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Global, regional, and national burdens of acute respiratory infections among children and adolescents from 1990 to 2021: A systematic analysis

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ABSTRACT

Objective: To evaluate the global, regional, and national burden and determinants of Acute Respiratory Infections (ARIs) among children and adolescents from 1990 to 2021.

Methods: We analysed ARI mortality and disability-adjusted life years (DALYs), stratified by age, sex, and economic development level based on data retrieved from the Global Burden of Disease study 2021. Decomposition and frontier analyses were employed to identify key drivers of burden variation and visualize potential reductions based on development levels.

Results: Between 1990 and 2021, the global burden of ARIs showed a significant decline in both achievable age-standardized DALYs rate and age-standardized mortality rates (EAPC= –3.87 and –3.81, respectively). Different age groups and sex witnessed different levels of ARI burden, males experienced heavier burden than females and the 0-4 years-old group experienced heavier burden than other study age groups. Most of the 204 countries and territories experienced a downward trend of ARI burden, with slight increases observed only in Lesotho and Dominica. A negative correlation was found between the Socio-demographic Index and ARI burden. Decomposition analysis indicated that the significant decreases in deaths and DALYs were primarily driven by epidemiological changes.

Conclusions: The global burden of ARIs among children and adolescents has declined over the past three decades, but substantial regional disparities persist. Targeted public health strategies are needed to address the continued ARI burden in high-risk regions and vulnerable age groups.

KEYWORDS: Respiratory infection; Global disease burden; Decomposition analysis; Frontier analysis

1. Introduction

Acute respiratory infections (ARIs) remain a significant global health concern, ranking as the fourth leading cause of death worldwide, as reported by the World Health Organization (WHO)[1]. Common

Summary

Question: What are the global, regional, and national trends and determinants of acute respiratory infection burden among children and adolescents?

Findings: According to the Global Burden of Disease 2021 data covering 204 countries and territories, age-standardized mortality and disability-adjusted life-year rates for acute respiratory infections among individuals aged 0-24 years declined substantially between 1990 and 2021. The burden remained highest in males, children younger than 5 years, and regions with lower sociodemographic development. Decomposition analysis showed that epidemiological improvements were the primary contributors to burden reduction.

Meaning: Despite substantial global progress, persistent age and regional disparities indicate a need for targeted prevention and control strategies in vulnerable populations and low Socio-demographic Index settings.

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pathogens responsible for ARIs include influenza virus (IFV), respiratory syncytial virus (RSV), human rhinovirus (HRV) and other respiratory viruses such as parainfluenza virus (PIV), human coronavirus (HCoV), human metapneumovirus (HMPV), and adenovirus (ADV)[2-6]. ARIs encompass both acute upper respiratory infections (URIs), characterized by symptoms such as cough and inflammation of the nasal, pharyngeal, or laryngeal areas, and acute lower respiratory infections (LRIs), which predominantly manifest as pneumonia and bronchitis-related conditions.

In 2021, the global age-standardized incidence rates (ASIR) of URIs and LRIs were 166 770.73 per 100 000 population [95% uncertainty interval (*UI*) 148 098.16 to 189 487.93] and 4 283.61 per 100 000 population (95% *UI* 4 057.03 to 4 524.89), respectively. The corresponding age-standardized mortality rates (ASMR) were 0.28 per 100 000 population (95% *UI* 0.09 to 0.61) for URIs and 28.67 per 100 000 population (95% *UI* 25.92 to 31.07) for LRIs, highlighting the substantial global public-health burden of ARIs[7].

Age-stratified studies have consistently shown that young children under 5 years of age experience higher incidence and mortality rates from ARIs compared to other age groups[3,8,9], which is likely due to factors such as physiological immaturity, insufficient immunity, environmental exposure, malnutrition and limited access to medical resources in children. However, much of the existing research on ARIs and disease burdens predominantly focuses on children under 5 years old, with insufficient attention given to adolescents. Evidence suggests that, despite significant progress in reducing ARI-related mortality in children under five, adolescents and young adults (aged 10-24 years) have not benefited equally from advancements in healthcare[10]. Adolescents continue to face substantial health challenges, with injuries and infections remaining major contributors to their overall disease burden. In 2019, LRIs were among the top three causes of infectious disease burden in children and adolescents aged 0-24 years globally[10,11]. Furthermore, the burden of infectious diseases, including ARIs, is concentrated in countries with lower levels of sociodemographic development, as measured by the Socio-Demographic Index (SDI)[7,12,13]. In these regions, over half of deaths among children and adolescents are attributed to infectious diseases. Addressing the burden of ARIs among children and adolescents, considering age groups, sex, and SDI levels, is crucial for achieving global health goals, reducing health inequities, and alleviating the substantial burden posed by ARIs.

Therefore, this study aimed to quantify global, regional, and national ARI mortality and disability-adjusted life years among individuals aged 0-24 years from 1990 to 2021 based on Global Burden of Disease 2021 dataset, and to explore temporal trends, demographic patterns, and sociodemographic disparities through decomposition and frontier analyses.

2. Methods

2.1. Data sources and definition

Data on respiratory infections across 204 countries or territories, 21 Global Burden of Disease (GBD) regions from 1990 to 2021 were extracted from the Global Burden of Disease study 2021 (GBD 2021, https://vizhub.healthdata.org/gbd-results/). We collected sex- and age-specific case data, as well as data on the number of deaths and age-standardized rates (ASR) of mortality and disability-adjusted life years (DALYs) for respiratory infections. Specifically, we analyzed ARI data in 5 age groups: <5 years, 5-9 years, 10-14 years, 15-19 years, and 20-24 years. Additionally, we gathered disease data for infants under 1 year of age, divided into the following subgroups: new-borns (<28 days), 1-5 months, and 6-11 months. Detailed explanations regarding the raw data and the methodology employed in the GBD 2021 study are provided in previous publications[14].

In GBD 2021, URIs were defined to include a range of symptoms such as cough, acute nasopharyngitis, sinusitis, pharyngitis, tonsillitis, laryngitis, tracheitis, epiglottitis, rhinitis, rhinosinusitis, rhinopharyngitis, and supraglottitis. While LRIs encompass death and disability resulting from clinician-diagnosed and self-reported cases of pneumonia and bronchiolitis[14].

2.2. Metrics for analysis

The age-standardized rate (ASR) is a key metric used to evaluate variations in the age composition across diverse populations. It represents a weighted average of age-specific rates, computed based on the age distribution of a standard population, calculating with the following formula:

$$ASR = \frac{\sum_{i=1}^{A} a_i w_i}{\sum_{i=1}^{A} w_i} \times 100000 \qquad (1)$$

where a_i is the age-specific rate in the ith age group, w_i is the number of persons (or the weight) in the corresponding i^{th} age subgroup of the selected reference standard population, and A is the number of age groups.

The estimated annual percentage change (EAPC) with a 95% confidence interval (*CI*), was used to assess the temporal trends of ASR over the past 30 years[15]:

$$\ln(ASR) = \alpha + \beta x + \varepsilon \qquad (2)$$

$$EAPC = 100 \times [\exp(\beta) - 1] \qquad (3)$$

where x represents the calendar year, β represent the regression coefficients.

SDI is an important metric used to comprehensively assess the level of social and economic development for each country or region[16]. In GBD 2021, countries and regions were classified into five SDI levels: high SDI (greater than 0.81), high-middle SDI (0.71-0.81),

middle SDI (0.62-0.71), low-middle SDI (0.47-0.62), and low SDI (less than 0.47).

2.3. Statistical analysis

2.3.1. The burden of acute respiratory infections

The age-standardized rate (ASR) is widely used to assess variations in disease burden patterns. The estimated annual percentage change (EAPC) serves as a standard indicator to capture the temporal trends of ASR over time. The trends in the burden of ARIs were evaluated globally, regionally, and nationally from 1990 to 2021 by calculating the EAPC using a linear regression model.

2.3.2. Decomposition analysis of the change in DALYs and deaths

The decomposition methodology of Das Gupta refers to an economic approach designed to analyse the impact of population changes on a particular phenomenon[17,18]. In our study, we utilized this method to assess how population dynamics, including factors such as increasing age, growth, and epidemiological changes, contribute to changes observed in DALYs and mortality rates from 1990 to 2021. Here, population growth refers specifically to changes in the total population size over time, estimated by allowing the total population to change from 1990 to 2021 while holding the baseline age structure and age-specific rates constant; population ageing captures shifts in the population age composition with total population size and age-specific rates held constant; and epidemiological change represents changes in age-specific mortality (or DALY) rates with population size and age structure held constant. This method helps disentangle the complex interactions between different demographic and epidemiological factors, providing valuable insights into the drivers of disease burden changes over time. The formula is as follows (using mortality as an example):

$$\text{Mortality}_{a_y p_y e_y} = \sum_{i=1}^{A} (a_{i,y} \times p_y \times e_{i,y}) \qquad (4)$$

where a_y, p_y, e_y represent the mortality based on ageing structure, population growth, and mortality rate for a specific year, respectively. And $a_{i,y}$ represents the population proportion for one of the 5 age categories in the year y, p_y represents the total population in a given year y, $e_{i,y}$ represents the mortality rate given age category one in year y, and A is the number of age groups.

2.3.3. Correlation between SDI and the regional burdens of ASRs

The correlation between ASR and SDI was visualized using a Gaussian process regression (GPR) model with a Loess smoother and assessed by the Spearman rank order correlation tests[19]. The fundamental principle behind GPR is to infer a distribution over functions directly, thereby defining a prior over those functions. Upon observing some function values, the prior distribution is updated to a posterior distribution. The general form is as follows:

$$p(f \mid X) = N(f \mid \mu, K) \qquad (5)$$

where $f=[f(x_1), \ldots, (f(x_n))$, $\mu = (m(x_1), \ldots, m(x_n)]$, K is the kernel function, m is the mean function and it is common to use $m(x) = 0$.

2.3.4. Frontier analysis of acute respiratory infections

We applied frontier analysis as a quantitative method to identify the lowest potentially achievable age-standardized DALYs rate (ASDR) and age-standardized mortality rate (ASMR) based on development, as measured by the SDI. This method helps us identify the minimum level of ARI burden that could be achieved at specific development levels, thereby providing valuable insights for the formulation of health policies and intervention measures[20].

A 95% *UI* or 95% *CI* was reported for all metrics. 95% *UI* was reported for all GBD-estimated metrics (*e.g.*, age-standardized DALYs rate and age-standardized mortality rate), whereas 95% *CI* was used for statistics derived from our own regression and trend analyses (*e.g.*, estimated annual percentage change, EAPC). All rates were reported per 100 000 population. Data processing, analysis and visualization were performed using R version 4.3.3.

3. Results

3.1. The burden of acute respiratory infections

3.1.1. Global and regional trends

In 2021, ARIs was responsible for approximately 0.59 million deaths and 53.82 million DALYs globally. Trends indicating a decrease were observed in ARIs over the past three decades (Figure 1). The ASMR per 100 000 population of ARIs decreased from 75.70 (95% *UI* 65.41 to 86.80) in 1990 to 19.72 (95% *UI* 15.87 to 24.16) in 2021 [EAPC –3.87 (95% *CI* –4.09 to –3.64)]. Correspondingly, ASDR per 100 000 population decreased from 6 776.68 (95% *UI* 5 847.33 to 7 785.08) in 1990 to 1 805.98 (95% *UI* 1 442.59 to 2 222.01) in 2021 [EAPC, –3.81 (95% *CI* –4.03 to –3.60)]. A downward trend was observed in both sexes, with EAPCs in ASMR per 100 000 population of –3.81 (95% *CI* –4.01 to –3.61) in males and –3.93 (95% *CI* –4.18 to –3.68) in females, and EAPCs in ASDR per 100 000 population of –3.76 (95% *CI* –3.96 to –3.57) in males and –3.87 (95% *CI* –4.12 to –3.63) in females. Detailed results are provided in Supplementary Table 1.

Among the SDI regions, the burden of ARIs was heavier in low SDI, low-middle SDI regions (Figure 1). Regarding temporal trends, the smallest declines in ASMR were observed in low-middle SDI regions [EAPC: –3.94 (95% *CI* –4.20 to –3.69)], whereas high SDI regions experienced the smallest decline in ASDR [EAPC: –2.79

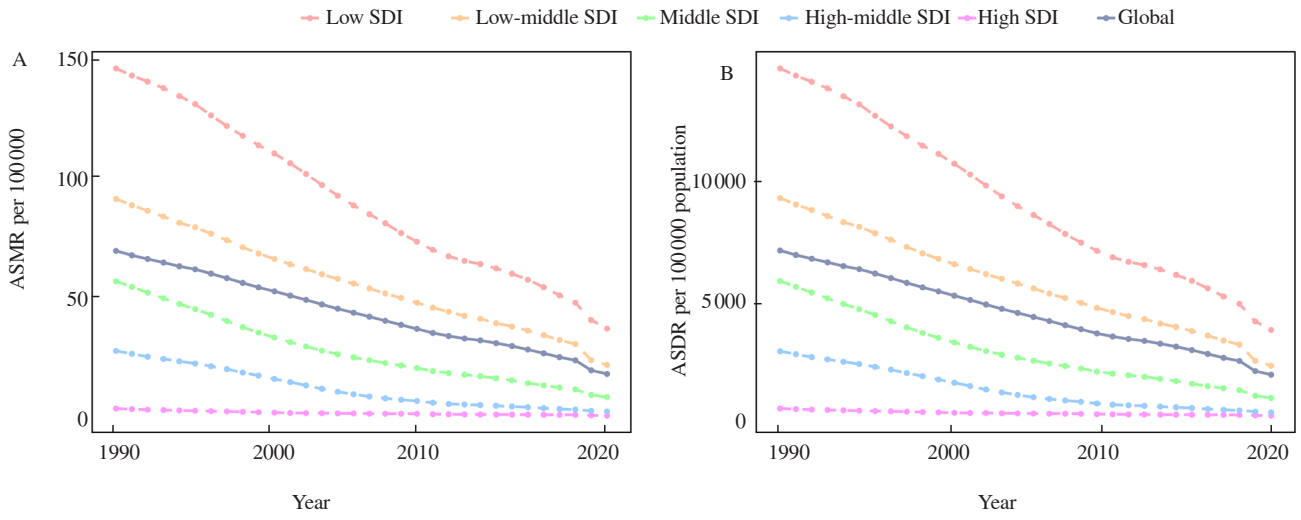

Figure 1. Temporal trends of ASMR and ASDR of ARIs from 1990 to 2021 in different SDI regions by SDI quintile and globally. A. ASMR. B. ASDR. ASMR: age-standardized mortality rate; ASDR: age-standardized DALYs (disability-adjusted life years) rate; ARIs: acute respiratory infections; SDI: socio-demographic index.

(–2.95 to –2.63)], indicating a relatively slower reduction in DALYs compared with other SDI groups. In contrast, high-middle SDI regions showed the most pronounced decreases in both ASMR and ASDR [EAPC of ASMR: –7.73 (95% *CI* –7.97 to –7.49), EAPC of ASDR: –7.13 (95% *CI* –7.34 to –6.92)] (Supplementary Table 1).

As shown in Supplementary Table 1, in 2021, among the 21 geographic super regions, regions with ASMRs for ARIs of >25 per 100 000 population included Central Asia [25.95 (95% *UI* 21.54 to 31.43)], Oceania [56.86 (95% *UI* 43.96 to 74.69)], Eastern Sub-Saharan Africa [29.66 (95% *UI* 21.83 to 39.23)], Western Sub-Saharan Africa [54.56 (95% *UI* 38.45 to 73.38)], Southern Sub-Saharan Africa [29.13 (95% *UI* 23.61 to 35.16)]. Correspondingly, the ASDRs for these areas ranged from 2 324 to 5 142 per 100 000 population in 2021. Several regions exhibited transient year-to-year increases in ASMRs and ASDRs for ARIs between 1990 and 2021, most notably Oceania, Central Asia, and Southern Sub-Saharan Africa, where these increases were more pronounced and visually apparent (Supplementary Figure 1). East Asia, Andean Latin America and Tropical Latin America saw the greatest decreases in ARIs burdens, with ASMR EAPCs of –9.79 (95% *CI* –10.12 to –9.46), –5.91 (95% *CI* –6.17 to –5.65) and –6.16 (95% *CI* –6.48 to –5.83) respectively, and ASDR EAPCs of –9.33 (95% *CI* –9.64 to –9.03), 5.78 (–6.02 to –5.54) and –5.70 (–5.96 to –5.45) respectively. Additionally, Oceania, a high-income region, showed the smallest declines among the 21 regions from 1990 to 2021, with ASMR EAPCs of –1.31 (95% *CI* –1.63 to –0.98) and ASDR EAPCs of –1.29 (95% *CI* –1.61 to –0.97).

3.1.2. Global burden of ARIs among children and adolescents by sex and age

As shown in Figure 2, in 2021, the global burden of ARIs in children and adolescents among males was consistently higher than that among females across all age groups. A distinct peak in the number of age-specific deaths and DALYs was observed in the 0-4 years age group, with values exceeding those of other age groups by more than ten folds (Figure 2A and Figure 2B). The burden was particularly pronounced during early childhood compared to older age groups. Both the age-specific death rates and DALYs exhibited a decreasing trend following this peak and remained significantly lower and relatively stable (Figure 2A and Figure 2B).

Among infants under 1 year of age, the highest number of deaths and DALYs occurred during the first 28 days of life (neonatal period), followed by a gradual decline. Specifically, both the rate of deaths and DALYs showed a pronounced peak in the neonatal period, followed by a sharp reduction in the 1-5 months age group. This downward trend continued gradually through the 6-11 months age group, though the burden remained higher compared to older paediatric populations (Figure 2C and Figure 2D).

As illustrated by supplementary Figure 2, all age groups experienced a decline in the burden of ARIs from 1990 to 2021, with the most notable decrease observed in the 0-4 years age group and the corresponding EAPCs for ASMR and ASDR were –4.02 (95% *CI* –4.26 to –3.78) and –3.99 (95% *CI* –4.23 to –3.75), respectively (Supplementary Table 2).

3.1.3. Countries and territories trends

The burden of ARIs exhibited considerable variation across 204 countries and territories. In 2021, the ASRs of ARIs varied by up to 1 700-fold between countries, with ASMRs per 100 000 population ranging from 0.16 (95% *UI* 0.11 to 0.24) in Cyprus to 90.46 (95% *UI* 64.99 to 122.54) in Chad. Concomitantly, ASDRs per 100 000

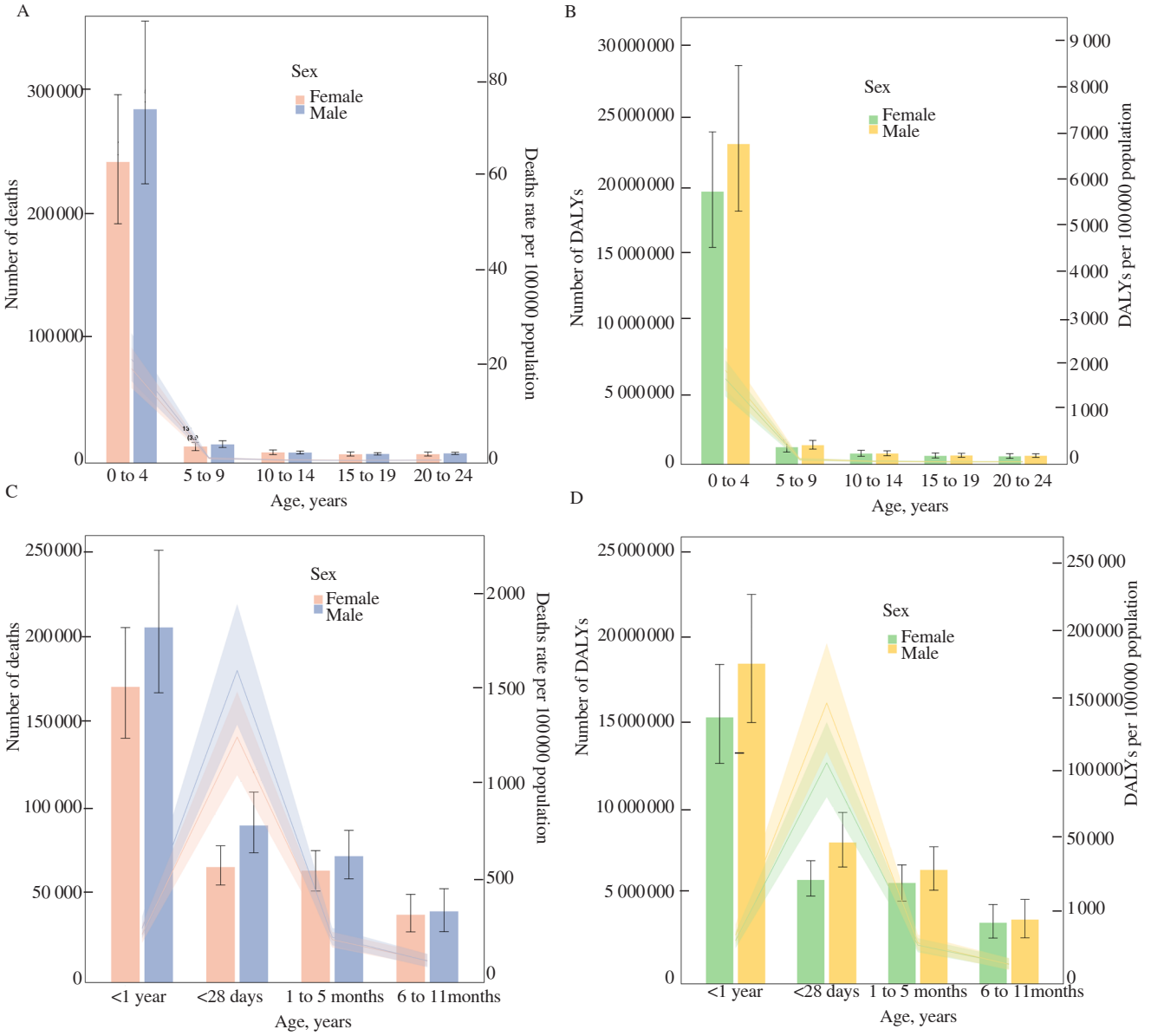

Figure 2. Age-specific numbers and rates of deaths and DALYs of ARIs by sex in 2021. A. Deaths in children and adolescents aged 0-24 years old. B. DALYs in children and adolescents aged 0-24 years old. C. Deaths in infants <1 year old. D. DALYs in infants <1 year old. Shaded areas represent uncertainty intervals. DALYs: disability-adjusted life years. ARIs: acute respiratory infections.

population ranged from 105.29 (95% *UI* 59.42 to 170.12) in Cyprus to 7993.26 (95% *UI* 5747.42 to 10789.39) in Chad (Figure 3A and 3B, Supplementary Table 3). Due to their large populations, countries such as India, Nigeria, and Pakistan recorded the highest absolute numbers of deaths and DALYs attributed to ARIs, despite not having the highest ASMR and ASDR values globally (Supplementary Table 3).

From 1990 to 2021, only Lesotho and Dominica showed a slight upward trend in both ASMR and ASDR, while the remaining countries showed a downward trend. The most significant decreases occurred in China and Turkey, where the EAPCs in ASMRs were all < –9. Generally, the trends in ASMR closely mirrored those in ASDR (Figure 3C and 3D, Supplementary Table 3).

3.2. Decomposition analysis of the change in DALYs and Deaths

A decomposition analysis was conducted to assess the contributions of three population-level determinants, including population aging, population growth, and epidemiological changes to the change in mortality and DALYs from 1990 to 2021. Globally, the mortality rates and DALYs associated with ARIs decreased significantly, with the most pronounced reduction observed in the low-middle SDI region over the past 30 years (Figure 4A and 4B). Epidemiological change emerged as the primary driver of the changes in mortality and DALYs rates across all SDI regions. Population growth contributed notably to increases in mortality rates and DALYs in low SDI

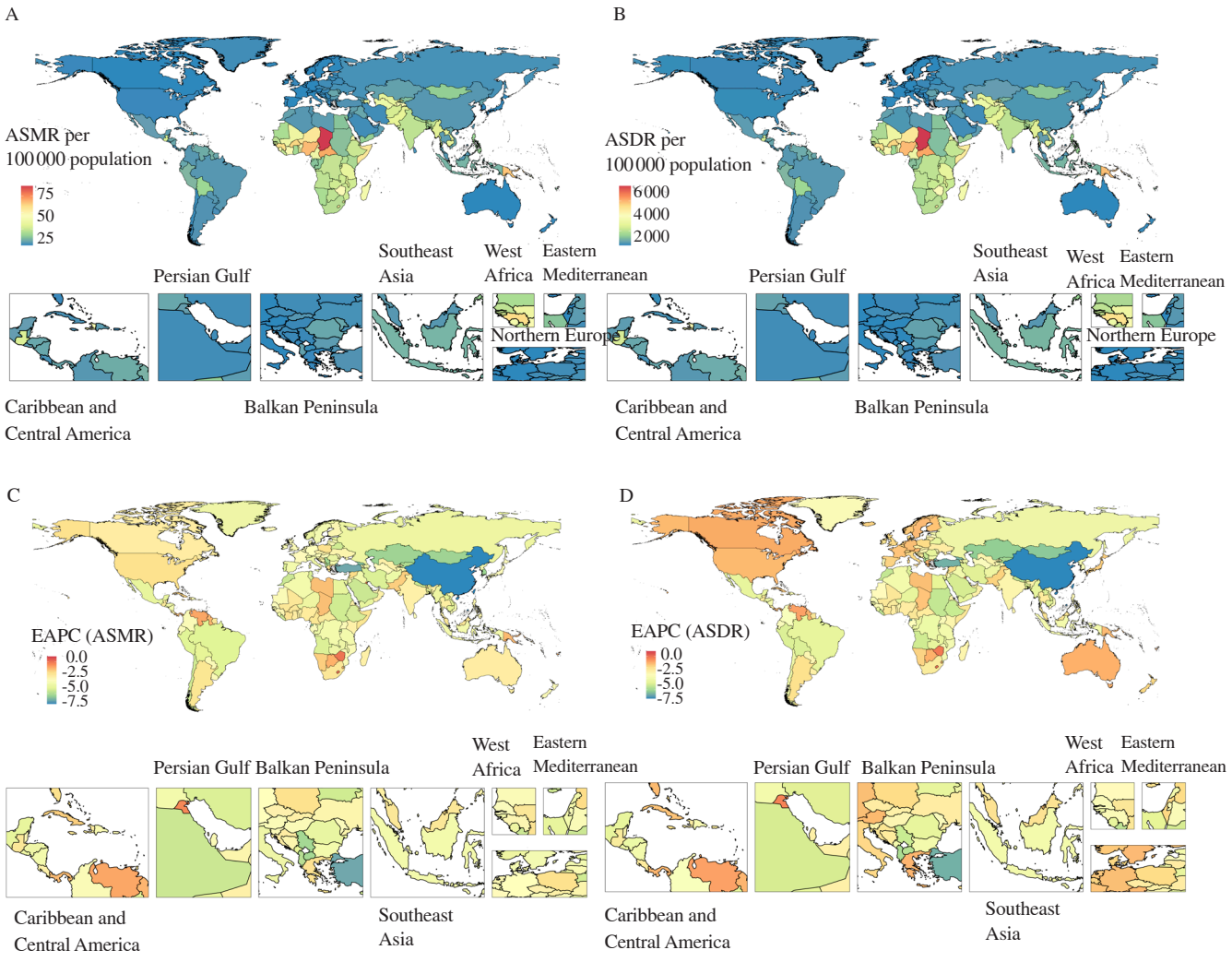

Figure 3. The global distribution of ASMR, ASDR, and EAPC in the ASMR and ASDR. A. The global distribution of ASMR of ARIs in 2021. B. The global distribution of ASDR of ARIs in 2021. C. The global distribution of EAPC in the ASMR from 1990 to 2021. D. The global distribution of EAPC in the ASDR from 1990 to 2021. ASMR: age-standardized mortality rate.

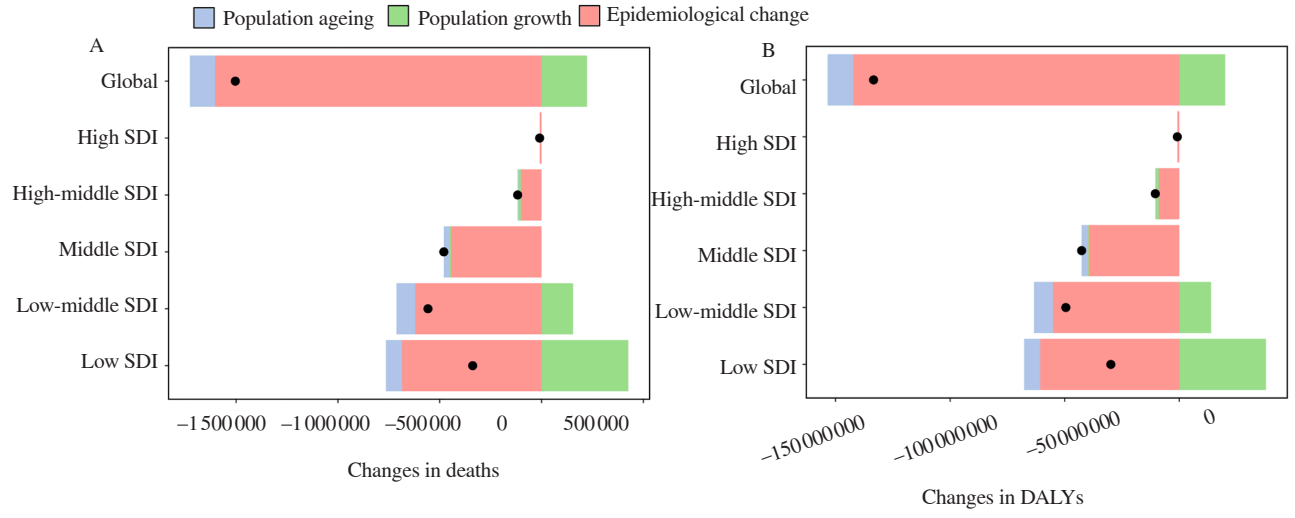

Figure 4. Changes in DALYs and mortality of ARIs according to population-level determinants of ageing, population growth, and epidemiological change from 1990 to 2021 at the global level and by SDI quintile. A. Mortality. B. DALYs. The black dot represents the overall value of change contributed by all 3 components. DALYs, disability-adjusted life years; ARIs, acute respiratory infections; SDI, socio-demographic index.

(202.67% and 203.16%, respectively) and low-middle SDI regions (111.28% and 111.38%). In contrast, population aging contributed to reductions in mortality rates across all SDI regions (Supplementary Table 4).

At the geographic super-regions level, Western and Eastern Sub-Saharan Africa, along with South Asia, experienced the most pronounced negative effects of population growth on disease burden reduction. In most regions, population growth was a contributing factor to increased mortality rates and DALYs, but these effects were balanced out by epidemiological change and population aging, resulting in an overall reduction in disease burden. In certain regions, such as Australia, High-income Asia Pacific, High-income North America, Southern Latin America and Western Europe, none of the three population-level determinants had a significant impact on the disease burden of ARIs (Supplementary Figure 3, Supplementary Table 5).

3.3. Association with the SDI

From 1990 to 2021, a negative association was observed between regional SDI and the corresponding regional burdens of ASRs of ARIs. Regions such as Central Asia, Western and Southern Sub-Saharan Africa, Andean Latin America and Oceania exhibited burdens that were noticeably higher than expected based on their SDIs levels. In contrast, regions including Eastern and Central Sub-Saharan Africa, as well as Tropical and Central Latin America, showed burdens significantly lower than expected (Figure 5A and 5B). This negative correlation between ASDR or ASMR and SDI was also evident at the national level (Figure 5C and 5D).

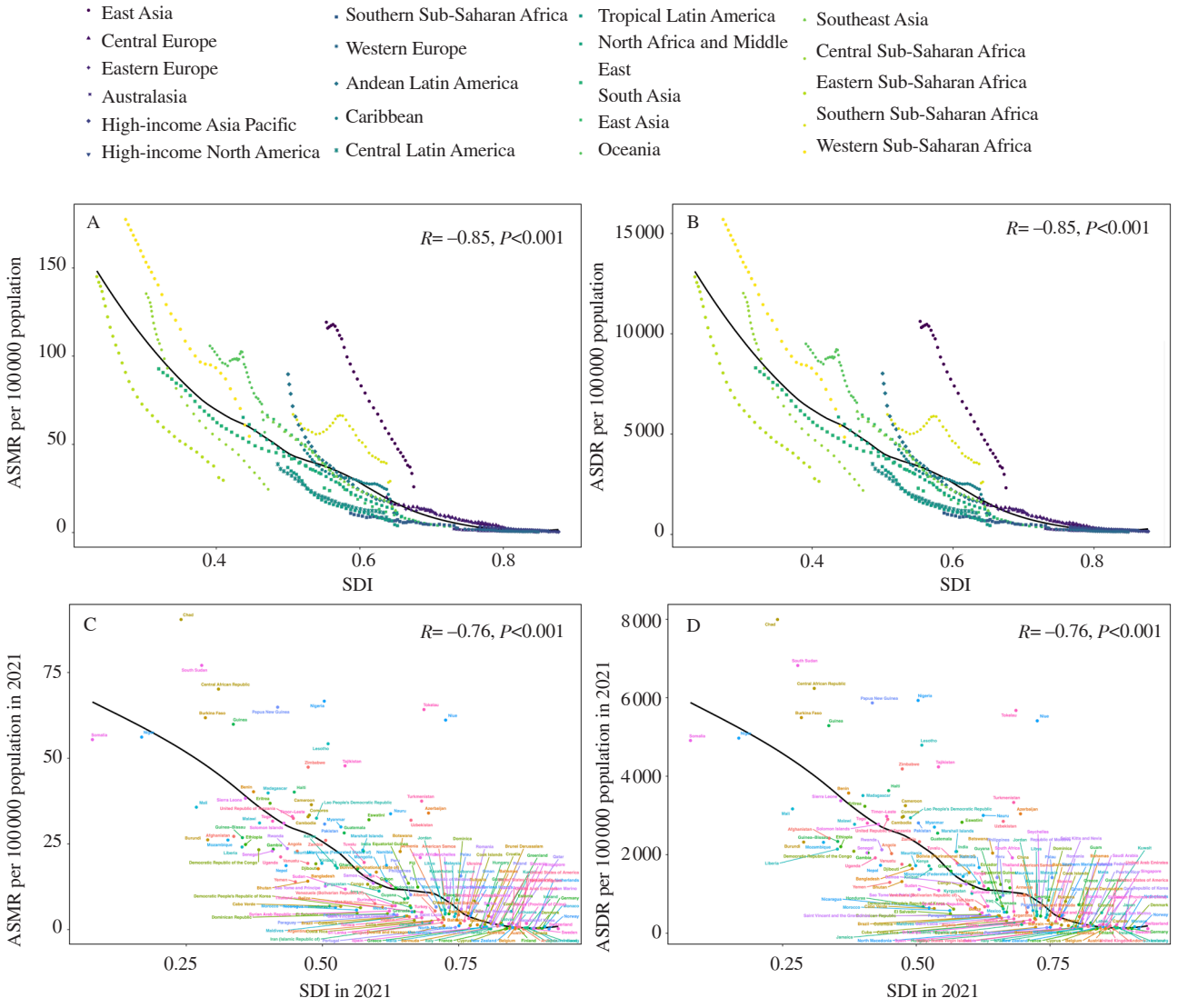

Figure 5. Correlations between ASMR, ASDR of ARIs and SDI at the regional and national levels. A. Correlations between ASMR and SDI at the regional level. B. Correlations between ASDR and SDI at the regional level. C. Correlations between ASMR and SDI at the national level. D. Correlations between ASDR and SDI at the national level. ASMR, age-standardized mortality rate; ASDR, age-standardized DALYs (disability-adjusted life years) rate; ARIs, acute respiratory infections; SDI, sociodemographic index.

3.4. Frontier analysis of ARIs

A frontier analysis was conducted based on ASDR of ARIs and SDI values to explore the possible improvements in ASDR that could be realized according to a nation's development status. The frontier line indicates the countries and territories with the lowest ASDR (optimal performers) relative to their corresponding SDI values. The gap between a country's observed and potentially achievable DALYs, represented by the distance from the frontier line, is termed as the effective difference. This gap could be reduced or eliminated by optimizing the use of the country's socio-demographic resources.

Globally, the effective difference for a given SDI tended to be smaller and less variable as SDI levels increased (Supplementary Table 6). The top 15 countries with the highest effective difference from the frontier included Tokelau, Niue, Nigeria, Papua New Guinea, Lesotho, Tajikistan, Central African Republic, South Sudan, Turkmenistan, Chad, Zimbabwe, Guinea, Azerbaijan, Burkina Faso, Nauru. These countries exhibited much higher DALYs rates compared to other countries with comparable socio-demographic resources. Besides, several countries with low SDI (<0.5) showed relatively small effective differences, including Burundi, Democratic Republic of the Congo, Liberia, Mali, Mozambique (Supplementary Table 6). Similar results were observed in the frontier analysis based on the ASMR of ARIs (Supplementary Figure 4).

4. Discussion

This study provides a comprehensive and detailed assessment of the global burden of ARIs among children and adolescents from 1990 to 2021. Our findings reveal a significant decline in both DALYs and mortality associated with ARIs at national and regional levels over the study period. However, a few countries, such as Lesotho and Dominica, showed a slight increase in ASDR and ASMR. A negative association was observed between the ARI burden and SDI, reflecting an unequal distribution of disease burden. The burden of ARIs disproportionately affects males, with higher numbers of age-specific deaths and DALYs observed in the 0-4 age group, particularly among infants under 1 year of age. Our decomposition analysis indicates that, in most regions, epidemiological changes have been the primary drivers behind the reduction in ARI burden, counteracting the increases caused by population growth.

Children and adolescents differ from adults in physiological, immunological, and environmental exposure factors, which can lead to a greater disease burden from respiratory infections. From a physiological perspective, the immune system of children, particularly in infants under 1 year, is not fully developed, which results in weaker immune responses and memory against respiratory viruses and bacterial infections[21,22]. This renders them more susceptible to severe infection outcomes and increases their ARI burden. Additionally, the respiratory tracts of children and adolescents are narrower and more reactive than those of adults, making them more prone to airway obstruction and wheezing, facilitating the progression of URIs to LRIs, thus further exacerbating the disease burden[23,24].

From an epidemiological standpoint, many children and adolescents reside in environments with high levels of air pollution, where the severity and burden of ARIs are significantly elevated[25]. In low-income regions, children and adolescents often face poor sanitation, limited healthcare resources, and insufficient access to appropriate ARI vaccinations (*e.g.*, pneumonia and influenza vaccines)[7,26]. Additionally, malnutrition in these regions impairs immune function, increasing susceptibility to respiratory pathogens, slowing recovery, and leading to recurrent infections. These factors collectively heighten the ARI burden in low-income areas[27].

Our study, to the best of our knowledge, provides a comprehensive report on global ARI-related deaths and DALYs among children and adolescents, offering comparisons across regions, countries, sexes, and age groups. Additionally, we conducted decomposition and frontier analysis to explore the factors affecting the disease burden and the lowest burden level that can be achieved in the future. Our findings align with previous studies, which also reported a declining trend in ARI burden and a higher burden in males[7,13]. Furthermore, the burden of ARIs was found to negatively correlate with SDI, remaining higher in many regions of sub-Saharan Africa[7,27].

Our decomposition analysis results showed that epidemiological changes contributed the most to the reduction in the ARI burden. This reduction could be partially attributed to the implementation of public health measures, such as the implementation of vaccination programs and stricter air quality regulations. Previous studies have demonstrated that vaccines for pneumonia, influenza and other respiratory viruses could significantly reduce ARIs burdens in children and adolescents[28-30]. If the combined impact of risk factors, such as air pollution, poor nutrition, and insufficient access to healthcare, were improved, substantial reductions in ARI-related morbidity and mortality could be achieved. These findings suggest that comprehensive public health interventions targeting multiple risk factors could lead to a more pronounced reduction in the global ARI burden among children and adolescents.

Based on these findings, we suggest that for countries or territories with low SDI, that are vulnerable in global efforts to reduce the ARI burden, such as Lesotho and Dominica,, urgent implementation of comprehensive epidemiological control policies are needed. Interestingly, frontier analysis revealed that some countries with lower SDI, such as Burundi, Democratic Republic of the Congo, Liberia, Mali, Mozambique, demonstrated exemplary performance despite limited resources. These countries can serve as valuable models for enhancing health outcomes in settings with constrained

resources, offering insights for additional control efforts in other low SDI regions grappling with the ARI burden.

There are several limitations that warrant acknowledgment. Firstly, our study constituted a secondary analysis of GBD 2021 data. Consequently, methodological limitations reported in the GBD 2021 database, such as the potential risk of ecological fallacy and disparities in data quality, were also applicable here. Secondly, the data for ARIs, particularly from low-income countries, might be incomplete or inconsistent due to variations in health reporting systems. This could impact the accuracy of the findings, especially in regions with limited health infrastructure.

In conclusion, from 1990 to 2021, there has been a global decline in the burden of ARIs. However, regions with lower SDI, such as parts of sub-Saharan Africa, continue to experience disproportionately high disease burdens. This trend is likely to persist, presenting ongoing challenges to both healthcare systems and economic sectors in these regions. Notably, some countries with lower SDI but strong disease control measures have shown promising results and offer valuable insights for regions facing a heavier ARI burden. To mitigate the global ARI burden, it is critical to implement comprehensive epidemiological strategies, which will be instrumental in achieving long-term public health goals.

Conflict of interest statement

The authors declare no conflicts of interest related to this study. All authors have contributed to the research and writing of this manuscript, and the results are presented in an impartial manner. No financial or personal relationships could influence the work presented in this manuscript.

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Authors' contributions

Y.Z. and D.Z. conceived and supervised the study and reviewed the manuscript critically for important intellectual content. X.M. and S.L. participated in the study design, collected the data, performed the data analysis, and drafted the manuscript. M.L., X.C. and H.X. organized the tables. The author(s) read and approved the final manuscript.

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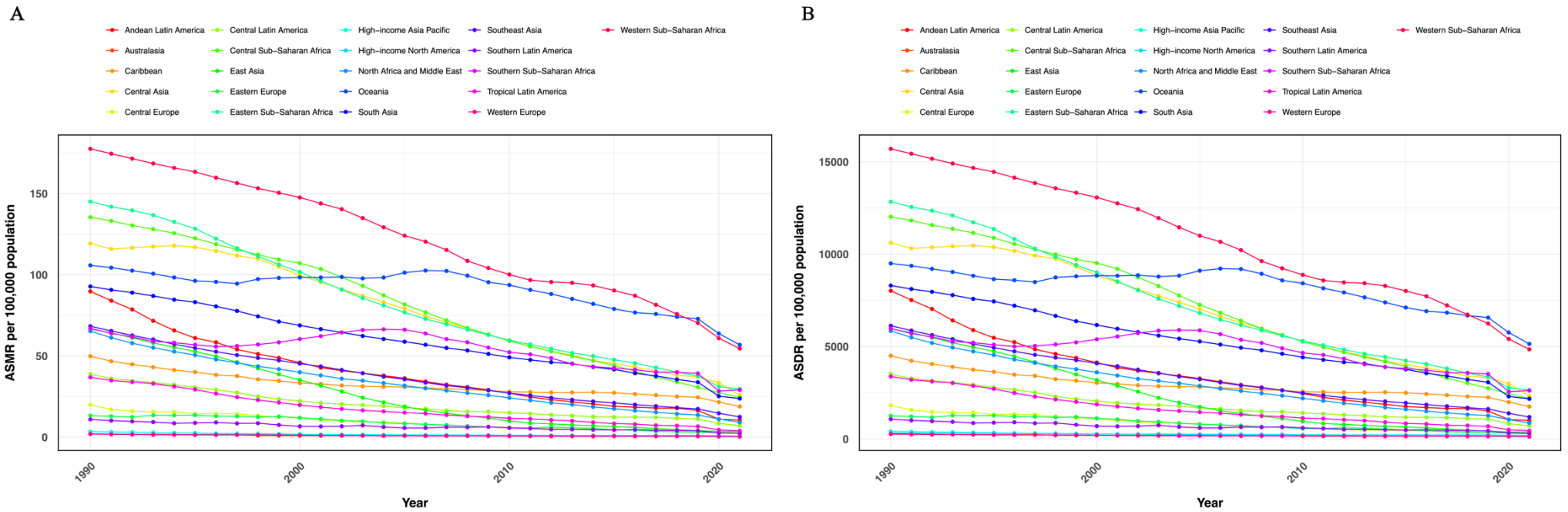
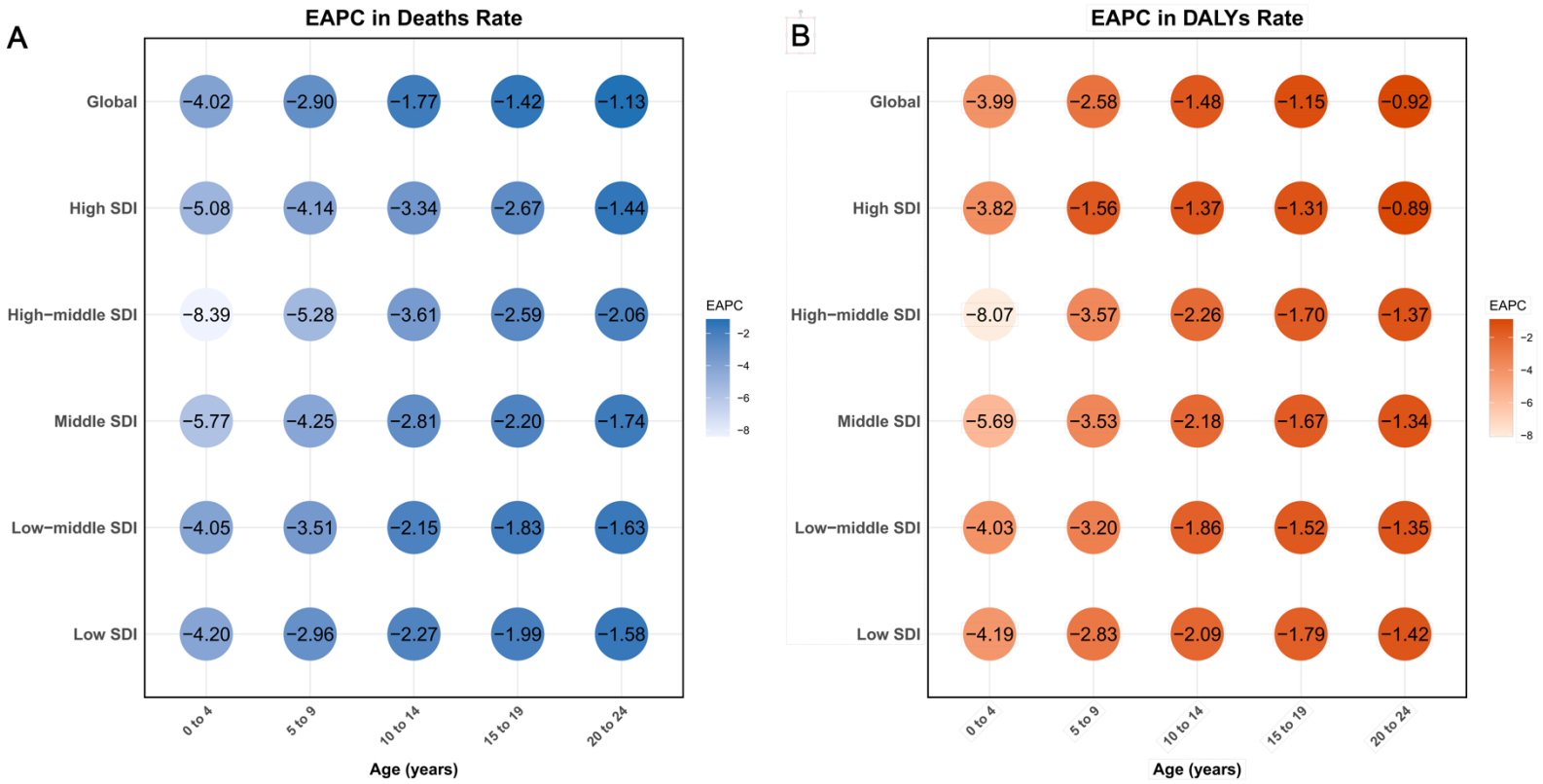
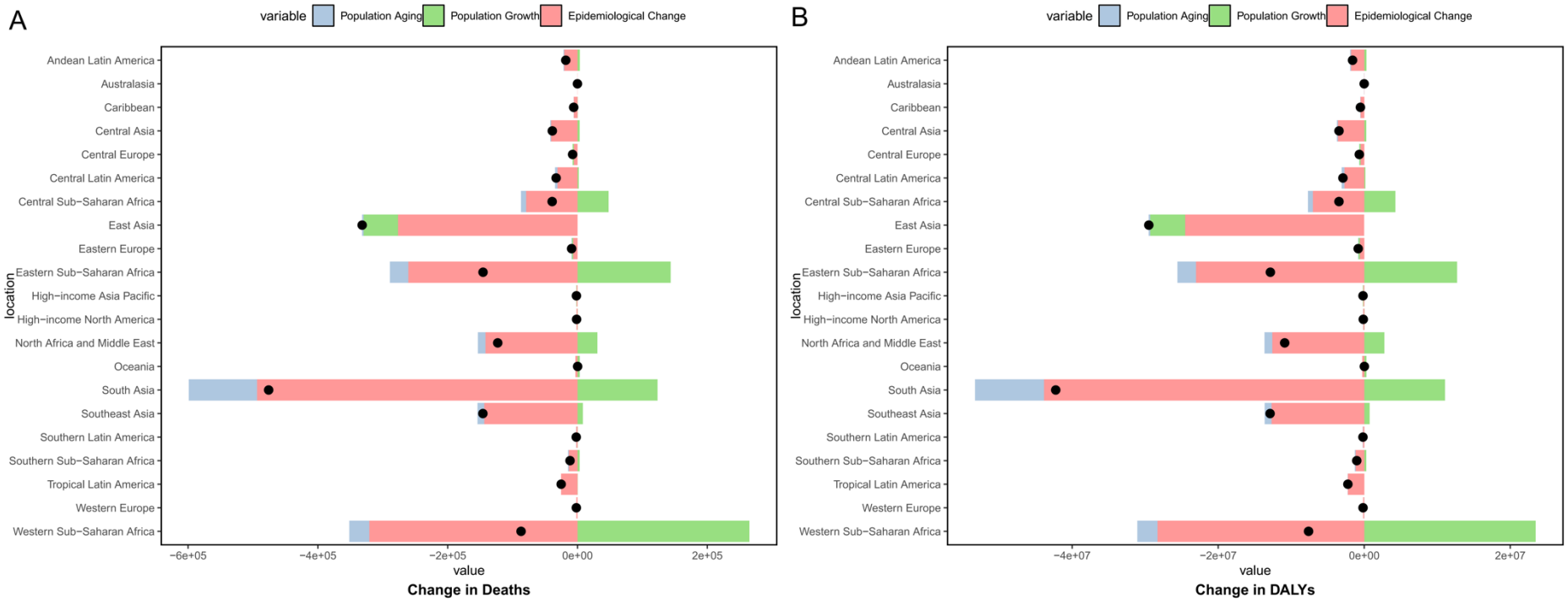


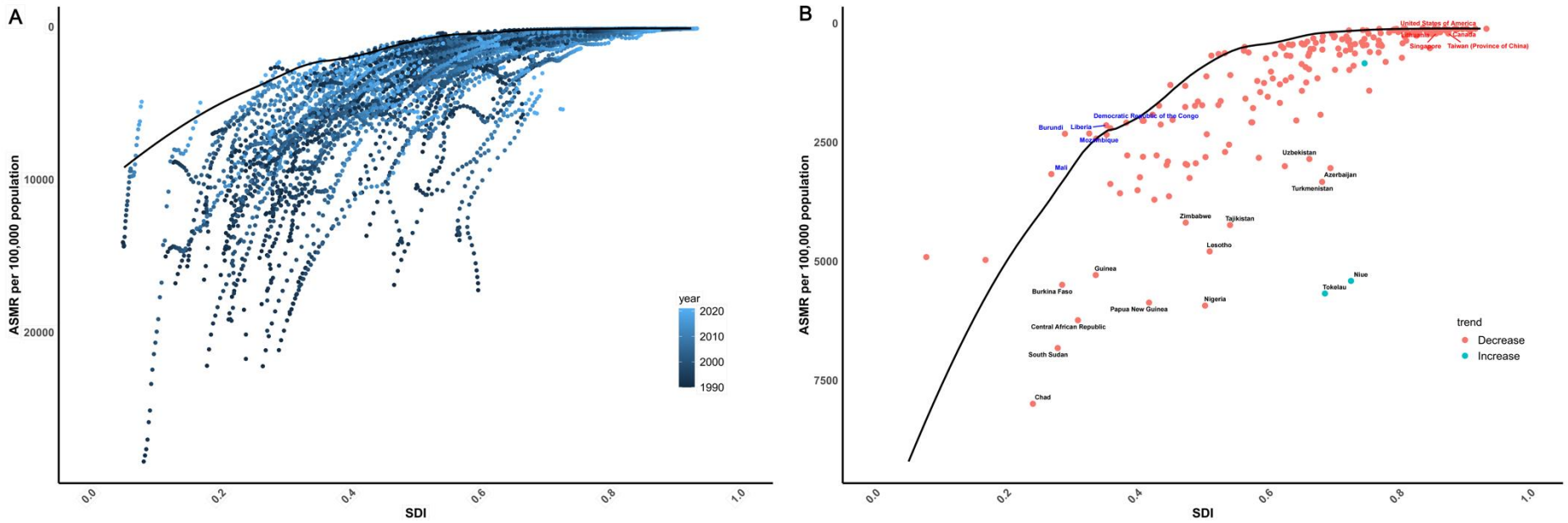
Supplementary Figure 1. Temporal trends of ASMR and ASDR of ARIs from 1990 to 2021 in different geographic super-regions. A. ASMR. B. ASDR. ASMR, age-standardized mortality rate; ASDR, age-standardized DALYs (disability-adjusted life years) rate; ARIs, acute respiratory infections.



Supplementary Figure 2. The EAPC in death rate (A) and DALYs rate (B) of ARIs over a 30-year period by age and SDI. EAPC, estimated annual percentage change; DALYs, disability-adjusted life-years; SDI, sociodemographic index. ASDR, age- standardized DALYs (disability-adjusted life years) rate, ARIs, acute respiratory infections.



Supplementary Figure 3. Changes in DALYs and mortality of ARIs according to population level determinants of ageing, population growth, and epidemiological change from 1990 to 2021 at the super‐regional level. A. DALYs. B. Mortality. The black dot represents the overall value of change contributed by all 3 components. DALYs, disability-adjusted life years; ARIs, acute respiratory infections; SDI, socio-demographic index.



Supplementary Figure 4. Frontier analysis based on SDI and mortality of ARIs in 204 countries and territories. A. Frontier analysis based on SDI and ASMR from 1990 to 2021. B. Frontier analysis based on SDI and ASMR in 2021. Dots represent countries and territories. The frontier is delineated in solid black color. Black fonts are used to label the top 15 countries with the largest effective difference. Examples of countries and territories with high SDI (> 0.85) and relatively high effective difference for their level of development are labeled in red (*e.g.* Canada), and blue fonts are used to label examples of frontier countries with low SDI (<0.5) and low effective difference (*e.g.* Mali). Red dots indicate a decrease in ASMR from 1990 to 2021; blue dots indicate an increase in ASMR from 1990 to 2021. ASMR, age-standardized mortality rate; ARIs, acute respiratory infections; SDI, socio-demographic index.

Supplementary Table 1. The global and regional burden of acute respiratory infections in 1990 and 2021and the temporal trends during 1990–2021.

Characteristics	1990				2021				EAPC of ASMR (95% CI)	EAPC of ASDR (95% CI)
	Deaths number (95% UI)	ASMR per 100,000 (95% UI)	DALYs (95% UI)	ASDR per 100,000 (95% UI)	Deaths number (95% UI)	ASMR per 100,000 (95% UI)	DALYs number (95%UI)	ASDR per 100,000 (95% UI)		
Global	2091170.57 (1807084.81 to 2397765.30)	75.70 (65.41 to 86.80)	187200673.45 (161538702.80 to 215052230.62)	6776.68 (5847.33 to 7785.08)	587086.09 (472903.64 to 718561.09)	19.72 (15.87 to 24.16)	53815075.52 (42984993.20 to 66224977.47)	1805.98 (1442.59 to 2222.01)	-3.87 (-4.09 to -3.64)	-3.81 (-4.03 to -3.60)
Sex										
Male	1083400.65 (922133.35 to 1260387.85)	76.13 (64.79 to 88.56)	97038086.11 (82472488.15 to 113044881.53)	6818.70 (5794.94 to 7943.70)	315363.97 (251931.27 to 390233.74)	20.53 (16.38 to 25.43)	28879173.87 (22895058.30 to 35947584.67)	1878.55 (1488.86 to 2338.47)	-3.81 (-4.01 to -3.61)	-3.76 (-3.96 to -3.57)
Female	1007769.92 (845799.84 to 1169821.59)	75.24 (63.15 to 87.34)	90162587.34 (75633457.38 to 104781475.96)	6732.13 (5647.02 to 7823.61)	271722.22 (215725.64 to	18.86 (14.97 to 23.10)	24935901.64 (19652493.46 to 30676749.45)	1728.47 (1363.45 to 2124.36)	-3.93 (-4.18 to -3.68)	-3.87 (-4.12 to -3.63)

					332908.62)				
Socio-demographic index									
Low SDI	633319.66 (502390.69 to 780424.28)	158.66 (125.84 to 195.48)	56199812.66 (44612036.99 to 69167705.39)	14061.83 (11158.71 to 17304.10)	294979.58 (222466.11 to 380162.24)	40.32 (30.43 to 51.94)	26328449.27 (19843407.35 to 33880859.88)	3596.62 (2711.61 to 4626.98)	-4.05 (-4.25 to -3.86)	-4.04 (-4.23 to -3.84)
Low-middle SDI	763858.32 (659714.59 to 877014.83)	99.32 (85.77 to 114.04)	68254667.81 (58882033.66 to 78398738.61)	8871.86 (7651.41 to 10193.48)	205826.29 (169356.33 to 244413.74)	23.80 (19.57 to 28.26)	18742084.18 (15303096.17 to 22427694.83)	2165.83 (1768.99 to 2590.32)	-3.94 (-4.20 to -3.69)	-3.90 (-4.15 to -3.65)
Middle SDI	554937.24 (492643.34 to 620225.37)	61.86 (54.92 to 69.14)	49809843.50 (44118774.90 to 55888793.46)	5552.71 (4919.37 to 6229.35)	74904.02 (64128.34 to 86768.65)	9.19 (7.85 to 10.66)	7200604.58 (5966589.59 to 8663294.22)	878.78 (729.20 to 1055.00)	-5.51 (-5.7 to -5.32)	-5.35 (-5.53 to -5.18)
High-middle SDI	126314.57 (110770.56 to 145724.11)	30.21 (26.49 to 34.86)	11496311.54 (10031184.46 to 13364155.14)	2747.55 (2399.13 to 3191.85)	8839.61 (7685.08 to 10269.54)	2.64 (2.29 to 3.07)	1031202.77 (811699.29 to 1325537.12)	302.43 (239.36 to 386.52)	-7.73 (-7.97 to -7.49)	-7.13 (-7.34 to -6.92)
High SDI	11483.31 (10592.91 to 12614.59)	3.99 (3.68 to 4.39)	1326961.77 (1101331.22 to 1631936.31)	455.47 (380.38 to 557.05)	2051.88 (1869.62 to 2221.25)	0.74 (0.67 to 0.80)	468175.42 (319658.38 to 670821.98)	167.24 (114.92 to 238.47)	-4.40 (-4.66 to -4.15)	-2.79 (-2.95 to -2.63)

GBD region										
Central Asia	50307.35 (46625.55 to 54278.42)	119.26 (110.53 to 128.66)	4482049.47 (4151146.41 to 4839292.09)	10619.38 (9834.38 to 11467.49)	11474.65 (9520.19 to 13904.21)	25.95 (21.54 to 31.43)	1028043.64 (850137.70 to 1251119.02)	2324.01 (1921.96 to 2828.03)	-4.57 (-4.91 to -4.23)	-4.56 (-4.89 to -4.22)
Oceania	4709.52 (3750.80 to 5938.08)	105.82 (84.24 to 133.50)	422902.14 (336206.09 to 534041.41)	9500.02 (7547.78 to 12005.70)	4866.29 (3765.00 to 6371.62)	56.86 (43.96 to 74.69)	439981.15 (338962.45 to 576927.04)	5142.46 (3957.27 to 6764.07)	-1.31 (-1.63 to -0.98)	-1.29 (-1.61 to -0.97)
Southeast Asia	178024.81 (151227.06 to 213797.04)	68.34 (58.06 to 82.08)	15958286.15 (13508471.90 to 19249034.67)	6125.85 (5186.20 to 7389.06)	32217.27 (26446.59 to 39418.84)	12.51 (10.25 to 15.33)	3063827.27 (2445063.25 to 3855356.52)	1187.03 (947.96 to 1492.24)	-4.88 (-5.06 to -4.69)	-4.74 (-4.9 to -4.57)
East Asia	345154.19 (289242.85 to 405307.10)	66.49 (55.74 to 78.08)	30931026.93 (25945383.78 to 36386204.58)	5959.59 (5001.67 to 7008.23)	13320.99 (10573.08 to 16571.27)	3.58 (2.84 to 4.46)	1426865.46 (1074458.12 to 1863132.60)	378.03 (285.70 to 491.39)	-9.79 (-10.12 to -9.46)	-9.33 (-9.64 to -9.03)
Central Europe	8284.20 (7825.61 to	19.90 (18.80 to 21.02)	754833.99 (703763.78 to	1811.14 (1691.94 to	726.74 (633.55 to	2.67 (2.32 to 3.03)	76942.52 (61819.72 to	281.97 (227.12 to	-5.62 (-5.85 to -5.38)	-5.28 (-5.49 to -5.07)

	8748.51)		812118.46)	1943.80)	819.16)		95280.48)	348.31)		
Eastern Europe	10312.72 (9868.71 to 10762.09)	13.30 (12.73 to 13.88)	972853.20 (907637.27 to 1050981.17)	1252.15 (1169.77 to 1350.32)	1202.69 (1094.25 to 1309.03)	2.43 (2.21 to 2.65)	143183.96 (115402.30 to 179307.36)	282.78 (230.42 to 350.25)	-5.33 (-5.83 to -4.84)	-4.81 (-5.21 to -4.41)
Australasia	146.31 (133.51 to 159.07)	2.06 (1.88 to 2.24)	20922.29 (16177.00 to 27154.55)	287.67 (224.50 to 370.26)	31.36 (26.55 to 36.70)	0.36 (0.30 to 0.42)	12509.52 (7698.18 to 19218.67)	138.04 (85.47 to 211.27)	-3.69 (-4.20 to -3.17)	-1.65 (-1.87 to -1.42)
High-income Asia Pacific	1846.26 (1596.31 to 2124.62)	3.50 (3.03 to 4.03)	223276.53 (173351.49 to 287845.58)	413.38 (325.80 to 526.34)	166.47 (152.19 to 182.78)	0.46 (0.42 to 0.50)	56387.54 (36144.47 to 84916.49)	151.85 (98.19 to 227.22)	-5.43 (-5.74 to -5.12)	-2.84 (-2.99 to -2.69)
Southern Latin America	2517.90 (2378.81 to 2669.40)	10.94 (10.34 to 11.60)	246288.06 (223233.56 to 275368.14)	1069.23 (969.69 to 1194.69)	559.46 (478.09 to 653.55)	2.45 (2.07 to 2.88)	70156.59 (52122.64 to 94023.72)	307.59 (228.67 to 411.83)	-3.65 (-4.05 to -3.25)	-3.16 (-3.46 to -2.87)
Western Europe	2201.13 (2127.69 to 2277.02)	1.96 (1.89 to 2.02)	300350.05 (243126.29 to 380563.69)	262.32 (214.98 to 328.94)	388.90 (358.00 to 418.52)	0.36 (0.33 to 0.39)	136306.48 (87116.10 to 207133.35)	124.33 (79.86 to 188.46)	-4.58 (-4.90 to -4.26)	-2.13 (-2.3 to -1.97)
High-income	2117.45 (2038.90 to	2.12 (2.05 to 2.21)	329702.82 (257039.78 to	328.98 (257.33 to 424.84)	702.67 (636.98 to	0.67 (0.60 to 0.74)	199010.14 (129602.28	185.99 (121.77 to	-2.65 (-2.94 to -2.36)	-1.59 (-1.68 to -1.49)

North America		2201.70)		426967.38)		774.58)		to 290110.91)	270.00)		
Caribbean		9189.73 (7571.85 to 11024.69)	49.90 (41.11 to 59.88)	829489.39 (680511.34 to 998526.89)	4505.20 (3695.44 to 5424.19)	3307.72 (2312.21 to 4404.92)	18.93 (13.23 to 25.21)	306706.43 (212969.21 to 410988.18)	1753.97 (1218.22 to 2348.77)	-2.26 (-2.47 to -2.05)	-2.21 (-2.41 to -2.00)
Andean Latin America		21062.08 (18115.00 to 24343.52)	89.76 (77.19 to 103.75)	1882604.34 (1615590.82 to 2182306.61)	8020.34 (6881.73 to 9298.75)	2962.48 (2263.45 to 3780.61)	10.55 (8.06 to 13.47)	280700.95 (209443.40 to 367063.84)	1000.20 (746.62 to 1307.01)	-5.91 (-6.17 to -5.65)	-5.78 (-6.02 to -5.54)
Central Latin America		39625.02 (36971.85 to 42760.82)	38.79 (36.20 to 41.85)	3584433.99 (3316394.51 to 3907608.45)	3508.95 (3245.84 to 3826.34)	6688.06 (5285.51 to 8438.63)	7.12 (5.59 to 9.03)	667160.87 (504990.30 to 877873.55)	706.39 (534.15 to 930.08)	-4.47 (-4.73 to -4.22)	-4.27 (-4.5 to -4.03)
Tropical Latin America		28376.44 (25482.18 to 31748.90)	36.91 (33.14 to 41.31)	2600634.39 (2305391.89 to 2957344.61)	3377.87 (2997.08 to 3837.53)	3186.16 (2576.84 to 3835.94)	3.92 (3.14 to 4.75)	359339.21 (265497.99 to 474785.76)	444.15 (326.60 to 588.29)	-6.16 (-6.48 to -5.83)	-5.70 (-5.96 to -5.45)
North	Africa	148264.83 (125980.23 to	65.30 (55.49 to 82.61)	13286171.96 (11256667.15 to	5850.98 (4955.89 to	25327.77 (20858.19 to	9.17 (7.56 to 11.14)	2391955.67 (1922977.31	865.31 (696.32 to	-5.41 (-5.68 to -5.15)	-5.31 (-5.55 to -5.06)

and Middle East	187618.53)		16854443.08)	7422.27)	30764.46)		to 2982761.70)	1077.91)		
South Asia	647425.40 (537545.65 to 752051.26)	92.81 (77.06 to 107.83)	57917957.02 (48042322.99 to 67306067.86)	8301.69 (6884.92 to 9650.94)	171514.94 (139185.25 to 210856.11)	23.80 (19.30 to 29.26)	15666146.89 (12621510.85 to 19384119.81)	2169.58 (1749.88 to 2681.33)	-3.72 (-4.0 to -3.44)	-3.68 (-3.95 to -3.40)
Eastern Sub-Saharan Africa	228855.35 (179014.75 to 291169.82)	145.05 (113.45 to 184.41)	20294311.75 (15888662.51 to 25790996.41)	12837.65 (10047.64 to 16303.58)	83288.81 (61236.30 to 110255.71) 吧	29.66 (21.83 to 39.23)	7438034.08 (5463456.52 to 9806991.64)	2645.34 (1944.72 to 3485.73)	-4.90 (-5.08 to -4.73)	-4.88 (-5.05 to -4.71)
Central Sub-Saharan Africa	61604.23 (44335.62 to 80787.48)	135.41 (97.37 to 177.92)	5478030.94 (3944695.92 to 7164156.95)	12023.40 (8651.35 to 15749.57)	22521.80 (15601.37 to 32595.07)	24.55 (16.99 to 35.55)	2018666.59 (1402541.19 to 2895177.00)	2194.63 (1523.23 to 3148.37)	-5.27 (-5.64 to -4.90)	-5.26 (-5.63 to -4.89)
Western Sub-Saharan Africa	279017.48 (218890.09 to 345920.57)	177.50 (139.06 to 220.17)	24707937.43 (19415871.97 to 30579691.62)	15700.25 (12321.02 to 19438.81)	192036.26 (135369.40 to 258319.57)	54.56 (38.45 to 73.38)	17081734.04 (12083350.04 to 22925296.06)	4849.40 (3429.10 to 6507.44)	-3.33 (-3.59 to -3.07)	-3.32 (-3.57 to -3.06)
Southern Sub-	22128.17	67.00 (57.62 to	1976610.61	5979.40	10594.59	29.13	951416.51	2618.08	-1.95 (-2.45 to -1.44)	-1.94 (-2.43 to -1.45)

Saharan Africa	(19031.59 to 25956.75)	78.59)	(1695781.93 to 2324298.35)	(5128.12 to 7032.25)	(8587.58 to 12787.92)	(23.61 to 35.16)	(764423.09 to 1158858.22)	(2103.94 to 3187.51)

ASMR Age-standardized mortality rate, DALYs Disability-adjusted life years, ASDR Age-standardized DALY rate, UI Uncertainty interval, CI Confidence interval, EAPC Estimated annual percentage change, SDI Socio-demographic Index.

Supplementary Table 2. The age-specific burden of acute respiratory infections globally and by SDI quintile in 2021, and temporal trends during 1990–2021.

	Age group (years)	EAPC in mortality (95%CI)	EAPC in DALYs (95%CI)
Global	0-4	-4.02 (-4.26 to -3.78)	-3.99 (-4.23 to -3.75)
	5-9	-2.9 (-3.09 to -2.71)	-2.58 (-2.74 to -2.43)
	10-14	-1.77 (-1.90 to -1.64)	-1.48 (-1.59 to -1.38)
	15-19	-1.42 (-1.51 to -1.33)	-1.15 (-1.22 to -1.08)
	20-24	-1.13 (-1.26 to -1.00)	-0.92 (-1.03 to -0.81)
Low SDI	0-4	-4.20 (-4.41 to -3.99)	-4.19 (-4.40 to -3.98)
	5-9	-2.96 (-3.12 to -2.81)	-2.83 (-2.97 to -2.69)
	10-14	-2.27 (-2.39 to -2.16)	-2.09 (-2.20 to -1.98)
	15-19	-1.99 (-2.10 to -1.88)	-1.79 (-1.89 to -1.70)
	20-24	-1.58 (-1.68 to -1.47)	-1.42 (-1.52 to -1.33)
Low-middle SDI	0-4	-4.05 (-4.32 to -3.78)	-4.03 (-4.29 to -3.76)
	5-9	-3.51 (-3.76 to -3.26)	-3.20 (-3.41 to -2.99)
	10-14	-2.15 (-2.31 to -1.98)	-1.86 (-1.99 to -1.72)
	15-19	-1.83 (-2.00 to -1.65)	-1.52 (-1.67 to -1.38)

	20-24	-1.63 (-1.83 to -1.42)	-1.35 (-1.51 to -1.18)
Middle SDI	0-4	-5.77 (-5.98 to -5.57)	-5.69 (-5.89 to -5.49)
	5-9	-4.25 (-4.41 to -4.08)	-3.53 (-3.66 to -3.41)
	10-14	-2.81 (-2.96 to -2.65)	-2.18 (-2.30 to -2.07)
	15-19	-2.20 (-2.34 to -2.05)	-1.67 (-1.78 to -1.56)
	20-24	-1.74 (-1.87 to -1.61)	-1.34 (-1.44 to -1.24)
High-middle SDI	0-4	-8.39 (-8.66 to -8.12)	-8.07 (-8.32 to -7.82)
	5-9	-5.28 (-5.53 to -5.03)	-3.57 (-3.73 to -3.40)
	10-14	-3.61 (-3.85 to -3.37)	-2.26 (-2.41 to -2.11)
	15-19	-2.59 (-2.83 to -2.35)	-1.70 (-1.87 to -1.53)
	20-24	-2.06 (-2.35 to -1.76)	-1.37 (-1.57 to -1.16)
High SDI	0-4	-5.08 (-5.37 to -4.78)	-3.82 (-4.03 to -3.60)
	5-9	-4.14 (-4.43 to -3.86)	-1.56 (-1.66 to -1.46)
	10-14	-3.34 (-3.54 to -3.14)	-1.37 (-1.44 to -1.31)
	15-19	-2.67 (-2.83 to -2.51)	-1.31 (-1.38 to -1.24)
	20-24	-1.44 (-1.65 to -1.22)	-0.89 (-0.96 to -0.81)

CI Confidence interval, EAPC Estimated annual percentage change, SDI Socio-demographic Index.

Supplementary Table 3. The national burden of acute respiratory infections in 2021 and the temporal trends during 1990–2021.

Country	2021				EAPC of ASMR (95% CI)	EAPC of ASDR (95% CI)
	Deaths number per 1000 (95% UI)	ASMR per 100000 (95% UI)	DALYs number per 1000 (95% UI)	ASDR per 100,000 (95% UI)		
India	116324.31 (89184.26 to 149123.87)	22.87 (17.50 to 29.33)	10607032.80 (8079845.57 to 13664775.85)	2080.82 (1585.42 to 2678.38)	-3.64 (-3.94 to -3.33)	-3.59 (-3.89 to -3.29)
Indonesia	9178.87 (7043.83 to 11890.01)	9.20 (7.06 to 11.91)	923854.92 (685107.37 to 1234648.58)	919.43 (683.67 to 1225.49)	-5.05 (-5.21 to -4.88)	-4.80 (-4.93 to -4.66)
China	12776.48 (10187.97 to 15867.51)	3.55 (2.83 to 4.41)	1372435.35 (1037196.15 to 1791426.48)	375.16 (284.66 to 487.38)	-9.95 (-10.29 to -9.6)	-9.48 (-9.80 to -9.15)
Pakistan	40809.41 (30228.42 to 53307.53)	30.79 (22.80 to 40.21)	3724616.84 (2754579.42 to 4878166.68)	2809.90 (2078.06 to 3680.27)	-2.12 (-2.50 to -1.73)	-2.10 (-2.47 to -1.72)
Philippines	7933.20 (6299.06 to 10031.29)	15.39 (12.21 to 19.47)	730714.10 (568333.64 to 943714.67)	1417.95 (1103.36 to 1830.53)	-3.86 (-4.16 to -3.57)	-3.77 (-4.06 to -3.48)
Bangladesh	11727.56 (8521.18 to 15657.88)	17.76 (12.92 to 23.69)	1088060.16 (784341.79 to 1461770.64)	1643.05 (1187.25 to 2202.83)	-6.08 (-6.47 to -5.70)	-6.00 (-6.37 to -5.62)
Viet Nam	2512.88 (1800.98 to	6.87 (4.93 to 9.08)	247014.14 (173337.14 to	673.17 (473.05 to 909.20)	-4.80 (-5.08 to -	-4.63 (-4.89 to -

	3323.63)		334155.92)		4.52)	4.36)
South Africa	4793.72 (3776.74 to 5907.71)	21.00 (16.52 to 25.90)	437790.28 (339504.85 to 549000.25)	1920.09 (1488.61 to 2407.16)	-3.06 (-3.74 to -2.38)	-3.00 (-3.66 to -2.34)
Democratic Republic of the Congo	13790.52 (8810.93 to 22083.60)	23.30 (14.86 to 37.34)	437790.28 (339504.85 to 549000.25)	1920.09 (1488.61 to 2407.16)	-5.12 (-5.52 to -4.72)	-5.11 (-5.51 to -4.71)
Russian Federation	889.07 (799.91 to 971.02)	2.43 (2.18 to 2.66)	105604.61 (84394.38 to 132611.43)	282.32 (227.53 to 351.35)	-5.69 (-6.32 to -5.06)	-5.17 (-5.68 to -4.65)
United Republic of Tanzania	12613.55 (8503.34 to 18531.25)	32.46 (21.88 to 47.71)	1128615.81 (763545.53 to 1645382.45)	2901.68 (1962.37 to 4230.62)	-5.05 (-5.24 to -4.85)	-5.03 (-5.23 to -4.84)
Myanmar	7060.57 (5104.76 to 9291.54)	29.95 (21.66 to 39.38)	636958.68 (458580.43 to 840993.76)	2702.84 (1947.27 to 3564.72)	-5.67 (-6.08 to -5.25)	-5.62 (-6.03 to -5.21)
Mozambique	5857.77 (3721.49 to 9104.13)	26.12 (16.57 to 40.58)	520962.05 (332935.60 to 802944.37)	2314.62 (1477.17 to 3565.14)	-4.70 (-4.93 to -4.46)	-4.72 (-4.95 to -4.48)
Nigeria	109518.57 (73402.22 to 152750.26)	66.64 (44.63 to 93.01)	9748423.05 (6561065.58 to 13558275.49)	5930.52 (3988.52 to 8252.53)	-3.20 (-3.46 to -2.94)	-3.18 (-3.44 to -2.92)

Zimbabwe	4610.96 (3486.51 to 5846.34)	47.39 (35.79 to 60.16)	408205.54 (309275.54 to 516462.23)	4186.70 (3168.51 to 5301.97)	-0.07 (-0.40 to 0.27)	-0.14 (-0.46 to 0.19)
Somalia	9831.89 (6087.51 to 15715.50)	55.42 (34.28 to 88.71)	874316.79 (544547.51 to 1388909.78)	4910.28 (3054.90 to 7803.50)	-2.89 (-3.22 to -2.56)	-2.89 (-3.21 to -2.56)
Kenya	5093.17 (3783.39 to 6959.25)	18.67 (13.87 to 25.50)	468632.06 (346762.19 to 637530.08)	1716.29 (1271.18 to 2334.20)	-3.67 (-4.10 to -3.24)	-3.63 (-4.04 to -3.21)
Cambodia	2582.92 (1923.45 to 3324.82)	32.91 (24.53 to 42.34)	231754.29 (172033.09 to 299362.81)	2954.57 (2194.67 to 3813.66)	-6.08 (-6.38 to -5.79)	-6.06 (-6.36 to -5.77)
Nepal	2614.55 (1873.61 to 3681.86)	18.66 (13.39 to 26.25)	242778.02 (173578.47 to 341831.89)	1729.41 (1239.05 to 2431.60)	-6.80 (-7.09 to -6.51)	-6.71 (-6.99 to -6.43)
Ukraine	216.97 (165.49 to 271.24)	2.56 (1.97 to 3.18)	25849.97 (18203.78 to 35292.22)	294.59 (211.79 to 394.74)	-3.83 (-4.31 to -3.35)	-3.34 (-3.76 to -2.92)
Angola	5529.87 (3679.84 to 8013.16)	22.85 (15.19 to 33.13)	492993.44 (328909.96 to 710618.44)	2028.67 (1351.95 to 2925.08)	-6.41 (-6.81 to -6.00)	-6.40 (-6.81 to -6.00)
Thailand	754.57 (576.13 to 968.04)	5.06 (3.90 to 6.43)	83060.39 (59254.29 to 113840.21)	552.28 (399.66 to 746.68)	-3.51 (-3.75 to -3.26)	-3.16 (-3.38 to -2.94)
Ethiopia	17490.27 (12186.48 to 24944.72)	24.82 (17.29 to 35.39)	1554996.78 (1084689.72 to 2205018.33)	2204.86 (1538.22 to 3125.80)	-6.53 (-6.76 to -6.30)	-6.50 (-6.72 to -6.27)

Uganda	6697.36 (4011.81 to 10649.18)	21.20 (12.73 to 33.66)	607426.26 (366932.76 to 952135.23)	1919.05 (1161.55 to 3002.85)	-4.06 (-4.39 to -3.74)	-4.02 (-4.34 to -3.70)
Madagascar	552.57 (319.83 to 985.64)	3.96 (2.28 to 6.98)	23044.01 (14366.54 to 39082.98)	134.20 (82.55 to 232.01)	-3.59 (-3.79 to -3.38)	-3.60 (-3.81 to -3.40)
Malawi	3802.43 (2424.47 to 5605.51)	31.11 (19.83 to 45.85)	339290.31 (217281.68 to 496260.36)	2774.85 (1776.61 to 4058.39)	-5.35 (-5.66 to -5.04)	-5.34 (-5.65 to -5.03)
Brazil	3060.02 (2479.44 to 3688.43)	3.91 (3.14 to 4.74)	345216.11 (255544.21 to 456137.78)	443.59 (326.82 to 587.63)	-6.22 (-6.54 to -5.89)	-5.76 (-6.02 to -5.50)
Democratic People's Republic of Korea	463.81 (280.52 to 697.56)	6.39 (3.84 to 9.62)	44496.86 (26909.64 to 66293.54)	613.11 (369.40 to 912.86)	-4.91 (-5.29 to -4.53)	-4.77 (-5.13 to -4.41)
Ghana	3614.73 (2246.59 to 5434.22)	17.79 (11.07 to 26.75)	321910.36 (201224.08 to 480444.40)	1582.01 (989.46 to 2360.60)	-3.30 (-3.62 to -2.98)	-3.31 (-3.62 to -2.99)
Zambia	3345.23 (2225.32 to 4834.56)	26.03 (17.29 to 37.64)	300008.90 (200363.68 to 429832.55)	2330.42 (1554.67 to 3340.45)	-5.52 (-5.90 to -5.13)	-5.51 (-5.89 to -5.13)
Burundi	2414.79 (1414.05 to	26.18 (15.41 to 42.20)	215062.38 (126656.57 to	2320.69 (1372.43 to	-4.62 (-4.99 to -	-4.60 (-4.97 to -

	3905.22)		344796.61)	3708.47)	4.26)	4.24)
Central African Republic	2588.63 (1593.71 to 3882.09)	70.16 (43.22 to 105.22)	230447.10 (142385.87 to 343225.66)	6238.20 (3856.62 to 9289.75)	-3.12 (-3.26 to -2.99)	-3.13 (-3.26 to -2.99)
Republic of Korea	33.95 (24.57 to 46.16)	0.33 (0.24 to 0.45)	13901.79 (8103.66 to 22081.49)	134.17 (78.92 to 211.90)	-7.93 (-8.31 to -7.54)	-4.25 (-4.68 to -3.82)
Rwanda	1838.65 (1239.63 to 2696.21)	23.65 (15.94 to 34.68)	165354.75 (112203.39 to 239516.69)	2126.07 (1442.39 to 3080.11)	-7.19 (-7.71 to -6.66)	-7.12 (-7.64 to -6.60)
Lesotho	507.27 (354.22 to 683.94)	54.21 (37.88 to 73.03)	44688.61 (31230.86 to 60019.02)	4791.47 (3350.76 to 6430.55)	0.07 (-0.28 to 0.41)	0.01 (-0.32 to 0.35)
Cameroon	7783.51 (5288.60 to 10939.43)	36.42 (24.68 to 51.30)	695314.47 (474598.73 to 971662.47)	3249.67 (2213.27 to 4548.81)	-2.91 (-3.33 to -2.49)	-2.90 (-3.31 to -2.48)
Japan	112.66 (104.29 to 121.58)	0.46 (0.42 to 0.50)	39317.19 (25186.86 to 59234.61)	154.72 (99.82 to 232.04)	-4.29 (-4.80 to -3.79)	-2.07 (-2.24 to -1.90)
Guinea	5884.69 (3861.62 to 8702.19)	59.90 (39.30 to 88.64)	520826.96 (342804.35 to 767396.12)	5288.48 (3479.99 to 7794.14)	-3.88 (-4.12 to -3.63)	-3.88 (-4.13 to -3.64)
Lao People's	1200.21 (844.03 to	32.50 (22.85 to 44.68)	108584.99 (76074.32 to	2941.22 (2060.34 to	-6.14 (-6.39 to -	-6.09 (-6.34 to -

Democratic Republic	1650.33)		149640.62)	4053.42)	5.89)	5.84)
Uzbekistan	5378.11 (4372.90 to 6579.17)	31.91 (25.96 to 39.02)	480624.34 (389973.41 to 588905.20)	2850.02 (2312.74 to 3491.81)	-3.63 (-4.10 to -3.16)	-3.62 (-4.09 to -3.15)
Chad	14307.86 (10300.23 to 19340.22)	90.46 (64.99 to 122.54)	1267192.54 (912852.54 to 1707724.87)	7993.26 (5747.42 to 10789.39)	-1.80 (-2.07 to -1.54)	-1.81 (-2.07 to -1.55)
Burkina Faso	11069.67 (7414.03 to 15696.69)	61.80 (41.38 to 87.76)	985366.13 (661706.27 to 1393330.12)	5493.28 (3687.30 to 7774.26)	-3.01 (-3.24 to -2.79)	-3.01 (-3.24 to -2.79)
Eritrea	1481.71 (924.88 to 2291.79)	36.85 (22.92 to 57.16)	130244.86 (82324.97 to 199106.91)	3233.85 (2037.58 to 4955.00)	-3.57 (-3.78 to -3.35)	-3.57 (-3.78 to -3.35)
Mali	7083.14 (4819.64 to 10525.92)	35.70 (24.22 to 53.23)	629818.40 (430647.55 to 931565.58)	3166.89 (2159.34 to 4694.10)	-2.97 (-3.55 to -2.40)	-2.97 (-3.54 to -2.39)
South Sudan	5301.19 (3522.99 to 9529.31)	77.08 (51.19 to 138.36)	469766.25 (313258.52 to 841410.42)	6821.77 (4546.78 to 12199.88)	-2.00 (-2.51 to -1.48)	-2.01 (-2.51 to -1.50)
Malaysia	471.93 (354.62 to 621.66)	3.80 (2.85 to 5.00)	48907.50 (34752.08 to 68044.14)	397.40 (283.01 to 552.51)	-3.02 (-3.64 to -2.40)	-2.73 (-3.29 to -2.16)
Senegal	2296.48 (1587.77 to	22.93 (15.85 to 34.40)	205357.80 (142406.91 to	2048.29 (1419.78 to	-4.44 (-4.84 to -	-4.42 (-4.82 to -

	3444.51)		305347.21)	3045.39)	4.05)	4.03)
Afghanistan	6459.36 (4699.13 to 8845.69)	27.20 (19.77 to 37.25)	576179.30 (417878.25 to 790163.54)	2419.95 (1753.07 to 3320.50)	-5.31 (-5.71 to -4.91)	-5.32 (-5.71 to -4.92)
Romania	293.20 (250.47 to 336.97)	6.52 (5.57 to 7.50)	27495.55 (22650.60 to 33015.75)	612.02 (505.924 to 732.22)	-5.75 (-6.15 to -5.34)	-5.65 (-6.04 to -5.26)
Mexico	2446.73 (1870.83 to 3165.63)	5.21 (3.94 to 6.80)	254725.37 (184292.89 to 347035.42)	537.32 (387.26 to 733.93)	-5.85 (-6.15 to -5.55)	-5.55 (-5.84 to -5.26)
Niger	12437.24 (8289.69 to 18352.12)	56.15 (37.35 to 83.07)	1103268.50 (738187.22 to 1619936.42)	4971.12 (3320.19 to 7310.76)	-5.71 (-6.08 to -5.34)	-5.71 (-6.08 to -5.33)
Morocco	845.32 (517.96 to 1232.79)	5.70 (3.49 to 8.29)	85762.53 (51877.43 to 126693.99)	575.56 (348.44 to 847.91)	-6.89 (-7.25 to -6.53)	-6.65 (-6.97 to -6.33)
Togo	1630.94 (1111.13 to 2318.30)	31.64 (21.54 to 45.00)	144830.31 (98996.69 to 204491.29)	2804.43 (1915.4 to 3961.09)	-3.44 (-3.76 to -3.11)	-3.43 (-3.75 to -3.11)
Sierra Leone	2243.86 (1452.60 to 3477.15)	38.29 (24.77 to 59.35)	198107.84 (128752.34 to 305744.03)	3374.92 (2192.10 to 5207.11)	-5.55 (-5.82 to -5.27)	-5.57 (-5.85 to -5.30)
Papua New Guinea	4370.88 (3345.29 to 5786.38)	64.89 (49.58 to 86.29)	394982.64 (301434.46 to 523049.46)	5867.51 (4469.64 to 7802.04)	-1.63 (-1.96 to -1.30)	-1.62 (-1.95 to -1.28)

Egypt	7241.60 (5499.28 to 9404.22)	12.57 (9.54 to 16.33)	667622.82 (501797.47 to 877191.24)	1158.62 (870.28 to 1523.05)	-5.94 (-6.27 to -5.61)	-5.87 (-6.19 to -5.55)
Kazakhstan	484.74 (392.66 to 595.57)	5.71 (4.64 to 7.00)	46431.45 (36723.05 to 58251.66)	548.22 (433.42 to 688.24)	-7.96 (-8.68 to -7.23)	-7.81 (-8.51 to -7.10)
Yemen	2913.55 (1999.10 to 3995.89)	13.93 (9.549 to 19.11)	270908.65 (184697.23 to 373587.55)	1295.23 (882.43 to 1786.95)	-5.78 (-5.93 to -5.64)	-5.70 (-5.84 to -5.56)
Congo	378.51 (243.89 to 546.96)	13.22 (8.51 to 19.10)	34730.27 (22465.71 to 49851.03)	1211.17 (783.36 to 1738.56)	-5.37 (-5.78 to -4.95)	-5.30 (-5.70 to -4.89)
Saudi Arabia	250.80 (167.20 to 351.98)	1.85 (1.23 to 2.60)	27833.56 (17515.03 to 41167.53)	212.70 (133.07 to 315.07)	-6.83 (-7.13 to -6.52)	-6.30 (-6.57 to -6.02)
Iraq	1253.30 (912.75 to 1713.22)	6.38 (4.652 to 8.71)	122745.25 (87225.09 to 171695.50)	621.45 (443.14 to 867.37)	-5.07 (-5.40 to -4.75)	-4.90 (-5.19 to -4.60)
Azerbaijan	1118.69 (878.58 to 1418.17)	33.99 (26.69 to 43.13)	100041.10 (78385.70 to 127160.94)	3041.81 (2383.95 to 3867.65)	-4.98 (-5.25 to -4.71)	-4.97 (-5.23 to -4.70)
Turkey	806.15 (579.51 to 1067.22)	2.88 (2.06 to 3.82)	95057.15 (63455.78 to 135570.81)	335.70 (224.72 to 476.95)	-9.10 (-9.43 to -8.77)	-8.52 (-8.84 to -8.19)
United States	663.88 (598.77 to 734.40)	0.70 (0.62 to 0.77)	181851.24 (118977.76 to 264433.60)	187.54 (123.33 to 271.57)	-2.59 (-2.88 to -2.30)	-1.61 (-1.71 to -1.52)

of America						
Sudan	2978.40 (1992.21 to 4314.24)	11.79 (7.89 to 17.08)	274934.66 (182699.95 to 400750.02)	1087.85 (723.28 to 1585.12)	-6.77 (-7.08 to -6.46)	-6.70 (-6.99 to -6.40)
Benin	4101.28 (2688.31 to 6327.25)	40.22 (26.33 to 62.09)	364715.65 (240254.30 to 559168.88)	3570.84 (2349.39 to 5475.62)	-3.59 (-3.81 to -3.37)	-3.58 (-3.80 to -3.36)
Taiwan (Province of China)	80.70 (68.06 to 93.98)	1.78 (1.50 to 2.08)	9933.26 (7456.28 to 13062.04)	214.65 (163.01 to 279.47)	-4.00 (-4.33 to -3.67)	-3.41 (-3.68 to -3.13)
Argentina	467.47 (395.14 to 552.41)	2.92 (2.45 to 3.48)	55168.74 (41272.18 to 73404.38)	346.41 (259.11 to 460.44)	-2.89 (-3.35 to -2.44)	-2.58 (-2.94 to -2.22)
Poland	145.73 (124.89 to 165.94)	1.54 (1.31 to 1.77)	17183.48 (12971.88 to 22511.20)	182.91 (137.62 to 240.15)	-2.68 (-3.11 to -2.25)	-2.33 (-2.69 to -1.97)
Botswana	243.73 (162.10 to 354.30)	22.78 (15.16 to 33.11)	21808.92 (14561.19 to 31628.46)	2040.83 (1363.58 to 2959.24)	-1.46 (-1.83 to -1.08)	-1.42 (-1.79 to -1.05)
France	58.75 (49.42 to 69.37)	0.33 (0.28 to 0.39)	22074.77 (13495.85 to 33916.06)	119.96 (74.01 to 183.49)	-4.26 (-4.68 to -3.85)	-1.82 (-2.02 to -1.62)
Kyrgyzstan	395.24 (327.23 to	11.24 (9.30 to 13.40)	35747.53 (29408.41 to	1016.07 (835.31 to	-7.46 (-7.86 to -	-7.43 (-7.82 to -

	471.12)		42929.22)	1221.13)	7.06)	7.03)
Sri Lanka	178.02 (119.87 to 252.39)	2.25 (1.52 to 3.20)	21372.27 (13635.93 to 31885.74)	270.16 (173.08 to 402.61)	-4.36 (-4.81 to -3.92)	-3.72 (-4.07 to -3.38)
Iran (Islamic Republic of)	576.01 (447.36 to 728.42)	1.88 (1.45 to 2.39)	67946.15 (47603.75 to 94768.20)	221.98 (154.61 to 310.22)	-6.47 (-7.33 to -5.61)	-6.01 (-6.74 to -5.28)
Bolivia (Plurinational State of)	901.84 (655.98 to 1186.84)	16.77 (12.21 to 22.05)	83034.18 (59992.54 to 109800.65)	1543.95 (1116.57 to 2039.37)	-6.17 (-6.44 to -5.91)	-6.10 (-6.36 to -5.84)
Belarus	30.86 (23.20 to 40.30)	1.39 (1.04 to 1.83)	4405.60 (2989.18 to 6333.14)	192.30 (131.42 to 274.73)	-6.71 (-7.13 to -6.29)	-5.68 (-6.03 to -5.33)
Dominican Republic	217.20 (139.54 to 311.25)	4.63 (2.97 to 6.63)	22239.42 (14059.92 to 32426.99)	474.11 (299.57 to 691.04)	-4.82 (-5.13 to -4.51)	-4.57 (-4.85 to -4.30)
Venezuela (Bolivarian Republic of)	750.62 (549.61 to 996.02)	7.58 (5.54 to 10.06)	735.90 (523.74 to 1003.01)	11.44 (7.15 to 16.57)	-1.16 (-1.71 to -0.60)	-1.10 (-1.62 to -0.58)
Tajikistan	2816.17 (1917.42 to 3914.78)	47.76 (32.53 to 66.37)	250135.20 (170398.19 to 347638.77)	4238.15 (2888.01 to 5888.56)	-3.73 (-3.94 to -3.51)	-3.71 (-3.92 to -3.50)

Turkmenistan	901.10 (718.49 to 1110.38)	37.48 (29.89 to 46.19)	80095.61 (63742.48 to 98825.65)	3331.64 (2651.45 to 4110.74)	-4.29 (-4.63 to -3.94)	-4.29 (-4.63 to -3.94)
Peru	1530.52 (1021.05 to 2163.21)	10.16 (6.77 to 14.37)	145227.95 (95289.58 to 208280.62)	965.33 (632.91 to 1384.76)	-6.21 (-6.53 to -5.89)	-6.07 (-6.38 to -5.76)
Mongolia	242.44 (171.36 to 329.76)	14.18 (10.04 to 19.27)	21918.14 (15452.97 to 29925.57)	1281.25 (903.99 to 1749.05)	-7.97 (-8.23 to -7.72)	-7.94 (-8.19 to -7.69)
Namibia	236.49 (150.49 to 351.31)	18.74 (11.93 to 27.81)	21082.56 (13505.80 to 31068.21)	1671.94 (1071.93 to 2461.75)	-2.16 (-2.52 to -1.80)	-2.13 (-2.49 to -1.78)
Colombia	658.88 (485.28 to 888.23)	3.93 (2.86 to 5.36)	74552.79 (51164.25 to 106028.68)	441.63 (302.23 to 630.12)	-4.68 (-5.04 to -4.31)	-4.25 (-4.56 to -3.93)
Gambia	365.32 (252.90 to 535.76)	23.44 (16.20 to 34.39)	31997.87 (22274.48 to 46564.68)	2047.76 (1423.28 to 2980.51)	-4.65 (-4.90 to -4.41)	-4.69 (-4.93 to -4.45)
Germany	50.37 (43.49 to 58.07)	0.25 (0.21 to 0.29)	22441.11 (13621.38 to 35055.34)	112.62 (68.38 to 175.86)	-4.34 (-4.72 to -3.95)	-1.69 (-1.89 to -1.49)
Algeria	764.20 (529.59 to 1073.57)	3.73 (2.59 to 5.26)	78928.02 (52963.69 to 113829.04)	385.97 (258.64 to 557.93)	-5.12 (-5.46 to -4.78)	-4.84 (-5.13 to -4.54)
Djibouti	124.26 (79.19 to 189.73)	19.20 (12.23 to 29.32)	11210.20 (7182.36 to 16951.17)	1731.98 (1109.46 to 2619.30)	-4.23 (-4.79 to -3.68)	-4.20 (-4.74 to -3.66)

Liberia	813.87 (481.19 to 1296.80)	24.09 (14.25 to 38.37)	72479.96 (43144.10 to 114399.86)	2142.29 (1275.52 to 3379.82)	-6.85 (-7.42 to -6.28)	-6.84 (-7.41 to -6.27)
Honduras	338.73 (219.84 to 483.10)	6.80 (4.42 to 9.69)	33925.80 (21998.64 to 48434.44)	678.52 (441.12 to 966.75)	-5.39 (-5.60 to -5.17)	-5.14 (-5.32 to -4.95)
United Kingdom	104.75 (92.31 to 114.88)	0.57 (0.50 to 0.63)	27194.69 (17795.37 to 39957.86)	146.00 (95.82 to 213.83)	-4.15 (-4.69 to -3.61)	-2.31 (-2.61 to -2.01)
Republic of Moldova	47.35 (36.44 to 61.22)	6.45 (4.93 to 8.39)	4698.57 (3479.85 to 6303.06)	632.96 (469.18 to 848.91)	-4.46 (-4.98 to -3.93)	-4.31 (-4.81 to -3.80)
Ecuador	530.13 (385.78 to 708.54)	6.91 (5.01 to 9.26)	52438.82 (36884.06 to 72427.27)	682.19 (479.28 to 942.84)	-4.48 (-5.12 to -3.84)	-4.31 (-4.90 to -3.71)
Italy	33.06 (28.36 to 37.55)	0.28 (0.23 to 0.32)	15148.14 (9170.47 to 23585.26)	122.82 (74.69 to 190.69)	-5.49 (-6.04 to -4.93)	-2.31 (-2.61 to -2.02)
Chile	71.14 (61.67 to 81.96)	1.21 (1.05 to 1.40)	12122.44 (8480.85 to 17079.18)	206.83 (145.65 to 290.13)	-6.66 (-7.10 to -6.21)	-5.23 (-5.62 to -4.84)
Georgia	50.48 (39.76 to 64.17)	4.60 (3.63 to 5.86)	4786.96 (3676.93 to 6230.51)	435.78 (335.03 to 566.98)	-8.55 (-9.15 to -7.95)	-8.41 (-8.99 to -7.81)
Haiti	2796.55 (1897.03to	40.12 (27.20 to 54.41)	253282.19 (172012.44 to	3633.53 (2466.57 to	-3.35 (-3.57 to -	-3.32 (-3.54 to -

	3792.13)		342912.90)	4921.20)	3.13)	3.10)
Spain	30.23 (26.02 to 34.79)	0.30 (0.26 to 0.34)	12008.93 (7312.14 to 18464.37)	117.14 (71.87 to 179.36)	-5.02 (-5.32 to -4.73)	-2.12 (-2.28 to -1.96)
Timor-Leste	271.98 (201.85 to 351.02)	33.01 (24.50 to 42.59)	24531.76 (18115.36 to 31784.43)	2977.50 (2198.73 to 3857.70)	-5.79 (-6.16 to -5.42)	-5.74 (-6.11 to -5.38)
Paraguay	126.14 (80.09 to 181.72)	4.12 (2.60 to 5.94)	14123.10 (8675.72 to 21015.06)	458.26 (281.07 to 681.79)	-4.15 (-4.58 to -3.72)	-3.81 (-4.16 to -3.45)
Gabon	116.83 (67.49 to 181.10)	12.10 (6.99 to 18.74)	10952.14 (6415.19 to 16867.27)	1133.14 (664.04 to 1744.32)	-4.25 (-4.61 to -3.89)	-4.15 (-4.49 to -3.80)
Eswatini	202.42 (139.06 to 279.45)	32.04 (22.03 to 44.22)	17840.59 (12332.33 to 24524.49)	2826.19 (1955.07 to 3883.52)	-1.47 (-2.17 to -0.78)	-1.49 (-2.19 to -0.80)
Guinea-Bissau	379.53 (243.19 to 588.94)	26.83 (17.23 to 41.59)	33259.98 (21415.87 to 51184.52)	2337.81 (1507.51 to 3593.58)	-5.19 (-5.59 to -4.79)	-5.22 (-5.61 to -4.82)
Lithuania	8.81 (7.22 to 10.81)	1.38 (1.13 to 1.70)	1229.87 (875.20 to 1715.59)	190.36 (136.574 to 264.28)	-4.04 (-4.77 to -3.31)	-3.33 (-3.88 to -2.78)
Mauritania	557.72 (409.35 to 753.22)	19.33 (14.16 to 26.14)	49741.02 (36598.28 to 66735.96)	1720.76 (1264.20 to 2311.10)	-4.13 (-4.57 to -3.69)	-4.11 (-4.55 to -3.67)

Bosnia and Herzegovina	8.47 (6.02 to 11.50)	1.09 (0.78 to 1.49)	1168.92 (758.94 to 1721.29)	148.06 (96.95 to 216.91)	-3.83 (-4.36 to -3.29)	-3.13 (-3.58 to -2.69)
Bulgaria	69.24 (56.64 to 81.33)	4.75 (3.87 to 5.58)	6666.81 (5214.72 to 8249.74)	456.48 (357.76 to 563.33)	-5.13 (-5.62 to -4.64)	-4.97 (-5.44 to -4.50)
Guatemala	2016.51 (1582.11 to 2562.37)	28.21 (22.09 to 35.91)	182096.79 (141548.44 to 233729.73)	2549.04 (1980.62 to 3273.58)	-3.11 (-3.43 to -2.79)	-3.02 (-3.34 to -2.70)
Serbia	16.45 (11.54 to 22.31)	0.84 (0.59 to 1.14)	2658.37 (1672.24 to 3987.24)	127.14 (81.39 to 188.32)	-7.75 (-8.34 to -7.16)	-6.48 (-7.01 to -5.96)
Portugal	14.61 (12.24 to 17.21)	0.62 (0.52 to 0.74)	3294.90 (2130.74 to 4897.89)	142.49 (92.17 to 211.94)	-6.39 (-7.03 to -5.75)	-4.17 (-4.65 to -3.69)
Comoros	122.48 (85.93 to 170.69)	33.41 (23.46 to 46.52)	10896.48 (7677.11 to 15100.54)	2974.55 (2097.54 to 4119.39)	-4.47 (-4.63 to -4.30)	-4.46 (-4.62 to -4.30)
Greece	13.55 (10.92 to 16.48)	0.64 (0.51 to 0.78)	3237.61 (2144.72 to 4804.59)	146.71 (98.31 to 216.21)	-2.80 (-3.16 to -2.44)	-1.55 (-1.73 to -1.36)
Tunisia	141.36 (85.15 to 215.51)	3.45 (2.08 to 5.25)	15032.47 (8907.80 to 23245.68)	364.49 (216.04 to 562.56)	-6.42 (-6.66 to -6.18)	-6.07 (-6.29 to -5.84)
Armenia	87.69 (68.71 to 112.14)	10.40 (8.14 to 13.32)	8263.30 (6378.68 to	976.29 (754.34 to 1267.34)	-4.91 (-5.15 to -	-4.80 (-5.04 to -

			10736.83)		4.66)	4.56)
United Arab Emirates	37.12 (26.31 to 51.11)	1.88 (1.34 to 2.59)	4430.62 (2941.74 to 6422.21)	222.45 (148.26 to 321.33)	-3.79 (-4.38 to -3.19)	-3.37 (-3.88 to -2.87)
Canada	38.53 (32.37 to 45.54)	0.39 (0.32 to 0.46)	17107.46 (10305.59 to 26235.00)	170.83 (103.38 to 261.36)	-3.36 (-3.74 to -2.97)	-1.25 (-1.40 to -1.10)
Kiribati	11.42 (7.77 to 15.66)	17.95 (12.22 to 24.62)	1040.08 (700.91 to 1440.65)	1632.67 (1100.70 to 2261.10)	-3.46 (-3.62 to -3.30)	-3.41 (-3.56 to -3.25)
Equatorial Guinea	117.43 (64.64 to 208.38)	13.52 (7.47 to 23.89)	10778.83 (6033.63 to 18858.18)	1242.33 (697.53 to 2164.81)	-8.35 (-8.74 to -7.95)	-8.23 (-8.63 to -7.84)
Netherlands	19.62 (16.73 to 22.66)	0.45 (0.38 to 0.52)	5758.10 (3647.06 to 8662.61)	129.71 (82.64 to 194.27)	-4.01 (-4.32 to -3.70)	-1.96 (-2.11 to -1.81)
Panama	111.76 (85.96 to 140.26)	6.59 (5.06 to 8.28)	11257.18 (8377.04 to 14639.75)	659.45 (491.73 to 855.46)	-1.68 (-2.17 to -1.18)	-1.55 (-2.01 to -1.10)
Libya	105.70 (72.45 to 152.57)	4.84 (3.31 to 6.97)	10475.32 (6955.58 to 15447.49)	476.70 (317.74 to 699.84)	-1.79 (-2.39 to -1.20)	-1.73 (-2.28 to -1.17)
Latvia	5.93 (4.93 to 7.04)	1.37 (1.14 to 1.63)	840.19 (605.32 to 1156.13)	189.42 (137.48 to 258.88)	-4.99 (-5.77 to -4.22)	-4.25 (-4.87 to -3.63)

Belgium	15.36 (12.56 to 18.48)	0.52 (0.42 to 0.62)	4083.71 (2569.61 to 6222.87)	135.04 (85.38 to 205.27)	-4.16 (-4.44 to -3.87)	-2.19 (-2.36 to -2.02)
Syrian Arab Republic	306.58 (205.64 to 429.32)	5.41 (3.61 to 7.57)	29159.68 (19106.70 to 41611.32)	518.03 (339.39 to 736.59)	-2.52 (-3.52 to -1.51)	-2.45 (-3.41 to -1.48)
Nicaragua	191.24 (133.77 to 261.29)	6.49 (4.54 to 8.88)	19063.27 (13013.51 to 26700.23)	643.79 (439.98 to 900.78)	-5.09 (-5.50 to -4.67)	-4.89 (-5.27 to -4.51)
Croatia	13.52 (10.49 to 16.69)	1.49 (1.15 to 1.86)	1700.71 (1182.29 to 2336.73)	183.06 (127.59 to 250.54)	-3.35 (-3.82 to -2.87)	-2.81 (-3.21 to -2.41)
Czechia	49.58 (40.98 to 58.16)	1.91 (1.57 to 2.24)	5572.55 (4190.51 to 7248.93)	213.64 (160.81 to 277.57)	-3.71 (-4.19 to -3.23)	-3.29 (-3.71 to -2.87)
Hungary	21.37 (16.74 to 26.80)	0.96 (0.75to 1.21)	3061.64 (2105.22 to 4358.12)	136.13 (93.82 to 193.49)	-4.60 (-5.06 to -4.14)	-3.72 (-4.11 to -3.33)
Lebanon	88.66 (61.33 to 125.81)	4.68 (3.23 to 6.66)	8862.86 (5933.73 to 12897.03)	466.24 (312.34 to 679.08)	-5.24 (-5.49 to -5.00)	-4.99 (-5.21 to -4.78)
Sweden	5.43 (4.43 to 6.62)	0.19 (0.16 to 0.24)	3308.16 (1942.70 to 5257.12)	115.34 (67.96 to 183.08)	-4.92 (-5.41 to -4.43)	-1.63 (-1.87 to -1.40)
North	5.65 (3.69 to 7.86)	1.12 (0.73 to 1.55)	790.56 (489.63 to 1168.69)	150.98 (94.03 to 221.55)	-7.74 (-8.41 to -	-6.91 (-7.56 to -

Macedonia					7.07)	6.26)
Uruguay	20.82 (17.06 to 25.22)	2.02 (1.64 to 2.47)	2861.53 (2027.34 to 3984.32)	275.20 (195.31 to 381.94)	-4.14 (-4.56 to -3.72)	-3.40 (-3.71 to -3.10)
Austria	4.25 (3.59 to 5.00)	0.20 (0.16 to 0.23)	2362.73 (1415.28 to 3749.21)	108.82 (65.35 to 172.71)	-4.71 (-5.07 to -4.34)	-1.58 (-1.75 to -1.41)
Cuba	72.94 (59.37 to 87.31)	2.70 (2.19 to 3.24)	8620.72 (6359.81 to 11431.87)	315.10 (233.89 to 415.03)	-2.15 (-2.58 to -1.71)	-1.81 (-2.17 to -1.45)
Solomon Islands	128.80 (95.02 to 169.71)	31.05 (22.86 to 41.00)	11543.36 (8469.78 to 15285.29)	2775.07 (2032.48 to 3682.62)	-2.84 (-3.00 to -2.69)	-2.83 (-2.99 to -2.68)
Australia	23.14 (18.97 to 27.84)	0.32 (0.26 to 0.38)	9976.18 (6019.76 to 15464.08)	132.73 (80.44 to 205.15)	-3.43 (-3.92 to -2.93)	-1.43 (-1.61 to -1.25)
Bhutan	39.11 (25.31 to 55.66)	14.13 (9.17 to 20.05)	3659.07 (2369.94 to 5197.20)	1315.33 (855.06 to 1862.32)	-6.06 (-6.35 to -5.77)	-5.95 (-6.23 to -5.68)
Guyana	30.39 (22.40 to 40.73)	8.95 (6.59 to 12.00)	2899.26 (2087.62 to 3964.03)	855.07 (616.23 to 1169.19)	-1.56 (-2.00 to -1.12)	-1.51 (-1.92 to -1.10)
El Salvador	136.50 (90.97 to 194.00)	4.86 (3.24 to 6.91)	13930.22 (9015.19 to 20309.63)	495.76 (320.93 to 722.14)	-5.55 (-5.91 to -5.19)	-5.29 (-5.61 to -4.98)

Estonia	3.70 (3.12 to 4.37)	1.15 (0.96 to 1.35)	555.15 (396.55 to 767.15)	168.80 (121.28 to 232.18)	-5.86 (-6.62 to -5.11)	-4.87 (-5.43 to -4.31)
Jordan	236.58 (181.46 to 312.09)	4.51 (3.47 to 5.94)	23421.23 (17313.72 to 31917.45)	443.26 (330.07 to 601.30)	-4.61 (-4.80 to -4.42)	-4.40 (-4.56 to -4.24)
Singapore	17.34 (14.55 to 20.28)	1.34 (1.13 to 1.57)	2785.25 (1941.46 to 3909.90)	215.25 (150.19 to 301.77)	-5.17 (-5.52 to -4.82)	-3.83 (-4.09 to -3.56)
Switzerland	5.68 (4.70 to 6.71)	0.27 (0.22 to 0.31)	2477.85 (1497.86 to 3889.54)	114.54 (69.49 to 179.56)	-5.38 (-5.72 to -5.04)	-2.25 (-2.45 to -2.05)
Denmark	5.79 (4.78 to 6.92)	0.37 (0.30 to 0.44)	1935.98 (1196.58 to 2951.32)	123.11 (76.28 to 187.83)	-4.87 (-5.23 to -4.50)	-2.30 (-2.50 to -2.09)
Slovakia	47.89 (35.98 to 60.55)	3.62 (2.72 to 4.57)	4836.49 (3493.42 to 6378.45)	364.84 (264.43 to 479.45)	-3.58 (-3.89 to -3.27)	-3.37 (-3.65 to -3.09)
Fiji	50.99 (35.36 to 70.17)	12.38 (8.58 to 17.04)	4760.14 (3248.06 to 6664.12)	1154.87 (788.32 to 1616.25)	-1.44 (-1.97 to -0.91)	-1.36 (-1.88 to -0.85)
Finland	5.67 (4.80 to 6.65)	0.41 (0.35 to 0.49)	1703.27 (1067.66 to 2605.88)	125.50 (79.07 to 191.80)	-3.96 (-4.23 to -3.70)	-1.77 (-1.88 to -1.66)
Costa Rica	37.09 (30.48 to 44.65)	2.46 (2.01 to 2.97)	4543.48 (3342.42 to 6116.32)	295.08 (218.50 to 394.76)	-3.58 (-4.10 to -3.06)	-3.06 (-3.50 to -2.62)

Vanuatu	35.53 (25.21 to 47.49)	19.32 (13.71 to 25.84)	3237.32 (2276.01 to 4373.06)	1756.97 (1234.40 to 2375.48)	-2.06 (-2.59 to -1.54)	-2.03 (-2.55 to -1.51)
Ireland	7.29 (6.11 to 8.60)	0.49 (0.41 to 0.58)	2034.35 (1290.66 to 3098.99)	133.10 (85.14 to 202.03)	-4.80 (-5.36 to -4.23)	-2.77 (-3.08 to -2.46)
Kuwait	66.61 (53.91 to 80.57)	5.30 (4.29 to 6.42)	6581.10 (5093.04 to 8350.79)	522.25 (405.21 to 660.40)	-0.49 (-1.24 to 0.27)	-0.46 (-1.13 to 0.23)
Israel	8.91 (7.09 to 10.87)	0.22 (0.17 to 0.27)	4497.24 (2652.82 to 7144.80)	110.31 (65.08 to 175.21)	-5.24 (-5.67 to -4.80)	-2.30 (-2.47 to -2.13)
Trinidad and Tobago	12.61 (9.20 to 16.96)	3.24 (2.36 to 4.37)	1430.03 (981.92 to 2026.78)	361.43 (249.08 to 511.10)	-2.85 (-3.35 to -2.35)	-2.52 (-2.95 to -2.08)
Cabo Verde	14.80 (9.63 to 21.22)	6.76 (4.36 to 9.74)	1365.65 (886.10 to 1957.54)	626.53 (404.06 to 901.48)	-5.51 (-6.08 to -4.93)	-5.40 (-5.95 to -4.83)
Norway	2.73 (2.41 to 3.07)	0.19 (0.16 to 0.21)	1709.70 (1015.92 to 2694.27)	114.62 (68.38 to 180.17)	-5.73 (-6.21 to -5.26)	-1.93 (-2.17 to -1.68)
Brunei Darussalam	2.51 (1.85 to 3.39)	1.67 (1.22 to 2.25)	383.31 (251.77 to 563.46)	249.00 (164.74 to 364.97)	-2.31 (-2.66 to -1.97)	-1.61 (-1.85 to -1.38)
Mauritius	18.30 (14.99 to 21.33)	5.71 (4.66 to 6.66)	1852.45 (1435.95 to 2306.14)	576.23 (447.98 to 712.47)	-1.15 (-1.60 to -	-1.04 (-1.44 to -

					0.71)	0.65)
Palestine	124.61 (90.75 to 171.00)	4.44 (3.23 to 6.10)	12506.95 (8780.09 to 17732.19)	444.65 (312.32 to 630.59)	-4.55 (-4.82 to -4.28)	-4.34 (-4.57 to -4.11)
Albania	35.99 (24.37 to 50.45)	5.42 (3.67 to 7.60)	3558.92 (2375.47 to 5026.68)	528.35 (354.06 to 744.12)	-7.38 (-7.82 to -6.93)	-7.21 (-7.66 to -6.76)
Maldives	5.60 (4.14 to 7.41)	3.78 (2.80 to 4.99)	630.76 (438.95 to 880.39)	419.50 (293.67 to 582.88)	-6.12 (-6.50 to -5.73)	-5.60 (-5.99 to -5.21)
Samoa	17.00 (11.021 to 24.53)	13.51 (8.78 to 19.49)	1580.36 (1011.98 to 2304.29)	1252.76 (803.19 to 1826.33)	-2.88 (-2.99 to -2.78)	-2.80 (-2.90 to -2.70)
Micronesia (Federated States of)	7.31 (5.03 to 9.92)	15.92 (10.96 to 21.50)	659.35 (448.29 to 904.61)	1445.53 (984.74 to 1973.08)	-4.02 (-4.12 to -3.93)	-3.97 (-4.06 to -3.87)
New Zealand	8.22 (6.97 to 9.51)	0.57 (0.48 to 0.66)	2533.35 (1612.48 to 3795.98)	163.59 (105.35 to 243.21)	-4.17 (-5.18 to -3.14)	-2.26 (-2.83 to -1.69)
Puerto Rico	7.00 (5.66 to 8.57)	1.15 (0.94 to 1.41)	1235.15 (826.10 to 1779.87)	184.29 (127.50 to 260.28)	-4.04 (-4.58 to -3.50)	-3.06 (-3.42 to -2.69)
Slovenia	7.76 (6.47 to 9.15)	1.66 (1.38 to 1.95)	916.36 (687.54 to 1210.21)	193.66 (146.04 to 254.38)	-4.16 (-4.52 to -	-3.59 (-3.91 to -

					3.79)	3.27)
Bahrain	8.96 (6.50 to 11.99)	1.84 (1.34 to 2.45)	1069.24 (719.30 to 1538.61)	219.82 (149.13 to 314.16)	-3.97 (-4.59 to -3.35)	-3.54 (-4.09 to -2.98)
Oman	88.68 (61.42 to 128.71)	4.78 (3.30 to 6.95)	8841.55 (6283.41 to 12551.98)	475.71 (337.59 to 675.97)	-3.64 (-4.55 to -2.72)	-3.48 (-4.35 to -2.60)
Belize	11.64 (9.38 to 14.20)	6.47 (5.20 to 7.91)	1169.15 (901.11 to 1495.30)	645.27 (499.19 to 822.21)	-3.88 (-4.26 to -3.51)	-3.69 (-4.03 to -3.35)
Suriname	14.32 (9.95 to 20.02)	6.93 (4.80 to 9.70)	1428.80 (966.95 to 2045.31)	686.17 (464.96 to 981.29)	-3.07 (-3.31 to -2.82)	-2.89 (-3.12 to -2.67)
Jamaica	18.01 (12.92 to 24.43)	2.12 (1.51 to 2.89)	2372.14 (1561.53 to 3462.76)	268.05 (177.82 to 388.58)	-3.03 (-3.36 to -2.71)	-2.48 (-2.74 to -2.21)
Qatar	10.59 (7.45 to 14.84)	1.33 (0.93 to 1.85)	1425.58 (926.87 to 2127.83)	178.55 (116.07 to 266.56)	-4.07 (-4.57 to -3.56)	-3.48 (-3.83 to -3.12)
Montenegro	1.31 (0.86 to 1.87)	0.73 (0.47 to 1.04)	212.23 (128.21 to 323.89)	116.22 (70.27 to 177.22)	-6.05 (-6.69 to -5.40)	-4.94 (-5.39 to -4.48)
Sao Tome and Principe	14.75 (9.38 to 22.13)	12.68 (8.05 to 19.06)	1294.16 (826.39 to 1926.71)	1114.45 (710.73 to 1662.35)	-6.69 (-7.00 to -6.37)	-6.71 (-7.02 to -6.40)

Marshall Islands	6.09 (4.09 to 8.28)	23.21 (15.58 to 31.53)	543.77 (361.77 to 745.68)	2079.21 (1381.77 to 2847.19)	-1.76 (-2.33 to -1.18)	-1.74 (-2.32 to -1.16)
Tonga	8.00 (5.64 to 10.68)	12.83 (9.04 to 17.15)	748.97 (519.03 to 1017.57)	1199.54 (830.24 to 1632.97)	-2.31 (-2.60 to -2.02)	-2.24 (-2.52 to -1.97)
Cyprus	0.58 (0.39 to 0.85)	0.16 (0.11 to 0.24)	374.99 (211.49 to 605.46)	105.29 (59.42 to 170.12)	-6.72 (-7.06 to -6.37)	-2.65 (-2.84 to -2.46)
Greenland	0.26 (0.19 to 0.35)	1.40 (1.02 to 1.90)	48.32 (30.75 to 72.33)	259.02 (165.51 to 386.22)	-5.49 (-5.84 to -5.15)	-4.02 (-4.33 to -3.7)
Seychelles	3.27 (2.54 to 4.17)	9.21 (7.15 to 11.72)	317.64 (239.86 to 416.06)	891.94 (674.88 to 1166.02)	-0.15 (-0.55 to 0.26)	-0.12 (-0.49 to 0.25)
Bahamas	4.41 (3.28 to 5.90)	3.93 (2.90 to 5.29)	479.65 (336.01 to 673.17)	419.38 (295.47 to 587.31)	-2.53 (-2.95 to -2.10)	-2.29 (-2.67 to -1.91)
Guam	4.15 (3.03 to 5.42)	7.16 (5.23 to 9.35)	419.58 (296.13 to 567.71)	724.34 (511.91 to 978.69)	-0.24 (-0.67 to 0.20)	-0.18 (-0.57 to 0.21)
Saint Lucia	1.69 (1.22 to 2.26)	3.80 (2.72 to 5.14)	185.26 (126.98 to 261.08)	410.73 (280.88 to 579.67)	-1.96 (-2.21 to -1.70)	-1.72 (-1.93 to -1.50)
Saint Vincent	1.55 (1.19 to 2.04)	4.26 (3.25 to 5.66)	163.13 (118.50 to 225.40)	445.97 (324.28 to 616.84)	-2.52 (-2.85 to -	-2.30 (-2.59 to -

and the Grenadines					2.19)	2.02)
Dominica	1.48 (1.02 to 2.13)	8.66 (5.95 to 12.45)	146.81 (99.25 to 213.36)	840.00 (570.42 to 1218.92)	1.25 (0.85 to 1.65)	1.15 (0.78 to 1.52)
Luxembourg	0.42 (0.35 to 0.52)	0.26 (0.21 to 0.32)	190.24 (113.66 to 301.26)	115.04 (69.00 to 182.03)	-5.58 (-6.10 to -5.05)	-2.22 (-2.48 to -1.97)
Northern Mariana Islands	0.66 (0.48 to 0.86)	4.05 (3.00 to 5.32)	71.89 (49.93 to 100.31)	440.52 (308.10 to 611.30)	-1.80 (-2.21 to -1.38)	-1.54 (-1.89 to -1.18)
Tuvalu	1.14 (0.82 to 1.52)	19.59 (14.11 to 26.10)	103.46 (73.56 to 139.48)	1780.56 (1266.27 to 2399.07)	-5.43 (-5.68 to -5.18)	-5.37 (-5.62 to -5.11)
Malta	0.79 (0.62 to 0.99)	0.77 (0.60 to 0.97)	162.15 (105.56 to 241.62)	156.66 (102.14 to 233.50)	-2.91 (-3.17 to -2.64)	-1.68 (-1.84 to -1.52)
Iceland	0.58 (0.45 to 0.72)	0.54 (0.42 to 0.68)	147.69 (92.05 to 225.65)	137.37 (85.72 to 209.69)	-4.30 (-4.49 to -4.10)	-2.13 (-2.25 to -2.01)
Barbados	1.92 (1.32 to 2.70)	2.82 (1.93 to 3.97)	230.19 (149.75 to 339.15)	327.90 (214.71 to 481.04)	-2.17 (-2.61 to -1.73)	-1.82 (-2.18 to -1.45)

Monaco	0.07 (0.05 to 0.10)	0.88 (0.65 to 1.18)	13.37 (8.41 to 20.28)	165.15 (104.72 to 249.69)	-3.12 (-3.44 to -2.8)	-1.66 (-1.84 to -1.49)
American Samoa	1.90 (1.36 to 2.49)	10.33 (7.38 to 13.57)	181.02 (125.88 to 244.70)	16.72 (12.07 to 23.01)	-2.01 (-2.13 to -1.89)	-1.91 (-2.03 to -1.79)
Palau	0.75 (0.56 to 0.98)	15.64 (11.78 to 20.28)	67.31 (49.52 to 89.20)	1415.31 (1049.57 to 1864.00)	-2.11 (-2.37 to -1.86)	-2.11 (-2.36 to -1.86)
Nauru	2.10 (1.44 to 2.91)	33.78 (23.27 to 46.88)	186.34 (127.74 to 259.43)	3001.09 (2056.76 to 4179.99)	-1.38 (-2.32 to -0.43)	-1.37 (-2.31 to -0.43)
Saint Kitts and Nevis	0.88 (0.67 to 1.14)	5.97 (4.53 to 7.74)	89.87 (65.89 to 120.64)	601.99 (442.86 to 803.72)	-1.71 (-1.99 to -1.44)	-1.57 (-1.81 to -1.32)
United States Virgin Islands	0.22 (0.14 to 0.33)	1.10 (0.70 to 1.62)	35.62 (21.15 to 55.97)	173.80 (104.04 to 271.20)	-3.32 (-3.69 to -2.95)	-2.59 (-2.82 to -2.37)
Grenada	1.76 (1.37 to 2.21)	5.26 (4.07 to 6.60)	180.53 (133.92 to 236.54)	536.14 (398.49 to 700.15)	-2.29 (-2.69 to -1.89)	-2.11 (-2.47 to -1.76)
Cook Islands	0.47 (0.33 to 0.59)	8.37 (5.83 to 10.44)	45.11 (30.54 to 58.86)	810.69 (549.18 to 1046.82)	-6.64 (-7.35 to -5.92)	-6.22 (-6.87 to -5.56)
Andorra	0.03 (0.02 to 0.05)	0.19 (0.11 to 0.28)	18.20 (10.14 to 29.61)	107.39 (60.06 to 174.53)	-6.01 (-6.46 to -	-2.56 (-2.79 to -

					5.56)	2.33)
Antigua and Barbuda	1.09 (0.92to 1.27)	4.28 (3.61 to 5.00)	116.68 (91.65 to 147.83)	453.93 (359.66 to 570.71)	-0.71 (-1.17 to -0.25)	-0.61 (-1.01 to -0.21)
San Marino	0.02 (0.01 to 0.04)	0.33 (0.16 to 0.60)	8.60 (4.95 to 13.75)	120.88 (70.33 to 191.22)	-4.96 (-5.26 to -4.66)	-2.37 (-2.56 to -2.17)
Tokelau	0.31 (0.21 to 0.38)	64.20 (44.61 to 79.28)	27.00 (18.66 to 33.76)	5676.54 (3919.62 to 7043.39)	-2.26 (-3.85 to -0.65)	-2.15 (-3.68 to -0.59)
Niue	0.33 (0.28 to 0.39)	61.12 (51.46 to 71.24)	29.56 (24.66 to 34.80)	5411.95 (4533.78 to 6339.52)	-0.24 (-1.10 to 0.63)	-0.22 (-1.06 to 0.63)
Bermuda	0.13 (0.09 to 0.16)	1.03 (0.74 to 1.31)	22.55 (14.25 to 32.98)	173.22 (110.12 to 251.40)	-3.14 (-3.41 to -2.86)	-2.09 (-2.27 to -1.92)
Coted'Ivoire	7916.08 (5269.94 to 11491.19)	41.59 (27.63 to 60.47)	706264.06 (472544.35 to 1020123.85)	3705.15 (2474.20 to 5357.68)	-2.84 (-3.22 to -2.46)	-2.84 (-3.22 to -2.46)

ASMR Age-standardized mortality rate, DALYs Disability-adjusted life years, ASDR Age-standardized DALY rate, UI Uncertainty interval, CI Confidence interval, EAPC Estimated annual percentage change.

Supplementary Table 4. Age-standardised rate for ARIs DALYs and mortality change from 1990 globally and by SDI quintile.

	Overall difference (Deaths)	Mortality changes due to population-level determinants			Overall difference (DALYs)	DALYs changes due to population-level determinants		
		Population Aging (%)	Population growth (%)	Epidemiological change (%)		Population Aging (%)	Population growth (%)	Epidemiological change (%)
Global	-1504084.48	-124418.39 (8.27%)	222984.44 (-14.83%)	-1602650.53 (106.55%)	-133385597.9	-11155143.34 (8.36%)	20056611.66 (-15.04%)	-142287066.25 (106.67%)
High SDI	-9431.42	-272.72 (2.89%)	-466.74 (4.95%)	-8691.97 (92.16%)	-858786.35	-27943.28 (3.25%)	-62620.12 (7.29%)	-768222.95 (89.45%)
High-middle SDI	-117474.96	-3733.52 (3.18%)	-12895.78 (10.98%)	-100845.66 (85.84%)	-10465108.77	-332939.43 (3.18%)	-1200818.21 (11.47%)	-8931351.14 (85.34%)
Middle SDI	-480033.22	-29289.38 (6.1%)	-5366.02 (1.12%)	-445377.81 (92.78%)	-42609238.92	-2630720.86 (6.17%)	-485922.48 (1.14%)	-39492595.58 (92.69%)
Low-middle SDI	-558032.03	-91741.46 (16.44%)	154712.29 (-27.72%)	-621002.86 (111.28%)	-49512583.62	-8237819.68 (16.64%)	13870323.54 (-28.01%)	-55145087.49 (111.38%)
Low SDI	-338340.07	-78401.06	425784.08	-685723.09	-29871363.39	-7004660.79	37820984.86	-60687687.46

	(23.17%)	(-125.85%)	(202.67%)		(23.45%)	(-126.61%)	(203.16%)

DALYs Disability-adjusted life years, SDI Socio-demographic Index.

Supplementary Table 5. Age-standardized rate of ARI DALYs and mortality change from 1990 at super-region levels.

	Overall difference (Deaths)	**Mortality changes due to population-level determinants**			**Overall difference (DALYs)**	**DALYs changes due to population-level determinants**		
		Population Aging (%)	**Population growth (%)**	**Epidemiological change (%)**		**Population Aging (%)**	**Population growth (%)**	**Epidemiological change (%)**
Andean Latin America	-18099.60	-1288.30 (7.12%)	3510.30 (-19.39%)	-20321.60 (112.28%)	-1601903.39	-116626.83 (7.28%)	315631.42 (-19.70%)	-1800907.98 (112.42%)
Australasia	-114.95	-1.71 (1.49%)	17.71 (-15.41%)	-130.95 (113.92%)	-8412.76	-148.17 (1.76%)	3224.02 (-38.32%)	-11488.61 (136.56%)
Caribbean	-5882.01	-525.12 (8.93%)	173.86 (-2.96%)	-5530.74 (94.03%)	-522782.97	-47330.34 (9.05%)	15807.59 (-3.02%)	-491260.21 (93.97%)

Central Asia	-38832.70	-1474.36 (3.80%)	3165.84 (-8.15%)	-40524.17 (104.36%)	-3454005.83	-132060.9 (3.82%)	282319.42 (-8.17%)	-3604264.35 (104.35%)
Central Europe	-7557.46	-7.17 (0.09%)	-1829.06 (24.20%)	-5721.23 (75.7%)	-677891.47	-869.80 (0.13%)	-170041.41 (25.08%)	-506980.25 (74.79%)
Central Latin America	-32936.95	-4087.01 (12.41%)	1822.71 (-5.53%)	-30672.65 (93.13%)	-2917273.12	-371878.34 (12.75%)	167343.3 (-5.74%)	-2712738.08 (92.99%)
Central Sub-Saharan Africa	-39082.43	-7709.52 (19.73%)	47826.42 (-122.37%)	-79199.33 (202.65%)	-3459364.34	-690751.18 (19.97%)	4257314.97 (-123.07%)	-7025928.13 (203.10%)
East Asia	-331833.20	-2291.98 (0.69%)	-53048.02 (15.99%)	-276493.20 (83.32%)	-29504161.46	-195482.21 (0.66%)	-4802068.67 (16.28%)	-24506610.58 (83.06%)
Eastern Europe	-9110.03	-624.72 (6.86%)	-1867.46 (20.50%)	-6617.85 (72.64%)	-829669.24	-56417.34 (6.80%)	-183397.39 (22.1%)	-589854.5 (71.1%)
Eastern	-145566.54	-28390.67	143380.52	-260556.39	-	-2544627.84	12726255.47	-23037905.30

Sub-Saharan Africa		(19.50%)	(-98.50%)	(178.99%)	12856277.67	(19.79%)	(-98.99%)	(179.20%)
High-income Asia Pacific	-1679.80	3.93 (-0.23%)	-392.91 (23.39%)	-1290.82 (76.84%)	-166888.99	517.55 (-0.31%)	-58227.31 (34.89%)	-109179.23 (65.42%)
High-income North America	-1414.78	-119.99 (8.48%)	134.74 (-9.52%)	-1429.54 (101.04%)	-130692.68	-14847.8 (11.36%)	25202.79 (-19.28%)	-141047.67 (107.92%)
North Africa and Middle East	-122937.06	-11868.24 (9.65%)	30655.76 (-24.94%)	-141724.59 (115.28%)	-10894216.29	-1068672.77 (9.81%)	2764202.13 (-25.37%)	-12589745.65 (115.56%)
Oceania	156.76	23.19 (14.79%)	3326.18 (2121.78%)	-3192.60 (-2036.57%)	17079.01	2025.97 (11.86%)	299398 (1753.02%)	-284344.97 (-1664.88%)
South Asia	-475910.45	-105448.95	123144.85	-493606.36	-	-9463231.78	11057566.47	-43846144.83

		(22.16%)	(-25.88%)	(103.72%)	42251810.14	(22.4%)	(-26.17%)	(103.77%)
Southeast Asia	-145807.55	-10412.16 (7.14%)	8103.87 (-5.56%)	-143499.25 (98.42%)	- 12894458.89	-940131.06 (7.29%)	733054.43 (-5.69%)	-12687382.26 (98.39%)
Southern Latin America	-1958.44	-253.14 (12.93%)	86.32 (-4.41%)	-1791.62 (91.48%)	-176131.47	-24365.95 (13.83%)	8910.04 (-5.06%)	-160675.56 (91.22%)
Southern Sub-Saharan Africa	-11533.58	-1574.30 (13.65%)	3172.78 (-27.51%)	-13132.06 (113.86%)	-1025194.10	-143265.89 (13.97%)	283834.91 (-27.69%)	-1165763.11 (113.71%)
Tropical Latin America	-25190.29	-3.73 (0.01%)	162.26 (-0.64%)	-25348.82 (100.63%)	-2241295.17	-4008.15 (0.18%)	15213.89 (-0.68%)	-2252500.92 (100.50%)
Western Europe	-1812.22	9.13 (-0.50%)	-127.11 (7.01%)	-1694.24 (93.49%)	-164043.56	2473.22 (-1.51%)	-21772.21 (13.27%)	-144744.57 (88.24%)

Western Sub-Saharan Africa	-86981.22	-31100.64 (35.76%)	264719.72 (-304.34%)	-320600.30 (368.59%)	-7626203.39	-2768654.58 (36.30%)	23463852.52 (-307.67%)	-28321401.32 (371.37%)

DALYs Disability-adjusted life years, SDI Socio-demographic Index.

Table S6 Frontier DALYs, and effective difference by country or territory.

Location	SDI	ASDR 2019	Frontier DALYs	Effective difference	Effective difference rank (ASDR rank)	Location	SDI	ASDR 2019	Frontier DALYs	Effective difference	Effective difference rank (ASDR rank)
Afghanistan	0.34	2419.95 (1753.07 to 3320.5)	2395.1	24.85	40 (166)	Libya	0.73	476.7 (317.74 to 699.84)	158.5	318.2	111 (89)
Albania	0.71	528.35 (354.06 to 744.12)	176.27	352.08	119 (93)	Lithuania	0.86	190.36 (136.57 to 264.28)	105.55	84.82	68 (44)
Algeria	0.66	385.97 (258.64 to 557.93)	242.92	143.05	85 (71)	Luxembourg	0.88	115.04 (69 to 182.03)	109.28	5.76	24 (8)
American Samoa	0.72	979.3 (683.48 to 1316.96)	156.38	822.92	151 (122)	Madagascar	0.40	3506.53 (2408.45 to 4893.82)	2174.55	1331.98	171 (187)
Andorra	0.87	107.39 (60.06 to 174.53)	105.47	1.92	20 (2)	Malawi	0.38	2774.85 (1776.61 to 4058.39)	2199.55	575.31	135 (169)

Angola	0.45	2028.67 (1351.95 to 2925.08)	1486.6	542.08	134 (152)	Malaysia	0.74	397.4 (283.01 to 552.51)	146.13	251.27	104 (72)
Antigua and Barbuda	0.75	453.93 (359.66 to 570.71)	142.25	311.69	110 (83)	Maldives	0.65	419.5 (293.67 to 582.88)	251.15	168.35	91 (75)
Argentina	0.72	346.41 (259.11 to 460.44)	157.38	189.03	96 (66)	Mali	0.27	3166.89 (2159.34 to 4694.1)	3166.89	0	7.5 (182)
Armenia	0.70	976.29 (754.34 to 1267.34)	190.6	785.7	148 (121)	Malta	0.80	156.66 (102.14 to 233.5)	120.4	36.26	45 (31)
Australia	0.84	132.73 (80.44 to 205.15)	109.41	23.32	37 (19)	Marshall Islands	0.57	2079.21 (1381.77 to 2847.19)	436.14	1643.07	175 (156)
Austria	0.85	108.82 (65.35 to 172.71)	107.16	1.66	19 (3)	Mauritania	0.50	1720.76 (1264.2 to 2311.1)	926.17	794.59	150 (145)
Azerbaijan	0.69	3041.81 (2383.95 to	197.92	2843.89	192 (181)	Mauritius	0.72	576.23 (447.98	166.06	410.17	124 (99)

		3867.65)						to 712.47)			
Bahamas	0.81	419.38 (295.47 to 587.31)	118.79	300.59	109 (74)	Mexico	0.66	537.32 (387.26 to 733.93)	240.89	296.43	108 (95)
Bahrain	0.75	219.82 (149.13 to 314.16)	133.95	85.87	70 (52)	Micronesia (Federated States of)	0.59	1445.53 (984.74 to 1973.08)	409.13	1036.4	161 (138)
Bangladesh	0.49	1643.05 (1187.25 to 2202.83)	996.83	646.22	139 (142)	Monaco	0.91	165.15 (104.72 to 249.69)	109.31	55.84	50 (33)
Barbados	0.75	327.9 (214.71 to 481.04)	144.57	183.32	95 (64)	Mongolia	0.62	1281.25 (903.99 to 1749.05)	343.97	937.28	155 (133)
Belarus	0.78	192.3 (131.42 to 274.73)	120.04	72.26	62 (45)	Montenegro	0.80	116.22 (70.27 to 177.22)	116.22	0	7.5 (10)
Belgium	0.85	135.04 (85.38 to 205.27)	107.59	27.44	42 (22)	Morocco	0.56	575.56 (348.44 to 847.91)	490.89	84.67	67 (98)
Belize	0.61	645.27 (499.19 to	386.06	259.21	105 (107)	Mozambique	0.33	2314.62	2314.62	0	7.5 (162)

		822.21)						(1477.17 to 3565.14)			
Benin	0.37	3570.84 (2349.39 to 5475.62)	2270.57	1300.27	169 (188)	Myanmar	0.53	2702.84 (1947.27 to 3564.72)	637.92	2064.92	186 (168)
Bermuda	0.82	173.22 (110.12 to 251.4)	113.55	59.68	53 (36)	Namibia	0.62	1671.94 (1071.93 to 2461.75)	368.52	1303.42	170 (143)
Bhutan	0.47	1315.33 (855.06 to 1862.32)	1251.78	63.55	57 (135)	Nauru	0.63	3001.09 (2056.76 to 4179.99)	331.42	2669.67	190 (180)
Bolivia (Plurinational State of)	0.60	1543.95 (1116.57 to 2039.37)	397.91	1146.04	166 (139)	Nepal	0.43	1729.41 (1239.05 to 2431.6)	1729.15	0.26	16 (146)
Bosnia and Herzegovina	0.72	148.06 (96.95 to 216.91)	148.06	0	7.5 (28)	Netherlands	0.89	129.71 (82.64 to 194.27)	108.25	21.46	36 (18)

Botswana	0.64	2040.83 (1363.58 to 2959.24)	259.82	1781.01	180 (153)	New Zealand	0.85	163.59 (105.35 to 243.21)	112.38	51.22	49 (32)
Brazil	0.65	443.59 (326.82 to 587.63)	243.79	199.8	99 (80)	Nicaragua	0.52	643.79 (439.98 to 900.78)	643.79	0	7.5 (106)
Brunei Darussalam	0.81	249 (164.74 to 364.97)	112.46	136.54	83 (55)	Niger	0.17	4971.12 (3320.19 to 7310.76)	4957.57	13.54	31 (195)
Bulgaria	0.77	456.48 (357.76 to 563.33)	128.92	327.56	114 (84)	Nigeria	0.50	5930.52 (3988.52 to 8252.53)	904.16	5026.35	202 (201)
Burkina Faso	0.29	5493.28 (3687.3 to 7774.26)	2816.91	2676.37	191 (198)	Niue	0.73	5411.95 (4533.78 to 6339.52)	161.43	5250.51	203 (197)
Burundi	0.29	2320.69 (1372.43 to 3708.47)	2320.69	0	7.5 (163)	North Macedonia	0.75	150.98 (94.03 to 221.55)	143.01	7.98	28 (29)
Cabo Verde	0.53	626.53 (404.06 to	626.53	0	7.5 (104)	Northern	0.77	440.52 (308.1	118.06	322.46	113 (77)

		901.48)				Mariana Islands		to 611.3)			
Cambodia	0.47	2954.57 (2194.67 to 3813.66)	1262.82	1691.75	177 (177)	Norway	0.92	114.62 (68.38 to 180.17)	109.67	4.95	23 (7)
Cameroon	0.48	3249.67 (2213.27 to 4548.81)	1237.1	2012.57	185 (184)	Oman	0.77	475.71 (337.59 to 675.97)	122.48	353.23	120 (88)
Canada	0.87	170.83 (103.38 to 261.36)	109.07	61.76	55 (35)	Pakistan	0.50	2809.9 (2078.06 to 3680.27)	896.75	1913.15	181 (172)
Central African Republic	0.31	6238.2 (3856.62 to 9289.75)	2587.78	3650.42	198 (202)	Palau	0.75	1415.31 (1049.57 to 1864)	142.1	1273.21	168 (136)
Chad	0.24	7993.26 (5747.42 to 10789.39)	5032.89	2960.37	195 (204)	Palestine	0.63	444.65 (312.32 to 630.59)	335.18	109.46	78 (81)
Chile	0.77	206.83 (145.65 to 290.13)	122.85	83.99	66 (47)	Panama	0.71	659.45 (491.73 to 855.46)	185.24	474.21	130 (108)

China	0.72	375.16 (284.66 to 487.38)	159.93	215.23	101 (70)	Papua New Guinea	0.42	5867.51 (4469.64 to 7802.04)	1778.62	4088.89	201 (200)
Colombia	0.66	441.63 (302.23 to 630.12)	251.76	189.87	97 (78)	Paraguay	0.64	458.26 (281.07 to 681.79)	341.06	117.21	81 (85)
Comoros	0.48	2974.55 (2097.54 to 4119.39)	1225.21	1749.34	179 (178)	Peru	0.66	965.33 (632.91 to 1384.76)	242.86	722.47	143 (120)
Congo	0.58	1211.17 (783.36 to 1738.56)	421.1	790.07	149 (130)	Philippines	0.65	1417.95 (1103.36 to 1830.53)	296.69	1121.26	164 (137)
Cook Islands	0.78	810.69 (549.18 to 1046.82)	118.32	692.37	141 (115)	Poland	0.81	182.91 (137.62 to 240.15)	114.58	68.33	59 (39)
Costa Rica	0.70	295.08 (218.5 to 394.76)	179.75	115.33	80 (62)	Portugal	0.74	142.49 (92.17 to 211.94)	142.43	0.06	15 (25)
Coted'Ivoire	0.43	3705.15 (2474.2 to 5357.68)	1773.1	1932.06	183 (190)	Puerto Rico	0.83	184.29 (127.5 to 260.28)	112.73	71.55	61 (41)

Croatia	0.80	183.06 (127.59 to 250.54)	117.91	65.14	58 (40)	Qatar	0.85	178.55 (116.07 to 266.56)	109.45	69.1	60 (38)
Cuba	0.67	315.1 (233.89 to 415.03)	206.15	108.95	77 (63)	Republic of Korea	0.89	134.17 (78.92 to 211.9)	109.02	25.15	41 (21)
Cyprus	0.84	105.29 (59.42 to 170.12)	105.29	0	7.5 (1)	Republic of Moldova	0.73	632.96 (469.18 to 848.91)	150.26	482.69	131 (105)
Czechia	0.83	213.64 (160.81 to 277.57)	112.68	100.97	74 (49)	Romania	0.77	612.02 (505.92 to 732.22)	129.03	482.99	132 (101)
Democratic People's Republic of Korea	0.57	613.11 (369.4 to 912.86)	430.49	182.62	94 (102)	Russian Federation	0.81	282.32 (227.53 to 351.35)	118.93	163.4	88 (60)
Democratic Republic of the Congo	0.38	2088.09 (1343.03 to 3294.91)	2088.09	0	7.5 (158)	Rwanda	0.44	2126.07 (1442.39 to 3080.11)	1703.99	422.08	126 (159)
Denmark	0.90	123.11 (76.28 to	109.28	13.83	32 (15)	Saint Kitts	0.75	601.99 (442.86	131.67	470.32	129 (100)

		187.83)				and Nevis		to 803.72)			
Djibouti	0.49	1731.98 (1109.46 to 2619.3)	1006.02	725.96	144 (147)	Saint Lucia	0.67	410.73 (280.88 to 579.67)	213.32	197.42	98 (73)
Dominica	0.75	840 (570.42 to 1218.92)	143.8	696.19	142 (116)	Saint Vincent and the Grenadines	0.64	445.97 (324.28 to 616.84)	352.96	93.01	72 (82)
Dominican Republic	0.62	474.11 (299.57 to 691.04)	333.84	140.27	84 (87)	Samoa	0.59	1252.76 (803.19 to 1826.33)	420.85	831.91	152 (132)
Ecuador	0.66	682.19 (479.28 to 942.84)	234.56	447.64	127 (111)	San Marino	0.89	120.88 (70.33 to 191.22)	107.72	13.16	30 (13)
Egypt	0.61	1158.62 (870.28 to 1523.05)	397.73	760.88	146 (128)	Sao Tome and Principe	0.51	1114.45 (710.73 to 1662.35)	904.24	210.2	100 (125)
El Salvador	0.56	495.76 (320.93 to 722.14)	474.64	21.13	35 (90)	Saudi Arabia	0.82	212.7 (133.07 to 315.07)	117.57	95.13	73 (48)

Equatorial Guinea	0.66	1242.33 (697.53 to 2164.81)	246.17	996.16	159 (131)	Senegal	0.41	2048.29 (1419.78 to 3045.39)	1989.41	58.87	52 (155)
Eritrea	0.40	3233.85 (2037.58 to 4955)	2113.51	1120.34	163 (183)	Serbia	0.79	127.14 (81.39 to 188.32)	119.41	7.73	27 (17)
Estonia	0.84	168.8 (121.28 to 232.18)	111.43	57.37	51 (34)	Seychelles	0.73	891.94 (674.88 to 1166.02)	151.21	740.73	145 (118)
Eswatini	0.59	2826.19 (1955.07 to 3883.52)	429.7	2396.49	188 (173)	Sierra Leone	0.36	3374.92 (2192.1 to 5207.11)	2307.8	1067.13	162 (186)
Ethiopia	0.36	2204.86 (1538.22 to 3125.8)	2203.29	1.58	18 (161)	Singapore	0.86	215.25 (150.19 to 301.77)	109.09	106.16	76 (51)
Fiji	0.68	1154.87 (788.32 to 1616.25)	207.79	947.08	156 (127)	Slovakia	0.81	364.84 (264.43 to 479.45)	118.07	246.77	103 (69)
Finland	0.86	125.5 (79.07 to 191.8)	109.09	16.41	33 (16)	Slovenia	0.84	193.66 (146.04 to 254.38)	108.46	85.2	69 (46)

France	0.84	119.96 (74.01 to 183.49)	112.33	7.63	26 (12)	Solomon Islands	0.43	2775.07 (2032.48 to 3682.62)	1750.24	1024.82	160 (170)
Gabon	0.63	1133.14 (664.04 to 1744.32)	353.6	779.55	147 (126)	Somalia	0.08	4910.28 (3054.9 to 7803.5)	4910.28	0	7.5 (194)
Gambia	0.41	2047.76 (1423.28 to 2980.51)	1971.78	75.98	64 (154)	South Africa	0.68	1920.09 (1488.61 to 2407.16)	206.91	1713.19	178 (151)
Georgia	0.73	435.78 (335.03 to 566.98)	152.1	283.68	107 (76)	South Sudan	0.28	6821.77 (4546.78 to 12199.88)	3193.61	3628.16	197 (203)
Germany	0.90	112.62 (68.38 to 175.86)	108.93	3.7	21 (5)	Spain	0.77	117.14 (71.87 to 179.36)	117.14	0	7.5 (11)
Ghana	0.56	1582.01 (989.46 to 2360.6)	437.6	1144.42	165 (140)	Sri Lanka	0.70	270.16 (173.08 to 402.61)	181.66	88.5	71 (58)

Greece	0.79	146.71 (98.31 to 216.21)	118.61	28.1	44 (27)	Sudan	0.54	1087.85 (723.28 to 1585.12)	621.5	466.34	128 (124)
Greenland	0.83	259.02 (165.51 to 386.22)	113.46	145.56	86 (56)	Suriname	0.63	686.17 (464.96 to 981.29)	320.41	365.76	121 (112)
Grenada	0.67	536.14 (398.49 to 700.15)	208.56	327.59	115 (94)	Sweden	0.89	115.34 (67.96 to 183.08)	106.45	8.89	29 (9)
Guam	0.80	724.34 (511.91 to 978.69)	126.89	597.45	138 (113)	Switzerland	0.93	114.54 (69.49 to 179.56)	108.71	5.83	25 (6)
Guatemala	0.54	2549.04 (1980.62 to 3273.58)	633.83	1915.2	182 (167)	Syrian Arab Republic	0.62	518.03 (339.39 to 736.59)	339.09	178.94	93 (91)
Guinea	0.34	5288.48 (3479.99 to 7794.14)	2388.89	2899.59	193 (196)	Taiwan (Province of China)	0.87	214.65 (163.01 to 279.47)	109.71	104.94	75 (50)
Guinea-Bissau	0.35	2337.81 (1507.51 to 3593.58)	2313.65	24.16	39 (165)	Tajikistan	0.54	4238.15 (2888.01 to	523.58	3714.57	199 (192)

								5888.56)			
Guyana	0.65	855.07 (616.23 to 1169.19)	259.6	595.48	137 (117)	Thailand	0.68	552.28 (399.66 to 746.68)	201.66	350.62	118 (97)
Haiti	0.45	3633.53 (2466.57 to 4921.2)	1476.81	2156.72	187 (189)	Timor-Leste	0.44	2977.5 (2198.73 to 3857.7)	1641.64	1335.86	172 (179)
Honduras	0.51	678.52 (441.12 to 966.75)	678.52	0	7.5 (110)	Togo	0.41	2804.43 (1915.48 to 3961.09)	1910.84	893.59	154 (171)
Hungary	0.79	136.13 (93.82 to 193.49)	117.7	18.43	34 (23)	Tokelau	0.69	5676.54 (3919.62 to 7043.39)	198.85	5477.69	204 (199)
Iceland	0.88	137.37 (85.72 to 209.69)	109.34	28.02	43 (24)	Tonga	0.63	1199.54 (830.24 to 1632.97)	345.6	853.94	153 (129)
India	0.58	2080.82 (1585.42 to	437.69	1643.13	176 (157)	Trinidad and	0.77	361.43 (249.08	129.45	231.97	102 (67)

		2678.38)				Tobago		to 511.1)			
Indonesia	0.66	919.43 (683.67 to 1225.49)	245.31	674.12	140 (119)	Tunisia	0.68	364.49 (216.04 to 562.56)	197.1	167.39	90 (68)
Iran (Islamic Republic of)	0.70	221.98 (154.61 to 310.22)	180.66	41.32	47 (53)	Turkey	0.71	335.7 (224.72 to 476.95)	167.34	168.36	92 (65)
Iraq	0.66	621.45 (443.14 to 867.37)	240.56	380.89	122 (103)	Turkmenistan	0.68	3331.64 (2651.45 to 4110.74)	200.59	3131.05	196 (185)
Ireland	0.87	133.1 (85.14 to 202.03)	109.15	23.95	38 (20)	Tuvalu	0.58	1780.55 (1266.27 to 2399.07)	436.54	1344	173 (149)
Israel	0.81	110.31 (65.08 to 175.21)	110.31	0	7.5 (4)	Uganda	0.42	1919.05 (1161.55 to 3002.85)	1771.16	147.89	87 (150)
Italy	0.81	122.82 (74.69 to 190.69)	118.06	4.76	22 (14)	Ukraine	0.76	294.59 (211.79 to 394.74)	129.75	164.85	89 (61)

Jamaica	0.68	268.05 (177.82 to 388.58)	204.73	63.31	56 (57)	United Arab Emirates	0.85	222.45 (148.26 to 321.33)	109.81	112.63	79 (54)
Japan	0.87	154.72 (99.82 to 232.04)	109.13	45.59	48 (30)	United Kingdom	0.86	146 (95.82 to 213.83)	109.53	36.47	46 (26)
Jordan	0.73	443.26 (330.07 to 601.3)	161.37	281.89	106 (79)	United Republic of Tanzania	0.45	2901.68 (1962.37 to 4230.62)	1649.38	1252.3	167 (175)
Kazakhstan	0.73	548.22 (433.42 to 688.24)	151.23	396.99	123 (96)	United States of America	0.82	173.8 (104.04 to 271.2)	112.58	61.22	54 (37)
Kenya	0.52	1716.29 (1271.18 to 2334.2)	737.54	978.75	157 (144)	United States Virgin Islands	0.86	187.54 (123.33 to 271.57)	109.01	78.53	65 (42)
Kiribati	0.53	1632.67 (1100.7 to 2261.1)	648.8	983.87	158 (141)	Uruguay	0.72	275.2 (195.31 to 381.94)	157.93	117.27	82 (59)
Kuwait	0.85	522.25 (405.21 to 660.4)	108.56	413.69	125 (92)	Uzbekistan	0.66	2850.02 (2312.74 to 3491.81)	240.16	2609.86	189 (174)

Kyrgyzstan	0.60	1016.07 (835.31 to 1221.13)	422.42	593.65	136 (123)	Vanuatu	0.47	1756.97 (1234.4 to 2375.48)	1240.76	516.21	133 (148)
Lao People's Democratic Republic	0.49	2941.22 (2060.34 to 4053.42)	996.63	1944.59	184 (176)	Venezuela (Bolivarian Republic of)	0.60	735.9 (523.74 to 1003.01)	403.65	332.25	116 (114)
Latvia	0.83	189.42 (137.48 to 258.88)	114.54	74.87	63 (43)	Viet Nam	0.63	673.17 (473.05 to 909.2)	329.86	343.31	117 (109)
Lebanon	0.74	466.24 (312.34 to 679.08)	147.57	318.67	112 (86)	Yemen	0.45	1295.23 (882.43 to 1786.95)	1294.84	0.39	17 (134)
Lesotho	0.51	4791.47 (3350.76 to 6430.55)	864.72	3926.74	200 (193)	Zambia	0.51	2330.42 (1554.67 to 3340.45)	874.08	1456.33	174 (164)
Liberia	0.35	2142.29 (1275.52 to 3379.82)	2142.29	0	7.5 (160)	Zimbabwe	0.47	4186.7 (3168.51 to	1273.78	2912.92	194 (191)

5301.97)

DALYs Disability-adjusted life years.