# NE LINCOLNSHIRE JSNA INDICATOR SUMMARY

| TITLE: | FRACTION OF MORTALITY ATTRIBUTABLE TO PARTICULATE AIR POLLUTION |
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| SUBTITLE: | 3.1 Fraction of annual all-cause adult mortality attributable to long-term exposure to current levels of anthropogenic particulate air pollution (measured as fine particulate matter, $PM_{2.5}$*) |
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| Domain: | Domain 3: Health protection |
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| Frequency of Availability: | Annually |
|---|---|

| Time Period Of Data Analysis: | 2010 - 2012 |
|---|---|

**AVAILABLE COMPARISONS**

| TYPE | AVAILABLE |
|---|---|
| National, Regional or Peer Group | *Yes* |
| Electoral Ward / NELCCG Practice | *No* |
| Neighbourhood | *No* |
| Socioeconomic Differences | *No* |
| Targets, Trends & Projections | *No* |

## KEY POINTS

Between 2010 and 2011 the fraction of annual all-cause adult mortality attributable to long – term exposure to levels of anthropogenic particulate air pollution decreased by 0.6% from 5.6% to 5% but then remained at that level for 2012. The 2012 rate of 5 for North East Lincolnshire is 0.1 higher than the average for the Yorkshire and Humber region and 0.1 lower than the average for England. National and regional levels show a three year downward trend.

## DESCRIPTION

Poor air quality is a significant public health issue. The burden of particulate air pollution in the UK was estimated to be equivalent to nearly 29,000 deaths in 2008 at typical ages equating to a loss of population attributable to 340,000 life years.

Inclusion of this indicator in the Public Health Outcomes Framework will enable Directors of Public Health to prioritise action on air quality in their local area to help reduce the health burden from air pollution.

Airborne particles comprise an anthropogenic, (caused or produced by humans), component and a natural component. The intention of this measure is to estimate the mortality burden associated with long-term exposure to anthropogenic particulate air pollution at current levels, expressed as the percentage of annual deaths from all causes in those aged 30+. Concentrations of anthropogenic, rather than total air pollution are used as the basis for this indicator, as burden estimates based on total air pollution might give a misleading impression of the scale of the potential influence of policy interventions.[1]

## Calculation

An increase of 10 µg/m$^3$ in the population-weighted annual average background concentration of **fine particulate matter** * is assumed to increase all-cause mortality rates by a unit relative risk (RR) factor of 1.06. The **modelled, population-weighted annual average anthropogenic background fine particulate matter concentration (α)**, RR is calculated as:

$$(\mathbf{1.06}) \times (\boldsymbol{\alpha}/\mathbf{10})$$

The fraction of deaths attributable to anthropogenic air pollution is expressed as a percentage, calculated as:

$$\mathbf{100} \times (\mathbf{RR} - \mathbf{1})/\mathbf{RR}$$

**Fine particulate matter is also known as $PM_{2.5}$ means the mass (in micrograms) per cubic metre of air of particles with an aerodynamic diameter generally less than 2.5 micrometres.*

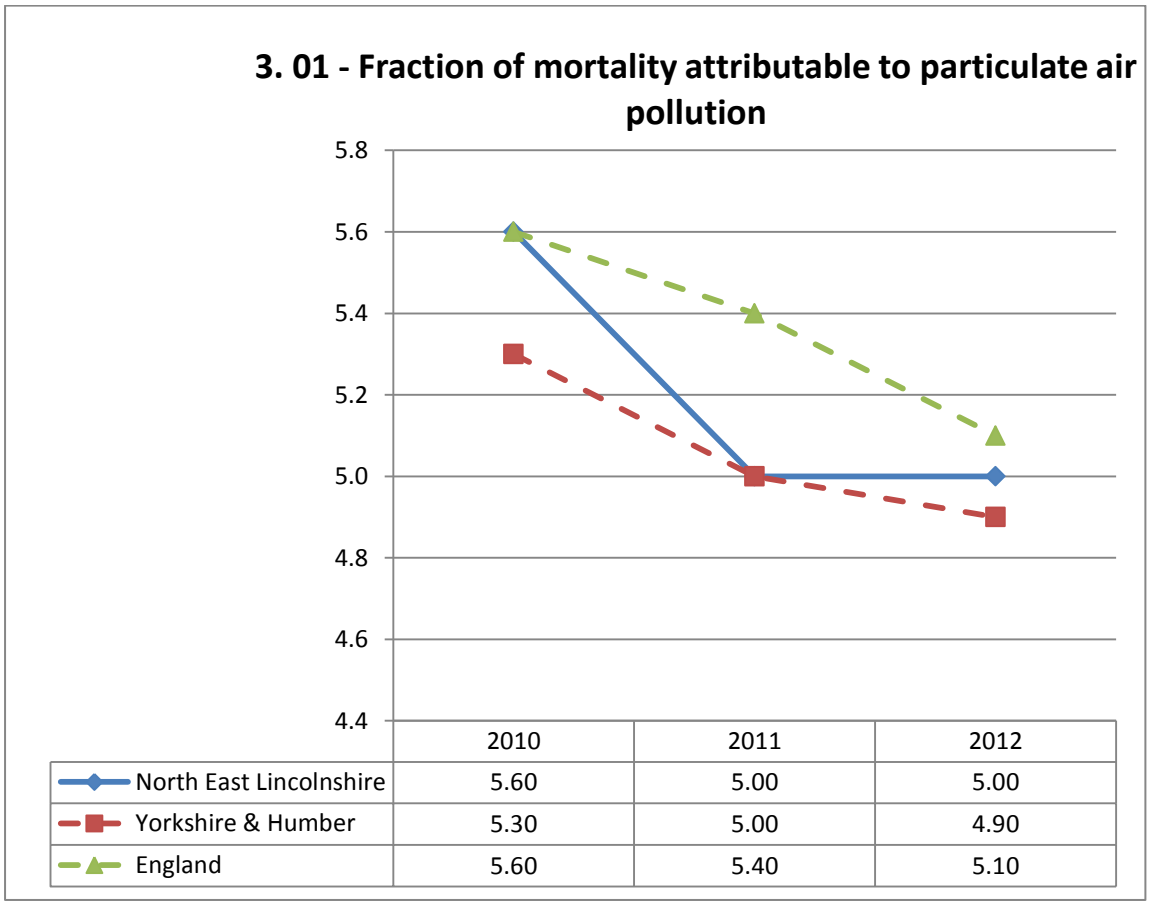
## NATIONAL, REGIONAL OR PEER GROUP

Figure 1 compares the all-cause adult mortality rates attributable to long-term exposure to current levels of anthropogenic particulate air pollution for North East Lincolnshire against the Yorkshire and Humber region and England.

National and regional levels show a three year downward trend. Between 2010 and 2011 rates decreased by 0.6 from 5.6 to 5 but then remained at that level for 2012. The 2012 rate of 5 for North East Lincolnshire is 0.1 higher than the average for the Yorkshire and Humber region and 0.1 lower than the England average.

[1] Source: Committee on the Medical Effects of Air Pollutants (COMEAP), "The mortality effects of long-term exposure to particulate air pollution in the UK", 2010

Figure 1 Year on year rate of all-cause adult mortality attributable to long-term exposure to air pollution, by local/unitary authority and country: 2010-2012




| | 2010 | 2011 | 2012 |
|---|---|---|---|
| North East Lincolnshire | 5.60 | 5.00 | 5.00 |
| Yorkshire & Humber | 5.30 | 5.00 | 4.90 |
| England | 5.60 | 5.40 | 5.10 |

Source: Public Health England 2015

3.1 or 3.01 ?

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| **Public Data Sources:** | Public Health England<br>http://www.phoutcomes.info/<br><br>*http://uk-air.defra.gov.uk/data/pcm-data* |