

Table 1: Estimated fraction of mortality attributable to particulate air pollution in Northamptonshire for people aged over 25 years (2010)⁷.

	Percentage mortality attributable to PM _{2.5}	Attributable Deaths aged 25+	Associated Life-Years lost
England	5.6%	25,002	264,749
Northamptonshire	5.7%	323	3,513
Corby	5.6%	29	330
Daventry	5.5%	33	349
East Northamptonshire	5.5%	42	390
Kettering	5.8%	47	493
Northampton	6.1%	102	1168
South Northamptonshire	5.4%	34	384
Wellingborough	5.9%	36	400

4.6. Premature death is the ultimate health impact associated with air pollution, but poor air quality particularly affects people with pre-existing respiratory and cardiac problems. It can be seen from Table 2 and 3 that the number of people affected by asthma and COPD in Northampton is higher than for England as a whole. These figures give an indication of the levels of ill health and the size of the 'high risk' population that will benefit most from improvements in air quality in the Borough.

Table 2: Rates of Prevalence for Asthma 2012/13⁸

	% Population with Asthma	Number of People with Asthma
Northampton	6.12%	13,800
England	5.9%	3,127,590

⁸ Public Health Northampton

Table 3: Mortality rates for COPD Northampton, East Midlands and England 2010⁹

	All Cause Mortality (per 100,000)	COPD Mortality (per 100,000)
Northampton	589	29
East Midlands	545	24
England	538	25

4.7. In addition to the more predictable health impacts from exposure to air pollution such as those linked to respiratory and cardiac function, studies also suggest associations with other adverse health outcomes, including strokes¹⁰, which increase the risk of vascular dementia, low birth-weight babies¹¹ and cognitive development in schoolchildren¹².

4.8 The evidence suggests there is a close link between air pollution and areas of high deprivation. Individuals living in areas of high deprivation often live in accommodation close to roads that have high levels of emissions. The Environment Agency estimates that people living in the most deprived areas have over five times the exposure to air pollutants as individuals living in the least deprived areas (Environment Agency, 2003). Individuals in more deprived areas have poorer health in general, so they suffer more adverse health effects than people experiencing the same level of emissions exposure in less deprived areas (BMA, 2012).

The proportion of children living in high traffic density areas has been found to increase with decreasing median family income for all ethnicities except white (Gunier, 2003). Minority children are about three times more likely to live in high traffic areas compared to white children. Therefore minority children have a higher potential of exposure to vehicle emissions, and this is of particular concern considering the previously discussed vulnerability of children to air pollution and emissions. Figure 3 shows the spatial distribution of deprivation in Northampton.

⁹ NHS Information Centre for Health and Social Care

¹⁰ Short term exposure to air pollution and stroke: systematic review and meta-analysis, *BMJ* March 2015; 350:h1295

¹¹ Maternal Exposure to Particulate Air Pollution and Term Birth Weight: A Multi-Country Evaluation of Effect and Heterogeneity, *Environmental Health Perspectives*, (March 2013)

¹² Association between Traffic-Related Air Pollution in Schools and Cognitive Development in Primary School Children: A Prospective Cohort Study, *PLOS Medicine* (March 2015)