

Children's Environment and Health Action Plan (CEHAP)

Pilot Environmental Health Indicators Toolkit

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Abbreviations

AQMA	Air Quality Management Area
CEHAPE	Children’s Environment and Health Action Plan for Europe
CEHAP	Children’s Environment and Health Action Plan
CEHI	Children’s Environmental Health Indicators
CRCE	Centre for Radiation, Chemical and Environmental Hazards
CISS	Chemical Incident Surveillance System
CLG	Communities and Local Government
CMO	Chief Medical Officer
CWI	Child Well-being Index
DALY	Disability-adjusted life year
DCSF	Department for Children, Schools and Families
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DH	Department of Health
DHWM	Department of Health West Midlands
ECM	Every Child Matters
EHP	Environmental Health Practitioner
ENHIS	Environment and Health Information System
ETS	Environmental Tobacco Smoke
GIS	Geographic Information System
GOR	Government Office Region
HPA	Health Protection Agency
HHSRS	Housing Health and Safety Rating System
HIP	Housing Investment Programme
HRABPSA	Housing Revenue Account Business Plan Statistical Appendix
HSSA	Housing Strategy Statistical Appendix
ICD	International Classification of Diseases
IMD	Index of Multiple Deprivation
ISG	Interdepartmental Steering Group
LAA	Local Area Agreement
LaRS	Local and Regional Service
NeSS	Neighbourhood Statistics Service
NGO	Non-governmental Organization
NHS	National Health Service
NI	National Indicator

NO ₂	Nitrogen dioxide
ONS	Office for National Statistics
ODPM	Office of the Deputy Prime Minister
PM ₁₀	Particulate Matter with an aerodynamic diameter <10µm
PSA	Public Service Area Agreement
QA/QC	Quality Assurance/Quality Control
RPG	Regional Priority Goal
RTA	Road Traffic Accident
SMR	Standardized Mortality Ratio
SOA	Super Output Area
WHO	World Health Organization
WMPHO	West Midlands Public Health Observatory
WSSD	World Summit on Sustainable Development

FOREWORD

At the World Health Organization's (WHO) fourth Ministerial conference "The future for our children" in Budapest (2004) the WHO European Member States made a commitment to the Children's Environment and Health Action Plan for Europe (CEHAPE). The aim of the CEHAPE programme is to develop and implement national plans and policies to address local priorities to reduce the burden of disease among children caused by environmental risk factors. The United Kingdom's (UK) response has included the development of a Children's Environment and Health Strategy for the UK and we welcome this environmental health toolkit which will help with the delivery of the Strategy. The programme entails developing a core set of environmental and health indicators, building on the Department for Environment, Food and Rural Affairs (Defra) funded project "Research to Review the Development of Environment and Health Indicators for the UK", to describe and characterise the burden of disease and hazards among children at a local authority level within Government Office Regions (GOR) of England, and Wales.

There are many potential indicators available and it is important for the credibility of the programme that the areas selected should be both evidence based wherever possible and locally relevant. This report presents an overview of the process used in developing the indicators and the method applied for the collation and analysis of the data for each indicator. It highlights those sub-regional areas and populations which are most vulnerable to environmental risk factors included in the basket of indicators.

The information provided in the report should be regarded as a basis on which the impact of the environment on children's health can be assessed and can be widened or narrowed as necessary to reflect the specific needs of the region undertaking the assessment. For example, some regions may wish to include indicators focussing on bathing water quality and/or radon, whereas in other regions this may not be applicable. The methods used for assessing each indicator are flexible and adaptable to reflect the data available to the assessor.

The West Midlands Region was selected for the pilot given the long established interest and working partnership on the impact of the environment and health. The region has higher than national proportion of children under 16 years in the population and specific children's environmental health challenges. The pilot is intended to inform ongoing multiagency work to improve the health of children in the West Midlands.

The project demonstrates that while there is a wealth of information and data available on environmental factors which influence health, much of it is not child specific and therefore some core indicators can serve only as proxies. In many cases although the required data exist, it cannot be disaggregated to a local authority level.

Today's children are tomorrow's future and maintaining a focus on the impact of the environment on their health and wellbeing is crucial. It is hoped that this environmental health indicators toolkit will provide a tool to assist in assessing the distribution of children's environmental health issues, highlighting priority areas for improvement and monitoring the impact of appropriate interventions.

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EXECUTIVE SUMMARY

The aim of this project is to identify a set of indicators that appropriately describes the burden and distribution of hazards and risks of childhood disease and injury due to environmental factors at a sub-national level. It has been estimated that more than a third of the burden of disease among children is due to modifiable environmental factors. This pilot project in the West Midlands Government Office Region (GOR) highlights those local authorities and childhood populations most vulnerable to environmentally-mediated diseases and injuries through the examination and analysis of a set of indicators. The project has defined a core set of indicators to describe children's environmental health as a part of the UK's commitment to develop and implement the Children's Environment and Health Action Plan for Europe (CEHAPE). This pilot has focused on the local dimension (local authority level) and has been carried out by the Health Protection Agency (HPA) in collaboration with the West Midlands Public Health Observatory (WMPHO), the Department of Health West Midlands (DHWM) together with input from local authority colleagues, Primary Care Trusts and the Environment Agency (Chapter 1).

The project has drawn on the experiences of the World Health Organization/European Union (WHO/EU) Environment and Health Information System (ENHIS)^{*} and CEHAPE[†] programmes and focuses on those WHO Regional Priority Goals (RPG)[‡] which are applicable to a developed community such as the West Midlands: RPG II (accidents), RPG (ambient and indoor air quality and respiratory illnesses) and RPG IV (hazardous chemicals, physical and biological agents).

There is an enormous range of potential indicators and the pilot explicitly set out to prioritise a reasonable number which could realistically be included in a routine regionally based project (Chapter 2). Accordingly, a multi-agency group was created to establish the key issues for the region and agree a workable definition of "children's environmental health". Inevitably this does not address many of the wider environment and health determinants such as social, behavioural or cultural issues. To ensure the credibility and relevance of the indicators the primary criteria for selection have been the demonstration of linkages between environmental exposure and health outcomes/effects and regional relevance.

Each indicator was assessed according to these criteria together with data quality, availability and accessibility. The working group refined an initial set of over 30 indicators to 17 and has developed detailed fact sheets on each describing rationale, method of calculation, timeliness and confidentiality (Chapter 4). Mapping the indicators and identifying those areas with potentially significantly poor outcomes has enabled an initial focus on those local authorities where interventions could have the most important impact (Chapters 4 and 5). It is anticipated that this pilot will be actively considered by other regions and the devolved administrations (Chapter 6).

^{*} Environment and health issues

http://www.enhis.org/object_class/enhis_Environment_and_health_issues.html (accessed 26/08/2008)

[†] Children's Environment and Health Action Plan for Europe

http://www.enhis.org/object_class/enhis_cehape.html#idj (accessed 26/08/2008)

[‡] Fourth Ministerial Conference on Environment and Health

<http://www.euro.who.int/document/e83338.pdf> (accessed 26/08/2008)

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1 INTRODUCTION

1.1. Children exhibit behaviours and developmental characteristics that mean they face greater exposure to certain environmental hazards and are more susceptible to the effects of those exposures. Children from preconception to adolescence are more vulnerable than adults to a variety of environmental factors due to¹:

- rapidly developing organ systems;
- behavioural differences-living and playing “closer to the ground”;
- longer life expectancy than adults, giving long latency agents time to work alone or in combination;
- limited control over their environment; and
- the extent of intake/exposure in relation to body weight compared to adults.

Although there is evidence that exposures to environmental risks contribute significantly to the burden of disease among children and adolescents² there are still gaps in our knowledge about the magnitude and distribution of hazards/risks and the environmental burden of disease among the young³.

1.2. The World Health Organization (WHO) considers the development of a set of key children’s environmental health indicators as an essential step in the effort to improve children’s health through safer environments. Several international policies, particularly the World Summit on Sustainable Development (WSSD) Plan of Implementation⁴ and the Banff Ministerial Statement on the World Summit on Sustainable Development⁵ have called for more effective collaboration on such indicators. A global Initiative on Children’s Environmental Health Indicators (CEHI) was launched at the WSSD in September 2002 in response to these concerns⁶. The U.K. is committed to supporting these initiatives which are aimed at enabling the:

- assessment of the state of children’s health and environment at national, regional and local levels;
- monitoring of temporal trends, geographic hot spots and vulnerable groups for selected environmental risk factors, in terms of both exposure and health outcomes;
- assessment of relevant policies and monitoring progress in policy implementation;
- development and implementation of new policies; and
- communication with experts and policy-makers from other sectors, the public and relevant NGOs

1.3. At the fourth WHO Ministerial conference on environment and health (2004), “The future for our children” WHO European Member States agreed a declaration to a Children’s Environment and Health Action Plan for Europe (CEHAPE)⁷. The 53 states of the WHO European Region are committed to developing and implementing national CEHAP plans and policies to address local priorities by 2010. In the UK, this is being led by the Government’s Interdepartmental Steering Group (ISG) on Environment and Health. The ISG has tasked the Health Protection Agency (HPA) and the Environment Agency to

develop a national CEHAP. The WHO is also developing a European Region-wide Environmental Health Information System (ENHIS) providing standardised information to support public health and environmental strategies in Europe; aspects of which are directly relevant to CEHAP^{8 9}. The HPA recently led for the Department of Health on ENHIS providing national data and analysis. This experience has been used with the support of the ENHIS programme to inform the development of children specific indicators for sub-national analysis.

1.4. The West Midlands has a higher proportion of children (under 16 years) than the national average and has some regionally distinctive children's health issues including the highest infant mortality rate in England (see Section 3.3). The region also has some important environmental health issues and has consequently been working in this field for some years. The key relationships between the health and environmental communities were already established and have been used to develop a core set of indicators to:

- describe the burden and distribution of hazards/risks and of childhood disease and injury attributable to environmental risks within a region; and
- provide intelligence to inform appropriate interventions and monitor the impact of those interventions particularly in terms of reducing inequalities.

1.5. A working draft of the Children's Environment and Health Strategy (CEHS) for the UK, including this pilot, was presented at the WHO Intergovernmental Midterm Review on 13 – 15 June 2007, Vienna, Austria.

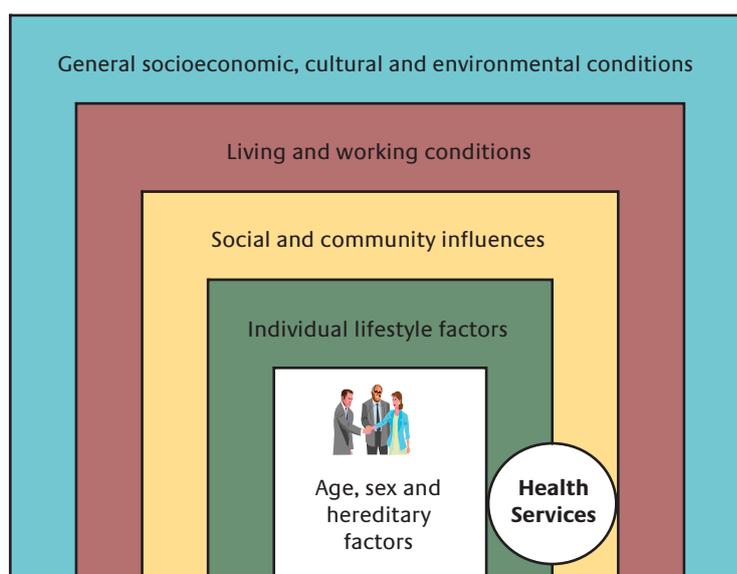
1.6. It is hoped that the information provided in this document may be used to inform those involved in monitoring, improving and protecting public health, such as the Strategic Health Authority, Primary Care Trusts and Local Authorities, as to those issues of concern with regards to children living in local authority areas in the region by supporting:

- Identification of priority issues for improvement;
- debates about priorities for improvement;
- the identification and sharing of good practice in policy development and operational delivery;
- debates about the setting of local targets to drive improvement, for example through Local Area Agreements (LAAs).

1.7. A draft version of this report was initially available for consultation within the West Midlands GOR between 2 September 2008 and 17 October 2008 (see Appendix 4 for a list of the consultees). The consultation was subsequently extended to 14 February 2009 to accommodate government departments' responses. There were very few responses but this could reflect the input of many organisations into the production of the toolkit. The West Midlands local authorities made significant contributions before the document was finalised for consultation. A summary of the comments from the consultation document is available in Appendix 5 and where appropriate revisions have been made in this final report.

2 METHOD

- 2.1. The engagement of public health professionals working at a local level was considered essential to ensure indicators would be informed by local intelligence and experience. Accordingly, a working group including staff from Health Protection Agency's Centre for Radiation, Chemical and Environmental Hazards (CRCE) and Local and Regional Services Division (LaRS), the Department of Health West Midlands (DHWM) and the West Midlands Public Health Observatory (WMPHO) was established to oversee the development of locally appropriate indicators. This group was further strengthened by a representative of local authority Environmental Health and has consulted with the Environment Agency.
- 2.2. Agreeing a definition of environmental health was a crucial early step. Physical environment is only one of the many factors determining a child's health. Whitehead and Dahlgren (1991)¹⁰ sought to demonstrate the relationship between these many different determinants of health.



Source: Whitehead and Dahlgren (1991)

Diagram1: Whitehead Dahlgren diagrammatic representation of the relationship between determinants of health

- 2.3. The group agreed definitions (see Boxes 1 and 2) recognising the wide range of available indicators (see Box 3) and that several of the ENHIS/CEHAPE indicators were inappropriate for a developed region such as the West Midlands (e.g. regional Priority Goal I ‘...adequate measures are taken to improve access to safe and affordable water and adequate sanitation for all children”). An analysis of the relevance of the WHO Environmental Health indicators for England and Wales conducted by NETCEN¹¹ short-listed 14 indicators given in Box 4.

A variety of approaches has been adopted for developing and monitoring sets of indicators describing children's well-being. For example, the United States (US) Child

Well-Being Index (CWI) uses a composite index, updated annually, which measures trends in child well-being. In the UK, Bradshaw published data describing children's well-being in 2002¹², updated in 2005¹³, to show trends for some 60 indicators covering areas such as child health and housing and neighbourhood. The "Every Child Matters" (ECM)¹⁴ outcomes framework also includes 25 indicators covering a variety of aspects related to children's well-being. However, Huby and Bradshaw (2006)¹⁵ consider that the role of the environment in influencing the well-being of children and young people is barely represented in ECM. In addition, this pilot has been informed by the Rogers Review (2007) of Local Authority Regulatory Priorities which has set out five national priorities including air quality and food hygiene for local authority regulatory services to assist them in prioritizing their resources¹⁶. Rogers also short-listed local environmental quality, noise nuisance and notification of infectious diseases as potential local priorities. The pilot has also examined the 198 indicators included in the National Indicators Set¹⁷ which are the **only** measures on which central government will performance manage outcomes delivered by local government.

Box 1: The definition of "environmental health" for this project includes both the direct and indirect effects of chemical, physical (including ionising and non-ionising radiation, and noise) and biological hazards on health and wellbeing, and encompasses some aspects of the physical and social environment such as sustainable development, housing, urban development, land use and transport

Box 2: The group agreed to adopt the definition of a child as a person aged 0 to 19 years (inclusive), including the foetus from the time of conception (<http://www.who.int/ceh/en/>)

2.4. Indicators of environmental stress and of environmentally related disease outcomes were prioritised based on the following hierarchy:

- a. Indicators of environmental stress or environment-related disease, where the causal link between environment and health is plausible, there is a significant evidence base supporting this and relevance to the West Midlands is clear e.g. air quality
- b. Indicators of environmental stress or environment-related disease with plausibility, relevance to the West Midlands but a poorly developed evidence base to support it e.g. noise nuisance
- c. Quality of life type issues which generally have been poorly defined, and/or for which the evidence base is weak but which are relevant to West Midlands e.g. access to green space

2.5. This pilot has focused on indicators falling under a) and b) and further work will develop the quality of life issues. The working group also consulted with the West Midlands local authorities to ensure the indicators chosen were consistent with the targets and goals in the National Priorities and Local Area Agreements.

2.6. An initial set of indicators (see Appendix 1) was agreed by the group and data sets were assessed for the following characteristics:

- Availability
- Year of start
- Level of disaggregation
- Quality assurance and control
- Accessibility
- Spatial coverage
- Format

Box 3: Examples of Indicators considered

- WHO (Euro) Children Health and Environment (CHE) programme. http://www.euro.who.int/childhealthenv/Monitoring/20030627_1
- ENHIS indicators- Chemical Hazard and Poisons Division CHaPD is providing the UK's formal participant status to the ENHIS programme which includes 10 indicator categories some of which are child-focused or may impact upon child health. http://www.enhis.org/object_class/enhis_home_tab.html
- National Indicators for Local Authorities and Local Authority Partnerships: Handbook of Definitions <http://www.communities.gov.uk/documents/localgovernment/pdf/543055.pdf>
- NHS National Planning Guidance and Vital Signs http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082542
- Community Health Profiles by the UK Association of Public Health Observatories http://www.apho.org.uk/default.aspx?QN=P_HEALTH_PROFILES
- Indicators of Public Health in the English Regions by the UK Association of Public Health Observatories.
- Clinical and Health Outcomes Knowledge Base, National Centre for Health Outcomes Development <http://www.nchod.nhs.uk>
- Tackling Health Inequalities
- Environment Agency – mapping your environment
- Key Health Data for the West Midlands http://medweb4.bham.ac.uk/websites/key_health_data/index.html
- NETCEN, IoM, CIEH – Research to review and develop environment and health indicators for the UK (Jan 2006)
- Health Profile of England, Department of Health <http://www.dh.gov.uk/en/Publicationsandstatistics/>
- UNICEF Children's Indicator set <http://www.unicef.org/statistics/index.html>
- The New Local Government Performance Network <http://www.defra.gov.uk/environment/localgovindicators/>

2.7. At the time of writing the most contemporary data for the period 2001 to 2007 are used for individual indicators where possible. Although the time period may differ among indicators, the period for any one indicator will be the same for all the local authorities to facilitate comparisons. Expert support was sought where necessary (e.g. plausibility of the asthma and allergy indicators) and data have been collated and analysed by the HPA in collaboration with the WMPHO. The group has identified 17 indicators as being appropriate for the pilot, approximately half of which describe health outcomes and the other half exposure proxies (see Table 1). The core set of indicators directly or indirectly addresses 8 of the 14 NETCEN indicators (see Box 4) and also includes three (housing, health and public space) of the eight components of well-being proposed by Aber *et al* (2002)¹⁸ as being useful for the comprehension of social exclusion among US children. More importantly, seven of the core set of indicators are in alignment with those in the National Indicators Set and three of the NHS Vital Signs Set.

Box 4: Indicators short-listed by NETCEN

1. Exposure to air pollutants
2. Policies to reduce environmental tobacco smoke exposure
3. Affordability
4. Dampness and mould growth
5. Mortality associated with extreme temperatures
6. Road accident rate
7. Mortality rate due to road traffic accidents
8. Injury rate due to road traffic accidents
9. Housing safety and accidents
10. Potential years of life lost due to road traffic accidents
11. Accessibility
12. Annoyance and sleep disturbance due to noise
13. DALY lost due to road traffic accidents
14. Mortality due to drink driving

2.8. Section 4 describes the rationale for each indicator, the sources of the data together with an assessment of data quality and limitations. Indicators that were considered important but for which data are not currently available have been identified as 'gap indicators'. Traffic light systems are often used to identify indicator(s) to which an authority should be giving special consideration. In the more sophisticated systems this reflects both the position for that indicator relative to other authorities and the rate and direction of change¹⁹. However, in this report it has not been possible to use such a system due to time constraints and red/green is used simply to show that the 95% confidence interval for indicators does not overlap with the 95% confidence interval for the West Midlands and in the case of amber there is an overlap (see Section 5). Results are presented graphically at local authority and upper tier authority level as well as in maps showing local authorities in red, green and amber bands.

TABLE 1 Core set of indicators

Core Indicators	Exposure	Outcome
Housing		
1. Unfit Dwelling	✓	
2. Overcrowding	✓	
3a. Homeless households in priority need	✓	
3b. Homeless households in temporary accommodation	✓	
Health		
4. All cause mortality		✓
5. Infant mortality		✓
6. Hospital admission rate due to acute respiratory illness		✓
7. Hospital admission rate due to asthma		✓
8. Immunization uptake		✓
9. Obesity		✓
Accidents		
10. Hospital admission rate due to non-traffic related injuries		✓
11. Hospital admission rate due to traffic related physical injuries		✓
Environment		
12. Exposure to air pollutants	✓	
13. Proximity to heavily trafficked roads	✓	
14. Noise nuisance	✓	
15. Potential exposure to chemical incidents	✓	
16. Physical activity	✓	
17. Access to green space	✓	
Gap Indicators		
Hospital admission due to diarrhoeal illness/ food poisoning notification		✓
Exposure to ETS	✓	
Access to sport facilities	✓	

3 WEST MIDLANDS GOVERNMENT OFFICE REGION BACKGROUND

- 3.1 There are 34 local authorities in the West Midlands region comprising 24 District and County Councils (which make up 4 counties), 7 Metropolitan and 3 Unitary Authorities (refer to Figure 1). This project presents data for the 34 lower tier authorities and also provides a summary at the upper tier authority level (14 upper tier authorities) at the end of the document.
- 3.2 The region has a rich and varied environment ranging from urban population centres to sparse rural areas. More than 70% of its land area is agricultural and it is also an important industrial region.
- 3.3 The West Midlands has a higher proportion of children (under 19 years) than the national average (refer to Figure 2 and Table 2). The regional infant mortality rate is 6.4/1000 compared to 5.1/1000 for England. The region has higher than national (England and Wales) rates of low birth weight babies, perinatal mortality, stillbirths and neonatal mortality (refer to Table 3). The West Midlands has a disproportionate level of deprivation with 26.5% of *Super Output Areas (SOAs) in the most deprived 20% of English SOAs and 14% in the worst 10% nationally. In Sandwell, over 20% of SOAs are in the bottom 10% for England and over half are in the bottom 20% for England²⁰. Figure 3 shows the distribution of childhood deprivation by ward.

TABLE 2 Selected information on West Midlands demography (Census 2001)

	West Midlands	England
% aged under 19	25.9	25.0
%male	48.9	48.7
% white	86.1	87.0
% Asian	3.39	2.09
% Black	1.56	1.14
% Mixed	0.75	0.47
% Other non white	0.57	0.89

* These are groups of output areas which are consistent in size and whose boundaries do not change which were developed from Census 2001.

TABLE 3 Selected information on West Midlands health

	Years	West Midlands	England
Infant Mortality (per 1000 livebirths)	2003-2005	6.8	5.1
Perinatal Mortality (per 1000 births)	2003-2005	9.8	8.2
Stillbirth Rate (per 1000 births)	2003-2005	5.8	5.5
Neonatal Mortality (per 1000 live births)	2003-2005	4.9	3.5
Low (<2500g) Birthweight (per cent)	2003-2005	8.8	7.9
Life expectancy Male (years)	2002-2004	75.9	76.55
Life expectancy Female (years)	2002-2004	80.6	80.91
All cause all age SMR	2003-2005	104.0	100.0
% Limiting long standing illness – Males	2000-2002	26.1	25.1
% Limiting long standing illness – Females	2000-2002	28.6	27.0

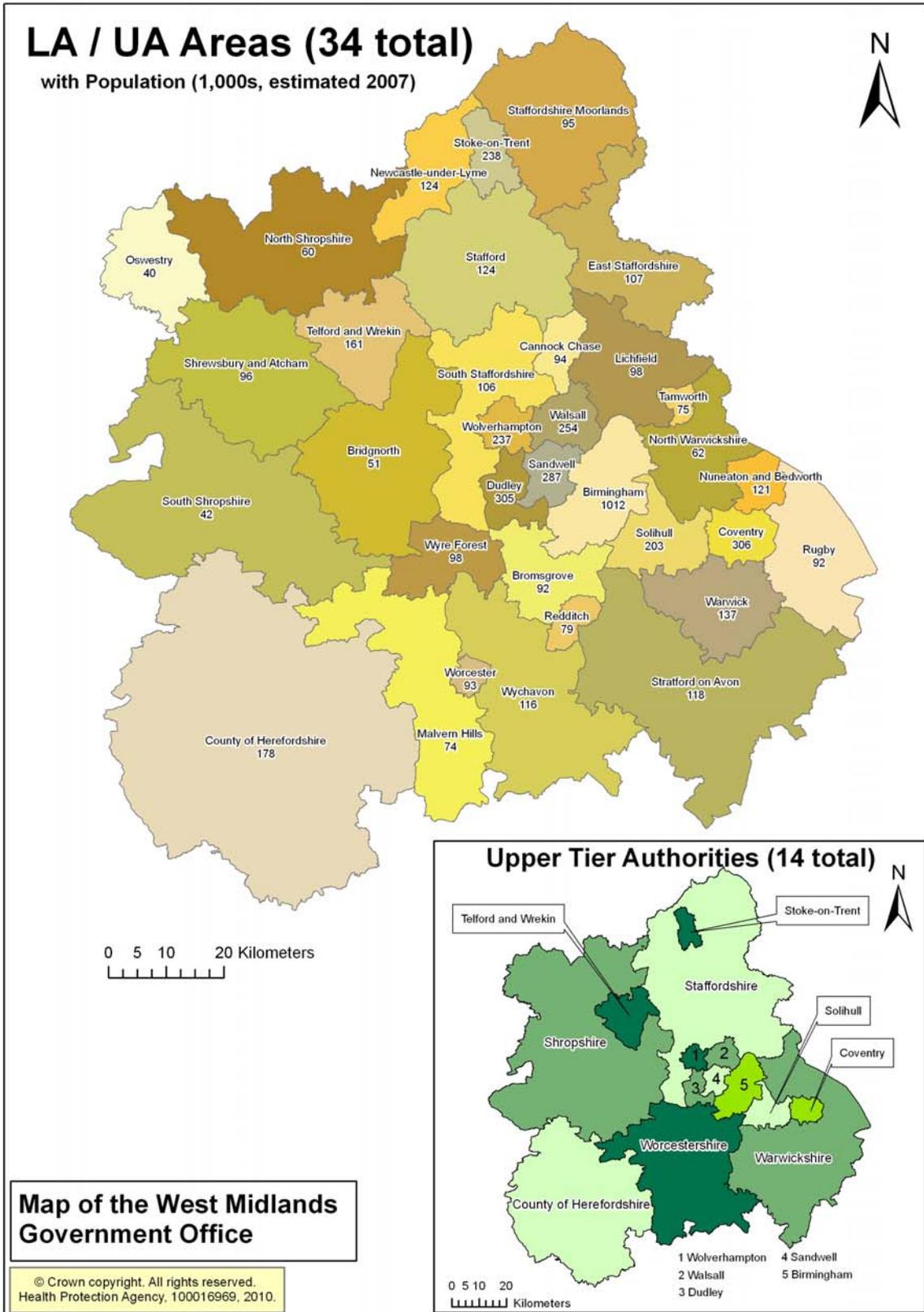
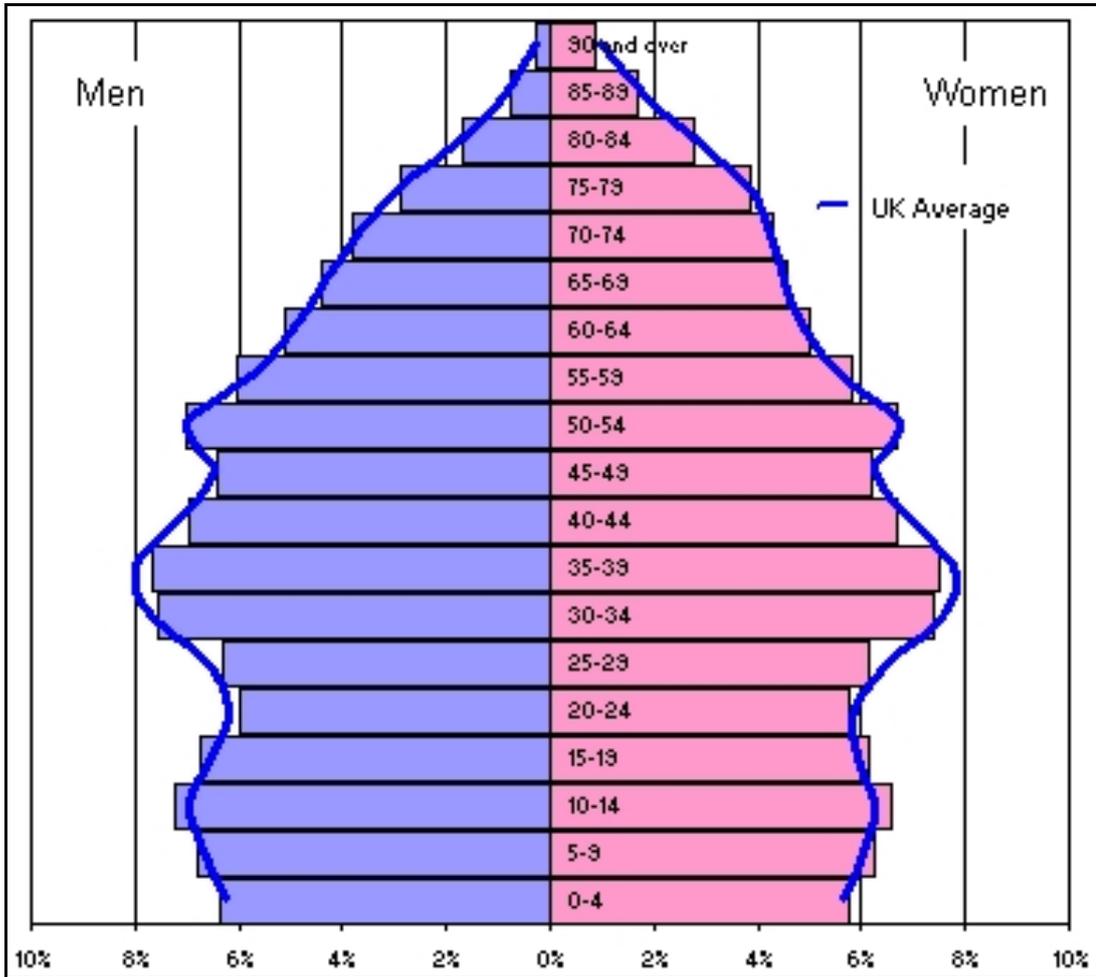
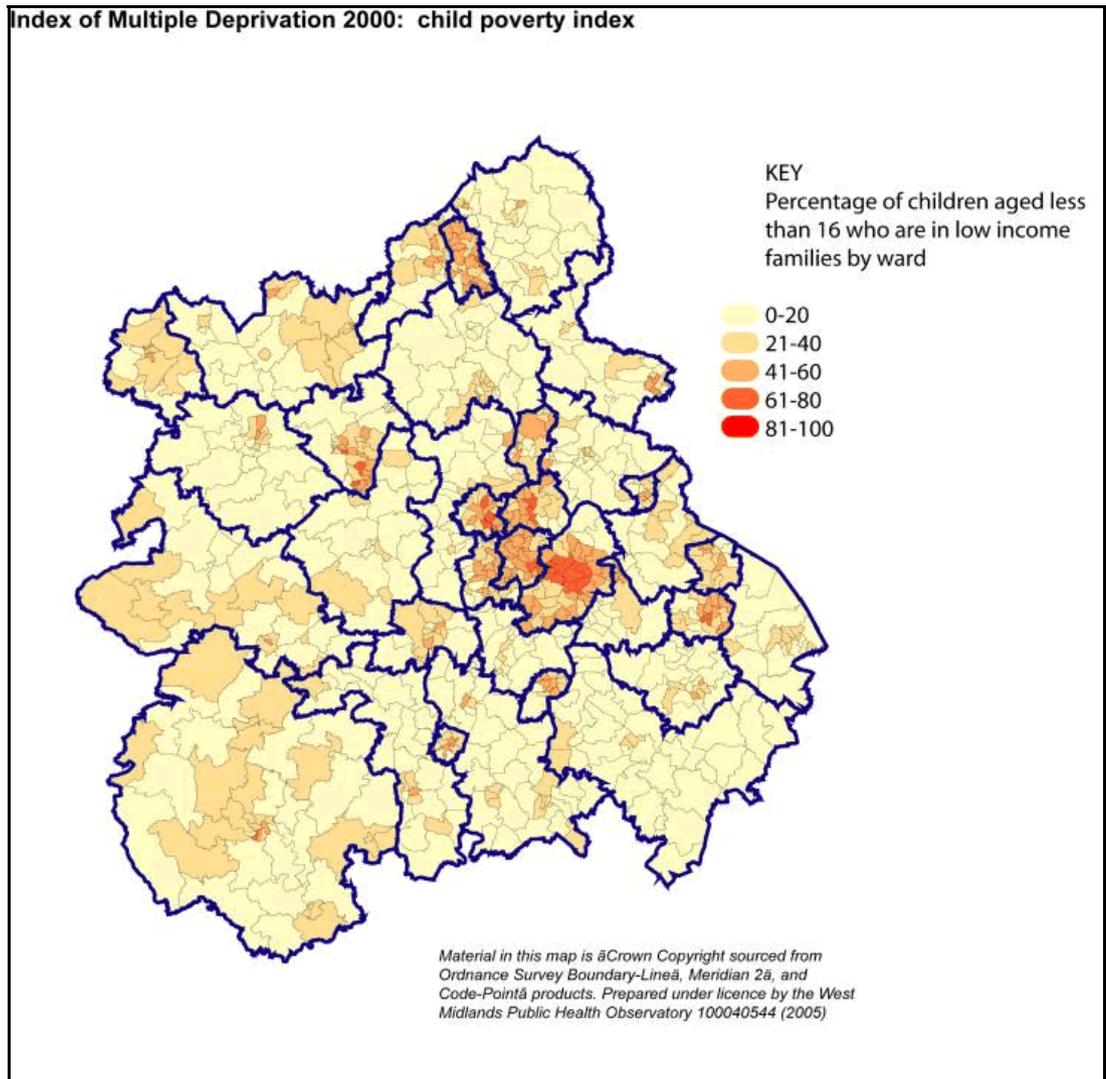


Figure 1: Map of West Midlands Government Office Region with population



Source: <http://www.statistics.gov.uk/census2001/pyramids/pages/f.asp>

Figure 2: Percentage of “all males” and “all females” in the age groups in the West Midlands



Source: Key Health Data for the West Midlands 2004
(http://medweb4.bham.ac.uk/websites/key_health_data/2004/ch_01.htm)

Figure 3: Map of child poverty index derived from index of multiple deprivation

4 CORE INDICATORS

4.1 Housing

Article 27 of the United Nations Convention of the Child (1959) recognises the children have a right to adequate housing conditions and states that “*States.....in accordance with national conditions and within their means, shall take appropriate measures to assist parents and others responsible for the child to implement this right and shall in case of need provide material assistance and support programmes, particularly with regard to nutrition, clothing and housing*”²¹.



The government's commitment to improving housing quality and reducing inequality is demonstrated by the recommendation that housing should be a focus of programmes and resources²². It is imperative that the government maintains the momentum and commitment in this area given the links between housing and health outcomes. The Children's Plan (2007) reaffirmed the

government's commitment to improve housing by the level of investment planned up to 2010²³.

4.1.1 Percentage of Unfit Dwellings

This indicator uses the Unfitness Standard data available at the time of the project although this was superseded by the Housing Health and Safety Rating System (HHSRS) in 2006. Negotiation with key stakeholders including the local authorities are currently underway to ascertain how best to develop this indicator in light of the new HHSRS. It is expected that subsequent assessments will use data from HHSRS.

Definition:
Unfit housing is defined as those dwellings that are in need of substantial repair and includes those that are: substantially unsafe; affected by damp, cold, or infestation (e.g. mould); or lacking in modern facilities. This indicator measures the proportion of unfit dwellings in a local authority as a percentage of the total housing stock.
Rationale:
There are several risks associated with unfit dwellings, in particular cold, damp, mould and unsafe

conditions. Dampness in houses leads to an increased level of house dust mites and fungal spores, increasing risk of respiratory or allergic symptoms²⁴. This can be exacerbated by poor ventilation. Cold housing is one of the factors associated with the excess of winter deaths in this country²⁵.

Poor quality housing is associated with increased levels of limiting long term illness, respiratory and infectious diseases, accidents, psychological problems, perceived poor general health, increased mortality, lower educational attainment and greater likelihood of unemployment^{26 27}.

As houses have become more energy efficient, some have experienced a decline in indoor air quality primarily due to a reduction in the air exchange rate. Environmental tobacco smoke, carbon monoxide, radon and nitrogen dioxide are all known to be damaging to health²⁸.

Unsafe environments result in an increased likelihood of accidents and injuries which can have physical as well as psychological implications for children.

Relevance to Children:

The quality of housing is an important determinant of health status in children. Young children spend up to 90% of their time indoors and poor housing is known to affect health. Shelter reported in 2006 that the 215,300 West Midlands children living in unfit dwellings were at a higher risk (up to 25%) of severe ill-health and disability during childhood and early adulthood²⁹. Furthermore, almost a half of accidents among children are associated with the physical conditions in the home.

One of the focal points of the Government's White Paper in 2004 was to bring all social housing "into a decent condition" by 2010³⁰, especially for those containing families with children (in addition to other groups). The World Health Organization Children's Environmental Health Programme (WHO CEH) recognises unfit dwelling as a major contributor to perinatal and respiratory diseases, insect borne diseases and physical injuries in children³¹. Between 1997 and 2008, the number of children in bad housing (non-decent, overcrowded and temporary accommodation) was reduced by 1.4 million. By 2010 the figure should be increased to over 2 million (from 1.4 million). Another £11 billion will be invested in further improvements to the quality of social housing over the next 3 years²³.

Primary Source:

The data are obtained from the Communities and Local Government (CLG) and Neighbourhood Statistics.

Date Last Published:

December 2005

Time Period:

01 April 2004 - 31 March 2005

Numerator definition:

Count of the total number of unfit dwellings in the local authority.

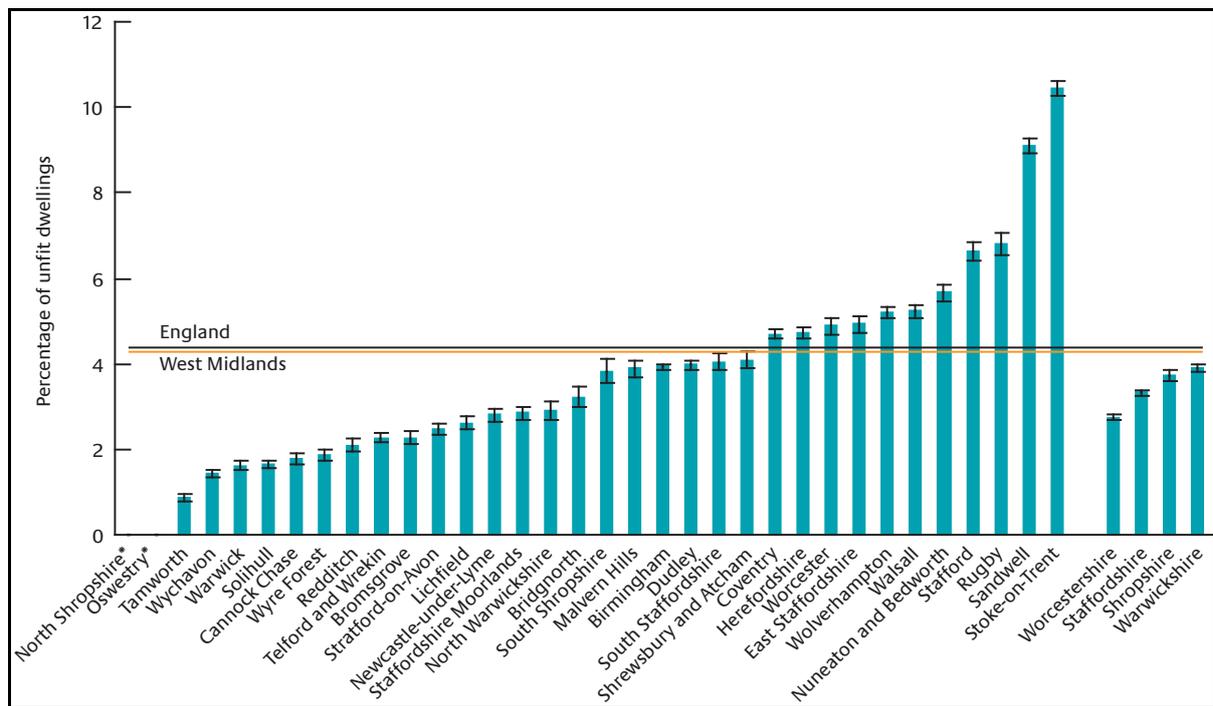
Source of Numerator:

The data can be found on the Office of National Statistics (ONS) Neighbourhood Statistics Service (NeSS) website in the housing section. The data are extracted from the Housing Investment

Programme (HIP) 'Housing Strategy Statistical Appendix' (HSSA) and the 'Housing Revenue Account Business Plan Statistical Appendix (HRABPSA).
Denominator Definition:
Counts of households on the local authority housing register.
Source of Denominator:
Total housing stock figures are available yearly from Housing Flow Reconciliation (HFR), council tax records, the HSSA and census. The data are based primarily on census data and supplemented by HFR and house building records.
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Households of black and ethnic minorities groups are more than twice as likely to live in unfit dwellings as that of white British people ³² . No breakdown by age, gender or socio-economic status is available.
Timeliness:
The dataset is updated annually and has been available on the ONS website since 2001.
Accuracy and Completeness:
Where the data are not provided a value of 0 has been entered for the local authority. QA/QC carried out on the data include sums, range and comparison checks. The data are not disaggregated by age group and no child specific data are available.
Disclosure Control:
This information is in public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
Number of unfit dwellings during the period 01 April 2004 to 31 March 2005 divided by the total number of dwellings on the local authority register as at 1 st April 2005, multiplied by 100. 95% confidence intervals are calculated using normal approximation.
Other Sources of Indicator set:
A derivation of this indicator is found in WHO Children's Environmental Health Indicators National Indicators Set NETCEN
Further Information:
Information relating to making homes decent is available from the CLG website located at: http://www.communities.gov.uk/index.asp?id=1152136 The ONS NeSS housing indicator is available from http://www.neighbourhood.statistics.gov.uk/dissemination/LeadHome.do?a=3&c=&d=13&i=1001&o=172&m=0&enc=1&extendedList=false&areaSearchText=&areaSearchType=13

Implications:

Figures 4 and 5 show that 9 local authorities have a higher percentage of unfit dwellings than the average for the entire region as well as the national average. Local authorities have powers to deal with homes in disrepair and can use these to reduce harm to children resulting from living in unfit dwellings. In particular a large proportion of injuries to children occur in the home and these might be reduced by improved home design and measures such as improved fittings and fixtures and child safety locks on kitchen cupboards (to prevent poisoning by ingestion of household chemicals). DCSF (2007)²³ also endorses improvements in the design of home fittings to prevent children gaining access.



* No Data

Figure 4: Per cent Unfit Housing in the West Midlands

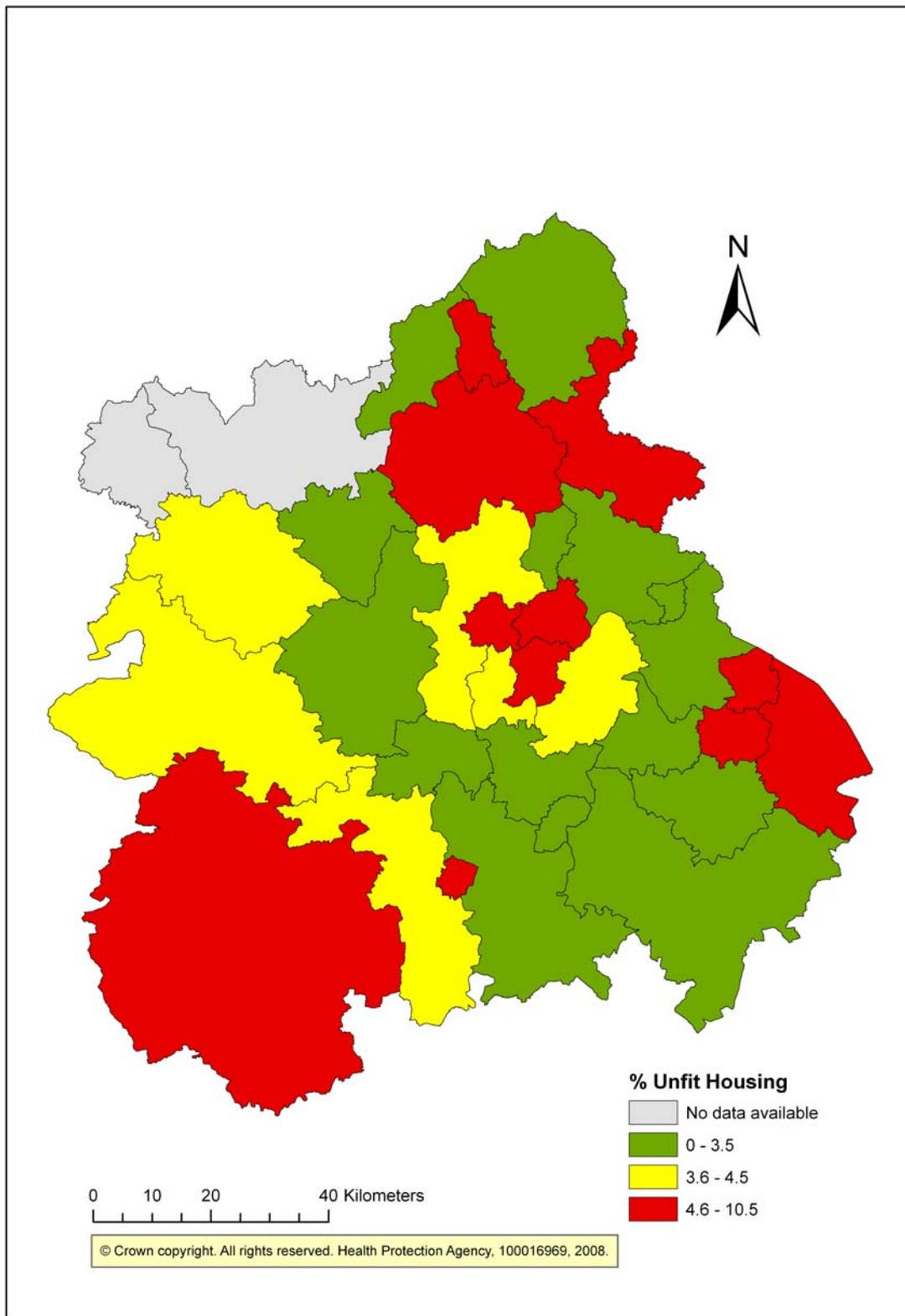


Figure 5: Map showing the proportion of unfit housing in the 34 West Midlands local authorities in relation to the regional average

4.1.2 Percentage Households in Overcrowded Accommodation

Definition:
Overcrowding in this document uses the statutory definition of "bedroom standard" e.g. children of the opposite sex over 10 years of age sharing a bedroom or the use of kitchen and living rooms as bedrooms. This indicator measures the percentage of overcrowded accommodation in the local authority. Details of bedroom standards and overcrowding can be found in the Housing (Overcrowding) Bill ³³ .
Rationale:
Overcrowding is associated with physical and psychological symptoms including depression and "Our Healthier Nation" recognises the importance of good housing in reducing stress ³⁴ and its association with other insults such as poverty, pollution, crime and poor access to facilities.
Relevance to Children:
Children in overcrowded houses are up to 10 times more likely to contract meningitis ²⁹ . Children living in overcrowded and unfit houses are more likely to suffer sleep deprivation and are less likely to concentrate in school thereby leading to under-achievement. Young children spend more than 90% of their times indoors and therefore the impact of overcrowding on their health and wellbeing will be important ^{35 36} . Baker <i>et al.</i> (1998) ³⁷ reported links between overcrowding and tuberculosis and symptoms of wheezing. Furthermore, overcrowding has been linked to delayed cognitive development and slow growth in childhood which is associated with an increased risk of coronary heart disease in later in life ³⁶ . Government guidance ³⁸ charged housing authorities with the provision of appropriate accommodation for families in need as this can make an important contribution in meeting the health and developmental needs of children. Shelter estimates that there are approximately 45,000 Birmingham children living in cramped housing and Figures 6 and 7 demonstrates that it has the highest percentage of overcrowded houses in the region. The Department for Children, Schools and Families (DCSF) plan to (a) tackle overcrowding, publishing an Action Plan this year (2008) and (b) prioritise children's needs in housing decisions especially the need to stay close to services such as schools ²³ .
Primary Source:
The data are obtained from the Office of National Statistics and is a part of census data
Date Last Published:
April 2001
Time Period:
2001
Numerator definition:
Count of the total number of overcrowded households in the local authority.
Source of Numerator:
Office of National Statistics

Denominator Definition:
Counts of households during collation of census area statistics for census 2001.
Source of Denominator:
ONS
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Households of black and ethnic minorities groups are six to seven times as likely to live in overcrowded conditions as white British households ³² . No breakdown by age, gender or socio-economic status is available.
Timeliness:
The dataset is updated every 10 years as part of the census area statistics collated during census.
Accuracy and Completeness:
Where the data are not provided a value of 0 has been entered for the local authority. In tables issued for England and Wales, small numbers are adjusted to maintain anonymity. In addition, some records were rearranged in the output database, and broad limitations are placed on detail in tables to be produced for small populations. Missing data are imputed.
The data are subject to extensive quality assurance process. The data are not disaggregated by age group and no child specific data are available.
Disclosure Control:
The confidentiality of personal census information is paramount and disclosure protection measures are used to prevent the inadvertent disclosure of information about identifiable people. However, the information obtained from the ONS NeSS website is in public domain therefore no disclosure control procedures have been applied at this point.
Technical Guidance:
Number of overcrowded properties in 2001 divided by the total number of properties in the local authority register, multiplied by 100. 95% confidence intervals were calculated using normal approximation however, these are small and are not shown in Figure 6 below.
Other Sources of Indicator set:
This indicator can be found in WHO Children's Environmental Health Indicators Programme NETCEN
Further Information:
The ONS NeSS housing indicator is available from http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=276800&c=birmingham&d=13&e=7&g=373272&i=1001x1003x1004&m=0&enc=1&dsFamilyId=155
Implications:

The government already recognises overcrowding as a key issue which contributes to the development and health of children and has charged local authorities with the provision of appropriate accommodation for families in need.

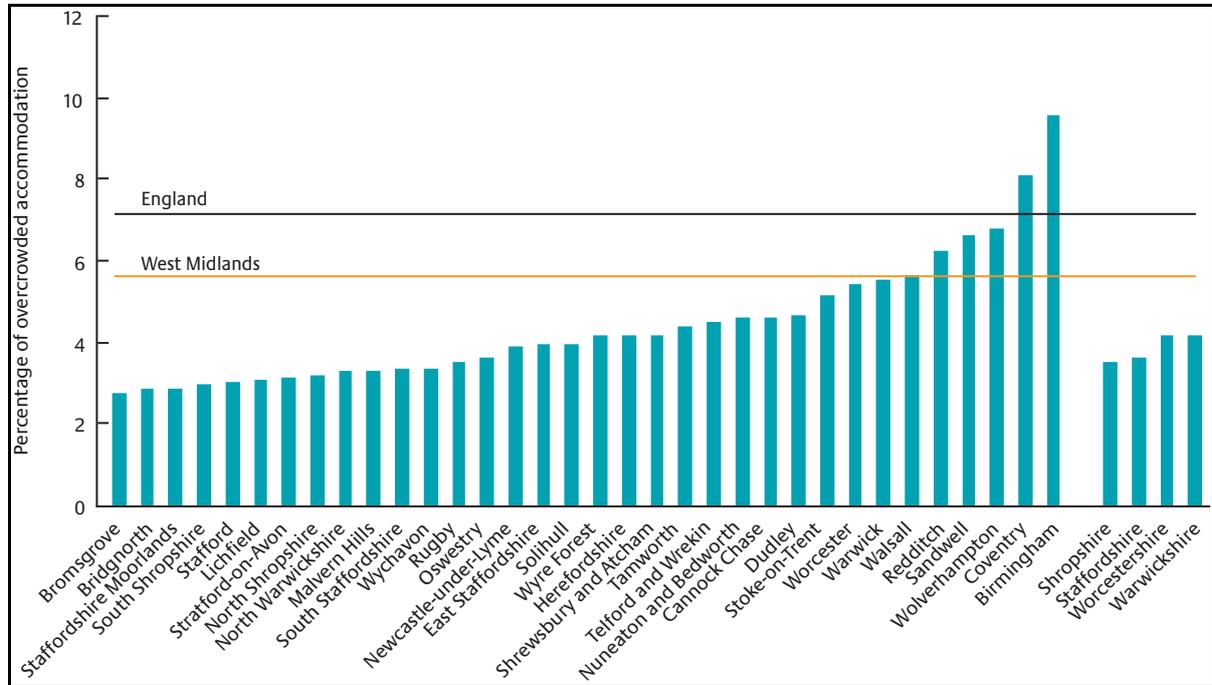


Figure 6: Per cent overcrowded accommodation within the West Midlands

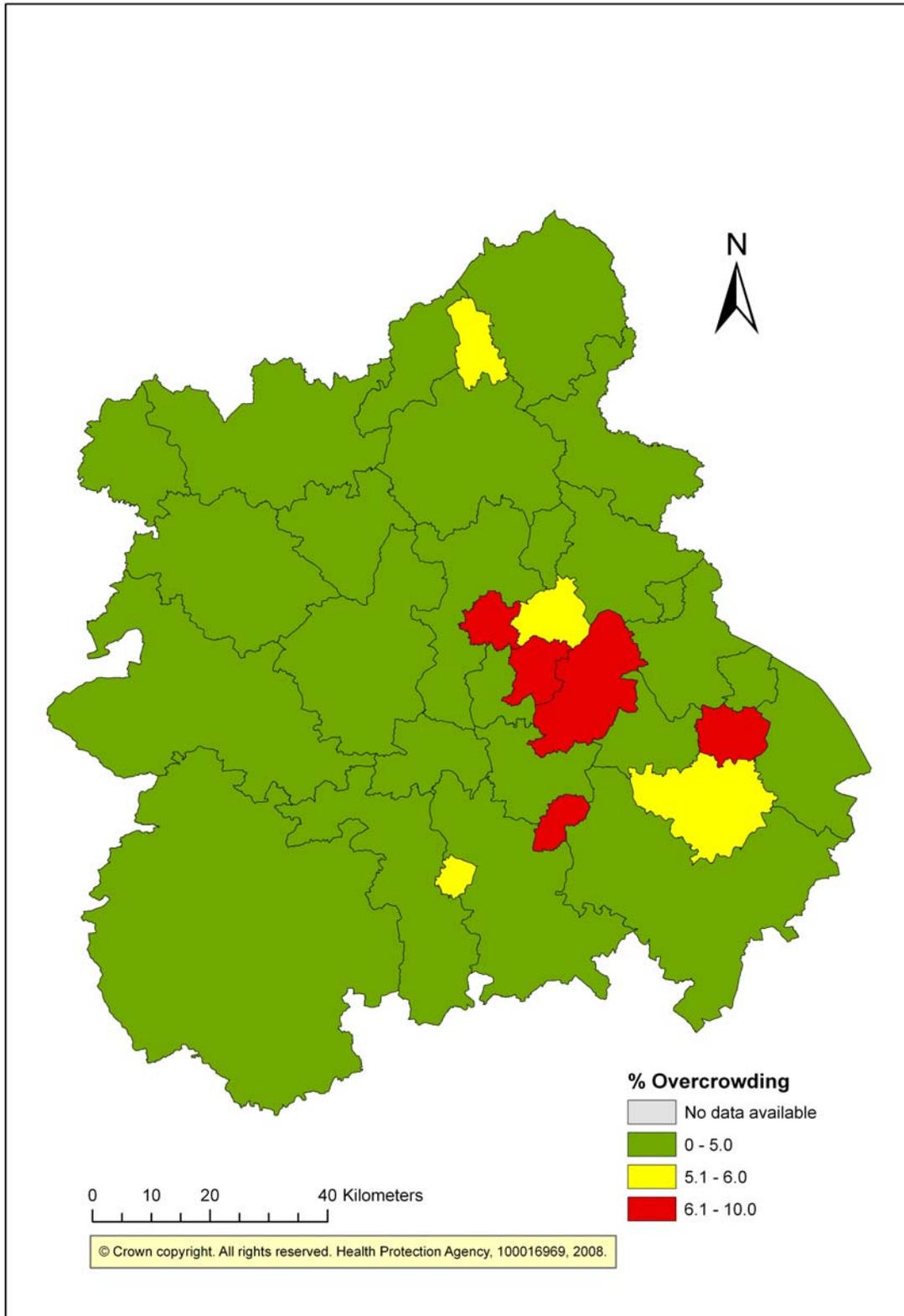


Figure 7: Map showing the proportion of overcrowded households in the 34 West Midlands local authorities in relation to the regional average

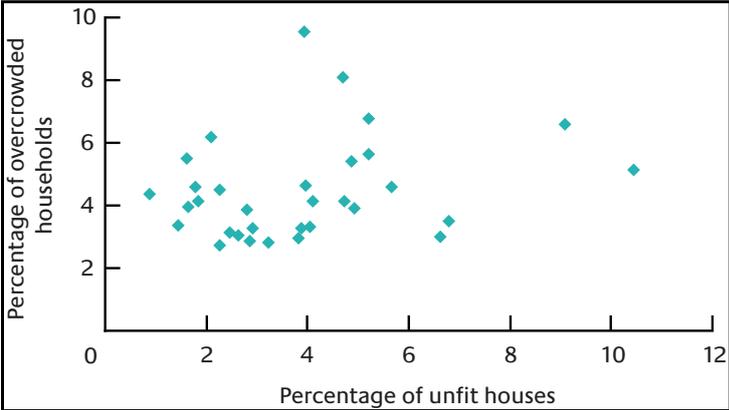


Figure 8: Scatter diagram of per cent unfit houses versus per cent overcrowded households

4.1.3 Homelessness

Homelessness includes a wide spectrum of people with housing difficulties. This project considers the following categories:

- a) homeless and in priority need; and
- b) homeless and in temporary accommodation

(a) Homeless Households and in Priority Need

Definition:
This indicator measures the level of statutory homeless households in priority need as a percentage of the total households on the local authority register.
Rationale:
There are several categories of homelessness and this particular indicator considers those accepted by the local authority as being legally homeless and in priority need. Those considered intentionally homeless are not included. Statutorily homeless households contain some of the most vulnerable and needy members of our communities. Single homeless people show high levels of social isolation, economic and educational exclusion, mental health problems and drug and alcohol dependency ^{39 40 41 42 43} .
Research evidence has highlighted the negative impacts upon health, education and employment facing homeless families. Preventing and tackling homelessness requires sustained and joined-up interventions by central and local government, health and social care and the voluntary sector.
Relevance to Children:
Although not all unintentionally homeless households in priority need have children, it is the most frequent reason for being classified as in priority need. Homeless children are two to three times more likely to be absent from school and two to four times more likely to suffer mental health problems than other children. Not only does homelessness impact on the health of children but also the quality of the health care they receive ⁴⁴ .
Research has reported that homeless children have four times as many respiratory infections, five times as many stomach and diarrhoeal infections, twice as many emergency hospital admissions, six times as many speech and stammering problems and four times the rate of asthma compared to other children ⁴⁵ . WHO CEH Programme recognises homelessness as a major contributor to perinatal and respiratory diseases, insect borne diseases and physical injuries in children.
In the UK young homeless people are subject to different guidelines to homeless adults and have differing access to health services ⁴⁶ . This could have serious implications in the West Midlands region where the number of homeless households in priority need per 100,000 is greater than that nationally for more than half of the local authorities (refer to Figure 9).
Primary Source:
The data are obtained from the CLG.
Date Last Published:
December 2005

Time Period:
1 st April 2004 – 31 st March 2005
Numerator definition:
Count of households accepted by a local authority as being unintentionally statutorily homeless and in priority need.
Source of Numerator:
2004/2005 Housing Strategy Statistical Appendix (HSSA) – Section E (Homelessness).
Denominator Definition:
Count of households on the local authority housing register.
Source of Denominator:
2004/2005 Housing Strategy Statistical Appendix (HSSA) – Section C (The Housing Register).
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Households of black and ethnic minorities groups are more than twice as likely to become homeless as white British households ³² . No breakdown by age, gender or socio-economic status is available.
Timeliness:
The dataset presented is for 2004/2005 but it will be updated annually in the future.
Accuracy and Completeness:
A built-in validation system allows individual local authorities to check the accuracy of their data before submission to the CLG. This includes the use of sums, range and comparison checks. Once the data are submitted to the CLG further validation checks are carried out manually. The data are not disaggregated by age group and no child specific data are available.
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied. However, data have been suppressed by the CLG to protect both the confidentiality of individuals and potential statistical instability due to low counts.
Technical Guidance:
Count of unintentional homeless households in priority need for the period 01 April 2004 to 31 March 2005 divided by the count of households on the local authority register as at April 2005, multiplied by 100.
95% confidence intervals were calculated using normal approximation.
Other Sources of Indicator set:
The indicator can be found on the Office of National Statistics (ONS) Neighbourhood Statistics Service (NeSS) website in the housing section.

Further Information:

It should be noted that this indicator is a measure of households accepted as being statutorily homeless and does not include households that have become unintentionally homeless but are not considered to be in priority need (one of the criteria to be classed as in priority need is having children or being pregnant). In addition households that have become intentionally homeless and rough sleepers are not included.

Information relating to homelessness is available from CLG website which can be found at:
<http://www.communities.gov.uk/index.asp?id=1156302>

The ONS NeSS housing indicator is available for download from
<http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=276800&c=birmingham&d=13&e=7&g=373272&i=1001x1003x1004&o=172&m=0&enc=1&dsFamilyId=656>

Further Reading:

1. Minton A. and Jones S (2005). Generation Squalor. Shelter’s National Investigation into the Housing Crisis.
2. Shelter (2004). Toying with their future. The hidden cost of the housing crisis

Implications:

Local authorities and primary care trusts should cooperate to ensure that services to meet their basic health needs are available for homeless children and adolescents.

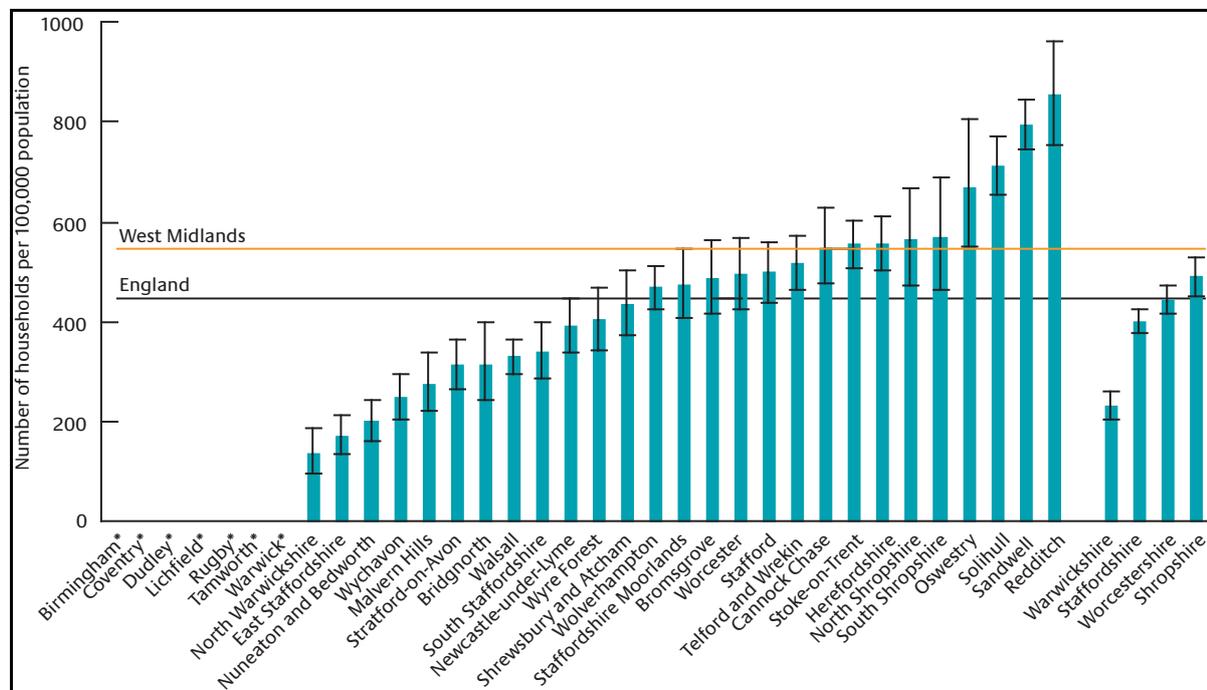


Figure 9 Number of households in priority need per 100,000 households

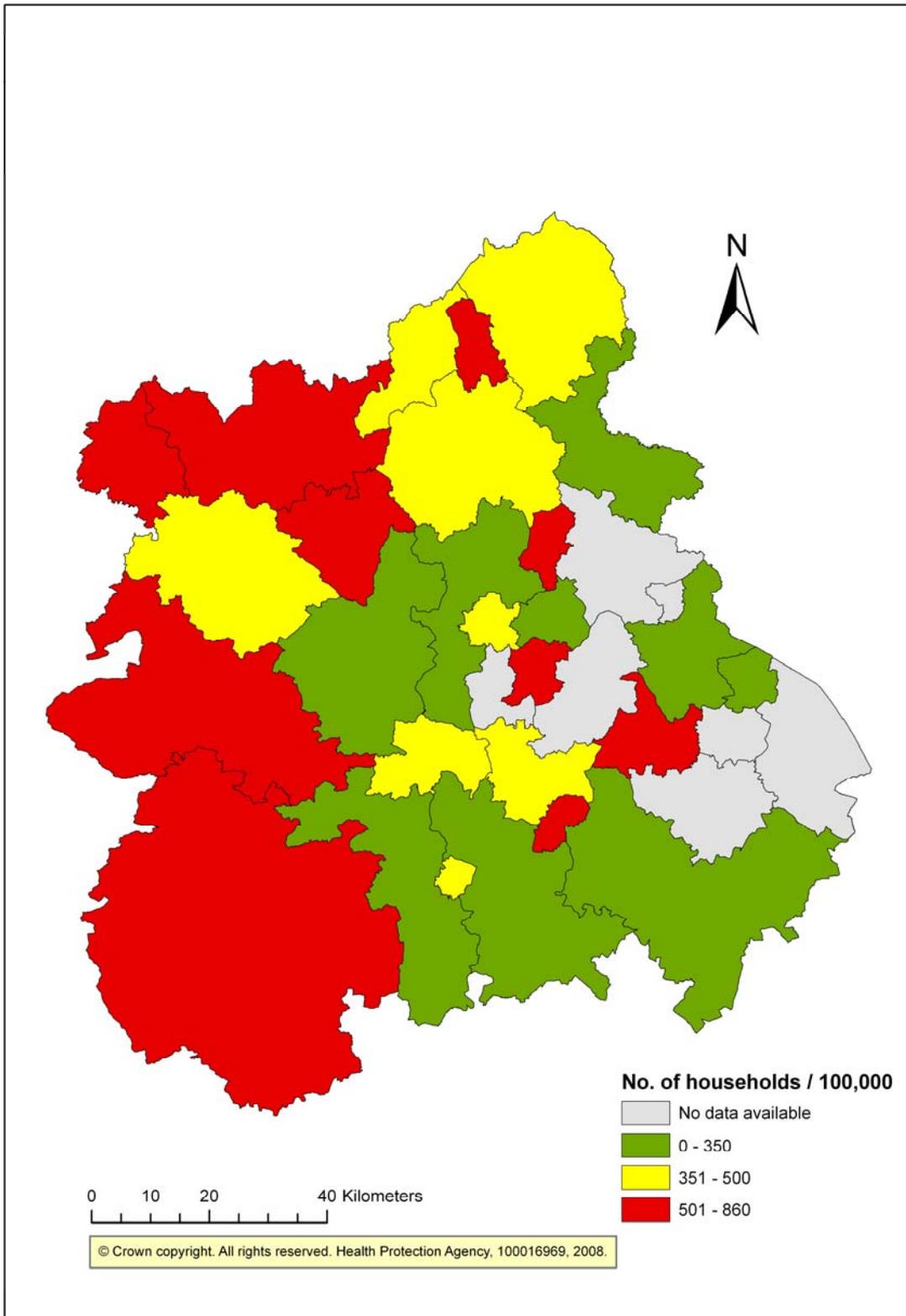


Figure 10: Graphical demonstration of the households in priority need in the 34 West Midlands local authorities in relation to the regional average

(b) Statutory Homeless and in Temporary Accommodation

Definition:
This indicator measures the level of statutorily homeless households in temporary accommodation as a percentage of the total households on the local authority register. Temporary accommodation includes bed and breakfast, hostels (inclusive of women's refuges), private leased sector, local authority/housing association and others.
Rationale:
The Communities and Local Government has published a strategy document ⁴⁷ which sets out the Government's plans for reducing homelessness with the aim of halving the number of homeless households in temporary accommodation by 2010.
Relevance to Children:
<p>The impact of homelessness on a child starts at birth. Children born to women who have been in bed and breakfast for an extended period are more likely to be of low birth weight. They are also more likely to miss their immunizations which can have serious health implications in the future²⁹.</p> <p>Homelessness statistics suggest that 3 in 5 of homeless households contained at least one dependent child with a further 9% including a pregnant woman⁴⁸. Homelessness is known to have a particularly adverse effect on households with children and pregnant women hence the government has made it a priority to halve the number of households living in temporary accommodations (compared with levels in 2001) by 2016, a reduction of more than 30,000 households.</p> <p>While the indicator covers all those in temporary accommodation a high percentage will be households with children. It was found that children living in bed and breakfast are at greater risk of infection, in particular, gastroenteritis, skin disorders and chest infections as well as accidents. Hence the government was committed to eliminate the long-term use of bed and breakfast type accommodation for households with/expecting children by March 2004. This is still a key priority of the government.</p>
Primary Source:
The data are obtained from the CLG and ONS NeSS.
Date Last Published:
December 2005
Time Period:
01 April 2004 – 31 March 2005
Numerator definition:
Count of households accepted by a local authority as being statutorily homeless and in temporary accommodation.
Source of Numerator:
2004/2005 Housing Strategy Statistical Appendix (HSSA) – Section E (Homelessness).

Denominator Definition:
Count of households on the local authority housing register.
Source of Denominator:
2004/2005 Housing Strategy Statistical Appendix (HSSA) – Section C (The Housing Register).
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
People from black and ethnic minority communities experience a disproportionately high level of homelessness ³² . Data relating to ethnicity of households is collected as part of HSSA. No breakdown by age, gender or socio-economic status is available.
Timeliness:
The dataset presented is for 2004/2005 but it will be updated annually and published by the CLG/ONS.
Accuracy and Completeness:
A built-in validation system allows individual local authorities to check the accuracy of their data before submission to the CLG. This includes the use of sums, range and comparison checks. Once the data are submitted to the CLG further validation checks are carried out manually. The data are not disaggregated by age group and no child specific data are available.
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied. However, data have been suppressed by the CLG to protect both the confidentiality of individuals and potential statistical instability due to low counts.
Technical Guidance:
Count of homeless households in temporary accommodation for the period 1 st April 2004 to 31 st March 2005 divided by the count of households in the local authority register as at April 2005, multiplied by 100000. 95% confidence intervals were calculated using normal approximation.
Other Sources of Indicator set:
The data can be found on the Office of National Statistics (ONS) Neighbourhood Statistics Service (NeSS) website in the housing section. Public Service Agreements (PSA5) include indicators relating to homelessness including one which measures the number of households with dependent children living in temporary accommodation.
Further Information:
Information relating to homelessness is available from CLG website which can be found at: http://www.communities.gov.uk/housing/housingresearch/housingstatistics/housingstatisticsby/homelessnessstatistics/publicationshomelessness/

The ONS NeSS housing indicator is available for download from <http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=276800&c=birmingham&d=13&e=7&g=373272&i=1001x1003x1004&o=172&m=0&enc=1&dsFamilyId=656>

Further information is also available at CLG

Implications:

Being lodged in bed and breakfast accommodation has been shown to be particularly harmful to the physical and mental health of children. Local authorities should make every effort to ensure that when placing families with children in temporary accommodation, the accommodation provides an environment as suitable as possible for the health and psychological needs of the children. Figure 11 shows that, with the exception of one local authority within the West Midlands, the number of households in temporary accommodation per 100,000 households is below the national average. There are two local authorities which have no households in temporary accommodation. Figure 12 shows the performance of the local authorities in comparison to the regional average.

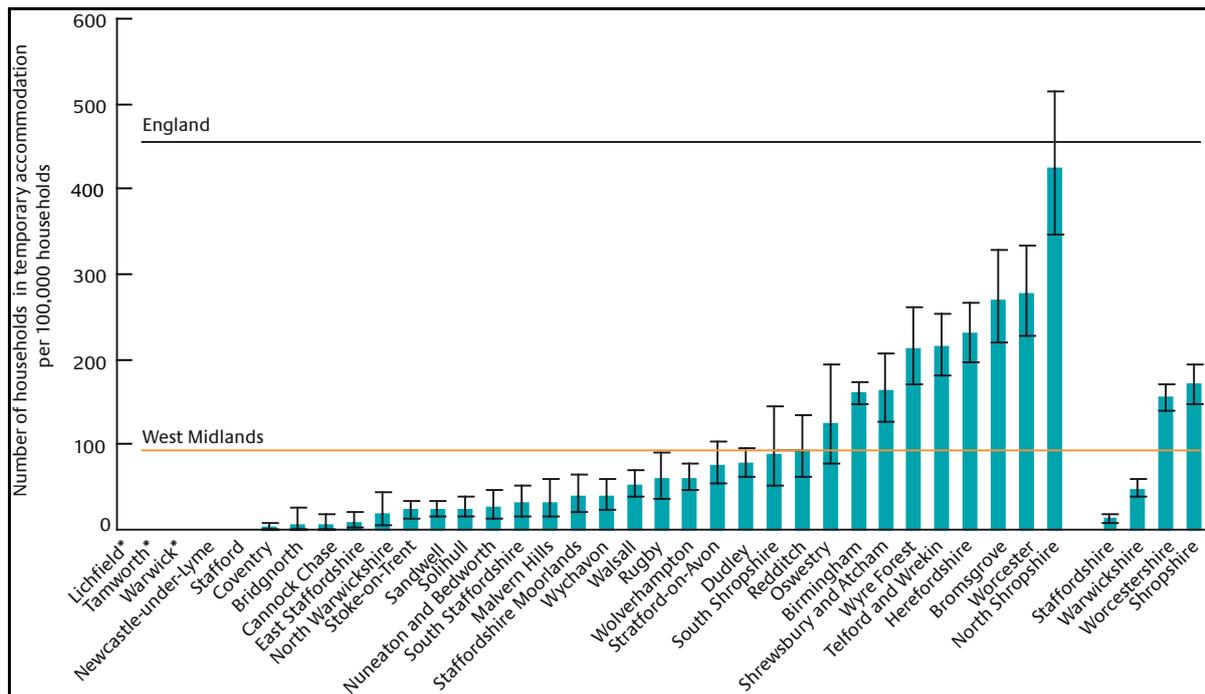


Figure 11: Number of households in temporary accommodation per 100,000 households

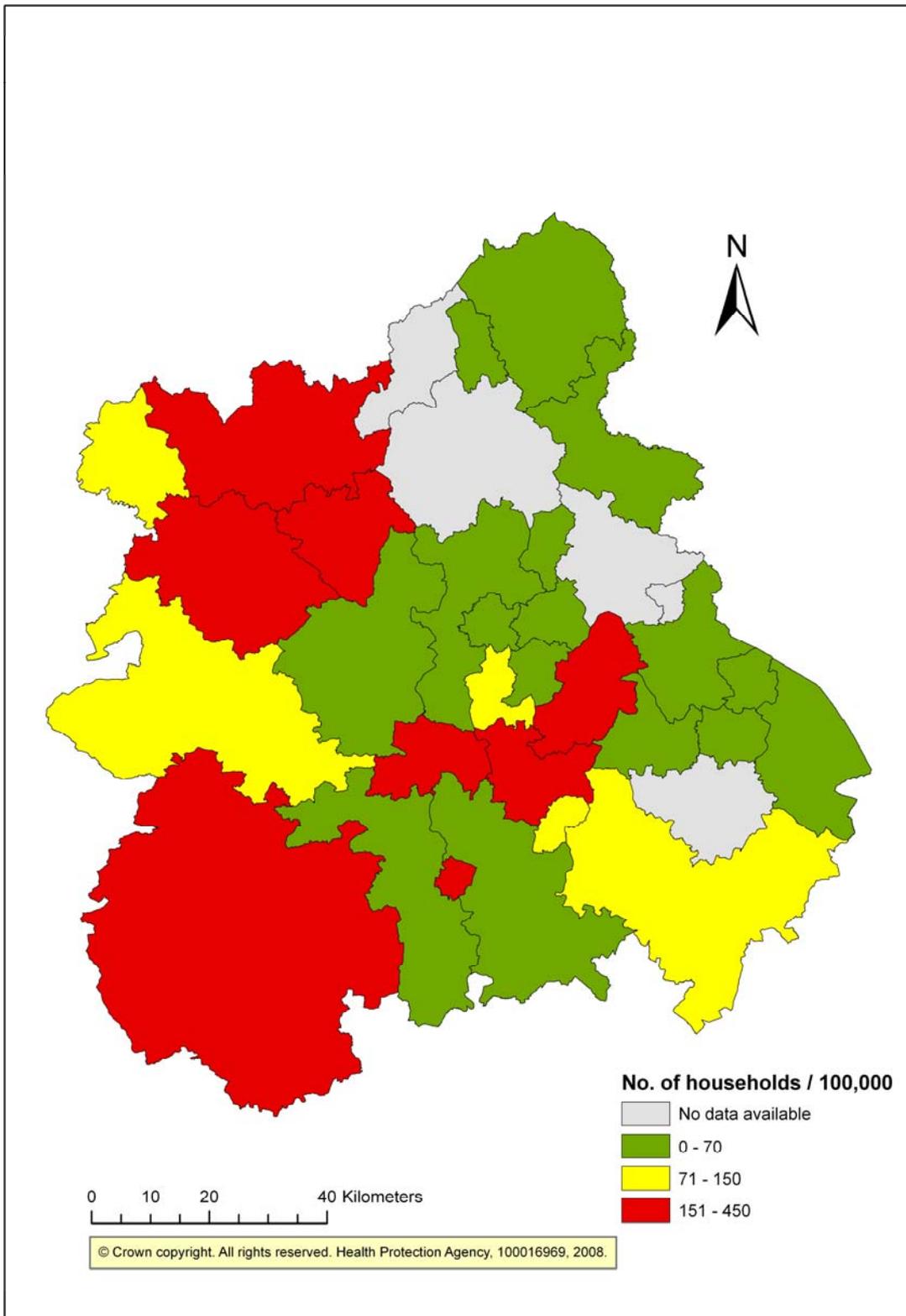


Figure 12: Map showing the number of households in temporary accommodation in the West Midlands local authorities in relation to the regional average

4.2 Health

Article 24 of the Convention on the Rights of the Child (1959) states that “States.....recognize the right of the child to the enjoyment of the highest attainable standard of health”²¹.

General Note on Mortality

Death rate is strongly related to age. Death rate in the first year of life (infant mortality) is far higher than any other period of childhood and within the first year; death rate in the first month is much greater than in any other month. In the 5 year period 2001-2005 in West Midland local authorities the number of infant (age under 1 year) deaths ranged from 4 to 398 and the number of deaths for those aged 1 – 19 years from 6 to 295. Given these small numbers all indicators of cause specific mortality were found to be unsuitable at levels of disaggregation below that for the region and have been excluded from the final basket of indicators.

4.2.1 Infant Mortality Rate

Definition:
Infant deaths (age less than one year) per 1,000 live births (crude rate)
Rationale:
Environmental factors influence infant mortality, first through their effect on the mother in pregnancy and so the viability of the child when born and second through the direct effect on the young child after birth.
The commonest causes of infant mortality are congenital malformations and conditions arising in the perinatal period. 52.7% of infant deaths occur in the first week of life (early neonatal) 15.8 % between 8 and 28 days (late neonatal) and 31.5% after 29 days.
There is an association between standards of living and infant mortality rates. Although the rates tend to be small at a local level, there are wide inequalities in infant mortality rates by local authority in England and monitoring these inequalities is essential to understanding trends in inequalities in infant mortality.
Relevance to Children:
As a result of the Acheson Report ⁴⁹ the Department of Health (DH) introduced a number of targets, one of which was “By 2010 reduce inequality in health outcomes by 10% as measured by infant mortality and life expectancy at birth”. This is supported by two separate targets, one of which is “Starting with children under 1 year, by 2010 to reduce the gap in mortality by at least 10% between routine and manual groups and the population as a whole”. The update on this target in 2006 reported that over the period since the target baseline (1997-99), the gap had widened ⁵⁰ . However, this target is difficult to monitor at a local level as the number of deaths in any given local authority or primary care trust (PCT) among a particular social group is small and subject to random fluctuations from year to year. Given these small numbers a total of three years worth of data has been used in the calculation of this indicator as shown in Figure 13.
Primary Source:
The data are obtained from National Centre for Health Outcomes Development (NCHOD)

Date Last Published:
December 2006
Time Period:
Three year pooled average 2003 – 05
Numerator definition:
The number of infant deaths (less than 1 year)
Source of Numerator:
Office of National Statistics
Denominator Definition:
The number of live births occurring
Source of Denominator:
Office of National Statistics
Geographic Coverage:
Regions, counties, county districts, metropolitan county districts, unitary authorities
Dimensions of Inequality Available:
<p>Infant mortality varies with birth weight (deaths amongst the lowest birth weight babies are highest) and maternal age (infant mortality among babies born to mothers under 20 years are higher than for other groups). Infant mortality also varies with the socio-economic status of the mother and lower socio-economic groups are not only more likely to have low birth weight babies but also the infants have higher mortality even after adjusting for birth weight. The effect of marital status, ethnicity and other factors on infant mortality has also been examined.</p> <p>Due to the number of deaths being small these inequalities tend to be obscured by random variation at local authority or primary care trust level.</p>
Timeliness:
The indicator is updated on an annual basis and published in the Compendium of Clinical and Health Indicators (NCHOD website).
Accuracy and Completeness:
Statistics on births and deaths are derived from the registration of births and deaths. The Office of National Statistics completes a variety of quality checks, including duplicate and sums checks, on the data before making them available for analysis. Data on births and deaths are considered to be largely complete.
Disclosure Control:
This information is in the public domain; however rates based on fewer than 5 deaths are withheld to prevent any possibility of disclosing data on an identifiable individual.

Technical Guidance:

Deaths under 1 year of age per thousand live births in same time period.

The 95% confidence intervals for crude rates and percentages are calculated using the likelihood-based method described by Aitken *et al.* (1990)⁵¹ which is a good approximation of the exact method.

Other Sources of Indicator set:

National Standards Local Action. National Targets Priority 1: improve the health of the population.

National health inequalities target. Reduce the gap between infant mortality in the 'routine and manual classes' and the population as a whole by 10%.

Basket of Indicators – Indicator 11.3.

Quality of Life Indicator – Indicator 11.

Opportunity for All – Children and young people – Indicator 11.

Sustainable Development Indicator.

WHO Children's Environmental Health Indicators.

Community Health Profile

UNICEF Children's Indicator set (<http://www.unicef.org/statistics/index.html>)

Further Information:

Note the wide confidence intervals especially in the local authorities with smaller populations.

Implications:

The first way that authorities can seek to reduce infant mortality is through helping mothers to be healthy during pregnancy and in particular encouraging mothers who smoke to quit as soon as they know that they are pregnant. After birth support to mothers and young families, such as more visits by Health Visitors for a longer period after the birth of a child, will also help reduce infant mortality.

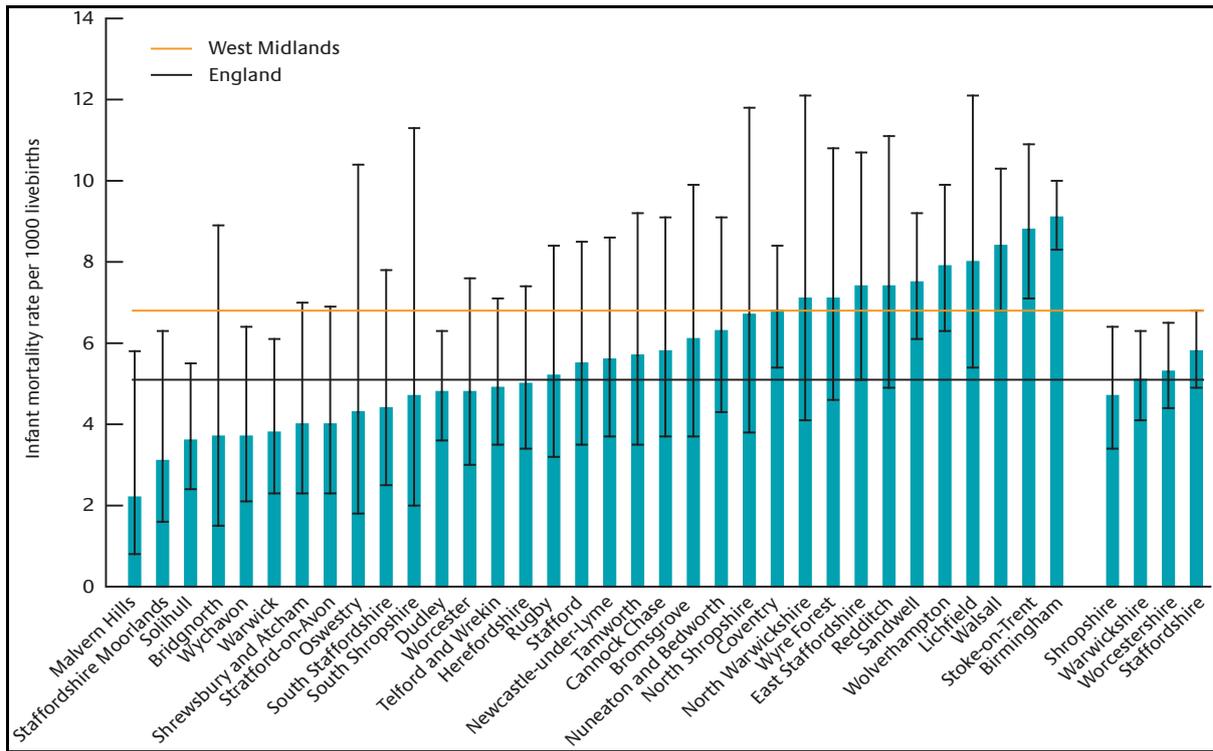


Figure 13: Infant mortality rate 2003-2005

4.2.2 All Cause Death Rate Age 1-19

Definition:
All cause death rate (ages standardised) age 1-19 per 100,000 population.
Rationale:
<p>Death rate in childhood reflects inherent susceptibility, physical hazard of the environment (external causes of death) and environmental factors such as housing quality, nutrition, air quality, interacting in a way that is often incompletely understood such that it is difficult to disentangle the effect of environmental factors.</p> <p>While age specific rates for narrower age bands might be preferred, broader age bands have been used because the number of deaths in each group is small. Age standardisation (which produces a weighted average of age specific rates) has been used to reduce the effect of variation in age structure between local authority populations.</p>
Relevance to Children:
Risk of death related to age is shown in Figure 14. The risk before age 1 is much higher than in other periods. This has been covered separately in infant mortality and is therefore excluded from this indicator. Death rates for males are slightly higher than for females especially among older children and death from various causes is shown in Figure 14.
Primary Source:
Calculated by WMPHO.
Date Last Published:
April 2007
Time Period:
January 2001 – December 2005
Numerator definition:
Number of deaths from all causes in specific age bands
Denominator Definition:
Mid year population estimates ONS 2005.
Source of Data:
Office of National Statistics
Geographic Coverage:
Unitary Authorities, District Councils, County Councils, Local Authorities
Dimensions of Inequality Available:
Not routinely available by socio- economic group or ethnicity
Timeliness:
Cleaned death files are issued annually by ONS usually about 9 months after year end.
Accuracy and Completeness:

Death registration is believed to be nearly complete. Population estimates particularly at local authority level may have sizeable errors.
Disclosure Control:
Because number of deaths at local authority level in each age band may be small and potentially identifiable, the data required for calculation of this indicator is not publicly available.
Technical Guidance:
Age specific rates (1-4, 5-9, 10-14 and 15-19) have been calculated from number of deaths and population estimates. The European Standard population has then been used to calculate age standardised rates. The population for age group 1-4 has been taken as 6,400.
Other Sources of Indicator set:
WHO Children's Environmental Health Indicators includes deaths 0-5 years. National Indicators Set NHS Vital Signs
Further Information
Note the very wide confidence intervals for the smaller local authorities.
Implications:
The importance of investigating the exact cause of death among children is important as Figure 15 shows that one of the least deprived local authorities in the West Midlands has one of the highest age standardised mortality (all causes) rates. This indicator features in both the National Indicators (NI120) as well as the NHS Vital Signs. The variation in the causes of deaths among different age groups is shown in Figure 16. The chief cause of death in the 15-19 years age group is "external". Therefore the main action that authorities can take to reduce child mortality is seek to reduce hazards in the external environment by providing safe places for children to play, safer housing and safer ways of making everyday journeys.

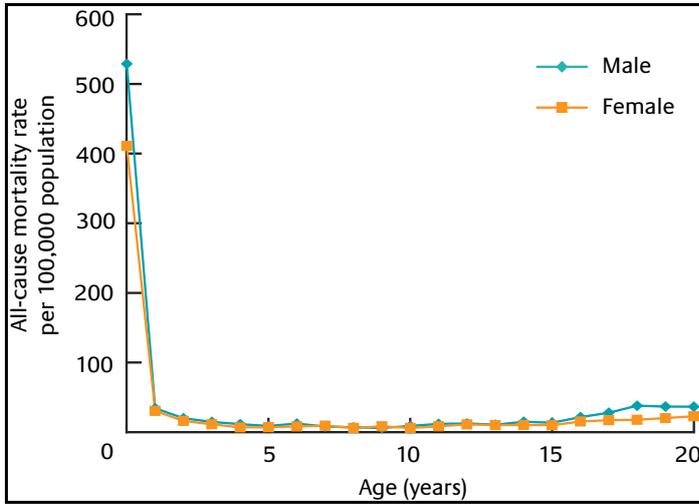


Figure 14: All cause mortality by age within the West Midlands

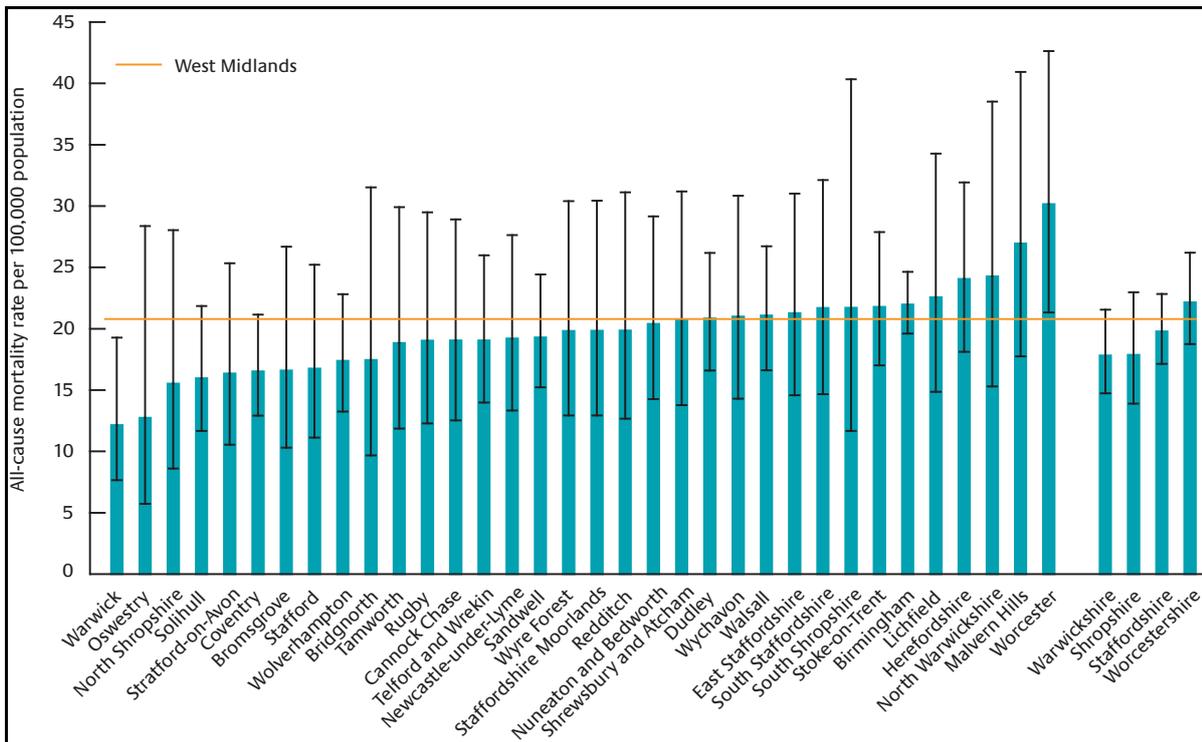


Figure 15: All cause mortality age standardized 2001-2005

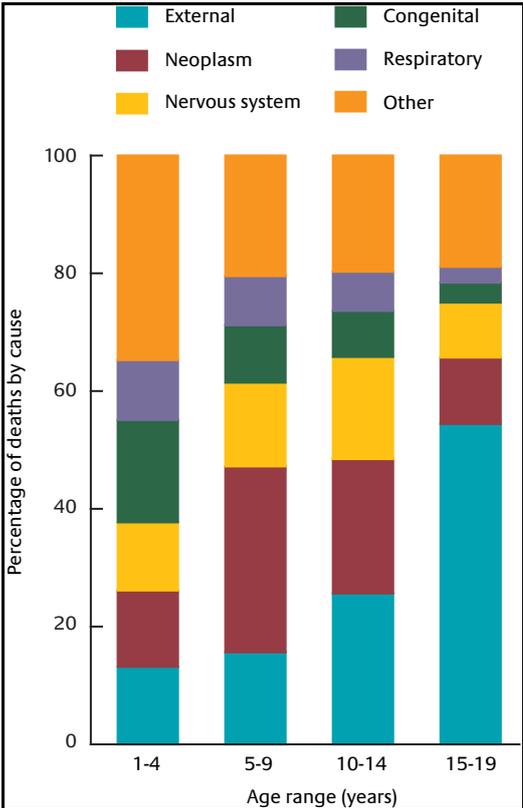


Figure 16: Cause of death by age 1-19 years for 2005

4.2.3 Hospital Admission Rate due to Acute Respiratory Illness

General Note on Hospital Admission Rates

Hospital admissions are, in general, a poor indicator of illness in the child population. The vast majority of child illness is managed outside hospital. Current practice is to avoid admission of children to hospital whenever there is a safe viable option. Whether a child with an illness is admitted depends not only on the severity of their condition but also on the ease of access to the hospital, the assessment of the parents' ability to manage them at home and the confidence of the medical team in hospital in their ability to identify those cases which can safely be managed at home.

Definition:

This indicator measures the hospital admission rates among children (0-19 years) due to acute respiratory illness (ICD10 J00 – J22). This includes acute upper respiratory tract illness, influenza and other lower tract respiratory illness.

Rationale:

More than 6% of the global burden of disease is attributable to respiratory infections and it causes more morbidity and mortality than all cancers. Respiratory illness accounts for 13% of all hospital admissions⁵². Analyses have shown that rates of morbidity vary throughout the country not only on a socio-economic basis but also between health authorities, even when social deprivation is taken into account, probably reflecting variation in access to, and expectation of, health services and also clinical practice⁵³.

Relevance to Children:

Acute respiratory illness is one of the main causes of ill health in children. It may be triggered/exacerbated by risks factors such as air pollution, overcrowding and poor (unfit) housing conditions which have all been included in the basket of indicators for this project.

Respiratory illness is the most commonly reported long term illness in babies and children and accounts for the greatest number of GP consultations. Between 1 and 3% of all babies experience an admission with bronchiolitis and about 2.5% of all child admissions are for pneumonia⁵². Figure 17 shows that respiratory illness is related to age and falls off rapidly after the first year of life. A variety of influences are reflected by emergency admission rates in children, especially under the age of 5 years for lower respiratory infections bronchiolitis, bronchopneumonia and pneumonia. Given this, age-standardisation is used in the analyses of rates for this indicator.

Figure 17 shows that rates are high, around (8,000 per 100,000), in the first year of life then fall steeply to levels around 1,000 per 100,000 by age 8 years. Figure 18 shows that there may be links between deprivation and risk of respiratory infections among children with the more deprived local authorities having higher rates of respiratory infections.

Primary Source:

The data are obtained from Hospital Episode Statistics (HES) and ONS.

Date Last Published:

April 2007

Time Period:
April 2003– March 2006
Numerator definition:
Number of hospital admissions among children resident in local authority with a primary diagnosis of respiratory disease ICD10 J00-J99.
Source of Numerator
Hospital Episode Statistics
Denominator Definition:
ONS population estimate for the mid year period that is, 2004.
Source of Data:
Office of National Statistics
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Increased morbidity is associated with an increase in socio-economic deprivation. In addition, poverty is associated with a greater than 20-fold increase in the relative burden of lung infections, which disproportionately affect the very young and very old.
Timeliness:
The dataset is updated annually.
Accuracy and Completeness:
Hospital admissions are believed to be fairly completely recorded. Coding of cause of admission is of variable quality but for broad diagnostic groupings numbers are likely to be close to the true value. The uncertainty attached to mid year population estimates particularly at lower tier local authority level has been noted. The problems of interpreting hospital admission data and its inadequacy as a measure of prevalence have already been noted.
Disclosure Control:
Access to individual level hospital episode statistics is restricted and not in the public domain, however, summary statistics can be freely disclosed provided that numbers in any cell are reasonably large and there is no risk of identifying individuals.
Technical Guidance:
Age specific admission rates calculated for (<1, 1-4, 5-9, 10-14, 15-19). Then multiplied by European standard population (<1 uses 1600; 1-4 uses 6400; 5-9, 10-14, 15-19 use 7000).
The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation. The methodology is based on that described by Breslow and Day (1987) ⁵⁴ .

Other Sources of Indicator set:

This indicator is included in the ENHIS set.

Further Information:

This indicator is among the core set of WHO Environmental Health Indicators.

Implications:

Respiratory illness in children is exacerbated by others smoking in the child's environment. Local authorities should therefore ensure that environments in which children spend time are non-smoking and carers who smoke should not do so when children are present. The smoking ban which was implemented in England in July 2007 will most probably help to achieve non-smoking public environments for children albeit only in public places. Damp housing also exacerbates respiratory illness and measures to reduce unfit housing will thus also reduce respiratory illness in children.

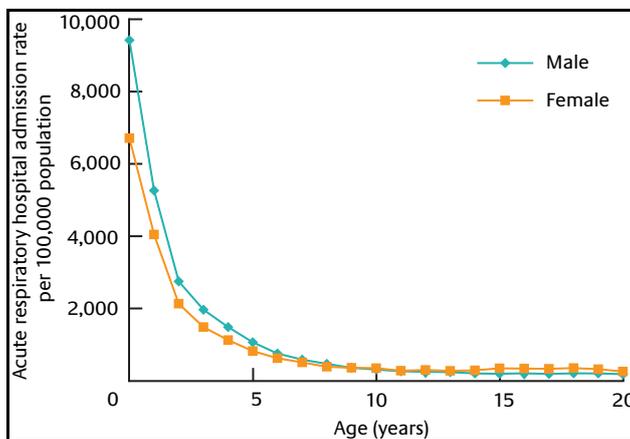


Figure 17: Acute Respiratory Hospital Admissions for males and females (2005/6) in the West Midlands

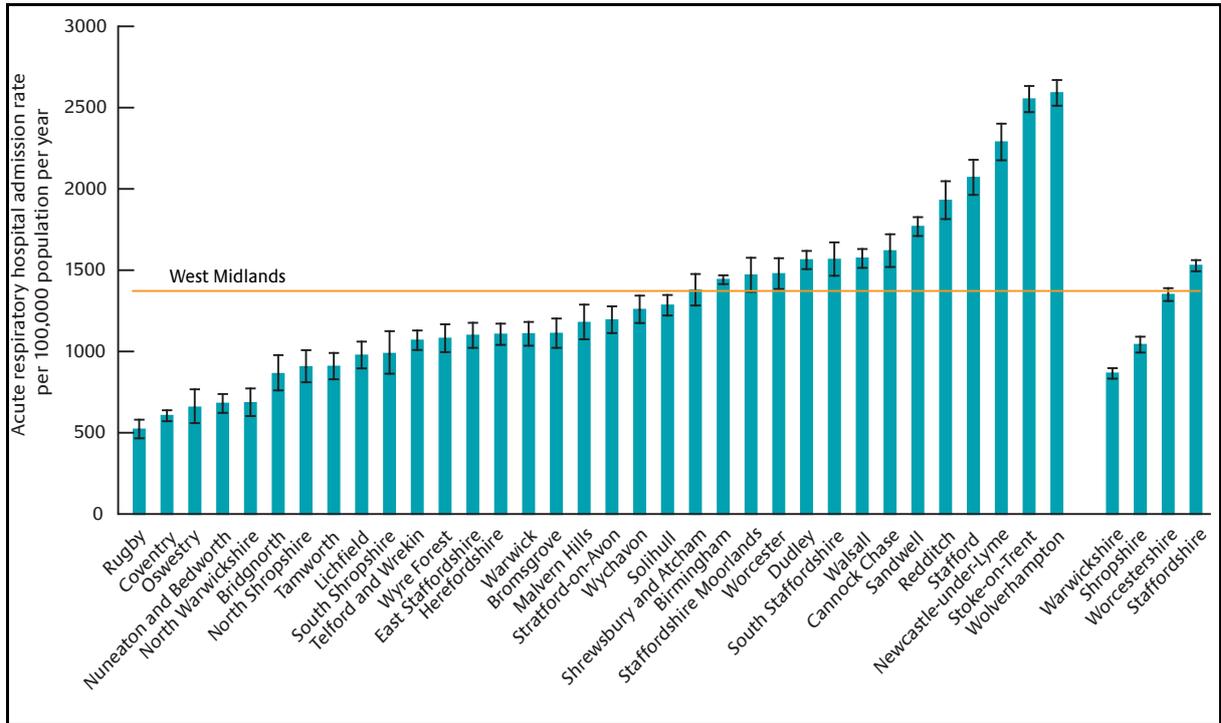


Figure 18: Acute Respiratory Hospital Admissions Age Standardised 0-19 years (2003/5)

4.2.4 Hospital Admission due to Asthma

Definition:
Hospital admission rate (age sex standardized) from asthma (ICD10 J45-J46) age 0-19 per 100,000 population.
Rationale:
See comment on limitation of hospital admission rates as an indicator of prevalence under indicator 4.2.3. Asthmatic episodes may be triggered by pollution or infection.
Relevance to Children:
Figure 19 shows how hospital admission rate varies with age. Admission rates rise in the first years of life to peak at age 3 years. Thereafter they fall with age. In young children rates are much higher in boys than in girls but in teenage children the reverse is true. Damp and mouldy housing is associated with asthma in children as well as air pollution ⁵⁵ . Four of the seven metropolitan borough councils appear to have hospital admissions for asthma in the upper 75 per cent of the figures for the region (refer to Figure 20) possibly due to higher pollution levels or poorer living conditions. The performance of all the local authorities in the West Midlands in relation to the regional average is shown in Figure 22.
Primary Source:
WMPHO
Date Last Published:
April 2007
Time Period:
April 2003- March 2006
Numerator definition:
The number of children aged 0-19 years admitted to hospital with a diagnosis of asthma.
Source of Numerator:
Hospital Episode Statistics
Denominator Definition:
The total number of episodes of children resident in local authority admitted to hospital with a primary diagnosis of asthma ICD10 J45.
Source of Denominator:
Population - Office of National Statistics Mid year estimates
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Data on socio-economic status of family not routinely collected.

Timeliness:
Data are updated annually
Accuracy and Completeness:
Hospital admissions are believed to be fairly completely recorded. Coding of cause of admission is of variable quality but for broad diagnostic groupings numbers are likely to be close to the true value. Diagnosis of asthma may not be consistent in all hospitals. In particular there may be diagnostic transfer between upper respiratory tract infections and asthma. The uncertainty attached to mid year population estimates particularly at lower tier local authority level has been noted. The problems of interpreting hospital admission data and its inadequacy as a measure of prevalence have already been noted.
Disclosure Control:
Access to individual level hospital episode statistics is restricted and not in the public domain however summary statistics can be freely disclosed provided that numbers in any cell are reasonably large and there is no risk of identifying individuals.
Technical Guidance:
Age specific admission rates calculated for (<1, 1-4, 5-9, 10-14, 15-19). Then multiplied by European standard population (<1 uses 1600; 1-4 uses 6400; 5-9, 10-14, 15-19 use 7000)
The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation. The methodology is based on that described by Barlow and Day (1987) ⁵⁴ .
Other Sources of Indicator set:
WHO CEHI
Further Information:
Further information is available on the Global Initiative on Children's Environmental Health Indicators (http://www.who.int/ceh/indicators/globinit/en/index.html)
Implications:

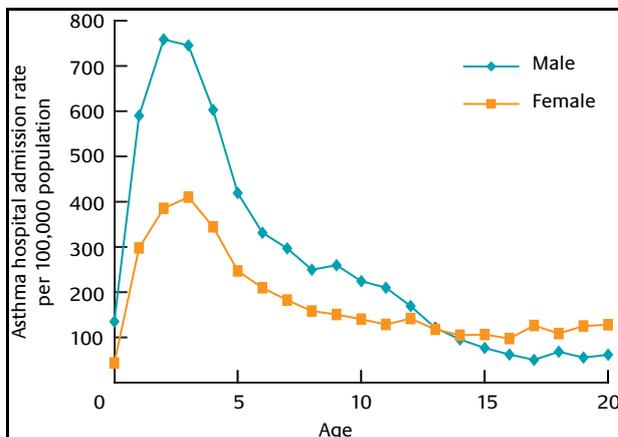


Figure 19: Asthma Hospital Admission Rate for Males and Females in England (2005/06)

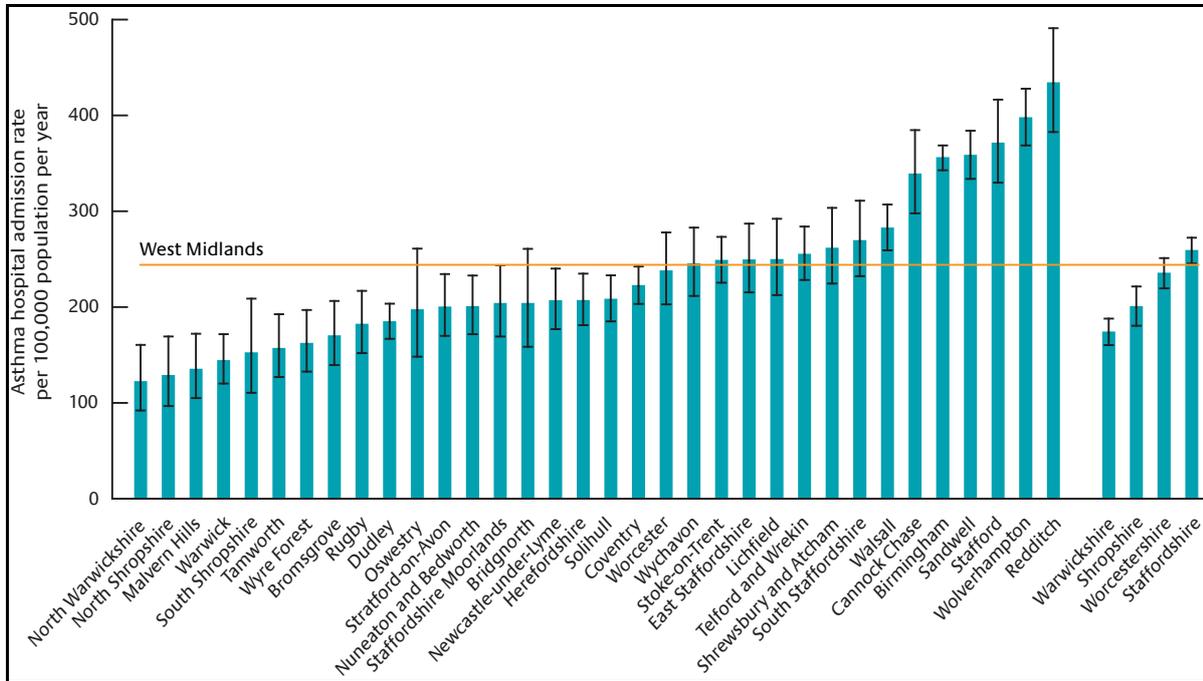


Figure 20: Asthma Hospital Admissions Age Standardised 0-19 years (2003/04 – 2005/06)

4.2.5 Immunization Uptake

<p>Definition:</p> <p>Immunization uptake rate among young children for Diphtheria/Tetanus/Polio, Meningitis C (Men C), Haemophilus influenzae B (Hib) and Measles/Mumps/Rubella (MMR). This indicator therefore measures the number of children who have been immunised against these diseases by their 1st, 2nd and 5th birthdays.</p>
<p>Rationale:</p> <p>The primary aims of immunization are as follows⁵⁶:</p> <ol style="list-style-type: none"> i. To protect the individual from infectious diseases, with associated mortality, morbidity and long term sequelae; ii. To prevent outbreaks of disease; and iii. Ultimately to eradicate infectious diseases world-wide, as in the case of smallpox. <p>It is widely accepted that vaccination has been one of the most successful and cost-effective public health interventions in history, eradicating smallpox, lowering the global incidence of polio by 99% since 1988, and achieving dramatic reductions in illness and death from diphtheria, tetanus, whooping cough and measles. It is estimated that in 2003 alone, immunization averted more than two million deaths⁵⁷.</p>
<p>Relevance to Children:</p> <p>The Global Immunization Vision and Strategy (GIVS) was designed by the World Health Organization (WHO) and the United Nation's Children's Fund (UNICEF) at the World Health Assembly to spearhead the fight against vaccine-preventable diseases. It has been estimated that every year these diseases kill more than two million people of which two thirds are young children⁵⁷.</p> <p>The WHO recommends that immunity levels of approximately 95% will prevent outbreaks of measles, mumps and rubella. Therefore the government set a target of "95% uptake of childhood immunization by the age of 24 months". Figures 21 – 23 illustrate the rate of uptake for childhood vaccinations at three stages in early life.</p>
<p>Primary Source:</p> <p>This data are derived from Cover of Vaccination Evaluated Rapidly (COVER) undertaken by the Communicable Disease Surveillance Centre of the Health Protection Agency.</p>
<p>Date Last Published:</p> <p>September 2007</p>
<p>Time Period:</p> <p>01 April 2003 – 31 March 2004</p>
<p>Numerator definition:</p> <p>The number of children aged 1, 2 and 5 years in the primary care trust (district) who have been immunized by the 31/03/04 and who have reached their 1st, 2nd and 5th birthday during the year 01/04/2003 to 31/03/2004.</p>
<p>Source of Numerator:</p> <p>Centre for Infections of the Health Protection Agency.</p>

Denominator Definition:
The numbers of children aged 1, 2 and 5 years in the primary care trust (district) on the 31/03/04 reaching their 1 st , 2 nd and 5 th birthday during the year 01/04/2003 to 31/03/2004.
Source of Denominator:
Centre for Infections of the Health Protection Agency.
Geographic Coverage:
Primary care trusts (before 2006 reorganisation)
Dimensions of Inequality Available:
There does not appear to be any direct links between the patterns of uptake of the vaccinations in the more deprived and vulnerable groups and those in the higher socio-economic bands.
Timeliness:
Returns are made annually to Centre for Infections of the Health Protection Agency using COVER (Cover of Vaccination Evaluated Rapidly)
Accuracy and Completeness:
The data provided by the Primary Care Trust represents the actual numbers of children who have been vaccinated. Where the information has not been submitted either the data from the latest available year are used or an estimate has been made but it is noted in the results.
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
The number of children within the primary care trust aged 1, 2 or 5 years between 01 April 2003 and 31 March 2004 who have been vaccinated by 31 March 2004 divided by the total number of children were aged 1, 2 or 5 years in the PCT multiplied by 100. The 95% confidence intervals are calculated using the estimation method which is a good approximation when the numbers are large.
Other Sources of Indicator set:
Indications of Public Health in English Regions 5: Child Health Community Health Profiles WHO Children's Health Indicators UNICEF Indicator set (http://www.unicef.org/statistics/index.html) NHS Vital Signs
Further Information:
In general the uptake MMR is lower than that for other immunizations. Data for immunisation against Diphtheria, Tetanus, Polio, Hib and Meningitis C are very similar as demonstrated by Figures 21 and 22.
Implications:

The general uptake of the MMR vaccine within the West Midlands is below the government's target of 95% and PCT-level data mask significant variation in the level of uptake at small area level with the potential for outbreaks of disease therefore targeted initiatives aimed at increasing uptake are required.

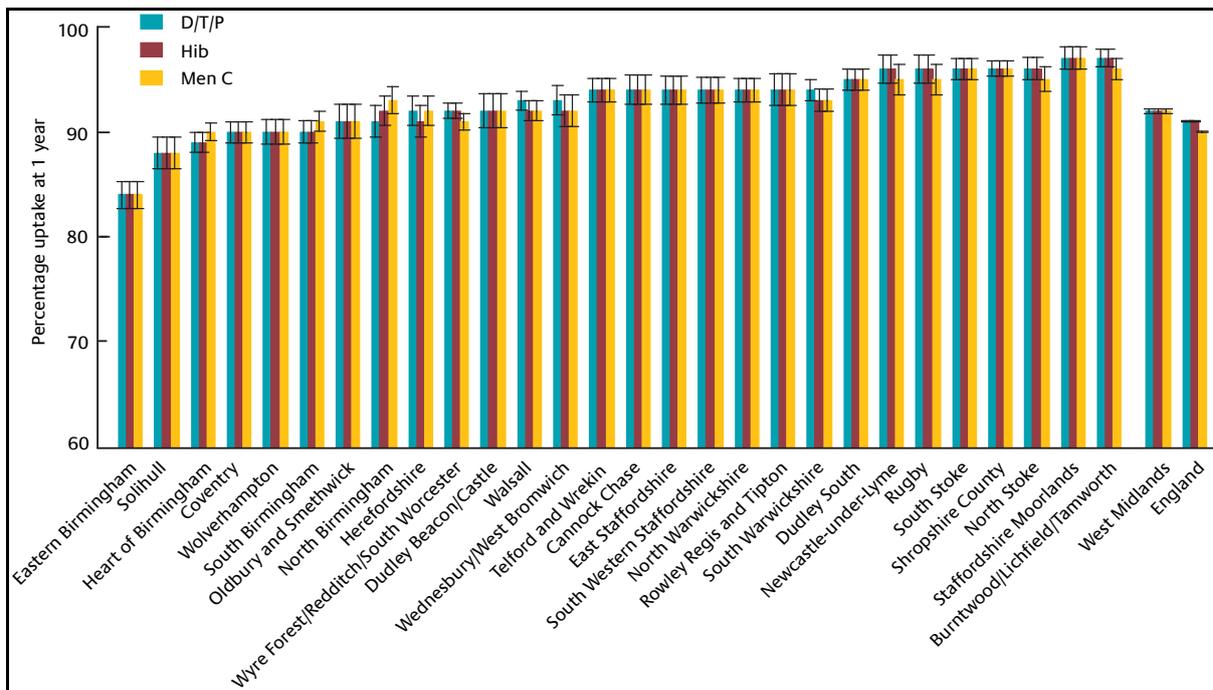


Figure 21: Percentage uptake of Diphtheria/Tetanus/Polio, Hib and Men C vaccination at 1 year

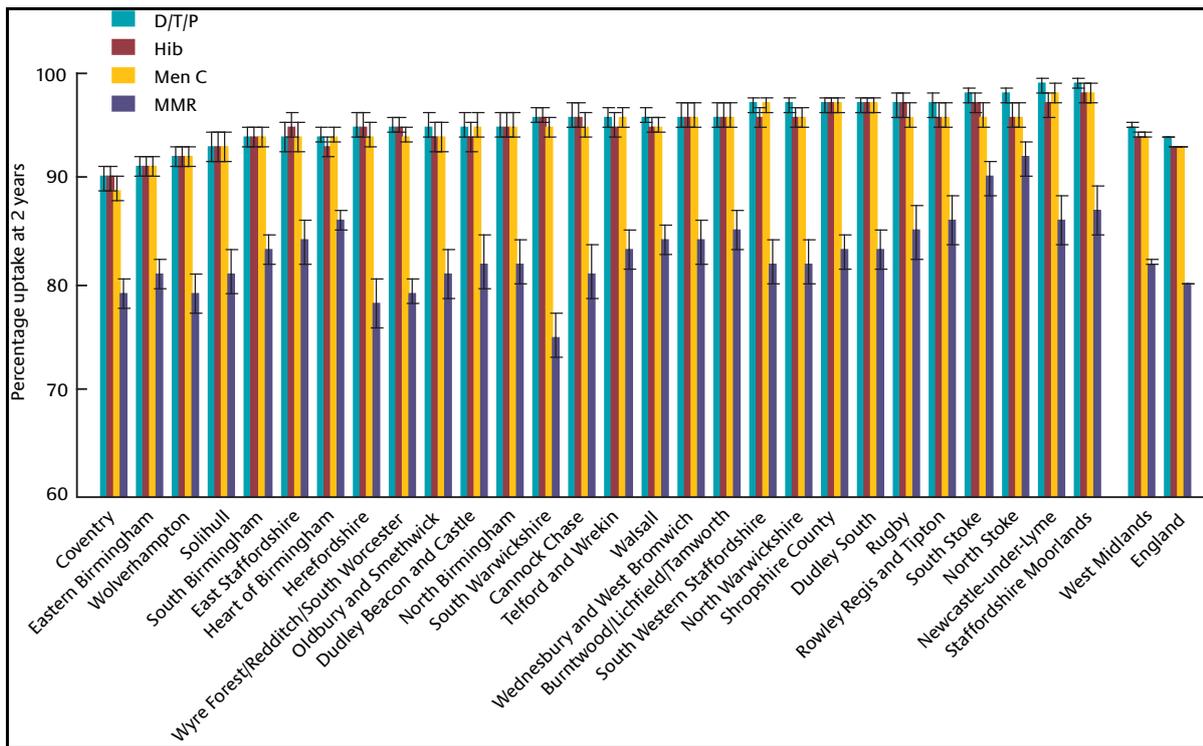


Figure 22: Percentage uptake of Diphtheria/Tetanus/Polio, Hib, Men C and MMR vaccination at 2 years

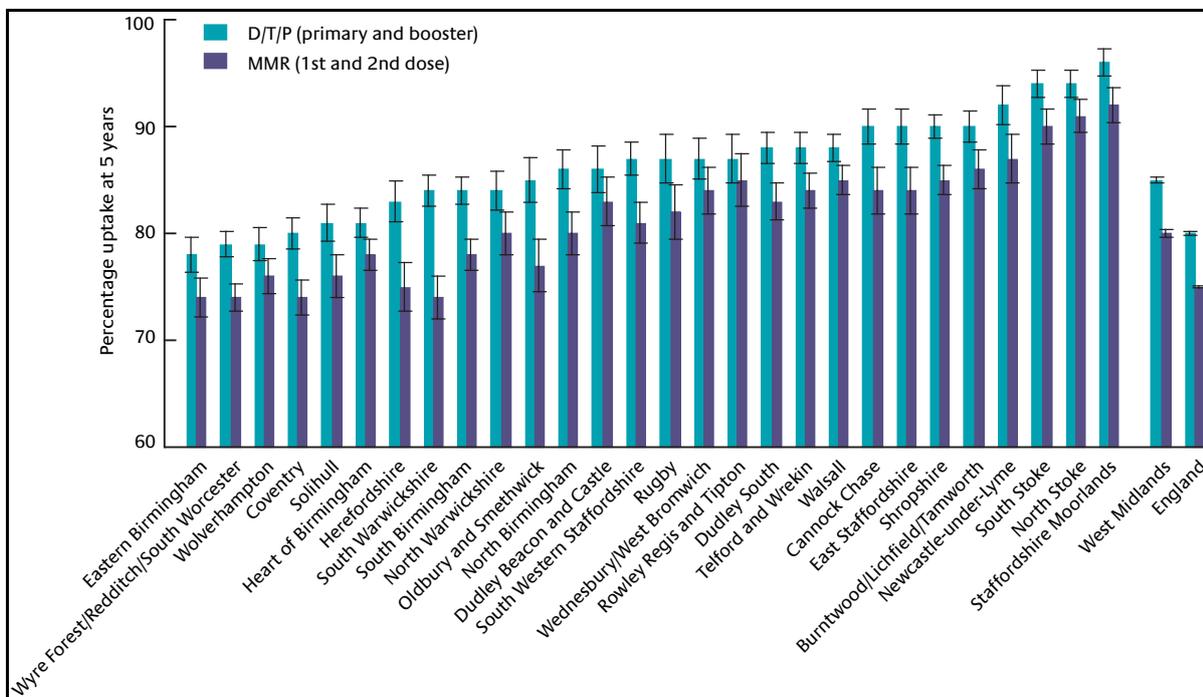


Figure 23: Percentage uptake of Diphtheria/Tetanus/Polio (primary and booster) and MMR (1st and 2nd dose) vaccination at 5 years

4.2.6 Obesity

Definition:
This indicator measures the prevalence of obese and overweight children among children in primary schools' reception and year 6 classes.
Rationale:
Being obese (Body Mass Index (BMI) >30 kg/m ²) and to a lesser degree being overweight (BMI > 25 kg/m ² <30 kg/m ²) increases the risk of cardiovascular and other disease. In 2006, 38% of adults were overweight and 24% were classed as obese ⁵⁸ which represents a 15% increase from 1993. The risk of adult obesity is greater for children with higher levels of obesity ⁵⁹ . From an environmental health perspective, physical activity is seen as preventative and this in turn can be encouraged by giving attention to environmental factors such as built environment, land use and transport.
Relevance to Children:
The National Child Measurement Programme (NCMP) was introduced in the 2005/06 academic year and involves measuring the height and weight of primary school children in reception year (entry to primary school) and year 6 (exit primary school).
According to Health Survey for England, 16% of children aged 2-15 years were classed as obese in 2006, an increase from 11% in 1995.
In October 2007 the Government published a new long-term plan to reverse the rising trend in obesity by improving children's diet and increasing their participation in physical activity. A new Public Service Agreement (PSA) aims to reduce the number of obese and overweight children to 2000 levels by 2020 ⁶⁰ . This replaces the previous target to " <i>halt the year on year rise in obesity in children under the age of 11 by 2010</i> ". Furthermore, this obesity is included in the national indicators (NI55 " <i>Obesity in primary school aged children in reception year</i> " and NI56 " <i>Obesity among primary school aged children in year 6</i> ") which can be delivered by local government working alone or in partnership.
Participation in physical activity can reduce obesity and improve fitness levels in children. Physical activity can also help to improve school children's attendance, behaviour and attainment through the enhancement of self esteem and concentration levels. The Government's white paper Choosing Health: Making Healthy Choices Easier ³⁰ identified that there will be new initiatives to promote physical activity and sport inside and outside of school. Figure 24 shows that within the West Midlands the percentage of children classed as obese in the worse performing local authority is nearly two times greater than that for the best performing one.
Primary Source:
National Child Measurement Programme dataset held by the NHS information centre.
Date Last Published:
2008
Time Period:
2007/08

Numerator definition:
Number of children attending schools who are above the 85 th (overweight) and the 95 th (obese) percentiles for BMI of the British 1990 growth reference survey. NB: This definition of overweight is different from that used in adults.
Source of Numerator:
Survey records
Denominator Definition:
Total number of children measured. Children who are not measured are excluded from the denominator.
Source of Denominator:
Survey records
Geographic Coverage:
Local authorities
Dimensions of Inequality Available:
It was found that children in households in which the reference person had a routine or semi-routine occupations were twice as likely to be obese compared to those of managerial and professional household ⁵⁸ .
Timeliness:
The data set is the first in the time series
Accuracy and Completeness:
Measurements are made according to a standard procedure by trained staff. In 2007/08 nationally the overall participation rate was 83% for reception year and 78% for year 6. However participation rates varied widely from one school to another e.g. 45% to 100% in reception class and 37% to 100% in Year 6.
Disclosure Control:
Information which could lead to the identification of individual schools is not released.
Technical Guidance:
Number of children classed as obese divided by the total number of children who were measured multiplied by 100
Other Sources of Indicator set:
National Indicators Set NHS Vital Signs
Further Information:
Analysis of the National Childhood Obesity Database 2005/06, a report for the Department of Health

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_063565

Tackling Obesity: Future Choices – Modelling Future Trends in Obesity & Their Impact on Health. Foresight, Government Office for Science <http://www.foresight.gov.uk/Obesity/14.pdf>

Health Survey for England 2002: Department of Health, 2003 http://www.dh.gov.uk/en/Publicationsandstatistics/PublishedSurvey/HealthSurveyForEngland/Healthsurveyresults/DH_4001558

Implications:

Targeting childhood obesity is essential as there is evidence that obese children become obese adults.

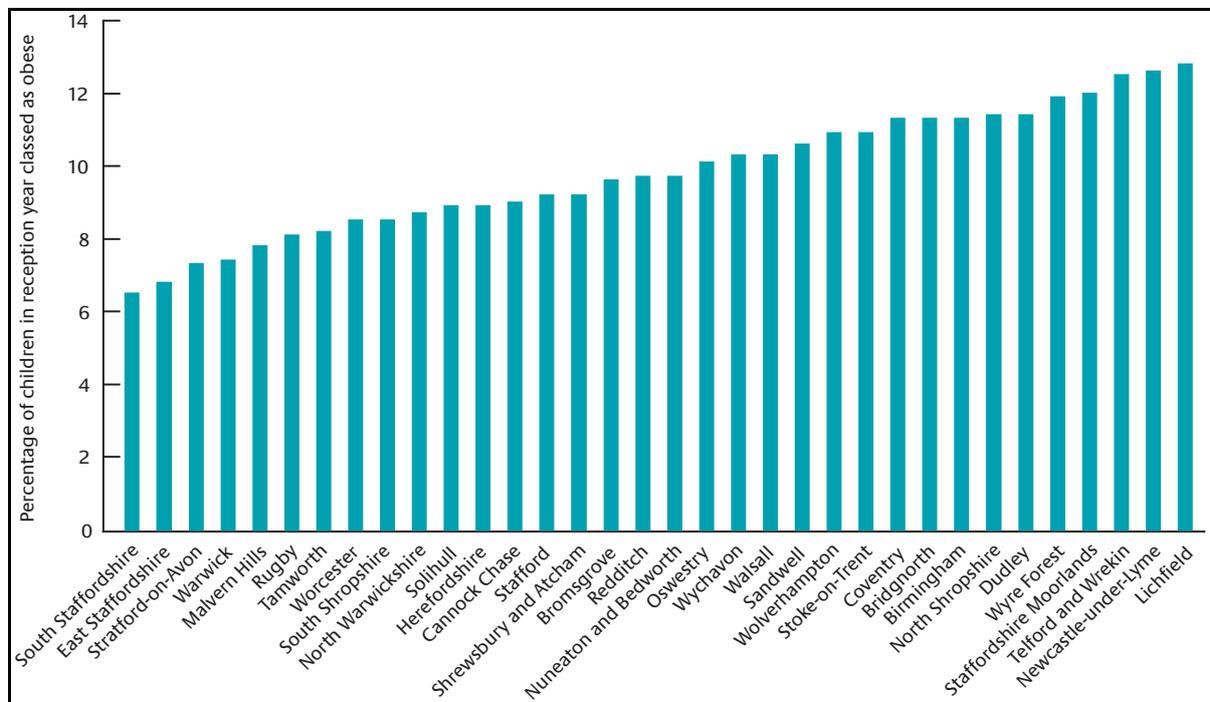


Figure 24: Percentage of children in reception year who are classed as obese

4.3 Accidents

4.3.1 Hospital Admissions due to Non-Road Traffic Related Injuries

Definition:
Hospital admission rate from non-road traffic related injuries (ICD10 S00-T98 with W00-X59 and X85-Y98) (age sex standardised) age 0-19 per 100,000 population.
This indicator covers all non-traffic injuries and therefore falls, burns and poisoning and drowning are included.
Rationale:
Only the most serious non intentional injury results in hospital admission. The vast majority of such injuries are treated in accident and emergency department without admission or seen in primary care or treated by the family without access to medical services. The difficulties of interpreting hospital admission statistics discussed under indicator 4.2.3 apply even more forcibly to injuries than to other conditions. However, there is no better indicator of injuries routinely available at local authority level which is an important part of the rationale for its inclusion.
Relevance to Children:
Hospital admission rates for non-road traffic related injuries by age are shown in Figure 25. Rates are highest in one year olds as the child becomes mobile. Rates are much higher in boys than girls. In girls the rate falls steadily with age, but in boys after an initial fall it rises to a new peak around age 14 years and then settles to a level about two and a half times that seen in girls.
Poor housing and lack of access to safe play environments increase the risk of injury in children. Almost 900,000 children under the age of 15 years attend hospital every year as a result of accidents in the home. Given this, the Government plans to fund a new home safety equipment scheme to prevent the accidents which happen to young children in their homes ²³ . In addition, NI48 “Children killed and seriously injured in road traffic accidents” can provide a measure on which outcomes can be performance managed at a local level. Figure 26 shows that rate of admission in Stoke-on-Trent is more than twice that in Oswestry which has the lowest rate.
Primary Source:
Hospital Episode Statistics
Date Last Published:
April 2007
Time Period:
Three year pooled average 2003/04 – 05/06
Numerator definition:
Number of admissions for non-road traffic related injury.
Source of Numerator:
Hospital Episode Statistics

Denominator Definition:
Mid year population estimates of children
Source of Denominator:
Office of National Statistics Mid year estimates
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
In general, unintentional injuries are a major problem among young people, however, the rate of injury are particularly high among poor and ethnic minority children ⁶¹ . This is likely to be due to a more hazardous environment, inability to afford safety features and perhaps higher risk taking behaviour.
Timeliness:
Data updated annually
Accuracy and Completeness:
Hospital admissions are believed to be fairly completely recorded. Coding of cause of admission is of variable quality but for broad diagnostic groupings numbers are likely to be close to the true value. Coding of cause of injury is less complete than other diagnostic coding and varies considerably between hospitals. The uncertainty attached to mid year population estimates particularly at lower tier local authority level has been noted. The problems of interpreting hospital admission data and its inadequacy as a measure of prevalence have already been noted.
Disclosure Control:
Access to individual level hospital episode statistics is restricted and not in the public domain however summary statistics can be freely disclosed provided that numbers in any cell are reasonably large and there is no risk of identifying individuals.
Technical Guidance:
Age specific admission rates calculated for (<1, 1-4, 5-9, 10-14, 15-19). Then multiplied by European standard population (<1 uses 1600; 1-4 uses 6400; 5-9, 10-14, 15-19 use 7000).
The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation. The methodology is based on that described by Breslow and Day (1987) ⁵⁴ .
Other Sources of Indicator set:
WHO CEHI National Indicators Set Community Health Profile
Further Information:
N/A
Implications:
The majority of injuries to children, particularly young children, occur in the home; <i>en route</i> to, or at

school; and in playgrounds, leisure and sports areas. Hence it is imperative that measures and comprehensive safety strategies should focus on policy considerations, prevention counter measures, institutional approaches and design and enforcement of regulations that contribute to the creation of safer physical environments⁶².

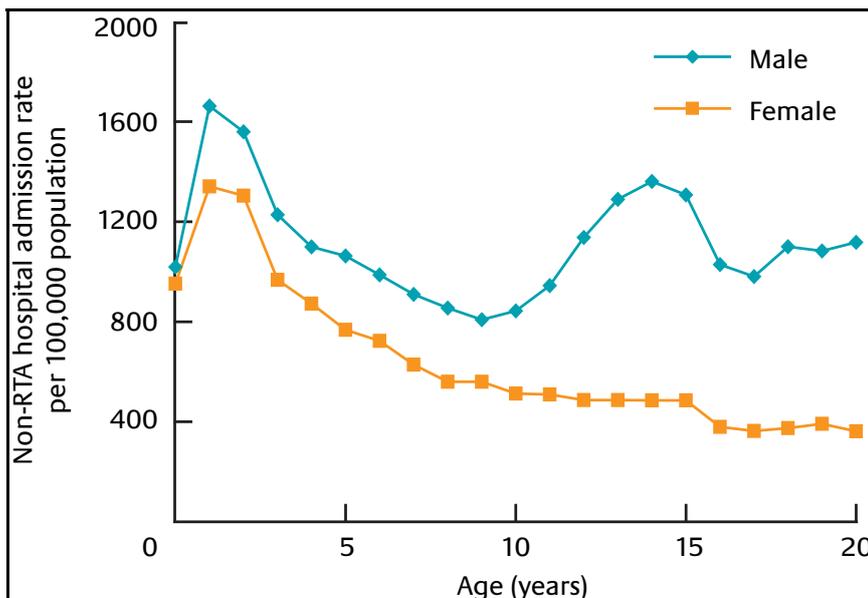


Figure 25: Non-road traffic Related Hospital Admission Rates for Males and Females in England (2005/06)

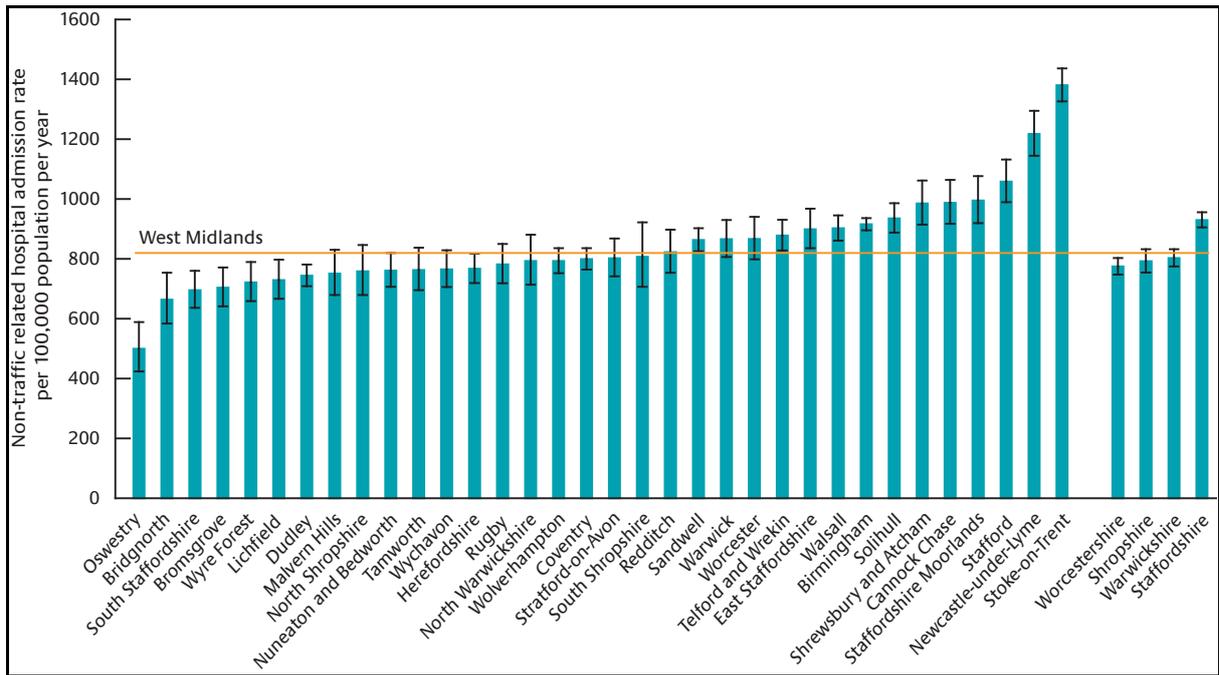


Figure 26: Non-road traffic related hospital admissions age standardised 0-19 years (2003/04-05/06)

4.3.2 Hospital Admission due to Road Traffic Related Accidents

Definition:

Hospital admission rate from road traffic related injuries (ICD10 S00-T98 with V00-V99 and X85-Y98) (age sex standardised) age 0-19 per 100,000 population.

This includes injuries sustained as a pedestrian or cyclist and those sustained when a passenger in a vehicle.

Rationale:

See comment on limitation of hospital admission rates as an indicator of prevalence under indicator 4.2.3.

There is clear evidence that the distribution of accidents and their outcomes is strongly influenced by environmental factors⁶³. Nationally, accidents are a major cause of ill health, injury and death and, while these have been steadily declining over recent years, they are the largest cause of death in children as well as causing a great deal of distress and disability.

The burden of unintentional injuries in childhood results in large costs to society through pain, suffering, loss of time and productivity, health care costs and inconvenience to the victims and their families⁶⁴.

Proximity to heavily trafficked roads and lack of access to safe play areas put children at increased risk of injury as pedestrians or cyclists. Children of families with older cars which have less adequate child safety equipment will also be at greater risk when travelling as passengers.

Relevance to Children:

Rates of hospital admission as a result of road traffic accidents rise with age in children reaching a peak about age 18 (refer to Figure 27). Rates are much higher in boys than in girls. In early years the rise in rate is associated with greater exposure as pedestrians and cyclists. In later teenage years the injuries are more likely to be sustained as drivers or passengers. Figure 28 indicates that traffic related injuries are more common among the less deprived local authorities. This may be associated with the ability to gain access to vehicles among this group of adolescents.

A EC DG Sanco study showed that children living within 50m of busy roads (motorways, national roads with double lanes, national roads and other principal roads) are at "high risk" from air pollution, noise and traffic accidents. WHO stated that children's ability to cope with traffic is limited until 10 years of age. Furthermore, they are more vulnerable to head injuries due to the head to body ratio. It has been estimated that road traffic injuries cause post traumatic stress disorder in up to 33% of children⁶⁵.

DCSF plan to encourage local authorities to create 20mph zones, where appropriate, because they can reduce child pedestrian deaths by 70 per cent²³. They also published the "Staying Safe Action Plan"⁶⁶ in 2008, responding to the "Staying Safe" consultation and to reduce accidents both on the roads and in the homes, particularly within vulnerable families. This will be well supported at a local level by NI70 "Hospital Admissions due to unintentional and deliberate injury to children".

Primary Source:

WMPHO

Date Last Published:
April 2007
Time Period:
Three year pooled average 2003/04 – 05/06
Numerator definition:
Number of hospital admissions with injury as a result of road traffic incident
Source of Numerator:
Hospital Episode Statistics
Denominator Definition:
Mid population estimates, 2004
Source of Denominator:
ONS mid year estimates
Geographic Coverage:
Local Authority
Dimensions of Inequality Available:
The health inequality dimension associated with accidental injury is important from the public health perspective. It is noteworthy that the social class gradient associated with deaths from accidental injury is steeper than for most other causes of death in childhood. Children from unskilled families are five times more likely to suffer accidental death than children from professional families ⁶⁷ . Also children in deprived areas are 3 times more likely to be hit by a car ⁶⁸ .
Timeliness:
Data update annually
Accuracy and Completeness:
Hospital admissions are believed to be fairly completely recorded. Coding of cause of admission is of variable quality but for broad diagnostic groupings numbers are likely to be close to the true value. Coding of cause of injury is less complete than other diagnostic coding and varies considerably between hospitals. The uncertainty attached to mid year population estimates particularly at lower tier local authority level has been noted. The problems of interpreting hospital admission data and its inadequacy as a measure of prevalence have already been noted.
Disclosure Control:
Access to individual level hospital episode statistics is restricted and not in the public domain however summary statistics can be freely disclosed provided that numbers in any cell are reasonably large and there is no risk of identifying individuals.
Technical Guidance:
Age specific admission rates calculated for (<1, 1-4, 5-9, 10-14, 15-19). Then multiplied by

European standard population (<1 uses 1600; 1-4 uses 6400; 5-9, 10-14, 15-19 use 7000).

The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation. The methodology is based on that described by Breslow and Day (1987)⁵⁴.

Other Sources of Indicator set:

National Indicators Set

NCHOD publishes admission rates for all accidents (i.e. traffic and non traffic) for age groups 0-4years and 5-14years but due to small numbers data are not publicly disclosed below regional level.

Further Information:

N/A

Implications:

The majority of road traffic injuries to young children are pedestrian injuries although cycle injuries become more important in older children. In adolescents, injuries as drivers and car passengers are more important therefore the more affluent communities may need to be targeted. Prevention should focus on separating pedestrian areas, especially those used by children, from traffic and slowing down traffic in residential areas. In adolescents, instruction in safe driving and firm enforcement of safe driving practices are required. Teaching children road safety also has merit.



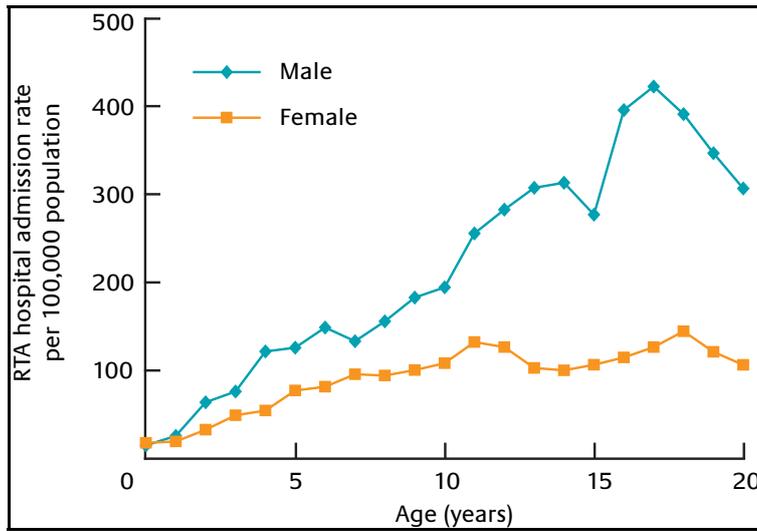


Figure 27: Road Traffic Hospital Admission Rates for Males and Females in England (2005/06)

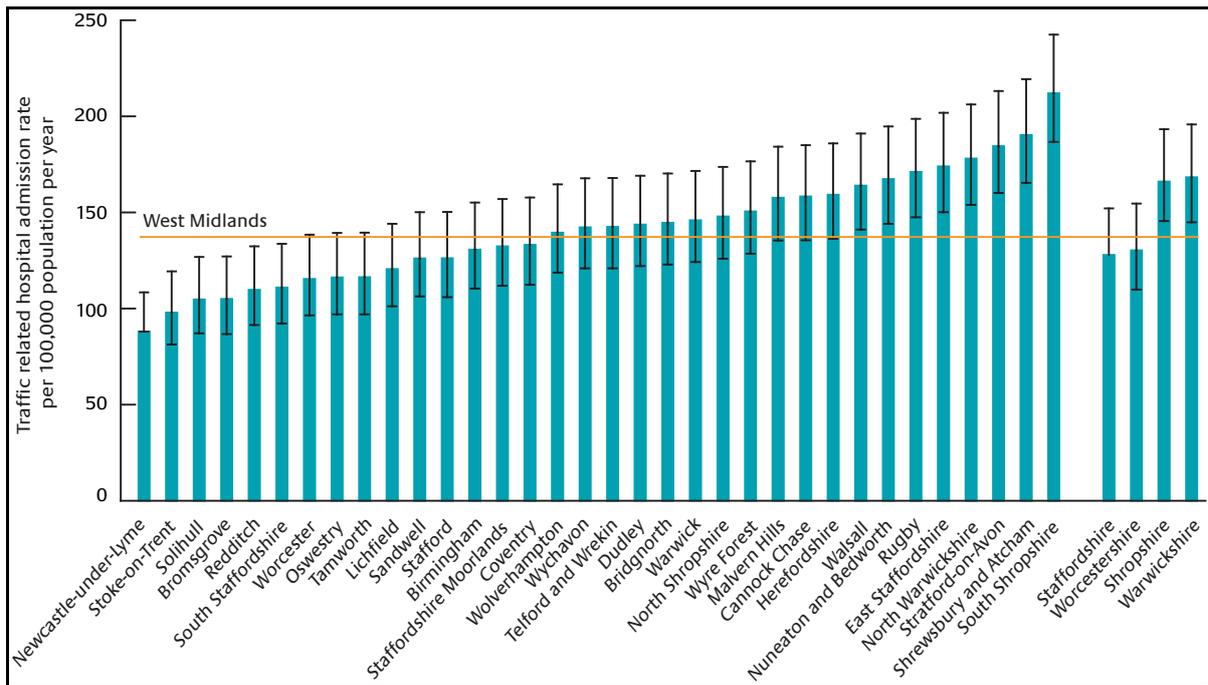


Figure 28: Directly standardized admission rates for childhood injuries due to traffic related accidents

4.4 Environment

4.4.1 Exposure to Air Pollutants

<p>Definition:</p> <p>This indicator measures the annual mean levels of nitrogen dioxide (NO₂) and particles (PM₁₀) at background locations (background locations are used due to the availability/accessibility of the data but roadside locations would be more appropriate for the identification of local factors which influence air quality in the area). A summary of the number of days for which the maximum 8-hr daily running mean for ozone (O₃) was greater than 120µg/m³ is also presented.</p>
<p>Rationale:</p> <p>It has been reported that exposure to ambient air pollution may increase the risk of low birth weight and attenuate the protective effect of better lung function against new onset of asthma^{69 70}. Although the levels of pollutants such as sulphur dioxide have largely been falling over the last decade and are not a major cause for concern in most areas in the UK, some pollutants such as particulate matter are non-threshold effect pollutants and therefore continue to present challenges.</p> <p>Despite the significant improvements in air quality in the UK since the 1950s, adverse health effects continue – with NO₂, PM₁₀ and ground level O₃ being the current main problem pollutants and arising mainly as a result of road traffic⁷¹. As at October 2007, 214 local authorities in the UK had declared Air Quality Management Areas (AQMA) due to breaches of the limit value primarily for NO₂ and PM₁₀ as a result of traffic. The health impacts of these pollutants are considered when setting limit values, standards and objectives. The National Air Quality Strategy was reviewed on July 17, 2007 (http://www.defra.gov.uk/environment/quality/air/airquality/strategy/index.htm) and sets out policy options and air quality objectives to further improve air quality within the UK.</p>
<p>Relevance to Children:</p> <p>In general, children living in the more urban/ industrial areas experience poorer air quality⁷². There is published evidence that ambient air pollution is associated with a range of health impacts in children^{73 74 75}. There are also links between poor air quality and children's admission to hospital⁷⁶. A recent study showed impaired development in the lungs of children living in proximity to heavily trafficked roads⁷⁷. However, while evidence for the effects of air pollutants on children is accumulating, full consensus has not yet been reached. Figures 29 – 31 show the levels of air pollutants in those local authorities participating in the Automatic Urban and Rural Monitoring Network (AURN) with data for the period 01 January 2005 – 31 December 2005.</p> <p>NI194 "<i>Level of air quality</i>" is one of the national indicators announced as part of the Comprehensive Spending Review 2007 (http://www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/55/55.pdf) hence it can inform LAAs aimed at improving local air quality.</p>
<p>Primary Source:</p> <p>Department for Environment, Food and Rural Affairs (Defra)</p>
<p>Date Last Published:</p> <p>Air quality monitoring data are continuously downloaded from monitoring sites across England onto the air quality website</p>

Time Period:
01 January 2005 – 31 December 2005
Numerator definition:
Measured air pollutant concentrations
Source of Numerator:
Defra
Denominator Definition:
N/A
Source of Denominator:
N/A
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Children living in more deprived communities in England are known to be exposed to poorer air quality and often live in proximity to sources emitting pollutants.
Timeliness:
Real time data are available online 24 hours per day
Accuracy and Completeness:
QA/QC is carried out by NETCEN who manages the monitoring network on behalf of Defra.
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
Measured daily or hourly concentrations of the pollutants imputed to get annual concentration
Other Sources of Indicator set:
This indicator is included in: ENHIS set National Indicators Set Community Health Profile Air pollution has been identified as one of the five national enforcement priorities by the Rogers Review of Local authority Enforcement Priorities
Further Information:
Air quality data can be accessed at http://www.airquality.co.uk/archive/data_and_statistics_home.php

<http://www.defra.gov.uk/environment/airquality/strategy/pdf/air-qualitystrategy-vol1.pdf>

Implications:

Currently the UK Air Quality Regulations are designed to improve the overall air quality and do not focus on exposure reduction which may be a more effective method to improve the health impacts associated with air quality.

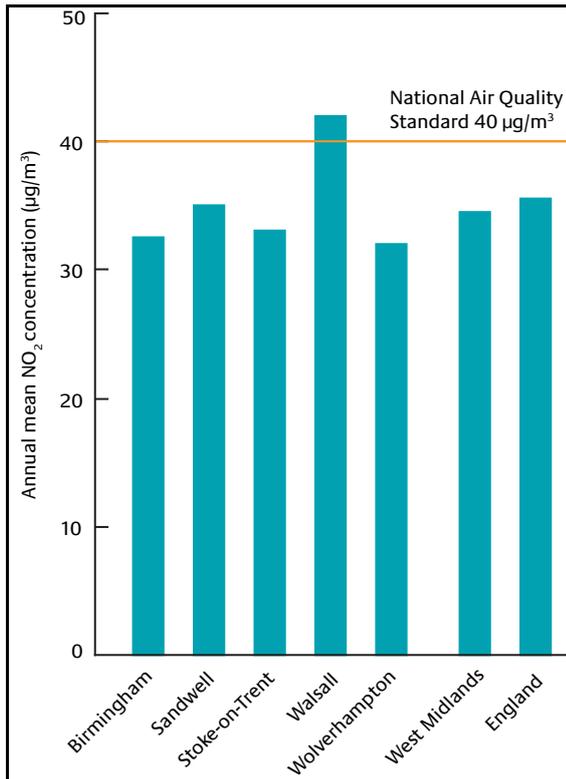


Figure 29: Annual mean NO₂ concentration for 01 January – 31 December 2005

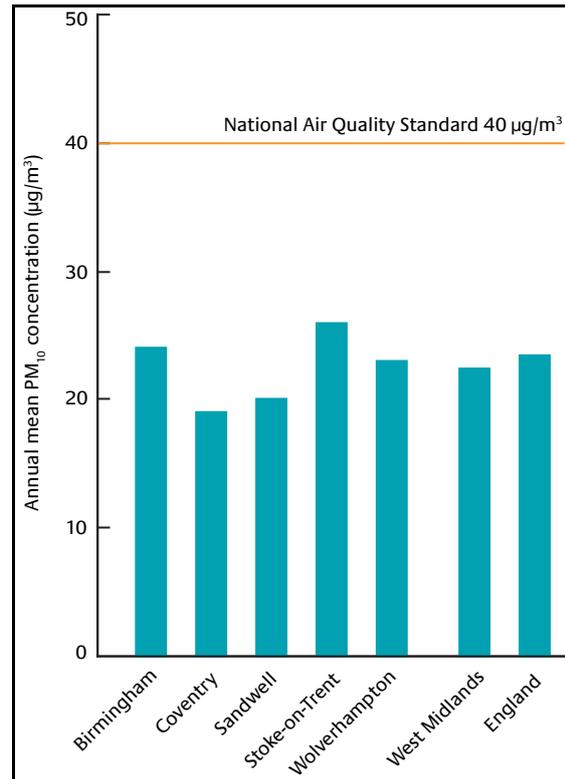


Figure 30: Annual mean PM₁₀ concentration for 01 January – 31 December 2005

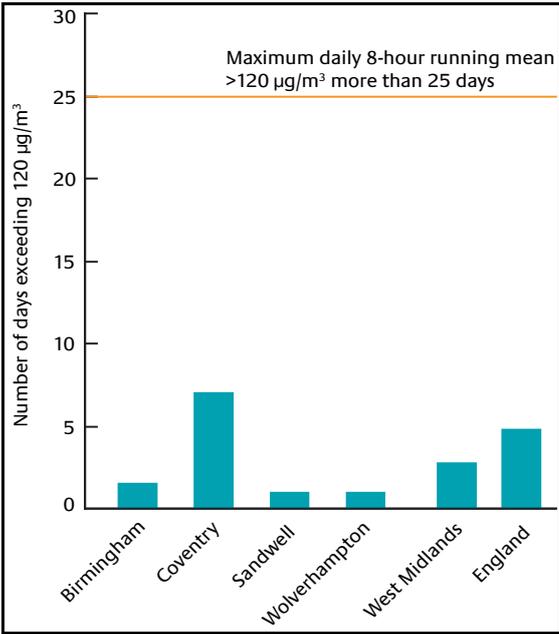


Figure 31: Exceedence of maximum 8-hr running mean of 120µg/m³ for O₃ hourly



4.4.2 Percentage of Children in Proximity to Heavily Trafficked Roads

Definition:
This indicator identifies those children living within 250m of A roads and motorways with an Annual Average Daily Flow (AADF) greater than 10,000 vehicles (see Figure 32). It is a proxy indicator and therefore does not directly account for vehicle emissions which can impact upon respiratory health or the road and vehicle characteristics which can influence risks of injury or likelihood of noise nuisance. It may be more appropriate to vary the definition of heavily trafficked road, for example, by using flows of 20,000 vehicles per day and use distances less than 100m as air pollution is known to rapidly fall off with distance from the road.
Rationale:
Road traffic can cause/contribute to a number of health effects including noise nuisance, respiratory illness (resulting from air pollution) and physical injuries.
Relevance to Children:
Road traffic represents an important source of risk to children in that it can cause both physical injuries as well as respiratory illnesses as a result of vehicle emissions. In addition, children may be restricted in normal activities such as playing, sports and other physical activities. Road traffic noise has also been associated with impaired learning skills in children. A study carried out by Gauderman <i>et al.</i> (2007) showed that there was a deficit in lung function attained at the age of 18 years by those children who lived within 500m of a freeway ⁷⁷ . Figures 33 and 34 show the per cent of children in the local authorities in the West Midlands who live within 250m of roads with traffic flows greater than 10,000 vehicles per day.
Primary Source:
Data derived using GIS analysis, based on: Department for Transport major road network and traffic count data; ONS Census 2001 population data and output area boundaries; OS Address-Point data
Date Last Published:
ONS data – 2001 Department for Transport (DfT) data – 2005 OS Address Point data - 2004
Time Period:
Fixed point
Numerator definition:
Estimated total number of children (aged 0 – 19 years) living within 250m of A-roads and motorway links with AADF > 10,000 vehicles
Source of Numerator:
Data derived using GIS analysis, based on: Department for Transport major road network and traffic count data; ONS Census 2001 population data and output area boundaries; OS Address-Point data
Denominator Definition:
Total number of children (aged 0 - 19) recorded at 2001 Census as living within LA / UA

Source of Denominator:
ONS 2001 population data
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
N/A
Timeliness:
Based on 2001 population data, November 2004 address point locations and 2005 traffic count data
Accuracy and Completeness:
<p>Potentially errors occur due to: only motorways and A-roads being included as heavily-trafficked roads; vehicle flow being aggregated for all vehicles, including pedal cycles, so does not distinguish between different vehicle types; assumption in GIS analysis that population is distributed evenly across address point locations; temporal difference between population data and address point locations / traffic count data.</p> <p>Analysis is expected to be sufficiently accurate for purpose, though no estimate has been made of likely error band.</p> <p>Analysis is complete for the local authorities using the parameters given – further analysis could be carried out using different measures of heavily-trafficked roads and proximity.</p>
Disclosure Control:
Data used in GIS analysis to produce derived data are subject to publication restrictions, including copyright and acknowledgement.
Technical Guidance:
Parameters describing both heavily-trafficked roads and proximity can be found in the published scientific literature – these vary widely and between different countries. Most definitions of heavily-trafficked roads range between 3,000 and 25,000 AADF, though DEFRA LAQM guidance uses higher figures (~80,000 to 120,000 AADF). Common figures for proximity range from within 50m to within 500m of roads.
Other Sources of Indicator set:
This indicator is included in WHO CEH indicator set
Further Information:
N/A
Implications:
While local authorities cannot immediately change the numbers of people living in close proximity to heavily trafficked roads, in the long term good planning policies can reduce it. When planning traffic routes and residential developments there should be a presumption that both will be separated as far

apart as possible. In some cases it may be possible to reduce traffic on roads passing through residential areas. Figure 32 shows those A roads and motorways through the West Midlands LAs with an AADF greater than 10,000 vehicles.

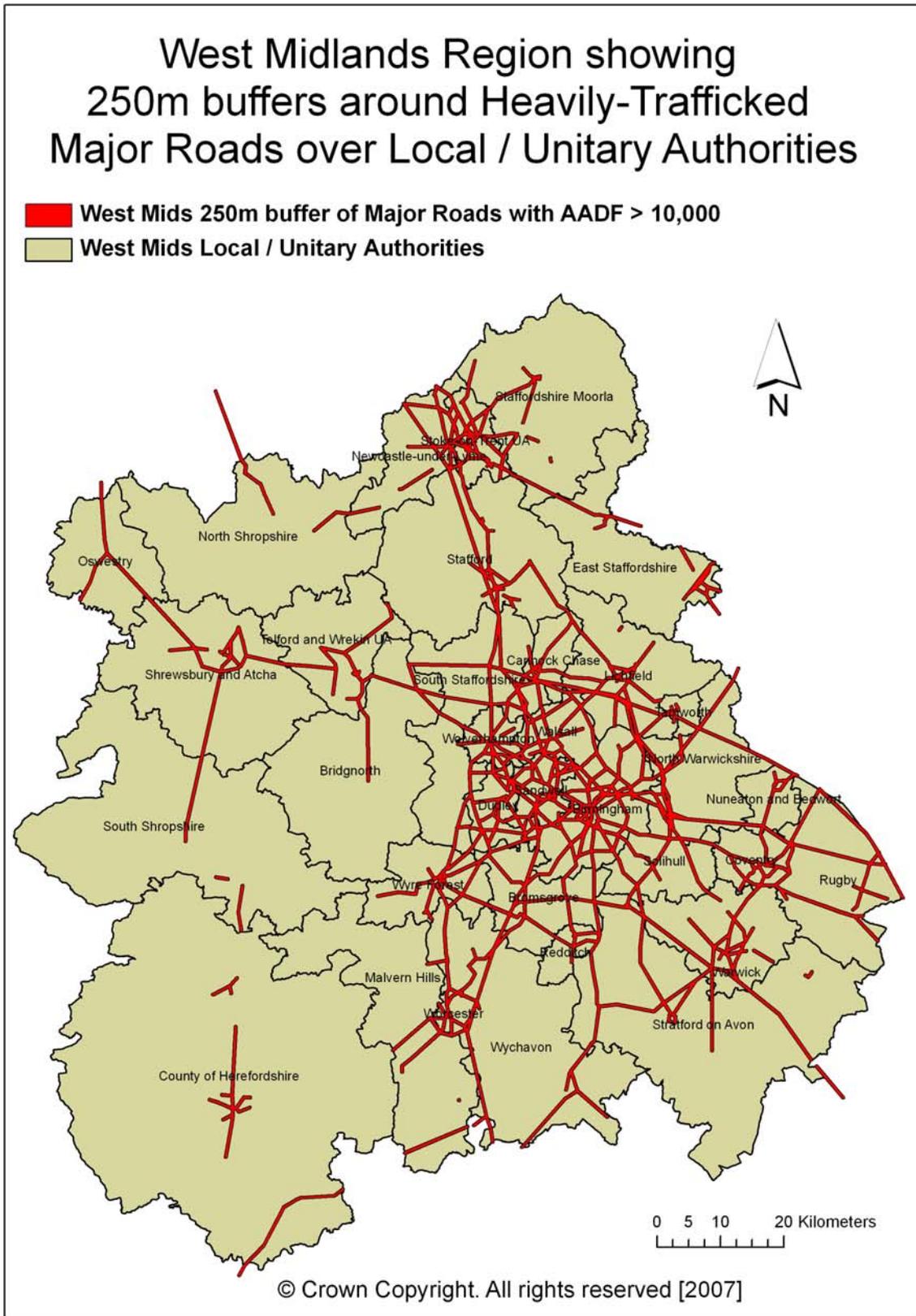


Figure 32: Heavily trafficked roads with AADF>10,000 in the West Midlands

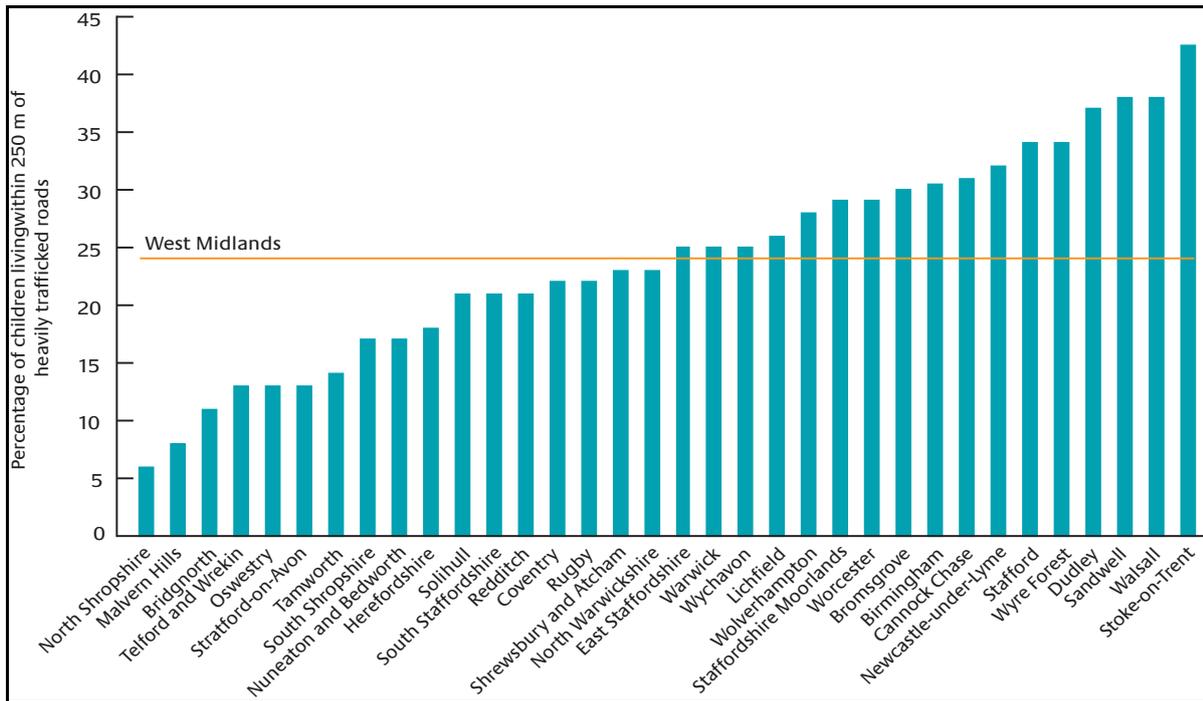


Figure 33: Per cent children within 250m of heavily trafficked roads within the West Midlands

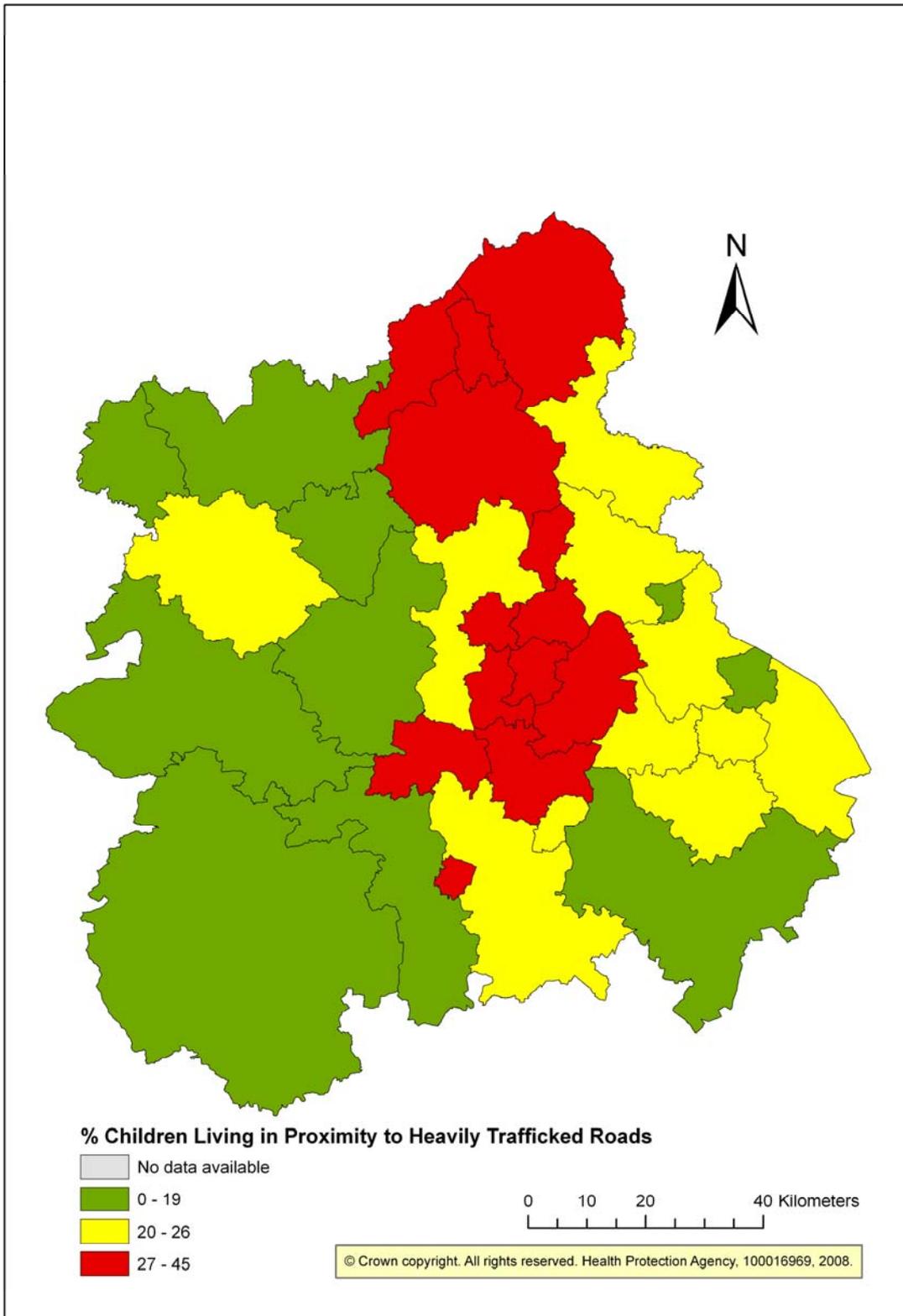


Figure 34: Map showing the percentage of children living in proximity (250m) to heavily trafficked roads

4.4.3 Noise Nuisance Data

Definition:
This indicator measures the rate of noise complaints recorded by local authorities expressed as the number of complaints per unit population.
Rationale:
Effects of noise include: interference with communication; noise-induced hearing loss; sleep disturbance effects; cardiovascular and psycho-physiological effects; performance reduction effects; annoyance responses; and effects on social behaviour ⁷⁸ . Noise can affect property values and can make a property difficult to sell. The National Noise Attitude Survey ⁷⁹ undertaken for Defra in 1999/2000 found that 18% of UK respondents placed noise in the top five environmental problems that personally affected them.
Relevance to Children:
Results from quantitative research have shown that children are a high risk group susceptible to the adverse effects of noise exposure ⁸⁰ . Although the long-term consequences of noise are largely unknown, it is possible that impairment in early childhood development and education by noise may have lifelong effects on academic achievements. In children, noise is considered to particularly affect cognitive performance, motivation and annoyance. In particular aircraft noise has been associated with impairment of reading comprehension and recognition memory ⁸¹ .
Primary Source:
Local authorities
Date Last Published:
August 2005
Time Period:
N/A
Numerator definition:
The number of noise complaints recorded by the local authority
Source of Numerator:
Local Authority
Denominator Definition:
The population in the local authority
Source of Denominator:
ONS
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
It is unclear which factors or indeed whether any particular factors are associated with noise nuisance. Unpublished work carried out at the University of Birmingham suggests that neither deprivation nor

ethnicity is associated with noise nuisance complaint levels.
Timeliness:
Updated annually
Accuracy and Completeness:
All local authorities are required to investigate noise complaints; however, the way the investigation is carried out may vary from one authority to the other. For example, some local authorities provide an out-of-hour service while others do not therefore the levels and outcome of complaints may vary. Residents may also vary in their propensity to make noise complaints. Reported complaints to local authorities' Environment Health Practitioners (EHPs) relating to road traffic, aircraft and other noise sources, which are not within the remit of EHPs, are likely to be understated in the records. Given all these factors noise complaints may not be a reliable indicator of incidents of noise events.
Disclosure Control:
Returns for noise nuisance data from local authorities are made annually to the Chartered Institute of Environmental Health. However, these data are not made available to the public and therefore its dissemination is at the discretion of the local authority.
Technical Guidance:
The number of noise complaints (from domestic premises, industrial/commercial premises, road works/construction/demolition and road traffic) recorded by the local authority per 100,000 population in the local authority.
Other Sources of Indicator set:
This indicator is included in the WHO Environment and Health Information System (ENHIS) set of indicators
Further Information:
http://www.defra.gov.uk/environment/noise/index.htm
Implications:
At the time of writing no data was obtained for the individual local authorities to carry out any analyses.

4.4.4 Potential Exposure to Chemical Incidents

Definition:
This indicator gives an estimation of potential exposure of children living within 1 km of uncontained chemical incidents. A Chemical incident is defined as <i>“an acute event in which there is, or could be, exposure of the public to chemical substances which cause, or have the potential to cause ill health”</i> (http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1284475648621).
Rationale:
For the period January – December 2007 a total of 107 chemical incidents were recorded in the West Midlands in the national Chemical Incidents Surveillance System (CISS). This represents approximately 12 per cent of all chemical incidents (recorded in CISS) which occur in England and Wales. Chemical incidents are recorded at a rate of 20 per 1,000,000 populations annually.
Relevance to Children:
Figure 35 shows the distribution of uncontained chemical incidents within the West Midlands for the period January – December 2007. 34 of the 61 geo-coded incidents were uncontained and resulted in an estimated potential population exposure of 352,000, of which 105,000 were children living within 1km of an incident. This suggests that approximately one in every 3 person potentially exposed to an uncontained chemical incident is a child (higher than the national average of 1 in 4). However, it is likely that the impact of such exposure will be acute and short-term rather than chronic.
Primary Source:
Chemical Incident Surveillance System hosted and managed by the CRCE of the HPA.
Date Last Published:
Incidents are continuously logged as they are reported.
Time Period:
January – December 2007
Numerator definition:
The number of uncontained chemical incidents which occurred between January and December 2007 within the West Midlands.
Source of Numerator:
Chemical Incident Surveillance System hosted and managed by the CRCE of the HPA
Denominator Definition:
N/A
Source of Denominator:
N/A
Geographic Coverage:

Government Office Region
Dimensions of Inequality Available:
Figure 36 shows that children potentially exposed to chemical incidents within 1 km were more frequently from the more deprived communities in West Midlands ⁸² (this is the case for all Government Office Regions and Wales).
Timeliness:
Recorded in near real time
Accuracy and Completeness:
There is a general and regional variability and under ascertainment of chemical incidents as demonstrated by the quarterly and half-yearly reports posted on the HPA website. However, completion of data fields has improved over the last two years with some approaching 100%.
Disclosure Control:
System uses data from multiple sources with permissions for the HPA to conduct and publish analyses
Technical Guidance:
The population and children within a 1km buffer zone of chemical incidents are determined by overlaying ONS population statistics on the address point locations in GIS.
Other Sources of Indicator set:
N/A
Further Information:
http://www.hpa.org.uk/Publications/ChemicalsPoisons/ChemicalsSurveillanceReports/
Implications:
Chemical incidents range from major acute events such as the Buncefield fire to lower level small releases. While there is a real potential for exposure no work has yet been conducted on establishing or measuring real exposures

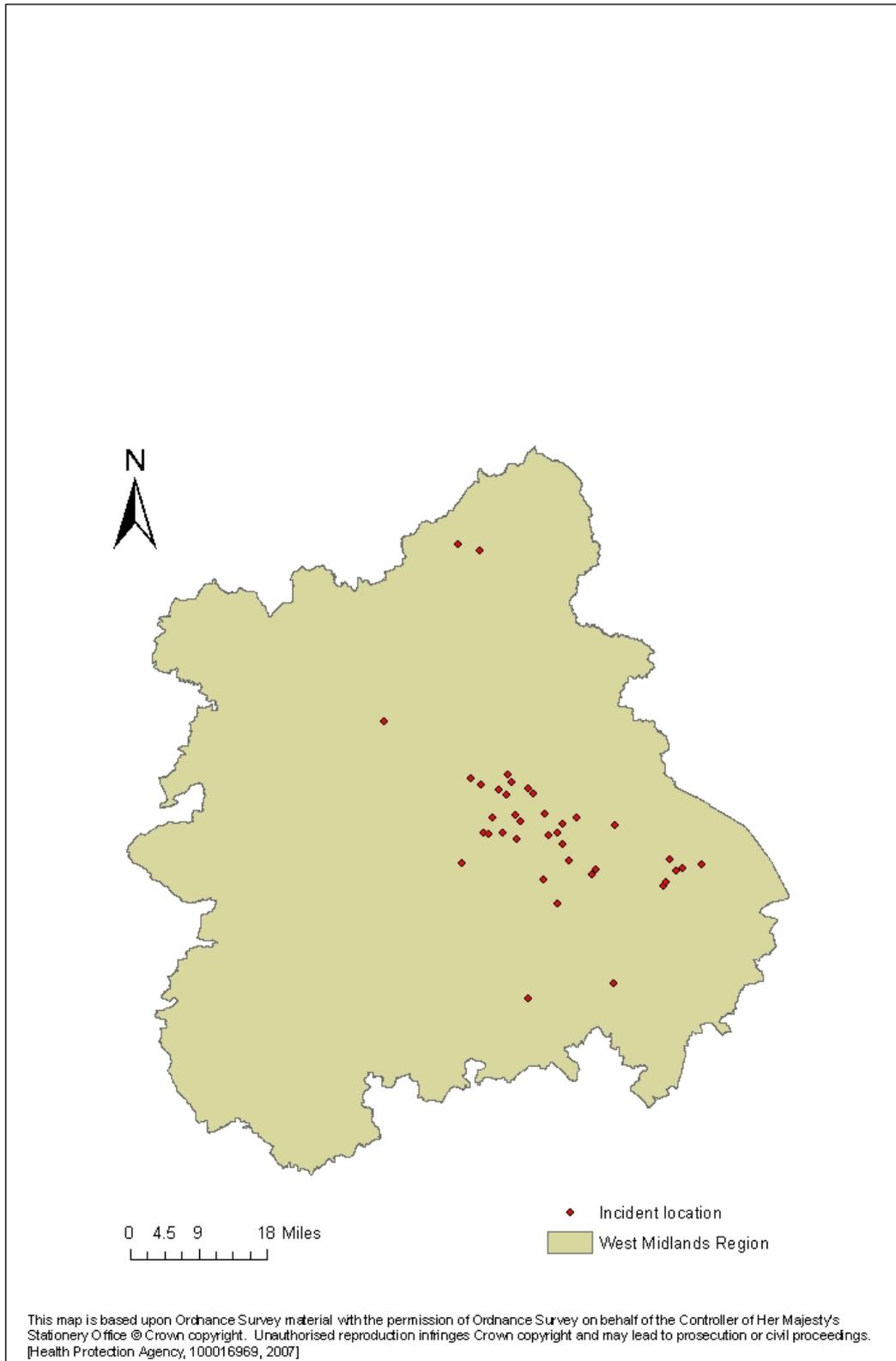


Figure 35: Location of chemical incidents within the West Midlands

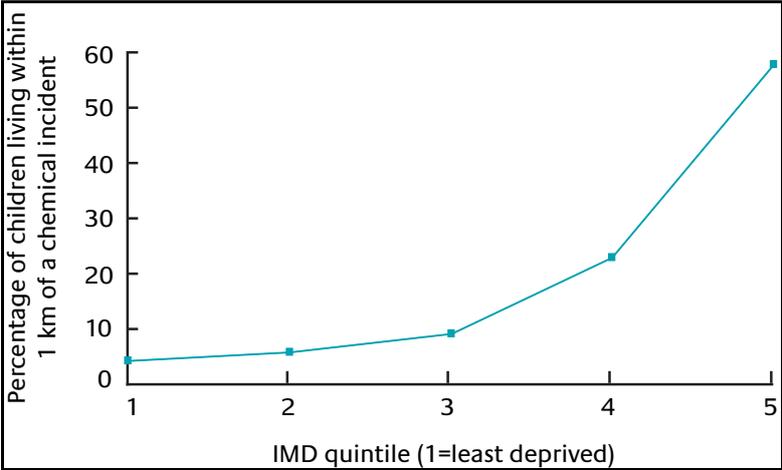


Figure 36: Proportion of children living within 1 km of a chemical incident within the West Midlands by Index of Multiple Deprivation (IMD) quintile

4.4.5 Physical Activity

Definition:
The percentage of children aged 5 – 16 years who participate in at least two hours of high quality physical education and out-of-hours school sport in a typical week.
Rationale:
In adults physical inactivity contributes to obesity, hypertension, cardiovascular disease and much other ill health. Physical activity not only reduces the risk of ill health but contributes to fitness and physical and mental well-being.
Relevance to Children:
There is some evidence that the level of physical activity in childhood affects that in later life. Levels of physical activity tend to decline with increasing age but those who are physically active and play sport as children are more likely to continue to play sport as adults.
Participation in physical activity can reduce obesity and improve fitness levels in children. In fact, Currie <i>et al.</i> , (2004) ⁸³ recommended that children between the ages of 5 and 18 should participate in physical activity of at least moderate intensity for one hour (daily) on 5 or more days per week. This has also been endorsed by the CMO (2004) ⁸⁴ . Physical activity can also help to improve schoolchildren's attendance, behaviour and attainment through the enhancement of self esteem and concentration levels ⁸⁵ .
In the government's white paper Choosing Health: Making Healthy Choices Easier ³⁰ it was stipulated that there will be new initiatives to promote physical activity and sport inside and outside of school.
PSA3 aims to enhance the take-up of sporting opportunities by 5 to 16 year olds so that the percentage of school children who spend a minimum of two hours each week on high quality PE and school sport within and beyond the curriculum increases from 25% in 2002 to 75% by 2006 and to 85% by 2008 ⁸⁶ (SR2004 Public Service Agreements 2005/2008). Figure 37 shows the per cent of children participating in a minimum of two hours per week physical activity for the local authorities within the West Midlands. The PSA is also complemented by NI157 " <i>children and young people's participation in high quality PE and sport</i> ".
Primary Source:
The data comes from a survey commissioned by the Department for Education and Skills from TNS an independent research company. Reports on more than 5 million school children are given in a survey covering primary, secondary and special schools
Date Last Published:
2005/6
Time Period:
2005/6
Numerator definition:

Number of pupils in each year group who participate in at least two hours of high quality PE and out-of-hours school sport.
Source of Numerator:
Survey returns
Denominator Definition:
Number of pupils in each year group attending the school.
Source of Denominator:
Survey returns
Geographic Coverage:
Local authorities
Dimensions of Inequality Available:
Data are collected by schools – no data on individual pupil's place of residence or family circumstances.
Timeliness:
Information collected annually
Accuracy and Completeness:
Survey forms are completed by schools but a sub sample is checked for accuracy
Disclosure Control:
No disclosure controls are applicable
Technical Guidance:
Number of children engaged in more that 2 hours/week physical activity divided by the total number of students who participated in the survey multiplied by 100
Other Sources of Indicator set:
National Indicators Set
Further Information:
The Health Survey for England 2006. The Information Centre, 2008 www.ic.nhs.uk/pubs/HSE06CVDandriskfactors
Physical Education and school sport http://www.teachernet.gov.uk/teachingandlearning/subjects/pe/
Department for Transport, 2007: Transport Trends 2007 edition http://www.dft.gov.uk/162259/162469/221412/190425/220778/trends2007a.pdf
Implications:
N/A

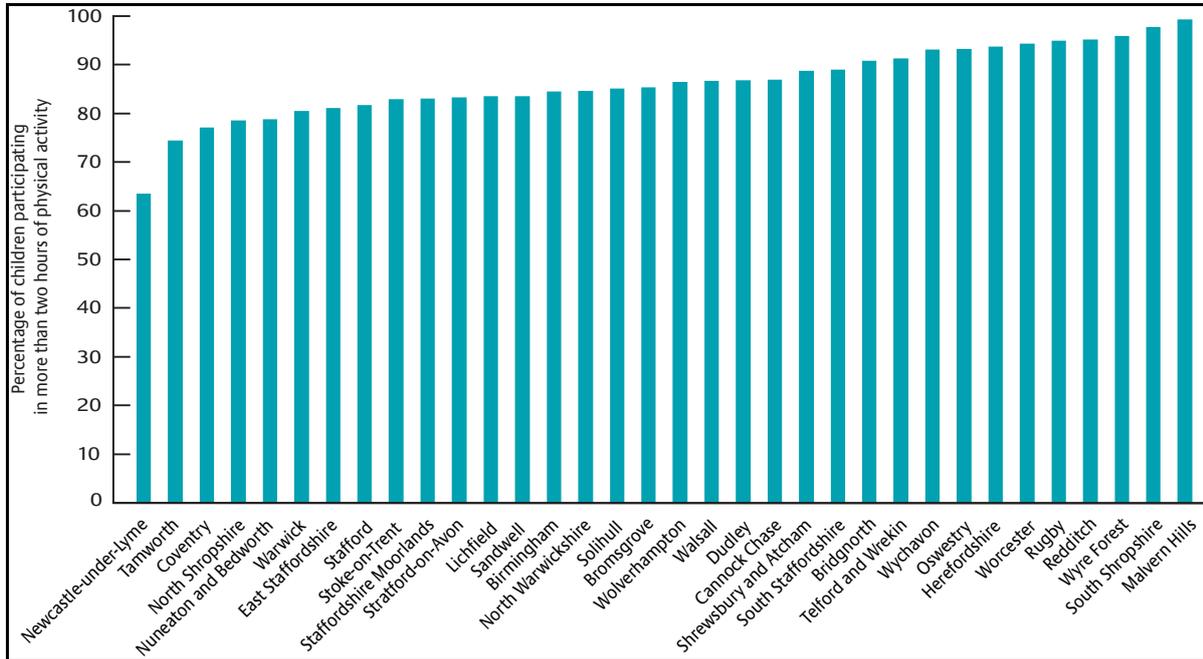


Figure 37: Per cent children participating in more than 2 hours physical activity

4.4.6 Access to Green Space

Definition:
This indicator gives the estimated percentage of the surface area in each local authority designated as domestic gardens and green space.
Rationale:
The Government is commitment to increasing physical activity throughout the population. It is recognised that lack of exercise increases the risk of a number of illnesses including stroke and coronary heart disease. The Public Health White Paper (Department of Health, 2004a) recognised the contribution of green space to reducing obesity, increasing exercise and 'improving mental health'. This is however predicated by the scoping study for the Forestry Commission.
Relevance to Children:
Currie <i>et al.</i> , (2004) ⁸³ recommended that children between the ages of 5 and 18 should participate in physical activity of at least moderate intensity for one hour (daily) on 5 or more days per week. Participation in physical activity can reduce obesity and improve fitness levels in children. It has been reported that nearly 16% of children in the West Midlands are obese ⁸⁷ . The government is trying to tackle obesity by introducing a goal for 2020 by which child health should be improved with the proportion of obese and overweight reduced to 2000 levels ²³ . Physical activity can also help to improve schoolchildren's attendance, behaviour and attainment through the enhancement of self esteem and concentration levels. The Government's white paper Choosing Health: Making Healthy Choices Easier identified that there will be new initiatives to promote physical activity and sport inside and outside of school. Furthermore, a study by Whewey and Millward (1997) reported that 56% of children from housing estates in the UK referred to green open spaces as their regular and favourite place of play ⁸⁸ . Children's access to green space within the West Midlands is shown in Figure 38. However, there are limitations to the information presented as highlighted in the technical guidance section below.
Primary Source:
ONS NeSS Generalised Land Use Statistics (GLUS) 2005
Date Last Published:
2007
Time Period:
2005
Numerator definition:
Land space designated as domestic gardens and green space in each local authority.
Source of Numerator:
CLG, Data and Statistics Infrastructure Division
Denominator Definition:
Total land space within a local authority
Source of Denominator:
CLG, Data and Statistics Infrastructure Division

Geographic Coverage:
Local authorities
Dimensions of Inequality Available:
N/A
Timeliness:
The data set is the first in the time series, with a previous publication in 2001
Accuracy and Completeness:
The data are presented in thousands of metres squared, to 2 decimal places. The statistics are therefore accurate to the nearest 10m ² . Where there is no area of a given land type, a zero is entered. Where the area of a particular land type is not zero, but is less than 5m ² no data are entered.
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
The percentage of garden space within a local authority does not provide any indication of the number of households that have garden space as many may have none and a few may have extremely large gardens.
Other Sources of Indicator set:
Regional Health and Well-being Strategy
Further Information:
N/A
Implications:
N/A

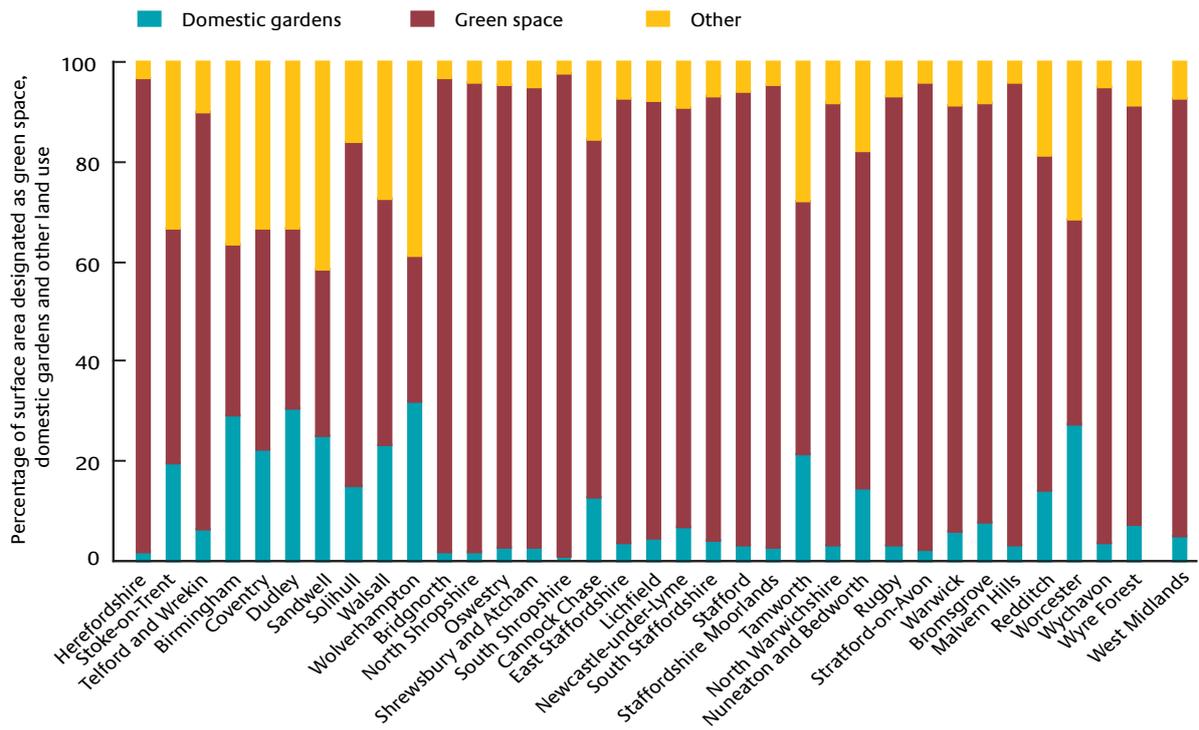


Figure 38: Proportions of green space, domestic gardens and other land use in the West Midlands region

4.5 Gap Indicators

Incidence of Diarrhoeal Illness

Definition:
Two indicators of diarrhoeal disease incidence in children were examined: <ol style="list-style-type: none"> i. Hospital admissions for diarrhoeal disease (ICD10 A00-A09) (age sex standardised) age 0-19 per 100,000 population; and ii. Notification rate for food poisoning (age sex standardised) age 0-19 per 100,000 population
Rationale:
See comment on limitation of hospital admission rates as an indicator of prevalence under indicator 4.2.3. It has been reported that infectious intestinal disease occurs in 1 in 5 people each year, of whom 1 in 6 presents to a general practitioner in England ⁸⁹ . In developed countries the burden of diarrhoeal disease is 1 to 2 episodes per child per year (for morbidity), however, it far greater in developing countries at 6 to 7. Most of these will not even present to the GP and only a tiny minority will result in a hospital admission.
Special Relevance to Children:
Children are more susceptible to diarrhoeal illness and may fair worse in their prognosis. Figure 39 shows how hospital admission rate varies with age and sex. Admission rates are high in the first year of life (about 170 per 100,000) and fall sharply with age to below 20 per 100,000 by age 4 years. The WHO predicts that by 2025 there will still be more than 5 million deaths in children below 5 years of age, 97% of which will occur in developing countries. Diarrhoeal disorders remain one of the most important causes of global childhood mortality and morbidity ⁹⁰ . In developed countries there have been substantial improvements in hygiene, water, sanitation, health and nutrition and therefore diarrhoeal is less frequent and less severe than in developing countries. Hospital admissions due to diarrhoeal illness within the West Midlands' local authorities are shown in Figure 40.
Primary Source:
HES and Notifiable Disease Register
Date Last Published:
April 2007
Time Period:
April 2003 – March 2006
Numerator definition:
<ol style="list-style-type: none"> i. Number of hospital admissions among children with a diagnosis of diarrhoeal illness for the period 2003- 2006 ii. Number of cases of food poisoning for the period 2003-2006

Source of Numerator:
<ul style="list-style-type: none"> i. Hospital Episode Statistics (HES) ii. Notifiable Disease Register
Denominator Definition:
ONS population estimate for the mid year period that is, 2004.
Source of Denominator:
Office of National Statistics Mid year estimates
Geographic Coverage:
Local Authorities
Dimensions of Inequality Available:
Maternal depression is linked to diarrhoeal illness in infants in a low income community setting ⁹¹ .
Timeliness:
The dataset is updated annually.
Accuracy and Completeness:
The HES data are subjected to QA/QC checks by the ONS which includes duplicate and comparison (trend) checks. The dataset will not include those children who attend their local GP or those who are treated at home with over the counter medications and may therefore be an underestimate.
Disclosure Control:
Access to individual level hospital episode statistics is restricted and not in the public domain, however, summary statistics can be freely disclosed provided that numbers in any cell are reasonably large and there is no risk of identifying individuals.
Technical Guidance:
Age specific rates calculated for (<1, 1-4, 5-9, 10-14, 15-19). Then multiplied by European standard population (<1 uses 1600; 1-4 uses 6400; 5-9, 10-14, 15-19 use 7000)
The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation. The methodology is based on that described by Breslow and Day (1987) ⁵⁴ .
Other Sources of Indicator set:
WHO CEHI
Implications:
The shortcomings of hospital admissions as an indicator of disease frequency have been rehearsed in Section 4.2.3. Notification is unlikely to be any better. It is known that the vast majority of food poisoning episodes are not notified and notification rates probably reflect the notification behaviour of local doctors rather than frequency of food poisoning.
Figures 40 and 41 show that hospital admissions and notifications give completely different rank

orders for the local authorities from which it may be concluded that one and most probably both are unsatisfactory. A reliable indicator of frequency of diarrhoeal disease in children would have to be based on community survey data or possibly data from primary care.

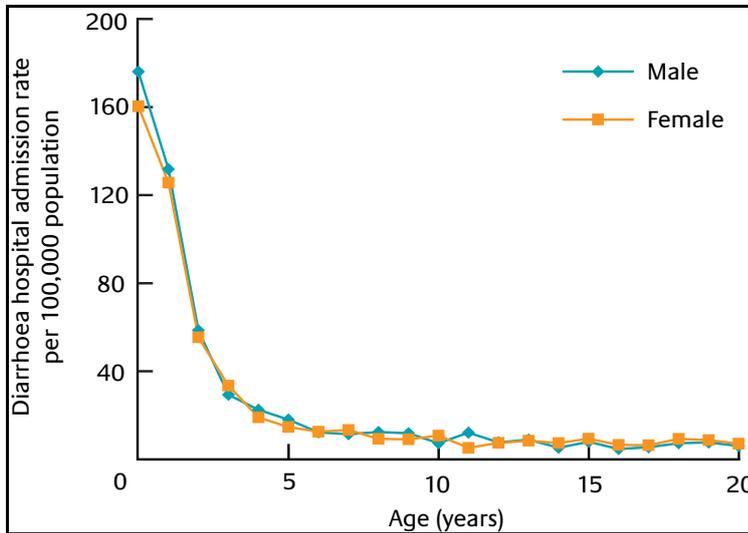


Figure 39: Diarrhoea Hospital Admission Rate for males and females in England (2005/6)

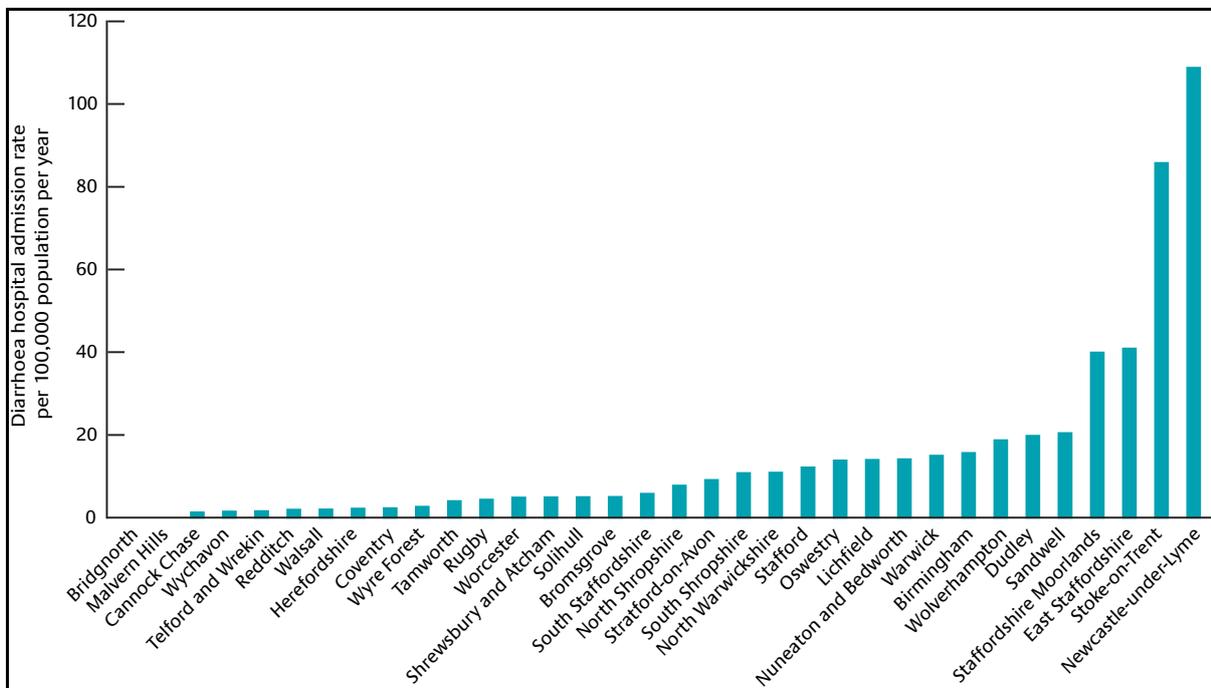


Figure 40: Diarrhoea Admission Rates 0-19 years age standardized (2003/06)

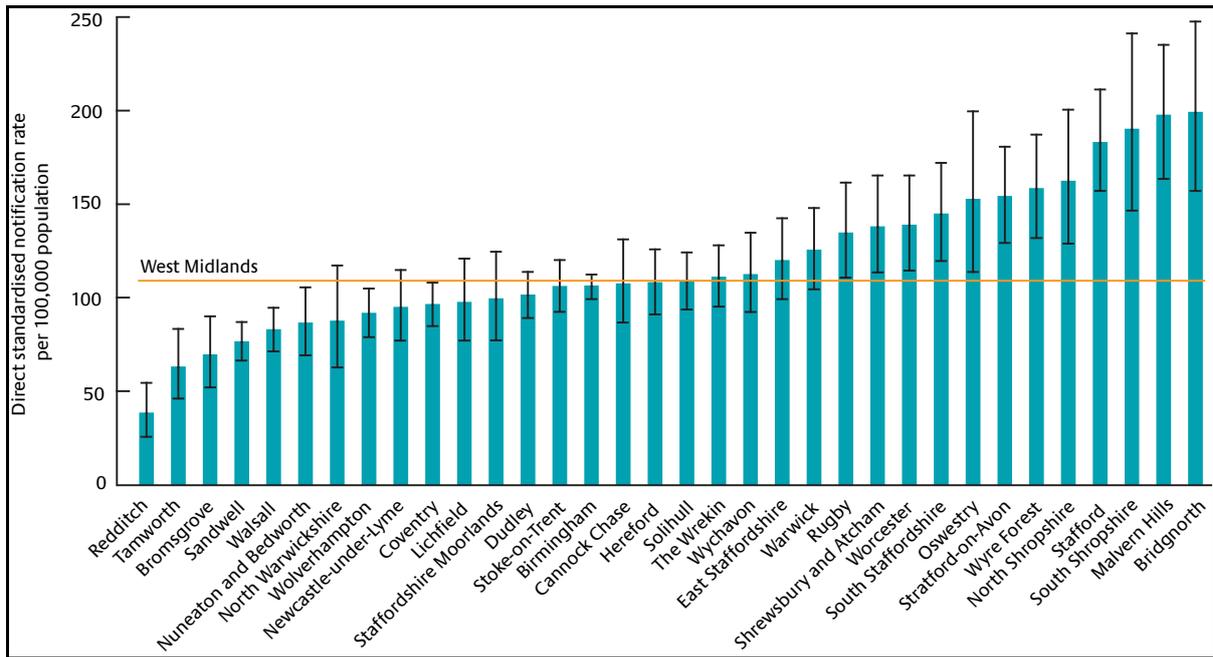


Figure 41: Direct Standardised notification rate (2003-2006)

Estimated Prevalence of Adult Smoking

Definition:
This is a synthetic estimate of the percentage of those aged 16 years and over who smoke. This estimate is based on the characteristics of the local authority population.
Rationale:
It has been well established that smoking is the single largest cause of preventable deaths in the UK. It is a major cause of ill health in the society and has been linked to respiratory illness, cancer and coronary heart disease. A study carried out by Cooke <i>et al.</i> (1994) reported that approximately 53% of children in England and Wales are exposed to environmental tobacco smoke (ETS) in the home ⁹² .
Relevance to Children:
<p>The Health Survey for England carried out in 2002 showed that 37% of children aged 0-15 years live in households where at least one adult smokes on most days. It has been estimated that as many as 17000 children under the age of 5 years are admitted to hospital every year with illnesses resulting from passive smoking⁹³. WHO consultation in 1999 concluded that ETS is a real and substantial threat to child health, causing death and suffering throughout the world⁹⁴.</p> <p>ETS is associated with respiratory and middle ear disease, reduced foetal growth, sudden infant death syndrome (SIDS), neurological developmental/behavioural outcomes, cardiovascular effects, and childhood cancer.</p> <p>The many adverse consequences of the exposure of children to involuntary tobacco smoke are well understood and will not be reviewed in this document. Specifically, parental and peer smoking are critical and detrimental influences on future regular tobacco use. In addition, maternal smoking during pregnancy causes well-established, demonstrable harm by reducing birth weight and increasing infant mortality.</p> <p>A study carried out by Rushton <i>et al.</i> (2003) has shown that the impact of ETS on childhood illness can be considerable, emphasising the importance of the need to develop effective strategies for reducing the risk of ETS exposure in the home and elsewhere⁹⁵. Given the above, it is included in the National Indicators as NI123 "16+ current smoking rate" and therefore will be used by central Government to performance manage outcomes delivered by local government.</p>
Primary Source:
Action on Smoking and Health
Date Last Published:
2002
Time Period:
2001-2002
Numerator definition:
Estimated number of those aged 16 years and over who smoke

Source of Numerator:
HSE/ASH
Denominator Definition:
Population aged 16 years and over resident in the local authority
Source of Denominator:
ONS mid year population estimates
Geographic Coverage:
Local Authorities, Wards
Dimensions of Inequality Available:
<p>In England there appear to be links between socio-economic status and smoking as Figure 42 shows that the smoking prevalence in the more deprived local authorities is higher. It has also been noted that smoke cessation programmes have been more successful among the more affluent in the society thereby increasing health inequality.</p> <p>Health Survey for England 2002 showed that there were marked differences in smoking prevalence between different socio-economic groups, both for children and young adults⁹⁶. 1% of boys aged 4-15 in the highest socio-economic quintile had a cotinine level of 15 ng/ml, in comparison to 6% in the lowest income quintile.</p>
Timeliness:
<i>Adhoc</i> surveys
Accuracy and Completeness:
The data presented were generated by a combination of statistical modelling techniques and synthetic estimates and presented by Action on Smoking and Health (ASH).
Disclosure Control:
The information is in the public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
Because lower tier authorities are synthetic estimates they will not reflect any change in smoking behaviour. Estimates for metropolitan authorities and counties are based on the HSE national survey.
Other Sources of Indicator set:
This indicator is included in: ENHIS set National Indicators Set NHS Vital Signs
Further Information:
Further information about surveys relating to smoking can be obtained from the following websites:

http://www.ash.org.uk/ash_tjwkzorn.htm

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_4078027

Implications:

Continued measures to reduce smoking includes enforcement of no smoking areas, coupled with health education to promote non-smoking, increasing efforts to deter young people from starting smoking and provision of help for people to quit. Health education to make parents more aware of the harm that ETS can do to young people is particularly beneficial. There appears to be links between smoking and economic status as demonstrated by Figures 42 and 43. This indicator is included as a gap indicator because the data available are synthetic estimates. However, it is expected that an enhanced integrated household survey starting this year provide data at a PCT level.

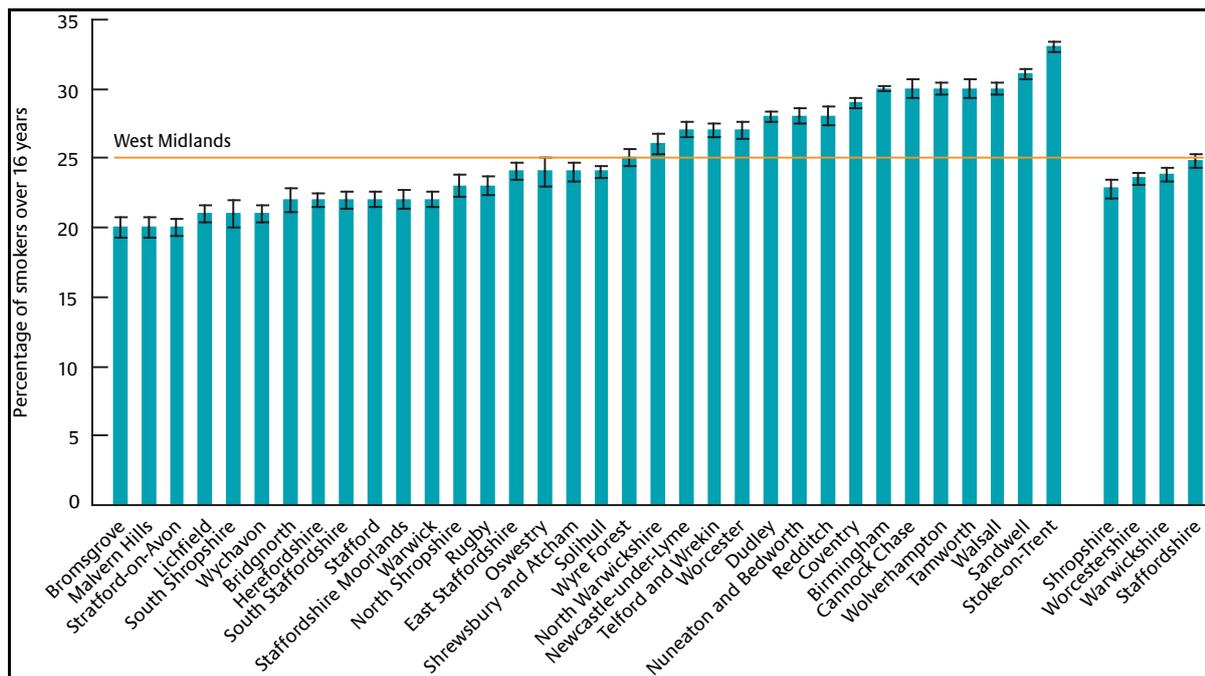


Figure 42: Per cent smokers over 16 years

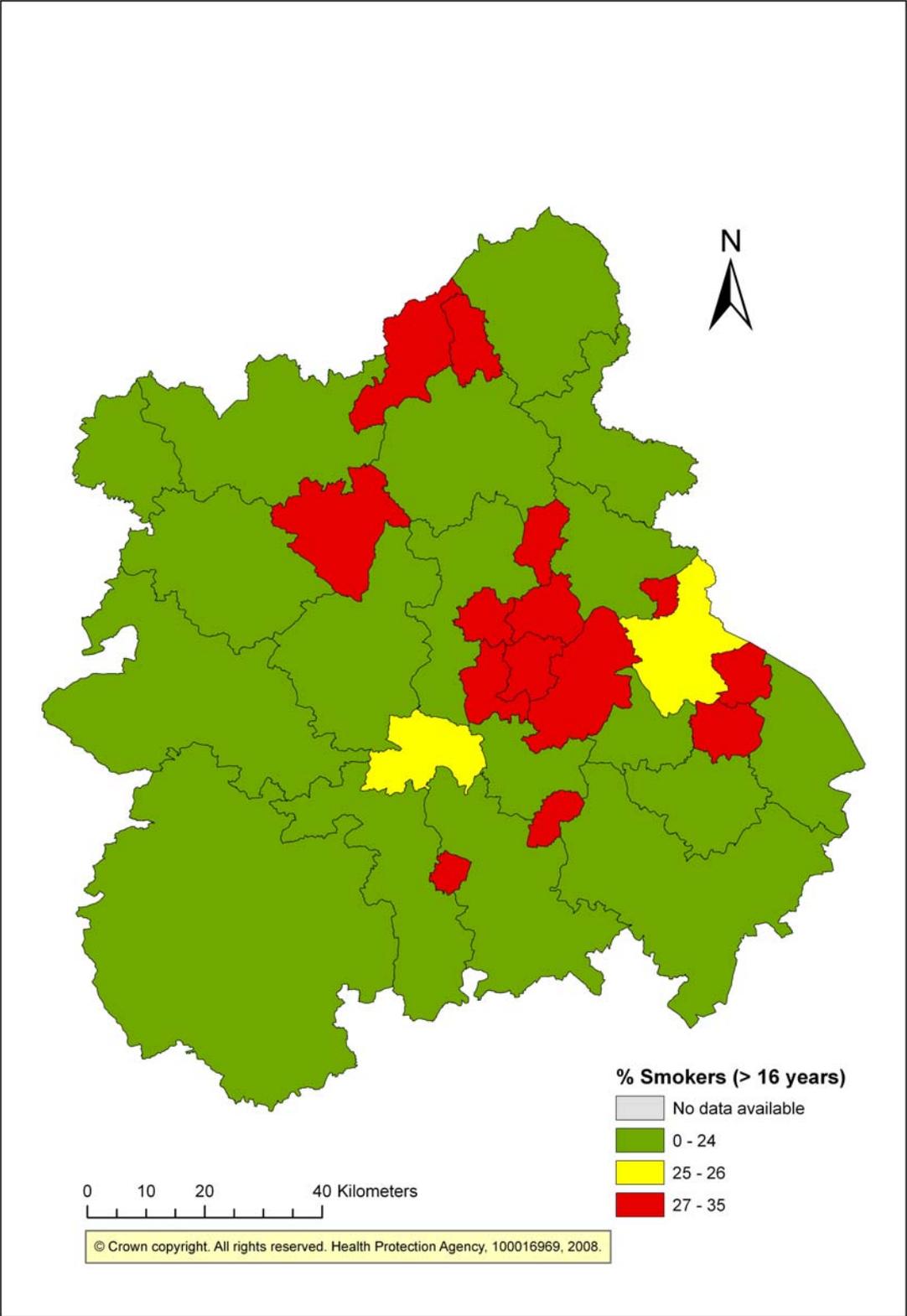
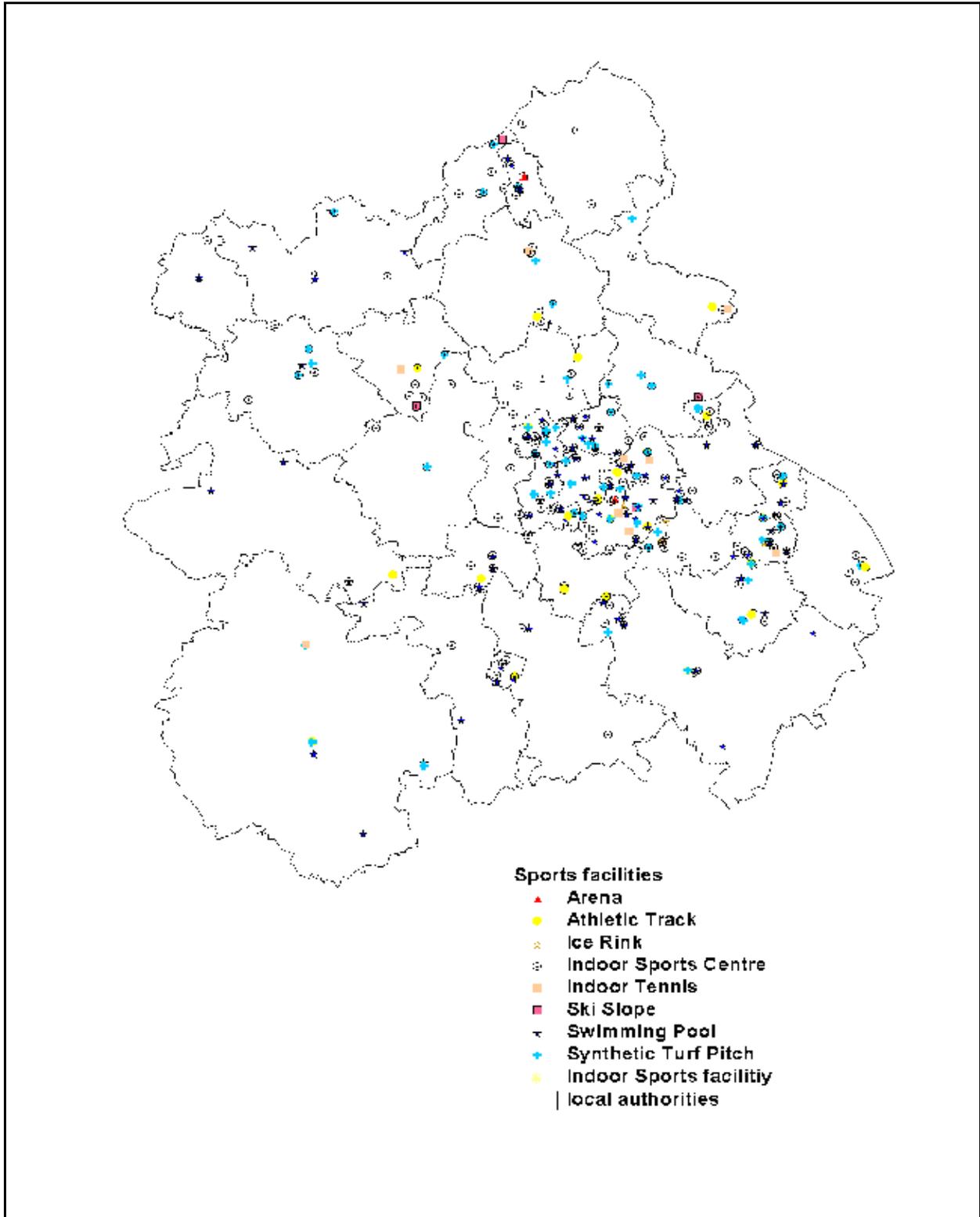


Figure 43: Map showing per cent smokers older than 16 years

Access to Sport Facilities

Definition:
This indicator gives the location of all sport facilities within the West Midlands region and does not indicate those which are free.
Rationale:
See Section 4.4.5
Relevance to Children:
<p>Participation in physical activity can reduce obesity and improve fitness levels in children. It has been reported that nearly 16% of children in the West Midlands are obese⁸⁷. Physical activity can also help to improve schoolchildren's attendance, behaviour and attainment through the enhancement of self esteem and concentration levels. In the government's white paper Choosing Health: Making Healthy Choices Easier³⁰ it was stipulated that there will be new initiatives to promote physical activity and sport inside and outside of school. Furthermore, by 2006 it was expected that all maintained schools would be in a school sports partnerships.</p> <p>In "The Children's Plan: Building brighter futures", the DCSF is committed to spending £225 million over the next 3 years to include: Offer every local authority capital funding that would allow 3500 playgrounds nationally to be rebuilt or renewed and made accessible to children with disabilities; and create 30 new adventure playgrounds for 8-13 year olds in disadvantaged areas supervised by trained staff²³.</p>
Primary Source:
Sport England
Date Last Published:
2005
Time Period:
N/A
Numerator definition:
<p>Sports facilities- Sports halls Swimming pools</p> <ul style="list-style-type: none"> <input type="checkbox"/> Synthetic turf pitches <input type="checkbox"/> Indoor bowls <input type="checkbox"/> Indoor tennis <input type="checkbox"/> Athletics tracks <input type="checkbox"/> Health and fitness <input type="checkbox"/> Golf courses <input type="checkbox"/> Ice rinks <input type="checkbox"/> Ski slopes
Source of Numerator:
Sport for England

Denominator Definition:
N/A
Source of Denominator:
N/A
Geographic Coverage:
Local authorities
Dimensions of Inequality Available:
N/A
Timeliness:
Fixed point
Accuracy and Completeness:
Subject to categories listed by Sport England-currently being extended. No differentiation between free and paid for facilities. No account of accessibility other than physical distance
Disclosure Control:
The information is in public domain therefore no disclosure control procedures have been applied.
Technical Guidance:
N/A
Other Sources of Indicator set:
Key Health Data for the West Midlands
Further Information:
Sports facilities in locations throughout England can be found on http://www.activeplaces.com/Index.asp?Authorise=true and those located within the West Midlands are shown in Figure 44.
Implications:
Further work is required to develop this indicator and fully exploit its usefulness. As a starting point it will be necessary to determine the accessibility (fee paying or free entry) of the facilities identified on the Sports England website to all children in the area (of the facility).



Source: The West Midlands Key Health Data 2001

Figure 44: Location of sports facilities in the West Midlands

5 DISCUSSION

5.1 General

Children are particularly vulnerable to the effects of environmental stressors given their unique exposure, behavioural and developmental characteristics. The nature of these environmental stressors and their impact on children have changed over the decades and the role of the contemporary environment in children's health is complex and multifaceted and not well understood⁹⁷. In addition, concerns persist about inequalities in the distribution of these hazards and consequently innovative methods are required for assessment and management of interventions. The World Health Organization (WHO) considers the development of a set of key children's environmental health indicators as an essential step in the effort to improve children's health through safer environments and this project, supporting the commitment of the UK to the development of a national CEHAPE programme, has piloted the development of a core set of children's environment and health indicators in one region to:

- describe the burden and distribution of hazards/risks of childhood disease and injury attributable to environmental risks within a region; and
- provide intelligence to inform appropriate interventions and monitor the impact of those interventions particularly in terms of reducing inequalities.

The current tools at our disposal for the assessment of children's health as a result of environmental insults are inadequate and consequently it is difficult to appropriately target policies and interventions. This project is part of an environmental public health tracking strategy to identify and respond to information gaps as well as to help with the delivery of the UK CEHAP Strategy. It is anticipated that this work will be useful for government and non-governmental organisations including local authorities, NHS, Strategic Health Authorities, and non-statutory bodies/persons who play an active part in protecting children's health from environmental risks as well as the general public.

Recognising that no single agency can effectively address these concerns given the range of potentially relevant issues, a multi-agency collaboration involving the HPA (CRCE, LaRS, the International Research and Development Group), the West Midlands Public Health Observatory, the Department of Health West Midlands and a local authority representative was established to agree the scope and scale of the project, agree regional priorities and select indicators for inclusion based on plausibility, strength of evidence, relevance, quality and accessibility (further details are outlined in Sections 2.4 and 2.6). This pilot has set out to establish a method using routinely available data rather than to prescribe a specific and definitive list of indicators. Clearly what is appropriate for the West Midlands will not necessarily be relevant in other UK regions although it is anticipated that some indicators would be considered 'core'. The project group considered a range of definitions of 'environmental health' and while accepting that ideally this construct should consider physical, social, community and economic conditions it was important to focus on practical and credible factors. This pilot has focussed on areas where there is an evidence base, plausibility and relevance to the region (see Section 2.4). It is accepted that this strategy omits quality of life type issues

which have poorly developed evidence bases but potentially have major impacts on community health and further work will be needed to consider the impact of these wider issues.

The geographies used for mapping the indicators are a compromise between the limitations inherent in the data (e.g. several are only available at local authority level), policy requirements (fit with the targets and goals in the National Priorities e.g. Public Service Agreements (PSA) or NHS Operating Framework (Vital Signs) and Local Area Agreements (LAAs) which are informed by National Indicators Set) and technical issues including, on occasions, small numbers in very local areas and the masking of local variations in larger geographical units. This pilot has used upper and lower tier local authorities but the method could in some cases be applied to smaller geographies if considered useful. At the time of writing the project used the most contemporary data for each indicator where possible.

The pilot has used a crude red/green 'traffic light system' based on a 95% confidence interval to identify indicator(s) which local public health agencies may need to give special consideration. This does not enable an assessment of the rate and direction of change and all comparisons with local, regional and national indicators should be made with caution. Further work will be required as the system matures and in particular the identification and utility of other statistical techniques, such as statistical control charts, which will identify those local authorities which are performing significantly differently.

The indicators selected for the core set have been grouped into four domains (to enable collation of data from potentially different organisations as well as use of specialist expertise in the domains), namely housing, health, accidents and environment. The project group identified some indicators considered important but excluded from the core set due to data limitations; these have been labelled 'gap indicators' (see Appendix 3). Although the project does not explicitly identify indicators which may be directly or indirectly related to climate change, it is recognised that as a result of this phenomenon environmental hazards may shift or increase and children are likely to be affected disproportionately by these fluxes. Some effects of climate change could include a deterioration in air quality (Indicator 12) resulting in increased air pollution related illnesses and injury and death due to extreme weather events and natural disasters⁹⁸.

It is accepted that important work will be ongoing in addressing these issues in many areas. Accordingly this initial toolkit should be regarded as a pilot to provide practical guidance for environmental health assessments and as a stimulus for discussion and development in this important field of child health.

5.2 Indicators Domain

5.2.1 Housing

Although in April 2006 the Housing Health and Safety Rating System (HHSRS) superseded concepts such as that of unfit dwellings, this project used those older concepts as that was the data available at the time of writing. However, it is expected that when local authorities carry out this assessment they will use any new data which becomes available as a result of HHSRS.

Unfitness

An estimated 4% of the West Midlands region housing stock is statutorily unfit, similar to the national average. The relationship with deprivation is not straightforward. Only three of the 11 local authorities with higher than average levels of unfit housing are in the lower half of local authorities ranked nationally by deprivation scores (IMD2004)*. Stafford which has 7% unfit housing is not particularly deprived as measured by IMD (ranked 252nd for deprivation (IMD2004) out of the 354 local authorities). On the other hand Tamworth and Cannock are in the half of local authorities with higher deprivation scores but have less than 2% unfit housing again indicating that the problem of poor housing standards is not confined to economically deprived communities (albeit that this is the main driver).

The percentage of unfit dwellings in Stoke-on-Trent and Sandwell was more than twice the national and regional averages. Although it is accepted that black and ethnic minorities are twice as likely as white people to live in unfit housing (this is most likely to be the main driver for these findings), these findings suggest that the housing dimension of inequality needs to be further investigated.

Overcrowding

5.6% of the regions children live in overcrowded homes. The region compares favourable with the national average of 7.1% overcrowded households. The more affluent local authorities have a lower proportion of overcrowded accommodations whereas Birmingham and Coventry, where a high proportion of the populations live in deprived Lower Super Output Areas (LSOAs), (9th and 52nd nationally), were the two local areas with overcrowding rates above the national average. Those local authorities with higher than regional average overcrowding rates are classed as “centres with industry” in the 2001 ONS cluster grouping⁹⁹.

There was no significant correlation between the proportion of unfit and the proportion of overcrowded properties. Possible explanations for this include: (1) urban regeneration projects which may improve housing fitness but have no effect on overcrowding levels; and (2) many unfit homes are occupied by the elderly while overcrowding is more commonly associated with households with children³⁹.

Homelessness

There is no single accepted indicator for homelessness and given the range of definitions which exist, routinely available data on ‘homeless and in temporary accommodation’ and ‘homeless and in priority need’ have been selected but it is recognised that these may not be appropriate in all circumstances e.g. rough sleepers are not included. The West Midlands has a higher proportion of households (547 per 100,000) in priority need for housing than the national average (445 households per 100,000). However, the level of households based in temporary accommodation (within the region) is less than 25% of the national level.

Ten of the 27 local authorities which reported homelessness (and in priority need) figures had levels above the national average. Three of the four areas with the highest

* IMD2007 was released over 1 year after this project had commenced with the use of IMD2004

reported level of homeless households were in areas of lower than average levels of income deprivation. Seven local authorities made no return for this indicator. More information is needed to determine if the shortfalls are primarily due to the limited availability of suitable housing or particularly high population demand levels.

Temporary accommodation is considered unsuitable for households with children. The limited use of this type of accommodation within the West Midlands should be viewed as positive and encouraging since the government is committed to eliminate the long-term use of bed and breakfast type accommodation for households with/expecting children.

5.2.2 Health

The health indicators included in this pilot are influenced by many factors beside environmental issues including quality of parenting, access to health care and health behaviours. Children subject to poor environments tend also to be exposed to adverse non-environmental factors. Accordingly, it cannot be assumed that the most effective action in response to poor status for the indicators used in this pilot will always be environmental improvement.

A further concern in the selection of indicators is that severe outcomes such as death or illness needing hospital admission are fortunately rare in developed countries so the data are based on small numbers and therefore become statistically unstable. Furthermore, less severe outcomes such as illness resulting in GP consultation or symptoms not requiring medical attention are poorly recorded and unreliable. Indicators based on hospital admission often reflect local admission policies and practice rather than prevalence of the underlying condition. In addition, attendance at Accident & Emergency is only recorded in the Hospital Episode Statistics dataset used in this project if the child is admitted. For the health dimensions of this project the use of a single indicator for all age groups is problematic. It is clear that both risks and outcomes change with age. For example the causes of accidental death in an infant and a teenager are usually very different as demonstrated by injury to under 15s mainly as pedestrians and cyclists. Age standardisation only partially addresses this issue.

While infant mortality is higher in the West Midlands than in other UK regions the small numbers in the smaller local authorities means that analyses become unstable. As would be expected the metropolitan authorities tend to have the highest rates while the rural authorities have the lowest. However, even when aggregated over 5 years, confidence intervals are very wide for the smaller local authorities and it is questionable whether this indicator is appropriate at this geography.

Hospital admissions for respiratory disease are subject to all the reservations of hospital based indicators. It is acknowledged that many illnesses which are classed as moderate to minor often go unreported and are treated in the home. In other cases management of the illness may be undertaken in consultation with NHS Direct or the local GP. There is a tendency for admissions to be higher in metropolitan areas. While poor air quality is a possible contributory factor children in these areas may be disadvantaged in many other ways. In addition, the areas with high admission rates tend to be those with easy access to a paediatric service. There are interesting exceptions such as Coventry which

despite being a metropolitan area with considerable deprivation has a very low admission rate.

In general the metropolitan and less affluent local authorities tended to have a higher percentage of children in reception year who are classed as obese. This suggests that deprivation and obesity are linked and policies developed need to capture this dimension of the problem. This issue is of particular concern in the region since levels have increased over the last few years. In response to this the Government published the Healthy Weight: Healthy Lives Strategy in January 2008 in which it pledged that “by 2020, we aim to reduce the proportion of overweight and obese children to 2000 levels”¹⁰⁰. This finding in the pilot supports the recommendations in the Children’s Environment and Health Strategy for the UK (2008)¹⁰¹ which states that improvements are needed with regards to reducing obesity in children and young people.

Immunisation statistics are readily available and are one indicator of the effectiveness of preventative health services for children.

5.2.3 Accidents

Hospital admission was used as a proxy measure for the incidence of childhood injuries within the region. It is recognised that this is an unsatisfactory measure as the majority of injuries which are moderate to minor, generally go unreported and are treated in the home. In other instances parents consult NHS Direct or their local GP for management of some injuries. In addition, attendance at A&E will only guarantee that the child is included in the data for this indicator if he/she is admitted. Therefore caution must be exercised in the interpretation of all indicators using hospital admissions data.

All admissions of children aged 1 to 19 years have been aggregated for these hospital admission rate indicators. As with deaths, admission rates vary considerably with age and also there is marked variation with gender (boys having nearly twice the admission rate of girls). Age sex standardisation attempts to remove the effects of age and gender difference in the population but may not completely do so. The excess of accidents in boys is a feature observed in all populations not just the West Midlands.

Non-road traffic accidents

Across the West Midlands local authorities, hospital admission rates for non-road traffic accidents varied between approximately 500/100,000 and 1400/100,000 per year for the three year period 2003/04 - 2005/06. Stoke-on-Trent had the highest admission rate in the area and it is noteworthy that this area also had the highest levels of unfit housing reported in the region. It is well known that the majority of accidents among younger children in particular, occur in the home and are often associated with defective or poorly designed housing or equipment although this relationship was not consistent for this indicator. With the exception of Stoke-on-Trent all local authorities with higher than average admission rates for non-traffic accidents were “manufacturing towns” or “prospering smaller towns”⁹⁹. Further investigation is needed to determine those factors which predispose these children to accidents.

The correlation between the rate of non-road traffic accidents and deprivation was poor. This may be attributed to one or a combination of the following confounding issues:

proximity to health services, ability of parents to manage moderate to minor injuries, ability of the doctors to assess the parents' ability to handle injuries in the home; and/or the use of NHS Direct and GP facilities for such injuries.

Road traffic related accidents

Age is important in road traffic accidents (RTA) among children with those under 15 years being injured as pedestrians while those older, particularly males, tend to be drivers or passengers in vehicles. RTAs are responsible for the highest numbers of injuries and deaths among children. It has been reported that the main cause of accidental death among males aged 1-14 years within the West Midlands (1995-2004) is transport related (54%)¹⁰².

Within the region admission rates varied between 90/100,000 and 210/100,000 per year over the three year period 2003/04 – 2005/06. South Shropshire had the highest RTA rates and the six local authorities with the highest rates are all ranked in the top 50% of the least deprived local authorities nationally. High rates may be associated with these areas being rural and consequently having higher traffic speeds as well as the ability of these groups of young children to acquire vehicles. Although the finding may be related to traffic features of these areas, additional analysis of road and traffic information and data on child proximity to trafficked roads data are required. Although there appears to be little correlation between RTA and proximity to heavily trafficked roads it might be prudent to examine heavily trafficked roads at a buffer distances other than the 250m used in this project. A study carried out by EC DG Sanco showed that children living within 50m of busy roads (motorways, national roads with double lanes, national roads and other principal roads) are at "high risk" from air pollution, noise and traffic accidents.

The numbers of childhood deaths due to traffic accidents are very small and can vary considerably between years. This can make comparisons between small areas such as local authorities difficult and inferences must be treated with caution. However, this is a very important indicator and, while inappropriate for local authority level analysis, should be used at levels for which there are sufficient numbers. 35% of traffic related mortality may be attributed to environmental conditions thereby highlighting the importance of addressing land use policies and practices; road design, urban structure and density; and the harmonizing road design and vehicles¹⁰³.

5.2.4 Environmental

Air quality

Air pollutants typically exist as part of a complex mixture of chemicals with origins in industry, transportation, power and natural sources. For this indicator the selected pollutants are principally derived from transport and combustion processes.

The primary source of NO₂ within the West Midlands is transportation. Measurements of NO₂ in the West Midlands region are marginally lower than the national average of approximately 35µg/m³. Although a number of local authorities within the West Midlands have declared Air Quality Management Areas covering the entire borough, this does not necessarily mean that the general air quality across the local authority is poor as the declaration has been made on the basis of localised pockets of pollution.

While levels of pollutants at roadside locations are more pertinent than background levels as this is usually where most population exposure will occur, these data are less accessible than that from the AURN* network, which consists primarily of background sites. Consequently data were only available for seven of the West Midlands local authorities from the air quality archives. Walsall has NO₂ levels above the National Air Quality Standard of 40µg/m³. The government requires any local authority which breaches any of the National Air Quality Standards to declare Air Quality Management Areas and develop and implement Action Plans to ameliorate/reduce the levels of the pollutants in question. To date at least four of the seven metropolitan authorities have developed Air Quality Action Plans.

Particulate concentrations have been widely studied for their potential to cause lung damage, particularly amongst children. The data collected indicate that the West Midlands annual PM₁₀ concentration is marginally lower than the national average of 34µg/m³.

Of the primary urban populations in the region, Birmingham and Stoke-on-Trent have the highest PM₁₀ concentrations although neither exceeds the National Air Quality Standard of 40µg/m³. As with NO₂, there are areas within each local authority which have measured levels above that of the National Air Quality Standard of 40µg/m³. One of the urban local authorities has declared an AQMA for particulates due to transportation in the area. The higher particulate levels in Stoke-on-Trent may contribute to the second highest level of hospital admissions for acute respiratory conditions.

Heavily trafficked roads

It is interesting to note that within the West Midlands some more rural local authorities such as Stafford and Newcastle-under-Lyme have more than 30% of children living within 250m of heavily trafficked roads. This is surprising as the largest unitary authority, Birmingham, has the lowest proportion of children living within 250m of heavily trafficked roads.

Noise

Noise nuisance data are available but can only be obtained directly from the individual local authorities and at the time of writing this was not available. It is recommended that this indicator be included in the core set. The development of this indicator is being furthered through a project in the South West region.

Chemical incidents

It has not been feasible to 'traffic light' this indicator as incidents have been concentrated in around a third of the local authorities, mainly in those local authorities classed as "centres with industry". The usefulness of this indicator has been questioned by a respondent, however, it is considered prudent to include it in the core set and allow those undertaking the assessments to decide whether it is relevant in their region.

Physical activity

It was encouraging to note that more than 60% of children in the West Midlands were engaged in more than 2 hours physical activity per week. The analyses for the West

* Automatic Urban and Rural Monitoring Network

Midlands' local authorities suggest that the more affluent are more likely to engage in more physical activity therefore further work is required in more deprived communities. The inclusion of this indicator in the National Indicators Set makes it highly probable that local authorities will try to ensure that improvements are achieved as it is a measure by which central government can performance manage local government.

Access to green space

As expected the metropolitan local authorities have less green space and domestic gardens whereas the smallest authorities with the lowest population have the greatest access to open space. Further work is required on describing the actual physical access to green space especially given natural England's recent recommendation that everybody should live within 300m of a green space¹⁰⁴.

Access to sports facilities

Further work is required on appropriate definitions of sport/leisure facilities. It is also true that it is not sufficient to identify such facilities and the important criteria is whether it is fees paying which would restrict accessibility by the more deprived populace.

6 SUMMARY AND RECOMMENDATIONS

The development of this pilot has led to enthusiastic and on-going discussions of its nature, extent and distribution of environmental health hazards in the region. This initial phase of the work has provided valuable intelligence to inform the development/targeting of policies and interventions to improve children's health in one region and has highlighted the inadequacies in some datasets which require further work. It is anticipated that other UK regions will have different issues that may need to be addressed and therefore appropriate indicators can be developed using the methodology outlined in this document.

It is envisaged that the results of the assessments when undertaken in other regions of England and Wales will stimulate discussions and drive policy development and implementation to improve the health of children. This assessment has highlighted the inequalities which exist within the West Midlands regions and some specific children's issues which need to be addressed such as the access to health services *etc* for the homeless children. It is recommended that each region should seek to engage as many stakeholders (within the region) as possible in the process to facilitate the easy transition from the assessment phase to action phase where improvements will actually take place.

Undertaking such an assessment can be time consuming but it is the only mechanism which will allow the identification of important issues with regards to children's health. Therefore it may be feasible to undertake the assessment once every three to five years, review/evaluate the results, develop and implement appropriate policies/interventions and monitor. This will enable allow the identification and quantification of improvements as well as highlighting those areas in which policies /interventions are not working and therefore further work is needed.

Summary Matrix

	Unfit housing	Over-crowding	Homeless in priority need	Homeless in temporary accommodation	Acute respiratory hospital admissions	Obesity	Infant mortality	Non-traffic hospital admissions	Traffic related hospital admissions	Asthma hospital admissions	Physical Activity	Smoking in >16 years olds
Birmingham			nd									
Bridgnorth	😊	😊	😊	😊				😊				😊
Bromsgrove	😊	😊						😊		😊		😊
Cannock Chase	😊	😊		😊								
Coventry			nd	😊	😊			😊				
Dudley		😊	nd	😊			😊	😊		😊		
East Staffordshire		😊	😊	😊	😊	😊						
Herefordshire UA		😊			😊			😊				😊
Lichfield	😊	😊	nd	nd	😊			😊				😊
Malvern Hills		😊	😊	😊		😊	😊			😊		😊
Newcastle-under-Lyme	😊	😊	😊	😊								
North Shropshire	nd	😊								😊		😊
North Warwickshire	😊	😊	😊	😊	😊					😊		
Nuneaton & Bedworth		😊	😊	😊	😊			😊				
Oswestry	nd	😊						😊				

	Unfit housing	Over-crowding	Homeless in priority need	Homeless in temporary accommodation	Acute respiratory hospital admissions	Obesity	Infant mortality	Non-traffic hospital admissions	Traffic related hospital admissions	Asthma hospital admissions	Physical Activity	Smoking in >16 years olds
Redditch	☺											
Rugby		☺	nd	☺	☺					☺		☺
Sandwell				☺								
Shrewsbury & Atcham		☺	☺									☺
Solihull	☺	☺		☺	☺		☺					☺
South Shropshire		☺		☺	☺			☺		☺		☺
South Staffordshire		☺	☺	☺		☺		☺				☺
Stafford		☺		☺								☺
Staffordshire Moorlands	☺	☺		☺			☺					☺
Stoke-on-Trent UA				☺								
Stratford-on-Avon	☺	☺	☺			☺						☺
Tamworth	☺	☺	nd	nd	☺					☺		
Telford & Wrekin UA	☺	☺										
Walsall			☺	☺								
Warwick	☺		nd	nd		☺	☺			☺		☺
Wolverhampton			☺	☺				☺				

	Unfit housing	Over-crowding	Homeless in priority need	Homeless in temporary accommodation	Acute respiratory hospital admissions	Obesity	Infant mortality	Non-traffic hospital admissions	Traffic related hospital admissions	Asthma hospital admissions	Physical Activity	Smoking in >16 years olds
Worcester												
Wychavon	☺	☺	☺	☺			☺	☺				☺
Wyre Forest	☺	☺	☺		☺			☺		☺		

nd – not determined



Better performance than the lower/upper 95% confidence limit for the West Midlands *i.e.* the 95% upper/lower confidence limit does not include the West Midlands lower/upper 95% confidence limit



Similar performance to West Midlands average although the indicator could be at either ends of the 95% confidence limit therefore just escaping good or poor performance



Worse performance than the lower/upper 95% confidence limit for the West Midlands *i.e.* the 95% upper/lower confidence limit does not include the West Midlands lower/upper 95% confidence limit



Excellent performance (no recorded homeless in temporary accommodation)

Upper Tier Summary Matrix

	Unfit housing	Over-crowding	Homeless in priority need	Homeless in temporary accommodation	Acute respiratory hospital admissions	Infant mortality	Non-traffic hospital admissions	Traffic related hospital admissions	Asthma hospital admissions	Smoking prevalence
Herefordshire UA		😊			😊					😊
Stoke-on-Trent UA				😊				😊		
Telford & Wrekin UA	😊	😊								
Birmingham			nd							
Coventry			nd	😊	😊					
Dudley		😊	nd			😊	😊		😊	
Sandwell				😊						
Solihull	😊	😊		😊	😊	😊				😊
Walsall			😊	😊						
Wolverhampton			😊	😊						
Shropshire		😊	😊						😊	😊
Staffordshire	😊	😊	😊	😊						
Warwickshire		😊	😊	😊	😊		😊		😊	😊
Worcestershire	😊	😊	😊				😊			😊

Immunization Summary by PCT

	D/T/P at 1 year	Hib at 1 year	Men C at 1 year	D/T/P at 2years	Hib at 2 years	Men C at 2 years	MMR at 2 years	D/T/P (primary and booster) at 5years	MMR (1 st and 2 nd dose) at 5years
Burntwood/Lichfield/Tamworth	😊	😊	😊	😊	😊	😊	😊	😊	😊
Cannock Chase	😊	😊	😊	😊	😊	😊	😊	😊	😊
Coventry	😡	😡	😡	😡	😡	😡	😡	😡	😡
Dudley Beacon/Castle	😊	😊	😊	😊	😊	😊	😊	😊	😊
Dudley South	😊	😊	😊	😊	😊	😊	😊	😊	😊
East Staffordshire	😊	😊	😊	😊	😊	😊	😊	😊	😊
Eastern Birmingham	😡	😡	😡	😡	😡	😡	😊	😡	😡
Heart of Birmingham	😡	😡	😡	😊	😊	😊	😊	😡	😡
Herefordshire	😊	😊	😊	😊	😊	😊	😡	😡	😡
Newcastle-under-Lyme	😊	😊	😊	😊	😊	😊	😊	😊	😊
North Birmingham	😊	😊	😊	😊	😊	😊	😊	😊	😊
North Stoke	😊	😊	😊	😊	😊	😊	😊	😊	😊
North Warwickshire	😊	😊	😊	😊	😊	😊	😊	😊	😊
Oldbury & Smethwick	😊	😊	😊	😊	😊	😊	😊	😊	😡
Rowley Regis & Tipton	😊	😊	😊	😊	😊	😊	😊	😊	😊

	D/T/P at 1 year	Hib at 1 year	Men C at 1 year	D/T/P at 2years	Hib at 2 years	Men C at 2 years	MMR at 2 years	D/T/P (primary and booster) at 5years	MMR (1 st and 2 nd dose) at 5years
Rugby	😊	😊	😊	😊	😊	😊	😊	😊	😊
Shropshire County	😊	😊	😊	😊	😊	😊	😊	😊	😊
Solihull	😡	😡	😡	😊	😊	😊	😊	😡	😡
South Birmingham	😡	😡	😡	😊	😊	😊	😊	😊	😡
South Stoke	😊	😊	😊	😊	😊	😊	😊	😊	😊
South Warwickshire	😊	😊	😊	😊	😊	😊	😡	😊	😡
South Western Staffordshire	😊	😊	😊	😊	😊	😊	😊	😊	😊
Staffordshire Moorlands	😊	😊	😊	😊	😊	😊	😊	😊	😊
Telford & Wrekin	😊	😊	😊	😊	😊	😊	😊	😊	😊
Walsall	😊	😊	😊	😊	😊	😊	😊	😊	😊
Wednesbury/ West Bromwich	😊	😊	😊	😊	😊	😊	😊	😊	😊
Wolverhampton	😡	😡	😡	😡	😡	😡	😡	😡	😡
Wyre Forest/ Redditch/South Worcester	😊	😊	😡	😊	😊	😊	😡	😡	😡

Immunization Summary by Upper Tier Authority

	D/T/P at 1 year	Hib at 1 year	Men C at 1 year	D/T/P at 2years	Hib at 2 years	Men C at 2 years	MMR at 2 years	D/T/P (primary & booster) at 5years	MMR (1 st and 2 nd dose) at 5years
Stoke-on-Trent UA	😊	😊	😊	😊	😊	😊	😊	😊	😊
Herefordshire UA	🟡	🟡	🟡	🟡	😊	🟡	🔴	🔴	🔴
Telford & Wrekin	😊	😊	😊	😊	🟡	😊	🟡	😊	😊
Birmingham	🔴	🔴	🔴	🟡	🟡	🟡	😊	🔴	🔴
Coventry	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴
Dudley	😊	😊	😊	😊	😊	😊	🟡	😊	😊
Sandwell	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🟡
Solihull	🔴	🔴	🔴	🟡	🟡	🟡	🟡	🔴	🔴
Walsall	🟡	🟡	🟡	😊	😊	😊	😊	😊	😊
Wolverhampton	🔴	🔴	🔴	🟡	🟡	🟡	🔴	🔴	🔴
Shropshire	😊	😊	😊	😊	😊	😊	🟡	😊	😊
Staffordshire	😊	😊	😊	😊	😊	😊	😊	😊	😊
Warwickshire	😊	😊	😊	😊	😊	😊	🟡	🟡	🟡
Worcester	🟡	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🔴

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APPENDIX 1 : Initial Set of Indicators

Indicator	Possible Source/Link	IN/OUT	Date Started	Frequency of Update	Spatial Coverage	Level of Dis-aggregation	QA/QC
1. Children in unfit dwellings	CHP – North East Public Health Observatory	IN	2001	Annual	England	GOR, LA/District	1. Sum checks 2. Range checks 3. Comparison checks
2. Overcrowding	http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b=276800&c=birmingham&d=13&e=7&g=373272&i=1001x1003x1004&m=0&enc=1&dsFamilyId=155	IN	2001	(Census data)	National	GOR, LA, ward	Extensive quality assurance process
3. Homelessness	http://www.communities.gov.uk/index.asp?id=1156302	IN	1997	Quarterly	England & Wales	GOR	
4. Mortality rate for children (0-19) due to acute respiratory illness	West Midlands Public Health Observatory	OUT	1981	Annual	England & Wales	GOR, LA	1. Duplicate checks 2. Trends (comparison) checks
5. Morbidity rate of children due to acute respiratory illness	West Midlands Public Health Observatory (derived from HES)	OUT	1980s	Annual	England & Wales	GOR, LA	1. Duplicate checks 2. Trends (comparison) checks

Indicator	Possible Source/Link	IN/OUT	Date Started	Frequency of Update	Spatial Coverage	Level of Dis-aggregation	QA/QC
6. Morbidity rate for children due to diarrhoeal illness	West Midlands Public Health Observatory (derived from HES)	OUT	1980s	Annual	England & Wales	GOR, LA	1. Duplicate checks 2. Trends (comparison) checks
7. Infant mortality rate	http://www.statistics.gov.uk/downloads/themes_health/Dh1_36_2003/DH1_2003.pdf West Midlands Public Health Observatory will provide at LA level	IN	1921	Annual	England & Wales	GOR, SHA, LA	1. Sum checks 2. Range checks 3. Comparison checks
8. Incidence of non-traffic related injuries to children requiring hospital admission	http://www.wmpho.org.uk/information/ChildhoodInjuries.pdf#search=%22ONS%20and%20childhood%20injuries%22 West Midlands Public Health Observatory will provide at LA level	IN	1980s	Annual	England and Wales	GOR, LA	
9. Incidence of traffic related physical injuries to children requiring hospital admission	http://www.wmpho.org.uk/information/ChildhoodInjuries.pdf#search=%22ONS%20and%20childhood%20injuries%22 CHP – South West PHO West Midlands Public Health Observatory will provide at LA level	IN	1980s	Annual	England and Wales	GOR, LA	
10. Children mortality from traffic accidents	http://www.statistics.gov.uk/downloads/themes_health/Dh1_36_2003/DH1_2003.pdf CHP – South West PHO	OUT	1993	Annual	England, Scotland, Wales, NI	GOR, LA	1. Sum checks 2. Range checks 3. Comparison checks

Indicator	Possible Source/Link	IN/OUT	Date Started	Frequency of Update	Spatial Coverage	Level of Dis-aggregation	QA/QC
11. Child mortality rates from non-traffic related accidents	http://www.statistics.gov.uk/downloads/themes_health/Dh1_36_2003/DH1_2003.pdf	OUT	1993	Annual	National	GOR, LA	1. Sum checks 2. Range checks 3. Comparison checks
12. Prevalence of children with asthma in age groups 0-4, 5-9, 10-14, 15-19 of total population of children in the respective age group. Prevalence (%) of allergy towards house dust mites, pollens, furry animals or moulds	Discrete local studies http://www.statistics.gov.uk/Children/downloads/asthma.pdf	IN	n/a	n/a	n/a	n/a	n/a
13. Mean annual exposure of children aged 0-4 to atmospheric particulate pollutant	Merged with 14						

Indicator	Possible Source/Link	IN/OUT	Date Started	Frequency of Update	Spatial Coverage	Level of Dis-aggregation	QA/QC
14. Child population-weighted annual mean for PM ₁₀ , NO ₂ , SO ₂ . No. of days exceedences for O ₃ . Child population distribution of exceedence hours of air quality limit values	http://www.airquality.co.uk CHP – East Midlands PHO (combined indicator of PM, NO ₂ , SO ₂ and benzene only)	IN	1985	Annual	England and Wales	Local Authority	QA/AC for AURN sites carried out by NETCEN
15. Exposure to ETS in the home	Health Survey for England 2002	IN But modified	1993	Annual	National	GOR	
16. Schools in Air Quality Management Areas	http://www.airquality.co.uk/archive/laqm/laqm.php	OUT	1997	ongoing	National	Local Authority	QA/AC for AURN sites carried out by NETCEN
17. Percentage of children going to schools located in areas exposed to transport noise above an average of 55dB (A) during school hours		OUT					
18. Noise nuisance data	http://www.defra.gov.uk/environment/statistics/noise/alltables.htm	IN	1984	annual	National	Local Authority	

Indicator	Possible Source/Link	IN/OUT	Date Started	Frequency of Update	Spatial Coverage	Level of Dis-aggregation	QA/QC
19. Access to sports/leisure facilities	http://www.activeplaces.com/Index.asp?Authorise=true	IN		ongoing	National	Postcode	n/a
20. Immunization	http://www.dh.gov.uk/assetRoot/04/02/14/96/04021496.pdf	IN	1966	annual	National	Local Authority	
21. Potential exposure of children to uncontained chemical incidents		IN	2005	annual	England and Wales	Postcode	

APPENDIX 2 : Excluded Indicators with Rationale

1. Schools in Air Quality Management Areas

Definition:
Schools in air quality management areas
Rationale:
Air Quality Management Areas are declared where there is non-compliance with one or more of the standards and objectives in the National Air Quality Strategy. The government states that only areas which breach the standards and objectives must be declared and there is no guidance on the size of the area declared. Many local authorities have declared the entire city or borough when there are only two or three small areas which have poor air quality. The usefulness of this indicator is therefore questionable and it will not be included in the final list.

2. Mortality from Road Traffic Accidents

Definition:
Child mortality due to traffic accidents
Rationale:
This indicator was supposed to measure the death rate among children from road traffic injuries by age groups. WHO has noted that mortality due to road traffic injuries in the WHO European region represents a major public health problem. It has been estimated that 1.2 million deaths from road traffic accidents occurred in the European region in 2002. However, deaths from road traffic injuries have steadily declined during the last years and the numbers are too small at a local authority level to allow the inclusion of this indicator.

3. Mortality from non-Road Traffic Accidents

Definition:
Child mortality due to non-traffic accidents
Rationale:
Injuries due to non-traffic related accidents are the leading cause of death and disability in the European Union. However, as mentioned before the numbers are too small at a local authority level to allow the inclusion of this indicator.

4. Mortality due to Acute Respiratory Diseases

Definition:

Death rate from acute respiratory illness (ICD10 J100-J22) (ages standardised) age 0-19 per 100,000 population.

Rationale:

Acute respiratory illness includes acute upper respiratory tract illness, influenza and other lower tract respiratory illness. Environmental factors such as indoor and outdoor air quality impact on respiratory disease.

Respiratory disease now kills one in five adults in the UK (British Thoracic Society, 2006)⁵². The only countries in Europe with a worse mortality rate from respiratory disease than the UK are Ireland, Malta, Kyrgyzstan, Tajikistan, Kazakhstan, Uzbekistan and the Republic of Moldova .

Panickar *et al.* (2005)¹⁰⁵ concluded that respiratory mortality data could provide a foundation for assessing the impact of future health initiatives such as the introduction of a universal pneumococcal vaccination programme in England and Wales. However, due to the small numbers of death and confidentiality issues it was not possible to include this indicator.

APPENDIX 3 : Gap Indicators

Smoking

There appears to be strong links between smoking and socio-economic status (deprivation) as demonstrated by the analyses for the indicator relating to smoking among those greater than 16 years of age. All the local authorities within the top quintile are among the more deprived communities within the West Midlands, in some cases within England. Given this, there is the need to develop smoke cessations programmes which aim to reduce health inequality and focus mainly on the deprived communities. Nationally, it has also been noted that smoke cessation programmes have reduced the numbers of smokers in the more affluent sections of society but in general has increased health inequality.

Diarrhoeal Illness

This indicator is considered to be important but further work needs to be undertaken to determine which measure will provide a more accurate measure of the rate of diarrhoeal illness among children. Hospital admission rates did not correlate with rates reported through infectious disease notifications and neither correlate with expected distributions.

Access to Sport Facilities

Further work is needed to develop this indicator which could be very useful in reducing obesity and increasing physical activity among children.

APPENDIX 4 : Consultation

Consultees

Children's Parliament
Department for Children, Schools and Families
Department of Health
Environment Agency (West Midlands)
HPA Centre for Radiation, Chemical and Environmental Hazards
HPA Local & Regional Services Divisions
HPA International Research and Development Group
Northern Ireland, Department of Health, Social Services and Public Safety
Public Health Observatories
Scottish Government Departments
Welsh Assembly Government Departments
West Midlands Business Managers
West Midlands Health Protection Units
West Midlands Local Authorities
West Midlands NHS Trusts
West Midlands Primary Care Trusts
West Midlands Strategic Health Authority
WHO European Centre for Environment and Health, Bonn, Germany

APPENDIX 5 : Summarized Consultation Responses

Introduction:

<p>Does the introduction provide a clear rationale for the project?</p> <p>Yes – it clearly outlines the CEHAPE programme and its aim to identify key areas of concerns with regards to environment risks. The overall aim of the project is to improve children’s health through safer environments.</p>
<p>Do you agree that specific indicators for children’s environmental health are appropriate? If so, why?</p> <p>Generally yes but there is some concern that important areas may be missed.</p>
<p>Do you consider that the project is a useful and appropriate method for assessing the level and distribution of children’s environmental health hazards?</p> <p>Generally yes but there is some concern that the project focussed on areas with readily available data</p>
<p>Is the UK setting explained and justified adequately?</p> <p>Generally yes but unsure about how easily the rest of the UK will be able to implement the toolkit</p>
<p>Have the target groups being effectively identified?</p> <p>Yes</p>
<p>Is there anything you would like to add?</p> <p>It was thought that there was the need to more boldly express the benefits of the toolkit in Section 1.6. A respondent also wanted clarification on the reason for increased risk as a result of children “living and playing closer to the ground”</p>

Methodology:

Do you consider the method used for the selection of the indicators appropriate?

Yes as it attempted to utilise best available evidence and ensure relevance

Are the definitions of 'environmental health' and 'child' appropriate?

The definition of environmental health was viewed as appropriate however, although that for child was acceptable different age group are affected differently by certain exposures

Are there any alternative methods that the pilot should have considered?

No alternative methods were suggested

Are the selection criteria for indicators appropriate?

Yes but a respondent queried whether all could be considered "truly" environmental indicators

Are the selected indicators appropriate?

Yes see above

Are there any indicator sets which were not included but which you consider relevant?

No

Is there anything you would like to add?

More quality of life type issues work is supported

Core Indicators:

Does the template allow collation of all relevant information? If not, what would you like included
Yes and if further information is required it could be obtained from other indicator sets

Is the evidence base adequate for each indicator? Please state indicators and further evidence you wish to see included.

One respondent felt there was a broad spectrum within each indicator. Concerns about the following indicators:

1. Access to sports facilities – data included paid facilities therefore it is unlikely that children from deprived backgrounds will have access
2. Estimated prevalence of adult smokers over 16 years (Gap Indicator) – data for smokers under 16 years was desired but not available.
3. Access to green space – inclusion of private gardens is likely to overestimate access for deprived children
4. Physical Activity – 2 hours is less than the evidence based recommended amount per week
5. Chemical Incidents – usefulness questioned

Is the presentation of the results of the analyses clear and appropriate?

Yes – the templates are easy to follow and comparative groups enable straightforward referencing/benchmarking

Are there any other core indicators which you would like to see included and why?

Generally no but the possibility of developing an indicator regarding the role of schools in health education

Is there anything you would like to add?

No

Discussion:

Does the discussion appropriately summarise the project?

Yes it neatly summarises the important points but the access to sports facilities usefulness is again questionable

Do you agree with the recommendations?

Yes but some uncertainty about the recommendations made

Is it clear who will benefit from the document?

Yes but inequalities need to be addressed and multi-agency cross working implemented to realise the benefits

Is there anything you would like to add?

Implementation of actions to address inequalities

Other:

Was the membership of the working group adequate?

Yes but it could have been enhanced by the presence of paediatrician and PCT representation

Are there any relevant consultees who have not been included?

Possibly education sector representative and young people

Is there anything you would like to add?

The wish that the document acts as a catalyst to commission action for improvement in children's health

Suggestions for implementation in other regions welcome

No suggestions