

12 October 2015

## Mayoral candidates must address air pollution and inequalities killing Londoners

‘Clean Air in London’ (CAL) commissioned the Office for National Statistics (ONS) to update for the first time its ranking of the top 10 death categories for every borough in London for every year between 2001 and 2014 inclusive. The ONS produced the first ever such ranking for CAL in January 2013

Mayoral candidates are urged to consider separately ‘exposures’, ‘health impacts’ and ‘outcomes’. Prevention is better than cure and protection is not just about treating the unwell. Huge inequalities exist between boroughs and within them

Air pollution is one of the exposures causing four of the top five male death outcomes and four of the top six female death outcomes in London i.e. Ischaemic heart diseases; Malignant neoplasm of trachea, bronchus and lung; Chronic lower respiratory diseases; and Cerebrovascular diseases. Air pollution has also been linked to slower improvement in cognitive development in children and cognitive decline in older people

CAL encourages Londoners, Health and Wellbeing Boards, local authorities, Clinical Commissioning Groups and others to consider the data and adjust their priorities accordingly

At its simplest, in public health terms, ‘invisible’ air pollution is where smoking was 30 years ago in terms of the scale and certainty of the risks and the lack of public understanding of them

Clean Air in London (CAL) commissioned the Office for National Statistics (ONS) to update its ranking of the top 10 death categories in England and Wales, Greater London and each London borough for each year between 2001 and 2014 inclusive.

For each category, area and year the ONS has provided:

- number of deaths defined using the International Classification of Diseases <sup>Note 3</sup>;
- top 10 ranking of age standardised death rate per 100,000 population (standardised to the European Standard Population) (ASR) which allows comparison between populations which may contain different proportions of people of different ages <sup>Note 3</sup>; and
- three year rolling averages from 2001-2003 to 2012-2014 inclusive to show underlying trends.

Note 2 shows the top 10 rankings for males and females in London in 2014. The City of London is included with Hackney because its population is small.

CAL believes this information has only once before been produced by the ONS which was also for CAL in 2013. CAL is therefore again publishing the tables received from the ONS with this media release and sending them to the Mayor and Mayoral candidates with a ‘call to action’.

## Key findings

The ONS has provided a wealth of information which represents an official, high quality and consistent ranking of death categories in every London borough and for London as a whole for each of the last 14 years.

When considering the data it is essential to understand that exposure categories (e.g. air pollution, alcohol, obesity and smoking) cause health impacts (e.g. hardening and thickening of the arteries) which lead to death categories (e.g. heart attacks, strokes and lung cancer). In other words, **exposures** cause **impacts** and then **outcomes**. The ONS has provided ‘outcome’ data only.

Key findings include:

- i. top six male death categories in **London** in 2014 were: 1. Ischaemic heart diseases; 2. Dementia and Alzheimer’s disease; 3. Malignant neoplasm of trachea, bronchus and lung; 4. Chronic lower respiratory diseases; 5. Cerebrovascular diseases; and 6. Influenza and pneumonia;
- ii. top six female death categories in **London** in 2014 were: 1. Dementia and Alzheimer’s disease; 2. Ischaemic heart diseases; 3. Cerebrovascular diseases; 4. Influenza and pneumonia; 5. Chronic lower respiratory diseases; and 6. Malignant neoplasm of trachea, bronchus and lung;
- iii. air pollution is one of the exposure categories known to cause four of the top five male death categories and four of the top six female death categories. Air pollution has also been linked to slower improvement in cognitive development in children and cognitive decline in older people e.g. Dementia and Alzheimer’s disease. At a **borough, London** or **national** level, no one cause of death will be responsible for all the deaths in a death category or even most of them;
- iv. why are there such large changes within the three-year rolling ASR for **London** between 2001-2003 and 2012-2014?:

Male	2001-2003	2012-2014
1. Ischaemic heart diseases	304.7	162.2
2. Malignant neoplasm of trachea, bronchus and lung	97.6	73.5
3. Dementia and Alzheimer’s disease	29.3	72.7
4. Chronic lower respiratory diseases	87.7	68.8
5. Cerebrovascular diseases	127.8	65.3
6. Influenza and pneumonia	112.5	61.4

Female	2001-2003	2012-2014
1. Dementia and Alzheimer's disease	38.0	82.3
2. Ischaemic heart diseases	156.9	77.5
3. Cerebrovascular diseases	113.2	55.5
4. Influenza and pneumonia	89.5	46.8
5. Chronic lower respiratory diseases	46.5	46.2
6. Malignant neoplasm of trachea, bronchus and lung	45.6	45.4

**Please note that the increase in ASR for Dementia and Alzheimer's disease may be attributable to: an underlying increase; better diagnosis; and/or the statistical category being broadened in 2010/2011 to include more sub-categories.**

- v. there are also important differences between London and England. For example, for males in the three year rolling period 2012-2014: why do more males die of 'Malignant neoplasm of trachea, bronchus and lung' in London than England (even though smoking rates are lower in London?); and why is 'Heart failure and complications and ill-defined heart disease' in the top 10 ranking for London in 2012-2014 but not 'Malignant neoplasm of the oesophagus'? For example, why were females in London in the three year rolling period 2012-2014 more likely to die of 'Influenza and pneumonia' than in England and Wales?
- vi. why did the total number of deaths in England and Wales fall between 2001 and 2014? Why are so few deaths reported in London?

All the underlying data are being published as part of this investigation.

## Quotes

Simon Birkett, Founder and Director of Clean Air in London, said: "It is astonishing the Government still does not publish this information.

"How long Londoners live for should not be determined by where they live. Useful data like this is part of a range of information that public health specialists are trained to understand and use to tackle health inequalities as well as improve and protect people's health. Local communities need to be confident that everything is being done to help people live longer, healthier lives. That's why we need the right data in the hands of public health teams in councils across England, working closely with partners like clinical commissioning groups.

"Clean Air in London encourages Londoners, Health and Wellbeing Boards, local authorities, Clinical Commissioning Groups and others to consider the data and adjust their priorities accordingly. Clean Air in London thanks the ONS for providing this valuable data.

"In London and across Europe, air pollution is killing more than 10 times the number of people dying from road traffic accidents. The known health effects of air pollution have rocketed in recent years with the World Health Organisation classifying outdoor air pollution as carcinogenic to humans in October 2013 as it did smoking in February 1985. At its simplest, in public health terms,

‘invisible’ air pollution is where smoking was 30 years ago in terms of the scale and certainty of the risks and the lack of public understanding of them.

“CAL urges the Mayoral candidates to consider separately exposures, health impacts and outcomes and seek specialist technical advice where necessary. Air pollution, alcoholism, obesity and smoking cause serious health impacts which may often result in death. Prevention is better than cure and protection is not just about treating the unwell.

“In the 20<sup>th</sup> Century, 25 of the 30 year gain in United States life expectancy was attributable to advances in public health not medical treatment.

“CAL hopes that others will map and publicise the detailed, London and borough by borough, data.”

## Notes

### 1. CAL is publishing summaries of the new data here

#### CAL summaries

[SEE ATTACHMENTS ON WEBSITE]

#### Office of National Statistics data

The ONS data, including borough by borough splits, in two excel spreadsheets, can be found on the ONS website here (dated 12 October 2015):

<http://www.ons.gov.uk/ons/about-ons/business-transparency/freedom-of-information/what-can-i-request/published-ad-hoc-data/health/october-2015/index.html?translation-component=&calling-id=77-6854-4&currLang=English&format=normal>

### 2. Top 10 death categories in Greater London in 2014

#### Male

1. Ischaemic heart diseases e.g. heart attacks
2. Dementia and Alzheimer’s disease
3. Malignant neoplasm of trachea, bronchus and lung e.g. lung cancer
4. Chronic lower respiratory diseases
5. Cerebrovascular diseases e.g. strokes
6. Influenza and pneumonia
7. Malignant neoplasm of prostate
8. Malignant neoplasm of colon, sigmoid, rectum and anus e.g. bowel cancer
9. Malignant neoplasm of lymphoid, haematopoietic and related tissue e.g. Hodgkin’s Disease and leukaemia
10. Heart failure and complications and ill-defined heart disease

## Female

1. Dementia and Alzheimer's disease
2. Ischaemic heart diseases
3. Cerebrovascular diseases
4. Influenza and pneumonia
5. Chronic lower respiratory diseases
6. Malignant neoplasm of trachea, bronchus and lung
7. Malignant neoplasm of breast
8. Heart failure and complications and ill-defined heart disease
9. Malignant neoplasm of colon, sigmoid, rectum and anus
10. Malignant neoplasm of lymphoid, haematopoietic and related tissue e.g. Hodgkin's Disease and leukaemia

### 3. Definitions used by the Office for National Statistics

The ONS ranked the death categories for CAL by the 'age standardised rate' of deaths in: England and Wales; Greater London; and each London borough between 2001 and 2014 inclusive.

The ranks for all of the years are based on the age-standardised rates for leading categories of death (ASR). These concern the underlying category of death. In the data, each leading category can contain a number of separate ICD-10 codes (i.e. the majority of the time, the leading categories of death reflect a number of categories or sub-categories). The definitions can be found via the following link at the end of this document (Annex A):

[www.ons.gov.uk/ons/rel/hsq/health-statistics-quarterly/no--28--winter-2005/leading-causes-of-death-in-england-and-wales---how-should-we-group-causes-.pdf](http://www.ons.gov.uk/ons/rel/hsq/health-statistics-quarterly/no--28--winter-2005/leading-causes-of-death-in-england-and-wales---how-should-we-group-causes-.pdf)

Further details on the specific ICD-10 codes contained within the definition of a leading category, can be found via the following link:

<http://apps.who.int/classifications/icd10/browse/2010/en>

Information on coding changes that were implemented by the ONS in 2011 can be found here. The coding changes reflected the use of more recent software released by the World Health Organisation:

<http://www.ons.gov.uk/ons/rel/subnational-health3/results-of-the-icd-10-v2010-bridge-coding-study--england-and-wales--2009/2009/index.html>

More specific information on the dementia figures can be found under point V on page 4.

The above changes have impacted on some categories of death for 2011 and 2012. A change in coding rules, applied by ONS to select the underlying category of death from all the causes listed on the death certificate, resulted in some categories being more or less likely to be selected as the

underlying category. This change is likely to explain, at least partly, the increase in deaths from Alzheimer's disease and dementia observed between 2010 and 2011.

CAL understands that there have been some other software changes since then. This link provides information on more recent software/coding changes that may be useful in interpreting the dementia data.

[http://www.ons.gov.uk/ons/dcp171778\\_373602.pdf](http://www.ons.gov.uk/ons/dcp171778_373602.pdf)

On 1 January 2014, ONS changed the software used to code category of death to a package called IRIS (version 2013). Further information can be found in a background note. In general:

- Age-standardised rates per 100,000 population (ASR) are standardised to the 1976 European Standard Population. Age-standardised rates are used to allow comparison between populations which may contain different proportions of people of different ages.
- [Underlying cause of death was defined using the International Classification of Diseases, Tenth Revision \(ICD-10\) codes in Health Statistics Quarterly 28, Winter 2005, Annex A](#)
- ASR was not calculated for CAL where there were less than 10 deaths in a year. ASR based on less than 20 deaths were italicised and must be interpreted with caution.

### **Other publications from the Office for National Statistics**

Deaths registered in England and Wales in 2014:

<http://www.ons.gov.uk/ons/rel/vsob1/death-reg-sum-tables/2014/sb-deaths-first-release--2014.html>

ONS reports annually on the leading categories of death in England, but CAL is not aware of anyone who has done this analysis before at the local authority level other than for CAL in 2013. ONS also reports the leading categories by sex for broad age groups in England.

Figures on smoking prevalence and numbers of smoking related deaths for local authorities are available from the Local Tobacco Control Profiles:

<http://www.tobaccoprofiles.info/>

The underlying data can be downloaded from the tool above.

Indicators of smoking prevalence and smoking-related deaths in our local authority Health Profiles:

<http://www.apho.org.uk/default.aspx?RID=49802>

The underlying data can also be downloaded. It may be easier to download figures for individual indicators from the Health Profiles than using the tobacco profile data.

#### 4. Letter from the Mayor of London stating he did not hold this data

The Mayor wrote to CAL in 2013 stating that all the public health data relating to mortality held by the Greater London Authority is published on the London Datastore and can be accessed using the following link:

<http://data.london.gov.uk/dataset/deaths-and-mortality-ratios-borough>

Additional datasets may also be held by Public Health England's London team. As far as CAL is aware, the Mayor still does not collect the local data published here by CAL.

#### 5. Scientific evidence about causes, health impacts and outcomes

##### General summary

<http://www.kphe.ca/air-pollution.php>

Ischaemic heart disease (page 8)

*The risk of ischaemic heart disease, which includes heart attacks, has particularly strong and consistent associations with PM<sub>2.5</sub>.*

Cerebrovascular (page 9)

*A large study in the United States reported significant associations with hospital admissions for a variety of cardiovascular diseases, including ischaemic heart disease, cerebrovascular disease and heart failure (Dominici et al., 2006)*

Malignant neoplasm of trachea, bronchus and lung

[http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221\\_E.pdf](http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf)

[http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf)

Chronic lower respiratory diseases

<http://www.who.int/gard/publications/Risk%20factors.pdf>

Dementia and Alzheimer's disease

<http://www.sciencedaily.com/releases/2012/02/120213185121.htm>

<http://alzheimers.about.com/od/prevention/a/Does-Air-Pollution-Increase-The-Risk-Of-Developing-Alzheimers-Disease.htm>

Association between traffic-related air pollution in schools and cognitive development in primary school children

<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001792>

## 6. Committee on the Medical Effects of Air Pollution

<http://www.bbc.co.uk/news/business-34455338>

<http://www.comeap.org.uk/documents/reports/39-page/linking/51-the-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-united-kingdom>

<http://www.comeap.org.uk/documents/statements/39-page/linking/46-mortality-burden-of-particulate-air-pollution>

## 7. Public Health Outcomes Framework website

<http://www.phoutcomes.info/public-health-outcomes-framework#page/3/gid/1000043/pat/6/par/E12000004/ati/102/are/E06000015/iid/30101/age/230/sx/4>

## 8. London Health Observatory

<http://www.lho.org.uk/>

Indicator Portal of the Health and Social Care Information Centre:

<https://indicators.ic.nhs.uk/webview/>

To find data on cancer, for example, from the panel on the left hand side select:

- 'Compendium of population health indicators'; then select
- 'Illness or condition' then 'Cancer'.

See the list of cancer sites, including lung and bladder.

Within these sites there is a range of tables, providing data on cancer incidence and mortality e.g. lung cancer rates for London boroughs, from the table 'Mortality from lung cancer: directly standardised rate, all ages, three year average, MFP'. This provides rates, and the number of deaths, for all English local authorities. There are other tables which provide trends in annual rates, and rates for premature deaths (under 75s).

## 9. Clean Air in London ranking of exposure categories by number of attributable deaths

<http://cleanairinlondon.org/health/clean-air-in-cities-index/>

## 10. Ten Great Public Health Achievements, United States, 1900-1999

*“During the 20th century, the health and life expectancy of persons residing in the United States improved dramatically. Since 1900, the average lifespan of persons in the United States has lengthened by >30 years; 25 years of this gain are attributable to advances in public health. To highlight these advances, MMWR will profile 10 public health achievements in a series of reports published through December 1999.”*

<http://jama.jamanetwork.com/article.aspx?articleid=189663>

## 11. Information and action by the United Nations and related bodies

### World Health Organisation

On 24 March 2014, the World Health Organisation published estimates that around 7 million people died – one in eight of total global deaths – in 2012 as a result of air pollution exposure. That finding more than doubled previous estimates and confirmed that air pollution is now the world’s largest single environmental health risk. Reducing air pollution could save millions of lives.

Included in the assessment was a breakdown of deaths attributed to specific diseases, underlining that the vast majority of air pollution deaths are due to cardiovascular diseases as follows:

Outdoor air pollution-caused deaths – breakdown by disease:

- 40% - ischaemic heart disease;
- 40% - stroke;
- 11% - chronic obstructive pulmonary disease (COPD);
- 6% - lung cancer; and
- 3% - acute lower respiratory infections in children.

Indoor air pollution-caused deaths – breakdown by disease:

- 34% - stroke;
- 26% - ischaemic heart disease;
- 22% - COPD;
- 12% - acute lower respiratory infections in children; and
- 6% - lung cancer.

These estimates are based on the latest WHO mortality data from 2012 as well as evidence of health risks from air pollution exposures. Estimates of people’s exposure to outdoor air pollution in different parts of the world were formulated through a new global data mapping. This

incorporated satellite data, ground-level monitoring measurements and data on pollution emissions from key sources, as well as modelling of how pollution drifts in the air.

Further details are available here:

<http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/>

[http://www.euro.who.int/\\_data/assets/pdf\\_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf](http://www.euro.who.int/_data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf)

### **World Health Organisation ranking of the top 10 death categories in the World in 2000 and 2012**

<http://who.int/mediacentre/factsheets/fs310/en/>

### **World Health Organisation's Non-Communicable Diseases Model**

<http://cleanair.london/wp-content/uploads/CAL-267-WHO-NCD-draft-report-311012.pdf>

### **World Health Assembly 68's resolution on air pollution**

<http://www.who.int/mediacentre/news/releases/2015/wha-26-may-2015/en/>

[http://apps.who.int/gb/ebwha/pdf\\_files/WHA68/A68\\_ACONF2Rev1-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_ACONF2Rev1-en.pdf)

[http://apps.who.int/gb/ebwha/pdf\\_files/WHA68/A68\\_18-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_18-en.pdf)

### **New Sustainable Development Goals for 2020 and 2030 (see Goals 3.9, 11.6, 12.4, 13.2 and 13.3 for air pollution commitments)**

<https://sustainabledevelopment.un.org/topics>

### **United Nations Fact Sheet about the right to 'clean water'**

<http://www.ohchr.org/Documents/Publications/FactSheet35en.pdf>