

# ***Park Hill 2008***

## ***Air Quality***

## ***Health Effects of Air Pollution***

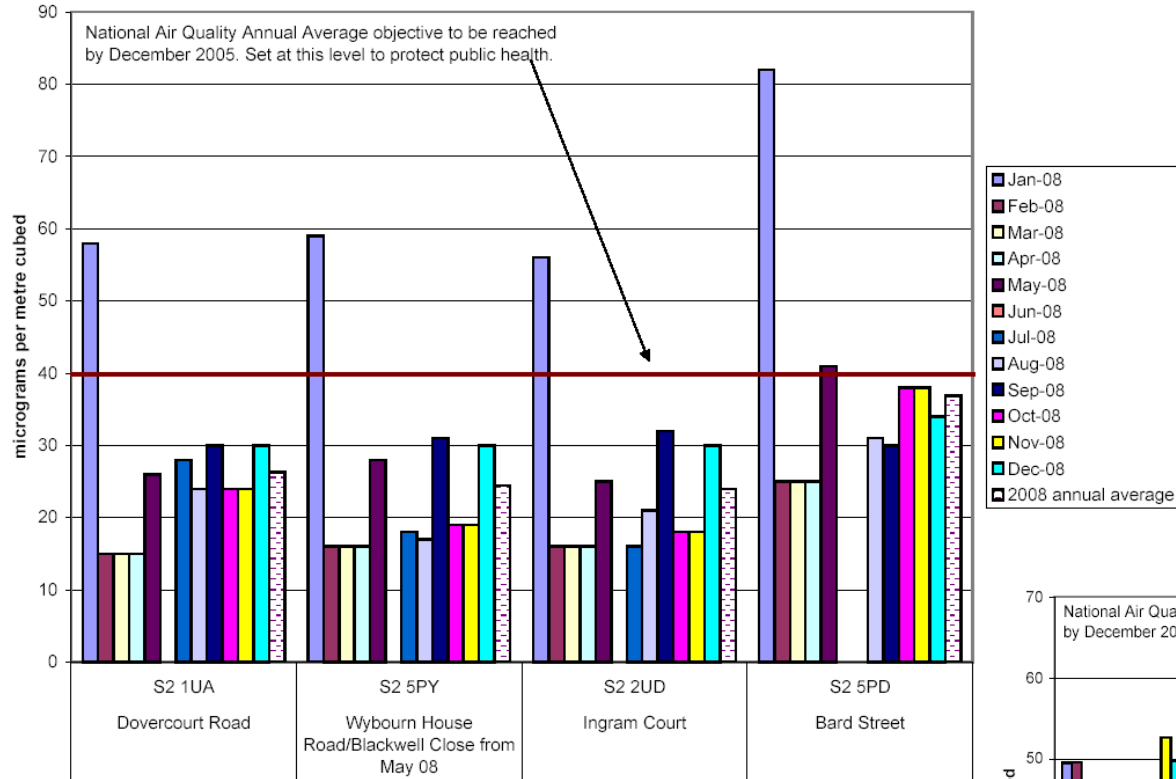
## ***Some Health Trends***

## ***Sheffield Neighbourhoods Information System (SNIS)***

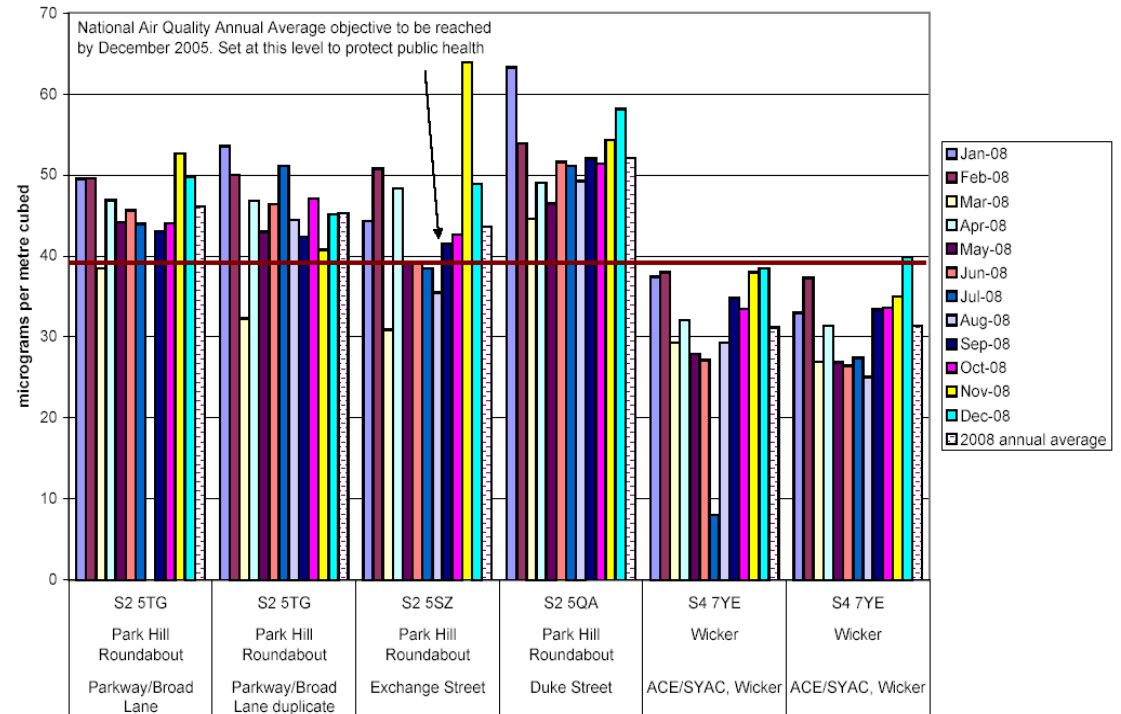


Prepared by  
Barbara Rimmington  
**East End Quality of Life Initiative**  
10 Montgomery Terrace Road  
Sheffield S6 3BU  
Tel. 0114 2859931  
Fax 0114 2787173  
Email [barbara@sheffieldct.co.uk](mailto:barbara@sheffieldct.co.uk)    March 2009

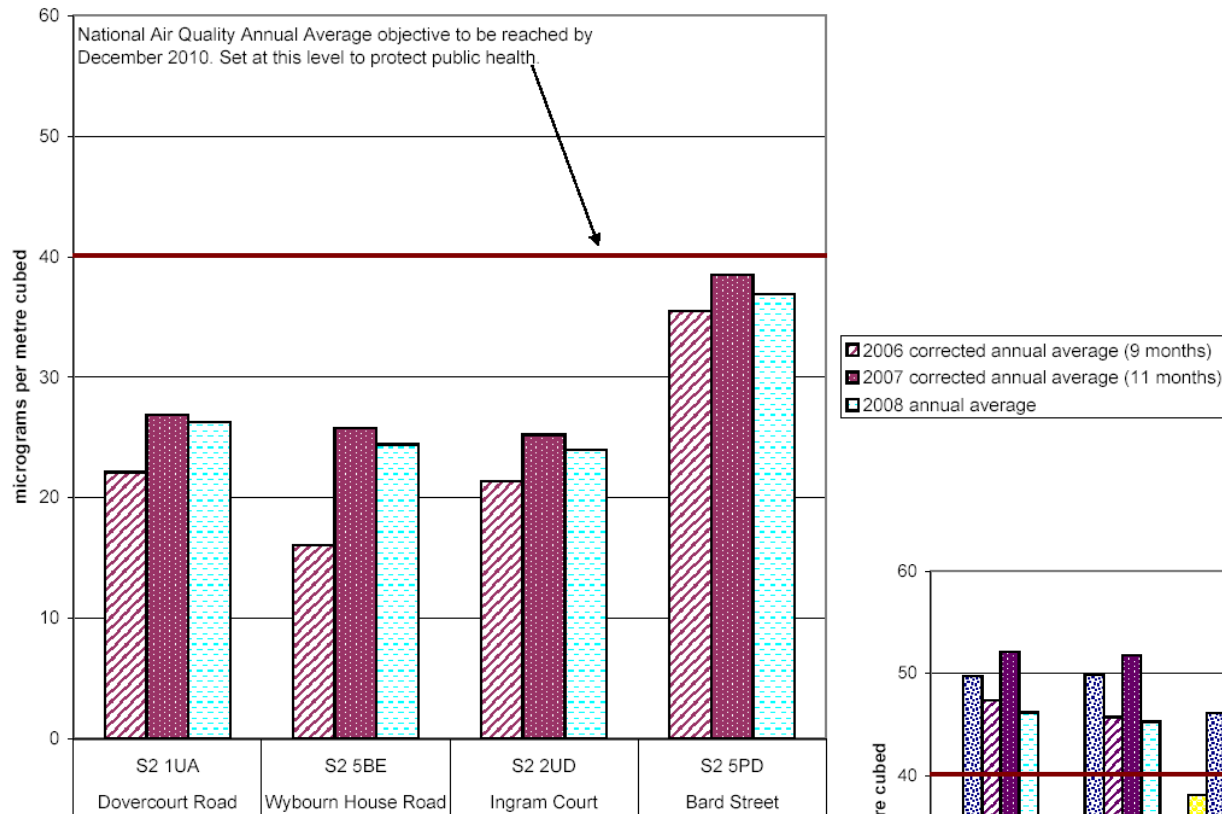
# Community Air Quality Monitoring of Nitrogen Dioxide for 2008



# SCC monitoring in City Centre

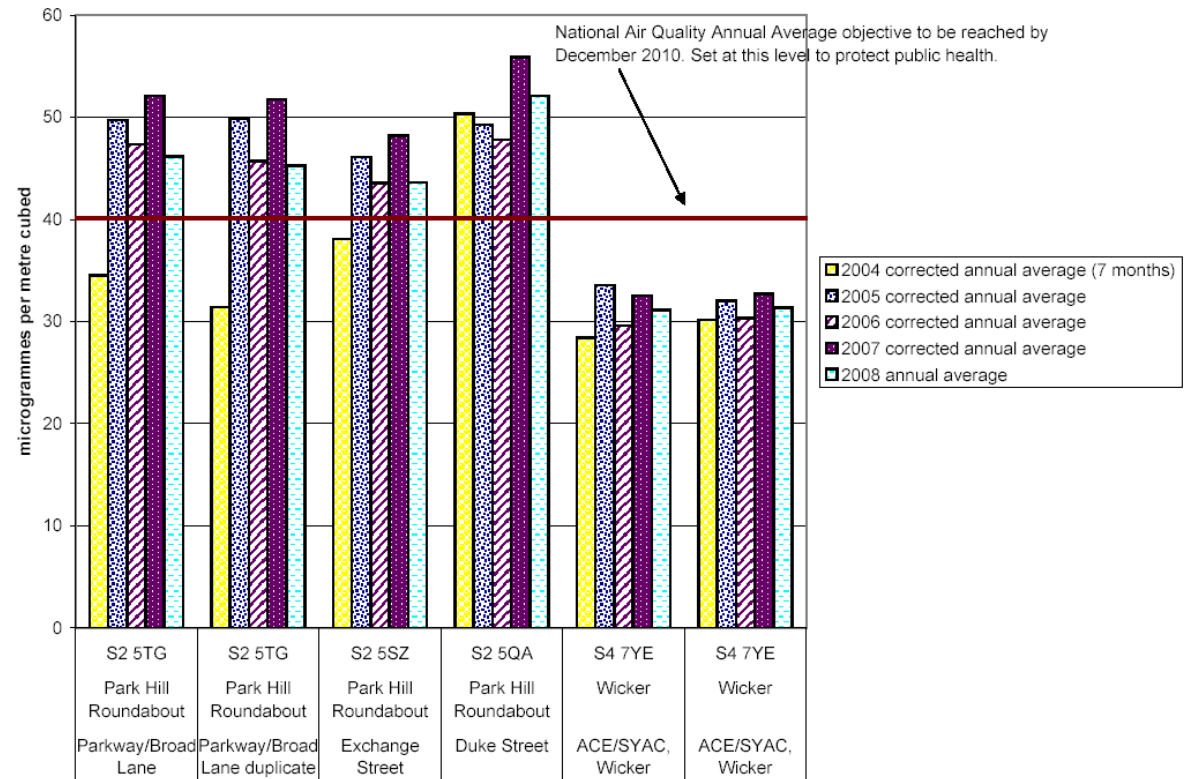


## Community Air Quality Monitoring of Nitrogen Dioxide - Annual Averages



2008ParkHealthAir

## SCC monitoring in City Centre



# Health Effects of Air Pollution

Pollutant	Effects related to short-term exposure	Effects related to long-term exposure
Particulate matter	<ul style="list-style-type: none"> <li>• Lung inflammatory reactions</li> <li>• Respiratory symptoms</li> <li>• Adverse effects on the cardiovascular system</li> <li>• Increase in medication usage</li> <li>• Increase in hospital admissions</li> <li>• Increase in mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in lower respiratory symptoms</li> <li>• Reduction in lung function in children</li> <li>• Increase in chronic obstructive pulmonary disease</li> <li>• Reduction in lung function in adults</li> <li>• Reduction in life expectancy, owing mainly to cardiopulmonary mortality and probably to lung cancer</li> </ul>
Ozone	<ul style="list-style-type: none"> <li>• Adverse effects on pulmonary function</li> <li>• Lung inflammatory reactions</li> <li>• Adverse effects on respiratory symptoms</li> <li>• Increase in medication usage</li> <li>• Increase in hospital admissions</li> <li>• Increase in mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in lung function development</li> </ul>
Nitrogen dioxide (in ambient air, NO <sub>2</sub> serves as an indicator for a complex mixture of mainly traffic-related air pollution)	<ul style="list-style-type: none"> <li>• Effects on pulmonary function, particularly in asthmatics</li> <li>• Increase in airway allergic inflammatory reactions</li> <li>• Increase in hospital admissions</li> <li>• Increase in mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Reduction in lung function</li> <li>• Increased probability of respiratory symptoms</li> </ul>

Source: World Health Organization, June 2004, *Health Aspects of Air Pollution: Results from the WHO project 'Systematic Review of Health Aspects of Air Pollution in Europe.'* p7

# Air Pollution and Noise: their effects on human health and social inclusion - a review of recent literature

## Executive Summary

This review of recent papers looks at the growing body of evidence of how environmental factors, and particularly road-traffic related air pollution, affect health. Some of the most recent studies focus on the effects of small particulates which penetrate to the lungs and their adverse effects on cardiovascular disease, coronary heart disease, and stroke. Other studies have highlighted the disproportionate burden of environmental degradation, particularly air quality and noise, on deprived communities, with consequent impacts on increasing social deprivation.

Children (and the unborn foetus) are especially vulnerable to the effects of air pollution, because their lungs, metabolic and immune systems are still developing, they have higher rates of respiratory infections, and have activity patterns which lead to higher exposure. The effects in childhood and foetal development can include:

- aggravation of asthma
- increased cough and bronchitis
- low birth weight
- infant deaths (due to respiratory and Sudden Infant Death Syndrome)
- pre-term births
- birth defects

leading to effects throughout adult life:

- premature ageing
- higher risk of infection
- susceptibility to tobacco smoke
- susceptibility to occupational exposure.

Air pollution has been associated with a range of health impacts, including:

- aggravating and causing respiratory disease (including asthma, bronchitis, emphysema, etc.)
- increased risk of cardiovascular disease and death
- increased risk of coronary heart disease and death
- increased risk of stroke
- eye disease
- DNA damage.

## Air Pollution and Noise: their effects on human health and social inclusion - a review of recent literature

### Examples of the costs of air pollution from Europe, the UK and Sheffield

<b>European Union</b>	kills 370,000 people per year reduces life expectancy by up to 9 months on average costs between €427 billion and €790 billion per year
<b>United Kingdom</b>	6,500 deaths brought forward (in 2002) 6,400 hospital admissions (in 2002) A 1 mg/m <sup>3</sup> decrease in PM <sub>2.5</sub> would give between 1.5 and 3.5 extra days of life per person NOx damage per tonne emission for 2010 €3,900 (low estimate) PM <sub>2.5</sub> damage per tonne emission for 2010 €37,000 (low estimate) SO <sub>2</sub> damage per tonne emission for 2010 €6,600 (low estimate)
<b>Sheffield</b>	6% coronary heart disease deaths 11% stroke deaths Annual health costs of £48.1m (low estimate) based on: 8,000 tonnes per annum NOx emissions (£20.9m) 1,480 tonnes per annum SO <sub>2</sub> emissions (£6.5m) 1,190 tonnes per annum PM <sub>10</sub> emissions (£20.7m - costs estimated on PM <sub>2.5</sub> being 70% of PM <sub>10</sub> ) Estimated annual cost benefits of introducing a Low Emission Zone between £1.8 million and £11.4 million per year (compared with inner relief road, costing £59m capital costs, bringing annual cost benefits of £0.03m to £0.2m)

## **Air Pollution and Noise: their effects on human health and social inclusion - a review of recent literature**

### **Noise and health**

As well as the adverse effects of air pollution on health, road traffic generates noise which affects health in the following ways:

annoyance

sleep disturbance

quality of sleep

ischaemic heart disease

impaired performance by school children

some evidence to suggest that it may cause low birthweight in babies and psychiatric disorders.

### **Conclusion**

The growing body of evidence would suggest that bolder and more effective measures should be taken to reduce people's exposure to air pollution and noise attributable to road-traffic and thus reduce their risk of disease and mortality due to cardiovascular, respiratory, and other symptoms. The evidence suggests that there is no safe level of exposure to particulate matter, and especially to very small particles (PM<sub>2.5</sub>) which penetrate into the lungs. Many studies highlight the possible under-estimates of the health effects of traffic-related air pollution and noise, due to problems in isolating these from other effects on health.

The most deprived communities experience the worst environmental degradation. The implications for policy therefore would seem to be to target measures to reduce air pollution in deprived areas and highly populated urban areas, where the relatively small individual health benefits can make a big impact because they reach a large population. Concerns about the U.K.'s ability to meet current targets to reduce air pollution, particularly in urban areas, further emphasise the need for reducing motor vehicle traffic but at the same time enhancing alternatives such as walking, cycling, and public transport.

Revised January 2006

## Cardiovascular Disease and Air Pollution



### *Cardiovascular Disease and Air Pollution*

A report by the Committee on the Medical Effects of Air Pollutants

Chairman: Professor JG Ayres

Chairman of the Sub-Group on Cardiovascular Disease and Air Pollution: Professor JG Ayres

February 2006

*“Cardiovascular disease is very common and, as exposure to air pollution, both in the long and short term contributes to initiation and exacerbation of disease, it is likely that even modest reductions in exposure will result in significant health gain”*

The term cardiovascular disease includes all diseases of the heart and blood vessels including stroke.



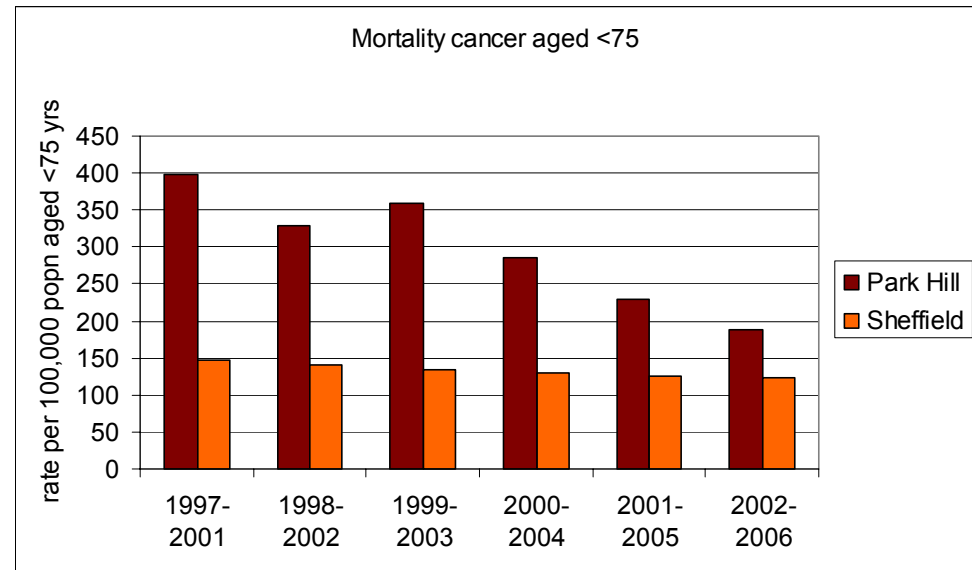
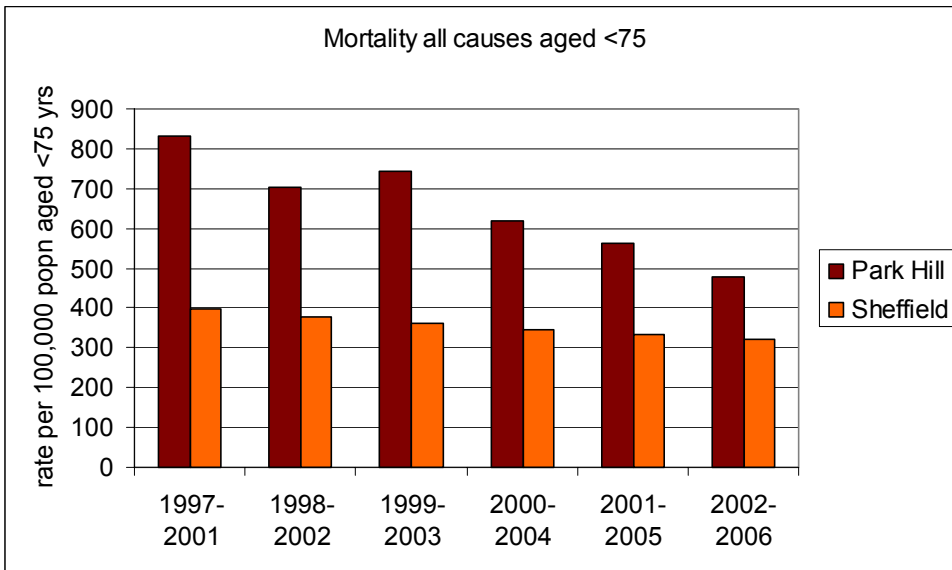
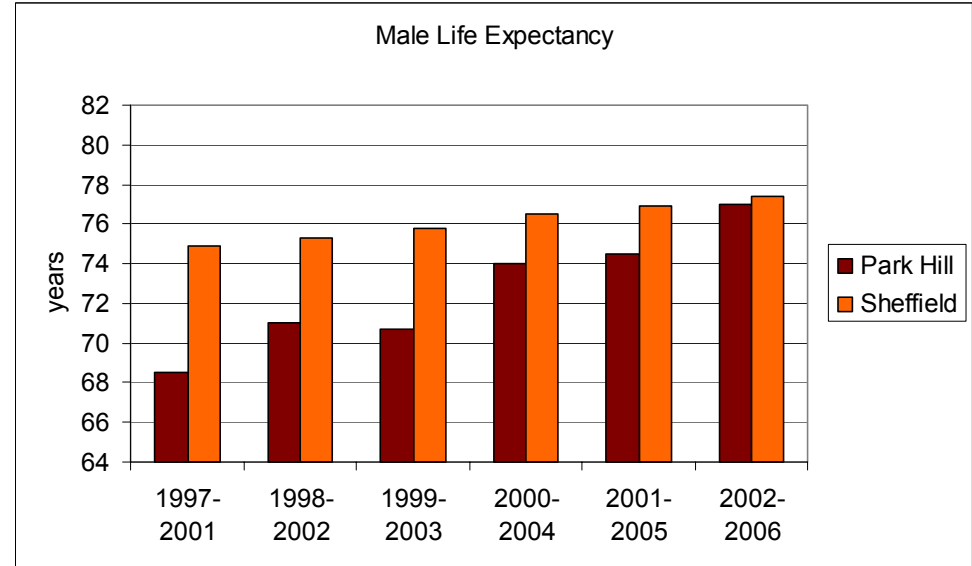
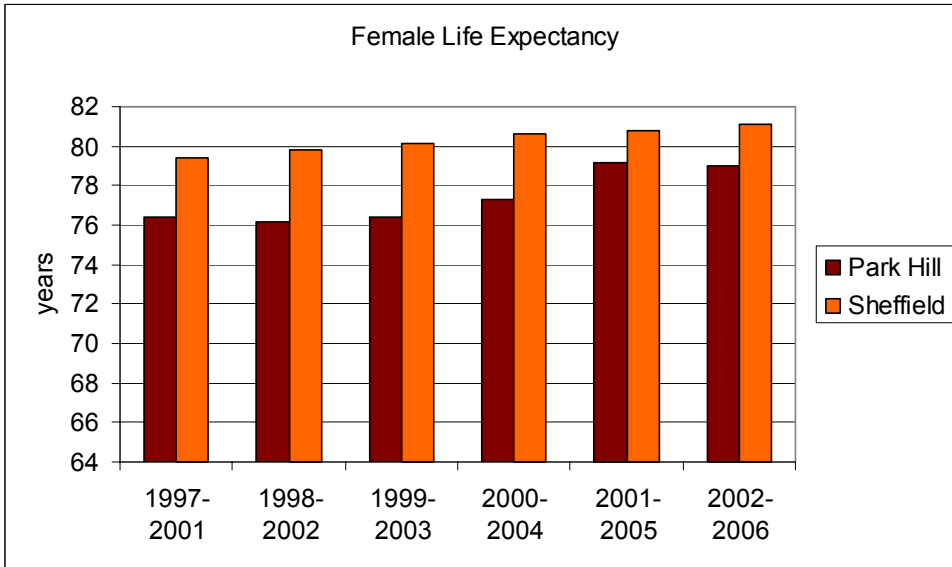
WHO REGIONAL OFFICE FOR EUROPE



*WHO Monograph<sup>1</sup>*  
**The effects of air pollution on children's health and  
development: a review of the evidence**

While recognizing the need for further research, current knowledge about the health effects of air pollution is sufficient for a strong recommendation to reduce children's current exposure to air pollutants, in particular to the pollutants related to traffic. The experts who conducted this review consider that such reductions in levels of air pollution will lead to considerable children's health benefits.

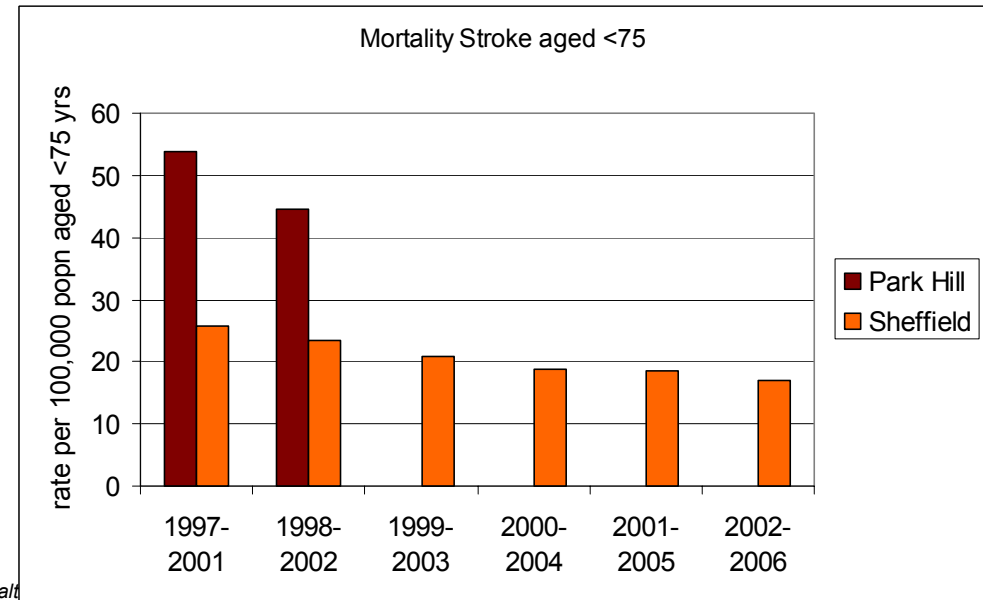
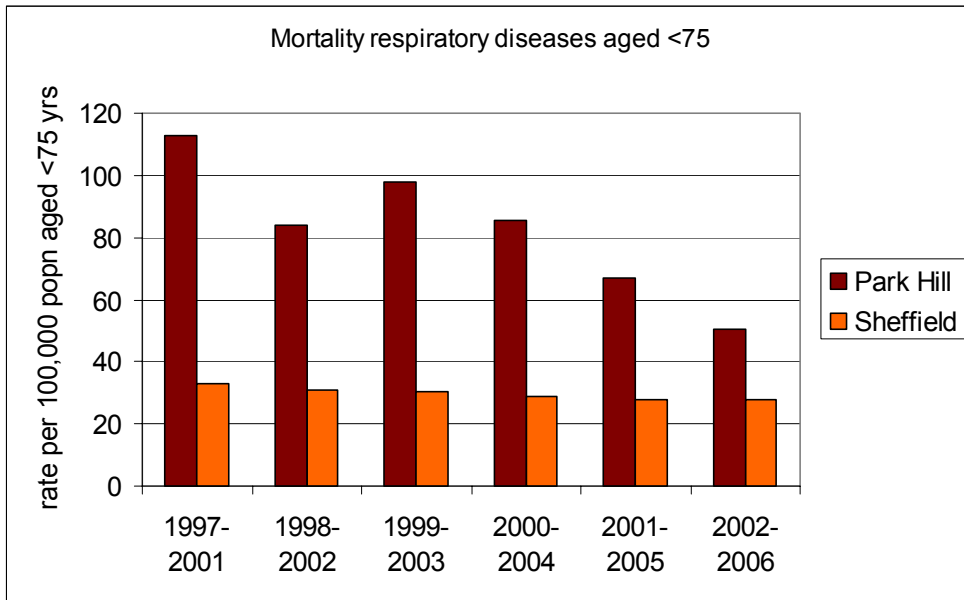
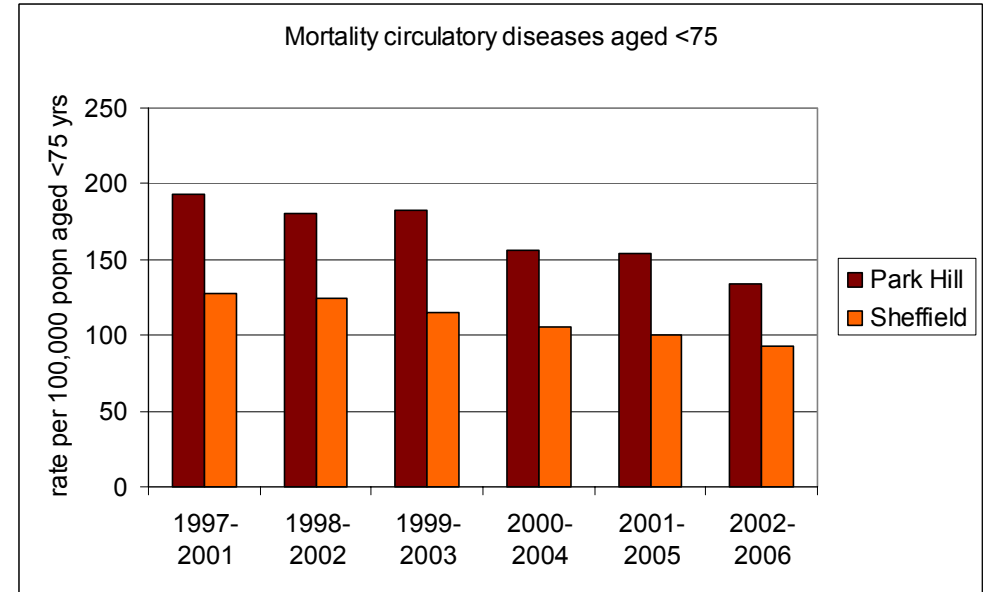
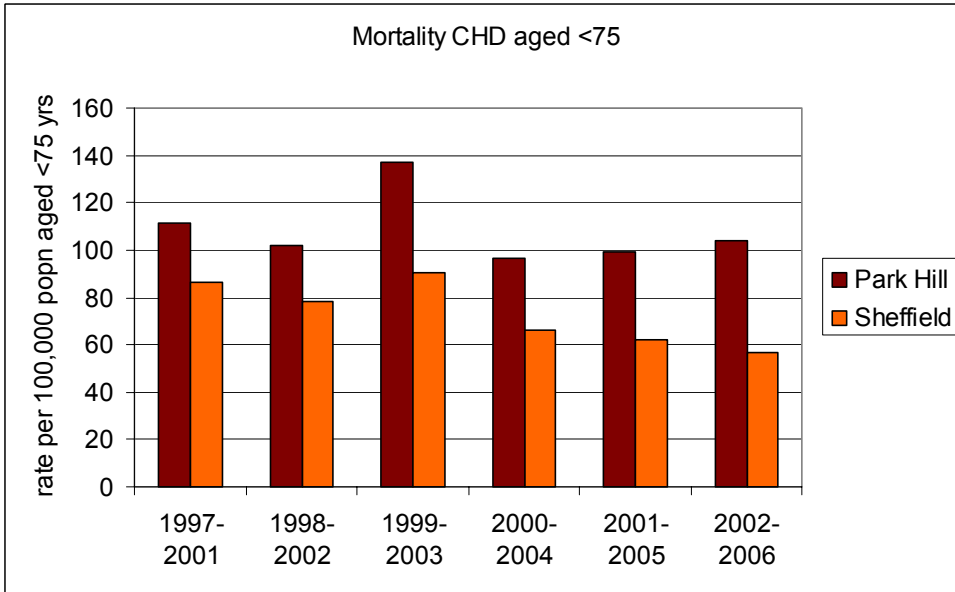
## Life Expectancy and Deaths



Data Source: Public Health Mortality Files, Office for National Statistics, 2002-2006; Population Health Register, 2002-2006.

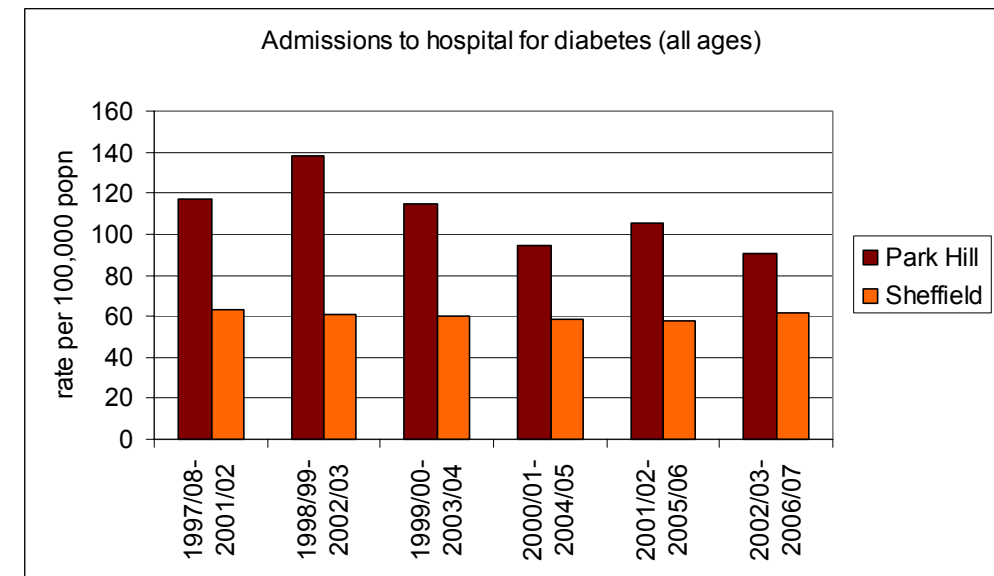
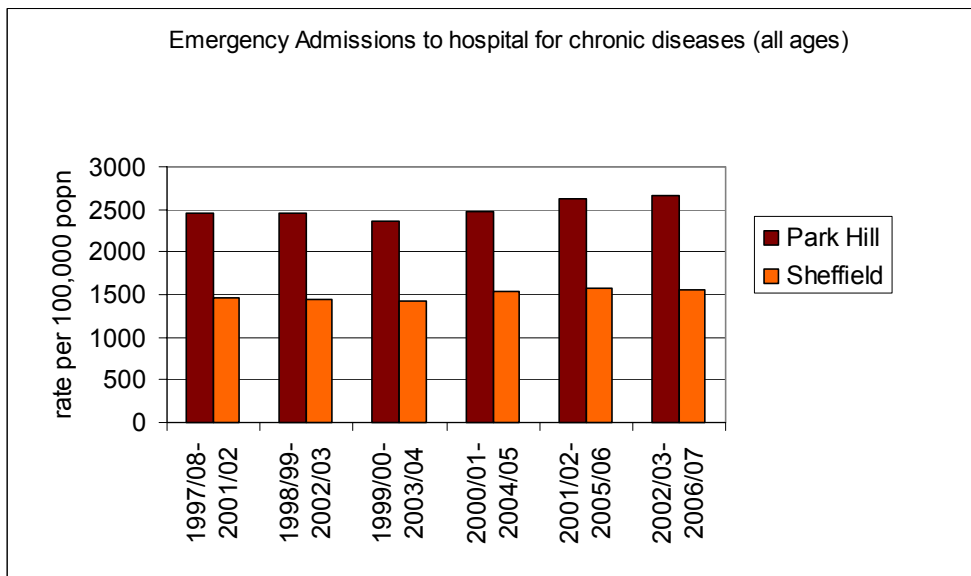
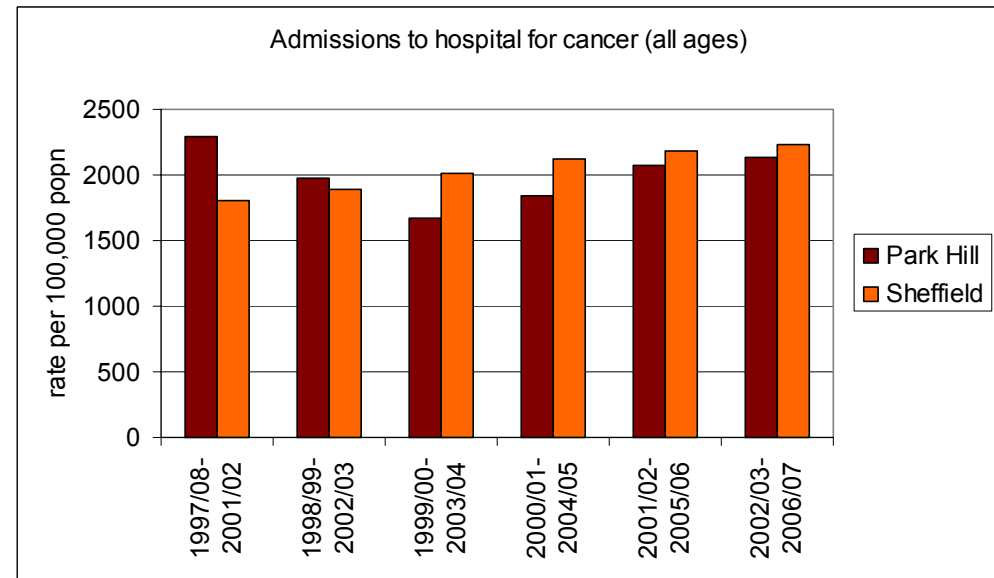
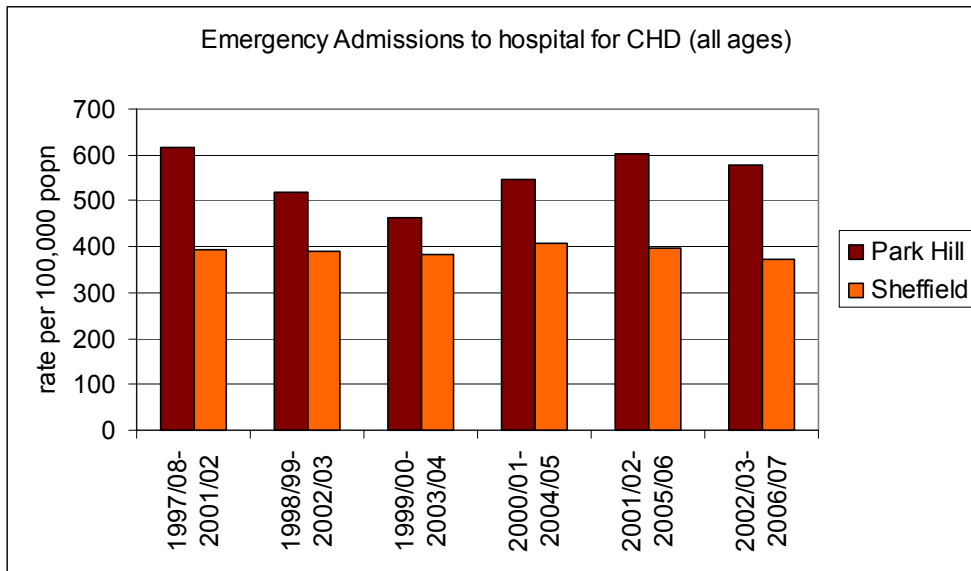
Life Expectancy calculation based on a method calculated by the West Midlands Public Health Observatory.

# Deaths



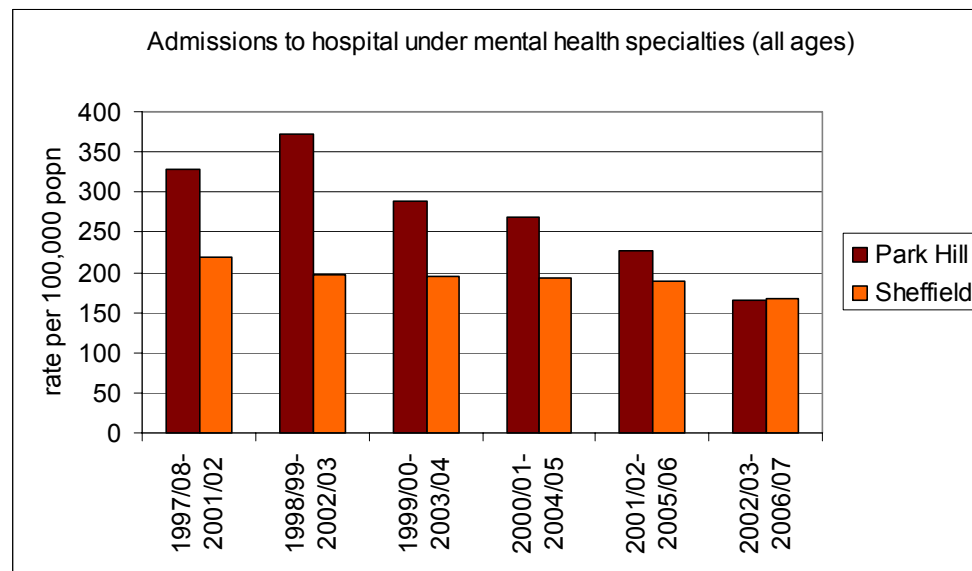
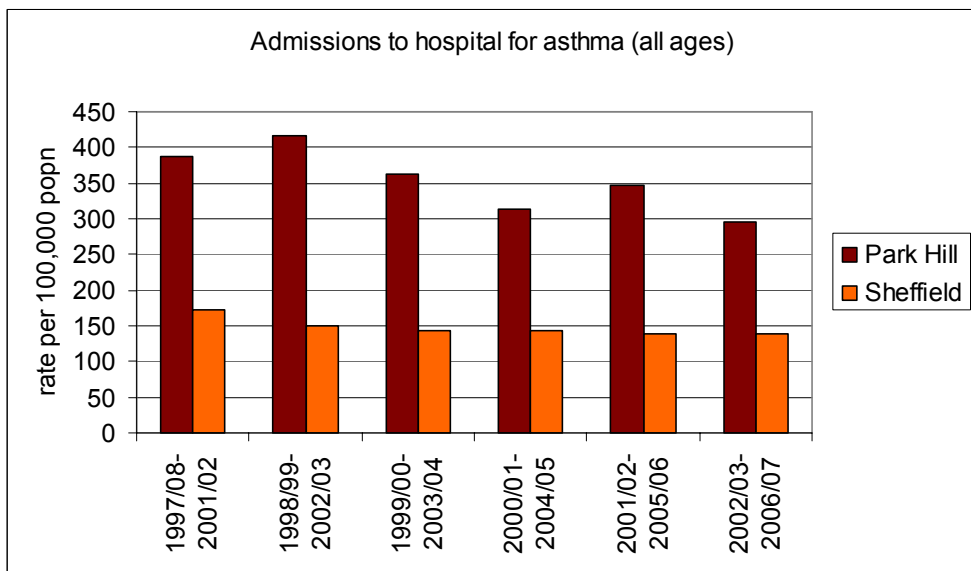
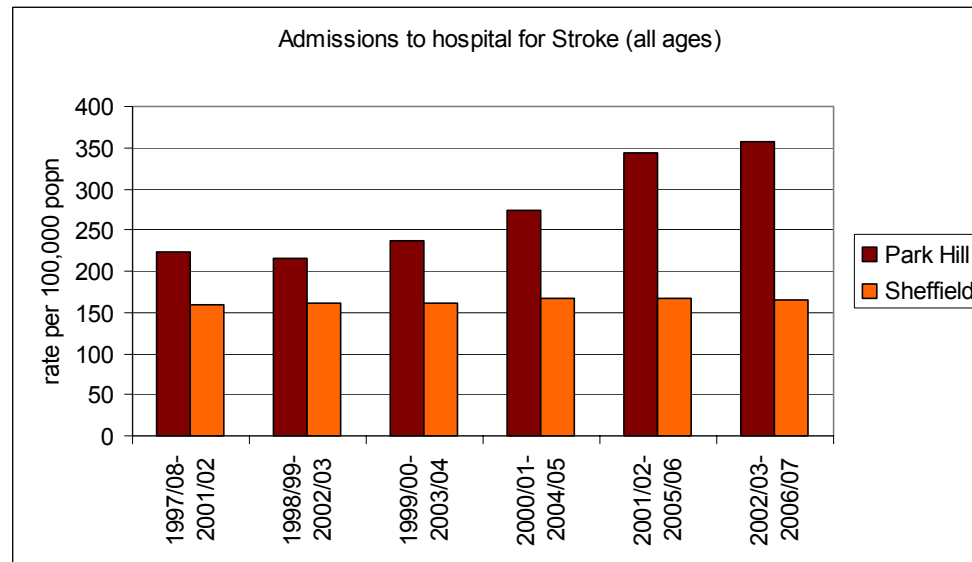
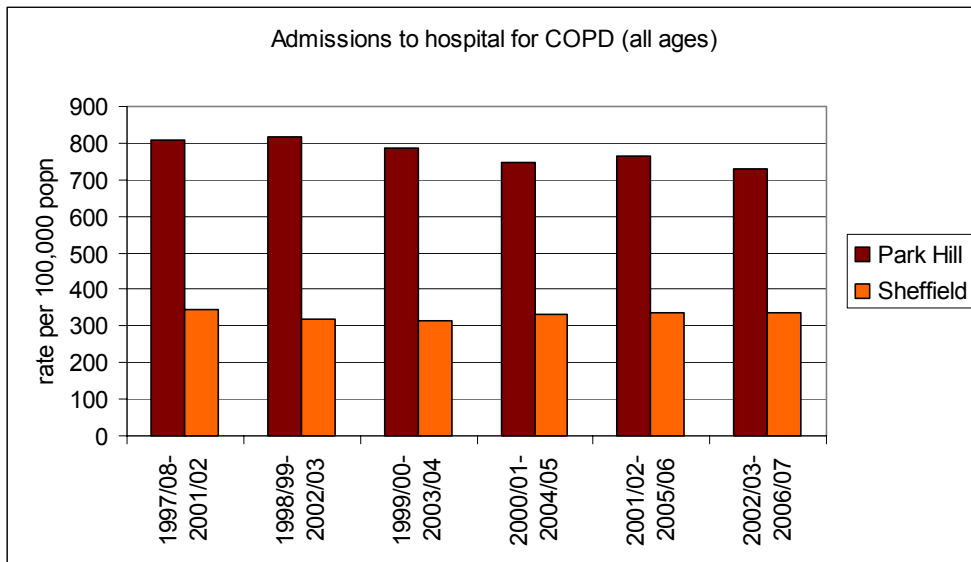
### Hospital Admission Rates - Emergency Admissions / A&E

### Hospital Admission Rates - Other Admissions



Data Source: Inpatient Minimum Data Sets, 2002/03-2006/07; Population Health Register extracts, 2002/03-2006/07.

## Hospital Admission Rates - Other Admissions



Data Source: Inpatient Minimum Data Sets, 2006/07; Population Health Register extracts, 2006/07.

All rates expressed as European Age Standardised rates per 100,000 population except emergency admissions aged <18yrs expressed as rate per 1,000 population.

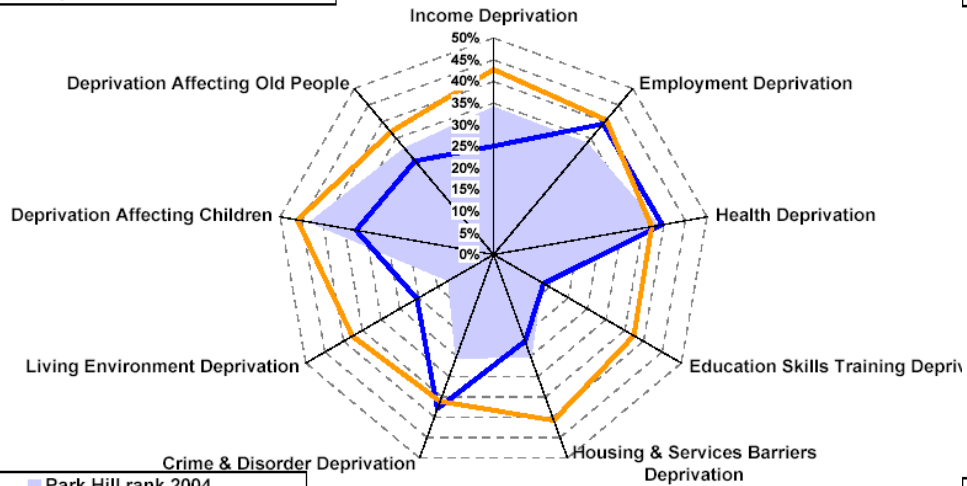


% Ranking within England Areas by IMD Sub Domains

Park Hill

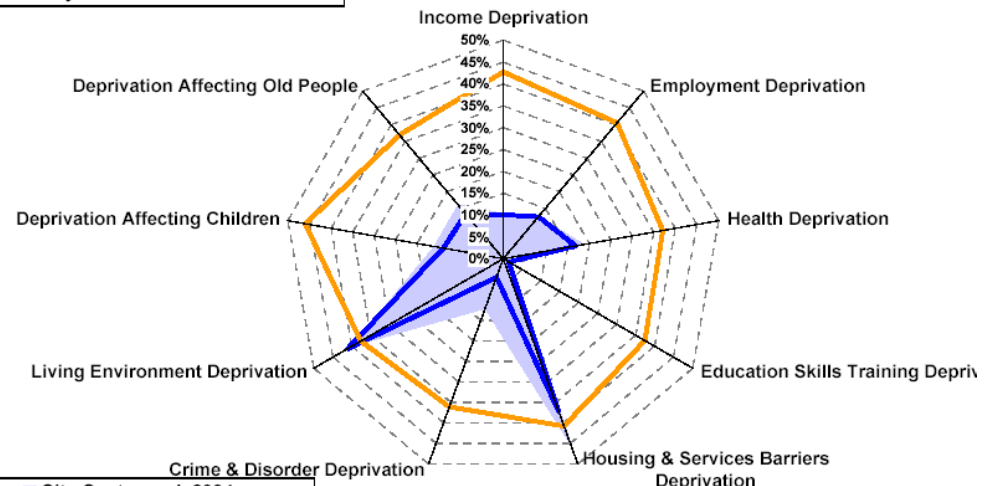
% Ranking within England Areas by IMD Sub Domains

City Centre



■ Park Hill rank 2004  
■ Park Hill rank 2007  
■ Sheffield rank 2007

10%= within most deprived 10% of areas in England



■ City Centre rank 2004  
■ City Centre rank 2007  
■ Sheffield rank 2007

10%= within most deprived 10% of areas in England

Data source: Sheffield City Council Neighbourhoods, 2008

# Asthma

*air pollution*

Could this  
be your  
child ?  
Drive less  
and he/she  
could need  
inhalers  
less

25% of car  
journeys less  
than 2 miles



Think about walking,  
cycling or taking a  
bus / tram for better  
health all-round

**NHS**  
*Sheffield*

**NHS SHEFFIELD**  
PUBLIC HEALTH  
722 PRINCE OF WALES ROAD  
DARNALL  
SHEFFIELD  
S9 4EU



**East End Quality of Life Initiative**

IMPROVING HEALTH AND WORKING FOR SOCIAL AND ENVIRONMENTAL JUSTICE

**East End Quality of Life Initiative**

c/o 10 Montgomery Terrace Road

Sheffield S6 3BU

Tel. 0114 285 9911/9931

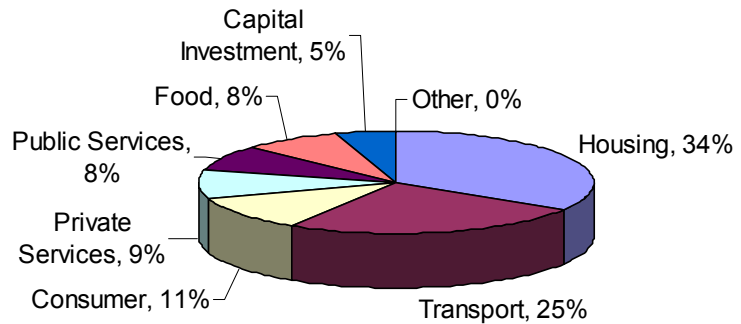


# What can you do to tackle climate change?

With the Stockholm Environment Institute, Sheffield City Council has developed a carbon footprint for the city.

Sheffield's total carbon footprint (based on 2004/05 consumption figures) is 5,798,361 tonnes per year. This compares to the UK's total carbon footprint of 698,568,010 tonnes per year.

## Sheffield's Carbon Footprint



## Why bother about climate change?

Isn't it just about ice sheets and polar bears?

Or does it affect me in Sheffield?



Here are some simple energy saving ideas that you can do to help reduce Sheffield's carbon footprint, and save money:

- Boil only as much water in an electric kettle as you need
- Switch off the lights when you leave a room
- Switch off the TV, computer, etc at the wall; don't leave them on stand-by
- Take a 3-minute shower



More ways to help save the planet and get fit:

- Use public transport more
- Walk and cycle more
- Cut down on car use

**DON'T BE A  
CAR  
POTATO!**

put your best foot forward

