Ambient air pollution:

A global assessment of exposure and burden of disease

World Health Organization

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World Health Organization

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preface

Preface

This report presents a summary of methods and results of the latest World Health Organization (WHO) global assessment of ambient air pollution exposure and the resulting burden of disease.

Air pollution has become a growing concern in the past few years, with an increasing number of acute air pollution episodes in many cities worldwide. As a result, data on air quality is becoming increasingly available and the science underlying the related health impacts is also evolving rapidly.

To date, air pollution – both ambient (outdoor) and household (indoor) – is the biggest environmental risk to health, carrying responsibility for about one in every nine deaths annually. Ambient (outdoor) air pollution alone kills around 3 million people each year, mainly from noncommunicable diseases. Only one person in ten lives in a city that complies with the WHO *Air quality guidelines*. Air pollution continues to rise at an alarming rate, and affects economies and people's quality of life; it is a public health emergency.

Interventions and policies for tackling air pollution issues exist and have been proven to be effective. The implementation of WHO resolution WHA68.8, which maps out a road map for enhanced global responses to the adverse effects of air pollution, provides an essential framework for decision-makers to choose and implement the most efficient policies.

Air pollution has also been identified as a global health priority in the sustainable development agenda. WHO has responsibility for stewarding three air pollution-related indicators for monitoring progress against the Sustainable Development Goals (SDGs): in health (Goal 3), in cities (Goal 11) and in energy (Goal 7).

Air pollution affects practically all countries in the world and all parts of society.

The role of the health sector is crucial, and there is a need to engage with other sectors to maximize the co-benefits of health, climate, environment, social and development. Saving people's lives is the overarching aim to implement policies aiming at tackling air pollution in the health, transport, energy, and urban development sectors.

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Abbreviations

AAP	ambient air pollution
AFR	Africa Region
ALRI	acute lower respiratory disease
AMR	Americas Region
AQG	Air quality guidelines
BoD	burden of disease
COPD	chronic obstructive pulmonary disease
DALY	disability-adjusted life year
DIMAQ	data integration model for air quality
EMR	Eastern Mediterranean Region
EUR	European Region
GBD	global burden of disease
HAP	household air pollution
HIC	high-income countries
IER	integrated exposure risk
IHD	ischeamic heart disease
LMIC	low-and middle-income countries
PAF	population attributable fraction
$PM_{2.5}$	particulate matter of diameter of less than 2.5 µm in $\mu g/m^3$
PM_{10}	particulate matter of diameter of less than 10 µm in $\mu g/m^3$
RR	relative risk
SDGs	Sustainable Development Goals
SEAR	South East Asia Region
UN	United Nations
YLD	year lived with disability
YLL	year of life lost
WHO	World Health Organization
WPR	Western Pacific Region


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Summary

Air pollution represents the biggest environmental risk to health. In 2012, one out of every nine deaths was the result of air pollution-related conditions. Of those deaths, around 3 million are attributable solely to ambient (outdoor) air pollution. Air pollution affects all regions, settings, socioeconomic groups, and age groups. While all people living in a given area breathe from the same air, there are nevertheless important geographical differences in exposure to air pollution. Citizens in Africa, Asia or the Middle East breathe much higher levels of air pollutants that those in living other parts of the world. Some places have air pollution levels that are several times higher than those considered safe by the World Health Organization (WHO) *Air quality guidelines.*

Air pollution is used as a marker of sustainable development, as sources of air pollution also produce climate-modifying pollutants (e.g. CO_2 or black carbon). Policies to address air pollution also generate a range of benefits to human health, not only through air quality improvements but also other health benefits, such as injury prevention or enabling physical activity.

Consequently, concerns about air pollution are reflected in the Sustainable Development Goals (SDGs): Air pollution levels in cities is cited as an indicator for urban sustainable development (SDG 11); access to clean energy – particularly clean household fuels and technologies – is highlighted as an indicator for sustainable energy (SDG 7); and mortality due to air pollution (ambient and household) is used an indicator for the health SDG goal (SDG 3). Reliable estimates of exposure to and impacts from air pollutants are key to better inform policy-makers, as well as development partners. These figures are necessary to track progress in air quality improvements and to help evaluate the effectiveness of policies aiming at reducing air pollution, as well as assessment of how much they are contributing to protect health.

In 2015, to respond to this major global public health threat, the 194 WHO Member States adopted the first World Health Assembly resolution to "address the adverse health effects of air pollution". The following year, Member States agreed on a road map for "an enhanced global response to the adverse health effects of air pollution".

Among the main elements of this road map are the monitoring and reporting of air pollution, and enhanced systems, structures and processes for monitoring and reporting health trends associated with air pollution and its sources.

The current report presents methods and data for two of the SDG indicators reported by WHO:

- SDG Indicator 11.6.2: Annual mean levels of fine particulate matter ($PM_{2.5}$) in cities (population-weighted); and
- SDG Indicator 3.9.1: Mortality rate attributed to household and ambient air pollution.

This report presents the updated results of mortality and morbidity attributed to ambient air pollution (also known as 'burden of disease due to air pollution'). It includes information on the sources of data on air pollution available to the WHO, on the methodology used to estimate human exposure to air pollution and related burden of disease, as well as the actual estimates of human exposure to particulate matter of a diameter less than 2.5 micrometres ($PM_{2.5}$) for countries and for the globe; and the related national burden of disease attributable to long-term exposure to ambient (outdoor) air pollution for the year 2012.

The global exposure assessment to air pollution consists of modelled data of population-weighted annual mean $PM_{2.5}$ concentrations. Data are modelled through combining remote satellite sensing data with ground measurements from the 2016 WHO ambient (outdoor) air quality database, which serves for calibration of the satellite data.

This database compiles information on $PM_{2.5}$ and PM_{10}[1] from measurements for about 3000 cities and towns worldwide. The modelled estimates indicate that in 2014 only about one in ten people breathe clean air, as defined by the WHO *Air quality guidelines*.

The burden of disease attributed to ambient air pollution was estimated using methodology developed for the Comparative Risk Assessment study. This methodology is based on combining estimates of exposure to air pollution and its distribution in the population, with results from epidemiological studies that indicate the additional disease burden from different levels of exposure to air pollution, after adjusting for other risk factors (e.g. tobacco smoke).

The results are refered to by epidemiologists as exposure-risk estimates at each level of exposure. Health outcomes, for which there is enough epidemiological evidence to be included in the analysis, comprise acute lower respiratory, chronic obstructive pulmonary disease, stroke, ischeamic heart disease and lung cancer. Many other diseases have been associated with air pollution, but are not included in this assessment because the evidence was not considered sufficiently robust.

The actual impact of air pollution on health presented here is a conservative figure, as it does not include the separate impacts of health from other air pollutants such as nitrogen oxides (NOx) or ozone (O_3), and excludes health impacts where evidence is still limited (e.g. pre-term birth or low birth weight).

Through this combined approach, the current report summarizes three sets of data and the interrelationship between them: 1) The compilation of the $PM_{2.5}$ and PM_{10} measurements data in the 2016 WHO ambient (outdoor) air quality database; 2) the modelled estimates of $PM_{2.5}$; and 3) the associated burden of disease.

[1] *Particulate matter of a diameter less than 25 and 10 micrometres respectively.*

intro

1. Introduction

This document summarizes the methods and the results of the latest WHO global assessment of air pollution exposure and related burden of disease.

Exposure to air pollutants can affect human health in various ways, leading to increased mortality and morbidity *(1)*. Epidemiological evidence on the health effects of air pollution is growing and evolving quickly. Today, air pollution is the largest environmental risk factor *(2)*.

Reliable estimates of exposure to air pollutants and related impacts on health are key to better inform policy-makers, as well as other health and development partners. Such information is essential to implementing, monitoring and evaluating policies that help to tackle air pollution while also protecting health.

The 194 WHO Member States recently adopted a resolution to respond to the adverse health effects of air pollution *(3)*, as well as a road map for an enhanced global response *(4)*. The road map outlines goals and approaches for monitoring and reporting of air pollution, as well as enhancing systems, structures and processes necessary to support monitoring and reporting on health trends associated with air pollution and its sources.

Air pollution is a clear marker for sustainable development, as sources of air pollution also produce climate pollutants (like CO_2 or black carbon).

Policies to address air pollution generate a number of benefits to human health, not only through air quality improvements but also other health benefits, such as injury prevention or enabling physical activity. Adressing air pollution therefore features highly in the global agenda.

In September 2015, the United Nations (UN) General Assembly adopted *Transforming our world: The 2030 Agenda for sustainable development*, which paves the way for a renewed global commitment to combat the world's most persistent development issues over the next 15 years *(5)*. A framework of indicators for the 17 SDGs and 169 SDG-related targets has been developed, and includes three air pollution-related indicators, which fall under WHO's reporting responsibility:

- SDG Indicator 3.9.1: Mortality rate attributed to household and ambient air pollution for the health goal (SDG 3).
- SDG Indicator 11.6.2: Annual mean levels of fine particulate matter ($PM_{2.5}$) in cities (population-weighted) for the urban sustainable development goal (SDG 11).
- SDG Indicator 7.1.2: Proportion of population with primary reliance on clean fuels and technologies for the sustainable energy goal (SDG 3).

Reporting for Indicators 3.9.1 and 11.6.2 are based on the methods and results presented in the current document, while the methods for estimating SDG Indicator 7.1.2. are presented elsewhere *(6)*.

While a number of air pollutants are associated with significant excess mortality or morbidity, including NOx, ozone, carbon monoxide and sulfur dioxides in particular, $PM_{2.5}$ is the air pollutant that has been most closely studied and is most commonly used as proxy indicator of exposure to air pollution more generally *(1)*.

Particulate matter consists of a complex mixture of solid and liquid particles of organic and inorganic substances suspended in the air. The major components of PM are sulphates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water. The most health-damaging particles are those with a diameter of 10 µm or less, which can penetrate and lodge deep inside the lungs. Both short- and long-term exposure to air pollutants have been associated with health impacts.

Small particle pollution has health impacts even at very low concentrations – indeed no threshold has been identified below which no damage to health is observed. Therefore, the WHO *Air quality guidelines* (AQGs) recommend aiming for, and achieving, the lowest concentrations of PM possible *(1)*. The guideline values are:

$PM_{2.5}$	*PM_{10}*
10 µg/m³ annual mean	*20 µ/m³ annual mean*
25 µg/m³ 24-hour mean	*50 µg/m³ 24-hour mean*

Reflecting the rising number of air pollution episodes in cities worldwide – and the resulting increased awareness about its impacts on health - $PM_{2.5}$ is increasingly measured and monitored by national air quality monitoring networks. WHO has been compiling annual mean concentrations for $PM_{2.5}$ and PM_{10} in cities since 2011 *(7,8)*.

A summary of a recent update of the WHO ambient (outdoor) air quality database *(9)* containing average annual estimates for $PM_{2.5}$ exposure globally, by region and for 3 000 specific human settlements is presented as part of this report.

The present work on global exposure modelling further develops recent innovations in global exposure estimates for $PM_{2.5}$ *(10,11)*, as used to model global burden of disease attributable to ambient air pollution *(2, 12–14)*.

It was also presented and reviewed at the Global Platform on Air Quality and Health, initiatied by WHO and other partners in 2014 *(15)*.

Academic researchers, scientists and international organizations have combined efforts to harmonize in developing comprehensive and reliable models of population exposure to $PM_{2.5}$, which can be used for health impact estimation.

Coverage of the entire exposure range for long-term exposure to $PM_{2.5}$ has been achieved through the development of the integrated exposure risk (IER) functions *(16)* that have been developed for the Global Burden of Disease Study *(17)*.

This allows for the integration of available relative risks information from studies of ambient air pollution, household air pollution, second-hand smoke and active smoking. The IERs have been used to derive estimates for both household- and ambient air pollution-attributable burden of disease for the GBD Project *(12, 14, 18)* and by the WHO (*2, 6*).

They currently cover cause-specific mortality such as acute lower respiratory in children under five years of age, and chronic obstructive pulmonary disease (COPD), ischeaemic heart disease (IHD), stroke and lung cancers in adults.

Other health outcomes have been associated with long-term exposure to particulate matter, such as adverse birth outcomes, childhood respiratory disease, diabetes, atherosclerosis, and neurodevelopment and cognitive function, but are not considered here *(19)*.

The current report presents the latest national mortality and morbidity estimates attributable to ambient air pollution.

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2. Exposure to ambient air pollution

2.1. Exposure: ground measurements of PM_{10} and $PM_{2.5}$

2.1.1. Methods

Description of methods

The database compiles ground measurements of annual mean concentrations of particulate matter of a diameter of less than 10 µm (PM_{10}) or 2.5 µm ($PM_{2.5}$) and aims to compile an average for each city/town. Years of measurements range from 2010 to 2015, unless the latest available data precede these times, in which case the most recent was used.

Scope of data

The database covers 3 000 human settlements ranging in size from a few hundred to more than 10 million inhabitants. Most of these are urban areas of 20 000 inhabitants or more – hence reference to an "urban air quality data base". However, about 25 % of settlements in the database are smaller areas of up to 20 000 residents, and a limited proportion (mostly in Europe) are settlements of only a few hundred to a few thousand inhabitants - although these may also be located in proximity to larger urban agglomerations (see Table 1).

Table 1. Ambient air pollution database: Proportion of settlements by population size

Percentages of observations	*Settlement size*
1 %	0
5 %	1 240
10 %	4 173
25 %	20 000
41 %	50 000
50 %	80 756
75 %	314 719
90 %	1 150 153
95 %	2 313 328
99 %	8 741 365
Mean settlement size	*543 664*
Number of settlements	*2977*

Data sources

Primary sources of data include official reporting from countries to WHO, official national/sub-national reports and national/sub-national web sites containing measurements of PM_{10} or $PM_{2.5}$. Furthermore, measurements reported by the following regional networks were used: Clean Air Asia for Asia (*20*), and the Air quality e-reporting database (*21*) from the European Environment Agency for Europe. In the absence of the above-mentioned data, data from UN agencies, development agencies, articles from peer reviewed journals and ground measurements compiled in the framework of the Global Burden of Disease Project (*17*) were used.[2]

The data was compiled between September–November 2015 from the above-mentioned sources/partners, or from web searches when not availbable. The web search strategy included the following approaches:

1. Screening of the web sites of respective ministries of environment, health, and statistics offices.

2. Web searches with the terms « air quality », « air pollution », « suspended particles », « monitoring », « PM_{10} », « $PM_{2.5}$ ».

Language variations used included English, French, Spanish, Portuguese, Italian, and German.

Type of data used

The database incorporated annual mean concentrations of particulate matter (PM_{10} or $PM_{2.5}$) based on daily measurements, or other data that could be aggregated into annual mean values. In the absence of annual means, measurements covering a more limited period of the year were exceptionally used and extrapolated.

[2] For the full list of references, please refer to the online version of the WHO database (*9*).

In order to derive air quality that is largely representative of human exposure in urban contexts, mainly data from urban background readings, residential areas, and commercial (or mixed) area measurements were used. Air quality stations characterized as covering particular 'hot spots' or exclusively industrial areas were not included, unless they were contained in reported city means and could not be disaggregated.

This selection is in accordance with the aim of capturing representative values for average human exposure. In contrast, measurements from hot spots and industrial areas are often captured for the purpose of identifying the highest exposure areas, and were deemed to be less representative of mean exposures for most of the urban population. Hot spots were either designated as such by the original reports, or were qualified as such due to their exceptional nature (e.g. exceptionally busy roads etc.). Omitting these, may, however, have led to an underestimation of the mean air pollution levels of a given city.

Where the data from various sources were available, only the latest data and most reliable sources were used. Only data measured since 2008 were included in the database.

It was not always possible to retrieve or use all publicly available data of interest. Reasons included language barriers, or incomplete information on data or data quality (e.g. missing year of reference). Data were used as presented in original sources. The indicated numbers of monitors do not necessarily correspond to the total number of existing or operational stations in the cities, but to the numbers of stations used for deriving the indicated city data.

Data processing and reporting

Where available, urban means reported by the original sources are included in the database. Where no urban means were available, the eligible city data were averaged using appropriate denominators.

Population data - used for weighting and for estimating the share of urban population covered - were either based on: UN population statistics when available for all human settlements covered *(22)*, or census data from national statistical offices *(23)*.

For completeness, cities with only PM_{10} (or resp. $PM_{2.5}$) reported, $PM_{2.5}$ (or PM_{10}) concentration was calculated from PM_{10} (resp. $PM_{2.5}$) using national conversion factors ($PM_{2.5}/PM_{10}$ ratio) either provided by the country or estimated as population-weighted averages of urban-specific conversion factors for the country. Urban-specific conversion factors were estimated as the mean ratio of $PM_{2.5}$ to PM_{10} of stations for the same year. If national conversion factors were not available, regional ones were used, which were obtained by averaging country-specific conversion factors.

As exposure to $PM_{2.5}$ serves as indicator for burden of disease calculation, $PM_{2.5}$ data were converted from PM_{10} in the absence of their measurement because they were used to calibrate the model described below.

As the conversion factor $PM_{2.5}/PM_{10}$ may vary according to location (generally between 0.4 and 0.8), the converted PM_{10} value for individual settlements may deviate from the actual value, and should only be considered as approximations.

The temporal coverage represents the number of days per year covered by measurements, or any alternative qualification (as provided in the original sources). If data from several monitoring stations in one city or town were available, their average temporal coverage was used for the overall average. Information on temporal coverage was not always available; however reporting agencies often respect a specific reporting threshold for the number of days covered before reporting on a given measurement value, or using it for estimating the city annual mean.

2.1.2. Results

Data availability

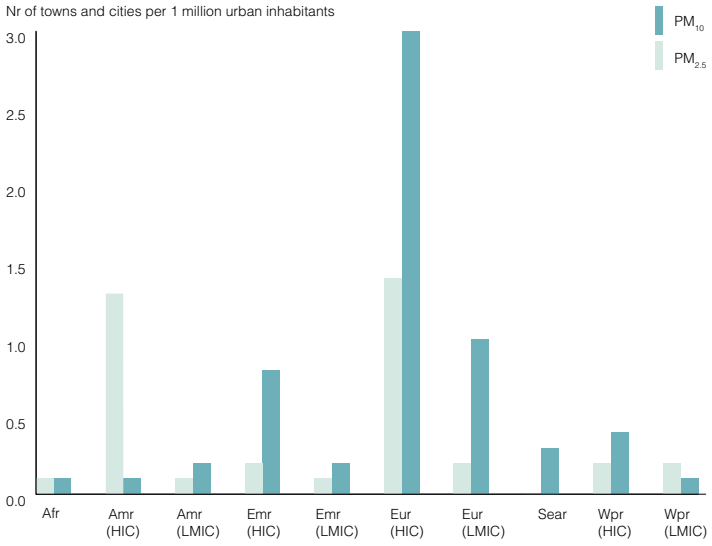
The 2016 version of the WHO ambient (outdoor) air quality database consists mainly of urban air quality data - annual means for PM_{10} and/or $PM_{2.5}$ - covering about 3 000 human settlements in 103 countries, for the years 2008-2015 *(9)*. The regional distribution and the number of settlements, and corresponding accessible data are described in Table 2 and Figure 1, respectively.

Table 2: Total number of towns and cities in AAP database, 2016 version, by region

Region	*Number of towns/cities*	*Number of countries with data*	*Total number of countries in region*
Africa (Sub-Saharan) (LMIC)	39	10	47
Americas (LMIC)	102	13	24
Americas (HIC)	524	6	11
Eastern Mediterranean (LMIC)	53	8	15
Eastern Mediterranean (HIC)	31	6	6
Europe (LMIC)	165	9	19
Europe (HIC)	1 549	33	34
South-East Asia (LMIC)	175	9	11
Western Pacific (LMIC)	225	4	21
Western Pacific (HIC)	109	5	6
Global	***2 972***	***103***	***194***

AAP: Ambient air pollution database; LMIC: Low-and middle-income countries; HIC: high-income countries.

Figure 1: Number of towns and cities with accessible PM_{10} and $PM_{2.5}$ data in 2016 per urban population.



$PM_{10}/_{2.5}$: Fine particulate matter of 10/2.5 microns or less; Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries.

$PM_{2.5}$ measurements can be directly linked to estimates of health risks, and are therefore of particular interest. In high-income countries, $PM_{2.5}$ measurements are conducted widely. In low- and middle-income countries (LMICs), $PM_{2.5}$ measures are not readily available in many countries but there have been large improvements since in the past three years.

Annual mean $PM_{2.5}$ measurements were available for 339 cities, or almost five times more than in the 2014 version of the database.

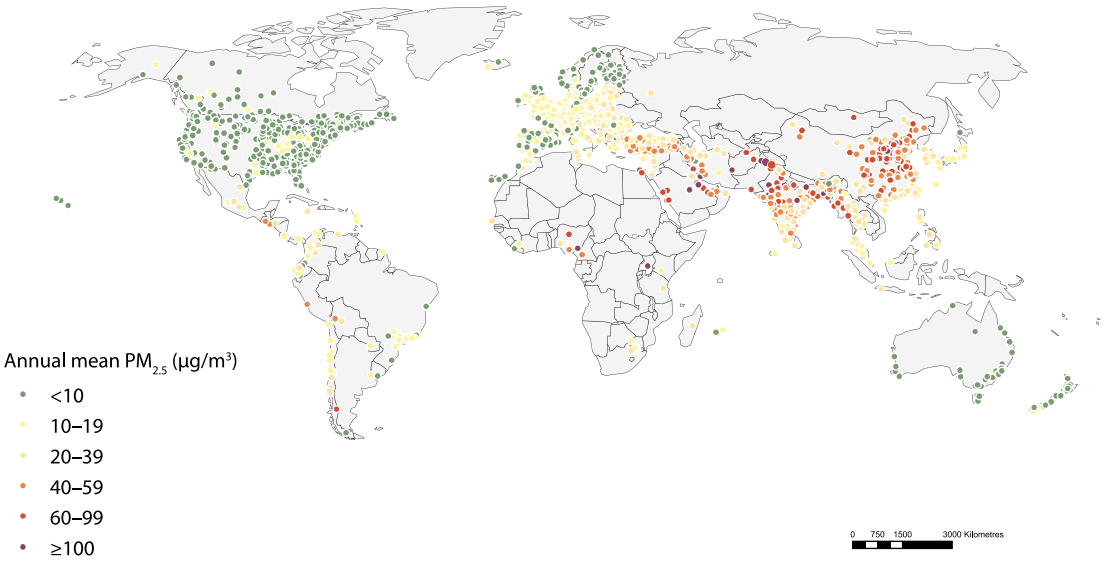
Annual mean PM_{10} measurements could be accessed in as many as 586 cities in LMICs.

In high-income countries (HIC), 1 241 cities and towns with $PM_{2.5}$ measures could be accessed, compared to 1639 cities and towns with PM_{10} measurements.

The 3 000 cities and towns currently covered by the WHO database represent about 1.6 billion people, or 43 % of the global urban population.

Ground measurements of annual mean concentration of $PM_{2.5}$ for the 3000 towns and cities is shown in Figure 2.

Figure 2: Location of the monitoring stations and $PM_{2.5}$ concentration in nearly 3 000 human settlements, 2008-2015

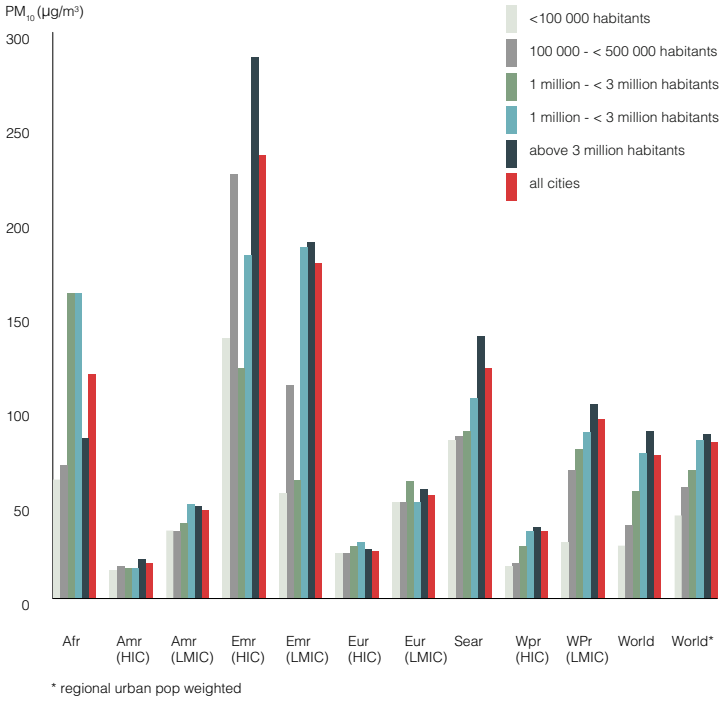


$PM_{2.5}$: Fine particulate matter of 2.5 microns or less.

Data summary

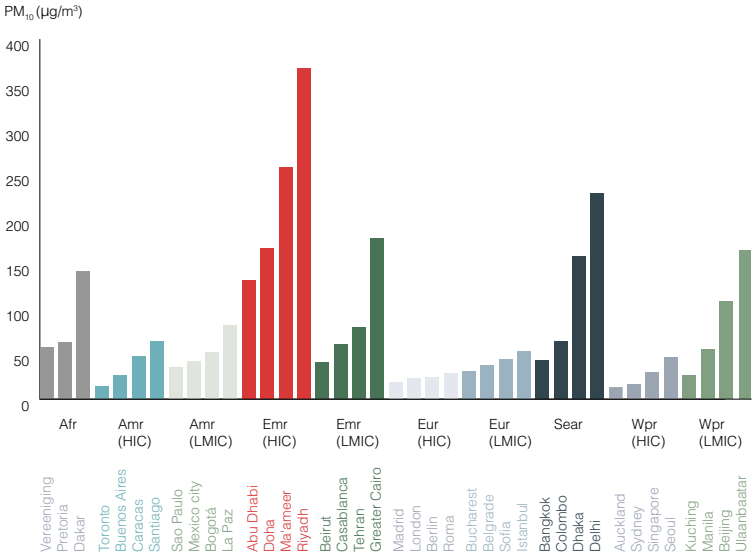
An overview of PM_{10} levels for the WHO regions and selected cities is presented in Figures 3, 4 and 5.

Figure 3: PM_{10} levels by region and city size, for available cities and towns latest year in the period 2008–2015



PM_{10}: Particulate matter of 10 microns or less; Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries. PM_{10} values for the world are regional urban population-weighted.

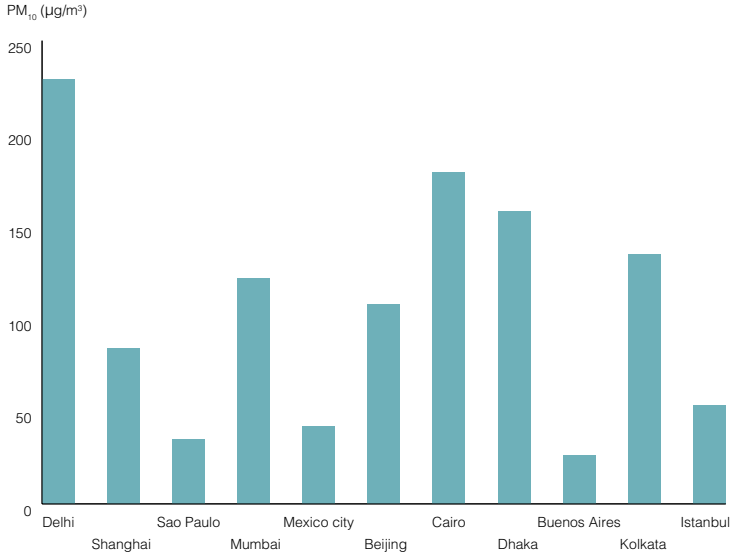
Figure 4: PM_{10} levels for selected[3] cities by region, for the last available year in the period 2011-2015



PM_{10}: Particulate matter of 10 microns or less; Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries.

[3] *Selection criteria: For year of measurement (2011 or more recent), the largest city or capital for each country within a region (or two cities for one country if only two countries available in the region. City size ranges from 140 000 to 26 million habitants.*

Figure 5: PM_{10} levels for available mega-cities of more than 14 million habitants for the last available year in the period 2011-2015

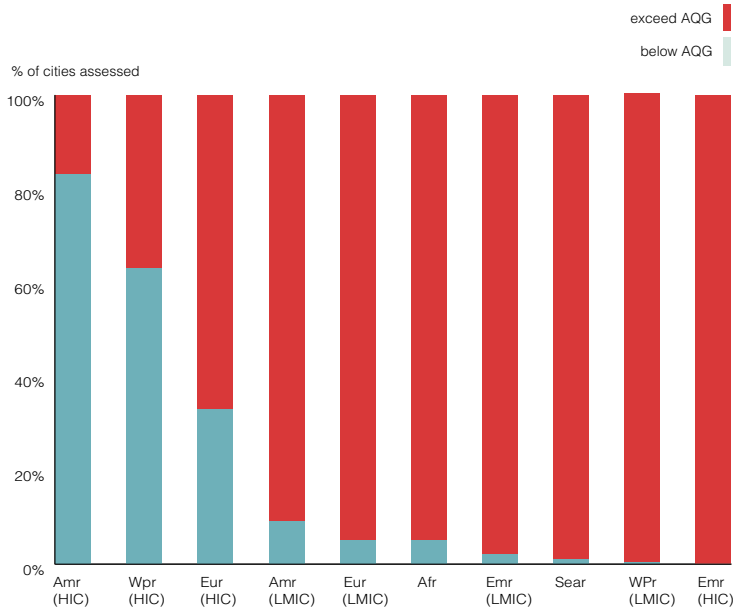


PM_{10}: Particulate matter of 10 microns or less.

Compliance with Air Quality Guidelines

Figure 6 shows the regional percentages of the assessed towns and cities with PM measurements experiencing PM_{10} or $PM_{2.5}$ air pollution levels that meet or exceed the WHO *Air Quality Guidelines* (AQG) (i.e. annual mean values of 20 µg/m³ (for PM_{10}) and 10 µg/m³ (for $PM_{2.5}$)).[4] Globally, according to the currently available data, only 16% of the assessed population is exposed to PM_{10}or $PM_{2.5}$ annual mean levels complying with AQG levels. This increases to 27% for the interim target 3 (i.e. IT-3: 30 µg/m³ for PM_{10} and 15 µg/m³ for $PM_{2.5}$) of the AQG, 46% for interim target 2 (i.e. IT-2: 50 µg/m³ for PM_{10} and 25 µg/m³ for $PM_{2.5}$), and 56% for interim target 1 (IT-1: 70 µg/m³ for PM_{10} and 35 µg/m³ for $PM_{2.5}$).

Figure 6: Annual mean particulate matter concentration of the assessed towns and cities, compared to the WHO *Air Quality Guidelines*[a]



Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries; AQG: WHO Air Quality Guidelines.
[a] Annual mean PM_{10}: 20 µg/m³; Annual mean $PM_{2.5}$: 10 µg/m³.

[4] *For town and cities with both PM_{10} and $PM_{2.5}$ values, $PM_{2.5}$ were used.*

Comparison of urban air pollution levels in recent years

A total of 792 towns and cities in 67 countries were selected for a more refined comparison of $PM_{2.5}$ (where available), or PM_{10} values over a period of five or more years (Table 3). The selection was made according to the following criteria: These cities/towns have either measured PM.2.5 or PM10 values in the three databases, and cover a period of three years or more; or these towns/cities are represented in the data that was collected in 2011, 2014 or 2016 and cover a period of four years or more. The 2011 version of the database contains data for 2010 or earlier and the 2014 version for 2012 or earlier. To compare levels of air pollution for the equivalent of a five-year period (mostly 2008–2013) for cities included in such a selection, a linear regression was made. Table 4 presents a regional summary by WHO region and income groups. Globally, annual PM levels are estimated to have increased by 8% during the recent five-year period in the assessed cities. (The cited global increase is weighted by the regional urban population)

Table 3: Number of cities included for the $PM_{2.5}$ and PM_{10} comparison over a five-year period (mostly 2008-2013), by region

Region	*Number of town and cities*	*Number of countries*
Africa (Sub-Saharan)[1]	2	2
America (LMIC)	13	7
America (HIC)	343	6
Eastern Mediterranean (LMIC)	16	6
Eastern Mediterranean (HIC)	6	2
Europe (LMIC)	32	5
Europe (HIC)	277	30
South-East Asia	53	5
Western Pacific (LMIC)	33	2
Western Pacific (HIC)	21	3
Global	***796***	***68***

LMIC: Low- and middle-income countries; HIC: High-income countries. Regions with less than five cities were not included in the analysis, due to poor representatation.

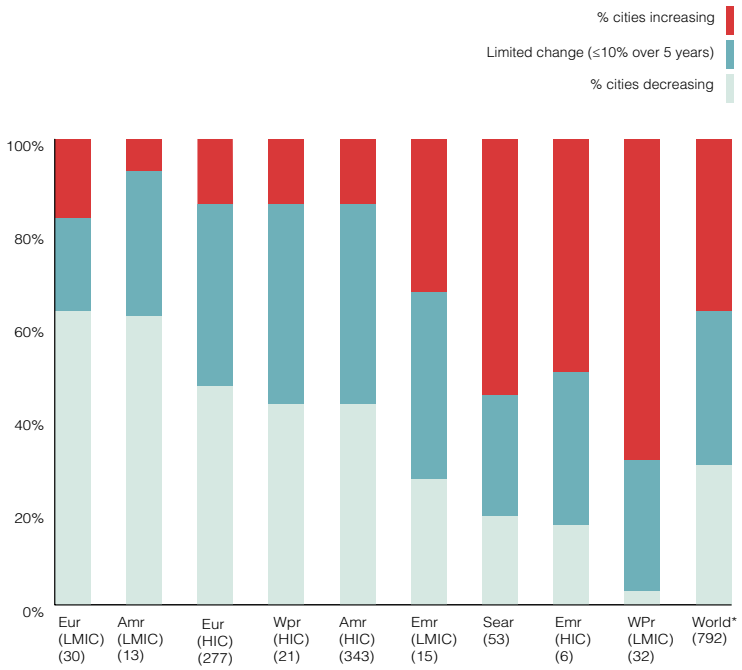
Figure 7 shows the percentage of towns and cities with decreasing levels of annual mean $PM_{2.5}$ or PM_{10} (in green), increasing levels (in light orange), and levels with changes of ≤10% over a five-year period (in blue), by region. The variation in population living in cities with increasing or decreasing population levels is represented in Figure 8.

Table 4: Trend for the five-year period (mostly 2008-2013) in $PM_{2.5}$ or PM_{10} based on cities available in several versions of the database, by region[1]

Region	*Trend over the mean period 2008-2013*[2]
Africa (Sub-Saharan)	NA
America (LMIC)	→
America (HIC)	↘
Eastern Mediterranean (LMIC)	↗
Eastern Mediterranean (HIC)	↗
Europe (LMIC)	↘
Europe (HIC)	↘
South-East Asia	↗
Western Pacific (LMIC)	↗
Western Pacific (HIC)	↘
Global[3]	↗

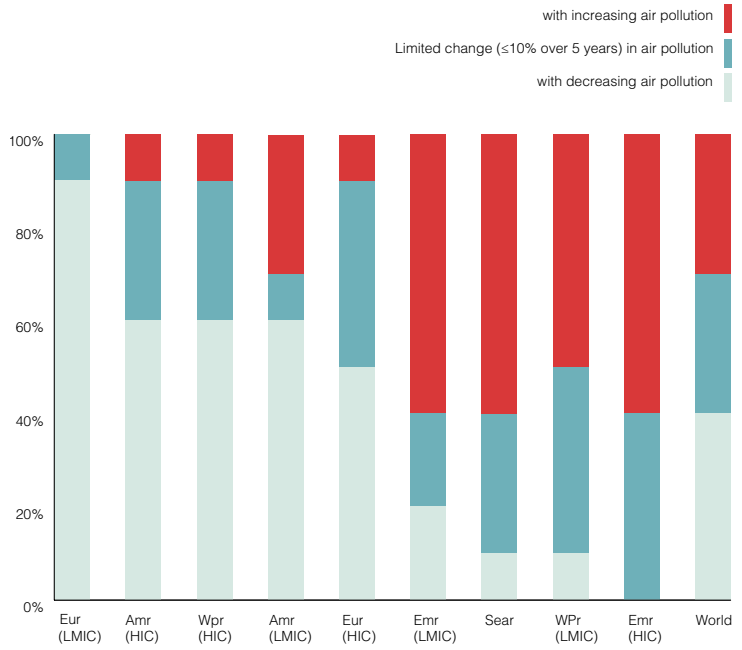
1 Criteria for inclusion: cities with measured PM2.5 or PM10 values in the three database versions covering a period of three years or more, or in two versions and covering a period of four years or more.
2 → No more than 5% change over the five-year period; ↗: More than 5% decrease over the five-year period; ↘: More than 5% increase over the five-year period.
3 Based on weighting by regional urban population. LMIC: Low- and middle-income countries; HIC: high-income countries; NA: not available. Results are based on 795 cities and are to be interpreted with caution, as: a) cities included might not ensure representativeness; a) yearly variations due for example to climatic changes can be important; and c) a five-year comparison does not necessarily represent trends, in particular when changes are limited.

Figure 7: Percentage of cities[1] with increasing and decreasing $PM_{2.5}$ or PM_{10} annual means over a five-year period (mostly 2008–2013), by region



Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: high-income countries. [1] The number of cities is indicated in bracket. *The world figure is regional population-weighted.

Figure 8: Percentage of city population experiencing increasing and decreasing $PM_{2.5}$ or PM_{10} annual means over a five-year period (mostly 2008-2013), by region



Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: high-income countries.

2.1.3. Discussion

The WHO urban ambient air quality database presents data on annual mean concentration of particulate matter (PM) for almost 3 000 human settlements, mostly cities, in 103 countries and is the most comprehensive database of its kind to date. The number of cities and towns reporting on PM measurements has nearly doubled since the previous version of the database was published in 2014 (1 600 cities) (*8*) and nearly tripled since the first 2011 version (1 100 cities) (*7*), which indicates an increased awareness of the risks posed by air pollution. In the past two years, the number of ground measurements available in high-income countries has doubled, while there has been a 50 % increase in low-and middle-income countries.

Monitoring the air quality is the first, but key, step to be taken by public authorities, both at the national and city levels, to tackle the multisectoral challenge of addressing air pollution. However, there are still huge monitoring and reporting gaps between high-income countries and low- and middle-income counterparts. Most air quality data still comes from Europe and the Americas, with regions such as Africa, South East Asia, and Eastern Mediterranean lagging behind.

The data presented in the latest database reflects a number of important limitations. The ground measurements are of limited comparability because of various reasons: a) Differing locations of measurement stations; b) varying measurement methods; c) different temporal coverage of certain measurements (i.e. if only part of the year was covered, the measurement may significantly deviate from the annual mean due to seasonal variability); d) possible inclusion of data that should not have been eligible for this database due to insufficient information to ensure compliance; e) differences in sizes of urban areas covered (i.e. for certain countries, only measurements for larger cities were found, whereas for others also cities with just a few thousand inhabitants were available); and f) varying quality of measurements.

In addition, some existing data may have been omitted, either because it could not yet be accessed due to language issues or limited accessibility. Finally, the city means presented in the database may differ from the ones calculated by the cities or municipalities themselves because they are averaged from multiple station data.

The comparison of air pollution levels for a given set of cities over the five-year period 2008-2013 shows a global increase of 8% in annual mean concentrations of $PM_{2.5}$. High-income regions of the Americas, Europe and Western Pacific demonstrate decreasing air pollution, while the other regions have increasing levels.

However, such a comparison of air pollution levels has a number of limitations. First of all, when $PM_{2.5}$ measurements were not available, PM_{10} values (converted into $PM_{2.5}$) were used for the comparison, which may have influenced the results.

Second, the period of comparison is relatively short. Yearly variations may for example be influenced by weather patterns and data within a five-year period may not be sufficient to reflect a longer-term trend. A longer time period of comparison would be required to confirm any trends.

Third, although sampling locations are reasonably stable over time, they may have changed within the period of comparison, and variations in annual mean PM levels for a given city may reflect different sampling locations rather than a genuine trend. As the data collected is used for calibrating the model that derives global $PM_{2.5}$ estimates, data quality is crucial, as well as location details and the type of monitoring stations: information that is also used in the modeling exercise. Efforts and investments should be made to encourage cities and countries to monitor air quality closely, using standard, good quality and comparable methods and instruments, as well as making this information widely available.

To date, only particulate matter concentrations have been compiled in the database. Additional pollutants – such as nitreous oxide (NO_2), ozone (O_3) or others – might be added to the database in the future.

2.2. Exposure: modelled estimates of $PM_{2.5}$

2.2.1. Methods

Assessment of the global effects of air pollution requires a comprehensive set of estimates of exposure for all populations. Ground monitoring networks have provided the primary source of this information but, although coverage has increased, there remain regions in which there is no or very little monitoring.

Ground measurement data therefore need to be supplemented with information from other sources, such as estimates from satellite retrievals of aerosol optical depth and chemical transport models. The recently developed Data Integration Model for Air Quality (DIMAQ) incorporates data from multiple sources in order to provide estimates of exposures to $PM_{2.5}$ at high spatial resolution ($0.1^{o} \times 0.1^{o}$) globally.

Sources of data include: Ground measurements from 6 003 monitoring locations around the world *(9,10)*, satellite remote sensing; population estimates; topography; and information on local monitoring networks and measures of specific contributors of air pollution from chemical transport models. The DIMAQ model calibrates data from these sources with ground measurements. The relationships between the various sources of data may be complex and will vary between regions due to differences in the composition of $PM_{2.5}$, and other factors.

DIMAQ has a hierarchical structure within which calibration equations are produced for individual countries using, as a priority, data from that country where available. Where data within a country is insufficient to produce accurate estimates, it is supplemented with regional information. When calibration equations have been established and tested, the model is used to estimate exposures, together with associated measures of uncertainty across the globe. These high-resolution estimates can be used to produce air quality profiles for individual countries, regions and globally.

A full description of the model development and evaluation is available separately (*24*).

2.2.2. Results

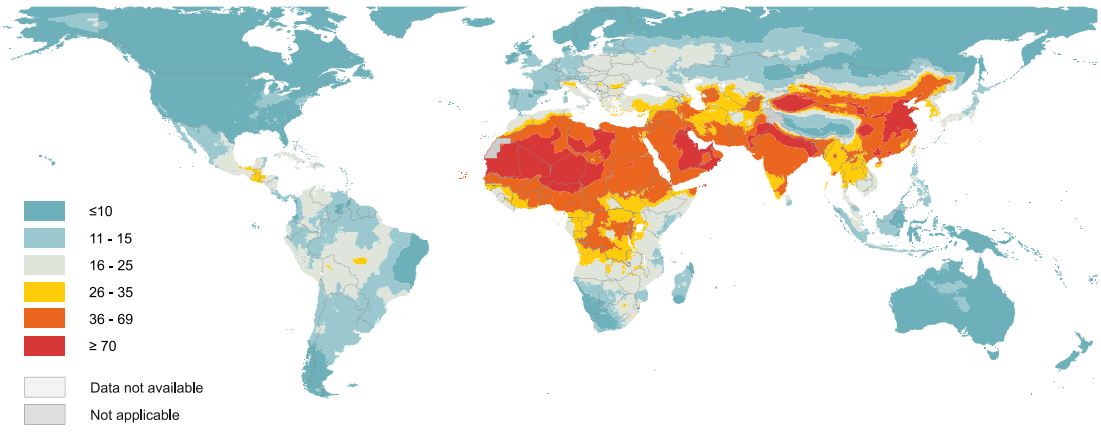
Global exposure to $PM_{2.5}$ has been modelled for the year 2014 in order to provide a comprehensive global coverage of estimates of air quality. The key parameter is the annual median concentration of $PM_{2.5}$, which is highly relevant for estimating health impacts. Modelled exposure to ambient $PM_{2.5}$ levels provides more comprehensive information for countries than measured data, which only provide data for a selection of towns and cities. A comprehensive set of estimated exposures such as this will be required, when estimating the health impacts of ambient air pollution for a given country.

Estimates of exposure are required for all areas, including those that may not be covered by ground monitoring networks. Estimates of air quality, expressed in terms of median concentrations of $PM_{2.5}$ are now available for all regions of the world, including areas in which $PM_{2.5}$ monitoring is not available (Figure 9) . It can be viewed on an interactive map at www.who.int/phe/health_topics/outdoorair/databases/en. Estimates of exposure, by country, are presented in Table A1 of Annex 1.

In the majority of regions of the world, annual median concentrations of air pollution are higher than the WHO guideline levels of 10 μg/m^3 (Figures 10 and 11). Exposures are particularly high in the Eastern Mediterranean, South-East Asian and Western Pacific Regions. Air pollution does not exclusively originate from human activity, and can be greatly influenced by dust storms, for example, particularly in areas close to deserts. This is partially illustrated in Figure 12, where modelled annual median $PM_{2.5}$ concentration by area (rural/urban) is presented and where rural areas in the African and Eastern Mediterranean Regions show greater concentrations than urban ones.

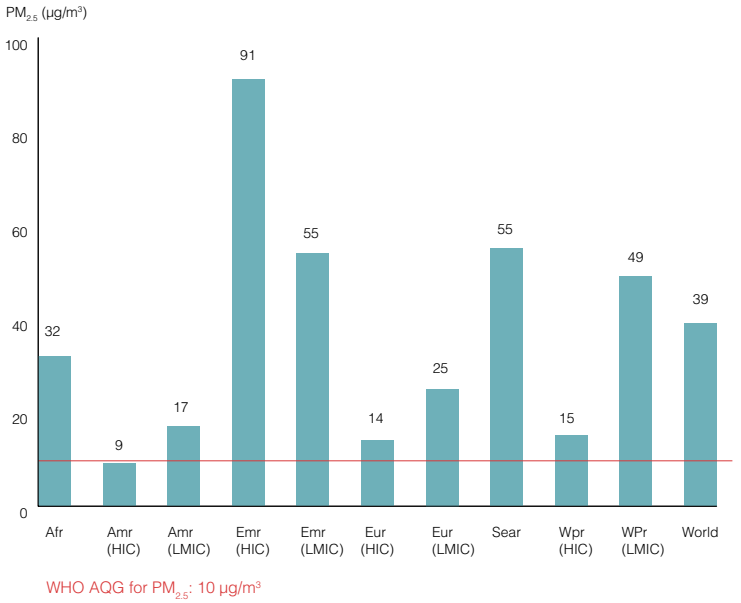
Based on the modelled data, 92% of the world population are exposed to $PM_{2.5}$ air pollution concentrations tha are above the annual mean WHO AQG levels of 10 μg/m^3 (Figure 13). With the exception of the region of the Americas, all regions – both HIC and LMIC – have less than 20% of the population living in places in compliance with the WHO AQG.

Figure 9: Global map of modelled annual median concentration of $PM_{2.5}$, in μg/m^3



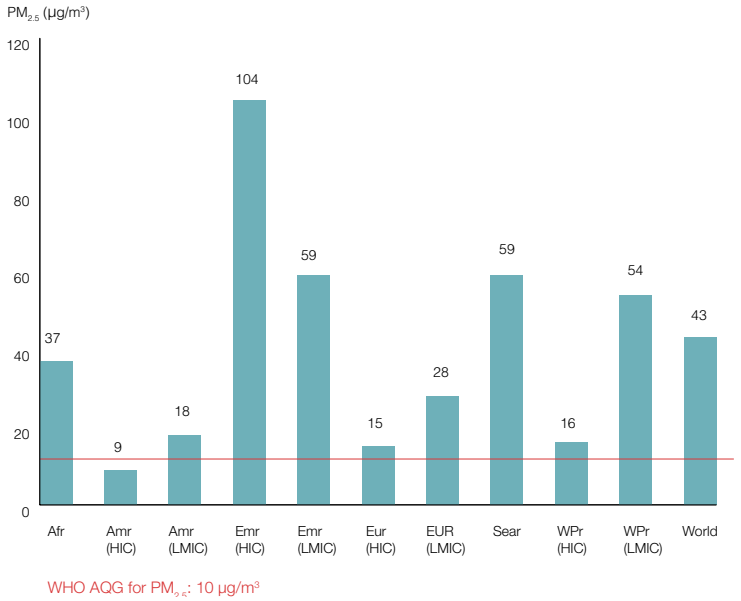
$PM_{2.5}$: Fine particulate matter of 2.5 microns or less.

Figure 10: Annual median exposure to ambient (outdoor) mean annual concentration of $PM_{2.5}$ in µg/m³, by region - urban and rural population population, 2014



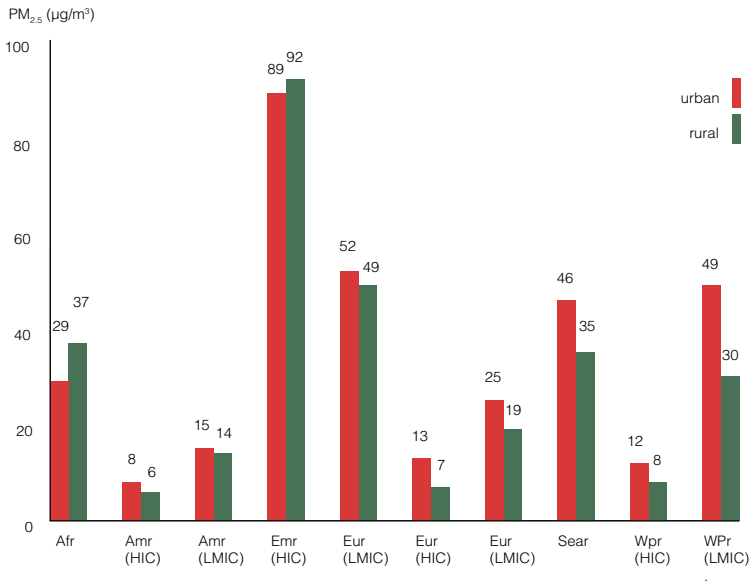
Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries; $PM_{2.5}$: particulate matter with an aerodynamic diameter of 2.5 µm or less. WHO AQG: WHO Air Quality Guidelines.

Figure 11: Annual median exposure to ambient (outdoor) $PM_{2.5}$ in µg/m³, by region - urban population only, 2014



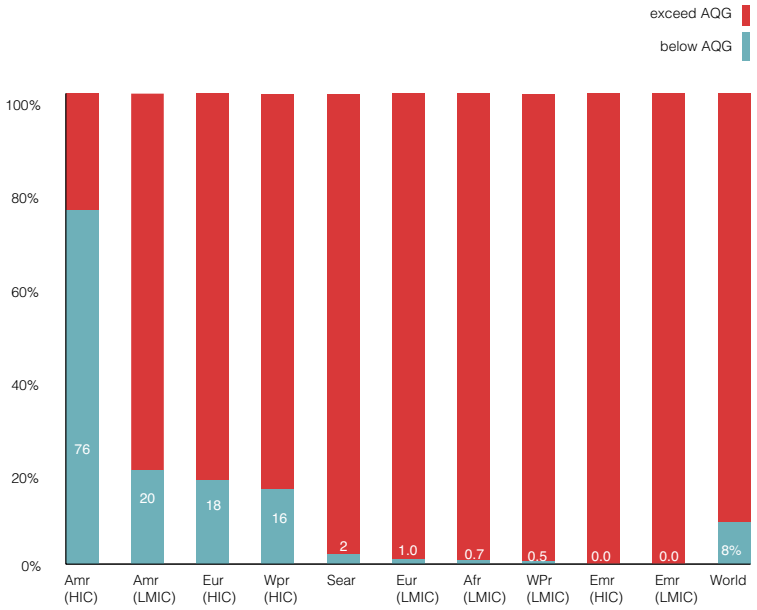
Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries. $PM_{2.5}$: particulate matter with an aerodynamic diameter of 2.5 µ$PM_{2.5}$: pa. WHO AQG: WHO Air Quality Guidelines.

Figure 12: Median $PM_{2.5}$ concentration, by geographic region - urban and rural areas combined, 2014



Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia, Wpr: Western Pacific; LMIC: low- and middle-income countries; HIC: high-income countries. Note: This graph represents the median $PM_{2.5}$ of regional urban and rural areas. These estimates are not in relation to the number of people exposed to those levels.

Figure 13: Modelled annual median particulate matter concentration compared to the WHO *Air Quality Guidelines* (AQG)[a]



Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: high-income countries; AQG: WHO Air Quality Guidelines.a Annual mean PM_{10}: 20 µg/m³; Annual mean $PM_{2.5}$: 10 µg/m³.

2.2.3. Discussion

Global population exposure to $PM_{2.5}$ matter has been modelled for the year 2014 to provide a comprehensive global coverage of estimates of air quality. Annual mean concentration of $PM_{2.5}$ is highly relevant for estimating health impacts and is used as an exposure indicator for calculating the burden of disease attributable to ambient air pollution.

The model used for this study currently has several limitations, however. The first limitation relates to population data. While the quality of estimates of population data and population density, used to calculate the average estimates of $PM_{2.5}$ for urban and rural areas is generally good for high-income countries, it can be relatively poor for some low- and middle-income areas. Furthermore, the definition of urban/rural may greatly vary by country.

The second limitation relates to resolution: The grid size is 0.1° x 0.1° (11 x 11 km close to the equator, but smaller towards the poles). This resolution may cause limitations when considering local situations. However, finer resolutions are planned for future studies. Regarding lack of monitoring data in countries, the model produces a calibration equation for each country using country level data as a priority, with regional data being used to supplement local information for countries with sparse, or no, ground monitoring data. It is acknowledged that the estimates for data-poor countries may be relatively imprecise and that this may result in apparent changes in levels of air pollution at borders with data-poor countries. In order to achiever reduced uncertainty in modelled data it is important that countries continue and/or improve ground measurement programmes.

Finally, where measurements of $PM_{2.5}$ are not available, PM_{10} measurements are used after conversion to $PM_{2.5}$ using either city, country or regional conversion factors. Conversion factors typically range between 0.4-0.8 depending on location. Localised conversion factors are likely to be more accurate, but the ability to calculate them relies on availability of localised data. The potential for inaccuracies in conversion factors means that model outputs for areas using large numbers of converted values may be less accurate than those based on measurements of $PM_{2.5}$ and extra caution should be taken in their interpretation.

Wherever possible, estimates of $PM_{2.5}$ have been computed using standardized categories and methods in order to enhance cross-national comparability. This approach may result in some cases in differences between the estimates presented here and the official national statistics prepared and endorsed by individual WHO Member States. These differences between WHO and national statistics may be larger in countries with small cities and settlements which may not be fully represented by the resolution of the WHO model. This may be compounded for isolated regions where air pollution is primarily from local sources and is experienced at very local levels.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3. Burden of disease attributable to ambient air pollution

3.1. Methods

The burden of disease attributable to ambient air pollution was estimated for the year 2012 based on Comparative Risk Assessment methods (*25*) and in consultation with expert groups for the Global Burden of Disease (GBD) study (*12, 14*). This methodology is based on combining exposure to air pollution and its distribution in the population with exposure-risk estimates at each level of exposure. This results in a population attributable fraction of disease burden, which is then applied to the health outcome of interest.

3.1.1. Source of the data

Health data

The total number of deaths, years of life lost (YLLs), years lived with disability (YLDs) and disability-adjusted life years (DALYs) by disease, country, sex and age group have been developed by the World Health Organization (*26*).

Exposure data

Annual mean concentration of $PM_{2.5}$ were modelled according to the description in the section Exposure: modelled estimates of $PM_{2.5}$. The model output provided the percentage of the population exposed to $PM_{2.5}$ by country, in increments of 1 µg/m^3.

Exposure-risk relationship

The integrated exposure-response (IER) functions, developed for the GBD 2010 study (*16*) and further updated for the GBD 2013 study (*14; 27*), were used for acute lower respiratory infections (ALRI), lung cancer, chronic obstructive pulmonary disease (COPD), stroke and ischaemic heart disease (IHD) and can be described with the following formula (*16*):

For $z < z_{cf}$,

$$RR_{IER}(z) = 1$$

For $z \geq z_{cf}$,

$$RR_{IER}(z) = 1 + \alpha \{1 - exp [-\gamma(z - z_{cf})^{\delta}]\}$$

where z is the annual mean concentration of $PM_{2.5}$, z_{cf} is the counterfactual $PM_{2.5}$ concentration, α, γ *and* δ *are* the parameter estimates. The IERs are age-specific for both IHD and stroke.

Demographic data

Population data from the UN Population Division (*21*) were used.

3.1.2. Estimation of disease burden

The percentage of the population exposed to $PM_{2.5}$ was provided by country, in increments of 1 µg/m^3; relative risks were calculated for each $PM_{2.5}$ increment, based on the integrated exposure-response functions (IER). The counterfactual concentration was selected to be a uniform distribution with lower and upper limits of 5.9 and 8.7 µg/m^3 respectively, given by the average of the minimum and and 5th percentiles of outdoor air pollution cohort exposure distribution, as described elsewhere (*14, 16*). The country population attributable fractions (PAF) for ALRI, COPD, lung cancer, stroke and IHD were calculated using the following formula, for each sex and age group:

$$PAF = \frac{\sum_{i=1}^{n} P_i(RR - 1)}{\sum_{i=1}^{n} P_i(RR - 1) + 1}$$

where i is the level of $PM_{2.5}$ in µg/m^3, and P_i is the percentage of the population exposed to that level of air pollution, and RR is the relative risk.

The attributable burden is calculated by multiplying the population-attributable fraction (PAF) by the health outcome, for each health outcome, sex and age group:

AB = PAF x health outcome

where AB is the attributable burden, PAF is the population-attributable fraction and the health outcome of interest, e.g. deaths, DALYs, YLLs, etc. DALYs are calculated by adding the years of life lived with disability (YLDs) and the YLLs. The relative risks (RRs) for YLDs were adjusted by a scalar of 1 for ALRI, lung cancer, and COPD; of 0.141 for IHD and of 0.553 for stroke (*27*). The age groups included in the analysis were children less than five years of age for ALRI, and adults above 25 years for the other diseases as previously reported (*2, 6*).

3.1.3. Uncertainty analysis

The uncertainty intervals are based on the following sources of uncertainty: (a) Uncertainty around the exposure to air pollution; and (b) uncertainty around relative risks of the integrated exposure-function. To account for uncertainty in exposure, the upper and lower exposure was obtained from the model (*24*) for each country, i.e. upper and lower credible limits for the estimate of the percentage of the population exposed to $PM_{2.5}$.

Alternative burden of disease estimates were calculated for each of these exposures. For the integrated exposure-response function, 1 000 draws of each parameter of the function were obtained (*27*) and population attributable fractions were calculated for each draw.

The final uncertainty intervals were obtained as the 2.5 and 97.5 percentiles of the draws for the alternative burden of disease calculations. As uncertainty for total mortality by cause was not taken into account, this is a partial accounting of uncertainty, and is likely to be underestimated.

3.2. Results

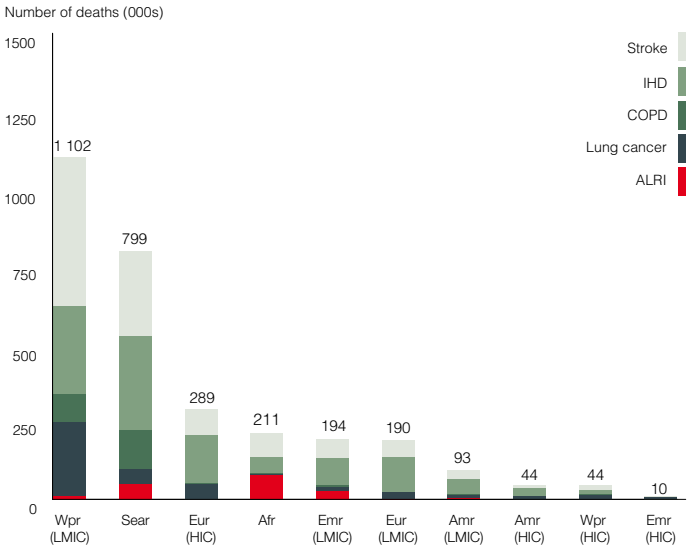
Globally, 3 million deaths were attributable to ambient air pollution (AAP) in 2012. About 87 % of these deaths occur in LMICs, which represent 82 % of the world population.

The WHO Western Pacific and South East Asian regions bear most of the burden with 1.1 million and 799 000 deaths, respectively. In other regions, about 211 000 deaths occur in Sub-Saharan Africa, 194 000 in the Eastern Mediterranean region, 190 000 in Europe, and 93 000 in the Americas. The remaining deaths occur in high-income countries of Europe (289 000), the Americas (44 000), Western Pacific (44 000), and Eastern Mediterranean (10 000) (Figure 14).

Age-standardized deaths and DALYs are shown in Figures 15 to 19. Age-standardized measures of deaths and disease are often used to compare countries, as they adjust for age distribution differences by applying age-specific mortality rates for each population. Country estimates of deaths, YLLs and DALYs are provided by disease and sex in Annex 2. The methods for exposure assessment and burden of disease estimation have been slightly updated compared with the previous estimate of 3.7 million deaths from AAP (2012), as released in 2014 (*2*).

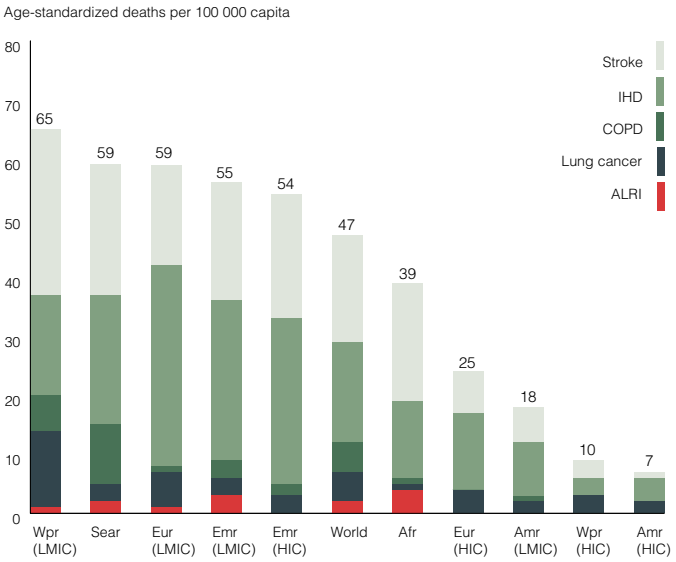
The variation is thought to be due to: 1) Additional evidence that has become available on the relationship between exposure and health outcomes, and the use of an updated version of the integrated exposure-response functions leading to modified estimates depending on the disease; and 2) revised population exposure to air pollution leading to modified estimates according to the region.

Figure 14: Deaths attributable to AAP in 2012, by disease and region



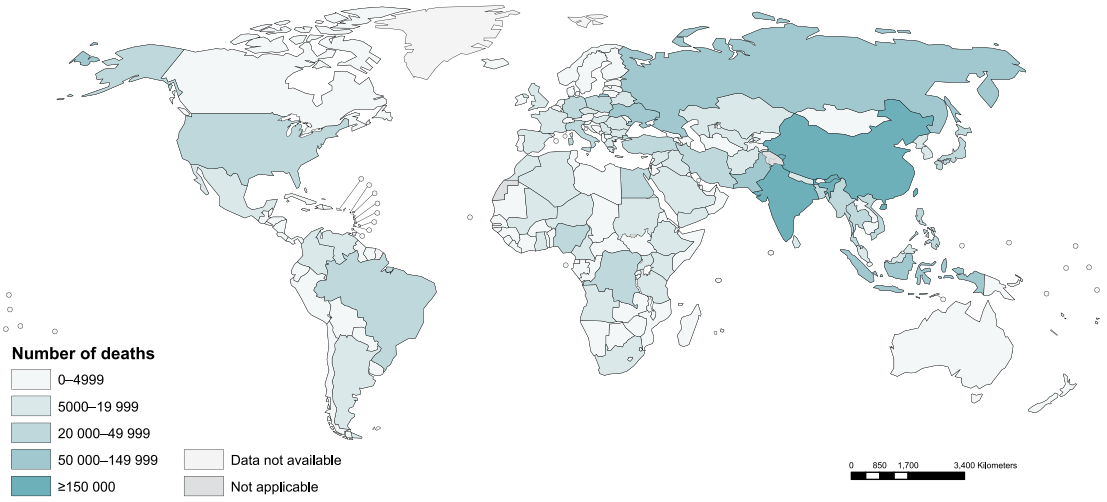
AAP: ambient air pollution; Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries

Figure 15: Age-standardized deaths per capita attributable to AAP in 2012, by disease and region



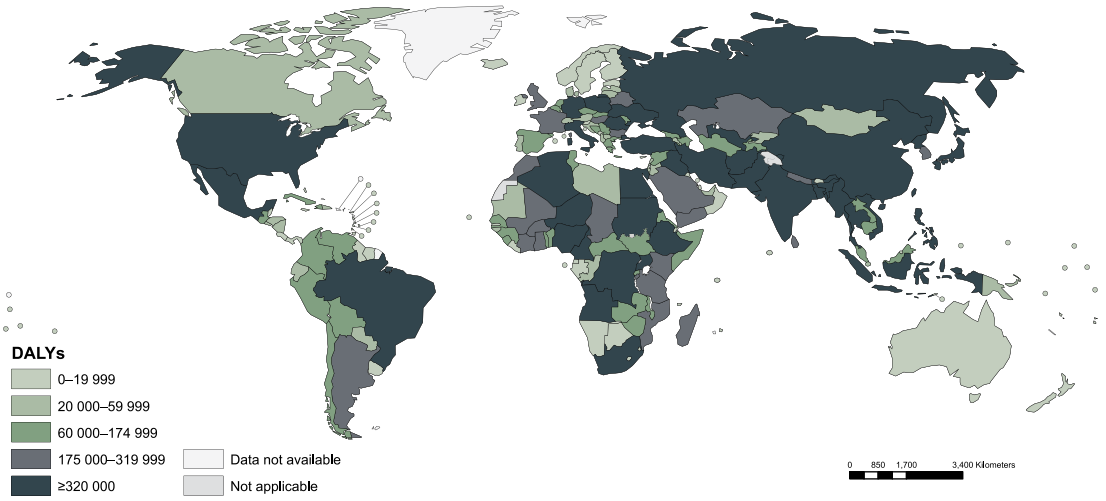
AAP: ambient air pollution; Afr: Africa; Amr: Americas; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries.

Figure 16: Deaths attributable to AAP in 2012, by country



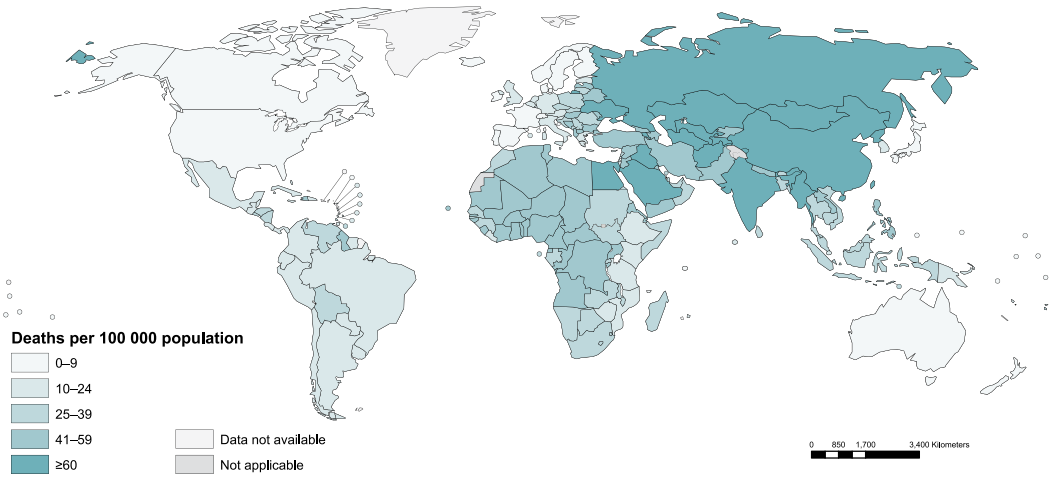
AAP: Ambient air pollution

Figure 17: DALYs attributable to AAP in 2012, by country



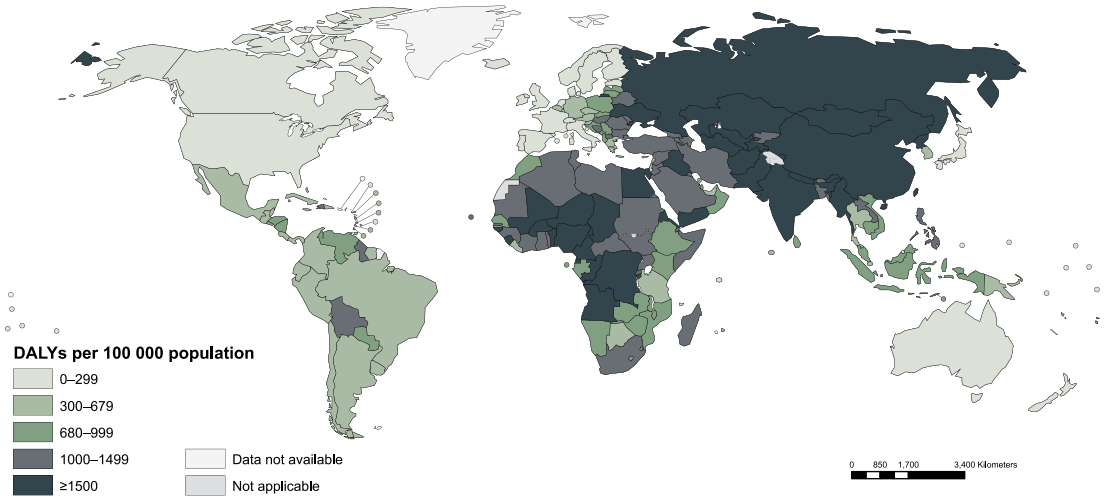
AAP: Ambient air pollution

Figure 18: Age-standardized deaths per 100 000 capita attributable to AAP in 2012, by country



AAP: Ambient air pollution

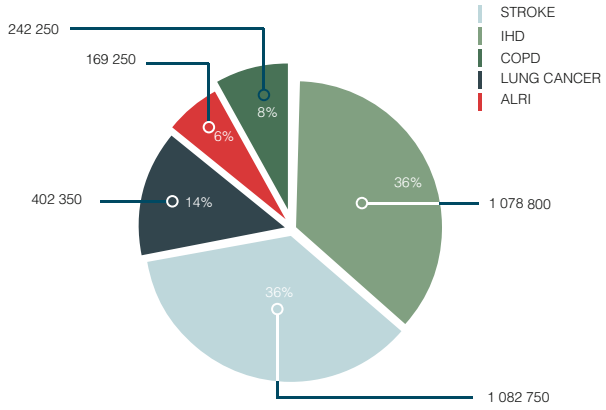
Figure 19: Age-standardized DALYs per 100 000 capita attributable to AAP in 2012, by country



AAP: Ambient air pollution

Almost 94 % of deaths worldwide are due to noncommunicable diseases in adults, such as cardiovascular diseases (stroke and ischaemic heart disease), chronic obstructive pulmonary disease and lung cancers. The remaining deaths occur in children under five years of age due to acute lower respiratory infections (Figure 20 and Tables 5 and 6).

Figure 20: Deaths attributable to AAP in 2012, by disease



Percentage represents percentage of total AAP burden. AAP: ambient air pollution; ALRI: acute lower respiratory disease; COPD: chronic obstructive pulmonary disease; IHD: ischaemic heart disease.

Table 5: Deaths attributable to AAP in 2012, by disease, age and sex

	Deaths			
Disease	*Children <5 years*	*Men*	*Women*	*Total*
ALRI	169 250	-	-	169 250
COPD	-	135 900	106 350	242 250
Lung cancer	-	285 900	116 450	402 350
IHD	-	606 350	472 450	1 078 800
Stroke	-	540 600	542 150	1 082 750
Total	***169 250***	***1 568 750***	***1 237 400***	***2 975 400***

AAP: ambient air pollution; ALRI: acute lower respiratory disease; COPD: chronic obstructive pulmonary disease; IHD: ischaemic heart disease. Men and women are adults of 25 years and above.

Table 6: Disability-adjusted life years (DALYs) attributable to AAP in 2012, by disease, age and sex

	DALYs ('000s)			
Disease	*Children <5 years*	*Men*	*Women*	*Total*
ALRI	15 478	-	-	15 478
COPD	-	3 758	2 862	6 620
Lung cancer	-	7 076	2 736	9 812
IHD	-	16 782	10 105	26 887
Stroke	-	13 927	12 210	26 137
Total	***15 478***	***41 544***	***27 913***	***84 934***

DALYs: disability-adjusted life years; AAP: ambient air pollution; ALRI: acute lower respiratory disease; COPD: chronic obstructive pulmonary disease; IHD: ischaemic heart disease. Men and women are adults of 25 years and above.

The fraction of each individual disease attributable to ambient air pollution is presented in Table 7 for DALYs, and ranges from 8 % for COPD to 25 % for lung cancers. ALRI, stroke and IHD lie in the middle with population attributable fraction of around 16 %.

Table 7 : Population attributable fraction (PAF) for the Disability-adjusted life years (DALY) attributable AAP in 2012, by disease, age, sex and region.

	ALRI	*COPD*			*Lung cancer*			*IHD*			*Stroke*		
	Children	*Men*	*Women*	*Both*	*Men*	*Women*	*Both*	*Men*	*Women*	*Both*	*Men*	*Women*	*Both*
	< 5 years	*≥25 years*			*≥25 years*			*≥25 years*			*≥25 years*		
Afr	16%	5%	5%	5%	26%	27%	27%	18%	16%	17%	18%	17%	18%
Amr (HIC)	6%	1%	0%	1%	5%	5%	5%	6%	5%	6%	5%	5%	5%
Amr (LMIC)	12%	2%	2%	2%	15%	16%	15%	12%	11%	12%	11%	10%	11%
Emr (HIC)	23%	14%	14%	14%	47%	47%	47%	23%	20%	22%	25%	22%	24%
Emr (LMIC)	18%	9%	9%	9%	35%	36%	36%	19%	18%	18%	20%	19%	20%
Eur (HIC)	10%	2%	2%	2%	15%	15%	15%	12%	10%	11%	11%	9%	10%
Eur (LMIC)	15%	4%	4%	4%	24%	23%	23%	14%	12%	13%	14%	12%	13%
Sear	19%	10%	10%	10%	33%	32%	33%	20%	18%	19%	20%	18%	19%
Wpr (HIC)	8%	2%	2%	2%	15%	14%	15%	10%	8%	9%	10%	8%	9%
Wpr (LMIC)	17%	9%	9%	9%	38%	38%	38%	17%	16%	17%	19%	18%	19%
HIC	10%	2%	1%	1%	13%	11%	12%	10%	9%	10%	10%	9%	9%
LMIC	17%	9%	9%	9%	34%	34%	34%	18%	16%	17%	19%	17%	18%
World	*17%*	*8%*	*8%*	*8%*	*26%*	*24%*	*25%*	*16%*	*14%*	*15%*	*17%*	*16%*	*16%*

DALY : Disability-adjusted life years ; PAF: population attributable fraction ; AAP: Ambient air pollution ; ALRI : Acute lower respiratory disease ; COPD: Chronic obstructive pulmonary disease ; IHD: Ischaemic heart disease. Afr : Africa ; Amr : America ; Emr : Eastern Mediterranean ; Eur : Europe ; Sear: South-East Asia ; Wpr: Western Pacific ; LMIC : Low- and middle-income countries ; HIC : High-income countries.

3.3. Discussion

In 2012, ambient air pollution from particulate matter was responsible for about 3 million deaths and 85 million DALYs. Burden of disease calculation is based on: 1) Population exposure assessment; 2) exposure-response functions; and 3) underlying health data. As data on air quality and epidemiological evidence is accumulating rapidly, and methodolodies for both points 1) and 2) are being revised on a regular basis, and these figures are evolving.

Decision-makers and researchers need accurate and reliable estimates of air pollution exposure and the related health impacts. Differing needs (cause-specific vs all-cause mortality, national or regional assessment), publication schedules and audience may lead to different approaches and data use, and therefore different results *(28–31)*. The methods used in this report were developed for global reporting and using the latest available evidence and health data that complied with WHO standards; they may therefore differ from official national statistics prepared and endorsed by individual WHO Member States.

Some regions, such as the Eastern Mediterranean and Africa are highly affected by natural desert dust particles. This results in high health burden according to the current methods, which assume natural dust affects health the same way as $PM_{2.5}$ from other sources.

The health impacts associated with exposure to dust are not yet fully understood, and are currently treated the same way as those from air pollution in industrialized countries where most of the epidemiological studies have been performed.

There is a need to for a better assessment of the health impacts from natural dust, as it could result in much lower burden than those from antropogenic particulate matter (*32, 33*).

The actual impact of air pollution on health presented here is a conservative figure. Many other diseases have been associated with air pollution but are not included in this assessment, because the evidence was not considered to be sufficiently robust, such as pre-term birth or low birth weight. Also, it does not include the separate impacts of health from other air pollutants such as nitrogen oxides (NOx) or ozone (O_3).

As data on air pollutants, methods to assess population exposure and epidemiological evidence accumulates, health effects of additional pollutants should be taken into account in the future as it has already been done for ozone *(14)*. In addition, assessments of the health impacts from interventions to reduce air pollution using rigorous epidemiological methodology are much needed. These would be able to take account of context, of intervention packages and provide a stronger basis for assessing real-life impacts of air quality improvement efforts.

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4. Conclusion and way forward

Ambient air pollution kills about 3 million people annually and is affecting all regions of the world, although Western Pacific and South East Asia are the most affected. About 90 % of people breathe air that does not comply with the WHO Air Quality Guidelines.

The data presented here carry significant uncertainties but constitute the best evidence available to date. Air quality data and epidemiological evidence on the effects of air pollutants on health are growing quickly. They will continue to improve exposure assessment to particulate matter and other pollutants, as well as for burden of disease estimation.

More epidemiological studies of the long-term effects of exposure to air pollution in low-income settings, where air pollution reaches unacceptable levels, are urgently needed to better inform the exposure-response relationships. Additional evidence on health outcomes currently not assessed in the analysis, because of lack of knowledge, is also crucial.

In terms of monitoring and reporting, there is a huge gap in monitoring and reporting air pollutants in low and middle-income regions, especially in Africa and Asia but also other regions. Strengthening capacities of cities to monitor their air quality with standardized methods, reliable and good quality instrumentation, and sustainable structures is key.


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Exposure: ground measurements of PM_{10} and $PM_{2.5}$

The database was compiled during 2015 with some updates in the first quarter of 2016 by Sophie Gumy, Tara Neville, Kristina Dushaj and Annette Prüss-Ustün (WHO Geneva) with contributions from Mazen Malkawi (WHO CEHA, Amman), Christian Gapp (WHO ECEH, Bonn), Alberto González Ortiz (European Environment Agency), Kaye Patdu and Candy Tong (Clean Air Asia), Michael Brauer (School of Population and Public Health, University of British Columbia, Canada), and several national institutions.

Exposure: modelled estimates of $PM_{2.5}$

The model to produce the estimates was developed under the leadership of WHO and the University of Bath, United Kingdom, with the input and review of an expert group of 12 leading scientists in the area. The scientist leading the work was Gavin Shaddick (University of Bath) who was assisted by Matthew Thomas and Amelia Jobling (University of Bath). The expert group consisted of Gavin Shaddick, Michael Brauer (University of British Columbia), Aaron van Donkelaar (Dalhousie University), Rick Burnett (Health Canada), Howard Chang (Emory University), Aaron Cohen (Health Effects Institute), Rita van Dingenen (Joint Research Centre, European Commission), Yang Liu (Emory University), Randall Martin (Dalhousie), Lance Waller (Emory University), Jason West (North Carolina) and Jim Zidek (University of British Columbia), in addition to Annette Prüss-Ustün, Sophie Gumy and Carlos Dora of WHO. The model was presented and reviewed at the WHO Global Platform on Air Quality, Geneva, in August 2015.

Burden of disease attributable to ambient air pollution

The burden of disease was calculated by Sophie Gumy and Annette Prüss-Ustün (WHO Geneva).

annex

Annex 1: Modelled population exposure to particulate matter ($PM_{2.5}$), by country

Country income grouping is based on the World Bank analytical income classification of economies[1] corresponding to the year of the data.

Table A1: Annual median concentration of particulate matter of an aerodynamic diameter of 2.5 mm or less ($PM_{2.5}$) with lower and upper bound, population-weighted and modelled, by area and country

		$PM_{2.5}$ [µg/m³], urban and rural areas			$PM_{2.5}$ [µg/m³], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Emr (LMIC)	Afghanistan	46	26	80	63	41	98
Eur (LMIC)	Albania	16	9	29	17	10	30
Afr	Algeria	27	9	74	25	8	73
Eur (HIC)	Andorra	10	6	18	11	6	17
Afr	Angola	27	8	95	42	9	182
Amr (HIC)	Antigua and Barbuda	13	6	28	13	6	28
Amr (LMIC)	Argentina	13	8	22	14	9	24
Eur (LMIC)	Armenia	21	7	66	25	7	87
Wpr (HIC)	Australia	6	4	8	6	4	9
Eur (HIC)	Austria	16	11	23	17	12	24
Eur (LMIC)	Azerbaijan	24	8	73	26	8	86
Amr (HIC)	Bahamas	13	6	28	13	6	28
Emr (HIC)	Bahrain	60	43	82	60	44	82
Sear	Bangladesh	84	53	131	89	58	134
Amr (HIC)	Barbados	14	6	31	14	6	31
Eur (LMIC)	Belarus	17	6	48	18	6	54
Eur (HIC)	Belgium	15	11	22	16	11	23
Amr (LMIC)	Belize	22	7	64	21	7	62
Afr	Benin	31	9	107	28	7	106
Sear	Bhutan	48	30	79	39	30	50
Amr (LMIC)	Bolivia, Plurinational States of	27	17	45	32	20	49
Eur (LMIC)	Bosnia and Herzegovina	42	23	76	55	30	100
Afr	Botswana	16	6	42	19	6	57
Amr (LMIC)	Brazil	10	7	16	11	8	17
Wpr HIC	Brunei Darussalam	5	3	9	5	3	9
Eur (LMIC)	Bulgaria	27	18	40	30	21	42
Afr	Burkina Faso	37	12	119	37	10	132

[1] *For more information, see: Country classification. Washington (DC): World Bank (https://datahelpdesk.worldbank.org/knowledgebase/topics/19280-country-classification, accessed February 2016).*

		$PM_{2.5}$ [μg/m³], urban and rural areas			$PM_{2.5}$ [μg/m³], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Afr	Burundi	38	11	136	49	12	198
Afr	Cabo Verde	36	14	96	NA	NA	NA
Wpr (LMIC)	Cambodia	23	7	75	25	6	99
Afr	Cameroon	65	38	111	64	39	104
Amr (HIC)	Canada	7	5	10	7	5	10
Afr	Central African Republic	39	12	129	56	15	217
Afr	Chad	39	14	115	61	18	207
Amr (HIC)	Chile	20	13	30	25	18	36
Wpr (LMIC)	China	54	37	80	59	42	84
Amr (LMIC)	Colombia	17	11	25	18	13	26
Afr	Comoros	16	8	32	16	8	32
Afr	Congo	40	11	143	57	13	236
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	18	12	27	19	13	27
Eur (HIC)	Croatia	19	12	31	20	13	32
Amr (LMIC)	Cuba	17	7	38	16	7	38
Eur (HIC)	Cyprus	17	11	26	17	11	26
Eur (HIC)	Czech Republic	20	14	29	21	15	29
Afr	Côte d'Ivoire	22	7	71	19	5	71
Sear	Democratic People's Republic of Korea	27	8	92	31	8	118
Afr	Democratic Republic of the Congo	38	12	121	61	16	225
Eur (HIC)	Denmark	10	7	16	11	7	17
Emr (LMIC)	Djibouti	39	9	159	46	10	211
Amr (LMIC)	Dominica	13	6	28	13	6	28
Amr (LMIC)	Dominican Republic	16	7	37	17	7	40
Amr (LMIC)	Ecuador	13	9	20	13	9	20
Emr (LMIC)	Egypt	93	50	171	101	54	188
Amr (LMIC)	El Salvador	35	20	62	37	22	64
Afr	Equatorial Guinea	33	7	153	32	8	128
Afr	Eritrea	35	10	126	36	9	138
Eur (HIC)	Estonia	8	5	13	8	5	13
Afr	Ethiopia	30	9	94	36	10	132
Wpr (LMIC)	Fiji	6	2	22	6	2	22
Eur (HIC)	Finland	7	5	11	7	5	11
Eur (HIC)	France	12	8	17	13	9	18
Afr	Gabon	30	8	115	36	7	169
Afr	Gambia	39	7	234	43	6	306
Eur (LMIC)	Georgia	19	11	33	23	13	40

		$PM_{2.5}$ [$\mu g/m^3$], urban and rural areas			$PM_{2.5}$ [$\mu g/m^3$], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Eur (HIC)	Germany	14	9	20	14	10	21
Afr	Ghana	24	12	46	22	10	46
Eur (HIC)	Greece	12	8	18	13	9	18
Amr (LMIC)	Grenada	14	6	31	14	6	32
Amr (LMIC)	Guatemala	32	20	51	33	23	49
Afr	Guinea	21	7	66	19	5	68
Afr	Guinea-Bissau	27	7	103	29	6	138
Amr (LMIC)	Guyana	15	5	45	16	5	54
Amr (LMIC)	Haiti	22	7	63	25	8	79
Amr (LMIC)	Honduras	35	20	60	40	23	68
Eur (LMIC)	Hungary	21	14	32	23	16	33
Eur (HIC)	Iceland	8	5	12	8	5	12
Sear	India	62	41	95	66	45	97
Sear	Indonesia	14	9	23	18	11	28
Emr (LMIC)	Iran (Islamic Republic of)	42	27	63	40	28	58
Emr (LMIC)	Iraq	50	18	141	51	17	154
Eur (HIC)	Ireland	9	6	14	10	7	14
Eur (HIC)	Israel	19	13	28	19	14	27
Eur (HIC)	Italy	17	12	25	18	13	26
Amr (LMIC)	Jamaica	16	11	25	17	12	25
Wpr (HIC)	Japan	13	8	19	13	9	19
Emr (LMIC)	Jordan	36	24	53	38	27	52
Eur (LMIC)	Kazakhstan	15	6	43	21	7	67
Afr	Kenya	16	9	28	17	10	29
Wpr (LMIC)	Kiribati	5	1	20	NA	NA	NA
Emr (HIC)	Kuwait	75	50	112	78	53	116
Eur (LMIC)	Kyrgyzstan	15	8	27	15	8	28
Wpr (LMIC)	Lao People's Democratic Republic	27	9	76	34	10	106
Eur (HIC)	Latvia	19	12	29	20	13	31
Emr (LMIC)	Lebanon	30	19	45	31	21	45
Afr	Lesotho	18	4	76	22	4	113
Afr	Liberia	8	4	17	6	3	15
Emr (LMIC)	Libya	61	22	171	58	19	175
Eur (HIC)	Lithuania	18	12	28	19	13	28
Eur (HIC)	Luxembourg	16	11	24	17	12	23
Afr	Madagascar	17	9	33	32	19	54
Afr	Malawi	22	7	72	26	7	95
Wpr (LMIC)	Malaysia	15	9	24	17	10	26
Sear	Maldives	16	8	29	NA	NA	NA

		$PM_{2.5}$ [μg/m³], urban and rural areas			$PM_{2.5}$ [μg/m³], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Afr	Mali	39	13	124	35	10	120
Eur (HIC)	Malta	14	9	21	14	10	20
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA
Afr	Mauritania	65	19	230	86	21	368
Afr	Mauritius	14	9	23	14	8	24
Amr (LMIC)	Mexico	20	13	30	20	13	31
Wpr (LMIC)	Micronesia (Federated States of)	6	2	22	6	2	23
Eur (HIC)	Monaco	9	6	18	9	6	18
Wpr (LMIC)	Mongolia	20	13	32	32	20	51
Eur (LMIC)	Montenegro	22	14	35	24	15	38
Emr (LMIC)	Morocco	20	13	32	19	12	29
Afr	Mozambique	17	6	47	22	7	69
Sear	Myanmar	51	32	80	57	35	90
Afr	Namibia	18	6	51	18	6	57
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA
Sear	Nepal	64	33	123	74	39	140
Eur (HIC)	Netherlands	15	10	22	15	10	22
Wpr (HIC)	New Zealand	5	4	8	5	4	8
Amr (LMIC)	Nicaragua	24	8	74	26	7	95
Afr	Niger	59	19	191	51	15	177
Afr	Nigeria	39	25	61	38	24	58
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	9	6	13	9	6	14
Emr (HIC)	Oman	48	18	132	47	15	145
Emr (LMIC)	Pakistan	60	37	97	68	43	107
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	12	7	20	13	7	23
Wpr (LMIC)	Papua New Guinea	10	2	45	12	2	71
Amr (LMIC)	Paraguay	15	9	25	17	10	28
Amr (LMIC)	Peru	26	16	42	36	23	54
Wpr (LMIC)	Philippines	22	14	35	27	17	43
Eur (HIC)	Poland	24	16	35	25	18	36
Eur (HIC)	Portugal	9	6	14	10	6	14
Emr (HIC)	Qatar	103	67	160	105	69	159
Wpr (HIC)	Republic of Korea	27	18	39	28	19	40
Eur (LMIC)	Republic of Moldova	17	5	59	17	4	68
Eur (LMIC)	Romania	19	13	28	20	14	29
Eur (HIC)	Russian Federation	15	8	27	17	9	31
Afr	Rwanda	43	13	143	51	14	185

		$PM_{2.5}$ [μg/m³], urban and rural areas			$PM_{2.5}$ [μg/m³], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	15	7	31	15	7	32
Amr (LMIC)	Saint Vincent and the Grenadines	13	6	28	NA	NA	NA
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	13	5	29	NA	NA	NA
Emr (HIC)	Saudi Arabia	108	67	174	127	79	205
Afr	Senegal	34	21	55	43	29	64
Eur (LMIC)	Serbia	19	12	31	21	14	33
Afr	Seychelles	13	7	27	13	7	27
Afr	Sierra Leone	17	4	69	17	3	86
Wpr (HIC)	Singapore	17	9	31	17	9	31
Eur (HIC)	Slovakia	19	13	29	20	14	29
Eur (HIC)	Slovenia	18	12	27	19	14	28
Wpr (LMIC)	Solomon Islands	5	1	18	5	1	19
Emr (LMIC)	Somalia	16	5	49	17	4	66
Afr	South Africa	27	18	42	31	21	48
Emr (LMIC)	South Sudan	29	11	81	32	12	91
Eur (HIC)	Spain	9	7	14	10	7	14
Sear	Sri Lanka	27	14	51	28	15	55
Emr (LMIC)	Sudan	44	14	137	53	16	178
Amr (LMIC)	Suriname	16	5	51	16	4	63
Afr	Swaziland	18	5	59	20	5	72
Eur (HIC)	Sweden	6	4	9	6	4	9
Eur (HIC)	Switzerland	12	8	18	13	8	18
Emr (LMIC)	Syrian Arab Republic	34	12	98	34	11	105
Eur (LMIC)	Tajikistan	41	12	138	51	14	187
Sear	Thailand	25	16	37	27	19	38
Eur (LMIC)	The former Yugoslav Republic of Macedonia	37	23	59	43	28	65
Sear	Timor-Leste	15	3	65	15	3	69
Afr	Togo	28	8	107	26	6	113
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	13	6	28	13	6	28
Emr (LMIC)	Tunisia	36	22	61	35	21	59
Eur (LMIC)	Turkey	34	22	50	35	24	51
Eur (LMIC)	Turkmenistan	25	8	76	26	7	95
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA
Afr	Uganda	57	30	108	80	46	138
Eur (LMIC)	Ukraine	16	6	44	17	6	48

		$PM_{2.5}$ [μg/m³], urban and rural areas			$PM_{2.5}$ [μg/m³], urban areas		
Region	*Country*	*Median*	*Lower*	*Upper*	*Median*	*Lower*	*Upper*
Emr (HIC)	United Arab Emirates	64	39	104	64	39	106
Eur (HIC)	United Kingdom	12	8	18	12	8	18
Afr	United Republic of Tanzania	22	11	42	24	12	47
Amr (HIC)	United States of America	8	5	12	8	6	12
Amr (HIC)	Uruguay	11	8	17	11	8	17
Eur (LMIC)	Uzbekistan	32	10	102	38	12	128
Wpr (LMIC)	Vanuatu	6	2	23	7	2	26
Amr (LMIC)	Venezuela, Bolivarian Republic of	22	13	39	24	14	41
Wpr (LMIC)	Viet Nam	26	15	43	28	17	45
Emr (LMIC)	Yemen	43	11	173	42	9	208
Afr	Zambia	23	9	64	29	10	90
Afr	Zimbabwe	20	7	55	24	8	75

$PM_{2.5}$: Particulate matter of a diameter of 2.5 mm or less; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

Wherever possible, estimates of $PM_{2.5}$ have been computed using standardized categories and methods in order to enhance cross-national comparability. This approach may result in some cases in differences between the estimates presented here and the official national statistics prepared and endorsed by individual WHO Member States.

These differences between WHO and national statistics may be larger for occur in countries with small cities and settlements which may not be fully represented by the resolution of the WHO model. This may be compounded for isolated regions where air pollution is primarily from local sources and is experienced at very local levels.

Annex 2: Deaths, YLLs and DALYs attributable to ambient air pollution, by country

Table A2.1: Deaths attributable to AAP in 2012 in both sex, by disease and country

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	3 772	188	301	3 813	3 071	11 145	(8961, 13570)	37	81
Eur (LMIC)	Albania	8	20	184	850	780	1 842	(744, 2452)	64	47
Afr	Algeria	341	131	633	5 087	5 231	11 424	(4577, 16150)	31	41
Eur (HIC)	Andorra	0	0	3	13	6	22	(0, 33)	27	12
Afr	Angola	3 687	131	39	1 491	1 710	7 058	(1377, 11428)	31	51
Amr (HIC)	Antigua and Barbuda	0	0	1	10	6	17	(0, 25)	19	20
Amr (LMIC)	Argentina	85	192	1 500	5 256	2 723	9 756	(2660, 13385)	23	18
Eur (LMIC)	Armenia	8	53	370	1 643	676	2 750	(107, 4229)	92	67
Wpr (HIC)	Australia	0	1	14	58	20	93	(1, 2829)	0.4	0.2
Eur (HIC)	Austria	1	63	687	1 642	496	2 890	(2010, 3587)	34	15
Eur (LMIC)	Azerbaijan	135	45	238	2 656	1 222	4 297	(954, 6220)	46	57
Amr (HIC)	Bahamas	3	0	5	31	19	57	(0, 86)	15	17
Emr (HIC)	Bahrain	2	7	25	76	39	148	(132, 165)	11	33
Sear	Bangladesh	3 850	8 316	4 375	10 291	10 617	37 449	(30245, 46036)	24	38
Amr (HIC)	Barbados	1	0	4	22	17	44	(0, 64)	15	10
Eur (LMIC)	Belarus	4	57	563	6 680	2 146	9 450	(159, 13717)	100	58
Eur (HIC)	Belgium	1	115	1 232	1 276	718	3 343	(2135, 4294)	30	14
Amr (LMIC)	Belize	1	1	3	18	13	36	(5, 54)	11	21
Afr	Benin	714	41	19	767	1 065	2 606	(909, 3972)	26	52
Sear	Bhutan	20	29	14	76	53	192	(154, 237)	26	40
Amr (LMIC)	Bolivia, Plurinational States of	265	68	88	1 126	973	2 521	(1983, 3045)	25	31
Eur (LMIC)	Bosnia and Herzegovina	2	100	583	1 398	1 454	3 538	(2753, 4373)	92	53
Afr	Botswana	35	3	10	89	136	273	(2, 423)	13	26
Amr (LMIC)	Brazil	198	539	2 901	12 987	9 616	26 241	(11292, 39983)	13	14
Wpr HIC	Brunei Darussalam	0	0	0	0	0	1	(0, 40)	0.2	0.3
Eur (LMIC)	Bulgaria	20	195	960	4 031	3 428	8 634	(7033, 10210)	118	55
Afr	Burkina Faso	1 651	72	45	1 120	1 735	4 623	(2381, 6922)	28	58

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burundi	1 378	45	21	532	1 025	3 001	(1348, 4689)	30	48
Afr	Cabo Verde	315	62	230	1 249	1 078	2 934	(222, 4510)	20	37
Wpr (LMIC)	Cambodia	2 621	169	62	1 736	2 413	7 000	(5755, 8463)	32	54
Afr	Cameroon	1	23	503	1 060	300	1 886	(29, 6607)	5	3
Amr (HIC)	Canada	5	7	1	37	78	128	(79, 181)	25	37
Afr	Central African Republic	452	64	12	306	381	1 215	(610, 1889)	26	40
Afr	Chad	2 426	61	20	731	1 101	4 340	(2410, 6438)	34	52
Amr (HIC)	Chile	17	89	587	1 087	1 042	2 822	(2064, 3465)	16	13
Wpr (LMIC)	China	6 716	90 626	228 479	257 638	449 373	1 032 833	(869033, 1212034)	76	70
Amr (LMIC)	Colombia	158	270	748	3 688	1 638	6 502	(4499, 8063)	14	17
Afr	Comoros	32	2	1	31	59	125	(29, 174)	17	34
Afr	Congo	324	43	8	386	484	1 244	(605, 1910)	29	50
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	2	26	65	380	172	644	(469, 786)	14	14
Eur (HIC)	Croatia	0	49	583	1 404	806	2 842	(2028, 3556)	66	31
Amr (LMIC)	Cuba	7	71	975	1 989	1 086	4 127	(338, 6115)	36	23
Eur (HIC)	Cyprus	0	3	56	120	45	223	(150, 281)	20	14
Eur (HIC)	Czech Republic	3	83	1 210	3 620	1 194	6 110	(4788, 7314)	58	29
Afr	Côte d'Ivoire	1 431	64	42	1 394	2 038	4 970	(688, 7767)	24	43
Sear	Democratic People's Republic of Korea	230	1 210	3 334	3 910	6 911	15 596	(2047, 26352)	63	62
Afr	Democratic Republic of the Congo	10 520	473	87	4 828	7 124	23 034	(11528, 35080)	33	52
Eur (HIC)	Denmark	0	39	402	434	263	1 138	(52, 1845)	20	10
Emr (LMIC)	Djibouti	54	5	5	57	92	212	(82, 336)	25	42
Amr (LMIC)	Dominica	0	0	1	6	5	13	(1, 19)	18	16
Amr (LMIC)	Dominican Republic	85	20	164	1 098	641	2 008	(173, 2864)	20	24
Amr (LMIC)	Ecuador	86	43	152	875	615	1 771	(860, 2308)	11	14
Emr (LMIC)	Egypt	951	1 968	2 079	22 327	16 206	43 531	(36017, 51817)	51	77
Amr (LMIC)	El Salvador	46	76	97	953	326	1 498	(1189, 1828)	25	27

		Number of deaths							Deaths per 100 000 capita	
Region	Country	ALRI[a]	COPD[b]	Lung cancer[b]	IHD[b]	Stroke[b]	Total	Uncertainty interval	Crude rate	Age-standardized rate
Afr	Equatorial Guinea	62	8	5	75	77	228	(18, 384)	29	50
Afr	Eritrea	362	22	17	307	534	1 243	(543, 1904)	25	56
Eur (HIC)	Estonia	0	1	36	233	48	319	(4, 624)	24	11
Afr	Ethiopia	5 565	400	376	2 320	4 595	13 257	(4890, 20742)	14	23
Wpr (LMIC)	Fiji	0	0	0	2	0	2	(0, 302)	0.2	0.3
Eur (HIC)	Finland	0	1	31	233	62	327	(1, 1609)	6	3
Eur (HIC)	France	4	126	4 256	3 793	2 774	10 954	(3825, 15204)	17	8
Afr	Gabon	58	18	16	138	155	385	(76, 622)	24	34
Afr	Gambia	114	7	5	100	160	386	(24, 675)	21	46
Eur (LMIC)	Georgia	12	52	192	2 127	1 358	3 741	(2341, 4741)	90	51
Eur (HIC)	Germany	5	569	6 821	13 392	5 372	26 160	(12729, 34229)	33	13
Afr	Ghana	968	72	75	1 810	2 804	5 728	(3816, 7407)	22	41
Eur (HIC)	Greece	1	70	844	2 388	1 705	5 008	(1717, 6683)	45	19
Amr (LMIC)	Grenada	0	0	1	11	9	22	(0, 32)	21	23
Amr (LMIC)	Guatemala	396	69	162	880	473	1 980	(1598, 2378)	13	19
Afr	Guinea	690	32	16	723	1 006	2 466	(273, 3832)	21	38
Afr	Guinea-Bissau	159	7	4	120	174	464	(38, 755)	27	47
Amr (LMIC)	Guyana	3	1	4	123	99	230	(0, 352)	30	43
Amr (LMIC)	Haiti	574	14	98	801	1 535	3 022	(381, 4532)	29	46
Amr (LMIC)	Honduras	99	81	93	809	493	1 575	(1242, 1927)	20	32
Eur (LMIC)	Hungary	4	160	2 000	4 324	1 659	8 147	(6279, 9881)	82	42
Eur (HIC)	Iceland	0	0	4	12	4	21	(0, 64)	6	4
Sear	India	39 914	110 500	26 334	249 388	195 001	621 138	(515242, 744416)	49	68
Sear	Indonesia	2 534	1 000	4 951	16 781	36 527	61 792	(32783, 81876)	25	38
Emr (LMIC)	Iran (Islamic Republic of)	600	434	1 460	16 484	7 290	26 267	(22583, 30064)	34	50
Emr (LMIC)	Iraq	1 010	173	728	4 974	3 200	10 085	(6690, 13684)	31	68
Eur (HIC)	Ireland	0	12	142	403	124	681	(43, 1071)	15	10
Eur (HIC)	Israel	1	35	411	509	262	1 219	(912, 1501)	16	11
Eur (HIC)	Italy	2	558	6 391	8 292	5 814	21 057	(14291, 26531)	35	13

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	Jamaica	8	8	82	246	349	693	(484, 869)	25	22
Wpr (HIC)	Japan	18	281	9 743	10 286	10 463	30 790	(11488, 41945)	24	9
Emr (LMIC)	Jordan	63	34	159	743	484	1 483	(1269, 1704)	21	43
Eur (LMIC)	Kazakhstan	89	117	669	6 307	3 111	10 293	(1322, 15858)	61	69
Afr	Kenya	2 021	31	79	1 192	1 780	5 102	(1993, 6971)	12	21
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 22)	0.0	0.0
Emr (HIC)	Kuwait	12	3	35	319	117	487	(433, 544)	14	45
Eur (LMIC)	Kyrgyzstan	48	33	73	1 357	617	2 129	(850, 2784)	38	59
Wpr (LMIC)	Lao People's Democratic Republic	399	48	122	668	620	1 857	(758, 2730)	29	52
Eur (HIC)	Latvia	0	7	199	1 156	496	1 859	(1363, 2268)	91	42
Emr (LMIC)	Lebanon	6	25	209	921	274	1 434	(1183, 1679)	29	30
Afr	Lesotho	82	16	6	89	195	387	(0, 719)	19	31
Afr	Liberia	63	4	2	75	91	236	(0, 621)	6	11
Emr (LMIC)	Libya	30	60	251	1 038	674	2 054	(1408, 2758)	33	58
Eur (HIC)	Lithuania	1	16	223	1 424	553	2 216	(1671, 2678)	73	35
Eur (HIC)	Luxembourg	0	4	37	35	30	106	(69, 135)	20	11
Afr	Madagascar	914	47	136	1 135	1 984	4 215	(1953, 5715)	19	39
Afr	Malawi	747	42	13	697	1 207	2 706	(87, 4273)	17	35
Wpr (LMIC)	Malaysia	29	148	670	3 630	1 773	6 251	(3548, 8036)	22	32
Sear	Maldives	1	1	3	23	20	48	(12, 65)	14	23
Afr	Mali	2 291	154	49	1 122	1 601	5 218	(2794, 7902)	32	60
Eur (HIC)	Malta	0	1	27	76	25	129	(66, 164)	31	16
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	340	23	10	237	369	978	(597, 1453)	26	46
Afr	Mauritius	2	2	23	144	82	252	(109, 326)	20	18
Amr (LMIC)	Mexico	467	742	1 336	9 983	4 269	16 798	(12475, 20528)	14	17
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	0	0	0	(0, 19)	0.1	0.2
Eur (HIC)	Monaco	0	0	1	4	2	8	(0, 14)	20	9

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Wpr (LMIC)	Mongolia	39	18	60	572	434	1 123	(779, 1389)	40	70
Eur (LMIC)	Montenegro	0	1	77	160	145	382	(284, 472)	61	39
Emr (LMIC)	Morocco	369	84	767	3 379	3 535	8 134	(6109, 9907)	25	31
Afr	Mozambique	1 350	58	58	598	1 278	3 343	(132, 5360)	13	21
Sear	Myanmar	1 530	1 561	2 780	5 476	11 316	22 664	(18744, 26942)	43	61
Afr	Namibia	34	10	9	92	162	306	(40, 481)	13	27
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	740	1 770	923	3 328	3 183	9 943	(7426, 13057)	36	56
Eur (HIC)	Netherlands	1	137	1 839	1 203	836	4 017	(2176, 5394)	24	12
Wpr (HIC)	New Zealand	0	0	3	13	4	20	(0, 463)	0.5	0.3
Amr (LMIC)	Nicaragua	72	40	64	671	399	1 247	(196, 1874)	21	31
Afr	Niger	3 168	99	7	1 073	1 835	6 183	(3802, 9146)	35	57
Afr	Nigeria	22 233	652	264	9 618	13 983	46 750	(38031, 56243)	28	44
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	0	12	137	330	156	636	(24, 1226)	13	6
Emr (HIC)	Oman	10	6	25	257	180	477	(326, 634)	13	36
Emr (LMIC)	Pakistan	13 683	5 688	2 394	20 772	16 705	59 241	(48757, 71340)	33	52
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	15	5	36	227	142	425	(54, 615)	11	12
Wpr (LMIC)	Papua New Guinea	165	10	26	186	132	519	(0, 1208)	7	12
Amr (LMIC)	Paraguay	42	16	108	529	465	1 159	(534, 1523)	18	25
Amr (LMIC)	Peru	163	128	651	1 949	1 348	4 239	(3277, 5148)	14	17
Wpr (LMIC)	Philippines	1 666	599	2 240	14 067	10 124	28 696	(22037, 34736)	30	47
Eur (HIC)	Poland	12	483	5 731	11 987	8 376	26 589	(21327, 31670)	69	39
Eur (HIC)	Portugal	1	20	323	647	779	1 769	(66, 2894)	17	7
Emr (HIC)	Qatar	1	2	34	104	36	179	(158, 200)	9	31
Wpr (HIC)	Republic of Korea	7	284	4 695	2 638	3 899	11 523	(9054, 13963)	23	16
Eur (LMIC)	Republic of Moldova	16	26	188	1 967	811	3 008	(0, 4776)	74	57
Eur (LMIC)	Romania	88	164	2 115	6 794	5 336	14 497	(11001, 17576)	73	39

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Russian Federation	133	723	9 840	83 938	46 216	140 851	(59079, 192348)	98	61
Afr	Rwanda	738	34	19	496	940	2 227	(1220, 3320)	21	40
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	1	0	3	15	18	38	(6, 55)	21	19
Amr (LMIC)	Saint Vincent and the Grenadines	0	0	1	12	8	21	(0, 31)	19	21
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	5	1	1	6	12	25	(0, 40)	14	26
Emr (HIC)	Saudi Arabia	59	236	362	4 128	3 335	8 119	(7027, 9293)	28	67
Afr	Senegal	613	67	32	529	764	2 005	(1592, 2440)	15	28
Eur (LMIC)	Serbia	4	88	1 341	2 049	1 952	5 435	(3821, 6858)	61	34
Afr	Seychelles	0	0	2	10	5	18	(1, 26)	19	19
Afr	Sierra Leone	745	15	8	398	617	1 783	(0, 3196)	30	50
Wpr (HIC)	Singapore	1	16	285	544	248	1 094	(543, 1479)	21	16
Eur (HIC)	Slovakia	5	21	416	2 210	813	3 465	(2681, 4156)	64	40
Eur (HIC)	Slovenia	0	10	217	265	240	732	(522, 915)	35	17
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 81)	0.0	0.0
Emr (LMIC)	Somalia	1 362	16	22	273	471	2 144	(122, 3734)	21	27
Afr	South Africa	1 160	464	1 638	4 608	6 486	14 356	(11397, 17206)	27	39
Emr (LMIC)	South Sudan	1 200	43	32	493	864	2 632	(1271, 3895)	24	36
Eur (HIC)	Spain	3	125	1 834	3 134	1 765	6 860	(1210, 11062)	15	7
Sear	Sri Lanka	33	275	365	4 846	2 273	7 792	(5675, 9843)	38	38
Emr (LMIC)	Sudan	2 878	199	118	1 738	3 161	8 093	(4644, 11955)	21	36
Amr (LMIC)	Suriname	2	0	8	31	33	74	(0, 122)	14	16
Afr	Swaziland	52	7	4	47	78	188	(0, 318)	15	28
Eur (HIC)	Sweden	0	0	4	26	9	40	(0, 1886)	0.4	0.2
Eur (HIC)	Switzerland	0	28	408	750	295	1 482	(396, 2031)	18	8
Emr (LMIC)	Syrian Arab Republic	116	66	538	3 779	1 496	5 994	(3542, 8251)	30	60
Eur (LMIC)	Tajikistan	501	86	95	1 743	1 189	3 615	(2044, 5246)	46	89

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Sear	Thailand	104	976	4 323	9 669	7 302	22 375	(17790, 26921)	33	28
Eur (LMIC)	The former Yugoslav Republic of Macedonia	1	23	292	390	660	1 366	(1107, 1635)	66	47
Sear	Timor-Leste	50	2	26	73	58	210	(0, 403)	19	31
Afr	Togo	484	19	12	372	566	1 454	(287, 2322)	22	42
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	3	2	28	223	96	351	(0, 515)	26	24
Emr (LMIC)	Tunisia	45	102	492	2 465	1 527	4 631	(3739, 5540)	43	44
Eur (LMIC)	Turkey	240	1 065	6 498	14 813	10 053	32 668	(27197, 38289)	44	48
Eur (LMIC)	Turkmenistan	130	55	114	2 425	944	3 667	(1134, 5197)	71	108
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	3 141	192	126	1 624	2 905	7 989	(6239, 10044)	23	45
Eur (LMIC)	Ukraine	63	268	2 644	38 707	12 824	54 507	(673, 79137)	120	65
Emr (HIC)	United Arab Emirates	9	13	62	399	172	655	(564, 749)	7	28
Eur (HIC)	United Kingdom	12	424	4 803	7 366	3 749	16 355	(5387, 22534)	26	13
Afr	United Republic of Tanzania	1 912	110	36	1 599	2 108	5 765	(3513, 7645)	12	21
Amr (HIC)	United States of America	33	721	8 836	22 560	5 893	38 043	(1539, 80804)	12	7
Amr (HIC)	Uruguay	4	14	169	308	217	713	(194, 996)	21	13
Eur (LMIC)	Uzbekistan	722	195	444	9 984	4 936	16 282	(7937, 23064)	57	85
Wpr (LMIC)	Vanuatu	0	0	0	1	1	2	(0, 41)	1	2
Amr (LMIC)	Venezuela, Bolivarian Republic of	125	126	814	3 466	1 582	6 113	(4424, 7612)	20	27
Wpr (LMIC)	Viet Nam	591	1 127	4 897	5 081	15 644	27 340	(19758, 34835)	30	33
Emr (LMIC)	Yemen	1 415	135	122	2 849	2 144	6 667	(3028, 10148)	27	58
Afr	Zambia	997	18	24	519	854	2 411	(679, 3600)	16	30
Afr	Zimbabwe	700	51	123	366	616	1 856	(137, 2949)	13	23

AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.2: Deaths attributable to AAP in 2012 in women, by disease and country

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	1 798	88	77	1 828	1 752	5 544	(4463, 6739)	38	81
Eur (LMIC)	Albania	3	9	63	400	440	915	(352, 1217)	64	42
Afr	Algeria	149	47	118	2 000	2 537	4 851	(1930, 6862)	26	34
Eur (HIC)	Andorra	0	0	1	6	3	10	(0, 14)	24	8
Afr	Angola	1 452	54	14	653	924	3 096	(625, 4980)	27	47
Amr (HIC)	Antigua and Barbuda	0	0	0	5	3	8	(0, 12)	17	17
Amr (LMIC)	Argentina	36	81	443	2 375	1 359	4 294	(1094, 5831)	20	13
Eur (LMIC)	Armenia	3	21	65	721	351	1 161	(34, 1756)	77	45
Wpr (HIC)	Australia	0	0	6	24	12	43	(0, 1312)	0.4	0.2
Eur (HIC)	Austria	1	27	250	797	296	1 372	(960, 1694)	32	11
Eur (LMIC)	Azerbaijan	60	19	52	1 176	656	1 962	(407, 2839)	42	46
Amr (HIC)	Bahamas	1	0	1	13	9	25	(0, 37)	13	12
Emr (HIC)	Bahrain	1	3	7	25	17	52	(46, 58)	10	27
Sear	Bangladesh	1 728	3 729	859	3 345	5 422	15 084	(12074, 18726)	20	31
Amr (HIC)	Barbados	0	0	1	10	9	20	(0, 28)	13	7
Eur (LMIC)	Belarus	1	12	70	3 289	1 206	4 578	(44, 6579)	90	38
Eur (HIC)	Belgium	1	42	319	499	398	1 258	(832, 1594)	22	9
Amr (LMIC)	Belize	1	0	1	9	7	17	(2, 25)	10	21
Afr	Benin	323	14	7	387	553	1 284	(450, 1944)	25	49
Sear	Bhutan	9	11	7	31	29	86	(69, 105)	25	40
Amr (LMIC)	Bolivia, Plurinational States of	120	35	45	509	454	1 164	(913, 1410)	23	27
Eur (LMIC)	Bosnia and Herzegovina	1	44	124	623	830	1 623	(1268, 2005)	84	41
Afr	Botswana	17	1	2	49	90	160	(1, 246)	15	28
Amr (LMIC)	Brazil	90	223	1 144	5 110	4 634	11 201	(4747, 17119)	11	11
Wpr HIC	Brunei Darussalam	0	0	0	0	0	0	(0, 17)	0.1	0.2
Eur (LMIC)	Bulgaria	8	83	169	1 896	1 850	4 006	(3271, 4734)	107	40
Afr	Burkina Faso	763	33	21	579	873	2 269	(1179, 3387)	27	52

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burundi	625	22	11	210	455	1 323	(589, 2082)	26	42
Afr	Cabo Verde	133	28	83	615	557	1 416	(102, 2163)	19	32
Wpr (LMIC)	Cambodia	1 165	62	22	824	1 249	3 322	(2737, 4005)	31	51
Afr	Cameroon	1	11	234	421	171	838	(9, 2996)	5	2
Amr (HIC)	Canada	2	2	1	14	38	57	(35, 81)	23	28
Afr	Central African Republic	186	30	4	146	205	570	(289, 882)	24	36
Afr	Chad	1 028	29	8	344	536	1 945	(1086, 2877)	31	47
Amr (HIC)	Chile	7	39	237	385	500	1 168	(845, 1444)	13	9
Wpr (LMIC)	China	2 831	42 903	67 281	129 846	219 575	462 436	(389791, 542399)	70	60
Amr (LMIC)	Colombia	66	126	299	1 555	886	2 932	(2017, 3643)	12	14
Afr	Comoros	14	1	0	14	27	56	(12, 78)	15	29
Afr	Congo	123	16	2	173	255	568	(279, 863)	26	45
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	1	13	22	147	87	270	(194, 331)	12	11
Eur (HIC)	Croatia	0	18	146	693	440	1 297	(941, 1605)	58	21
Amr (LMIC)	Cuba	3	31	353	863	540	1 791	(132, 2638)	32	18
Eur (HIC)	Cyprus	0	1	12	40	25	78	(53, 98)	14	8
Eur (HIC)	Czech Republic	1	33	364	1 702	685	2 786	(2194, 3323)	52	20
Afr	Côte d'Ivoire	652	19	16	580	881	2 147	(293, 3351)	21	40
Sear	Democratic People's Republic of Korea	114	571	1 561	1 830	3 211	7 288	(890, 12333)	58	46
Afr	Democratic Republic of the Congo	4 665	199	25	2 226	3 836	10 952	(5520, 16614)	31	50
Eur (HIC)	Denmark	0	21	199	180	145	546	(19, 896)	19	8
Emr (LMIC)	Djibouti	23	3	2	25	41	94	(36, 150)	22	36
Amr (LMIC)	Dominica	0	0	0	3	3	6	(0, 9)	17	14
Amr (LMIC)	Dominican Republic	35	10	64	575	350	1 035	(82, 1470)	20	23
Amr (LMIC)	Ecuador	38	18	61	380	299	797	(378, 1041)	10	11
Emr (LMIC)	Egypt	490	868	564	10 018	7 743	19 682	(16245, 23495)	46	64
Amr (LMIC)	El Salvador	20	44	45	478	180	767	(607, 941)	24	24

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Equatorial Guinea	23	3	1	26	35	88	(7, 148)	23	42
Afr	Eritrea	152	11	9	130	245	547	(239, 840)	22	46
Eur (HIC)	Estonia	0	0	9	116	27	152	(1, 292)	22	7
Afr	Ethiopia	2 049	51	196	911	2 055	5 263	(1973, 8087)	11	19
Wpr (LMIC)	Fiji	0	0	0	0	0	1	(0, 95)	0.1	0.2
Eur (HIC)	Finland	0	0	10	100	35	146	(0, 722)	5	2
Eur (HIC)	France	1	46	1 153	1 547	1 602	4 349	(1514, 5912)	13	5
Afr	Gabon	21	8	5	64	87	185	(36, 295)	23	30
Afr	Gambia	50	2	1	45	72	171	(11, 296)	19	42
Eur (LMIC)	Georgia	4	23	33	1 044	764	1 868	(1156, 2365)	86	38
Eur (HIC)	Germany	2	246	2 238	6 033	3 133	11 652	(5497, 15113)	28	9
Afr	Ghana	450	33	16	853	1 676	3 028	(2013, 3923)	23	41
Eur (HIC)	Greece	0	33	149	1 039	957	2 178	(707, 2867)	38	13
Amr (LMIC)	Grenada	0	0	0	5	4	9	(0, 13)	17	16
Amr (LMIC)	Guatemala	178	32	68	398	236	912	(736, 1096)	12	16
Afr	Guinea	313	12	5	373	515	1 219	(137, 1882)	21	38
Afr	Guinea-Bissau	69	2	2	61	86	220	(18, 355)	26	44
Amr (LMIC)	Guyana	2	0	1	53	47	104	(0, 160)	27	40
Amr (LMIC)	Haiti	264	6	52	408	815	1 544	(196, 2313)	30	44
Amr (LMIC)	Honduras	45	35	37	334	227	678	(533, 832)	18	26
Eur (LMIC)	Hungary	2	66	714	2 164	878	3 824	(2973, 4618)	73	29
Eur (HIC)	Iceland	0	0	2	5	2	10	(0, 32)	6	3
Sear	India	20 455	47 210	6 202	89 727	96 383	259 977	(214832, 312709)	43	57
Sear	Indonesia	1 081	297	1 341	5 875	18 347	26 941	(14114, 35705)	22	31
Emr (LMIC)	Iran (Islamic Republic of)	289	177	469	6 858	3 513	11 306	(9706, 12963)	30	46
Emr (LMIC)	Iraq	466	69	204	1 884	1 394	4 016	(2657, 5481)	25	51
Eur (HIC)	Ireland	0	6	59	169	71	305	(15, 480)	13	7
Eur (HIC)	Israel	0	14	139	209	139	501	(378, 615)	13	7
Eur (HIC)	Italy	2	224	1 661	3 808	3 434	9 128	(6297, 11395)	30	8

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	Jamaica	3	2	18	114	184	322	(225, 402)	23	18
Wpr (HIC)	Japan	9	63	2 670	4 089	5 052	11 883	(4383, 15975)	18	5
Emr (LMIC)	Jordan	28	9	21	276	239	573	(492, 656)	17	33
Eur (LMIC)	Kazakhstan	38	43	121	2 948	1 744	4 895	(599, 7483)	56	53
Afr	Kenya	892	14	31	477	815	2 229	(865, 3052)	10	18
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 7)	0.0	0.0
Emr (HIC)	Kuwait	5	1	9	75	42	131	(116, 147)	9	34
Eur (LMIC)	Kyrgyzstan	21	14	18	639	291	983	(380, 1283)	34	47
Wpr (LMIC)	Lao People's Democratic Republic	167	24	35	325	305	856	(353, 1253)	26	45
Eur (HIC)	Latvia	0	2	34	591	296	923	(677, 1121)	83	27
Emr (LMIC)	Lebanon	3	10	62	274	160	508	(417, 599)	21	21
Afr	Lesotho	38	6	1	48	120	213	(0, 387)	20	29
Afr	Liberia	31	2	1	37	47	117	(0, 307)	6	11
Emr (LMIC)	Libya	13	23	31	433	331	831	(578, 1113)	27	45
Eur (HIC)	Lithuania	0	4	34	765	342	1 146	(865, 1379)	70	24
Eur (HIC)	Luxembourg	0	2	12	14	17	45	(30, 57)	17	8
Afr	Madagascar	410	23	24	489	1 015	1 961	(910, 2659)	18	36
Afr	Malawi	383	17	5	371	664	1 441	(44, 2267)	18	35
Wpr (LMIC)	Malaysia	13	42	220	1 342	820	2 436	(1379, 3124)	17	27
Sear	Maldives	0	1	0	9	5	16	(4, 22)	9	17
Afr	Mali	1 046	47	20	647	924	2 685	(1469, 3998)	34	62
Eur (HIC)	Malta	0	0	6	32	12	51	(26, 64)	25	11
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	129	10	4	123	194	459	(284, 674)	24	44
Afr	Mauritius	1	0	6	53	35	95	(39, 122)	15	12
Amr (LMIC)	Mexico	205	348	505	4 307	2 255	7 620	(5620, 9341)	12	14
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	0	0	0	(0, 7)	0.1	0.1
Eur (HIC)	Monaco	0	0	0	2	1	4	(0, 6)	18	6

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Wpr (LMIC)	Mongolia	15	7	13	224	198	458	(316, 567)	32	53
Eur (LMIC)	Montenegro	0	0	19	47	63	130	(97, 161)	41	22
Emr (LMIC)	Morocco	159	28	85	1 506	1 991	3 769	(2851, 4570)	23	27
Afr	Mozambique	567	33	21	313	636	1 569	(64, 2509)	12	19
Sear	Myanmar	644	893	1 208	3 257	5 491	11 493	(9511, 13676)	43	56
Afr	Namibia	16	5	3	50	103	177	(22, 275)	15	28
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	354	902	438	1 446	1 588	4 728	(3505, 6257)	33	51
Eur (HIC)	Netherlands	1	64	692	475	494	1 726	(953, 2307)	20	9
Wpr (HIC)	New Zealand	0	0	2	5	3	10	(0, 230)	0.4	0.2
Amr (LMIC)	Nicaragua	30	19	25	290	190	554	(81, 837)	19	25
Afr	Niger	1 313	43	1	559	942	2 859	(1773, 4193)	33	58
Afr	Nigeria	9 519	276	132	4 347	7 008	21 283	(17347, 25554)	26	42
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	0	6	59	146	91	302	(10, 583)	12	5
Emr (HIC)	Oman	5	2	6	88	66	167	(114, 223)	13	29
Emr (LMIC)	Pakistan	5 883	1 313	361	9 764	9 068	26 390	(22064, 31251)	31	49
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	8	3	11	84	69	174	(21, 253)	9	9
Wpr (LMIC)	Papua New Guinea	75	3	9	85	42	214	(0, 488)	6	10
Amr (LMIC)	Paraguay	18	5	22	200	204	450	(206, 588)	14	19
Amr (LMIC)	Peru	72	66	312	847	651	1 948	(1498, 2377)	13	14
Wpr (LMIC)	Philippines	756	160	636	5 226	4 297	11 074	(8520, 13378)	23	34
Eur (HIC)	Poland	5	171	1 678	5 284	4 514	11 651	(9373, 13862)	58	25
Eur (HIC)	Portugal	0	6	67	273	415	762	(25, 1211)	14	5
Emr (HIC)	Qatar	1	1	5	21	7	34	(30, 38)	7	28
Wpr (HIC)	Republic of Korea	3	89	1 326	1 100	1 914	4 431	(3523, 5338)	18	10
Eur (LMIC)	Republic of Moldova	7	9	38	1 024	433	1 512	(0, 2366)	71	45
Eur (LMIC)	Romania	40	51	432	3 037	2 767	6 327	(4830, 7618)	62	26
Eur (HIC)	Russian Federation	62	192	1 682	39 313	26 465	67 714	(27433, 92271)	88	41

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Rwanda	329	16	7	222	452	1 026	(562, 1531)	18	33
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	0	0	1	6	9	16	(2, 24)	18	15
Amr (LMIC)	Saint Vincent and the Grenadines	0	0	0	6	4	11	(0, 15)	20	19
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	2	0	0	4	7	13	(0, 20)	15	26
Emr (HIC)	Saudi Arabia	29	90	92	1 429	1 559	3 199	(2746, 3695)	25	56
Afr	Senegal	265	24	12	263	398	962	(768, 1165)	14	26
Eur (LMIC)	Serbia	1	33	363	829	1 080	2 306	(1649, 2892)	50	24
Afr	Seychelles	0	0	0	4	2	7	(0, 10)	15	12
Afr	Sierra Leone	353	6	3	203	323	887	(0, 1582)	29	51
Wpr (HIC)	Singapore	1	4	95	198	122	420	(208, 566)	16	11
Eur (HIC)	Slovakia	2	6	111	1 072	421	1 612	(1250, 1928)	58	28
Eur (HIC)	Slovenia	0	4	63	112	134	313	(227, 389)	30	11
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 27)	0.0	0.0
Emr (LMIC)	Somalia	627	10	10	113	219	979	(55, 1714)	19	24
Afr	South Africa	509	162	579	1 987	3 690	6 928	(5511, 8281)	26	31
Emr (LMIC)	South Sudan	524	16	14	215	420	1 190	(577, 1757)	22	32
Eur (HIC)	Spain	1	26	324	1 249	980	2 581	(426, 3981)	11	4
Sear	Sri Lanka	13	96	100	1 745	961	2 915	(2117, 3689)	28	26
Emr (LMIC)	Sudan	1 224	75	40	759	1 537	3 635	(2095, 5350)	19	32
Amr (LMIC)	Suriname	0	0	2	13	16	32	(0, 52)	12	13
Afr	Swaziland	23	4	1	27	55	110	(0, 183)	18	30
Eur (HIC)	Sweden	0	0	2	12	6	19	(0, 926)	0.4	0.1
Eur (HIC)	Switzerland	0	12	148	328	172	660	(160, 899)	16	6
Emr (LMIC)	Syrian Arab Republic	48	22	96	1 418	513	2 097	(1261, 2862)	21	41
Eur (LMIC)	Tajikistan	214	47	36	893	700	1 889	(1070, 2741)	48	92

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Sear	Thailand	42	219	1 424	4 320	3 406	9 412	(7563, 11200)	28	21
Eur (LMIC)	The former Yugoslav Republic of Macedonia	1	8	53	141	342	543	(442, 650)	52	33
Sear	Timor-Leste	23	1	9	38	29	99	(0, 187)	18	29
Afr	Togo	231	7	4	189	296	727	(145, 1154)	21	40
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	1	0	8	83	44	137	(0, 200)	20	17
Emr (LMIC)	Tunisia	19	43	29	1 010	732	1 833	(1489, 2188)	33	32
Eur (LMIC)	Turkey	101	411	862	6 273	5 054	12 701	(10666, 14818)	33	33
Eur (LMIC)	Turkmenistan	53	26	26	1 037	482	1 624	(483, 2310)	62	89
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	1 335	97	66	660	1 393	3 552	(2767, 4473)	20	39
Eur (LMIC)	Ukraine	26	76	439	20 654	7 479	28 673	(245, 41329)	118	48
Emr (HIC)	United Arab Emirates	3	4	13	59	39	118	(100, 137)	5	26
Eur (HIC)	United Kingdom	6	207	2 166	2 843	2 207	7 429	(2222, 10324)	23	9
Afr	United Republic of Tanzania	841	47	15	692	980	2 575	(1568, 3416)	11	19
Amr (HIC)	United States of America	15	378	4 004	9 355	3 362	17 113	(608, 36782)	11	5
Amr (HIC)	Uruguay	2	4	36	117	120	278	(74, 380)	16	8
Eur (LMIC)	Uzbekistan	303	90	111	4 622	2 560	7 685	(3717, 10905)	53	71
Wpr (LMIC)	Vanuatu	0	0	0	0	0	1	(0, 14)	1	1
Amr (LMIC)	Venezuela, Bolivarian Republic of	54	62	344	1 253	748	2 461	(1763, 3091)	16	20
Wpr (LMIC)	Viet Nam	230	557	1 245	2 177	7 292	11 502	(8312, 14709)	25	21
Emr (LMIC)	Yemen	631	64	29	1 060	997	2 781	(1242, 4274)	23	49
Afr	Zambia	473	13	10	210	379	1 084	(295, 1633)	15	24
Afr	Zimbabwe	345	23	41	194	365	968	(70, 1524)	13	22

AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.3: Deaths attributable to AAP in 2012 in men, by disease and country

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	1 974	100	224	1 985	1 318	5 601	(4497, 6829)	37	80
Eur (LMIC)	Albania	5	11	121	451	340	928	(379, 1237)	64	51
Afr	Algeria	192	84	515	3 088	2 694	6 573	(2638, 9293)	35	48
Eur (HIC)	Andorra	0	0	2	8	3	12	(0, 18)	31	17
Afr	Angola	2 235	77	26	838	786	3 962	(750, 6449)	35	56
Amr (HIC)	Antigua and Barbuda	0	0	1	5	3	9	(0, 13)	22	24
Amr (LMIC)	Argentina	49	111	1 057	2 880	1 364	5 462	(1548, 7547)	27	26
Eur (LMIC)	Armenia	5	32	306	922	324	1 589	(67, 2474)	107	95
Wpr (HIC)	Australia	0	0	9	34	8	51	(1, 1520)	0.4	0.3
Eur (HIC)	Austria	0	35	437	845	200	1 518	(1047, 1890)	37	20
Eur (LMIC)	Azerbaijan	75	26	186	1 481	566	2 334	(540, 3382)	50	69
Amr (HIC)	Bahamas	2	0	3	18	9	32	(0, 48)	18	23
Emr (HIC)	Bahrain	1	4	18	51	22	96	(86, 107)	12	37
Sear	Bangladesh	2 121	4 587	3 516	6 946	5 195	22 365	(18175, 27311)	29	45
Amr (HIC)	Barbados	0	0	3	12	9	24	(0, 35)	18	13
Eur (LMIC)	Belarus	3	46	493	3 392	940	4 873	(100, 7150)	110	88
Eur (HIC)	Belgium	1	74	913	777	320	2 085	(1301, 2703)	38	21
Amr (LMIC)	Belize	0	1	2	9	6	19	(3, 29)	11	22
Afr	Benin	392	26	12	380	512	1 322	(455, 2028)	26	56
Sear	Bhutan	12	18	7	45	24	106	(84, 132)	27	39
Amr (LMIC)	Bolivia, Plurinational States of	145	33	43	617	518	1 357	(1070, 1635)	26	35
Eur (LMIC)	Bosnia and Herzegovina	1	56	458	775	624	1 915	(1480, 2370)	100	67
Afr	Botswana	18	2	8	39	46	113	(1, 177)	11	24
Amr (LMIC)	Brazil	108	317	1 757	7 877	4 982	15 041	(6486, 22871)	15	18
Wpr HIC	Brunei Darussalam	0	0	0	0	0	0	(0, 24)	0.2	0.3
Eur (LMIC)	Bulgaria	12	112	791	2 135	1 578	4 628	(3756, 5483)	130	73
Afr	Burkina Faso	888	39	24	541	862	2 354	(1202, 3536)	29	65
Afr	Burundi	753	23	10	322	570	1 677	(759, 2607)	34	55

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Cabo Verde	182	35	147	634	521	1 519	(116, 2348)	21	44
Wpr (LMIC)	Cambodia	1 456	107	40	911	1 163	3 677	(3017, 4457)	34	58
Afr	Cameroon	0	12	269	639	129	1 049	(17, 3612)	6	4
Amr (HIC)	Canada	3	5	1	23	39	70	(44, 100)	28	49
Afr	Central African Republic	266	34	8	160	176	644	(320, 1007)	28	44
Afr	Chad	1 398	33	12	388	564	2 395	(1324, 3561)	38	56
Amr (HIC)	Chile	11	49	350	702	542	1 654	(1216, 2024)	19	18
Wpr (LMIC)	China	3 885	47 724	161 198	127 791	229 798	570 396	(478904, 669949)	81	81
Amr (LMIC)	Colombia	92	144	449	2 133	752	3 571	(2479, 4422)	15	20
Afr	Comoros	17	1	1	18	33	69	(16, 96)	19	39
Afr	Congo	201	27	6	213	229	676	(325, 1046)	32	55
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	1	13	43	233	84	374	(273, 455)	16	17
Eur (HIC)	Croatia	0	31	437	711	366	1 546	(1078, 1953)	75	43
Amr (LMIC)	Cuba	4	40	622	1 126	545	2 337	(191, 3480)	41	28
Eur (HIC)	Cyprus	0	2	44	80	20	145	(96, 184)	25	20
Eur (HIC)	Czech Republic	2	50	846	1 917	509	3 324	(2582, 3990)	64	40
Afr	Côte d'Ivoire	779	45	26	814	1 157	2 823	(392, 4417)	26	45
Sear	Democratic People's Republic of Korea	117	639	1 772	2 080	3 700	8 308	(1081, 14021)	69	87
Afr	Democratic Republic of the Congo	5 855	274	62	2 602	3 289	12 082	(6010, 18471)	34	55
Eur (HIC)	Denmark	0	18	203	253	119	593	(32, 949)	21	12
Emr (LMIC)	Djibouti	31	2	2	32	50	118	(45, 186)	28	48
Amr (LMIC)	Dominica	0	0	1	3	2	6	(0, 10)	18	18
Amr (LMIC)	Dominican Republic	50	10	101	523	291	974	(88, 1395)	19	24
Amr (LMIC)	Ecuador	49	24	91	495	316	975	(480, 1269)	13	16
Emr (LMIC)	Egypt	461	1 100	1 515	12 310	8 463	23 849	(19760, 28330)	55	93
Amr (LMIC)	El Salvador	26	32	53	475	146	731	(582, 888)	26	30
Afr	Equatorial Guinea	39	5	4	49	42	140	(11, 236)	35	57

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Eritrea	211	11	8	177	289	697	(304, 1065)	28	68
Eur (HIC)	Estonia	0	1	27	118	21	167	(2, 334)	27	18
Afr	Ethiopia	3 516	349	180	1 409	2 540	7 994	(2902, 12647)	17	28
Wpr (LMIC)	Fiji	0	0	0	1	0	1	(0, 208)	0.3	0.4
Eur (HIC)	Finland	0	1	21	133	27	181	(1, 892)	7	4
Eur (HIC)	France	3	80	3 103	2 246	1 172	6 605	(2282, 9311)	21	12
Afr	Gabon	38	11	11	73	68	200	(40, 328)	25	38
Afr	Gambia	64	5	4	55	87	215	(13, 379)	24	50
Eur (LMIC)	Georgia	8	30	159	1 083	594	1 873	(1176, 2379)	95	68
Eur (HIC)	Germany	3	323	4 583	7 359	2 240	14 508	(6932, 19142)	37	18
Afr	Ghana	517	39	59	957	1 128	2 700	(1801, 3489)	21	42
Eur (HIC)	Greece	1	38	694	1 349	748	2 829	(988, 3824)	52	26
Amr (LMIC)	Grenada	0	0	1	7	5	13	(0, 19)	24	32
Amr (LMIC)	Guatemala	218	37	94	482	237	1 068	(862, 1283)	14	23
Afr	Guinea	376	19	11	350	491	1 247	(136, 1950)	21	38
Afr	Guinea-Bissau	90	4	2	59	88	243	(19, 399)	29	49
Amr (LMIC)	Guyana	2	1	2	70	52	126	(0, 193)	33	47
Amr (LMIC)	Haiti	310	8	46	393	720	1 478	(184, 2220)	29	48
Amr (LMIC)	Honduras	54	46	56	475	266	896	(709, 1095)	23	39
Eur (LMIC)	Hungary	2	93	1 286	2 161	782	4 324	(3300, 5271)	91	59
Eur (HIC)	Iceland	0	0	2	7	2	11	(0, 32)	7	4
Sear	India	19 459	63 291	20 132	159 661	98 618	361 161	(300418, 431873)	55	80
Sear	Indonesia	1 453	703	3 609	10 906	18 179	34 851	(18554, 46214)	28	45
Emr (LMIC)	Iran (Islamic Republic of)	311	257	991	9 626	3 776	14 961	(12870, 17101)	39	54
Emr (LMIC)	Iraq	544	104	524	3 090	1 807	6 069	(4032, 8209)	36	89
Eur (HIC)	Ireland	0	6	84	234	53	377	(26, 591)	16	13
Eur (HIC)	Israel	1	21	273	300	123	718	(533, 887)	19	16
Eur (HIC)	Italy	1	335	4 730	4 484	2 380	11 929	(7934, 15165)	41	18
Amr (LMIC)	Jamaica	5	6	64	132	164	371	(257, 468)	27	26

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Wpr (HIC)	Japan	9	218	7 072	6 197	5 410	18 907	(7055, 26040)	31	13
Emr (LMIC)	Jordan	35	25	138	468	244	910	(776, 1049)	25	54
Eur (LMIC)	Kazakhstan	50	74	548	3 358	1 367	5 398	(697, 8392)	67	91
Afr	Kenya	1 129	17	47	715	965	2 873	(1130, 3920)	14	25
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 15)	0.0	0.0
Emr (HIC)	Kuwait	8	2	26	245	75	356	(317, 397)	19	52
Eur (LMIC)	Kyrgyzstan	28	19	55	718	326	1 145	(468, 1502)	41	75
Wpr (LMIC)	Lao People's Democratic Republic	232	24	87	344	315	1 001	(404, 1477)	31	60
Eur (HIC)	Latvia	0	5	165	565	200	937	(678, 1150)	101	65
Emr (LMIC)	Lebanon	3	15	147	647	114	926	(766, 1080)	37	39
Afr	Lesotho	44	9	5	41	75	175	(0, 332)	17	33
Afr	Liberia	33	2	1	38	45	119	(0, 314)	6	11
Emr (LMIC)	Libya	18	37	220	605	343	1 222	(829, 1646)	38	73
Eur (HIC)	Lithuania	0	12	189	659	210	1 070	(796, 1302)	77	51
Eur (HIC)	Luxembourg	0	2	25	22	12	61	(39, 78)	23	15
Afr	Madagascar	504	23	111	646	968	2 253	(1047, 3058)	20	42
Afr	Malawi	364	24	8	326	542	1 264	(42, 2006)	16	35
Wpr (LMIC)	Malaysia	16	106	450	2 288	954	3 814	(2166, 4914)	27	37
Sear	Maldives	0	1	3	14	15	32	(8, 43)	19	29
Afr	Mali	1 245	107	29	475	677	2 533	(1326, 3904)	31	57
Eur (HIC)	Malta	0	1	21	44	13	78	(39, 100)	38	22
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	211	13	6	114	175	519	(314, 779)	27	49
Afr	Mauritius	1	1	17	92	47	158	(68, 204)	25	26
Amr (LMIC)	Mexico	262	393	831	5 677	2 014	9 178	(6837, 11188)	15	20
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	0	0	0	(0, 12)	0.1	0.2
Eur (HIC)	Monaco	0	0	1	2	1	4	(0, 8)	23	12
Wpr (LMIC)	Mongolia	24	11	47	347	236	665	(462, 822)	48	89
Eur (LMIC)	Montenegro	0	1	58	112	81	252	(187, 311)	82	59

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Morocco	210	56	683	1 873	1 544	4 366	(3247, 5344)	27	34
Afr	Mozambique	784	25	37	285	642	1 773	(67, 2850)	14	24
Sear	Myanmar	887	669	1 572	2 219	5 825	11 171	(9234, 13274)	44	68
Afr	Namibia	18	6	6	42	58	130	(16, 206)	12	26
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	385	869	484	1 882	1 595	5 216	(3922, 6802)	39	61
Eur (HIC)	Netherlands	1	74	1 147	727	342	2 291	(1220, 3089)	28	16
Wpr (HIC)	New Zealand	0	0	2	7	2	11	(0, 235)	0.5	0.3
Amr (LMIC)	Nicaragua	42	21	39	381	209	692	(111, 1037)	24	39
Afr	Niger	1 855	55	7	514	894	3 325	(2028, 4950)	37	56
Afr	Nigeria	12 714	376	132	5 271	6 975	25 467	(20692, 30689)	30	46
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	0	6	79	184	66	334	(14, 644)	13	8
Emr (HIC)	Oman	5	4	19	168	114	310	(212, 411)	14	42
Emr (LMIC)	Pakistan	7 800	4 375	2 032	11 008	7 637	32 852	(26659, 40154)	36	56
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	7	3	25	143	73	250	(33, 362)	13	15
Wpr (LMIC)	Papua New Guinea	91	6	17	101	90	305	(0, 721)	8	15
Amr (LMIC)	Paraguay	24	10	87	329	260	709	(327, 936)	22	32
Amr (LMIC)	Peru	91	62	339	1 103	697	2 291	(1779, 2772)	15	20
Wpr (LMIC)	Philippines	910	439	1 605	8 841	5 827	17 622	(13500, 21370)	36	61
Eur (HIC)	Poland	7	312	4 053	6 704	3 863	14 938	(11904, 17834)	80	56
Eur (HIC)	Portugal	0	13	256	374	364	1 007	(42, 1685)	20	10
Emr (HIC)	Qatar	1	1	30	84	29	145	(128, 162)	10	32
Wpr (HIC)	Republic of Korea	5	195	3 369	1 538	1 985	7 092	(5520, 8637)	29	25
Eur (LMIC)	Republic of Moldova	8	17	150	943	378	1 496	(0, 2412)	76	72
Eur (LMIC)	Romania	48	113	1 683	3 757	2 569	8 170	(6137, 9965)	84	54
Eur (HIC)	Russian Federation	72	531	8 158	44 624	19 752	73 137	(31229, 100241)	110	91
Afr	Rwanda	409	18	12	274	488	1 201	(657, 1790)	23	48

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	1	0	2	9	9	21	(3, 31)	24	24
Amr (LMIC)	Saint Vincent and the Grenadines	0	0	1	6	4	10	(0, 15)	19	23
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	3	0	1	3	5	12	(0, 19)	13	27
Emr (HIC)	Saudi Arabia	30	145	270	2 699	1 776	4 921	(4282, 5604)	30	78
Afr	Senegal	348	43	20	266	366	1 043	(825, 1274)	15	31
Eur (LMIC)	Serbia	3	55	978	1 221	872	3 128	(2164, 3974)	71	45
Afr	Seychelles	0	0	1	6	3	11	(1, 16)	22	27
Afr	Sierra Leone	392	9	5	195	294	895	(0, 1614)	30	49
Wpr (HIC)	Singapore	1	12	190	346	126	674	(336, 914)	26	22
Eur (HIC)	Slovakia	2	15	304	1 139	392	1 852	(1422, 2228)	71	55
Eur (HIC)	Slovenia	0	7	153	153	106	419	(294, 527)	41	25
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 54)	0.0	0.0
Emr (LMIC)	Somalia	736	6	12	160	252	1 165	(67, 2020)	23	30
Afr	South Africa	651	302	1 059	2 622	2 796	7 429	(5876, 8928)	29	53
Emr (LMIC)	South Sudan	676	27	18	278	444	1 442	(693, 2138)	26	40
Eur (HIC)	Spain	2	98	1 510	1 885	785	4 279	(759, 7106)	19	10
Sear	Sri Lanka	19	178	266	3 101	1 312	4 877	(3555, 6154)	49	54
Emr (LMIC)	Sudan	1 654	124	78	979	1 624	4 458	(2549, 6608)	24	40
Amr (LMIC)	Suriname	2	0	6	18	16	42	(0, 70)	16	20
Afr	Swaziland	29	3	3	19	24	78	(0, 135)	13	25
Eur (HIC)	Sweden	0	0	2	15	4	21	(0, 961)	0.4	0.2
Eur (HIC)	Switzerland	0	16	260	422	123	821	(227, 1132)	21	11
Emr (LMIC)	Syrian Arab Republic	67	44	442	2 361	983	3 898	(2278, 5388)	39	80
Eur (LMIC)	Tajikistan	287	39	59	850	489	1 726	(975, 2507)	43	86
Sear	Thailand	61	757	2 899	5 349	3 896	12 962	(10209, 15731)	39	35

		Number of deaths							Deaths per 100 000 capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	The former Yugoslav Republic of Macedonia	1	15	239	249	319	823	(663, 986)	80	64
Sear	Timor-Leste	27	1	18	35	29	110	(0, 216)	20	33
Afr	Togo	252	12	9	184	270	727	(142, 1168)	22	43
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	1	2	19	140	52	214	(0, 316)	32	32
Emr (LMIC)	Tunisia	25	59	463	1 454	795	2 798	(2246, 3354)	52	57
Eur (LMIC)	Turkey	139	653	5 636	8 540	4 999	19 967	(16480, 23516)	54	68
Eur (LMIC)	Turkmenistan	77	29	88	1 388	462	2 043	(632, 2888)	80	131
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	1 806	95	60	963	1 512	4 436	(3471, 5568)	25	53
Eur (LMIC)	Ukraine	37	192	2 205	18 054	5 346	25 834	(366, 37875)	123	89
Emr (HIC)	United Arab Emirates	6	9	49	340	134	537	(464, 612)	8	28
Eur (HIC)	United Kingdom	7	217	2 637	4 523	1 542	8 926	(3006, 12230)	29	16
Afr	United Republic of Tanzania	1 072	63	21	907	1 128	3 190	(1942, 4227)	13	24
Amr (HIC)	United States of America	18	343	4 833	13 205	2 531	20 930	(882, 44069)	13	9
Amr (HIC)	Uruguay	2	10	134	192	97	434	(118, 617)	27	20
Eur (LMIC)	Uzbekistan	419	106	333	5 362	2 376	8 597	(4221, 12158)	61	103
Wpr (LMIC)	Vanuatu	0	0	0	1	1	2	(0, 28)	1	2
Amr (LMIC)	Venezuela, Bolivarian Republic of	71	64	470	2 213	834	3 652	(2662, 4521)	25	35
Wpr (LMIC)	Viet Nam	361	570	3 651	2 903	8 352	15 838	(11414, 20146)	35	48
Emr (LMIC)	Yemen	785	71	94	1 789	1 147	3 886	(1779, 5876)	31	69
Afr	Zambia	523	5	14	309	475	1 327	(382, 1968)	18	36
Afr	Zimbabwe	355	28	82	172	251	888	(64, 1425)	12	23

AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.4: Years of life lost (YLLs) attributable to AAP in 2012 in both sex, by disease and country

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	342 278	4 660	9 762	120 813	88 567	566 080	(445478, 704450)	1 904	2 456
Eur (LMIC)	Albania	736	346	4 553	16 575	14 364	36 575	(15359, 48721)	1 270	979
Afr	Algeria	30 968	2 788	19 267	136 594	134 408	324 026	(130976, 457620)	865	1 072
Eur (HIC)	Andorra	0	4	57	230	85	377	(11, 564)	475	261
Afr	Angola	334 716	3 243	1 147	46 867	53 614	439 587	(67634, 731631)	1 938	1 794
Amr (HIC)	Antigua and Barbuda	7	1	22	252	159	440	(0, 637)	494	508
Amr (LMIC)	Argentina	7 710	3 240	37 223	109 178	57 557	214 908	(63334, 295345)	511	451
Eur (LMIC)	Armenia	750	925	9 666	30 965	12 773	55 079	(2607, 85184)	1 849	1 467
Wpr (HIC)	Australia	6	11	300	1 026	288	1 631	(25, 48436)	7	5
Eur (HIC)	Austria	79	1 023	16 426	26 617	7 774	51 919	(35531, 64880)	614	334
Eur (LMIC)	Azerbaijan	12 253	936	7 393	60 815	28 109	109 506	(25610, 160025)	1 170	1 348
Amr (HIC)	Bahamas	271	3	125	627	367	1 393	(5, 2127)	374	390
Emr (HIC)	Bahrain	146	145	614	2 221	1 080	4 207	(3769, 4651)	315	659
Sear	Bangladesh	349 663	167 797	120 661	264 736	239 167	1 142 024	(938727, 1382416)	736	1 007
Amr (HIC)	Barbados	58	4	92	457	361	972	(0, 1428)	345	254
Eur (LMIC)	Belarus	341	1 195	15 144	144 985	42 857	204 523	(4528, 296175)	2 155	1 399
Eur (HIC)	Belgium	123	1 839	27 755	23 954	11 355	65 026	(40925, 83926)	587	333
Amr (LMIC)	Belize	84	19	78	357	268	806	(133, 1216)	239	424
Afr	Benin	64 834	1 045	564	22 852	31 729	121 024	(37122, 190585)	1 204	1 547
Sear	Bhutan	1 854	645	463	2 307	1 412	6 682	(5402, 8140)	898	1 195
Amr (LMIC)	Bolivia, Plurinational States of	24 091	1 356	2 223	31 861	28 907	88 439	(68806, 107340)	864	1 010
Eur (LMIC)	Bosnia and Herzegovina	212	1 875	14 849	29 104	28 263	74 303	(57791, 91575)	1 941	1 183
Afr	Botswana	3 222	63	271	2 245	3 551	9 353	(51, 14794)	439	657
Amr (LMIC)	Brazil	17 953	10 115	74 360	354 716	239 367	696 511	(301813, 1053085)	344	363
Wpr HIC	Brunei Darussalam	0	0	1	14	5	21	(0, 1160)	5	7
Eur (LMIC)	Bulgaria	1 810	3 462	26 434	79 453	63 521	174 680	(142448, 206211)	2 392	1 302
Afr	Burkina Faso	149 811	1 869	1 412	34 000	52 792	239 884	(114860, 370840)	1 446	1 764

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Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burundi	125 078	1 264	692	17 513	30 947	175 494	(72493, 282653)	1 733	1 684
Afr	Cabo Verde	28 605	1 172	6 850	35 272	29 697	101 596	(7214, 157893)	685	938
Wpr (LMIC)	Cambodia	237 841	4 061	2 369	50 212	69 515	363 999	(294477, 449621)	1 681	1 797
Afr	Cameroon	91	342	10 836	20 685	4 828	36 782	(667, 128437)	105	64
Amr (HIC)	Canada	461	120	41	792	1 622	3 037	(1883, 4261)	606	868
Afr	Central African Republic	41 024	1 386	366	8 325	10 233	61 334	(28745, 97338)	1 328	1 356
Afr	Chad	220 184	1 545	688	21 865	32 829	277 111	(146456, 422581)	2 179	1 906
Amr (HIC)	Chile	1 550	1 341	13 416	26 362	22 243	64 913	(47970, 79146)	373	318
Wpr (LMIC)	China	611 121	1 487 398	5 192 605	5 586 044	10 174 964	23 052 132	(19543716, 26807904)	1 691	1 507
Amr (LMIC)	Colombia	14 382	4 440	18 375	89 424	41 983	168 604	(117756, 207859)	360	408
Afr	Comoros	2 870	40	29	953	1 691	5 583	(934, 7945)	761	1 008
Afr	Congo	29 392	925	205	10 805	13 452	54 779	(24516, 86406)	1 278	1 490
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	167	361	1 489	9 162	3 710	14 889	(10973, 17978)	320	319
Eur (HIC)	Croatia	34	821	14 614	26 245	14 539	56 253	(39613, 70634)	1 312	706
Amr (LMIC)	Cuba	593	1 288	23 280	42 354	22 408	89 923	(8044, 133450)	793	555
Eur (HIC)	Cyprus	13	39	1 327	2 784	729	4 892	(3291, 6130)	433	329
Eur (HIC)	Czech Republic	257	1 589	29 092	65 292	20 142	116 373	(90511, 139522)	1 104	618
Afr	Côte d'Ivoire	129 982	1 756	1 292	45 243	66 022	244 295	(26116, 393384)	1 158	1 396
Sear	Democratic People's Republic of Korea	20 907	23 675	88 190	96 799	169 397	398 968	(54884, 662681)	1 611	1 528
Afr	Democratic Republic of the Congo	955 030	11 364	2 589	144 887	212 525	1 326 396	(616636, 2080128)	1 887	1 809
Eur (HIC)	Denmark	13	634	8 768	7 771	4 463	21 650	(1208, 35599)	387	217
Emr (LMIC)	Djibouti	4 895	116	135	1 576	2 398	9 120	(3063, 14957)	1 069	1 296
Amr (LMIC)	Dominica	7	3	27	146	131	314	(17, 460)	439	423
Amr (LMIC)	Dominican Republic	7 684	349	3 958	25 151	14 794	51 936	(4994, 74410)	511	603
Amr (LMIC)	Ecuador	7 813	634	3 438	18 890	13 981	44 756	(22313, 58308)	290	332
Emr (LMIC)	Egypt	86 432	41 035	61 176	579 459	405 956	1 174 059	(977014, 1389703)	1 371	1 876
Amr (LMIC)	El Salvador	4 155	1 221	2 280	22 393	7 739	37 787	(30163, 45749)	622	694

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Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Equatorial Guinea	5 636	183	182	2 279	2 281	10 561	(553, 18343)	1 365	1 545
Afr	Eritrea	32 875	619	588	9 644	15 798	59 524	(23614, 94105)	1 217	1 685
Eur (HIC)	Estonia	15	16	832	4 190	926	5 979	(94, 11818)	452	251
Afr	Ethiopia	505 240	9 519	12 822	64 045	117 458	709 084	(231594, 1134357)	769	781
Wpr (LMIC)	Fiji	2	0	0	52	9	63	(0, 9613)	7	9
Eur (HIC)	Finland	11	20	685	3 903	983	5 601	(32, 27740)	103	52
Eur (HIC)	France	354	1 843	104 132	67 410	43 169	216 907	(76667, 306566)	341	203
Afr	Gabon	5 279	340	497	3 146	3 452	12 714	(2213, 20886)	788	921
Afr	Gambia	10 347	181	161	3 180	5 070	18 938	(790, 34369)	1 048	1 400
Eur (LMIC)	Georgia	1 109	925	5 102	40 220	25 925	73 280	(46465, 92862)	1 771	1 159
Eur (HIC)	Germany	462	9 482	156 418	226 878	84 821	478 060	(230550, 632146)	594	292
Afr	Ghana	87 880	1 718	2 304	52 610	80 135	224 647	(143698, 295100)	879	1 188
Eur (HIC)	Greece	92	1 030	18 944	43 084	26 883	90 033	(33231, 120529)	810	426
Amr (LMIC)	Grenada	3	2	29	258	204	496	(0, 720)	470	554
Amr (LMIC)	Guatemala	35 958	1 131	4 319	21 192	11 548	74 147	(58770, 90213)	482	570
Afr	Guinea	62 630	829	600	22 249	30 979	117 287	(10043, 187988)	1 009	1 211
Afr	Guinea-Bissau	14 444	167	115	3 472	5 041	23 239	(1203, 39255)	1 355	1 493
Amr (LMIC)	Guyana	300	20	120	3 845	3 057	7 341	(2, 11267)	968	1 184
Amr (LMIC)	Haiti	52 024	293	2 571	21 300	40 672	116 861	(11065, 180089)	1 136	1 386
Amr (LMIC)	Honduras	8 980	1 326	2 437	20 015	12 286	45 045	(35558, 54901)	582	833
Eur (LMIC)	Hungary	323	3 224	53 191	82 644	31 806	171 188	(130357, 208824)	1 719	1 008
Eur (HIC)	Iceland	0	5	95	182	64	346	(2, 1095)	107	72
Sear	India	3 624 190	2 516 699	805 530	7 412 934	5 230 651	19 590 004	(16469071, 23179478)	1 550	1 899
Sear	Indonesia	229 870	19 399	137 053	439 333	905 691	1 731 346	(918449, 2295002)	698	905
Emr (LMIC)	Iran (Islamic Republic of)	54 425	8 513	37 894	422 105	180 270	703 207	(606437, 802052)	923	1 203
Emr (LMIC)	Iraq	91 681	3 600	19 790	131 867	80 659	327 596	(213090, 452214)	994	1 690
Eur (HIC)	Ireland	41	179	3 110	7 594	2 016	12 941	(997, 20463)	277	205
Eur (HIC)	Israel	92	528	9 349	8 473	4 408	22 850	(16838, 28299)	297	245
Eur (HIC)	Italy	209	6 796	130 442	131 513	79 372	348 333	(234110, 439693)	583	271

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Amr (LMIC)	Jamaica	718	125	2 131	4 817	6 809	14 599	(10198, 18271)	528	524
Wpr (HIC)	Japan	1 648	3 516	178 246	193 571	178 114	555 095	(219824, 753378)	437	206
Emr (LMIC)	Jordan	5 726	757	4 326	20 810	13 027	44 646	(38246, 51207)	638	1 084
Eur (LMIC)	Kazakhstan	8 047	2 713	19 050	158 918	77 917	266 644	(35223, 411307)	1 585	1 699
Afr	Kenya	183 436	784	2 293	36 055	49 073	271 641	(89698, 380125)	639	696
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 820)	0	0
Emr (HIC)	Kuwait	1 112	74	856	10 165	3 157	15 363	(13699, 17117)	449	970
Eur (LMIC)	Kyrgyzstan	4 399	673	2 148	31 325	17 023	55 569	(22858, 73035)	984	1 398
Wpr (LMIC)	Lao People's Democratic Republic	36 161	930	3 593	16 997	15 521	73 203	(26356, 110316)	1 131	1 458
Eur (HIC)	Latvia	38	150	4 812	21 964	9 136	36 100	(26497, 44009)	1 772	955
Emr (LMIC)	Lebanon	519	418	5 274	18 765	5 021	29 997	(24739, 35054)	609	631
Afr	Lesotho	7 458	320	163	2 248	5 165	15 355	(10, 28899)	746	949
Afr	Liberia	5 755	107	52	2 180	2 614	10 708	(2, 29331)	256	326
Emr (LMIC)	Libya	2 761	1 153	6 886	25 039	15 471	51 310	(35243, 68435)	817	1 285
Eur (HIC)	Lithuania	67	303	5 763	27 513	10 720	44 367	(33458, 53573)	1 471	855
Eur (HIC)	Luxembourg	2	55	854	712	485	2 109	(1361, 2703)	396	259
Afr	Madagascar	82 914	1 179	3 975	33 857	54 751	176 677	(76607, 243779)	792	1 116
Afr	Malawi	67 818	949	413	18 014	29 538	116 732	(2564, 190738)	743	962
Wpr (LMIC)	Malaysia	2 670	2 897	18 812	92 655	43 660	160 693	(91743, 206243)	554	730
Sear	Maldives	63	26	96	515	437	1 138	(290, 1520)	330	514
Afr	Mali	208 016	3 651	1 701	31 393	45 034	289 795	(146075, 450530)	1 799	1 856
Eur (HIC)	Malta	0	19	635	1 509	441	2 605	(1342, 3308)	627	361
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	30 826	525	332	6 353	9 893	47 930	(28099, 73826)	1 269	1 414
Afr	Mauritius	181	31	577	3 846	2 071	6 707	(2957, 8644)	533	477
Amr (LMIC)	Mexico	42 444	11 848	31 617	234 186	102 089	422 185	(315925, 512238)	346	419
Wpr (LMIC)	Micronesia (Federated States of)	1	0	0	2	1	3	(0, 642)	3	4
Eur (HIC)	Monaco	0	1	31	72	26	130	(0, 247)	346	193

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Wpr (LMIC)	Mongolia	3 567	463	1 690	16 537	12 529	34 787	(24192, 42989)	1 239	1 764
Eur (LMIC)	Montenegro	30	14	2 392	3 343	2 758	8 537	(6237, 10602)	1 368	937
Emr (LMIC)	Morocco	33 467	1 781	23 822	90 870	89 658	239 598	(178845, 291920)	726	830
Afr	Mozambique	122 599	1 402	1 609	16 718	33 533	175 861	(3830, 289097)	683	683
Sear	Myanmar	138 885	31 521	76 488	144 488	299 332	690 714	(574461, 817291)	1 315	1 627
Afr	Namibia	3 080	219	247	2 372	4 358	10 276	(1177, 16247)	448	700
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	67 160	37 949	27 843	87 564	75 614	296 130	(224082, 383002)	1 077	1 438
Eur (HIC)	Netherlands	119	2 151	41 779	23 421	13 830	81 300	(42901, 109773)	485	279
Wpr (HIC)	New Zealand	3	4	70	233	69	379	(2, 8155)	9	6
Amr (LMIC)	Nicaragua	6 569	717	1 679	18 186	10 835	37 986	(6041, 56939)	646	871
Afr	Niger	287 404	2 457	299	30 705	52 736	373 601	(221491, 569811)	2 118	1 879
Afr	Nigeria	2 018 551	17 656	8 853	303 549	439 419	2 788 027	(2226669, 3415964)	1 657	1 585
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	16	185	2 947	5 653	2 263	11 065	(473, 21655)	220	132
Emr (HIC)	Oman	889	128	722	6 968	4 887	13 594	(9288, 17927)	383	750
Emr (LMIC)	Pakistan	1 242 440	115 082	70 507	534 583	382 748	2 345 359	(1923609, 2848577)	1 322	1 518
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	1 364	87	824	5 199	2 967	10 442	(1426, 15150)	279	303
Wpr (LMIC)	Papua New Guinea	14 990	244	783	6 055	4 354	26 428	(0, 63261)	369	427
Amr (LMIC)	Paraguay	3 819	301	2 759	14 263	11 902	33 044	(15460, 43378)	518	672
Amr (LMIC)	Peru	14 797	2 172	15 470	47 787	34 847	115 073	(89177, 139093)	382	439
Wpr (LMIC)	Philippines	151 164	13 981	65 445	445 708	312 146	988 443	(755255, 1195918)	1 029	1 356
Eur (HIC)	Poland	1 089	8 840	144 742	247 551	157 769	559 991	(447950, 666269)	1 450	910
Eur (HIC)	Portugal	56	280	7 990	12 011	12 486	32 822	(1548, 54610)	312	166
Emr (HIC)	Qatar	126	64	1 211	3 875	1 366	6 642	(5902, 7403)	330	699
Wpr (HIC)	Republic of Korea	676	4 051	99 218	57 125	80 020	241 090	(190134, 290586)	486	345
Eur (LMIC)	Republic of Moldova	1 424	498	5 388	40 336	18 514	66 160	(0, 105853)	1 624	1 298
Eur (LMIC)	Romania	7 962	3 267	57 942	142 088	103 680	314 939	(237754, 382435)	1 579	989

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Eur (HIC)	Russian Federation	12 116	15 103	264 830	1 939 666	962 217	3 193 932	(1387484, 349265)	2 229	1 511
Afr	Rwanda	66 948	843	622	14 621	25 587	108 622	(56163, 167326)	1 004	1 195
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	84	8	78	334	401	905	(147, 1308)	500	495
Amr (LMIC)	Saint Vincent and the Grenadines	9	1	21	273	177	482	(0, 699)	441	477
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	451	13	24	169	318	975	(0, 1577)	546	764
Emr (HIC)	Saudi Arabia	5 322	4 578	10 690	105 918	80 188	206 697	(180637, 234079)	701	1 373
Afr	Senegal	55 711	1 566	1 145	14 426	20 763	93 611	(72749, 115746)	679	831
Eur (LMIC)	Serbia	366	1 711	37 806	47 899	38 856	126 637	(87989, 160382)	1 410	870
Afr	Seychelles	7	5	53	266	126	458	(37, 668)	484	501
Afr	Sierra Leone	67 662	425	284	13 264	20 502	102 136	(0, 190034)	1 690	1 782
Wpr (HIC)	Singapore	131	280	6 520	13 343	5 657	25 931	(13225, 34817)	489	374
Eur (HIC)	Slovakia	411	430	10 779	42 799	16 506	70 925	(54710, 85063)	1 310	876
Eur (HIC)	Slovenia	11	162	5 147	5 133	3 886	14 338	(10098, 17970)	695	382
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 3022)	0	0
Emr (LMIC)	Somalia	123 652	400	729	8 353	13 242	146 376	(6893, 261160)	1 459	1 089
Afr	South Africa	105 342	10 186	44 936	120 850	173 456	454 770	(359039, 545313)	861	1 116
Emr (LMIC)	South Sudan	108 895	1 113	983	14 751	23 942	149 684	(65942, 227535)	1 363	1 287
Eur (HIC)	Spain	237	1 691	42 769	56 725	26 621	128 043	(23835, 210056)	275	156
Sear	Sri Lanka	2 981	4 972	10 034	117 189	52 962	188 138	(137899, 235835)	921	893
Emr (LMIC)	Sudan	261 209	5 122	3 569	52 275	88 336	410 512	(224919, 623811)	1 089	1 190
Amr (LMIC)	Suriname	159	10	210	948	851	2 177	(1, 3573)	412	448
Afr	Swaziland	4 718	158	103	1 277	2 263	8 520	(0, 14612)	692	871
Eur (HIC)	Sweden	1	3	82	418	125	629	(0, 29479)	7	3
Eur (HIC)	Switzerland	33	413	9 276	12 040	4 266	26 028	(7270, 36208)	324	177

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Emr (LMIC)	Syrian Arab Republic	10 533	1 328	14 568	95 816	36 705	158 950	(93603, 218308)	796	1 392
Eur (LMIC)	Tajikistan	45 494	1 955	3 004	43 109	30 309	123 871	(66432, 185137)	1 562	2 346
Sear	Thailand	9 442	17 204	114 602	216 933	160 335	518 516	(411912, 622205)	772	643
Eur (LMIC)	The former Yugoslav Republic of Macedonia	101	434	8 103	9 960	13 709	32 306	(26226, 38493)	1 561	1 148
Sear	Timor-Leste	4 573	47	795	1 911	1 487	8 814	(0, 17545)	800	926
Afr	Togo	43 924	501	399	11 519	17 523	73 867	(11608, 122182)	1 095	1 309
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	258	38	733	5 548	2 284	8 862	(0, 13046)	661	594
Emr (LMIC)	Tunisia	4 057	1 987	14 135	61 326	36 037	117 542	(95177, 139946)	1 080	1 106
Eur (LMIC)	Turkey	21 805	20 007	196 101	368 778	239 376	846 068	(704766, 988251)	1 130	1 208
Eur (LMIC)	Turkmenistan	11 766	1 531	4 046	74 229	28 621	120 193	(36834, 171202)	2 323	3 120
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	285 051	4 878	4 194	48 986	80 384	423 492	(324787, 543839)	1 196	1 402
Eur (LMIC)	Ukraine	5 734	5 411	73 112	796 790	247 172	1 128 219	(17925, 1638357)	2 489	1 512
Emr (HIC)	United Arab Emirates	829	393	2 085	16 984	7 432	27 723	(23971, 31545)	310	595
Eur (HIC)	United Kingdom	1 135	6 760	97 796	139 234	56 059	300 985	(103839, 415531)	473	277
Afr	United Republic of Tanzania	173 615	2 667	1 009	45 516	55 715	278 521	(158205, 377239)	573	651
Amr (HIC)	United States of America	2 959	12 278	192 562	465 743	110 472	784 015	(35395, 1660176)	249	168
Amr (HIC)	Uruguay	324	261	4 196	6 473	3 844	15 099	(4262, 21261)	444	326
Eur (LMIC)	Uzbekistan	65 481	4 491	14 596	249 788	125 646	460 001	(221078, 657777)	1 609	2 196
Wpr (LMIC)	Vanuatu	8	0	3	30	26	66	(0, 1225)	27	43
Amr (LMIC)	Venezuela, Bolivarian Republic of	11 407	2 395	21 645	94 773	40 153	170 373	(123682, 211212)	571	689
Wpr (LMIC)	Viet Nam	53 762	17 575	147 882	111 775	328 906	659 901	(476947, 835297)	730	811
Emr (LMIC)	Yemen	128 485	3 378	3 389	89 708	66 717	291 678	(121702, 458316)	1 172	1 720
Afr	Zambia	90 477	417	683	14 882	22 490	128 949	(28321, 198935)	872	935
Afr	Zimbabwe	63 624	986	2 549	8 822	15 793	91 774	(3800, 148164)	630	692

YLL: year of life lost; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.5: Years of life lost (YLLs) attributable to AAP in 2012 in women, by disease and country

		Number of YLLs							*YLLs 100 000 per capita*	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	163 099	2 231	2 648	56 435	50 570	274 983	(216653, 341781)	1 905	2 411
Eur (LMIC)	Albania	311	152	1 506	6 703	7 540	16 213	(6722, 21586)	1 129	817
Afr	Algeria	13 523	945	3 641	48 877	60 940	127 925	(51571, 180805)	688	835
Eur (HIC)	Andorra	0	1	13	75	42	132	(3, 196)	328	145
Afr	Angola	131 797	1 326	412	18 643	27 801	179 980	(28357, 298561)	1 573	1 530
Amr (HIC)	Antigua and Barbuda	2	0	7	102	75	187	(0, 270)	401	392
Amr (LMIC)	Argentina	3 274	1 179	10 842	39 628	25 327	80 252	(23507, 109730)	373	290
Eur (LMIC)	Armenia	285	305	1 573	10 759	5 650	18 571	(769, 28210)	1 239	814
Wpr (HIC)	Australia	3	5	122	326	154	610	(9, 18958)	5	3
Eur (HIC)	Austria	59	410	5 910	9 858	4 003	20 241	(13832, 25322)	468	216
Eur (LMIC)	Azerbaijan	5 424	352	1 479	22 479	13 611	43 345	(9822, 63392)	920	1 002
Amr (HIC)	Bahamas	117	1	38	209	161	525	(2, 804)	276	270
Emr (HIC)	Bahrain	67	49	163	580	389	1 249	(1113, 1388)	249	531
Sear	Bangladesh	156 975	76 788	30 572	78 697	118 505	461 536	(376188, 563712)	601	814
Amr (HIC)	Barbados	24	1	30	164	154	373	(0, 549)	255	173
Eur (LMIC)	Belarus	109	201	1 637	55 352	20 372	77 671	(1303, 111090)	1 529	765
Eur (HIC)	Belgium	52	642	7 552	7 434	5 538	21 218	(13638, 27183)	376	193
Amr (LMIC)	Belize	50	1	22	146	128	348	(54, 516)	206	369
Afr	Benin	29 279	348	199	10 627	15 582	56 034	(17331, 87911)	1 111	1 398
Sear	Bhutan	801	254	232	891	782	2 959	(2394, 3597)	860	1 188
Amr (LMIC)	Bolivia, Plurinational States of	10 928	684	1 162	13 261	13 218	39 254	(30416, 47782)	768	875
Eur (LMIC)	Bosnia and Herzegovina	89	769	2 923	10 886	14 770	29 437	(23046, 36220)	1 531	817
Afr	Botswana	1 571	26	46	1 133	2 200	4 975	(28, 7816)	466	679
Amr (LMIC)	Brazil	8 134	4 195	30 138	127 197	112 013	281 677	(122028, 428178)	274	271
Wpr HIC	Brunei Darussalam	0	0	1	4	2	7	(0, 429)	4	5
Eur (LMIC)	Bulgaria	765	1 326	4 492	30 608	30 522	67 713	(55552, 79643)	1 805	822

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burkina Faso	69 235	809	679	16 091	24 820	111 633	(53548, 172413)	1 334	1 539
Afr	Burundi	56 736	579	346	6 009	12 534	76 204	(30987, 123588)	1 486	1 402
Afr	Cabo Verde	12 056	523	2 475	15 395	14 319	44 769	(3168, 69417)	589	772
Wpr (LMIC)	Cambodia	105 721	1 423	853	21 765	33 935	163 697	(132518, 201931)	1 511	1 617
Afr	Cameroon	46	163	5 073	6 348	2 483	14 113	(240, 51828)	80	45
Amr (HIC)	Canada	221	29	18	262	705	1 236	(764, 1734)	487	604
Afr	Central African Republic	16 868	627	127	3 521	5 138	26 282	(12380, 41630)	1 122	1 159
Afr	Chad	93 313	684	289	9 384	14 996	118 666	(62793, 180873)	1 868	1 655
Amr (HIC)	Chile	596	548	5 301	7 426	9 591	23 461	(17099, 28858)	266	206
Wpr (LMIC)	China	257 595	674 323	1 453 252	2 620 152	4 804 159	9 809 480	(8349919, 11390232)	1 483	1 265
Amr (LMIC)	Colombia	5 994	1 904	7 179	33 582	21 975	70 635	(49112, 87387)	297	320
Afr	Comoros	1 303	20	0	375	718	2 417	(388, 3450)	664	841
Afr	Congo	11 128	338	57	4 314	6 730	22 568	(10207, 35361)	1 053	1 264
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	70	171	494	2 991	1 757	5 482	(4012, 6661)	236	224
Eur (HIC)	Croatia	14	271	3 536	10 087	6 988	20 896	(15057, 25987)	941	411
Amr (LMIC)	Cuba	272	572	8 457	15 560	10 136	34 997	(3080, 52022)	620	405
Eur (HIC)	Cyprus	12	9	280	679	350	1 330	(905, 1664)	241	162
Eur (HIC)	Czech Republic	114	567	8 563	23 933	9 925	43 102	(33732, 51588)	803	374
Afr	Côte d'Ivoire	59 202	513	441	18 112	28 254	106 521	(11078, 171839)	1 030	1 275
Sear	Democratic People's Republic of Korea	10 325	9 559	36 368	38 170	69 820	164 242	(22547, 273082)	1 297	1 089
Afr	Democratic Republic of the Congo	423 559	4 619	837	59 455	107 418	595 889	(277324, 933537)	1 690	1 626
Eur (HIC)	Denmark	3	331	4 361	2 467	2 195	9 357	(413, 15866)	332	172
Emr (LMIC)	Djibouti	2 060	60	68	633	1 020	3 840	(1281, 6329)	905	1 086
Amr (LMIC)	Dominica	3	1	7	57	65	132	(7, 192)	366	332
Amr (LMIC)	Dominican Republic	3 163	179	1 546	12 026	7 639	24 553	(2382, 35051)	482	558
Amr (LMIC)	Ecuador	3 408	268	1 455	7 167	6 414	18 711	(9185, 24474)	243	266
Emr (LMIC)	Egypt	44 505	16 469	17 040	227 785	173 092	478 890	(397446, 568777)	1 129	1 452

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	El Salvador	1 823	709	1 054	10 301	4 181	18 067	(14364, 21967)	563	595
Afr	Equatorial Guinea	2 052	62	45	692	987	3 837	(202, 6677)	1 018	1 208
Afr	Eritrea	13 773	293	287	3 712	6 807	24 872	(9802, 39451)	1 017	1 349
Eur (HIC)	Estonia	0	4	190	1 535	419	2 148	(26, 4170)	304	119
Afr	Ethiopia	185 983	1 147	6 718	22 058	48 508	264 415	(86734, 420277)	573	590
Wpr (LMIC)	Fiji	1	0	0	12	3	17	(0, 2690)	4	5
Eur (HIC)	Finland	6	7	221	1 224	470	1 928	(9, 9739)	70	28
Eur (HIC)	France	118	587	27 891	19 899	21 127	69 620	(24625, 97125)	213	111
Afr	Gabon	1 870	136	179	1 305	1 821	5 310	(960, 8644)	665	769
Afr	Gambia	4 513	57	40	1 380	2 278	8 267	(350, 14948)	906	1 241
Eur (LMIC)	Georgia	398	346	837	16 390	12 865	30 836	(19451, 38983)	1 421	759
Eur (HIC)	Germany	188	3 828	52 206	77 785	42 801	176 808	(84431, 233666)	431	184
Afr	Ghana	40 887	747	499	22 515	45 407	110 054	(70401, 144587)	854	1 131
Eur (HIC)	Greece	38	464	3 235	14 852	13 587	32 175	(11623, 42388)	567	244
Amr (LMIC)	Grenada	1	1	7	89	86	184	(0, 267)	349	364
Amr (LMIC)	Guatemala	16 147	511	1 906	8 842	5 713	33 119	(26208, 40349)	422	479
Afr	Guinea	28 475	308	184	10 740	15 169	54 875	(4782, 87626)	946	1 148
Afr	Guinea-Bissau	6 300	58	51	1 633	2 357	10 399	(557, 17488)	1 204	1 346
Amr (LMIC)	Guyana	141	7	57	1 497	1 347	3 049	(1, 4706)	806	1 003
Amr (LMIC)	Haiti	23 931	119	1 425	10 371	21 027	56 873	(5454, 87458)	1 093	1 308
Amr (LMIC)	Honduras	4 088	532	985	7 345	5 486	18 435	(14479, 22554)	476	647
Eur (LMIC)	Hungary	142	1 265	18 701	33 186	14 276	67 570	(51699, 82224)	1 293	639
Eur (HIC)	Iceland	0	2	50	55	32	139	(0, 472)	87	50
Sear	India	1 857 079	1 023 759	198 706	2 306 544	2 414 822	7 800 910	(6517074, 9293312)	1 282	1 520
Sear	Indonesia	98 053	5 405	38 394	130 612	416 064	688 528	(362860, 912704)	560	706
Emr (LMIC)	Iran (Islamic Republic of)	26 208	3 380	13 159	157 167	79 310	279 224	(240070, 319522)	740	1 033
Emr (LMIC)	Iraq	42 264	1 287	5 539	42 680	31 022	122 792	(79044, 171590)	754	1 156
Eur (HIC)	Ireland	21	80	1 269	2 504	1 044	4 917	(339, 7915)	210	140

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Israel	22	191	2 982	2 644	1 999	7 837	(5787, 9707)	202	141
Eur (HIC)	Italy	142	2 489	34 371	46 326	41 127	124 455	(85411, 155902)	405	157
Amr (LMIC)	Jamaica	285	31	416	1 893	3 232	5 858	(4160, 7270)	422	387
Wpr (HIC)	Japan	792	675	44 831	57 353	69 710	173 361	(68199, 233248)	266	106
Emr (LMIC)	Jordan	2 500	191	650	7 237	6 189	16 767	(14405, 19191)	493	801
Eur (LMIC)	Kazakhstan	3 472	884	3 294	59 786	38 564	106 000	(13855, 162555)	1 218	1 156
Afr	Kenya	80 928	345	917	12 521	20 579	115 291	(37221, 161936)	542	569
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 266)	0	0
Emr (HIC)	Kuwait	424	24	220	2 040	1 106	3 815	(3377, 4283)	254	677
Eur (LMIC)	Kyrgyzstan	1 862	260	488	11 953	7 257	21 820	(8829, 28663)	763	1 000
Wpr (LMIC)	Lao People's Democratic Republic	15 152	461	1 109	7 543	7 234	31 499	(11532, 47352)	967	1 217
Eur (HIC)	Latvia	15	33	731	8 807	4 591	14 176	(10520, 17164)	1 282	510
Emr (LMIC)	Lebanon	230	149	1 627	4 737	2 721	9 463	(7740, 11146)	389	399
Afr	Lesotho	3 415	128	38	1 133	3 037	7 751	(5, 14403)	743	887
Afr	Liberia	2 797	44	18	1 009	1 274	5 141	(1, 14082)	247	308
Emr (LMIC)	Libya	1 165	423	930	9 671	7 263	19 452	(13555, 25798)	629	936
Eur (HIC)	Lithuania	41	62	844	11 035	5 576	17 558	(13377, 21057)	1 079	466
Eur (HIC)	Luxembourg	2	24	270	198	241	735	(475, 946)	276	157
Afr	Madagascar	37 173	579	695	13 221	26 546	78 214	(33671, 107996)	699	979
Afr	Malawi	34 742	383	153	8 793	15 345	59 415	(1237, 97031)	755	925
Wpr (LMIC)	Malaysia	1 175	810	6 370	30 873	19 113	58 341	(33213, 74942)	398	553
Sear	Maldives	27	14	16	193	111	362	(89, 483)	210	346
Afr	Mali	94 987	1 110	710	17 242	25 223	139 273	(71065, 214508)	1 744	1 844
Eur (HIC)	Malta	0	5	165	526	187	883	(462, 1110)	422	221
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	11 696	212	107	3 022	4 847	19 883	(11770, 30374)	1 059	1 224
Afr	Mauritius	63	6	157	1 168	766	2 160	(944, 2783)	340	289
Amr (LMIC)	Mexico	18 624	5 323	12 182	85 593	50 304	172 027	(127788, 209804)	280	324
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	0	0	1	(0, 229)	2	3

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Monaco	0	0	8	24	13	45	(0, 85)	235	101
Wpr (LMIC)	Mongolia	1 393	164	298	5 370	5 183	12 408	(8606, 15357)	876	1 226
Eur (LMIC)	Montenegro	12	3	567	763	1 039	2 384	(1744, 2968)	755	456
Emr (LMIC)	Morocco	14 418	539	2 611	36 185	46 775	100 528	(75973, 121784)	601	675
Afr	Mozambique	51 463	773	602	7 904	15 537	76 279	(1796, 125238)	578	579
Sear	Myanmar	58 409	17 927	33 762	81 429	140 657	332 184	(276447, 393004)	1 235	1 461
Afr	Namibia	1 417	97	88	1 225	2 716	5 543	(657, 8699)	470	699
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	32 168	19 509	14 486	36 272	37 045	139 481	(104679, 181830)	985	1 315
Eur (HIC)	Netherlands	52	1 024	16 884	7 483	7 307	32 750	(17038, 44484)	388	212
Wpr (HIC)	New Zealand	2	2	37	71	39	151	(1, 3452)	7	4
Amr (LMIC)	Nicaragua	2 719	323	664	6 966	4 917	15 591	(2485, 23519)	523	671
Afr	Niger	119 158	1 041	46	14 942	25 683	160 870	(95851, 244409)	1 838	1 774
Afr	Nigeria	864 235	7 184	4 557	128 099	211 378	1 215 453	(971393, 1487889)	1 471	1 441
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	5	92	1 254	1 887	1 135	4 373	(164, 8766)	175	90
Emr (HIC)	Oman	469	39	152	1 986	1 451	4 096	(2781, 5459)	314	620
Emr (LMIC)	Pakistan	534 059	27 645	11 666	235 717	203 293	1 012 379	(836044, 1220982)	1 174	1 363
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	730	39	270	1 607	1 352	3 998	(525, 5875)	214	222
Wpr (LMIC)	Papua New Guinea	6 763	76	265	2 433	1 248	10 785	(0, 25810)	308	335
Amr (LMIC)	Paraguay	1 679	96	526	4 731	4 929	11 961	(5561, 15661)	381	478
Amr (LMIC)	Peru	6 541	1 116	7 660	18 681	16 256	50 254	(38661, 61080)	333	366
Wpr (LMIC)	Philippines	68 621	3 457	18 623	143 385	120 160	354 247	(269559, 429507)	746	940
Eur (HIC)	Poland	413	2 612	43 455	81 408	71 253	199 140	(159581, 236994)	999	525
Eur (HIC)	Portugal	26	79	1 588	4 018	5 752	11 463	(495, 18432)	208	91
Emr (HIC)	Qatar	52	18	188	525	183	966	(851, 1088)	189	566
Wpr (HIC)	Republic of Korea	254	1 067	25 880	17 101	33 284	77 586	(61770, 93155)	311	192
Eur (LMIC)	Republic of Moldova	661	141	988	17 486	8 838	28 114	(0, 44276)	1 329	921

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Romania	3 602	861	10 999	51 272	47 638	114 372	(87652, 137810)	1 114	599
Eur (HIC)	Russian Federation	5 612	3 421	40 171	699 149	469 392	1 217 745	(520667, 1652256)	1 585	864
Afr	Rwanda	29 859	378	227	5 777	11 399	47 640	(24511, 73623)	844	963
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	33	2	21	121	175	353	(57, 508)	383	362
Amr (LMIC)	Saint Vincent and the Grenadines	4	0	6	118	90	218	(0, 316)	403	415
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	203	4	6	92	173	479	(0, 765)	534	733
Emr (HIC)	Saudi Arabia	2 612	1 552	2 877	30 851	32 992	70 884	(61575, 80767)	552	1 069
Afr	Senegal	24 092	536	434	6 568	10 119	41 749	(32542, 51479)	594	721
Eur (LMIC)	Serbia	130	584	10 113	15 556	19 350	45 734	(32284, 57582)	995	541
Afr	Seychelles	2	2	9	78	42	134	(10, 193)	289	268
Afr	Sierra Leone	32 049	164	101	6 434	10 455	49 203	(0, 91290)	1 610	1 745
Wpr (HIC)	Singapore	49	62	2 149	3 911	2 525	8 695	(4386, 11710)	324	238
Eur (HIC)	Slovakia	215	139	2 838	16 185	7 209	26 586	(20620, 31809)	953	532
Eur (HIC)	Slovenia	11	53	1 467	1 565	1 852	4 948	(3517, 6189)	476	217
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 1028)	0	0
Emr (LMIC)	Somalia	56 878	238	347	3 002	5 622	66 086	(3022, 118382)	1 310	949
Afr	South Africa	46 232	3 244	14 627	46 663	92 604	203 369	(160882, 243388)	756	863
Emr (LMIC)	South Sudan	47 572	403	426	5 798	10 960	65 159	(28646, 99084)	1 187	1 112
Eur (HIC)	Spain	78	314	8 154	16 655	12 742	37 943	(6952, 59988)	160	75
Sear	Sri Lanka	1 208	1 644	2 741	35 253	19 846	60 692	(44272, 76426)	576	534
Emr (LMIC)	Sudan	111 077	1 867	1 174	20 719	40 639	175 475	(96165, 266403)	934	1 024
Amr (LMIC)	Suriname	11	6	46	367	380	810	(0, 1312)	307	318
Afr	Swaziland	2 071	83	36	733	1 558	4 481	(0, 7592)	717	923
Eur (HIC)	Sweden	1	2	40	150	65	258	(0, 12682)	5	2
Eur (HIC)	Switzerland	15	171	3 442	3 950	2 243	9 821	(2578, 13745)	242	115
Emr (LMIC)	Syrian Arab Republic	4 394	425	2 703	33 724	12 004	53 250	(31883, 72663)	539	906

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Tajikistan	19 417	1 024	1 175	20 221	17 297	59 134	(31910, 88088)	1 505	2 306
Sear	Thailand	3 853	3 690	37 822	85 872	69 191	200 428	(160611, 238599)	589	467
Eur (LMIC)	The former Yugoslav Republic of Macedonia	48	140	1 481	3 106	6 440	11 216	(9174, 13331)	1 080	726
Sear	Timor-Leste	2 121	20	259	916	699	4 015	(0, 7918)	740	834
Afr	Togo	21 021	177	113	5 493	8 826	35 630	(5638, 58792)	1 042	1 232
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	129	5	187	1 714	936	2 971	(0, 4369)	438	375
Emr (LMIC)	Tunisia	1 750	754	853	21 482	15 248	40 087	(32733, 47528)	730	722
Eur (LMIC)	Turkey	9 142	6 887	24 932	130 958	103 457	275 375	(232719, 318894)	723	718
Eur (LMIC)	Turkmenistan	4 801	642	877	26 246	13 180	45 746	(13926, 65576)	1 741	2 302
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	121 133	2 388	2 071	17 673	36 036	179 301	(137192, 230643)	1 012	1 153
Eur (LMIC)	Ukraine	2 342	1 267	11 243	349 292	126 850	490 993	(6286, 705171)	2 015	968
Emr (HIC)	United Arab Emirates	311	96	477	1 867	1 207	3 959	(3368, 4580)	173	535
Eur (HIC)	United Kingdom	537	3 256	43 579	42 355	29 299	119 027	(38097, 167686)	369	192
Afr	United Republic of Tanzania	76 307	1 083	420	17 305	23 795	118 910	(67053, 161462)	486	547
Amr (HIC)	United States of America	1 323	6 262	85 539	158 082	55 912	307 117	(13418, 668580)	193	118
Amr (HIC)	Uruguay	166	69	893	1 897	1 934	4 959	(1432, 6853)	282	178
Eur (LMIC)	Uzbekistan	27 448	1 897	3 746	100 577	60 608	194 276	(92850, 278471)	1 337	1 712
Wpr (LMIC)	Vanuatu	3	0	1	9	8	21	(0, 394)	17	28
Amr (LMIC)	Venezuela, Bolivarian Republic of	4 943	1 126	9 256	30 067	17 683	63 075	(45119, 79002)	421	486
Wpr (LMIC)	Viet Nam	20 914	7 587	35 930	34 617	118 649	217 697	(157770, 276307)	476	465
Emr (LMIC)	Yemen	57 248	1 578	893	31 496	29 396	120 610	(49171, 191644)	980	1 380
Afr	Zambia	42 962	285	285	5 156	9 023	57 711	(12002, 89782)	779	754
Afr	Zimbabwe	31 355	405	940	4 112	8 510	45 323	(1868, 73001)	614	659

YLL: year of life lost; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.6: Years of life lost (YLLs) attributable to AAP in 2012 in men, by disease and country

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	179 179	2 429	7 115	64 378	37 997	291 097	(228829, 362678)	1 904	2 498
Eur (LMIC)	Albania	425	194	3 047	9 872	6 824	20 362	(8611, 27165)	1 410	1 142
Afr	Algeria	17 446	1 843	15 626	87 717	73 469	196 101	(79130, 277004)	1 040	1 311
Eur (HIC)	Andorra	0	3	44	155	43	245	(8, 369)	627	388
Afr	Angola	202 918	1 917	735	28 224	25 812	259 607	(39170, 433070)	2 308	2 067
Amr (HIC)	Antigua and Barbuda	4	1	15	150	83	254	(0, 367)	597	640
Amr (LMIC)	Argentina	4 436	2 061	26 380	69 550	32 230	134 657	(39258, 185786)	654	644
Eur (LMIC)	Armenia	465	621	8 093	20 206	7 124	36 508	(1714, 57014)	2 467	2 255
Wpr (HIC)	Australia	3	6	179	700	135	1 022	(16, 29638)	9	6
Eur (HIC)	Austria	20	613	10 516	16 759	3 771	31 679	(21683, 39595)	767	466
Eur (LMIC)	Azerbaijan	6 829	583	5 914	38 337	14 498	66 161	(15454, 96650)	1 423	1 751
Amr (HIC)	Bahamas	154	2	87	419	206	868	(3, 1322)	476	539
Emr (HIC)	Bahrain	79	96	451	1 641	692	2 958	(2655, 3263)	356	752
Sear	Bangladesh	192 688	91 010	90 088	186 039	120 662	680 488	(562668, 818621)	868	1 192
Amr (HIC)	Barbados	34	3	62	294	206	598	(0, 879)	443	349
Eur (LMIC)	Belarus	232	994	13 507	89 633	22 486	126 852	(2914, 185453)	2 876	2 270
Eur (HIC)	Belgium	71	1 198	20 203	16 520	5 817	43 808	(27226, 56771)	806	491
Amr (LMIC)	Belize	34	18	56	211	140	458	(73, 702)	273	474
Afr	Benin	35 556	697	365	12 225	16 147	64 990	(19753, 102678)	1 298	1 706
Sear	Bhutan	1 053	391	231	1 416	631	3 723	(3008, 4544)	932	1 206
Amr (LMIC)	Bolivia, Plurinational States of	13 163	672	1 061	18 600	15 689	49 185	(38356, 59565)	959	1 150
Eur (LMIC)	Bosnia and Herzegovina	123	1 106	11 926	18 218	13 493	44 866	(34654, 55437)	2 354	1 586
Afr	Botswana	1 651	38	225	1 112	1 352	4 378	(23, 6978)	411	620
Amr (LMIC)	Brazil	9 819	5 920	44 222	227 519	127 353	414 834	(179748, 625151)	416	471
Wpr HIC	Brunei Darussalam	0	0	1	10	3	13	(0, 734)	6	9
Eur (LMIC)	Bulgaria	1 045	2 136	21 942	48 845	32 999	106 967	(86678, 126655)	3 011	1 848

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burkina Faso	80 575	1 060	734	17 910	27 972	128 251	(61363, 198427)	1 560	2 042
Afr	Burundi	68 342	685	346	11 504	18 414	99 290	(41494, 159067)	1 987	1 971
Afr	Cabo Verde	16 548	649	4 375	19 876	15 378	56 827	(3900, 88470)	786	1 144
Wpr (LMIC)	Cambodia	132 121	2 639	1 516	28 446	35 580	200 302	(161935, 247712)	1 850	1 981
Afr	Cameroon	45	178	5 764	14 337	2 345	22 669	(449, 76799)	131	86
Amr (HIC)	Canada	239	91	23	531	917	1 800	(1118, 2532)	729	1 223
Afr	Central African Republic	24 156	759	238	4 804	5 096	35 052	(16358, 55711)	1 540	1 563
Afr	Chad	126 871	861	398	12 481	17 833	158 445	(83654, 241698)	2 490	2 163
Amr (HIC)	Chile	955	793	8 115	18 937	12 653	41 452	(30841, 50306)	483	448
Wpr (LMIC)	China	353 527	813 075	3 739 353	2 965 892	5 370 805	13 242 651	(11194228, 15425025)	1 888	1 755
Amr (LMIC)	Colombia	8 387	2 536	11 197	55 842	20 008	97 970	(68369, 120451)	424	511
Afr	Comoros	1 567	20	29	578	973	3 166	(545, 4495)	856	1 183
Afr	Congo	18 264	586	148	6 491	6 722	32 211	(14300, 51058)	1 503	1 722
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	97	191	995	6 171	1 953	9 408	(6962, 11315)	404	418
Eur (HIC)	Croatia	20	550	11 078	16 158	7 551	35 357	(24523, 44731)	1 711	1 052
Amr (LMIC)	Cuba	320	716	14 824	26 794	12 273	54 927	(5012, 81450)	963	710
Eur (HIC)	Cyprus	0	30	1 047	2 105	379	3 562	(2383, 4474)	618	504
Eur (HIC)	Czech Republic	143	1 022	20 530	41 359	10 216	73 271	(56758, 88046)	1 414	901
Afr	Côte d'Ivoire	70 780	1 244	851	27 131	37 769	137 774	(15084, 221544)	1 281	1 503
Sear	Democratic People's Republic of Korea	10 582	14 116	51 822	58 629	99 577	234 726	(31916, 389541)	1 940	2 148
Afr	Democratic Republic of the Congo	531 472	6 745	1 752	85 432	105 107	730 507	(339547, 1146426)	2 086	1 993
Eur (HIC)	Denmark	10	303	4 408	5 304	2 268	12 293	(743, 19728)	442	266
Emr (LMIC)	Djibouti	2 836	56	67	943	1 378	5 280	(1783, 8628)	1 232	1 514
Amr (LMIC)	Dominica	5	2	20	89	66	182	(10, 268)	512	517
Amr (LMIC)	Dominican Republic	4 521	170	2 412	13 125	7 155	27 383	(2582, 39379)	541	648
Amr (LMIC)	Ecuador	4 405	366	1 983	11 724	7 567	26 045	(13093, 33841)	338	404
Emr (LMIC)	Egypt	41 927	24 566	44 136	351 675	232 864	695 169	(579142, 820949)	1 607	2 335

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	El Salvador	2 332	513	1 226	12 092	3 558	19 720	(15796, 23782)	689	819
Afr	Equatorial Guinea	3 584	121	138	1 587	1 294	6 724	(353, 11663)	1 694	1 852
Afr	Eritrea	19 103	326	301	5 931	8 991	34 653	(13804, 54657)	1 416	2 082
Eur (HIC)	Estonia	15	12	642	2 655	507	3 831	(67, 7669)	620	432
Afr	Ethiopia	319 258	8 371	6 104	41 987	68 949	444 669	(144873, 714179)	966	982
Wpr (LMIC)	Fiji	1	0	0	40	6	47	(0, 6924)	10	13
Eur (HIC)	Finland	5	13	464	2 679	513	3 673	(22, 18053)	138	79
Eur (HIC)	France	237	1 256	76 241	47 511	22 042	147 287	(51558, 209821)	476	305
Afr	Gabon	3 410	204	318	1 841	1 631	7 404	(1235, 12241)	908	1 076
Afr	Gambia	5 833	124	121	1 800	2 792	10 671	(442, 19418)	1 193	1 557
Eur (LMIC)	Georgia	710	579	4 265	23 830	13 060	42 444	(26861, 53910)	2 155	1 667
Eur (HIC)	Germany	274	5 653	104 213	149 092	42 019	301 252	(146398, 398718)	763	411
Afr	Ghana	46 994	972	1 805	30 095	34 727	114 593	(73314, 150588)	905	1 242
Eur (HIC)	Greece	54	567	15 709	28 232	13 296	57 858	(21206, 78220)	1 064	627
Amr (LMIC)	Grenada	2	2	21	170	118	312	(0, 454)	592	778
Amr (LMIC)	Guatemala	19 811	620	2 412	12 350	5 835	41 028	(32568, 49874)	546	674
Afr	Guinea	34 155	521	417	11 509	15 810	62 411	(5224, 100360)	1 071	1 272
Afr	Guinea-Bissau	8 144	109	64	1 839	2 684	12 840	(636, 21766)	1 509	1 641
Amr (LMIC)	Guyana	158	13	63	2 347	1 710	4 292	(1, 6562)	1 130	1 375
Amr (LMIC)	Haiti	28 092	174	1 147	10 929	19 645	59 987	(5457, 92622)	1 179	1 469
Amr (LMIC)	Honduras	4 892	794	1 452	12 671	6 801	26 610	(21079, 32352)	688	1 028
Eur (LMIC)	Hungary	181	1 959	34 490	49 458	17 530	103 618	(78527, 126682)	2 189	1 479
Eur (HIC)	Iceland	0	3	45	127	32	207	(1, 623)	127	93
Sear	India	1 767 111	1 492 940	606 825	5 106 390	2 815 829	11 789 093	(9946795, 13893270)	1 799	2 272
Sear	Indonesia	131 817	13 994	98 659	308 721	489 627	1 042 818	(553692, 1381328)	834	1 116
Emr (LMIC)	Iran (Islamic Republic of)	28 217	5 134	24 735	264 939	100 960	423 984	(366337, 482565)	1 104	1 372
Emr (LMIC)	Iraq	49 417	2 313	14 251	89 187	49 637	204 804	(134138, 280733)	1 229	2 289
Eur (HIC)	Ireland	20	100	1 842	5 090	972	8 024	(625, 12550)	345	273
Eur (HIC)	Israel	71	337	6 368	5 829	2 409	15 014	(11058, 18604)	395	363
Eur (HIC)	Italy	67	4 307	96 071	85 187	38 245	223 878	(148539, 284331)	772	402

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	Jamaica	433	94	1 714	2 924	3 576	8 742	(6015, 11014)	636	664
Wpr (HIC)	Japan	856	2 841	133 415	136 217	108 404	381 734	(150665, 521111)	617	318
Emr (LMIC)	Jordan	3 226	566	3 677	13 573	6 838	27 879	(23823, 32044)	776	1 370
Eur (LMIC)	Kazakhstan	4 575	1 829	15 755	99 132	39 353	160 644	(21034, 248898)	1 979	2 410
Afr	Kenya	102 509	439	1 375	23 534	28 494	156 350	(52573, 218190)	735	830
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 554)	0	1
Emr (HIC)	Kuwait	687	50	636	8 125	2 050	11 548	(10319, 12834)	602	1 172
Eur (LMIC)	Kyrgyzstan	2 537	412	1 659	19 372	9 767	33 748	(13887, 44370)	1 210	1 881
Wpr (LMIC)	Lao People's Democratic Republic	21 009	469	2 484	9 455	8 287	41 704	(14831, 62964)	1 297	1 727
Eur (HIC)	Latvia	24	117	4 081	13 157	4 545	21 924	(15868, 26907)	2 353	1 591
Emr (LMIC)	Lebanon	290	269	3 647	14 028	2 300	20 534	(16998, 23914)	823	845
Afr	Lesotho	4 043	192	125	1 115	2 128	7 603	(5, 14504)	750	1 032
Afr	Liberia	2 958	63	35	1 171	1 340	5 567	(1, 15258)	264	344
Emr (LMIC)	Libya	1 596	729	5 956	15 368	8 209	31 858	(21655, 42641)	998	1 652
Eur (HIC)	Lithuania	26	241	4 919	16 478	5 145	26 809	(19974, 32584)	1 930	1 367
Eur (HIC)	Luxembourg	0	31	584	514	244	1 373	(884, 1760)	517	367
Afr	Madagascar	45 741	601	3 280	20 636	28 204	98 463	(42789, 135764)	886	1 259
Afr	Malawi	33 076	566	260	9 221	14 193	57 317	(1268, 93704)	732	999
Wpr (LMIC)	Malaysia	1 495	2 087	12 441	61 782	24 547	102 352	(58183, 131272)	712	914
Sear	Maldives	36	12	79	322	326	776	(200, 1038)	449	680
Afr	Mali	113 028	2 541	990	14 151	19 811	150 522	(74960, 236062)	1 852	1 859
Eur (HIC)	Malta	0	15	470	984	255	1 722	(879, 2202)	833	514
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	19 130	314	225	3 332	5 046	28 047	(16326, 43464)	1 477	1 604
Afr	Mauritius	118	26	420	2 679	1 305	4 547	(1984, 5863)	730	687
Amr (LMIC)	Mexico	23 819	6 526	19 435	148 593	51 785	250 159	(188088, 302420)	412	521
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	1	1	2	(0, 413)	4	6
Eur (HIC)	Monaco	0	1	22	48	13	84	(0, 163)	463	292
Wpr (LMIC)	Mongolia	2 174	300	1 392	11 167	7 346	22 379	(15576, 27640)	1 608	2 382

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Montenegro	18	11	1 826	2 579	1 719	6 153	(4488, 7635)	1 997	1 484
Emr (LMIC)	Morocco	19 049	1 242	21 211	54 684	42 883	139 069	(102817, 170336)	856	991
Afr	Mozambique	71 136	628	1 007	8 814	17 996	99 582	(2079, 163848)	795	804
Sear	Myanmar	80 476	13 594	42 726	63 058	158 676	358 529	(297718, 424251)	1 398	1 820
Afr	Namibia	1 662	122	159	1 147	1 642	4 733	(510, 7554)	425	699
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	34 992	18 440	13 357	51 291	38 569	156 649	(119368, 201233)	1 174	1 566
Eur (HIC)	Netherlands	66	1 128	24 895	15 938	6 523	48 550	(25883, 65343)	585	355
Wpr (HIC)	New Zealand	2	2	34	161	30	228	(2, 4745)	11	8
Amr (LMIC)	Nicaragua	3 850	394	1 014	11 220	5 918	22 396	(3551, 33421)	773	1 105
Afr	Niger	168 246	1 416	254	15 762	27 053	212 731	(125664, 325508)	2 395	1 969
Afr	Nigeria	1 154 316	10 471	4 295	175 451	228 041	1 572 574	(1255275, 1928134)	1 837	1 724
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	11	93	1 694	3 767	1 127	6 691	(298, 12905)	266	176
Emr (HIC)	Oman	420	89	570	4 982	3 437	9 498	(6500, 12470)	424	851
Emr (LMIC)	Pakistan	708 381	87 437	58 841	298 866	179 455	1 332 980	(1087099, 1627624)	1 462	1 665
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	635	48	554	3 592	1 615	6 444	(893, 9278)	343	388
Wpr (LMIC)	Papua New Guinea	8 227	169	518	3 623	3 107	15 643	(0, 37428)	429	525
Amr (LMIC)	Paraguay	2 140	206	2 233	9 532	6 973	21 084	(9812, 27736)	651	866
Amr (LMIC)	Peru	8 255	1 056	7 810	29 107	18 591	64 819	(50539, 78013)	430	521
Wpr (LMIC)	Philippines	82 543	10 524	46 822	302 322	191 986	634 196	(485332, 766829)	1 306	1 806
Eur (HIC)	Poland	677	6 229	101 287	166 143	86 516	360 851	(287762, 429651)	1 932	1 376
Eur (HIC)	Portugal	29	201	6 402	7 993	6 734	21 359	(973, 36242)	427	253
Emr (HIC)	Qatar	73	45	1 024	3 350	1 183	5 676	(5050, 6317)	377	736
Wpr (HIC)	Republic of Korea	422	2 984	73 338	40 024	46 736	163 504	(128161, 197684)	663	535
Eur (LMIC)	Republic of Moldova	764	357	4 400	22 849	9 676	38 046	(0, 61639)	1 941	1 773
Eur (LMIC)	Romania	4 360	2 406	46 943	90 816	56 042	200 568	(149781, 244879)	2 073	1 437
Eur (HIC)	Russian Federation	6 505	11 682	224 659	1 240 516	492 824	1 976 187	(855234, 2699613)	2 973	2 403

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Rwanda	37 090	465	395	8 844	14 188	60 982	(31633, 93698)	1 179	1 503
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	51	6	57	213	225	552	(90, 800)	621	639
Amr (LMIC)	Saint Vincent and the Grenadines	5	1	15	156	87	264	(0, 383)	478	540
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	248	9	18	77	144	496	(0, 812)	558	802
Emr (HIC)	Saudi Arabia	2 711	3 025	7 813	75 067	47 197	135 813	(119012, 153380)	815	1 649
Afr	Senegal	31 619	1 030	711	7 857	10 644	51 861	(40207, 64267)	768	960
Eur (LMIC)	Serbia	235	1 126	27 692	32 344	19 506	80 903	(55695, 102887)	1 844	1 235
Afr	Seychelles	5	4	43	188	84	324	(24, 475)	672	742
Afr	Sierra Leone	35 613	261	183	6 829	10 046	52 933	(0, 98733)	1 772	1 819
Wpr (HIC)	Singapore	82	218	4 371	9 433	3 132	17 236	(8807, 23110)	659	521
Eur (HIC)	Slovakia	197	292	7 941	26 613	9 297	44 339	(34039, 53329)	1 689	1 302
Eur (HIC)	Slovenia	0	109	3 681	3 568	2 034	9 391	(6573, 11794)	918	569
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 1994)	0	0
Emr (LMIC)	Somalia	66 774	163	382	5 351	7 621	80 289	(3850, 142755)	1 609	1 235
Afr	South Africa	59 110	6 942	30 310	74 187	80 853	251 401	(198075, 302170)	969	1 520
Emr (LMIC)	South Sudan	61 323	710	557	8 953	12 982	84 525	(37287, 128451)	1 539	1 467
Eur (HIC)	Spain	159	1 377	34 615	40 070	13 879	90 100	(16480, 150243)	392	245
Sear	Sri Lanka	1 773	3 328	7 293	81 936	33 116	127 446	(93595, 159445)	1 288	1 312
Emr (LMIC)	Sudan	150 132	3 256	2 395	31 556	47 697	235 036	(128740, 357480)	1 242	1 359
Amr (LMIC)	Suriname	148	3	164	582	471	1 367	(0, 2264)	516	585
Afr	Swaziland	2 647	74	68	544	705	4 039	(0, 7019)	665	799
Eur (HIC)	Sweden	0	1	41	268	60	371	(0, 16816)	8	4
Eur (HIC)	Switzerland	18	242	5 834	8 090	2 023	16 207	(4634, 22482)	409	246
Emr (LMIC)	Syrian Arab Republic	6 139	903	11 866	62 092	24 701	105 700	(61740, 145681)	1 046	1 895
Eur (LMIC)	Tajikistan	26 077	931	1 828	22 888	13 012	64 737	(34560, 97055)	1 618	2 378
Sear	Thailand	5 589	13 514	76 780	131 061	91 144	318 088	(250916, 383741)	960	841

		Number of YLLs							YLLs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	The former Yugoslav Republic of Macedonia	53	294	6 622	6 854	7 268	21 090	(17019, 25188)	2 046	1 611
Sear	Timor-Leste	2 452	27	537	995	788	4 799	(0, 9630)	857	1 016
Afr	Togo	22 903	325	287	6 025	8 697	38 237	(5972, 63385)	1 149	1 394
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	129	34	546	3 834	1 348	5 891	(0, 8678)	888	836
Emr (LMIC)	Tunisia	2 307	1 233	13 282	39 845	20 789	77 455	(62330, 92490)	1 438	1 517
Eur (LMIC)	Turkey	12 664	13 120	171 170	237 820	135 919	570 692	(471676, 669656)	1 552	1 780
Eur (LMIC)	Turkmenistan	6 964	890	3 168	47 983	15 442	74 447	(22665, 105624)	2 925	4 029
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	163 918	2 490	2 123	31 313	44 348	244 191	(187570, 313203)	1 381	1 677
Eur (LMIC)	Ukraine	3 392	4 144	61 870	447 498	120 322	637 226	(11122, 933659)	3 041	2 255
Emr (HIC)	United Arab Emirates	518	296	1 608	15 118	6 225	23 765	(20591, 26974)	356	620
Eur (HIC)	United Kingdom	599	3 504	54 217	96 879	26 760	181 959	(64682, 247933)	582	371
Afr	United Republic of Tanzania	97 308	1 584	588	28 211	31 919	159 610	(91061, 215775)	661	761
Amr (HIC)	United States of America	1 636	6 016	107 023	307 662	54 560	476 898	(21813, 992433)	306	222
Amr (HIC)	Uruguay	158	193	3 303	4 577	1 910	10 140	(2771, 14446)	619	509
Eur (LMIC)	Uzbekistan	38 033	2 594	10 850	149 210	65 038	265 725	(127912, 379504)	1 889	2 764
Wpr (LMIC)	Vanuatu	4	0	2	21	18	45	(0, 831)	36	59
Amr (LMIC)	Venezuela, Bolivarian Republic of	6 465	1 269	12 389	64 706	22 470	107 298	(78529, 132226)	721	914
Wpr (LMIC)	Viet Nam	32 848	9 988	111 953	77 158	210 257	442 204	(318315, 559363)	991	1 239
Emr (LMIC)	Yemen	71 237	1 800	2 496	58 212	37 321	171 068	(72537, 266686)	1 361	2 079
Afr	Zambia	47 514	133	398	9 726	13 467	71 237	(16339, 109153)	965	1 141
Afr	Zimbabwe	32 269	581	1 609	4 709	7 283	46 452	(1910, 75197)	646	725

YLL: year of life lost; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.7: Disability-adjusted life years (DALY) attributable to AAP in 2012 in both sex, by disease and country

		Number of DALYs							*DALYs 100 000 per capita*	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	343 358	9 245	9 915	121 757	88 934	573 208	(450258, 714931)	1 928	2 501
Eur (LMIC)	Albania	745	604	4 593	16 723	14 504	37 169	(15554, 49730)	1 290	996
Afr	Algeria	31 601	7 537	19 433	138 062	135 436	332 068	(133038, 474968)	887	1 097
Eur (HIC)	Andorra	0	7	58	234	91	390	(11, 588)	492	271
Afr	Angola	335 543	6 552	1 186	47 195	53 900	444 375	(68199, 744254)	1 959	1 833
Amr (HIC)	Antigua and Barbuda	8	4	22	254	163	451	(0, 657)	506	521
Amr (LMIC)	Argentina	7 910	5 339	37 546	110 617	59 090	220 501	(64676, 304961)	524	463
Eur (LMIC)	Armenia	762	1 391	9 713	31 157	12 978	56 001	(2634, 87447)	1 880	1 493
Wpr (HIC)	Australia	8	22	304	1 050	318	1 702	(27, 50732)	7	5
Eur (HIC)	Austria	99	2 110	16 581	27 161	8 730	54 681	(37186, 68807)	647	354
Eur (LMIC)	Azerbaijan	12 283	2 214	7 450	61 409	28 579	111 935	(25959, 165568)	1 196	1 375
Amr (HIC)	Bahamas	274	15	126	636	393	1 444	(5, 2223)	388	404
Emr (HIC)	Bahrain	161	511	620	2 277	1 161	4 731	(4152, 5354)	355	708
Sear	Bangladesh	353 835	271 662	121 865	270 583	249 310	1 267 255	(1019971, 1565478)	816	1 114
Amr (HIC)	Barbados	60	19	92	467	381	1 019	(0, 1518)	362	267
Eur (LMIC)	Belarus	372	2 086	15 300	145 781	43 834	207 374	(4586, 302118)	2 185	1 420
Eur (HIC)	Belgium	155	2 955	28 045	24 910	12 539	68 602	(43193, 88932)	619	353
Amr (LMIC)	Belize	93	39	79	364	281	856	(139, 1322)	254	445
Afr	Benin	65 079	2 765	574	23 087	31 842	123 348	(37519, 196565)	1 227	1 587
Sear	Bhutan	1 876	1 005	465	2 333	1 452	7 132	(5679, 8840)	959	1 274
Amr (LMIC)	Bolivia, Plurinational States of	24 333	2 468	2 253	32 124	29 100	90 278	(69920, 110141)	882	1 033
Eur (LMIC)	Bosnia and Herzegovina	227	3 084	14 995	29 394	28 593	76 293	(59030, 94725)	1 993	1 219
Afr	Botswana	3 245	296	277	2 282	3 578	9 678	(52, 15664)	454	680
Amr (LMIC)	Brazil	18 982	16 749	74 921	360 298	244 532	715 482	(308804, 1087305)	353	372
Wpr HIC	Brunei Darussalam	0	0	1	15	5	21	(0, 1184)	5	7
Eur (LMIC)	Bulgaria	1 844	5 245	26 629	80 138	64 096	177 952	(144728, 210701)	2 436	1 329
Afr	Burkina Faso	150 221	4 872	1 426	34 433	52 956	243 908	(116116, 380407)	1 470	1 810

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burundi	125 544	3 404	704	17 749	31 014	178 415	(73231, 290149)	1 762	1 734
Afr	Cabo Verde	28 900	3 427	6 929	35 678	30 327	105 261	(7373, 166998)	710	976
Wpr (LMIC)	Cambodia	238 434	11 197	2 402	50 839	69 837	372 709	(300100, 462590)	1 721	1 869
Afr	Cameroon	92	600	10 968	21 070	6 178	38 908	(742, 136028)	112	68
Amr (HIC)	Canada	470	269	43	808	1 631	3 220	(1947, 4671)	643	919
Afr	Central African Republic	41 185	2 676	379	8 431	10 307	62 979	(29201, 101381)	1 363	1 412
Afr	Chad	220 466	3 830	698	22 111	32 959	280 064	(147516, 429122)	2 203	1 953
Amr (HIC)	Chile	1 647	2 848	13 530	26 963	23 227	68 215	(50086, 83865)	392	334
Wpr (LMIC)	China	627 493	1 814 679	5 243 327	5 662 869	10 327 235	23 675 602	(20007452, 27642228)	1 737	1 546
Amr (LMIC)	Colombia	15 196	6 759	18 561	90 746	43 318	174 580	(121249, 216618)	372	422
Afr	Comoros	2 889	106	29	965	1 695	5 684	(944, 8146)	775	1 029
Afr	Congo	29 494	2 154	218	10 900	13 521	56 287	(24857, 90402)	1 313	1 547
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	225	641	1 502	9 306	3 908	15 582	(11394, 18978)	335	334
Eur (HIC)	Croatia	43	1 457	14 733	26 516	14 899	57 647	(40452, 72760)	1 345	726
Amr (LMIC)	Cuba	699	2 323	23 481	42 846	23 308	92 658	(8281, 138762)	817	573
Eur (HIC)	Cyprus	13	99	1 336	2 819	792	5 059	(3391, 6374)	448	341
Eur (HIC)	Czech Republic	291	3 128	29 383	65 908	21 071	119 780	(92827, 144282)	1 136	639
Afr	Côte d'Ivoire	130 378	4 355	1 314	45 623	66 204	247 874	(26334, 402957)	1 175	1 424
Sear	Democratic People's Republic of Korea	21 123	28 316	88 784	98 002	171 148	407 373	(55592, 684015)	1 645	1 559
Afr	Democratic Republic of the Congo	957 459	26 209	2 700	146 091	213 509	1 345 967	(622224, 2127257)	1 915	1 859
Eur (HIC)	Denmark	26	970	8 864	8 000	4 818	22 679	(1269, 37551)	405	228
Emr (LMIC)	Djibouti	4 922	357	136	1 604	2 408	9 427	(3114, 15828)	1 105	1 348
Amr (LMIC)	Dominica	8	6	28	148	135	325	(18, 479)	453	437
Amr (LMIC)	Dominican Republic	7 811	897	3 995	25 417	15 179	53 300	(5078, 77106)	525	619
Amr (LMIC)	Ecuador	7 979	1 366	3 463	19 161	14 295	46 264	(22877, 60802)	300	344
Emr (LMIC)	Egypt	88 057	75 577	61 584	586 048	409 090	1 220 357	(1005641, 1460546)	1 425	1 947
Amr (LMIC)	El Salvador	4 305	1 854	2 299	22 603	8 025	39 087	(30999, 47707)	644	718

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Equatorial Guinea	5 653	359	184	2 297	2 296	10 788	(563, 19051)	1 394	1 589
Afr	Eritrea	33 084	1 858	595	9 785	15 840	61 162	(23967, 98360)	1 250	1 745
Eur (HIC)	Estonia	16	29	839	4 235	1 003	6 122	(99, 12139)	462	258
Afr	Ethiopia	507 048	26 564	12 909	65 895	118 253	730 670	(236069, 1189241)	793	823
Wpr (LMIC)	Fiji	2	0	0	52	9	64	(0, 9832)	7	9
Eur (HIC)	Finland	14	35	692	3 969	1 064	5 774	(33, 28707)	106	54
Eur (HIC)	France	507	4 716	104 981	69 974	49 578	229 756	(82127, 325137)	361	215
Afr	Gabon	5 313	735	503	3 187	3 484	13 222	(2248, 22304)	819	966
Afr	Gambia	10 424	522	163	3 219	5 088	19 416	(803, 36006)	1 074	1 449
Eur (LMIC)	Georgia	1 119	1 611	5 139	40 618	26 204	74 692	(47163, 95143)	1 805	1 184
Eur (HIC)	Germany	723	14 904	158 013	232 055	93 848	499 543	(240916, 663000)	621	307
Afr	Ghana	88 159	5 674	2 324	53 339	80 391	229 888	(146097, 304536)	900	1 221
Eur (HIC)	Greece	116	1 725	19 160	43 631	27 629	92 262	(34043, 123906)	830	438
Amr (LMIC)	Grenada	4	6	29	261	208	508	(0, 744)	482	567
Amr (LMIC)	Guatemala	36 351	2 118	4 350	21 493	11 989	76 302	(60240, 93177)	496	590
Afr	Guinea	62 880	2 172	610	22 490	31 085	119 237	(10157, 193099)	1 025	1 239
Afr	Guinea-Bissau	14 488	426	117	3 511	5 057	23 599	(1221, 40273)	1 376	1 526
Amr (LMIC)	Guyana	318	50	120	3 864	3 072	7 423	(2, 11455)	979	1 197
Amr (LMIC)	Haiti	52 298	862	2 590	21 539	40 891	118 179	(11182, 182819)	1 149	1 403
Amr (LMIC)	Honduras	9 110	2 082	2 455	20 255	12 462	46 363	(36378, 56936)	599	858
Eur (LMIC)	Hungary	354	5 035	53 568	83 414	32 665	175 035	(132904, 214253)	1 758	1 033
Eur (HIC)	Iceland	0	7	96	187	73	363	(2, 1153)	112	76
Sear	India	3 663 274	3 282 841	813 674	7 455 375	5 290 851	20 506 014	(17046204, 24531628)	1 623	1 986
Sear	Indonesia	231 727	41 378	138 292	444 628	913 075	1 769 100	(933959, 2358064)	713	923
Emr (LMIC)	Iran (Islamic Republic of)	55 660	23 441	38 258	425 114	183 554	726 027	(622548, 834161)	953	1 239
Emr (LMIC)	Iraq	92 673	8 828	19 894	133 068	81 437	335 900	(216810, 468258)	1 019	1 732
Eur (HIC)	Ireland	50	306	3 145	7 745	2 229	13 475	(1051, 21435)	289	213
Eur (HIC)	Israel	126	1 178	9 436	8 876	5 075	24 690	(18152, 30809)	321	266
Eur (HIC)	Italy	314	12 191	131 947	136 139	86 663	367 253	(246725, 465377)	615	288

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	Jamaica	766	283	2 143	4 888	6 927	15 007	(10442, 18856)	543	539
Wpr (HIC)	Japan	1 868	7 141	180 791	199 245	197 984	587 030	(233989, 798287)	462	219
Emr (LMIC)	Jordan	5 781	1 722	4 353	21 028	13 218	46 102	(39283, 53271)	659	1 117
Eur (LMIC)	Kazakhstan	8 099	4 387	19 205	159 618	78 448	269 757	(35469, 419254)	1 604	1 718
Afr	Kenya	184 200	3 767	2 308	36 802	49 352	276 428	(91167, 388740)	650	715
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 839)	0	0
Emr (HIC)	Kuwait	1 138	903	870	10 325	3 307	16 543	(14565, 18708)	484	1 020
Eur (LMIC)	Kyrgyzstan	4 423	1 095	2 163	31 545	17 153	56 379	(23119, 74453)	998	1 417
Wpr (LMIC)	Lao People's Democratic Republic	36 207	1 925	3 622	17 135	15 752	74 641	(26680, 113554)	1 153	1 494
Eur (HIC)	Latvia	45	355	4 852	22 155	9 388	36 795	(26937, 44974)	1 806	977
Emr (LMIC)	Lebanon	563	1 197	5 322	19 015	5 295	31 392	(25707, 37039)	637	660
Afr	Lesotho	7 488	598	170	2 287	5 189	15 731	(10, 30274)	765	978
Afr	Liberia	5 781	172	53	2 210	2 626	10 842	(2, 29905)	259	331
Emr (LMIC)	Libya	2 873	2 782	6 916	25 355	15 711	53 638	(36273, 73079)	854	1 333
Eur (HIC)	Lithuania	89	615	5 811	27 763	11 126	45 404	(34144, 55014)	1 505	879
Eur (HIC)	Luxembourg	2	102	865	740	533	2 242	(1445, 2894)	421	276
Afr	Madagascar	83 240	3 440	3 987	34 331	54 855	179 853	(77621, 249698)	807	1 141
Afr	Malawi	68 297	2 764	426	18 331	29 624	119 442	(2604, 197879)	761	993
Wpr (LMIC)	Malaysia	2 810	5 688	18 970	93 314	45 039	165 821	(93772, 214821)	571	751
Sear	Maldives	66	54	96	521	457	1 194	(300, 1623)	346	537
Afr	Mali	208 354	6 954	1 716	31 584	45 192	293 800	(147304, 460299)	1 823	1 904
Eur (HIC)	Malta	1	49	641	1 532	477	2 700	(1388, 3448)	650	375
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	30 906	1 876	339	6 466	9 953	49 540	(28663, 77709)	1 312	1 484
Afr	Mauritius	188	159	583	3 892	2 152	6 974	(3042, 9097)	554	496
Amr (LMIC)	Mexico	44 235	16 438	32 017	237 465	106 252	436 407	(325031, 532267)	358	432
Wpr (LMIC)	Micronesia (Federated States of)	1	0	0	2	1	3	(0, 664)	3	5
Eur (HIC)	Monaco	0	2	31	73	28	135	(0, 259)	360	200
Wpr (LMIC)	Mongolia	3 605	797	1 714	16 670	12 598	35 384	(24539, 43902)	1 260	1 791

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Montenegro	34	84	2 409	3 402	2 797	8 726	(6362, 10866)	1 399	959
Emr (LMIC)	Morocco	33 877	4 689	23 994	92 069	90 543	245 171	(182357, 300280)	743	849
Afr	Mozambique	123 049	3 429	1 645	17 078	33 718	178 918	(3973, 296744)	695	704
Sear	Myanmar	139 242	54 071	76 965	145 603	302 550	718 432	(592047, 858889)	1 367	1 689
Afr	Namibia	3 110	551	255	2 414	4 387	10 716	(1212, 17457)	468	731
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	68 013	53 739	27 934	88 479	77 065	315 230	(234391, 415553)	1 146	1 533
Eur (HIC)	Netherlands	136	3 703	42 168	24 287	15 535	85 829	(45388, 116450)	512	295
Wpr (HIC)	New Zealand	4	7	71	238	74	394	(2, 8487)	9	6
Amr (LMIC)	Nicaragua	6 673	1 080	1 690	18 339	10 966	38 748	(6124, 58700)	659	889
Afr	Niger	288 091	7 262	317	31 120	52 962	379 751	(223946, 583674)	2 153	1 945
Afr	Nigeria	2 022 045	42 132	8 988	307 259	441 650	2 822 073	(2250524, 3466303)	1 677	1 620
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	24	278	2 980	5 787	2 489	11 558	(497, 22733)	230	138
Emr (HIC)	Oman	929	631	727	7 071	4 967	14 325	(9601, 19412)	404	780
Emr (LMIC)	Pakistan	1 246 970	203 138	71 703	540 886	390 112	2 452 808	(1992965, 3003450)	1 383	1 605
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	1 406	188	833	5 281	3 050	10 759	(1478, 15738)	287	312
Wpr (LMIC)	Papua New Guinea	15 096	477	791	6 172	4 455	26 992	(0, 65734)	377	439
Amr (LMIC)	Paraguay	3 939	601	2 782	14 433	12 070	33 825	(15764, 44631)	530	688
Amr (LMIC)	Peru	15 256	5 586	15 578	48 595	35 789	120 804	(92834, 147778)	401	461
Wpr (LMIC)	Philippines	152 429	31 229	66 053	449 535	315 928	1 015 174	(771359, 1237902)	1 057	1 394
Eur (HIC)	Poland	1 264	14 825	145 980	249 921	160 893	572 883	(456917, 683994)	1 484	934
Eur (HIC)	Portugal	65	480	8 052	12 354	12 978	33 929	(1609, 56590)	323	172
Emr (HIC)	Qatar	131	749	1 217	3 975	1 556	7 627	(6605, 8757)	378	759
Wpr (HIC)	Republic of Korea	847	7 319	100 350	59 488	85 509	253 512	(199622, 306641)	511	364
Eur (LMIC)	Republic of Moldova	1 435	802	5 422	40 569	18 817	67 046	(0, 108018)	1 645	1 316
Eur (LMIC)	Romania	8 053	6 093	58 336	143 543	104 935	320 959	(241726, 390976)	1 609	1 009
Eur (HIC)	Russian Federation	12 576	26 139	266 721	1 950 243	973 217	3 228 897	(1400443, 4408243)	2 253	1 529

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Rwanda	67 395	3 582	633	14 892	25 683	112 186	(57267, 175976)	1 037	1 251
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	86	18	79	339	409	931	(150, 1358)	515	510
Amr (LMIC)	Saint Vincent and the Grenadines	11	5	21	276	181	495	(0, 723)	452	489
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	453	25	24	171	319	993	(0, 1623)	556	781
Emr (HIC)	Saudi Arabia	5 842	15 152	10 749	107 302	81 537	220 583	(190290, 253571)	748	1 438
Afr	Senegal	56 072	4 088	1 163	14 689	20 953	96 965	(74892, 120816)	704	874
Eur (LMIC)	Serbia	409	2 987	38 000	48 463	39 455	129 313	(89674, 164494)	1 440	891
Afr	Seychelles	8	10	53	268	128	467	(37, 689)	494	511
Afr	Sierra Leone	67 756	948	288	13 372	20 545	102 909	(0, 192638)	1 703	1 804
Wpr (HIC)	Singapore	139	373	6 575	13 533	5 980	26 600	(13553, 35797)	502	383
Eur (HIC)	Slovakia	429	1 077	10 886	43 118	16 907	72 417	(55687, 87238)	1 337	896
Eur (HIC)	Slovenia	17	441	5 196	5 232	4 105	14 990	(10517, 18898)	727	402
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 3114)	0	0
Emr (LMIC)	Somalia	123 951	1 234	735	8 521	13 293	147 735	(6961, 264867)	1 472	1 112
Afr	South Africa	105 724	26 689	45 262	122 366	174 714	474 754	(371260, 576900)	899	1 165
Emr (LMIC)	South Sudan	109 253	2 819	991	14 970	24 060	152 094	(66740, 232766)	1 385	1 323
Eur (HIC)	Spain	272	2 578	43 157	58 237	29 352	133 596	(24974, 219257)	286	162
Sear	Sri Lanka	3 132	9 962	10 083	118 065	54 977	196 219	(141976, 249981)	961	931
Emr (LMIC)	Sudan	262 610	13 844	3 600	53 148	88 820	422 022	(228768, 650658)	1 119	1 240
Amr (LMIC)	Suriname	167	35	211	962	871	2 246	(1, 3745)	425	462
Afr	Swaziland	4 737	313	108	1 301	2 277	8 735	(0, 15241)	709	901
Eur (HIC)	Sweden	1	6	83	424	137	650	(0, 30558)	7	3
Eur (HIC)	Switzerland	41	1 295	9 387	12 379	5 055	28 158	(7841, 39714)	351	193
Emr (LMIC)	Syrian Arab Republic	10 953	4 291	14 588	96 682	37 340	163 854	(95388, 228829)	820	1 429
Eur (LMIC)	Tajikistan	45 592	3 397	3 029	43 484	30 568	126 069	(67187, 190103)	1 590	2 390
Sear	Thailand	9 610	29 447	115 769	219 454	167 934	542 214	(427557, 656102)	807	672

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	The former Yugoslav Republic of Macedonia	115	938	8 149	10 109	13 840	33 150	(26810, 39716)	1 602	1 180
Sear	Timor-Leste	4 583	105	797	1 927	1 512	8 924	(0, 17939)	810	942
Afr	Togo	44 102	1 506	405	11 664	17 590	75 267	(11746, 126011)	1 116	1 345
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	269	99	739	5 597	2 346	9 049	(0, 13424)	675	607
Emr (LMIC)	Tunisia	4 130	4 333	14 246	62 046	36 526	121 282	(97577, 145576)	1 115	1 141
Eur (LMIC)	Turkey	23 038	33 004	197 655	371 760	242 166	867 624	(720077, 1018543)	1 159	1 239
Eur (LMIC)	Turkmenistan	11 799	2 224	4 068	74 505	28 808	121 404	(37051, 173952)	2 347	3 151
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	287 096	14 192	4 228	49 772	80 711	435 999	(332422, 563596)	1 232	1 472
Eur (LMIC)	Ukraine	5 780	9 571	73 745	800 250	252 438	1 141 785	(18112, 1665776)	2 519	1 532
Emr (HIC)	United Arab Emirates	866	2 539	2 102	17 250	7 722	30 479	(25728, 35715)	340	624
Eur (HIC)	United Kingdom	1 247	11 617	98 923	141 450	61 260	314 497	(108260, 437232)	495	291
Afr	United Republic of Tanzania	174 605	8 070	1 037	46 340	56 141	286 193	(161705, 391100)	588	679
Amr (HIC)	United States of America	3 283	20 221	195 036	473 323	129 932	821 795	(37219, 1752538)	261	176
Amr (HIC)	Uruguay	333	406	4 233	6 586	3 964	15 523	(4369, 21975)	457	336
Eur (LMIC)	Uzbekistan	65 552	9 039	14 709	251 377	126 711	467 389	(223133, 674971)	1 635	2 230
Wpr (LMIC)	Vanuatu	8	1	3	30	26	68	(0, 1282)	27	44
Amr (LMIC)	Venezuela, Bolivarian Republic of	11 918	4 212	21 843	95 764	41 108	174 845	(126302, 218023)	586	707
Wpr (LMIC)	Viet Nam	54 576	37 308	149 065	113 987	333 882	688 818	(493511, 882658)	763	845
Emr (LMIC)	Yemen	129 343	6 715	3 472	90 415	67 112	297 057	(123087, 471950)	1 194	1 759
Afr	Zambia	90 821	2 071	694	15 113	22 568	131 267	(28730, 204403)	888	964
Afr	Zimbabwe	63 863	2 815	2 578	9 051	15 960	94 267	(3907, 154648)	647	725

DALY: Disability-adjusted life years; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.8: Disability-adjusted life years (DALY) attributable to AAP in 2012 in women, by disease and country

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI[a]*	*COPD[b]*	*Lung cancer[b]*	*IHD[b]*	*Stroke[b]*	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	163 611	4 545	2 696	56 907	50 706	278 465	(218979, 346868)	1 929	2 456
Eur (LMIC)	Albania	315	279	1 514	6 768	7 599	16 477	(6807, 22037)	1 147	832
Afr	Algeria	13 818	3 171	3 666	49 531	61 381	131 566	(52525, 188627)	708	858
Eur (HIC)	Andorra	0	3	13	77	45	138	(3, 207)	343	154
Afr	Angola	132 214	2 860	420	18 777	27 952	182 222	(28588, 304451)	1 593	1 566
Amr (HIC)	Antigua and Barbuda	3	2	7	103	77	192	(0, 279)	412	403
Amr (LMIC)	Argentina	3 368	2 259	10 919	40 289	26 124	82 959	(24129, 114297)	386	300
Eur (LMIC)	Armenia	290	538	1 579	10 845	5 753	19 005	(793, 29275)	1 268	836
Wpr (HIC)	Australia	4	11	123	337	167	641	(9, 19920)	6	3
Eur (HIC)	Austria	69	981	5 960	10 112	4 482	21 603	(14672, 27269)	500	234
Eur (LMIC)	Azerbaijan	5 438	1 011	1 489	22 749	13 838	44 525	(9979, 66106)	945	1 027
Amr (HIC)	Bahamas	118	6	38	212	177	551	(2, 852)	290	282
Emr (HIC)	Bahrain	74	169	164	598	413	1 418	(1236, 1615)	282	575
Sear	Bangladesh	158 982	124 061	30 763	81 010	122 603	517 418	(411938, 645789)	673	910
Amr (HIC)	Barbados	25	8	30	168	164	396	(0, 592)	270	184
Eur (LMIC)	Belarus	125	628	1 657	55 743	20 908	79 062	(1328, 113898)	1 556	782
Eur (HIC)	Belgium	68	1 206	7 617	7 869	6 098	22 859	(14658, 29478)	405	210
Amr (LMIC)	Belize	55	10	23	149	134	370	(57, 562)	220	388
Afr	Benin	29 398	1 137	201	10 737	15 641	57 113	(17530, 90675)	1 132	1 434
Sear	Bhutan	812	397	232	900	795	3 137	(2504, 3873)	911	1 260
Amr (LMIC)	Bolivia, Plurinational States of	11 044	1 272	1 175	13 393	13 306	40 189	(30990, 49214)	787	898
Eur (LMIC)	Bosnia and Herzegovina	96	1 393	2 949	11 024	14 913	30 375	(23611, 37699)	1 580	849
Afr	Botswana	1 582	128	47	1 149	2 216	5 121	(28, 8200)	480	699
Amr (LMIC)	Brazil	8 612	7 641	30 319	129 836	114 395	290 803	(125632, 444600)	283	280
Wpr HIC	Brunei Darussalam	0	0	1	5	2	8	(0, 440)	4	5
Eur (LMIC)	Bulgaria	781	2 248	4 527	30 936	30 801	69 294	(56679, 81887)	1 847	846
Afr	Burkina Faso	69 435	2 293	682	16 307	24 911	113 627	(54219, 177204)	1 357	1 582

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burundi	56 966	1 679	352	6 119	12 565	77 680	(31354, 127378)	1 515	1 452
Afr	Cabo Verde	12 198	1 742	2 503	15 599	14 644	46 687	(3288, 74301)	614	807
Wpr (LMIC)	Cambodia	106 010	4 751	860	22 058	34 090	167 768	(135168, 208012)	1 549	1 683
Afr	Cameroon	46	295	5 128	6 519	3 148	15 136	(275, 55444)	86	48
Amr (HIC)	Canada	226	99	19	268	710	1 323	(794, 1923)	521	649
Afr	Central African Republic	16 947	1 248	131	3 569	5 176	27 070	(12597, 43574)	1 155	1 210
Afr	Chad	93 449	1 765	292	9 499	15 059	120 064	(63304, 183941)	1 890	1 698
Amr (HIC)	Chile	640	1 317	5 340	7 689	10 058	25 044	(18119, 31154)	284	221
Wpr (LMIC)	China	265 085	827 725	1 467 555	2 653 784	4 871 317	10 085 465	(8550689, 11763242)	1 525	1 300
Amr (LMIC)	Colombia	6 383	3 132	7 247	34 217	22 568	73 547	(50791, 91728)	309	333
Afr	Comoros	1 312	55	0	381	720	2 468	(394, 3551)	678	863
Afr	Congo	11 178	914	61	4 355	6 764	23 271	(10363, 37219)	1 086	1 316
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	97	310	498	3 056	1 841	5 802	(4206, 7135)	250	238
Eur (HIC)	Croatia	18	599	3 561	10 216	7 163	21 558	(15445, 26983)	971	428
Amr (LMIC)	Cuba	323	1 061	8 518	15 784	10 543	36 229	(3171, 54429)	642	421
Eur (HIC)	Cyprus	13	39	281	695	379	1 406	(949, 1774)	254	172
Eur (HIC)	Czech Republic	130	1 342	8 638	24 216	10 366	44 692	(34810, 53813)	833	392
Afr	Côte d'Ivoire	59 397	1 568	444	18 265	28 339	108 013	(11168, 175802)	1 044	1 300
Sear	Democratic People's Republic of Korea	10 431	11 985	36 613	38 787	70 728	168 544	(22900, 284130)	1 331	1 118
Afr	Democratic Republic of the Congo	424 752	11 800	871	60 000	107 876	605 299	(280122, 956296)	1 716	1 673
Eur (HIC)	Denmark	9	511	4 403	2 568	2 355	9 847	(451, 16835)	349	182
Emr (LMIC)	Djibouti	2 073	184	69	646	1 024	3 995	(1306, 6762)	941	1 137
Amr (LMIC)	Dominica	3	2	7	58	67	137	(7, 201)	379	344
Amr (LMIC)	Dominican Republic	3 225	432	1 558	12 147	7 817	25 179	(2416, 36284)	495	573
Amr (LMIC)	Ecuador	3 487	642	1 464	7 291	6 559	19 444	(9466, 25696)	252	277
Emr (LMIC)	Egypt	45 281	33 741	17 162	230 911	174 599	501 693	(411728, 603736)	1 183	1 519
Amr (LMIC)	El Salvador	1 896	1 081	1 063	10 413	4 319	18 773	(14805, 23050)	585	618

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Equatorial Guinea	2 060	138	45	698	994	3 935	(206, 6985)	1 044	1 249
Afr	Eritrea	13 873	956	290	3 782	6 828	25 729	(9977, 41692)	1 052	1 409
Eur (HIC)	Estonia	0	10	192	1 557	462	2 221	(28, 4329)	314	125
Afr	Ethiopia	186 856	8 504	6 760	22 904	48 890	273 914	(88717, 444275)	593	625
Wpr (LMIC)	Fiji	1	0	0	13	3	17	(0, 2792)	4	5
Eur (HIC)	Finland	8	14	223	1 252	512	2 008	(10, 10191)	73	30
Eur (HIC)	France	191	2 082	28 077	21 080	24 400	75 830	(27007, 106138)	233	121
Afr	Gabon	1 886	319	181	1 322	1 837	5 545	(977, 9312)	694	810
Afr	Gambia	4 551	212	40	1 398	2 287	8 488	(355, 15697)	930	1 285
Eur (LMIC)	Georgia	403	730	843	16 583	13 022	31 582	(19837, 40182)	1 456	782
Eur (HIC)	Germany	314	6 639	52 661	80 057	47 119	186 789	(89154, 248086)	456	196
Afr	Ghana	41 021	2 679	503	22 854	45 531	112 589	(71527, 149172)	874	1 161
Eur (HIC)	Greece	50	836	3 273	15 109	13 926	33 195	(11941, 43983)	585	253
Amr (LMIC)	Grenada	2	2	8	90	88	190	(0, 278)	360	376
Amr (LMIC)	Guatemala	16 336	1 048	1 919	8 990	5 912	34 205	(26949, 41843)	435	498
Afr	Guinea	28 597	947	186	10 860	15 218	55 808	(4839, 90054)	962	1 174
Afr	Guinea-Bissau	6 321	181	52	1 652	2 365	10 570	(563, 17970)	1 224	1 377
Amr (LMIC)	Guyana	150	21	57	1 506	1 355	3 089	(1, 4795)	816	1 016
Amr (LMIC)	Haiti	24 064	398	1 433	10 491	21 126	57 512	(5526, 88794)	1 106	1 324
Amr (LMIC)	Honduras	4 151	924	993	7 456	5 559	19 083	(14879, 23560)	493	670
Eur (LMIC)	Hungary	156	2 235	18 816	33 555	14 720	69 483	(52992, 84973)	1 330	660
Eur (HIC)	Iceland	0	3	51	57	36	147	(1, 499)	91	54
Sear	India	1 875 402	1 385 386	200 791	2 324 770	2 441 642	8 227 991	(6791629, 9916369)	1 352	1 603
Sear	Indonesia	98 944	15 725	38 802	132 955	419 319	705 745	(369868, 942950)	574	722
Emr (LMIC)	Iran (Islamic Republic of)	26 794	10 461	13 257	158 464	80 783	289 758	(247234, 334417)	768	1 067
Emr (LMIC)	Iraq	42 735	3 907	5 576	43 279	31 377	126 874	(80850, 179471)	779	1 196
Eur (HIC)	Ireland	25	144	1 282	2 570	1 140	5 162	(360, 8373)	220	148
Eur (HIC)	Israel	38	523	3 008	2 825	2 320	8 714	(6403, 10916)	224	160
Eur (HIC)	Italy	194	5 208	34 730	48 418	44 680	133 231	(91124, 167870)	434	171

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Amr (LMIC)	Jamaica	309	103	419	1 927	3 289	6 047	(4273, 7536)	436	401
Wpr (HIC)	Japan	900	2 522	45 592	59 983	79 696	188 692	(74186, 254465)	289	117
Emr (LMIC)	Jordan	2 527	635	655	7 338	6 262	17 416	(14869, 20090)	512	830
Eur (LMIC)	Kazakhstan	3 497	1 748	3 322	60 090	38 851	107 508	(13978, 166466)	1 235	1 172
Afr	Kenya	81 300	1 833	924	12 858	20 724	117 639	(37893, 166207)	553	588
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 275)	0	0
Emr (HIC)	Kuwait	437	301	222	2 087	1 150	4 197	(3654, 4806)	280	718
Eur (LMIC)	Kyrgyzstan	1 874	475	491	12 051	7 322	22 213	(8961, 29373)	777	1 017
Wpr (LMIC)	Lao People's Democratic Republic	15 174	978	1 119	7 611	7 343	32 226	(11699, 49033)	989	1 251
Eur (HIC)	Latvia	18	133	738	8 902	4 727	14 519	(10740, 17627)	1 313	528
Emr (LMIC)	Lebanon	250	510	1 640	4 839	2 812	10 050	(8138, 11994)	414	424
Afr	Lesotho	3 430	266	40	1 153	3 051	7 940	(5, 15094)	761	913
Afr	Liberia	2 809	75	18	1 024	1 279	5 205	(1, 14350)	250	313
Emr (LMIC)	Libya	1 219	1 221	937	9 816	7 367	20 560	(14039, 28032)	665	982
Eur (HIC)	Lithuania	52	214	853	11 156	5 795	18 070	(13716, 21749)	1 110	485
Eur (HIC)	Luxembourg	2	48	273	211	263	797	(513, 1034)	299	172
Afr	Madagascar	37 332	1 736	700	13 437	26 596	79 800	(34195, 111029)	713	1 003
Afr	Malawi	34 976	1 297	158	8 952	15 385	60 768	(1252, 100625)	772	955
Wpr (LMIC)	Malaysia	1 244	2 160	6 419	31 173	19 671	60 667	(34118, 78886)	414	573
Sear	Maldives	28	28	16	196	121	390	(94, 535)	227	369
Afr	Mali	95 151	2 686	716	17 343	25 294	141 189	(71709, 219164)	1 768	1 890
Eur (HIC)	Malta	1	18	166	536	204	924	(482, 1171)	443	233
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	11 735	851	108	3 076	4 875	20 645	(12030, 32197)	1 099	1 289
Afr	Mauritius	67	68	159	1 189	805	2 287	(982, 3001)	360	306
Amr (LMIC)	Mexico	19 473	7 804	12 314	87 176	52 245	179 012	(132184, 219783)	292	337
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	0	0	1	(0, 239)	2	3
Eur (HIC)	Monaco	0	1	8	24	14	48	(0, 90)	248	108

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Wpr (LMIC)	Mongolia	1 411	332	304	5 429	5 217	12 692	(8773, 15800)	896	1 251
Eur (LMIC)	Montenegro	14	42	570	800	1 058	2 485	(1811, 3107)	787	479
Emr (LMIC)	Morocco	14 612	1 960	2 641	36 762	47 169	103 143	(77555, 125559)	617	692
Afr	Mozambique	51 682	1 885	613	8 083	15 641	77 904	(1852, 129366)	590	599
Sear	Myanmar	58 586	30 229	33 928	82 007	142 251	347 000	(285845, 415517)	1 290	1 524
Afr	Namibia	1 432	262	90	1 245	2 732	5 761	(671, 9291)	489	727
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	32 578	27 385	14 513	36 702	37 666	148 843	(109737, 197727)	1 052	1 403
Eur (HIC)	Netherlands	61	1 823	17 011	7 862	8 069	34 826	(18165, 47613)	412	226
Wpr (HIC)	New Zealand	2	4	37	74	41	157	(1, 3598)	7	4
Amr (LMIC)	Nicaragua	2 769	509	668	7 037	4 977	15 961	(2529, 24390)	535	687
Afr	Niger	119 487	3 201	49	15 138	25 781	163 656	(96959, 250625)	1 870	1 834
Afr	Nigeria	865 909	18 743	4 587	129 845	212 374	1 231 458	(982557, 1511846)	1 490	1 474
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	9	141	1 266	1 944	1 243	4 603	(177, 9276)	184	95
Emr (HIC)	Oman	488	207	153	2 019	1 479	4 347	(2890, 5964)	333	650
Emr (LMIC)	Pakistan	536 188	64 594	11 813	238 540	206 188	1 057 323	(865895, 1286013)	1 226	1 438
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	749	89	272	1 642	1 391	4 143	(543, 6148)	222	231
Wpr (LMIC)	Papua New Guinea	6 811	191	268	2 484	1 293	11 048	(0, 26994)	315	346
Amr (LMIC)	Paraguay	1 734	245	530	4 807	4 999	12 316	(5690, 16231)	392	492
Amr (LMIC)	Peru	6 762	2 919	7 709	19 058	16 694	53 142	(40460, 65542)	352	387
Wpr (LMIC)	Philippines	69 227	11 757	18 781	145 146	121 997	366 909	(276926, 449216)	773	974
Eur (HIC)	Poland	496	5 651	43 761	82 504	72 796	205 208	(163918, 245221)	1 030	544
Eur (HIC)	Portugal	31	183	1 602	4 182	6 001	11 999	(520, 19390)	218	96
Emr (HIC)	Qatar	55	152	188	542	216	1 152	(982, 1345)	226	623
Wpr (HIC)	Republic of Korea	340	2 706	26 216	18 267	35 854	83 383	(66174, 100564)	334	208
Eur (LMIC)	Republic of Moldova	666	291	994	17 602	8 993	28 546	(0, 45340)	1 350	937
Eur (LMIC)	Romania	3 646	2 272	11 074	51 974	48 246	117 212	(89467, 141783)	1 141	617

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Russian Federation	5 839	9 006	40 510	704 440	475 189	1 234 984	(527150, 1680821)	1 608	878
Afr	Rwanda	30 079	1 802	231	5 904	11 449	49 465	(25080, 78080)	876	1 014
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	34	7	21	123	179	365	(58, 530)	396	375
Amr (LMIC)	Saint Vincent and the Grenadines	5	2	6	119	92	224	(0, 327)	413	425
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	204	10	7	93	174	488	(0, 788)	544	749
Emr (HIC)	Saudi Arabia	2 853	5 538	2 890	31 332	33 455	76 067	(65190, 87950)	592	1 129
Afr	Senegal	24 267	1 792	438	6 700	10 217	43 414	(33590, 53983)	618	761
Eur (LMIC)	Serbia	151	1 229	10 159	15 818	19 624	46 980	(33048, 59479)	1 023	559
Afr	Seychelles	3	4	9	79	43	138	(10, 202)	298	276
Afr	Sierra Leone	32 095	406	102	6 485	10 477	49 564	(0, 92534)	1 622	1 765
Wpr (HIC)	Singapore	53	105	2 167	3 997	2 662	8 984	(4528, 12130)	335	246
Eur (HIC)	Slovakia	223	461	2 860	16 335	7 413	27 293	(21087, 32809)	978	549
Eur (HIC)	Slovenia	13	189	1 479	1 609	1 955	5 246	(3707, 6608)	505	234
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 1070)	0	0
Emr (LMIC)	Somalia	57 026	680	350	3 082	5 647	66 783	(3053, 120293)	1 324	972
Afr	South Africa	46 418	11 699	14 737	47 429	93 281	213 564	(167188, 259127)	794	908
Emr (LMIC)	South Sudan	47 751	1 271	429	5 899	11 018	66 368	(29030, 101715)	1 209	1 147
Eur (HIC)	Spain	95	737	8 211	17 329	14 080	40 452	(7494, 64193)	171	80
Sear	Sri Lanka	1 281	4 155	2 756	35 646	20 868	64 706	(46274, 83474)	614	569
Emr (LMIC)	Sudan	111 778	6 272	1 187	21 118	40 873	181 229	(98058, 279848)	965	1 073
Amr (LMIC)	Suriname	15	18	47	373	390	842	(0, 1391)	319	331
Afr	Swaziland	2 080	159	37	745	1 565	4 586	(0, 7901)	734	951
Eur (HIC)	Sweden	1	3	41	152	71	267	(0, 13190)	6	2
Eur (HIC)	Switzerland	19	624	3 478	4 102	2 621	10 844	(2860, 15447)	267	130
Emr (LMIC)	Syrian Arab Republic	4 604	1 834	2 707	34 104	12 320	55 568	(32706, 77627)	563	941
Eur (LMIC)	Tajikistan	19 463	1 764	1 182	20 390	17 412	60 211	(32252, 90532)	1 532	2 349

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Sear	Thailand	3 934	9 545	38 210	87 104	72 694	211 486	(168140, 254341)	622	492
Eur (LMIC)	The former Yugoslav Republic of Macedonia	55	395	1 489	3 173	6 495	11 606	(9434, 13886)	1 117	754
Sear	Timor-Leste	2 126	49	259	924	710	4 068	(0, 8103)	750	849
Afr	Togo	21 109	657	114	5 565	8 860	36 305	(5711, 60632)	1 062	1 265
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	134	30	188	1 735	971	3 057	(0, 4540)	451	386
Emr (LMIC)	Tunisia	1 785	1 897	861	21 809	15 483	41 833	(33829, 50181)	761	753
Eur (LMIC)	Turkey	9 734	13 423	25 178	132 386	104 840	285 561	(239712, 333430)	750	745
Eur (LMIC)	Turkmenistan	4 817	1 001	882	26 370	13 273	46 343	(14031, 66968)	1 764	2 330
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	122 133	7 024	2 085	18 017	36 198	185 457	(140980, 240534)	1 047	1 220
Eur (LMIC)	Ukraine	2 365	3 325	11 354	351 024	129 729	497 797	(6375, 718941)	2 043	984
Emr (HIC)	United Arab Emirates	329	599	480	1 926	1 267	4 601	(3773, 5558)	202	570
Eur (HIC)	United Kingdom	591	5 841	44 053	43 328	31 666	125 480	(40268, 178286)	389	204
Afr	United Republic of Tanzania	76 790	3 874	433	17 686	24 012	122 794	(68771, 168585)	502	574
Amr (HIC)	United States of America	1 467	10 443	86 655	161 524	65 810	325 901	(14581, 715016)	205	126
Amr (HIC)	Uruguay	171	140	899	1 949	1 996	5 155	(1478, 7170)	293	186
Eur (LMIC)	Uzbekistan	27 482	4 228	3 773	101 309	61 115	197 906	(93815, 286989)	1 362	1 742
Wpr (LMIC)	Vanuatu	4	0	1	9	8	22	(0, 421)	18	29
Amr (LMIC)	Venezuela, Bolivarian Republic of	5 190	2 044	9 319	30 503	18 123	65 179	(46343, 82205)	435	501
Wpr (LMIC)	Viet Nam	21 293	18 044	36 278	35 674	121 354	232 643	(166229, 300933)	509	497
Emr (LMIC)	Yemen	57 659	3 237	913	31 832	29 562	123 202	(49769, 198270)	1 001	1 417
Afr	Zambia	43 131	1 127	290	5 262	9 062	58 870	(12202, 92538)	795	782
Afr	Zimbabwe	31 471	1 320	950	4 229	8 595	46 566	(1935, 76231)	631	691

DALY: Disability-adjusted life years; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

Table A2.9: Disability-adjusted life years (DALY) attributable to AAP in 2012 in men, by disease and country

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Afghanistan	179 747	4 700	7 219	64 849	38 228	294 743	(231285, 368064)	1 928	2 543
Eur (LMIC)	Albania	430	325	3 078	9 955	6 905	20 692	(8739, 27712)	1 433	1 161
Afr	Algeria	17 783	4 367	15 767	88 531	74 055	200 502	(80265, 286385)	1 064	1 339
Eur (HIC)	Andorra	0	4	45	157	46	252	(8, 381)	644	399
Afr	Angola	203 330	3 692	765	28 419	25 948	262 154	(39517, 439803)	2 331	2 110
Amr (HIC)	Antigua and Barbuda	5	2	15	152	86	259	(0, 378)	610	655
Amr (LMIC)	Argentina	4 542	3 080	26 627	70 328	32 966	137 543	(39993, 190704)	668	658
Eur (LMIC)	Armenia	472	852	8 134	20 313	7 225	36 996	(1732, 58207)	2 500	2 286
Wpr (HIC)	Australia	4	12	181	713	151	1 060	(17, 30851)	9	7
Eur (HIC)	Austria	30	1 130	10 621	17 049	4 248	33 078	(22548, 41572)	800	488
Eur (LMIC)	Azerbaijan	6 845	1 202	5 961	38 661	14 741	67 410	(15613, 99461)	1 450	1 781
Amr (HIC)	Bahamas	156	9	88	424	216	893	(3, 1371)	490	554
Emr (HIC)	Bahrain	87	342	456	1 679	749	3 313	(2915, 3739)	398	803
Sear	Bangladesh	194 853	147 601	91 102	189 574	126 707	749 837	(607961, 919646)	956	1 309
Amr (HIC)	Barbados	35	11	62	299	217	623	(0, 927)	462	364
Eur (LMIC)	Belarus	247	1 458	13 643	90 038	22 926	128 312	(2936, 188471)	2 909	2 297
Eur (HIC)	Belgium	87	1 749	20 428	17 040	6 440	45 744	(28453, 59454)	842	514
Amr (LMIC)	Belize	38	29	57	215	147	485	(76, 762)	289	496
Afr	Benin	35 681	1 628	373	12 350	16 202	66 234	(19971, 105879)	1 323	1 750
Sear	Bhutan	1 064	608	233	1 433	657	3 995	(3175, 4967)	1 000	1 292
Amr (LMIC)	Bolivia, Plurinational States of	13 289	1 197	1 078	18 732	15 794	50 089	(38942, 60930)	976	1 173
Eur (LMIC)	Bosnia and Herzegovina	131	1 691	12 046	18 370	13 680	45 918	(35306, 57027)	2 409	1 626
Afr	Botswana	1 663	168	230	1 133	1 363	4 557	(23, 7471)	428	645
Amr (LMIC)	Brazil	10 370	9 108	44 602	230 462	130 137	424 679	(183508, 642890)	426	482
Wpr HIC	Brunei Darussalam	0	0	1	10	3	13	(0, 749)	6	9
Eur (LMIC)	Bulgaria	1 063	2 997	22 101	49 202	33 295	108 658	(87855, 128993)	3 058	1 880

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Afr	Burkina Faso	80 786	2 579	744	18 126	28 045	130 281	(61961, 203255)	1 585	2 093
Afr	Burundi	68 578	1 725	352	11 631	18 449	100 735	(41865, 162771)	2 016	2 021
Afr	Cabo Verde	16 702	1 685	4 426	20 078	15 682	58 574	(3987, 92741)	810	1 184
Wpr (LMIC)	Cambodia	132 424	6 446	1 542	28 781	35 747	204 941	(164959, 254600)	1 893	2 059
Afr	Cameroon	45	305	5 840	14 552	3 030	23 772	(484, 80716)	137	90
Amr (HIC)	Canada	244	169	24	539	920	1 897	(1151, 2749)	769	1 282
Afr	Central African Republic	24 238	1 428	248	4 862	5 132	35 909	(16613, 57810)	1 578	1 624
Afr	Chad	127 017	2 065	407	12 612	17 900	160 001	(84219, 245180)	2 515	2 213
Amr (HIC)	Chile	1 007	1 531	8 190	19 274	13 170	43 171	(31945, 52726)	503	466
Wpr (LMIC)	China	362 408	986 954	3 775 771	3 009 085	5 455 918	13 590 137	(11453348, 15895066)	1 937	1 800
Amr (LMIC)	Colombia	8 813	3 626	11 314	56 529	20 750	101 033	(70274, 124947)	437	526
Afr	Comoros	1 577	51	29	585	975	3 217	(553, 4594)	869	1 205
Afr	Congo	18 315	1 241	157	6 545	6 757	33 016	(14482, 53167)	1 540	1 784
Wpr (LMIC)	Cook Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Costa Rica	128	331	1 004	6 250	2 068	9 780	(7184, 11848)	420	435
Eur (HIC)	Croatia	25	857	11 172	16 300	7 736	36 090	(24965, 45828)	1 746	1 076
Amr (LMIC)	Cuba	377	1 262	14 963	27 062	12 765	56 428	(5158, 84332)	990	731
Eur (HIC)	Cyprus	0	60	1 055	2 125	413	3 653	(2438, 4604)	633	517
Eur (HIC)	Czech Republic	161	1 786	20 745	41 691	10 706	75 089	(57985, 90584)	1 450	926
Afr	Côte d'Ivoire	70 981	2 787	870	27 358	37 864	139 861	(15190, 227195)	1 300	1 535
Sear	Democratic People's Republic of Korea	10 692	16 331	52 171	59 216	100 420	238 829	(32356, 399937)	1 973	2 182
Afr	Democratic Republic of the Congo	532 707	14 409	1 828	86 091	105 633	740 668	(342501, 1171149)	2 115	2 046
Eur (HIC)	Denmark	17	459	4 460	5 432	2 463	12 832	(781, 20723)	462	279
Emr (LMIC)	Djibouti	2 850	173	68	958	1 383	5 432	(1806, 9060)	1 268	1 565
Amr (LMIC)	Dominica	5	4	21	90	68	188	(10, 278)	528	533
Amr (LMIC)	Dominican Republic	4 587	465	2 437	13 270	7 362	28 121	(2633, 40840)	555	666
Amr (LMIC)	Ecuador	4 492	724	1 999	11 870	7 736	26 820	(13393, 35088)	348	416

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Emr (LMIC)	Egypt	42 776	41 837	44 422	355 137	234 492	718 664	(593804, 856619)	1 661	2 409
Amr (LMIC)	El Salvador	2 409	773	1 236	12 190	3 706	20 314	(16184, 24659)	710	843
Afr	Equatorial Guinea	3 593	221	139	1 599	1 302	6 854	(356, 12068)	1 727	1 900
Afr	Eritrea	19 211	902	305	6 003	9 012	35 433	(13988, 56667)	1 448	2 141
Eur (HIC)	Estonia	15	19	647	2 678	541	3 901	(70, 7830)	632	440
Afr	Ethiopia	320 192	18 060	6 149	42 991	69 363	456 756	(147255, 745078)	993	1 029
Wpr (LMIC)	Fiji	1	0	0	40	6	47	(0, 7043)	11	13
Eur (HIC)	Finland	6	21	469	2 717	553	3 766	(23, 18586)	141	81
Eur (HIC)	France	316	2 633	76 905	48 894	25 178	153 926	(54470, 219288)	497	319
Afr	Gabon	3 427	417	322	1 865	1 647	7 678	(1255, 13005)	942	1 126
Afr	Gambia	5 873	309	123	1 821	2 802	10 928	(448, 20309)	1 221	1 610
Eur (LMIC)	Georgia	716	881	4 296	24 035	13 182	43 110	(27173, 54989)	2 189	1 695
Eur (HIC)	Germany	409	8 265	105 353	151 998	46 729	312 754	(152163, 415287)	792	429
Afr	Ghana	47 138	2 995	1 821	30 485	34 860	117 299	(74456, 155437)	927	1 277
Eur (HIC)	Greece	66	889	15 887	28 522	13 703	59 067	(21633, 80081)	1 086	641
Amr (LMIC)	Grenada	3	4	22	171	120	319	(0, 466)	604	793
Amr (LMIC)	Guatemala	20 016	1 070	2 431	12 503	6 077	42 097	(33300, 51335)	560	696
Afr	Guinea	34 282	1 224	424	11 630	15 867	63 429	(5271, 103042)	1 089	1 301
Afr	Guinea-Bissau	8 167	245	65	1 859	2 692	13 029	(648, 22302)	1 531	1 677
Amr (LMIC)	Guyana	168	29	63	2 358	1 717	4 335	(1, 6661)	1 141	1 389
Amr (LMIC)	Haiti	28 234	463	1 157	11 048	19 766	60 667	(5505, 94026)	1 192	1 488
Amr (LMIC)	Honduras	4 960	1 158	1 462	12 798	6 903	27 280	(21499, 33372)	705	1 054
Eur (LMIC)	Hungary	197	2 800	34 752	49 859	17 945	105 552	(79789, 129379)	2 230	1 508
Eur (HIC)	Iceland	0	4	45	130	37	216	(2, 655)	133	98
Sear	India	1 787 871	1 897 456	612 883	5 130 605	2 849 209	12 278 024	(10262166, 14606630)	1 874	2 363
Sear	Indonesia	132 783	25 653	99 490	311 673	493 756	1 063 355	(561844, 1415551)	851	1 136
Emr (LMIC)	Iran (Islamic Republic of)	28 866	12 981	25 001	266 650	102 771	436 269	(375126, 499638)	1 136	1 409
Emr (LMIC)	Iraq	49 938	4 921	14 319	89 788	50 060	209 026	(135965, 288780)	1 254	2 333
Eur (HIC)	Ireland	25	161	1 863	5 176	1 090	8 314	(648, 13074)	357	284

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Israel	88	655	6 429	6 050	2 755	15 976	(11742, 19891)	420	387
Eur (HIC)	Italy	119	6 983	97 217	87 721	41 983	234 023	(155315, 298202)	807	422
Amr (LMIC)	Jamaica	457	180	1 724	2 961	3 638	8 961	(6146, 11337)	652	681
Wpr (HIC)	Japan	968	4 620	135 199	139 262	118 288	398 337	(157715, 544352)	644	332
Emr (LMIC)	Jordan	3 255	1 087	3 697	13 691	6 956	28 686	(24404, 33165)	798	1 405
Eur (LMIC)	Kazakhstan	4 603	2 639	15 883	99 528	39 597	162 249	(21184, 252935)	1 999	2 433
Afr	Kenya	102 900	1 934	1 384	23 944	28 628	158 790	(53320, 222532)	747	850
Wpr (LMIC)	Kiribati	0	0	0	0	0	0	(0, 565)	0	1
Emr (HIC)	Kuwait	701	602	648	8 238	2 157	12 346	(10909, 13904)	643	1 227
Eur (LMIC)	Kyrgyzstan	2 550	620	1 672	19 494	9 831	34 166	(14021, 45095)	1 225	1 902
Wpr (LMIC)	Lao People's Democratic Republic	21 032	947	2 503	9 523	8 409	42 415	(15025, 64545)	1 319	1 764
Eur (HIC)	Latvia	27	222	4 113	13 253	4 661	22 276	(16099, 27405)	2 391	1 618
Emr (LMIC)	Lebanon	313	687	3 682	14 177	2 483	21 342	(17553, 25044)	856	878
Afr	Lesotho	4 058	332	130	1 134	2 138	7 791	(5, 15185)	769	1 065
Afr	Liberia	2 972	97	35	1 186	1 347	5 637	(1, 15553)	267	349
Emr (LMIC)	Libya	1 654	1 561	5 979	15 540	8 345	33 079	(22209, 45072)	1 036	1 703
Eur (HIC)	Lithuania	37	401	4 958	16 607	5 331	27 335	(20321, 33313)	1 968	1 396
Eur (HIC)	Luxembourg	0	53	592	530	270	1 445	(929, 1859)	544	386
Afr	Madagascar	45 908	1 704	3 287	20 894	28 260	100 053	(43326, 138723)	901	1 285
Afr	Malawi	33 321	1 467	268	9 379	14 239	58 674	(1292, 97277)	750	1 031
Wpr (LMIC)	Malaysia	1 566	3 529	12 551	62 141	25 368	105 154	(59344, 135959)	731	937
Sear	Maldives	38	25	80	325	336	804	(205, 1088)	465	703
Afr	Mali	113 203	4 269	1 000	14 241	19 899	152 611	(75546, 241047)	1 878	1 912
Eur (HIC)	Malta	1	31	475	997	273	1 776	(903, 2280)	859	531
Wpr (LMIC)	Marshall Islands	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Mauritania	19 171	1 026	230	3 390	5 078	28 895	(16624, 45511)	1 521	1 680
Afr	Mauritius	121	91	424	2 703	1 347	4 686	(2032, 6098)	752	708
Amr (LMIC)	Mexico	24 762	8 634	19 703	150 289	54 007	257 395	(192803, 312522)	424	535
Wpr (LMIC)	Micronesia (Federated States of)	0	0	0	1	1	2	(0, 425)	4	6

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (HIC)	Monaco	0	1	23	49	14	87	(0, 169)	477	301
Wpr (LMIC)	Mongolia	2 194	465	1 410	11 241	7 382	22 692	(15755, 28108)	1 630	2 413
Eur (LMIC)	Montenegro	20	42	1 838	2 602	1 739	6 241	(4548, 7760)	2 026	1 506
Emr (LMIC)	Morocco	19 265	2 729	21 354	55 307	43 374	142 028	(104639, 174822)	874	1 012
Afr	Mozambique	71 366	1 545	1 032	8 995	18 077	101 014	(2118, 167374)	806	824
Sear	Myanmar	80 657	23 843	43 037	63 596	160 299	371 432	(306289, 443553)	1 448	1 882
Afr	Namibia	1 678	289	164	1 168	1 655	4 955	(527, 8166)	445	733
Wpr (LMIC)	Nauru	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sear	Nepal	35 435	26 354	13 421	51 778	39 398	166 387	(124723, 217702)	1 247	1 666
Eur (HIC)	Netherlands	75	1 879	25 158	16 425	7 466	51 003	(27229, 68919)	614	375
Wpr (HIC)	New Zealand	2	3	34	164	33	236	(2, 4915)	11	8
Amr (LMIC)	Nicaragua	3 903	571	1 022	11 302	5 989	22 787	(3599, 34318)	787	1 124
Afr	Niger	168 604	4 061	267	15 982	27 181	216 095	(126988, 333049)	2 433	2 040
Afr	Nigeria	1 156 136	23 389	4 400	177 414	229 276	1 590 615	(1268077, 1954374)	1 858	1 761
Wpr (LMIC)	Niue	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	Norway	15	137	1 714	3 843	1 246	6 955	(310, 13468)	276	183
Emr (HIC)	Oman	441	424	574	5 051	3 488	9 978	(6705, 13452)	445	881
Emr (LMIC)	Pakistan	710 781	138 543	59 890	302 346	183 925	1 395 486	(1127121, 1716701)	1 531	1 765
Wpr (LMIC)	Palau	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Panama	657	99	562	3 639	1 659	6 615	(911, 9593)	352	398
Wpr (LMIC)	Papua New Guinea	8 285	286	524	3 688	3 162	15 944	(0, 38748)	437	538
Amr (LMIC)	Paraguay	2 205	356	2 252	9 625	7 071	21 509	(9961, 28424)	664	883
Amr (LMIC)	Peru	8 494	2 667	7 869	29 537	19 096	67 663	(52367, 82270)	449	543
Wpr (LMIC)	Philippines	83 202	19 471	47 272	304 389	193 931	648 265	(493810, 788684)	1 335	1 847
Eur (HIC)	Poland	768	9 174	102 219	167 417	88 097	367 674	(292598, 439065)	1 968	1 404
Eur (HIC)	Portugal	34	297	6 451	8 171	6 977	21 930	(1004, 37264)	438	260
Emr (HIC)	Qatar	76	597	1 028	3 433	1 340	6 475	(5621, 7412)	430	796
Wpr (HIC)	Republic of Korea	506	4 613	74 134	41 221	49 655	170 129	(133261, 206292)	690	557
Eur (LMIC)	Republic of Moldova	769	511	4 428	22 968	9 824	38 500	(0, 62769)	1 964	1 794

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Romania	4 406	3 820	47 262	91 568	56 690	203 747	(151783, 249488)	2 106	1 461
Eur (HIC)	Russian Federation	6 738	17 133	226 211	1 245 803	498 028	1 993 913	(861636, 2729202)	2 999	2 425
Afr	Rwanda	37 317	1 780	402	8 988	14 234	62 721	(32179, 97908)	1 213	1 566
Amr (HIC)	Saint Kitts and Nevis	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (LMIC)	Saint Lucia	52	11	58	216	229	566	(92, 828)	637	655
Amr (LMIC)	Saint Vincent and the Grenadines	6	3	15	157	89	271	(0, 397)	491	554
Wpr (LMIC)	Samoa	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eur (HIC)	San Marino	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Sao Tome and Principe	249	15	18	78	145	505	(0, 836)	568	821
Emr (HIC)	Saudi Arabia	2 989	9 614	7 860	75 971	48 082	144 516	(125044, 165703)	868	1 718
Afr	Senegal	31 806	2 296	726	7 988	10 735	53 551	(41279, 66817)	793	1 007
Eur (LMIC)	Serbia	258	1 758	27 841	32 645	19 832	82 333	(56535, 105013)	1 876	1 258
Afr	Seychelles	5	6	44	189	85	329	(24, 487)	682	753
Afr	Sierra Leone	35 661	542	186	6 887	10 069	53 345	(0, 100104)	1 786	1 842
Wpr (HIC)	Singapore	86	268	4 408	9 536	3 317	17 616	(8985, 23666)	674	532
Eur (HIC)	Slovakia	206	616	8 026	26 783	9 494	45 125	(34565, 54431)	1 719	1 326
Eur (HIC)	Slovenia	3	252	3 717	3 623	2 150	9 744	(6798, 12304)	952	592
Wpr (LMIC)	Solomon Islands	0	0	0	0	0	0	(0, 2046)	0	0
Emr (LMIC)	Somalia	66 926	555	385	5 440	7 646	80 952	(3884, 144582)	1 622	1 258
Afr	South Africa	59 306	14 990	30 525	74 937	81 433	261 190	(203996, 317620)	1 007	1 575
Emr (LMIC)	South Sudan	61 502	1 549	561	9 072	13 043	85 726	(37723, 131050)	1 561	1 503
Eur (HIC)	Spain	177	1 840	34 946	40 909	15 272	93 144	(17124, 155444)	405	254
Sear	Sri Lanka	1 851	5 807	7 326	82 420	34 109	131 513	(95676, 166551)	1 330	1 354
Emr (LMIC)	Sudan	150 832	7 572	2 413	32 030	47 946	240 793	(130714, 370769)	1 272	1 410
Amr (LMIC)	Suriname	152	17	164	589	482	1 405	(0, 2356)	530	601
Afr	Swaziland	2 657	154	71	556	711	4 149	(0, 7345)	684	832
Eur (HIC)	Sweden	1	3	42	271	66	382	(0, 17361)	8	5
Eur (HIC)	Switzerland	22	671	5 909	8 277	2 435	17 314	(4982, 24268)	437	264
Emr (LMIC)	Syrian Arab Republic	6 349	2 457	11 881	62 579	25 020	108 286	(62671, 151214)	1 072	1 935

		Number of DALYs							DALYs 100 000 per capita	
Region	*Country*	*ALRI*[a]	*COPD*[b]	*Lung cancer*[b]	*IHD*[b]	*Stroke*[b]	*Total*	*Uncertainty interval*	*Crude rate*	*Age-standardized rate*
Eur (LMIC)	Tajikistan	26 128	1 634	1 847	23 094	13 155	65 858	(34933, 99535)	1 646	2 424
Sear	Thailand	5 676	19 903	77 559	132 350	95 240	330 728	(259399, 401893)	998	874
Eur (LMIC)	The former Yugoslav Republic of Macedonia	60	543	6 661	6 936	7 345	21 544	(17335, 25832)	2 091	1 647
Sear	Timor-Leste	2 457	56	538	1 003	802	4 857	(0, 9831)	868	1 033
Afr	Togo	22 993	849	291	6 099	8 730	38 962	(6048, 65378)	1 171	1 432
Wpr (LMIC)	Tonga	NA	NA	NA	NA	NA	NA	NA	NA	NA
Amr (HIC)	Trinidad and Tobago	134	69	551	3 863	1 375	5 992	(0, 8886)	903	850
Emr (LMIC)	Tunisia	2 345	2 437	13 386	40 237	21 044	79 448	(63618, 95445)	1 475	1 555
Eur (LMIC)	Turkey	13 304	19 581	172 478	239 374	137 326	582 063	(479717, 685447)	1 583	1 815
Eur (LMIC)	Turkmenistan	6 982	1 223	3 186	48 135	15 535	75 061	(22782, 107012)	2 949	4 063
Wpr (LMIC)	Tuvalu	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afr	Uganda	164 963	7 169	2 143	31 755	44 513	250 542	(191462, 323201)	1 417	1 751
Eur (LMIC)	Ukraine	3 416	6 246	62 391	449 226	122 709	643 988	(11207, 947809)	3 074	2 279
Emr (HIC)	United Arab Emirates	537	1 940	1 623	15 324	6 454	25 878	(21954, 30159)	388	648
Eur (HIC)	United Kingdom	656	5 776	54 870	98 122	29 594	189 017	(67307, 259080)	604	386
Afr	United Republic of Tanzania	97 815	4 196	604	28 654	32 129	163 399	(92671, 222554)	676	788
Amr (HIC)	United States of America	1 815	9 778	108 381	311 799	64 122	495 894	(22891, 1038384)	318	232
Amr (HIC)	Uruguay	163	266	3 334	4 637	1 968	10 368	(2830, 14824)	633	521
Eur (LMIC)	Uzbekistan	38 070	4 812	10 936	150 068	65 596	269 482	(129023, 387995)	1 916	2 801
Wpr (LMIC)	Vanuatu	5	0	2	21	18	46	(0, 862)	37	60
Amr (LMIC)	Venezuela, Bolivarian Republic of	6 727	2 168	12 524	65 261	22 985	109 666	(79967, 135829)	737	934
Wpr (LMIC)	Viet Nam	33 283	19 264	112 787	78 313	212 528	456 175	(326446, 582343)	1 022	1 275
Emr (LMIC)	Yemen	71 684	3 478	2 560	58 582	37 550	173 855	(73256, 273680)	1 383	2 120
Afr	Zambia	47 691	944	404	9 851	13 506	72 396	(16519, 111871)	981	1 171
Afr	Zimbabwe	32 392	1 496	1 628	4 822	7 364	47 701	(1966, 78393)	664	760

DALY: Disability-adjusted life years; AAP: Ambient air pollution; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sear: South-East Asia; Wpr: Western Pacific; LMIC: Low- and middle-income countries; HIC: High-income countries; NA: Not available.

[a] Age group includes less than 5 years old.

[b] Age group includes 25 years and above.

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