

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix.

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Managing the estimation or publications process

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2. eMethods

In the following section, we have provided some methodological appendices to supply the information reported in the manuscript: “Global, Regional and National Burden of Non-traumatic Subarachnoid Hemorrhage – A Systematic Analysis for the Global Burden of Disease Study 2021”. This document only summarizes the key methodological aspects of the current manuscript while the details of the Global Burden of Disease (GBD) 2021 study have been presented in previous capstone articles. Since the details of many subarachnoid hemorrhage (SAH) -specific methodologies have also been reported in previous GBD publications focusing on stroke and its pathological types,^{1,2} we have not duplicated this information. This manuscript including its appendix materials has been produced as part of the GBD Collaborator Network following the GBD Protocol³ and Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) recommendations.⁴

2.1 Data Sources

To identify the most relevant and updated data sources for SAH burden, the GBD 2021 study included a systematic review according to the following search terms:

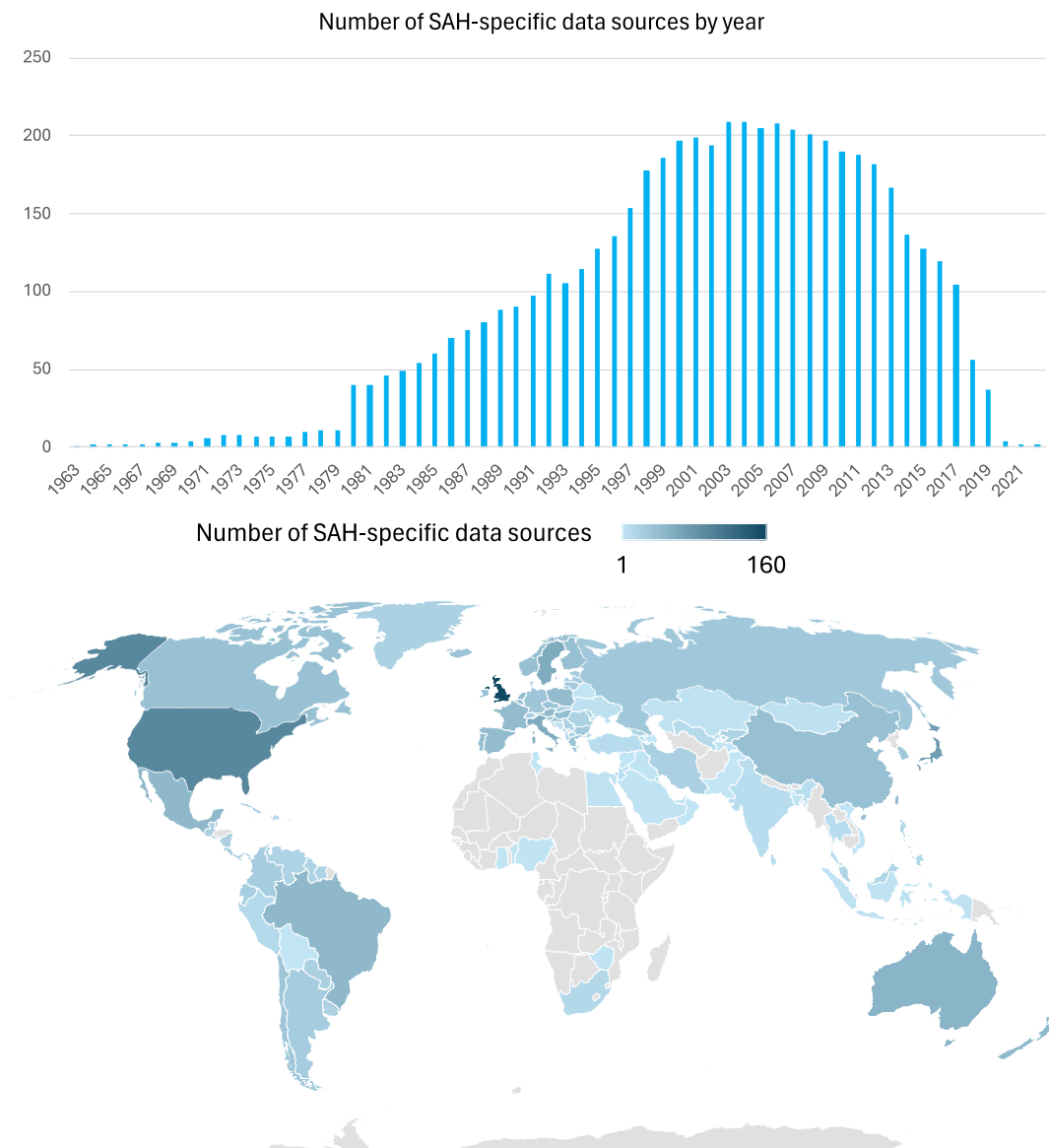
- PubMed: ("stroke"[TIAB] OR "ischaemic stroke"[TIAB] OR "ischaemic stroke"[TIAB] OR "cerebral infarction"[TIAB] OR "intracerebral hemorrhage"[TIAB] OR "intracerebral haemorrhage"[TIAB] OR "subarachnoid hemorrhage"[TIAB] OR "subarachnoid haemorrhage"[TIAB]) AND (incidence[TIAB] OR prevalence[TIAB] OR "excess mortality"[TIAB] OR "case fatality"[TIAB] OR "mortality ratio"[TIAB]) AND ("2017/09/01"[PDAT] : "2020/02/25"[PDAT])

Moreover, previous GBD studies¹ have utilized the following search terms to identify relevant data sources:

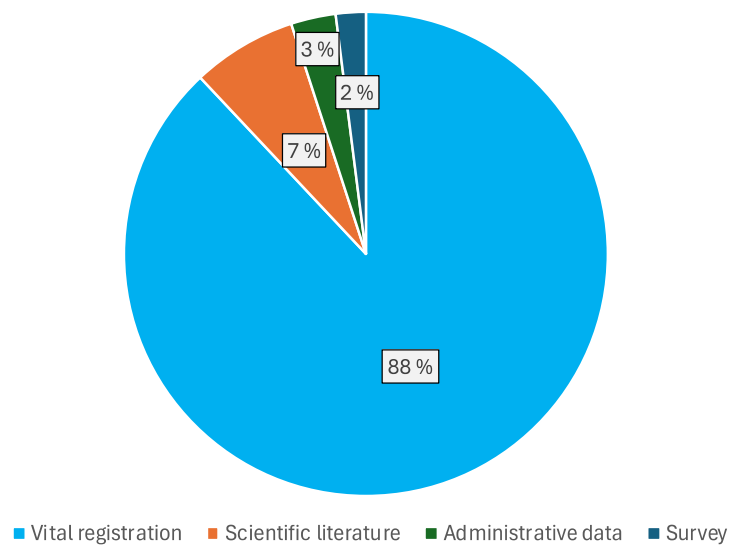
- Google Scholar search: ("subarachnoid hemorrhage" OR "subarachnoid haemorrhage") AND (incidence OR prevalence OR mortality OR epidemiology). Reviewed first 1000 hits, sorted by relevance.
- GIM search: (tw:("subarachnoid hemorrhage") OR tw:("subarachnoid haemorrhage")) AND (tw:(incidence) OR tw:(prevalence) OR tw:(mortality) OR tw:(epidemiology)) AND NOT (tw:(rats) OR tw:(mice) OR tw:(dogs) OR tw:(apes) OR tw:(monkeys)). Dates of search: 01Jan2010 – 31Aug2017

All used data input sources for the GBD 2021 study are publicly available on the website: <https://ghdx.healthdata.org/gbd-2021/sources>. As data sources for causes of death, nonfatal health outcomes and relative risks can be sorted by causes, SAH-specific sources can also be found on the same website. Besides crude references, each data source includes metadata describing its location, year, and type. Overall, there were 2,563 data sources for fatal SAHs, 311 data sources for non-fatal SAHs, and 36 data sources for SAH risk factors from 132 different countries/regions between 1963 and 2022. All data sources for fatal SAH were based on vital registrations comprising 88% of overall data sources while data sources for non-fatal SAHs and SAH-specific risk factors have primarily been gathered via systematic reviews of available literature. Most sources originate from high-income regions where 97% of the countries have at least one SAH-specific data source. On the other hand, 72 countries (35%) have no SAH-specific data source and the proportion in the 46 countries of Sub-Saharan Africa is as high as 87%. In comparison to previous systematic reviews on the time trends of SAH incidence⁵ and case-fatality,⁶ the GBD 2021 study includes over 80% of the identified population-based publications (or overlapping studies) as its data sources emphasizing its comprehensive coverage of the previously published evidence on non-fatal and fatal burden estimates of SAH. The distributions of data sources by location, year and type have been presented in Supplementary Figures 1 (all sources combined), 2 (fatal sources), 3 (nonfatal sources) and 4 (relative risk sources). Since a single source may include data from several years and/or locations, the annual and regional number of sources exceeds the total number of data sources.

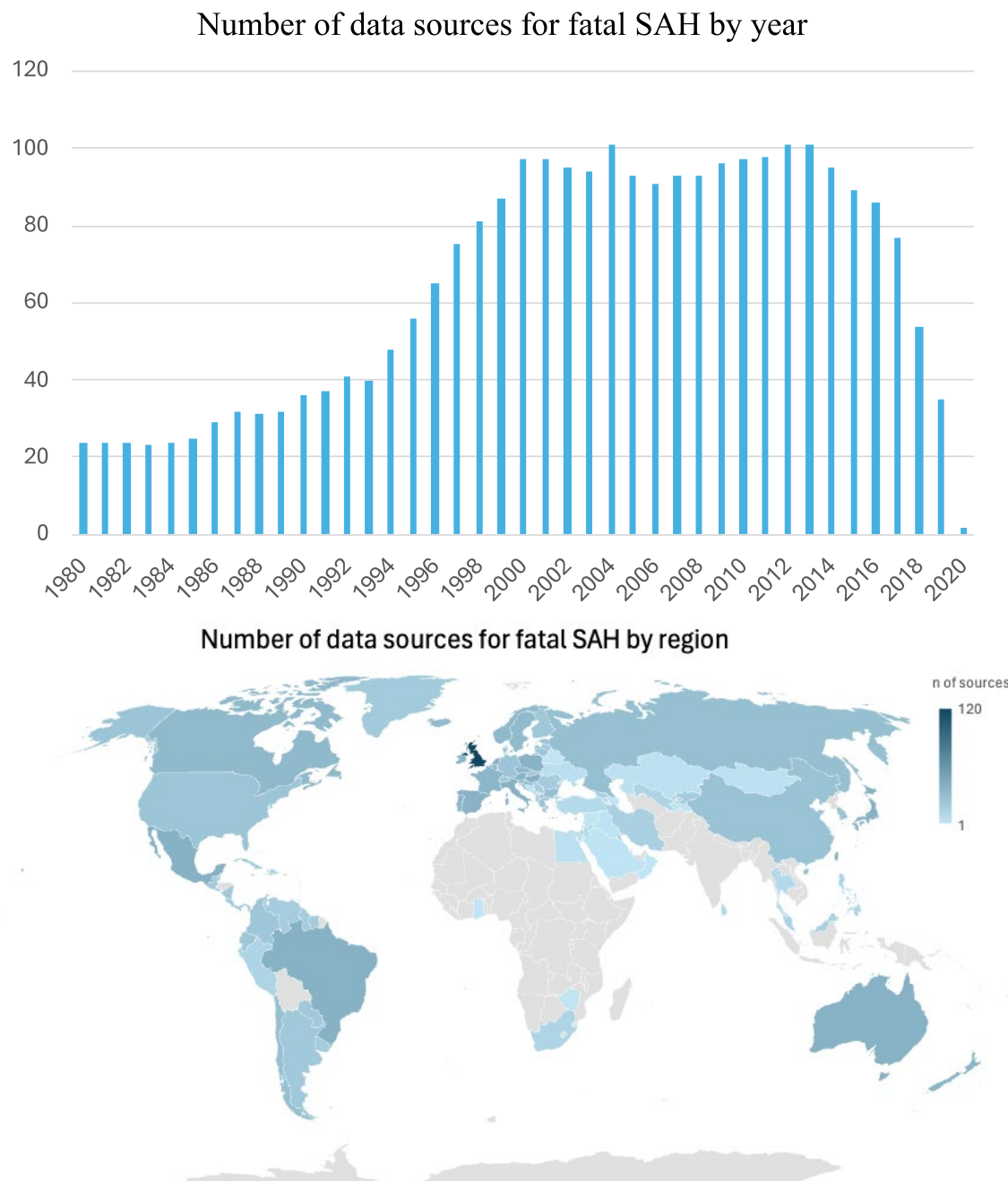
Supplementary Figure 1. The numbers and distributions of data sources for subarachnoid hemorrhage (SAH) included in the Global Burden of Diseases 2021 study by year, type, and region.



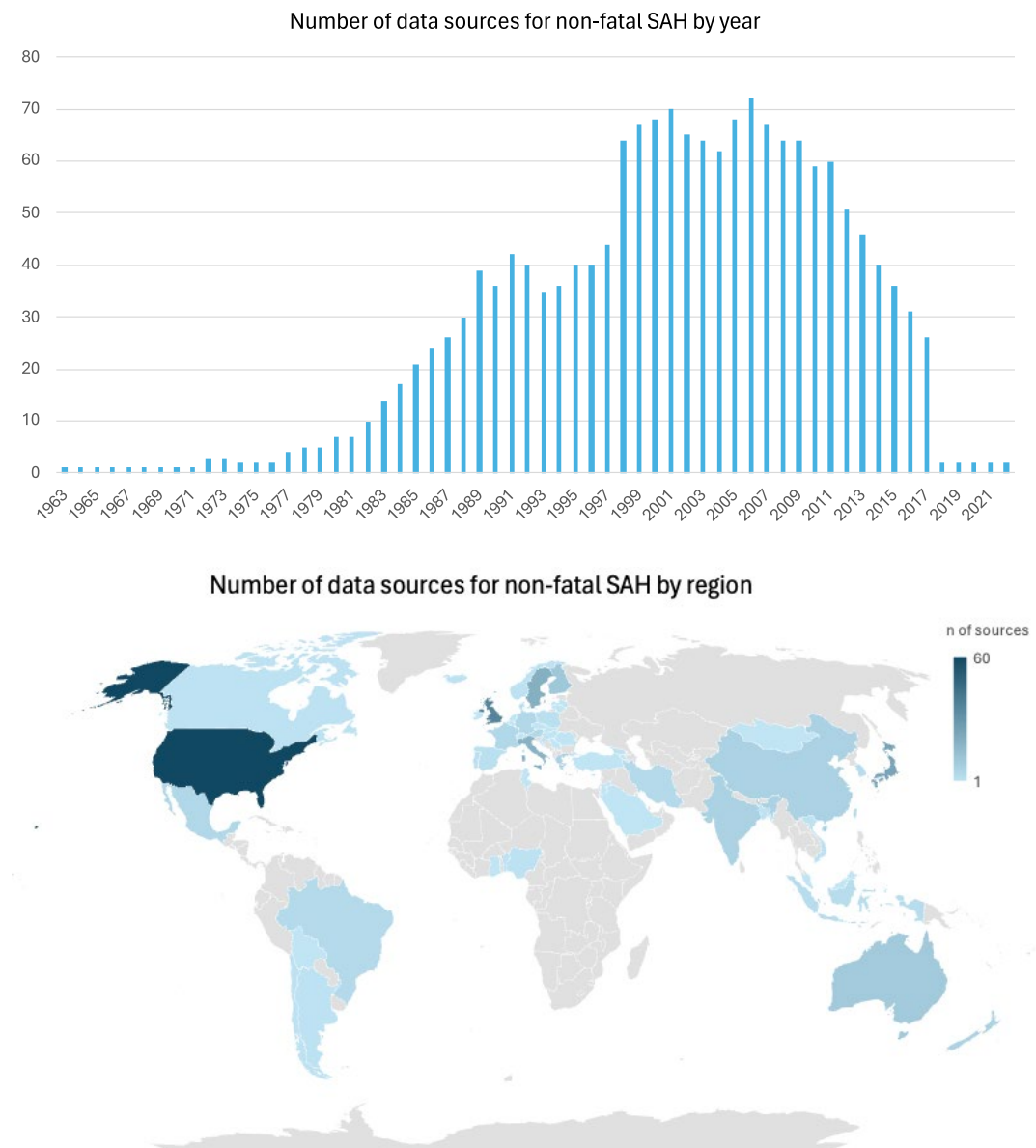
Proportion of SAH-specific data sources by source type



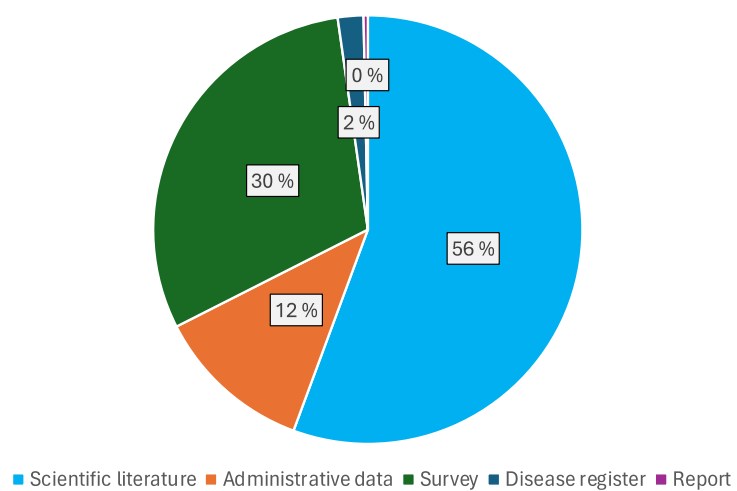
Supplementary Figure 2. The numbers and distributions of data sources for fatal subarachnoid hemorrhage (SAH) included in the Global Burden of Diseases 2021 study by year and region.



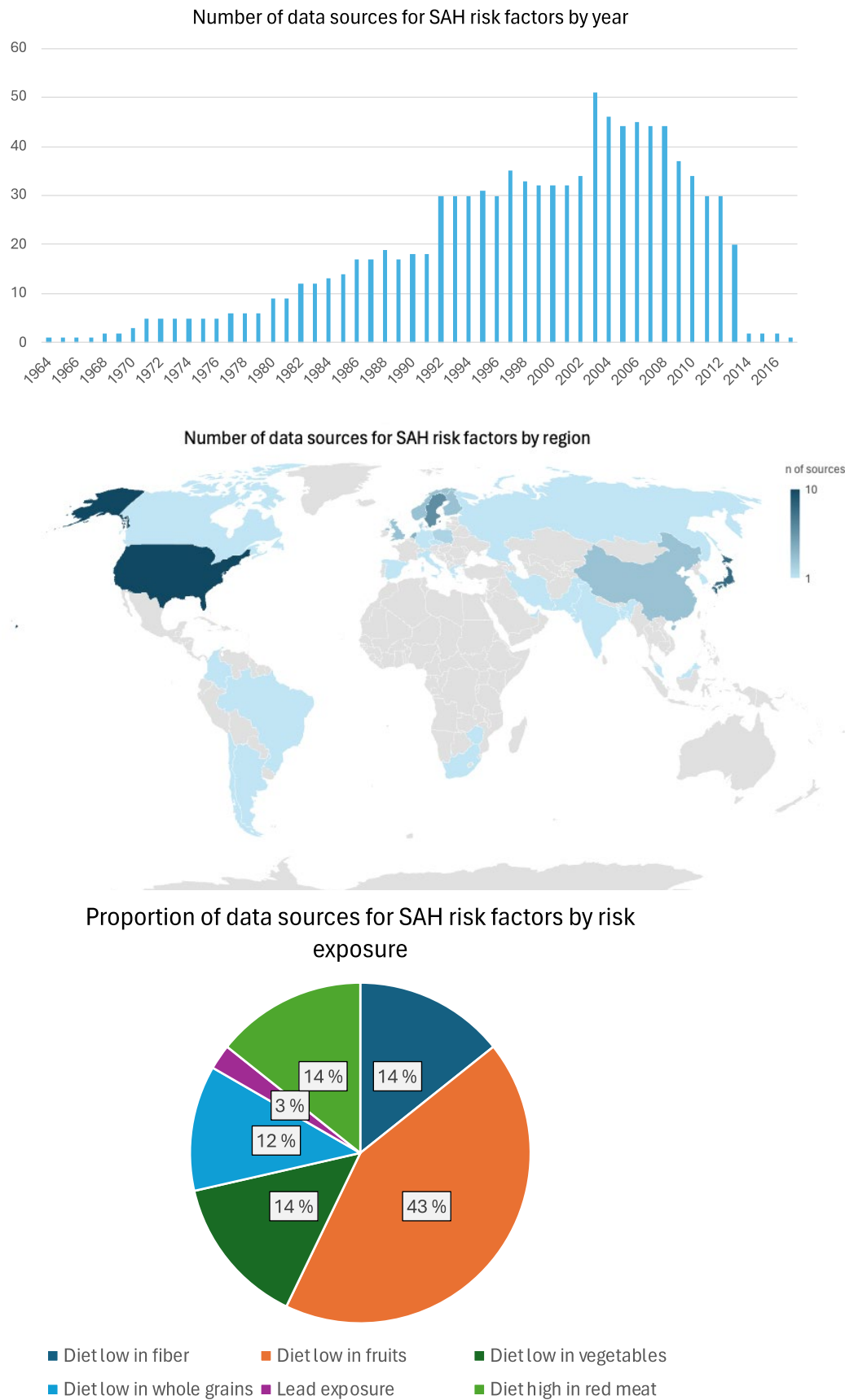
Supplementary Figure 3. The numbers and distributions of data sources for non-fatal subarachnoid hemorrhage (SAH) included in the Global Burden of Diseases 2021 study by year, type, and region.



Proportion of data sources for non-fatal SAH by source type



Supplementary Figure 4. The numbers and distributions of data sources for subarachnoid hemorrhage (SAH) risk factors included in the Global Burden of Diseases 2021 study by year, region and risk factor.



2.2 Data Modeling

Previous articles describe the details of general, stroke-specific, and SAH-specific data modeling in the GBD studies.^{1,2} Primarily, the GBD 2021 study used two statistical modeling tools namely Cause of Death Ensemble modeling (CODEm)⁷ and Disease-Model-Bayesian Meta-Regression 2.1 (DisMod-MR)⁸ to produce annual burden estimates of SAH across different population groups and geographical locations between 1990 and 2021. While both modeling tools utilize geospatial relationships of relevant covariates (Supplementary Tables 1), CODEm is designed to model fatal estimates by integrating the data of multiple statistical modeling tools and covariate permutations whereas the DisMod-MR uses a Bayesian meta-regression framework to model nonfatal outcomes such as cause-specific incidence and prevalence estimates. Besides direct SAH death diagnoses (e.g., 430 in ICD-9 and I60 in ICD-10), part of the SAH fatalities is gathered via the redistribution of implausible cause-of-death diagnosis codes in vital registrations (so-called garbage codes). For example, some unspecified stroke/cardiovascular deaths and deaths related to non-fatal causes (e.g., hypertension) or symptoms (e.g., convulsions, cardiac arrest, and coma) are assumed to be caused by SAH.⁹ Since some of the fatal ICD-8 data points and vital registrations from Tibet were observed to generate implausibly high and inconsistent time trends with the rest of the data for fatal SAH estimates in the GBD 2021 study, they were excluded from the final CODEm models. In terms of non-fatal SAH estimates, systematic reviews of unpublished and published evidence served as a primary method to gather data inputs for the DisMod-MR modeling tool. In addition to the WHO's reference case definition for SAH (non-traumatic first-ever stroke type caused by bleeding into the subarachnoid space of the brain), data inputs with an alternative definition such as SAH caused exclusively by ruptured intracranial aneurysm, were adjusted to the model as described earlier.¹ All modelling analyses in the GBD 2021 were completed by using Python (version 3.10.4), Stata (version 13.1), and R (version 4.2.1) statistical software.

Supplementary Table 1. Selected covariates for SAH-specific modeling in the GBD 2021 study.

Covariate	Model
Smoking prevalence	CODEm
Systolic blood pressure (mmHg)	CODEm + DisMod-MR
Healthcare access and quality index	CODEm
Lag distributed income per capita (I\$)	CODEm + DisMod-MR
Alcohol (litres per capita)	CODEm

2.3 Risk Factor Assessment

The GBD 2021 study uses a comparative risk assessment framework to estimate the cause-specific proportions of the burden that are attributable to the identified risk factors.¹⁰ Briefly, this estimation is based on seven interrelated methodological components. First, risk-outcome pairs and associative relative risk (RR) estimates with convincing or probable evidence are identified via systematic literature searches and calculated by using analytical tools based on meta-regression. Second, the exposure levels of each risk factor in each age-sex-location-year category are estimated by using two Bayesian statistical models, namely spatiotemporal Gaussian process regression and DisMod-MR 2.1. Third, based on the available epidemiological evidence, risk factor-specific theoretical minimum risk exposure levels (TMRELs) are determined. TMREL indicates the level of exposure that would minimize the health risk related to each risk factor. Fourth, by using the data on exposure levels, RRs, and TMRELs, population-attributable fractions (PAFs) are calculated for each risk-outcome pair. PAF represents the proportional change in disease burden in case the risk exposure would be reduced to the TMREL. Fifth, summary exposure variables (SEVs; risk-weighted prevalences of exposure by age) are calculated for each risk factor. Sixth, mediation between individual risk factors on the same pathophysiological pathway to an outcome of interest is assessed and considered in risk factor clusters. Lastly, attributable burden estimates are determined by age group, sex, location, and year. For SAH, the GBD 2021 study includes the data on all three risk clusters (i.e., behavioral, environmental/occupational, and metabolic risks) and 14 individual risk factors listed in Supplementary Table 2. However, apart from the dietary risks and lead exposure, RR estimates used for PAF calculations of SAH are based on the stroke literature, not specifically on SAH. Moreover, data on some of the identified risk factors for stroke in general such as high fasting plasma glucose, high low-density lipoprotein cholesterol, and low physical activity are not currently available for SAH. While the PAF calculations of risk clusters consider the interactions between individual risk factors, the PAFs of each risk factor are not mutually exclusive. Therefore, the sum of

risk factor-specific PAFs may exceed 100% due to the partial or complete overlapping effects of multiple risk factors.

Supplementary Table 2. Fourteen individual risk factors for subarachnoid hemorrhage in the Global Burden of Disease 2021 study. Theoretical minimum risk exposure levels are defined as the absence of risk factors.

Risk factors (cluster)	Definition
Diet high in red meat (B)	Any consumption of red meat including pork, beef, lamb, and goat but excluding poultry, fish, eggs, and all processed meats
Diet high in sodium (B)	Daily consumption of sodium > 5 g
Diet low in fiber (B)	Daily consumption of fiber < 21g
Diet low in fruits (B)	Daily consumption of fruits < 200 g
Diet low in vegetables (B)	Daily consumption of vegetables < 350 g
Secondhand smoke (B)	Daily indoor exposure to second-hand smoking
Smoking (B)	Previous or current smoking of tobacco
Ambient particulate matter pollution (E)	Annual average daily exposure to outdoor air concentration of PM _{2.5} > 8.8 µg/m ³
High temperature (E)	Ambient temperature higher than the temperature associated with the minimum mortality risk in a given location and year
Household air pollution from solid fuels (E)	Any exposure to an indoor concentration of PM _{2.5}
Lead exposure (E)	Lead concentration of blood > 20 µg/L
Low temperature (E)	Ambient temperature lower than the temperature associated with the minimum mortality risk in a given location and year
High body-mass index (M)	BMI > 23.0 kg/m ²
High systolic blood pressure (M)	Systolic blood pressure > 110-115 mm/Hg

B = behavioral risk cluster; BMI = body mass index; E = environmental/occupational risk cluster; M = metabolic risk cluster

2.4 Data Presentation

Previous capstone articles describe the details of standard data presentation methods in the GBD 2021 study. In Supplementary Table 3, we have summarized the key variables and terms used in the present article for the global burden of SAH and its risk factors.

Supplementary Table 3. Key variables/terms used in the current manuscript regarding the global burden of SAH.

Variable/term	Definition
General terms	
Age-standardization	Since 2017, the GBD studies have updated the standard population age structure (i.e., the GBD Standard Population) with each release. This is done by calculating the unweighted mean of the age-specific proportional distributions from the most recent GBD population estimates for all countries with populations exceeding 5 million. Age-standardized rates are then derived by calculating the weighted average of the age-specific rates based on these proportions.
Uncertainty interval (UI)	In the GBD 2021, every estimate is calculated 1,000 times, each time sampling from distributions rather than point estimates for data inputs, data transformations and model choice. After ordering the 1,000 values from smallest to largest, the 95% uncertainty interval is determined by the range from 25th and 975th value representing the certainty of a point estimate.
Sociodemographic index (SDI)	A compound measure that represents the regional sociodemographic development by accounting the location- and year-specific data on income, average years of schooling and fertility levels
Outcome/burden estimates	
Incidents / Incidence	New SAH cases including non-hospitalized and hospitalized as well as fatal and non-fatal events occurring in a specified population in a given time period. Estimates are presented in absolute numbers (incidents) or age-standardized rates per 100,000 people (incidence) per year.
Prevalent cases / Prevalence	Number of present SAH survivors (alive 28 days after SAH) in a specified population at any particular moment in time. Estimates are presented in absolute numbers (prevalent cases) or age-standardized rates per 100,000 people (prevalence) per year.
Deaths/mortality	Number of deaths attributed to SAH in a specified population and time period. Estimates include deaths among non-hospitalized and hospitalized SAH cases but because the SAH deaths are not linked with SAH incidents, they do not represent case-fatality rates. Moreover, since some of the SAH-related deaths may have occurred months after the actual SAH, the number of annual deaths may be greater than the number of annual incidents in small population groups. Estimates are presented in absolute numbers (deaths) or age-standardized rates per 100,000 people (mortality) per year.
Disability-adjusted life year	Equals the loss of one year of healthy life due to SAH. Calculated by the sum of years of life lost due to premature mortality (YLLs) and years lived with disability (YLDs) in a specified population and time period. Estimates are presented in absolute numbers (DALYs) or age-standardized rates per 100,000 people (DALY rates) per year.

Years of life lost (YLL)	Represent years lost due to premature mortality caused by SAH. Calculated by subtracting the age at death from the sex-, location- and year-specific life expectancy for an average person at the same age.
Years lived with disability (YLD)	Represent years lived in less than ideal health due to SAH. Calculated by multiplying the prevalence of SAH by the stroke-specific disability weights. Disability weights vary between 0 (perfect health) and 1 (equivalent to death) and are based on several public health surveys in low-, middle-, and high-income countries.
Population groups and geographical locations	
Sex (n=2)	Men, Women
Age groups (n=4)	Children (0–14 years old), Young adults (15–49 years old), Old adults (50–74 years old), Very old adults (≥75 years old)
Global Burden of Diseases study super-regions (n=7)	Central Europe, Eastern Europe, and Central Asia; High-income; Latin America and Caribbean; North Africa and the Middle East; South Asia; Southeast Asia, East Asia, and Oceania; Sub-Saharan Africa
Global Burden of Diseases study regions (n=21)	Andean Latin America; Australasia; Caribbean; Central Asia; Central Europe; Central Latin America; Central Sub-Saharan Africa; East Asia; Eastern Europe; Eastern Sub-Saharan Africa; High-income Asia Pacific; High-income North America; North Africa and Middle East; Oceania; South Asia; Southeast Asia; Southern Latin America; Southern Sub-Saharan Africa; Tropical Latin America; Western Europe; Western Sub-Saharan Africa
Countries and territories (n=204)	Afghanistan, Albania, Algeria, American Samoa, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bermuda, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Côte d'Ivoire, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Cook Islands, Costa Rica, Croatia, Cuba, Cyprus, Czechia, Democratic People's Republic of Korea, Democratic Republic of the Congo, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Eswatini, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Greenland, Grenada, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia (Federated States of), Monaco, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Niue, North Macedonia, Northern Mariana Islands, Norway, Oman, Pakistan, Palau, Palestine, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, South Sudan, Spain, Sri Lanka, Sudan, Suriname, Sweden, Switzerland, Syrian Arab Republic, Taiwan (Province of China), Tajikistan, Thailand, Timor-Leste, Togo, Tokelau, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, United Republic of Tanzania, United States of America, United States Virgin Islands, Uruguay, Uzbekistan, Vanuatu, Venezuela (Bolivarian Republic of), Vietnam, Yemen, Zambia, Zimbabwe
Level 4 causes included in comparisons	
Stroke types (n=3)	Intracerebral haemorrhage, Ischemic stroke, Subarachnoid haemorrhage
Neurological disorders (n=11)	Dementia, Epilepsy, Intracerebral haemorrhage, Ischemic stroke, Migraine, Motor neuron disease, Multiple sclerosis, Other neurological disorders, Parkinson's disease, Subarachnoid haemorrhage, Tension-type headache
Cardiovascular diseases (n=18)	Alcoholic cardiomyopathy, Aortic aneurysm, Atrial fibrillation and flutter, Endocarditis, Hypertensive heart disease, Intracerebral hemorrhage, Ischemic heart disease, Ischemic stroke, Lower extremity peripheral arterial disease, Myocarditis, Non-rheumatic calcific aortic valve disease, Non-rheumatic degenerative mitral valve disease, Other cardiomyopathies, Other cardiovascular and circulatory diseases, Other non-rheumatic valve diseases, Pulmonary Arterial Hypertension, Rheumatic heart disease, Subarachnoid hemorrhage
Non-communicable diseases (n=192)	Acne vulgaris, Acute glomerulonephritis, Acute lymphoid leukemia, Acute myeloid leukemia, Age-related and other hearing loss, Age-related macular degeneration, Alcohol use disorders, Alcoholic cardiomyopathy, Alopecia areata, Alzheimer's disease and other dementias, Amphetamine use disorders, Anorexia nervosa, Anxiety disorders, Aortic aneurysm, Appendicitis, Asbestosis, Asthma, Atopic dermatitis, Atrial fibrillation and flutter, Attention-deficit/hyperactivity disorder, Autism spectrum disorders, Benign prostatic hyperplasia, Bipolar disorder, Bladder cancer, Brain and central nervous system cancer, Breast cancer, Bulimia nervosa, Burkitt lymphoma, Cannabis use disorders, Caries of deciduous teeth, Caries of permanent teeth, Cataract, Cellulitis, Cervical cancer, Chronic hepatitis B including cirrhosis, Chronic hepatitis C including cirrhosis, Chronic kidney disease due to diabetes mellitus type 1, Chronic kidney disease due to diabetes mellitus type 2, Chronic kidney disease due to glomerulonephritis, Chronic kidney disease due to hypertension, Chronic kidney disease due to other and unspecified causes, Chronic lymphoid leukemia, Chronic myeloid leukemia, Chronic obstructive pulmonary disease, Cirrhosis due to alcohol, Cirrhosis due to other causes, Coal workers pneumoconiosis, Cocaine use disorders, Colon and rectum cancer, Conduct disorder, Congenital heart anomalies, Congenital musculoskeletal and limb anomalies, Contact dermatitis, Decubitus ulcer, Diabetes mellitus type 1, Diabetes mellitus type 2, Digestive congenital anomalies, Down syndrome, Dysthymia, Edentulism, Endocarditis, Endocrine, metabolic, blood, and immune disorders, Endometriosis, Esophageal cancer, Female infertility, Fungal skin diseases, G6PD deficiency, G6PD trait, Gallbladder and biliary diseases, Gallbladder and biliary tract cancer, Gastritis and duodenitis, Gastroesophageal reflux disease, Genital prolapse, Glaucoma, Gout, Hepatoblastoma, Hodgkin lymphoma, Hypertensive heart disease, Idiopathic developmental intellectual disability, Idiopathic epilepsy, Inflammatory bowel disease, Inguinal, femoral, and abdominal hernia, Interstitial lung disease and pulmonary sarcoidosis, Intracerebral haemorrhage, Ischemic heart disease, Ischemic stroke, Kidney cancer, Klinefelter syndrome, Larynx cancer, Lip and oral cavity cancer, Liver cancer due to alcohol use, Liver cancer due to hepatitis B, Liver cancer due to hepatitis C,

	Liver cancer due to NASH, Liver cancer due to other causes, Low back pain, Lower extremity peripheral arterial disease, Major depressive disorder, Male infertility, Malignant neoplasm of bone and articular cartilage, Malignant skin melanoma, Mesothelioma, Migraine, Motor neuron disease, Multiple myeloma, Multiple sclerosis, Myelodysplastic, myeloproliferative, and other hematopoietic neoplasms, Myocarditis, Nasopharynx cancer, Near vision loss, Neck pain, Neural tube defects, Neuroblastoma and other peripheral nervous cell tumors, Non-melanoma skin cancer (basal-cell carcinoma), Non-melanoma skin cancer (squamous-cell carcinoma), Non-rheumatic calcific aortic valve disease, Non-rheumatic degenerative mitral valve disease, Nonalcoholic fatty liver disease including cirrhosis, Opioid use disorders, Orofacial clefts, Osteoarthritis hand, Osteoarthritis hip, Osteoarthritis knee, Osteoarthritis other, Other benign and in situ neoplasms, Other cardiomyopathy, Other cardiovascular and circulatory diseases, Other chromosomal abnormalities, Other chronic respiratory diseases, Other congenital birth defects, Other digestive diseases, Other drug use disorders, Other eye cancers, Other gynecological diseases, Other hemoglobinopathies and hemolytic anemias, Other leukemia, Other malignant neoplasms, Other mental disorders, Other musculoskeletal disorders, Other neurological disorders, Other non-Hodgkin lymphoma, Other non-rheumatic valve diseases, Other oral disorders, Other pharynx cancer, Other pneumoconiosis, Other sense organ diseases, Other skin and subcutaneous diseases, Other urinary diseases, Other vision loss, Ovarian cancer, Pancreatic cancer, Pancreatitis, Paralytic ileus and intestinal obstruction, Parkinson's disease, Peptic ulcer disease, Periodontal diseases, Polycystic ovarian syndrome, Premenstrual syndrome, Prostate cancer, Pruritus, Psoriasis, Pulmonary Arterial Hypertension, Pyoderma, Refraction disorders, Retinoblastoma, Rheumatic heart disease, Rheumatoid arthritis, Scabies, Schizophrenia, Seborrheic dermatitis, Sickle cell disorders, Sickle cell trait, Silicosis, Soft tissue and other extraosseous sarcomas, Stomach cancer, Subarachnoid haemorrhage, Sudden infant death syndrome, Tension-type headache, Testicular cancer, Thalassemia, Thalassemia trait, Thyroid cancer, Tracheal, bronchus, and lung cancer, Turner syndrome, Urinary tract infections and interstitial nephritis, Urogenital congenital anomalies, Urolithiasis, Urticaria, Uterine cancer, Uterine fibroids, Vascular intestinal disorders, Viral skin diseases
All diseases (n=300)	Acne vulgaris, Acute glomerulonephritis, Acute hepatitis A, Acute hepatitis B, Acute hepatitis C, Acute hepatitis E, Acute lymphoid leukemia, Acute myeloid leukemia, Adverse effects of medical treatment, African trypanosomiasis, Age-related and other hearing loss, Age-related macular degeneration, Alcohol use disorders, Alcoholic cardiomyopathy, Alopecia areata, Alzheimer's disease and other dementias, Amphetamine use disorders, Anorexia nervosa, Anxiety disorders, Aortic aneurysm, Appendicitis, Asbestosis, Ascariasis, Asthma, Atopic dermatitis, Atrial fibrillation and flutter, Attention-deficit/hyperactivity disorder, Autism spectrum disorders, Benign prostatic hyperplasia, Bipolar disorder, Bladder cancer, Brain and central nervous system cancer, Breast cancer, Bulimia nervosa, Burkitt lymphoma, Cannabis use disorders, Caries of deciduous teeth, Caries of permanent teeth, Cataract, Cellulitis, Cervical cancer, Chagas disease, Chlamydial infection, Chronic hepatitis B including cirrhosis, Chronic hepatitis C including cirrhosis, Chronic kidney disease due to diabetes mellitus type 1, Chronic kidney disease due to diabetes mellitus type 2, Chronic kidney disease due to glomerulonephritis, Chronic kidney disease due to hypertension, Chronic kidney disease due to other and unspecified causes, Chronic lymphoid leukemia, Chronic myeloid leukemia, Chronic obstructive pulmonary disease, Cirrhosis due to alcohol, Cirrhosis due to other causes, Coal workers pneumoconiosis, Cocaine use disorders, Colon and rectum cancer, Conduct disorder, Conflict and terrorism, Congenital heart anomalies, Congenital musculoskeletal and limb anomalies, Contact dermatitis, COVID-19, Cutaneous and mucocutaneous leishmaniasis, Cyclist road injuries, Cystic echinococcosis, Cysticercosis, Decubitus ulcer, Dengue, Diabetes mellitus type 1, Diabetes mellitus type 2, Diarrheal diseases, Dietary iron deficiency, Digestive congenital anomalies, Diphtheria, Down syndrome, Drowning, Drug-susceptible tuberculosis, Dysthymia, Ebola, Ectopic pregnancy, Edentulism, Encephalitis, Endocarditis, Endocrine, metabolic, blood, and immune disorders, Endometriosis, Environmental heat and cold exposure, Esophageal cancer, Exposure to forces of nature, Extensively drug-resistant tuberculosis, Falls, Female infertility, Fire, heat, and hot substances, Food-borne trematodiasis, Foreign body in eyes, Foreign body in other body part, Fungal skin diseases, G6PD deficiency, G6PD trait, Gallbladder and biliary diseases, Gallbladder and biliary tract cancer, Gastritis and duodenitis, Gastroesophageal reflux disease, Genital herpes, Genital prolapse, Glaucoma, Gonococcal infection, Gout, Guinea worm disease, Hemolytic disease and other neonatal jaundice, Hepatoblastoma, HIV/AIDS - Drug-susceptible Tuberculosis, HIV/AIDS - Extensively drug-resistant Tuberculosis, HIV/AIDS - Multidrug-resistant, Tuberculosis without extensive drug resistance, HIV/AIDS resulting in other diseases, Hodgkin lymphoma, Hookworm disease, Hypertensive heart disease, Idiopathic developmental intellectual disability, Idiopathic epilepsy, Indirect maternal deaths, Inflammatory bowel disease, Inguinal, femoral, and abdominal hernia, Interstitial lung disease and pulmonary sarcoidosis, Intracerebral haemorrhage, Invasive Non-typhoidal Salmonella (iNTS), Iodine deficiency, Ischemic heart disease, Ischemic stroke, Kidney cancer, Klinefelter syndrome, Larynx cancer, Late maternal deaths, Leprosy, Lip and oral cavity cancer, Liver cancer due to alcohol use, Liver cancer due to hepatitis B, Liver cancer due to hepatitis C, Liver cancer due to NASH, Liver cancer due to other causes, Low back pain, Lower extremity peripheral arterial disease, Lower respiratory infections, Lymphatic filariasis, Major depressive disorder, Malaria, Male infertility, Malignant neoplasm of bone and articular cartilage, Malignant skin melanoma, Maternal abortion and miscarriage, Maternal deaths aggravated by HIV/AIDS, Maternal haemorrhage, Maternal hypertensive disorders, Maternal obstructed labor and uterine rupture, Maternal sepsis and other maternal infections, Measles, Meningitis, Mesothelioma, Migraine, Motor neuron disease, Motor vehicle road injuries, Motorcyclist road injuries, Multidrug-resistant tuberculosis without extensive drug resistance, Multiple myeloma, Multiple sclerosis, Myelodysplastic, myeloproliferative, and other hematopoietic neoplasms, Myocarditis, Nasopharynx cancer, Near vision loss, Neck pain, Neonatal encephalopathy due to birth asphyxia and trauma, Neonatal preterm birth, Neonatal sepsis and other neonatal infections, Neural tube defects, Neuroblastoma and other peripheral nervous cell tumors, Non-melanoma skin cancer (basal-cell carcinoma), Non-melanoma skin cancer (squamous-cell carcinoma), Non-rheumatic calcific aortic valve disease, Non-rheumatic degenerative mitral valve disease, Non-venomous animal contact, Nonalcoholic fatty liver disease including cirrhosis, Onchocerciasis, Opioid use disorders, Orofacial clefts, Osteoarthritis hand, Osteoarthritis hip, Osteoarthritis knee, Osteoarthritis other, Other benign and in situ neoplasms, Other cardiomyopathy, Other cardiovascular and circulatory diseases, Other chromosomal abnormalities, Other

	chronic respiratory diseases, Other congenital birth defects, Other COVID-19 pandemic-related outcomes, Other digestive diseases, Other direct maternal disorders, Other drug use disorders, Other exposure to mechanical forces, Other eye cancers, Other gynecological diseases, Other hemoglobinopathies and hemolytic anemias, Other intestinal infectious diseases, Other leukemia, Other malignant neoplasms, Other mental disorders, Other musculoskeletal disorders, Other neglected tropical diseases, Other neonatal disorders, Other neurological disorders, Other non-Hodgkin lymphoma, Other non-rheumatic valve diseases, Other nutritional deficiencies, Other oral disorders, Other pharynx cancer, Other pneumoconiosis, Other road injuries, Other sense organ diseases, Other sexually transmitted infections, Other skin and subcutaneous diseases, Other transport injuries, Other unintentional injuries, Other unspecified infectious diseases, Other urinary diseases, Other vision loss, Otitis media, Ovarian cancer, Pancreatic cancer, Pancreatitis, Paralytic ileus and intestinal obstruction, Paratyphoid fever, Parkinson's disease, Pedestrian road injuries, Peptic ulcer disease, Periodontal diseases, Pertussis, Physical violence by firearm, Physical violence by other means, Physical violence by sharp object, Poisoning by carbon monoxide, Poisoning by other means, Police conflict and executions, Polycystic ovarian syndrome, Premenstrual syndrome, Prostate cancer, Protein-energy malnutrition, Pruritus, Psoriasis, Pulmonary Arterial Hypertension, Pulmonary aspiration and foreign body in airway, Pyoderma, Rabies, Refraction disorders, Retinoblastoma, Rheumatic heart disease, Rheumatoid arthritis, Scabies, Schistosomiasis, Schizophrenia, Seborrheic dermatitis, Self-harm by firearm, Self-harm by other specified means, Sexual violence, Sickle cell disorders, Sickle cell trait, Silicosis, Soft tissue and other extraosseous sarcomas, Stomach cancer, Subarachnoid haemorrhage, Sudden infant death syndrome, Syphilis, Tension-type headache, Testicular cancer, Tetanus, Thalassemias, Thalassemias trait, Thyroid cancer, Tracheal, bronchus, and lung cancer, Trachoma, Trichomoniasis, Trichuriasis, Turner syndrome, Typhoid fever, Unintentional firearm injuries, Upper respiratory, Urinary tract infections and interstitial nephritis, Urogenital congenital anomalies, Urolithiasis, Urticaria, Uterine cancer, Uterine fibroids, Varicella and herpes zoster, Vascular intestinal disorders, Venomous animal contact, Viral skin diseases, Visceral leishmaniasis, Vitamin A deficiency, Yellow fever, Zika virus
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2.5 Supplementary References

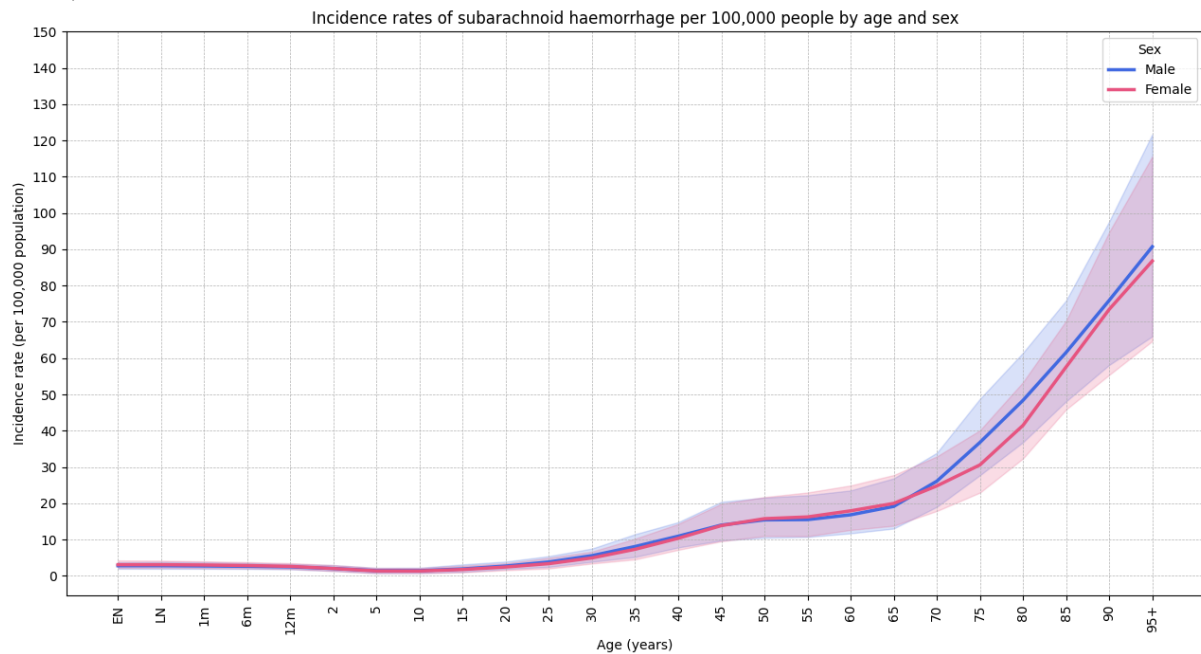
1. GBD Stroke Collaborators. Global, regional, and national burden of stroke and its risk factors, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet Neurol.* Oct 2021;20(10):795-820. doi:10.1016/S1474-4422(21)00252-0
2. GBD Stroke Risk Factor Collaborators. Global, regional, and national burden of stroke and its risk factors, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet Neurol.* Oct 2024;23(10):973-1003. doi:10.1016/S1474-4422(24)00369-7
3. Institute for Health Metrics and Evaluation. Protocol for the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), version 4.0. 2020. http://www.healthdata.org/sites/default/files/files/Projects/GBD/March2020_GBD%20Protocol_v4.pdf (accessed July, 2024).
4. Stevens GA, Alkema L, Black RE, et al. Guidelines for Accurate and Transparent Health Estimates Reporting: the GATHER statement. *Lancet.* Dec 10 2016;388(10062):e19-e23. doi:10.1016/S0140-6736(16)30388-9
5. Etminan N, Chang HS, Hackenberg K, et al. Worldwide Incidence of Aneurysmal Subarachnoid Hemorrhage According to Region, Time Period, Blood Pressure, and Smoking Prevalence in the Population: A Systematic Review and Meta-analysis. *JAMA Neurol.* May 1 2019;76(5):588-597. doi:10.1001/jamaneurol.2019.0006
6. Mahlamaki K, Rautalin I, Korja M. Case Fatality Rates of Subarachnoid Hemorrhage Are Decreasing with Substantial between-Country Variation: A Systematic Review of Population-Based Studies between 1980 and 2020. *Neuroepidemiology.* 2022;56(6):402-412. doi:10.1159/000526983
7. GBD Causes of Death Collaborators. Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* Apr 3 2024;doi:10.1016/S0140-6736(24)00367-2
8. GBD Diseases Injuries, Collaborators. Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* May 18 2024;403(10440):2133-2161. doi:10.1016/S0140-6736(24)00757-8
9. Truelsen T, Krarup LH, Iversen HK, et al. Causes of Death Data in the Global Burden of Disease Estimates for Ischemic and Hemorrhagic Stroke. *Neuroepidemiology.* 2015;45(3):152-60. doi:10.1159/000441084
10. GBD Risk Factors Collaborators. Global burden and strength of evidence for 88 risk factors in 204 countries and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* May 18 2024;403(10440):2162-2203. doi:10.1016/S0140-6736(24)00933-4

3. Supplementary Results

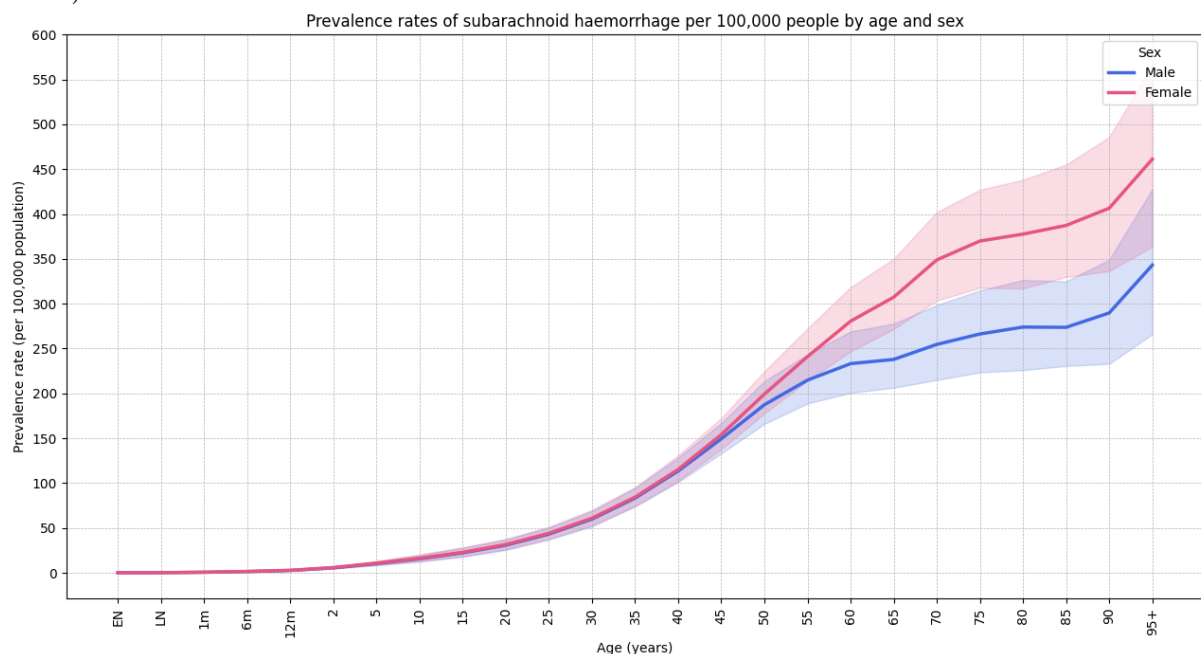
Supplementary Figure 5A-D. A) Incidence, B) prevalence, C) mortality, and D) disability-adjusted life year (DALY) rates of subarachnoid hemorrhage per 100,000 people by age and separately for men and women.

Solid lines represent the point estimates and shaded areas the 95% uncertainty intervals. EN = early neonatal (0–6 days); LN = late neonatal (7–27 days)

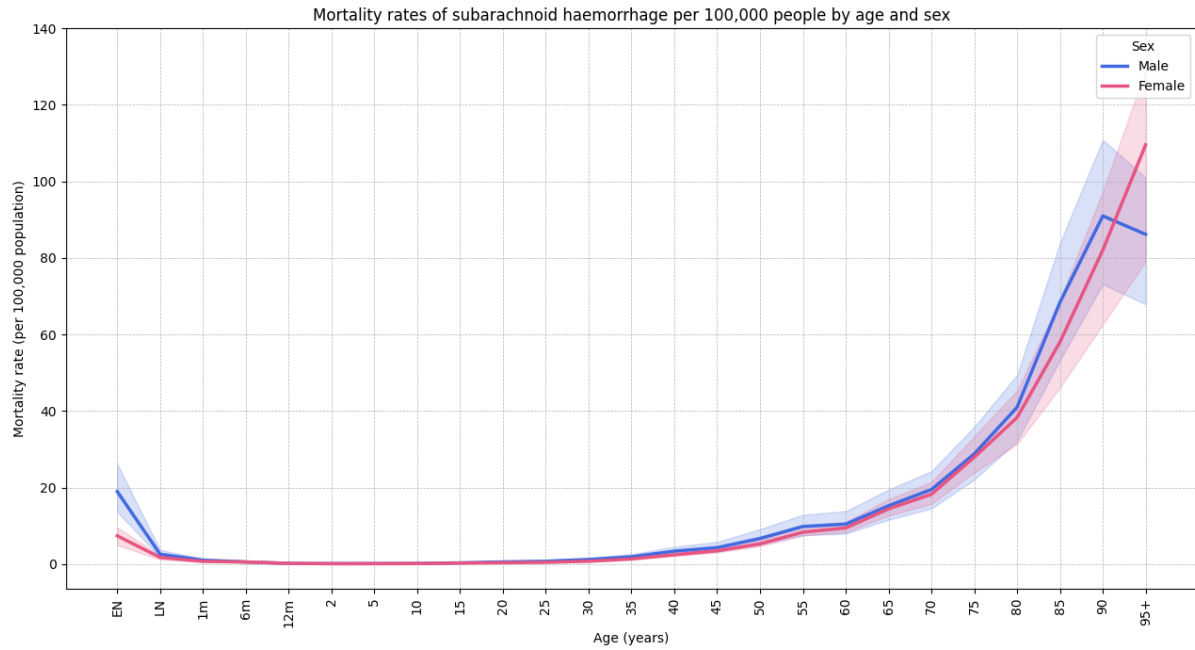
A) Incidence



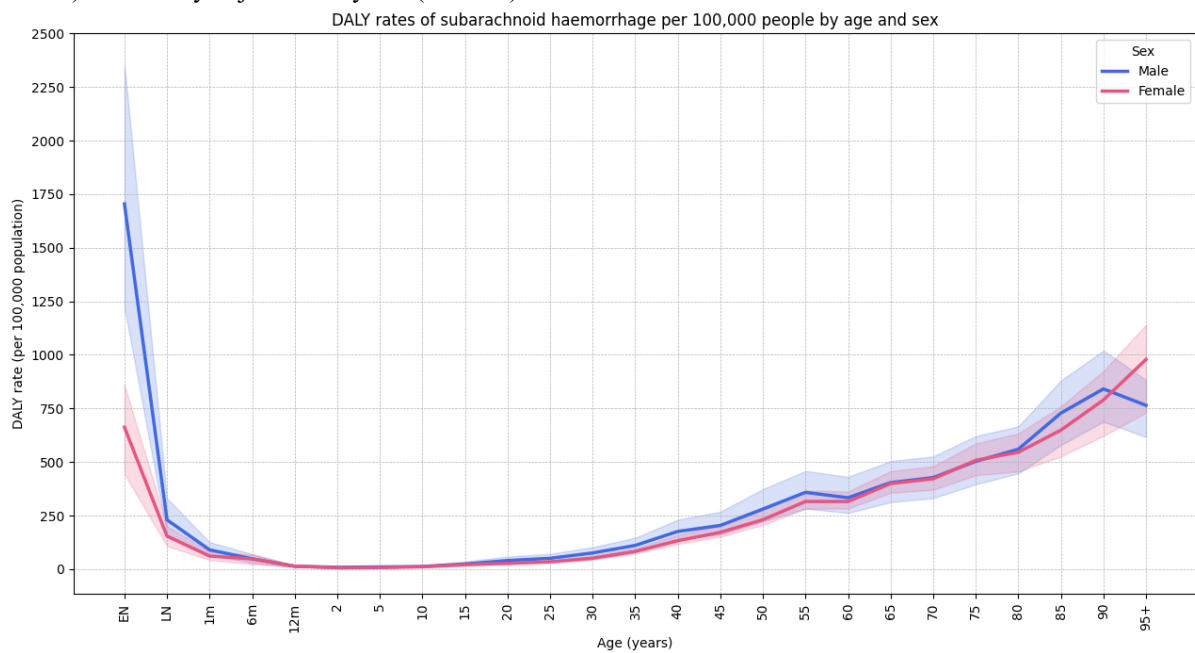
B) Prevalence



C) Mortality



D) Disability-adjusted life years (DALYs)

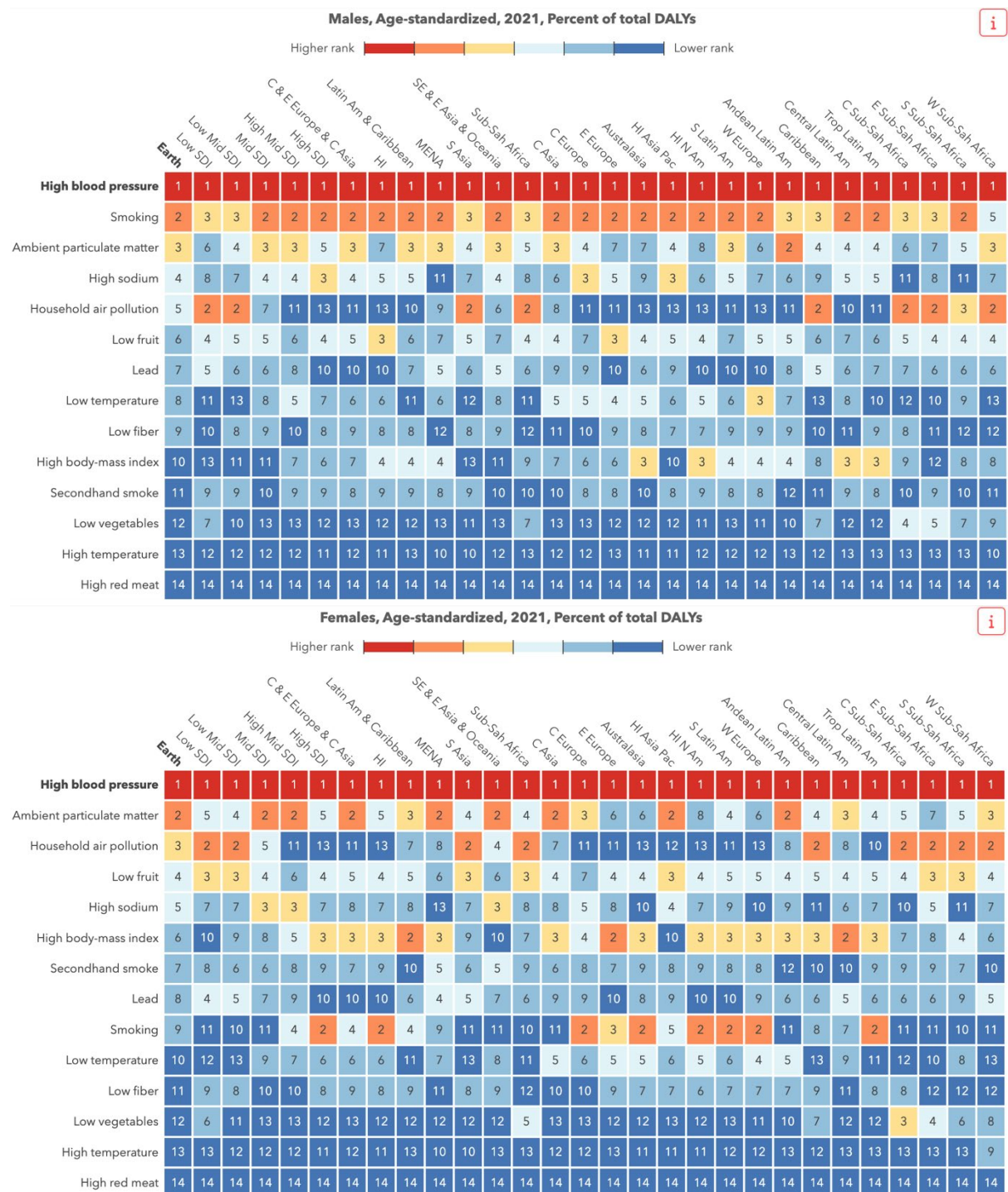


Supplementary Figure 6. Rankings of risk factors by their age-standardized population-attributable fractions on subarachnoid hemorrhage-related disability-adjusted life years (DALYs) in the world, five sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

	High systolic blood pressure	Smoking	Ambient particulate matter pollution	Household air pollution from solid fuels	Diet low in fruits	Diet high in sodium	Lead exposure	High body-mass index	Secondhand smoke	Low temperature	Diet low in fiber	Diet low in vegetables	High temperature	Diet high in red meat
Global	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Low SDI	1	6	5	2	3	8	4	12	9	11	10	7	13	14
Low-middle SDI	1	3	4	2	5	7	6	10	9	13	8	11	12	14
Middle SDI	1	3	2	7	5	4	6	9	8	10	11	13	12	14
High-middle SDI	1	2	3	11	6	4	9	7	8	5	10	13	12	14
High SDI	1	2	4	13	3	6	10	5	9	7	8	12	11	14
Central Europe, Eastern Europe, and Central Asia	1	2	3	11	5	7	10	4	8	6	9	13	12	14
High-income	1	2	6	13	4	7	10	3	9	5	8	12	11	14
Latin America and Caribbean	1	2	4	8	5	7	6	3	10	11	9	12	13	14
North Africa and Middle East	1	3	2	9	8	12	5	4	6	7	11	13	10	14
South Asia	1	5	3	2	4	7	6	13	9	12	8	11	10	14
Southeast Asia, East Asia, and Oceania	1	3	2	5	6	4	7	11	8	9	10	13	12	14
Sub-Saharan Africa	1	6	4	2	3	9	5	8	10	11	12	7	13	14
Andean Latin America	1	4	2	10	5	8	7	3	12	6	9	11	13	14
Australasia	1	2	6	13	4	10	8	3	9	5	7	12	11	14
Caribbean	1	3	4	2	6	10	5	7	11	13	9	8	12	14
Central Asia	1	3	2	9	4	7	10	6	8	5	11	13	12	14
Central Europe	1	2	4	11	7	3	9	5	8	6	10	13	12	14
Central Latin America	1	4	3	8	5	6	7	2	10	9	11	12	13	14
Central Sub-Saharan Africa	1	7	5	2	4	11	6	8	10	12	9	3	13	14
East Asia	1	3	2	7	8	4	5	10	9	6	11	13	12	14
Eastern Europe	1	2	6	11	4	7	10	3	8	5	9	12	13	14
Eastern Sub-Saharan Africa	1	5	8	2	3	7	6	11	9	10	12	4	13	14
High-income Asia Pacific	1	2	3	12	5	4	9	10	8	6	7	13	11	14
High-income North America	1	2	8	13	4	6	10	3	9	5	7	12	11	14
North Africa and Middle East	1	3	2	9	8	12	5	4	6	7	11	13	10	14
Oceania	1	3	8	2	4	7	11	6	5	10	12	9	13	14
South Asia	1	5	3	2	4	7	6	13	9	12	8	11	10	14
Southeast Asia	1	2	3	4	6	5	9	10	8	13	7	11	12	14
Southern Latin America	1	2	3	11	6	7	10	4	9	5	8	13	12	14
Southern Sub-Saharan Africa	1	4	5	2	3	11	8	6	9	10	12	7	13	14
Tropical Latin America	1	2	4	11	5	6	7	3	9	10	8	12	13	14
Western Europe	1	2	6	13	5	7	10	4	9	3	8	11	12	14
Western Sub-Saharan Africa	1	6	3	2	4	8	5	7	11	13	12	9	10	14

Supplementary Figure 7. Rankings of risk factors by their age-standardized population-attributable fractions on SAH-related disability-adjusted life years (DALYs) in the world, by 5 sociodemographic index (SDI) levels, 7 GBD super-regions and 21 GBD regions, separately for men and women.

Source of figures: <https://vizhub.healthdata.org/gbd-compare/>

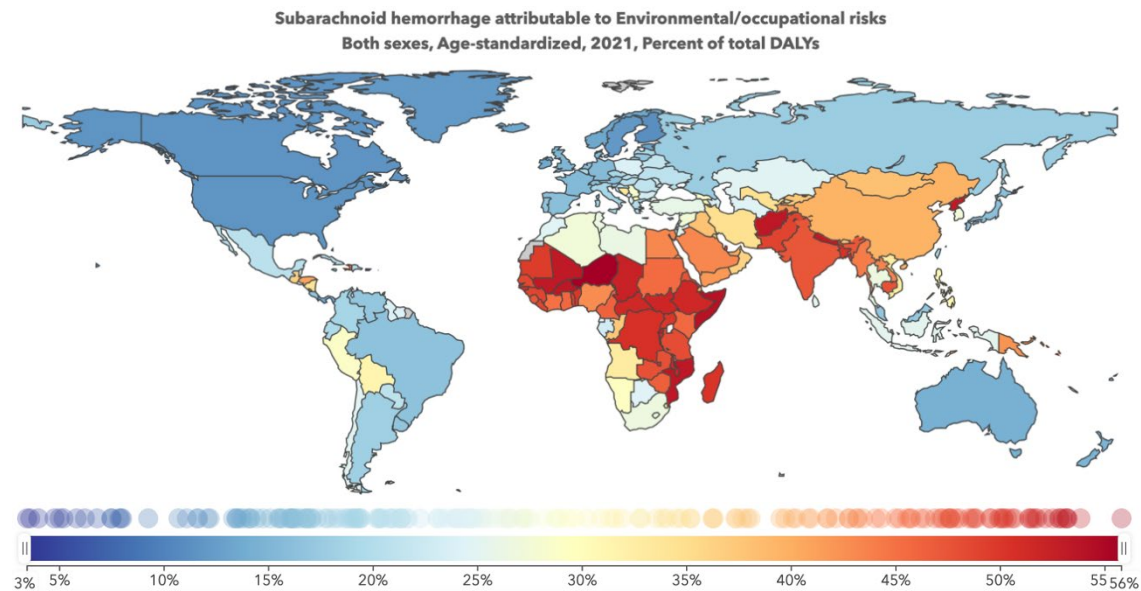


Supplementary Figure 8. Age-standardized population-attributable fractions (PAFs) of A) environmental/occupational risks, B) behavioral risks, and C) metabolic risks on disability-adjusted life years related to subarachnoid hemorrhage in 204 countries and territories of the world in 2021.

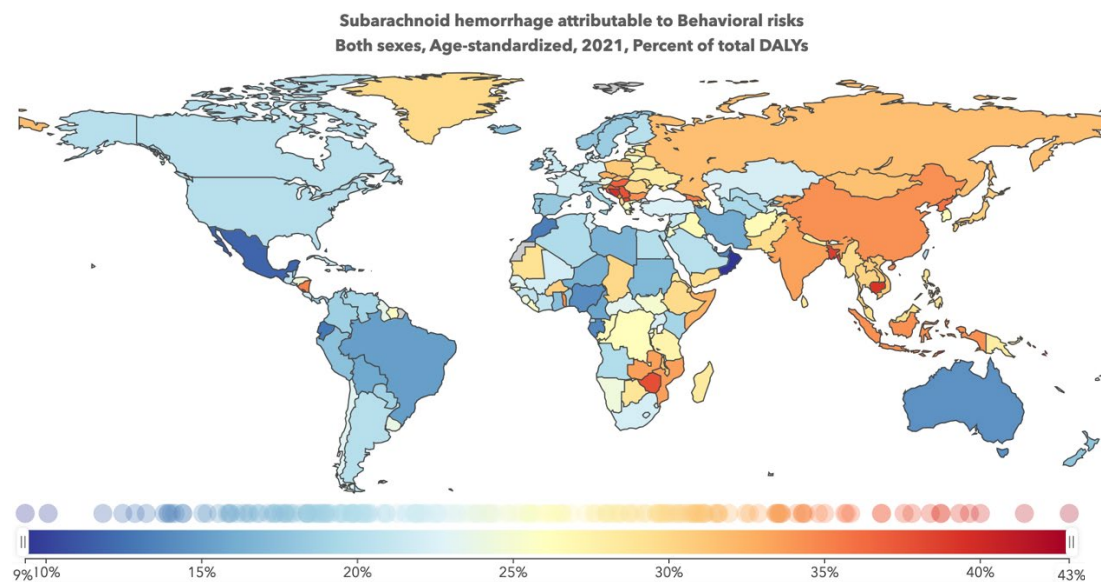
The circles above the scales represent the estimates from individual countries. Source of figures:

<https://vizhub.healthdata.org/gbd-compare/>

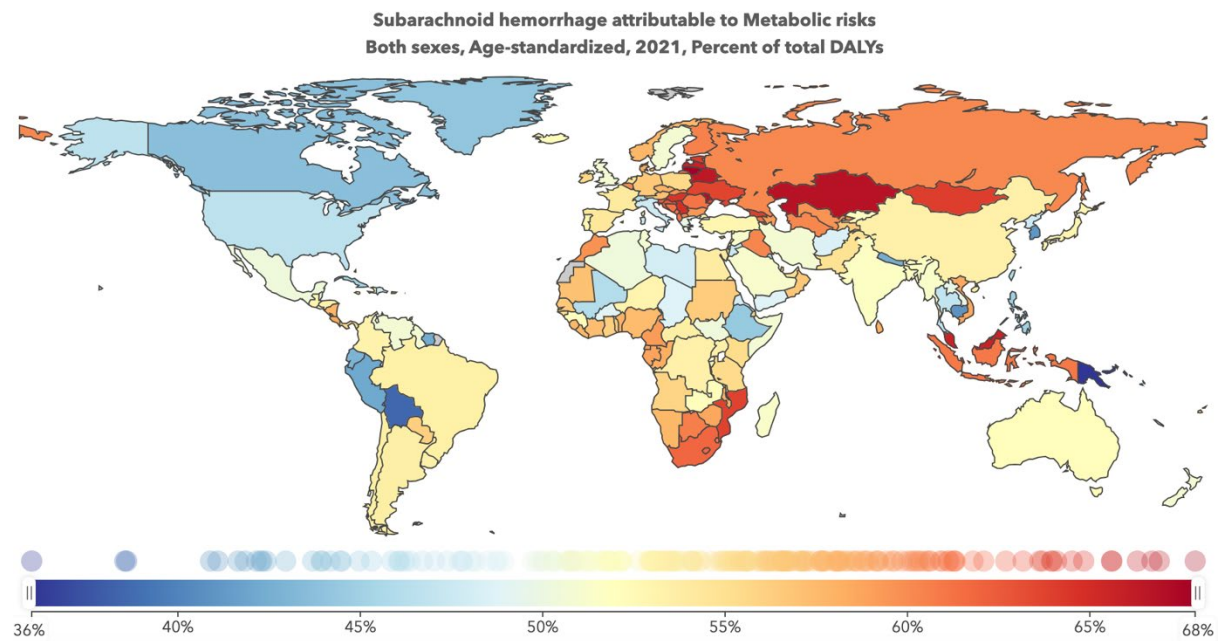
A) Environmental/occupational risks



B) Behavioral risks

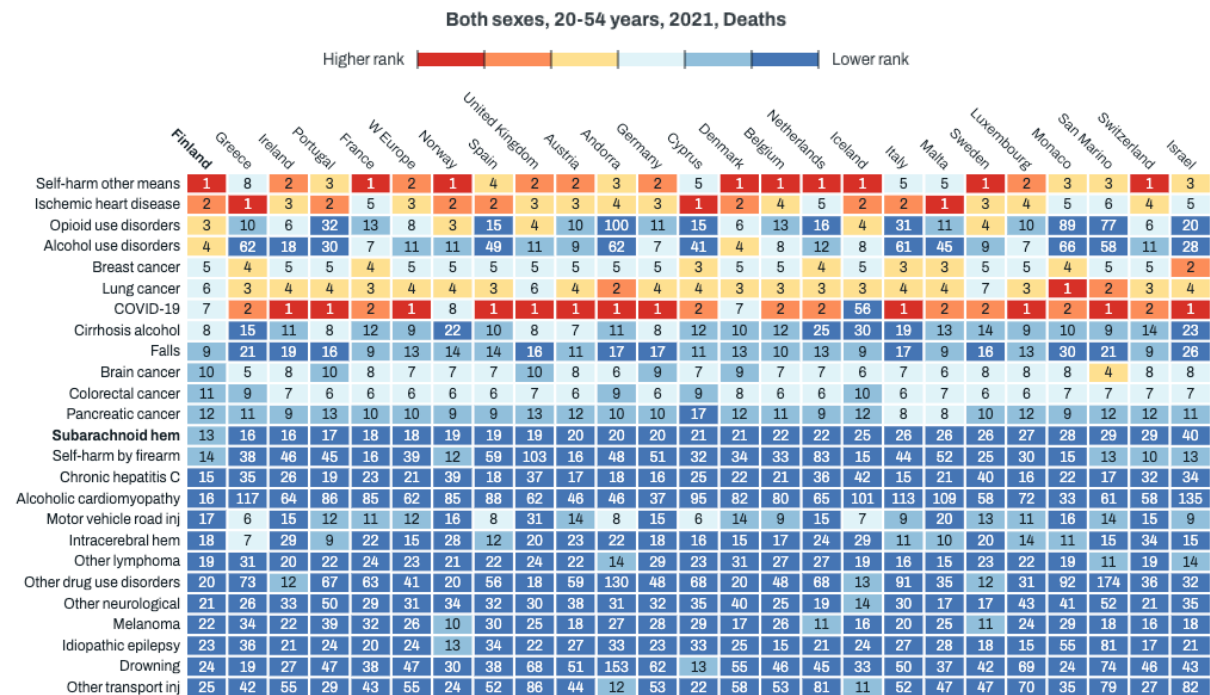


C) Metabolic risks



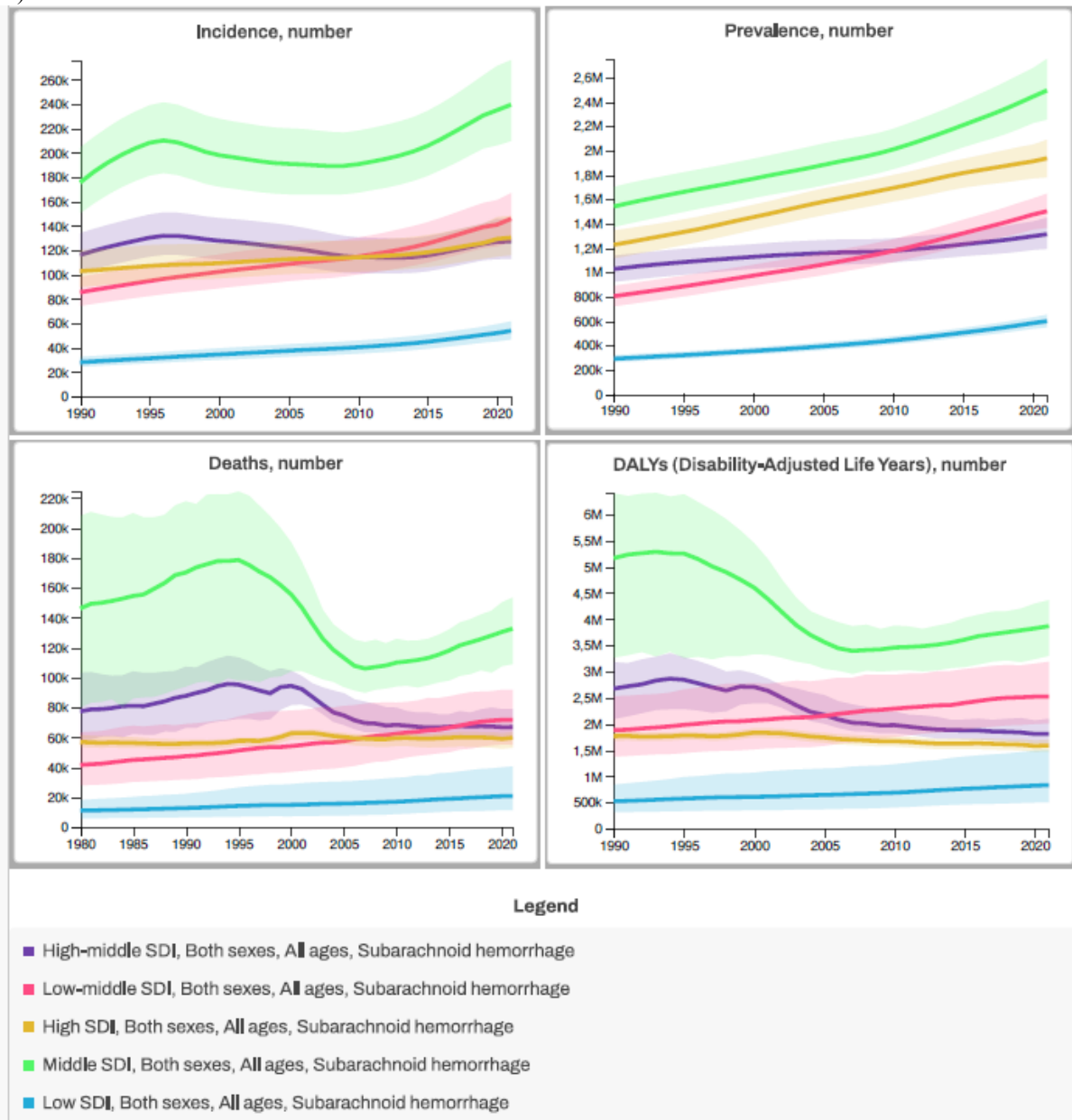
Supplementary Figure 9. Rankings of causes of death in the age group of 20-54 years across 24 Western European countries in 2021.

Source of figure: <https://vizhub.healthdata.org/gbd-compare/>



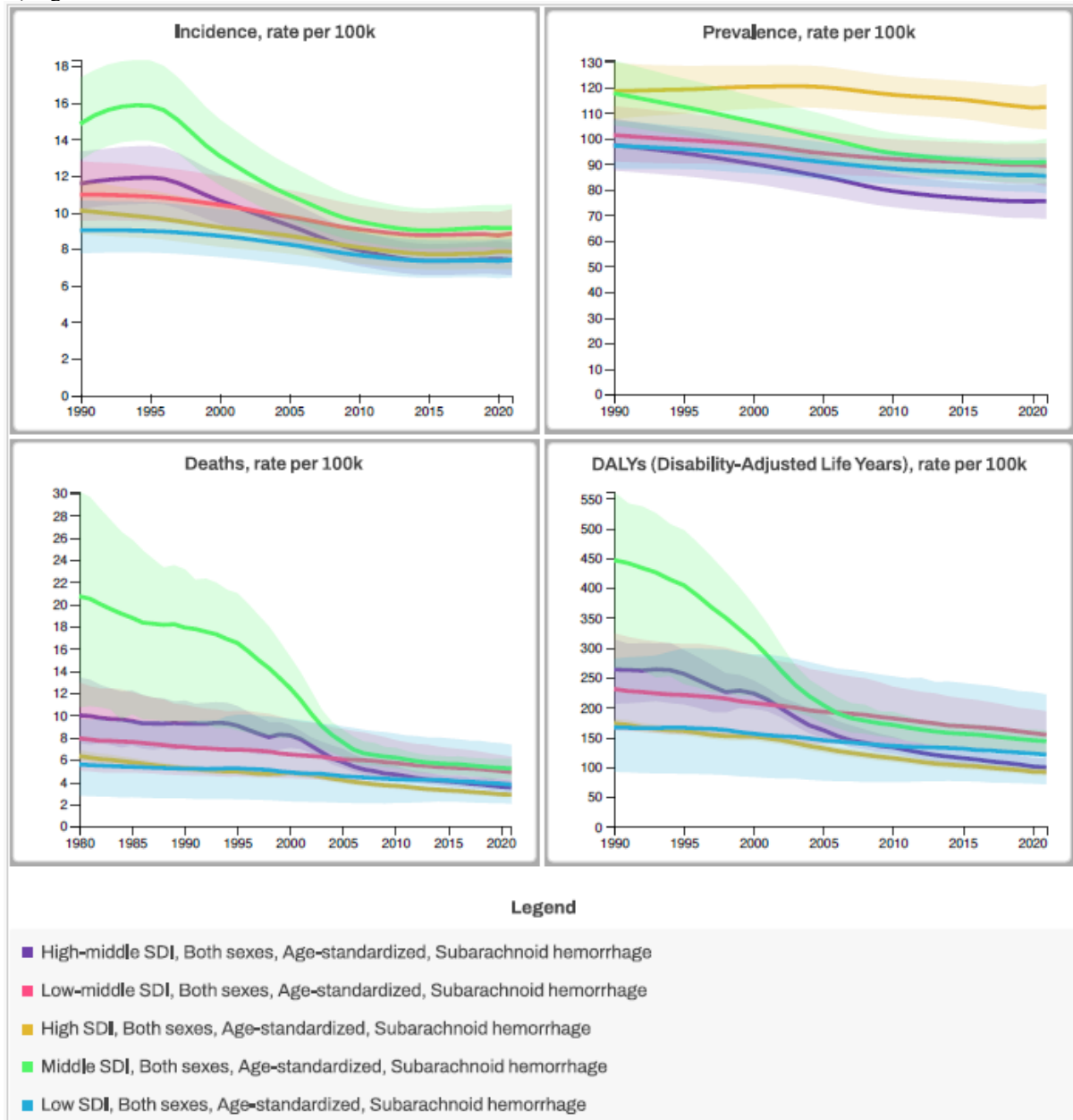
Supplementary Figure 10. Changes in the Incidence, Prevalence, Deaths, and Disability-Adjusted Life-Years (DALYs) of Subarachnoid Hemorrhage in the World Between 1990 (Deaths Since 1980) and 2021

A) Absolute numbers



Results are presented as absolute number (A) and age-standardized rates (B) per 100 000 people as well as stratified by Sociodemographic Index levels. Solid lines represent the changes in point estimates, and shaded areas represent 95% uncertainty intervals. Figures created with The Institute for Health Metrics and Evaluation, Global Burden of Diseases Study 2021.

B) Age-standardized rates



Results are presented as absolute number (A) and age-standardized rates (B) per 100 000 people as well as stratified by Sociodemographic Index levels. Solid lines represent the changes in point estimates, and shaded areas represent 95% uncertainty intervals. Figures created with The Institute for Health Metrics and Evaluation, Global Burden of Diseases Study 2021.

Supplementary Table 4. Age-standardized incidence, prevalence, mortality, and disability-adjusted life years (DALY) rates (with 95% uncertainty intervals) of subarachnoid hemorrhage per 100,000 people for 204 countries and territories in 2021.

	Incidence	Prevalence	Mortality	DALY rate
Afghanistan	8.88 (7.88–10.14)	83.19 (76.37–89.93)	6.60 (3.24–11.83)	186.26 (101.62–309.66)
Albania	6.73 (5.93–7.56)	67.44 (62.26–73.26)	2.49 (1.61–3.46)	69.05 (50.78–91.71)
Algeria	6.27 (5.48–7.07)	77.49 (71.82–83.72)	2.60 (1.72–3.95)	69.50 (48.57–99.79)
American Samoa	11.56 (10.39–12.83)	151.63 (143.48–159.82)	6.03 (4.83–7.57)	202.28 (164.02–251.73)
Andorra	6.10 (5.27–6.98)	84.59 (78.82–90.33)	1.80 (1.22–2.44)	57.46 (41.75–75.52)
Angola	6.31 (5.46–7.40)	85.41 (79.00–91.44)	2.74 (1.43–5.16)	88.71 (50.99–154.18)
Antigua and Barbuda	10.34 (9.19–11.48)	139.56 (131.03–147.42)	3.99 (3.71–4.30)	118.60 (110.98–127.41)
Argentina	10.86 (9.70–12.25)	125.28 (115.71–137.87)	4.06 (3.72–4.34)	134.14 (124.15–143.62)
Armenia	6.16 (5.46–6.90)	71.14 (65.98–76.17)	2.34 (2.08–2.64)	71.12 (63.51–80.44)
Australia	6.11 (5.37–6.92)	81.22 (75.77–87.05)	2.38 (2.13–2.59)	70.06 (64.90–75.38)
Austria	8.86 (7.58–10.19)	150.16 (141.07–158.41)	2.22 (1.98–2.42)	71.68 (64.60–78.56)
Azerbaijan	5.85 (5.03–6.68)	67.09 (61.95–72.60)	1.10 (0.74–1.57)	39.40 (29.64–51.87)
Bahamas	8.97 (7.98–9.97)	122.41 (115.44–129.67)	3.31 (2.70–4.08)	115.57 (94.93–141.03)
Bahrain	4.48 (3.90–5.04)	59.98 (54.83–65.34)	1.99 (1.45–2.51)	52.26 (41.52–63.45)
Bangladesh	12.74 (11.31–14.63)	122.47 (114.19–132.31)	7.93 (4.69–13.16)	243.46 (154.02–386.81)
Barbados	10.24 (9.21–11.50)	140.97 (132.99–149.01)	4.69 (3.74–5.82)	144.16 (114.34–179.24)
Belarus	7.36 (6.57–8.19)	71.75 (66.81–77.59)	3.93 (3.19–4.68)	123.73 (101.18–146.64)
Belgium	5.72 (5.02–6.53)	71.18 (65.73–77.18)	2.31 (2.09–2.49)	67.19 (62.95–72.38)
Belize	8.43 (7.49–9.44)	115.01 (108.03–121.97)	2.73 (2.39–3.10)	92.36 (81.22–103.89)
Benin	5.41 (4.70–6.35)	84.69 (79.07–90.95)	2.60 (1.22–6.16)	84.74 (44.30–183.61)
Bermuda	8.64 (7.54–9.71)	141.44 (134.53–149.13)	2.24 (1.89–2.70)	72.39 (61.63–86.07)
Bhutan	7.64 (6.68–8.71)	78.42 (72.16–84.84)	3.68 (2.44–5.58)	114.23 (78.27–170.02)
Bolivia (Plurinational State of)	14.43 (12.86–16.20)	171.84 (161.82–181.39)	9.70 (6.98–13.63)	300.13 (219.35–411.66)
Bosnia and Herzegovina	7.73 (6.93–8.59)	76.59 (70.71–82.43)	3.25 (2.38–4.21)	102.57 (77.01–130.54)
Botswana	5.86 (5.12–6.74)	79.12 (73.08–85.24)	1.34 (0.93–2.21)	46.75 (33.73–72.24)
Brazil	10.20 (8.84–11.81)	108.15 (96.34–121.68)	5.45 (5.12–5.68)	177.61 (169.76–184.33)
Brunei Darussalam	15.60 (13.78–17.87)	172.32 (162.82–182.90)	7.00 (5.73–8.50)	224.11 (188.53–267.80)
Bulgaria	8.32 (7.54–9.13)	75.93 (70.11–81.65)	5.09 (4.38–5.86)	154.16 (132.14–178.07)
Burkina Faso	5.00 (4.31–5.83)	80.47 (74.73–86.94)	2.25 (0.82–5.81)	76.70 (34.78–176.90)
Burundi	7.99 (6.86–9.49)	100.87 (93.66–107.96)	3.76 (0.85–13.92)	119.38 (37.30–389.51)
Côte d'Ivoire	5.07 (4.37–5.84)	81.15 (75.22–87.32)	2.45 (1.19–5.34)	87.78 (48.28–175.32)
Cabo Verde	5.18 (4.36–6.08)	91.15 (84.72–97.56)	1.66 (0.81–3.81)	62.53 (36.17–135.13)
Cambodia	10.80 (9.55–12.18)	102.64 (95.11–109.79)	5.88 (4.20–10.09)	165.54 (122.80–242.74)
Cameroon	5.27 (4.56–6.14)	84.35 (78.01–90.64)	2.80 (1.27–6.19)	97.33 (48.64–195.34)
Canada	7.03 (6.11–8.04)	103.20 (96.64–109.98)	2.36 (2.13–2.55)	76.13 (69.97–82.49)
Central African Republic	7.50 (6.45–8.84)	89.29 (81.88–96.53)	4.49 (1.55–11.58)	141.68 (57.82–314.50)
Chad	5.67 (4.90–6.60)	89.41 (83.10–95.41)	3.45 (1.34–8.47)	117.76 (52.85–264.50)
Chile	9.61 (8.46–10.82)	111.39 (103.59–121.03)	3.79 (3.50–4.08)	120.38 (112.85–129.21)
China	7.81 (6.88–8.95)	68.88 (61.53–76.90)	4.72 (3.45–5.95)	115.49 (86.86–142.50)
Colombia	13.97 (12.55–15.71)	178.26 (168.44–187.12)	6.09 (5.08–7.19)	184.51 (155.49–217.65)
Comoros	7.36 (6.39–8.62)	101.07 (94.05–108.35)	2.63 (1.07–6.33)	88.71 (43.07–188.52)
Congo	6.17 (5.35–7.09)	82.64 (76.65–88.61)	2.69 (1.45–5.27)	87.67 (51.87–155.51)
Cook Islands	9.90 (8.77–11.05)	152.97 (145.53–160.75)	2.83 (1.87–3.90)	113.54 (86.33–144.32)
Costa Rica	10.25 (8.95–11.66)	155.37 (146.79–163.67)	3.65 (3.16–4.04)	117.80 (104.96–129.08)
Croatia	5.93 (5.34–6.60)	64.96 (59.48–70.46)	3.39 (2.95–3.91)	93.44 (82.06–106.54)
Cuba	8.44 (7.42–9.54)	130.94 (124.33–137.57)	2.79 (2.39–3.17)	91.85 (80.29–103.71)
Cyprus	7.01 (6.13–7.98)	87.96 (81.91–93.66)	2.65 (2.11–3.36)	68.28 (56.81–81.96)
Czechia	6.11 (5.35–6.81)	72.88 (67.04–78.27)	2.30 (2.01–2.64)	73.74 (64.69–84.50)
Democratic People's Republic of Korea	11.65 (10.29–13.04)	99.29 (92.31–107.05)	7.72 (4.65–14.04)	216.33 (136.18–370.31)
Democratic Republic of the Congo	7.75 (6.67–9.12)	97.68 (90.79–104.81)	3.30 (1.08–10.89)	102.20 (42.99–302.44)
Denmark	7.42 (6.51–8.47)	98.92 (92.58–105.51)	2.73 (2.47–2.95)	76.66 (70.56–81.99)
Djibouti	7.49 (6.45–8.73)	101.23 (94.54–108.39)	2.83 (1.15–6.26)	94.58 (44.72–194.76)
Dominica	8.99 (7.91–10.12)	124.56 (117.12–132.60)	4.42 (3.56–5.39)	136.67 (113.11–166.88)
Dominican Republic	10.97 (9.68–12.47)	141.84 (133.15–150.07)	4.04 (2.98–5.27)	146.74 (114.48–185.95)
Ecuador	14.98 (13.58–16.91)	199.81 (189.65–209.28)	7.69 (6.14–9.47)	234.98 (190.75–288.98)
Egypt	5.52 (4.84–6.20)	65.46 (60.09–71.47)	2.99 (2.05–4.36)	83.75 (60.65–119.58)
El Salvador	9.75 (8.67–10.93)	134.70 (127.09–142.95)	3.37 (2.57–4.34)	118.51 (93.68–147.91)
Equatorial Guinea	5.30 (4.51–6.21)	74.12 (68.51–79.92)	1.56 (0.78–2.63)	54.32 (30.08–83.95)
Eritrea	8.20 (7.10–9.67)	107.71 (100.62–115.04)	3.84 (1.45–9.04)	127.23 (54.59–272.81)
Estonia	6.36 (5.57–7.12)	66.76 (62.09–71.95)	2.41 (2.08–2.71)	70.24 (61.16–79.30)
Eswatini	5.57 (4.90–6.44)	72.43 (67.17–78.35)	2.32 (1.50–3.70)	75.24 (48.72–118.52)
Ethiopia	6.55 (5.60–7.73)	84.80 (75.26–95.06)	2.15 (0.70–6.65)	70.39 (29.41–189.81)
Fiji	16.55 (15.02–18.22)	183.09 (172.52–193.13)	7.83 (5.97–10.32)	254.88 (198.88–321.88)
Finland	10.27 (9.00–11.74)	160.71 (152.76–168.90)	3.35 (3.00–3.61)	110.60 (102.95–119.05)
France	6.48 (5.75–7.26)	87.12 (81.54–93.16)	2.09 (1.89–2.25)	66.55 (61.47–71.66)

Gabon	5.96 (5.18–6.97)	83.14 (76.87–89.19)	1.95 (1.16–3.29)	64.90 (41.12–105.68)
Gambia	5.27 (4.56–6.15)	85.35 (79.45–91.70)	3.05 (1.31–7.59)	105.25 (51.58–242.97)
Georgia	16.12 (14.71–17.80)	136.10 (127.09–144.83)	8.83 (7.26–10.49)	244.00 (201.68–286.44)
Germany	6.30 (5.42–7.26)	93.33 (86.78–99.32)	2.17 (1.94–2.34)	69.11 (64.47–74.57)
Ghana	6.08 (5.21–7.10)	101.35 (95.05–108.14)	3.19 (1.70–6.19)	113.34 (64.95–211.59)
Greece	7.20 (6.30–8.23)	105.45 (98.72–111.73)	2.86 (2.60–3.05)	86.72 (80.58–93.76)
Greenland	11.62 (10.55–12.93)	111.87 (103.98–120.19)	7.53 (5.65–9.37)	231.20 (182.48–279.81)
Grenada	10.27 (9.19–11.49)	134.96 (127.79–142.43)	4.67 (4.08–5.27)	146.31 (126.09–165.44)
Guam	10.11 (8.99–11.25)	154.07 (146.53–161.85)	2.95 (2.46–3.46)	136.77 (117.70–159.68)
Guatemala	8.94 (8.00–10.10)	127.40 (120.04–134.47)	2.53 (2.16–2.91)	93.75 (80.59–107.15)
Guinea	6.05 (5.19–7.05)	94.71 (88.42–101.56)	3.04 (1.32–6.88)	107.15 (55.14–216.70)
Guinea-Bissau	5.68 (4.91–6.62)	88.00 (81.37–95.10)	4.41 (1.85–9.87)	151.44 (70.21–320.57)
Guyana	11.29 (10.21–12.57)	129.84 (121.80–138.50)	5.51 (4.26–6.96)	191.24 (147.74–242.52)
Haiti	14.75 (13.08–16.88)	150.03 (139.90–160.19)	12.78 (6.59–20.85)	434.98 (237.15–658.46)
Honduras	12.35 (11.06–13.91)	141.46 (132.68–150.27)	11.86 (8.47–15.42)	340.96 (235.34–447.31)
Hungary	5.99 (5.33–6.64)	67.13 (61.82–72.24)	2.17 (1.84–2.50)	75.62 (65.06–86.61)
Iceland	7.24 (6.34–8.32)	104.27 (97.73–110.61)	2.05 (1.76–2.27)	62.92 (56.80–69.61)
India	7.70 (6.65–8.95)	71.80 (63.07–81.19)	3.95 (2.73–5.50)	125.93 (91.47–167.76)
Indonesia	10.94 (9.54–12.64)	109.09 (96.70–122.68)	6.53 (4.72–10.63)	198.84 (154.02–287.20)
Iran (Islamic Republic of)	4.76 (4.15–5.41)	61.11 (54.85–67.86)	1.40 (1.05–1.69)	40.90 (34.14–48.29)
Iraq	5.11 (4.47–5.76)	66.00 (60.66–71.90)	2.36 (1.69–3.07)	74.78 (56.72–97.71)
Ireland	7.53 (6.64–8.52)	101.09 (94.48–107.32)	2.68 (2.36–2.94)	74.87 (68.89–81.33)
Israel	5.65 (4.84–6.54)	80.75 (74.99–86.50)	1.33 (1.18–1.45)	41.16 (37.50–44.92)
Italy	4.84 (4.26–5.39)	62.77 (56.25–69.75)	1.87 (1.66–2.01)	52.22 (48.49–55.95)
Jamaica	11.67 (10.55–13.08)	158.01 (149.38–166.71)	4.75 (3.68–6.04)	149.99 (116.73–190.13)
Japan	15.83 (13.71–18.40)	219.60 (196.31–244.74)	4.21 (3.76–4.49)	150.89 (138.85–162.62)
Jordan	4.69 (4.03–5.37)	68.52 (63.46–74.40)	0.51 (0.36–0.65)	24.18 (19.26–29.41)
Kazakhstan	10.15 (9.12–11.28)	87.86 (81.37–94.49)	6.46 (5.60–7.37)	169.52 (145.47–193.34)
Kenya	6.46 (5.58–7.60)	86.04 (76.66–96.12)	2.07 (0.93–5.05)	68.12 (35.50–148.42)
Kiribati	22.01 (19.58–24.58)	241.17 (227.04–255.27)	9.04 (6.61–13.07)	349.55 (258.11–479.78)
Kuwait	5.55 (4.76–6.31)	79.71 (73.79–85.55)	0.51 (0.42–0.61)	25.93 (21.96–30.34)
Kyrgyzstan	9.56 (8.55–10.68)	91.73 (84.64–97.80)	6.13 (5.19–7.21)	186.36 (156.23–220.95)
Lao People's Democratic Republic	9.87 (8.74–11.12)	99.12 (92.03–106.28)	5.68 (4.03–8.68)	183.57 (135.18–261.22)
Latvia	7.23 (6.39–8.05)	70.86 (65.84–76.29)	3.14 (2.75–3.56)	93.12 (81.10–106.48)
Lebanon	5.55 (4.80–6.29)	78.30 (72.45–84.33)	2.06 (1.62–2.58)	61.49 (51.22–73.63)
Lesotho	6.46 (5.64–7.39)	77.09 (70.95–83.55)	3.49 (2.08–5.80)	106.98 (65.68–176.90)
Liberia	5.51 (4.73–6.47)	86.68 (80.66–93.68)	2.91 (0.97–9.10)	101.07 (41.10–284.17)
Libya	5.09 (4.47–5.76)	68.65 (63.05–74.14)	2.15 (1.29–3.35)	79.74 (49.55–120.40)
Lithuania	6.75 (5.96–7.56)	68.70 (63.95–74.13)	3.03 (2.64–3.41)	91.73 (80.30–102.93)
Luxembourg	5.22 (4.50–6.00)	67.94 (62.75–73.57)	1.58 (1.41–1.76)	45.54 (41.35–50.45)
Madagascar	9.87 (8.43–11.47)	130.43 (121.99–139.49)	5.37 (1.86–15.13)	182.17 (73.64–469.84)
Malawi	6.95 (5.91–8.15)	87.85 (81.48–94.39)	3.51 (1.19–10.68)	114.81 (45.32–308.47)
Malaysia	9.05 (8.05–10.12)	111.26 (104.02–119.00)	3.50 (2.67–4.28)	107.43 (84.91–127.31)
Maldives	8.55 (7.54–9.73)	99.37 (92.52–106.47)	2.64 (2.05–3.31)	79.13 (63.73–97.86)
Mali	5.19 (4.46–6.02)	82.80 (76.91–89.09)	2.48 (1.11–5.53)	87.74 (47.00–178.27)
Malta	6.14 (5.27–7.10)	89.92 (83.52–95.57)	1.18 (1.05–1.32)	45.19 (40.40–50.63)
Marshall Islands	20.18 (18.03–22.51)	211.06 (199.03–223.26)	12.31 (7.83–17.85)	431.34 (286.73–619.46)
Mauritania	5.18 (4.40–6.09)	86.50 (80.17–93.07)	2.25 (0.98–5.16)	77.82 (39.96–164.89)
Mauritius	10.76 (9.55–12.13)	131.33 (122.54–140.12)	5.72 (5.27–6.09)	187.30 (171.59–199.49)
Mexico	9.82 (8.60–11.24)	133.61 (120.26–148.39)	4.04 (3.59–4.49)	130.47 (117.11–144.99)
Micronesia (Federated States of)	19.75 (17.67–22.13)	206.50 (194.12–218.19)	11.87 (7.68–16.99)	406.22 (273.77–555.66)
Monaco	5.60 (4.82–6.42)	79.53 (73.88–85.24)	1.87 (1.34–2.55)	65.82 (49.14–88.01)
Mongolia	13.01 (11.61–14.64)	93.97 (87.17–101.53)	12.41 (9.07–16.05)	312.23 (232.02–397.20)
Montenegro	5.23 (4.58–5.88)	59.11 (54.08–64.00)	2.15 (1.54–2.89)	61.62 (47.52–78.33)
Morocco	6.87 (6.05–7.77)	76.98 (70.71–83.33)	3.43 (2.02–5.41)	97.77 (59.95–148.98)
Mozambique	8.46 (7.27–10.10)	102.14 (94.42–109.95)	5.38 (1.75–15.43)	174.18 (64.61–475.93)
Myanmar	9.48 (8.49–10.69)	97.64 (90.82–104.40)	5.89 (4.15–9.64)	191.83 (142.91–273.19)
Namibia	5.78 (5.05–6.68)	78.07 (72.17–84.07)	1.96 (1.33–3.12)	62.49 (43.55–94.93)
Nauru	16.13 (14.37–17.95)	204.70 (192.62–216.23)	12.87 (9.14–17.22)	476.38 (352.58–635.27)
Nepal	8.88 (7.71–10.34)	83.28 (76.73–90.27)	4.57 (2.67–7.23)	139.47 (88.10–211.95)
Netherlands	6.53 (5.68–7.43)	90.37 (84.14–96.32)	2.27 (2.03–2.45)	65.47 (60.53–70.34)
New Zealand	5.81 (5.07–6.60)	71.98 (64.07–80.26)	2.97 (2.68–3.21)	89.48 (82.69–95.65)
Nicaragua	10.04 (8.78–11.51)	139.38 (130.39–146.85)	2.75 (2.15–3.37)	96.00 (78.21–115.95)
Niger	5.83 (5.06–6.89)	91.00 (84.43–97.84)	2.95 (1.04–7.65)	94.89 (42.70–216.47)
Nigeria	4.46 (3.84–5.20)	74.32 (66.32–82.16)	1.55 (0.75–3.55)	55.39 (31.94–111.94)
Niue	13.10 (11.65–14.70)	173.13 (163.58–182.31)	7.37 (5.75–9.48)	298.12 (246.16–369.82)
North Macedonia	12.93 (11.83–14.06)	102.43 (95.64–109.51)	7.79 (5.94–9.92)	211.45 (166.54–264.51)
Northern Mariana Islands	12.95 (11.65–14.31)	168.91 (160.13–178.12)	7.11 (5.75–8.91)	216.18 (175.42–265.97)
Norway	6.91 (6.02–7.96)	102.78 (92.05–113.34)	2.20 (1.97–2.35)	63.46 (58.36–68.61)
Oman	11.42 (10.19–12.71)	103.73 (96.96–110.22)	1.57 (1.06–2.09)	52.11 (39.30–65.13)
Pakistan	10.37 (9.02–11.96)	98.96 (86.98–112.63)	5.34 (3.48–8.29)	176.88 (123.25–257.80)

Palau	14.52 (12.97–16.19)	184.28 (174.34–194.05)	6.59 (5.04–8.28)	245.55 (193.08–301.42)
Palestine	5.33 (4.62–6.03)	74.08 (68.33–80.20)	0.97 (0.74–1.17)	34.44 (28.83–40.46)
Panama	11.81 (10.47–13.30)	160.11 (151.58–168.51)	4.97 (3.90–5.97)	153.87 (123.67–182.57)
Papua New Guinea	10.99 (9.77–12.28)	131.22 (123.00–139.38)	9.06 (5.89–13.58)	290.54 (204.77–407.57)
Paraguay	10.88 (9.68–12.15)	123.57 (115.68–131.28)	5.47 (4.10–7.14)	176.82 (136.33–228.17)
Peru	10.45 (9.31–11.74)	158.49 (150.20–167.11)	4.25 (3.04–5.70)	153.50 (113.79–197.66)
Philippines	9.60 (8.37–11.03)	106.64 (94.67–119.65)	4.29 (3.54–5.18)	151.94 (125.29–178.28)
Poland	6.21 (5.40–7.09)	70.00 (61.85–78.81)	2.60 (2.37–2.84)	91.34 (83.49–99.86)
Portugal	5.65 (4.84–6.43)	69.29 (63.56–75.18)	3.10 (2.80–3.35)	85.82 (79.96–92.53)
Puerto Rico	7.83 (6.81–8.85)	126.86 (119.98–133.74)	1.97 (1.62–2.31)	66.93 (56.65–77.65)
Qatar	7.80 (6.85–8.70)	100.79 (94.44–107.20)	3.22 (2.22–4.42)	82.29 (61.54–108.28)
Republic of Korea	10.63 (9.32–12.29)	127.76 (120.90–135.37)	3.42 (2.79–4.02)	107.27 (93.63–123.56)
Republic of Moldova	5.67 (4.91–6.39)	57.23 (52.68–61.98)	2.08 (1.86–2.34)	66.94 (59.78–75.43)
Romania	9.66 (8.82–10.44)	70.97 (64.51–77.26)	5.25 (4.54–5.93)	150.40 (128.51–169.85)
Russian Federation	10.12 (8.88–11.54)	88.47 (78.13–99.73)	5.99 (5.51–6.44)	177.74 (164.71–191.72)
Rwanda	7.26 (6.28–8.56)	94.60 (88.20–101.51)	2.77 (1.01–7.37)	88.92 (39.00–209.75)
Saint Kitts and Nevis	9.97 (8.90–11.15)	129.03 (121.45–137.11)	4.36 (3.66–5.09)	132.11 (111.94–156.24)
Saint Lucia	9.61 (8.56–10.75)	132.71 (125.14–139.95)	3.69 (3.01–4.42)	118.66 (98.19–142.38)
Saint Vincent and the Grenadines	8.31 (7.43–9.22)	115.39 (108.34–122.46)	3.22 (2.83–3.65)	109.86 (96.29–124.86)
Samoa	15.40 (13.78–17.40)	189.56 (179.08–200.11)	8.10 (5.75–11.36)	272.27 (197.64–370.52)
San Marino	5.62 (4.80–6.60)	82.51 (76.64–88.87)	0.69 (0.42–1.02)	29.91 (21.78–40.14)
Sao Tome and Principe	5.96 (5.10–7.02)	100.78 (93.68–107.64)	2.45 (1.12–6.00)	90.59 (45.45–211.51)
Saudi Arabia	4.57 (3.96–5.17)	58.70 (53.59–63.68)	1.32 (0.90–1.75)	46.41 (33.48–59.46)
Senegal	5.13 (4.38–6.04)	84.94 (79.12–91.18)	2.75 (1.27–6.29)	94.31 (48.54–200.08)
Serbia	9.88 (9.04–10.69)	75.65 (69.85–81.41)	4.88 (3.87–6.08)	142.86 (115.43–173.60)
Seychelles	7.19 (6.29–8.12)	93.05 (86.22–100.16)	1.98 (1.31–2.92)	73.17 (54.77–94.85)
Sierra Leone	5.61 (4.80–6.56)	90.10 (83.92–96.52)	2.93 (1.21–8.14)	106.18 (52.39–262.54)
Singapore	8.72 (7.40–10.29)	130.49 (122.69–138.24)	1.32 (1.19–1.44)	57.01 (49.88–63.87)
Slovakia	5.59 (4.86–6.29)	67.19 (61.98–72.72)	2.15 (1.68–2.64)	73.18 (60.56–87.70)
Slovenia	5.27 (4.53–5.98)	65.56 (60.79–70.78)	1.37 (1.15–1.57)	43.32 (37.01–49.25)
Solomon Islands	24.22 (21.64–27.07)	227.03 (213.74–240.19)	11.68 (7.44–16.89)	359.24 (244.30–501.87)
Somalia	9.04 (7.74–10.81)	112.55 (103.93–120.66)	4.62 (0.79–16.89)	146.23 (36.19–474.18)
South Africa	4.63 (4.02–5.39)	66.13 (59.08–73.63)	1.46 (1.20–1.68)	49.67 (42.12–56.90)
South Sudan	6.82 (5.88–8.02)	89.42 (83.17–96.07)	3.14 (1.20–7.70)	101.47 (47.05–219.37)
Spain	6.05 (5.27–6.89)	81.07 (75.69–86.98)	2.27 (2.02–2.47)	63.46 (58.71–68.10)
Sri Lanka	10.69 (9.44–12.00)	112.28 (105.24–119.06)	2.01 (1.34–2.77)	69.07 (51.67–88.03)
Sudan	6.36 (5.62–7.19)	68.68 (63.17–74.62)	3.60 (1.84–6.50)	110.18 (59.09–182.69)
Suriname	10.29 (9.18–11.54)	130.80 (122.93–138.60)	4.44 (3.31–5.75)	155.77 (122.99–195.04)
Sweden	6.48 (5.59–7.44)	89.46 (79.95–99.12)	1.81 (1.58–2.04)	52.92 (47.30–58.72)
Switzerland	5.52 (4.73–6.42)	74.67 (69.29–80.39)	1.66 (1.43–1.84)	46.55 (42.15–51.03)
Syrian Arab Republic	6.73 (5.96–7.48)	98.67 (92.80–104.98)	2.35 (1.56–3.31)	75.11 (54.37–101.19)
Taiwan (Province of China)	6.85 (6.05–7.63)	88.19 (82.07–94.84)	3.84 (2.98–4.78)	107.74 (86.97–132.16)
Tajikistan	8.94 (7.91–10.04)	108.90 (101.54–116.17)	2.30 (2.08–2.49)	80.11 (72.28–87.41)
Thailand	11.16 (10.03–12.44)	89.69 (82.68–96.50)	3.87 (2.75–5.14)	112.59 (83.54–147.39)
Timor-Leste	12.63 (11.30–14.29)	126.06 (117.79–133.79)	8.18 (6.29–10.53)	237.39 (186.44–308.38)
Togo	9.39 (8.25–10.71)	96.75 (89.60–103.82)	6.35 (3.51–11.85)	193.12 (121.46–327.81)
Tokelau	5.45 (4.69–6.37)	86.87 (80.77–93.29)	3.15 (1.34–8.02)	107.37 (50.83–256.83)
Tonga	13.55 (12.03–15.22)	175.54 (165.46–185.73)	7.97 (5.84–11.52)	320.05 (251.00–442.39)
Trinidad and Tobago	10.04 (8.90–11.32)	134.67 (127.42–142.19)	3.91 (2.68–5.69)	134.15 (97.09–189.50)
Tunisia	9.79 (8.80–10.98)	125.48 (117.64–132.74)	4.95 (3.80–6.31)	169.90 (133.29–215.74)
Turkey	6.05 (5.29–6.80)	77.30 (71.35–83.49)	2.14 (1.14–3.59)	60.86 (37.89–96.26)
Turkmenistan	12.15 (10.92–13.50)	106.44 (99.20–113.84)	8.38 (6.32–11.99)	264.08 (202.57–363.86)
Tuvalu	16.93 (15.06–19.00)	187.45 (176.97–198.95)	10.45 (6.82–15.16)	358.85 (245.49–500.52)
Uganda	6.79 (5.83–8.06)	87.52 (81.16–94.10)	2.33 (0.88–6.13)	78.61 (35.91–188.61)
Ukraine	9.20 (8.07–10.49)	82.99 (73.31–93.35)	4.97 (3.78–6.28)	142.97 (107.72–179.64)
United Arab Emirates	5.73 (4.99–6.43)	70.94 (65.22–76.57)	3.69 (2.72–4.85)	86.38 (67.94–109.03)
United Kingdom	7.08 (6.24–8.10)	88.36 (79.31–97.77)	3.01 (2.76–3.14)	85.03 (80.48–89.34)
United Republic of Tanzania	6.92 (5.94–8.15)	91.32 (85.09–97.80)	2.24 (0.87–6.18)	74.75 (35.77–182.11)
United States of America	6.30 (5.49–7.24)	97.57 (88.38–108.09)	3.24 (2.96–3.42)	100.36 (94.75–105.76)
United States Virgin Islands	9.84 (8.78–11.05)	135.20 (127.09–142.72)	2.60 (1.96–3.39)	92.52 (69.94–120.09)
Uruguay	13.40 (12.00–15.00)	144.97 (135.28–155.80)	6.68 (6.18–7.15)	210.03 (196.11–224.86)
Uzbekistan	6.87 (6.11–7.68)	70.07 (65.05–75.12)	4.51 (3.77–5.42)	121.28 (103.75–143.62)
Vanuatu	17.11 (15.29–19.23)	196.00 (185.37–207.67)	9.71 (5.90–14.23)	346.50 (228.12–497.84)
Venezuela (Bolivarian Republic of)	12.35 (11.02–14.08)	169.99 (161.22–178.79)	5.51 (4.11–7.12)	184.51 (138.38–235.54)
Viet Nam	10.49 (9.29–11.92)	107.41 (100.42–114.73)	5.23 (2.92–9.86)	151.17 (100.92–239.12)
Yemen	7.67 (6.81–8.73)	75.76 (69.58–82.51)	5.53 (2.54–10.61)	150.97 (78.71–267.26)
Zambia	7.70 (6.65–8.97)	95.33 (88.71–102.11)	3.63 (1.65–7.67)	113.69 (56.80–225.18)
Zimbabwe	8.46 (7.44–9.72)	111.64 (104.73–118.38)	6.01 (4.00–9.61)	184.88 (127.85–282.71)

Supplementary Table 5. Age-standardized incidence, prevalence, mortality, and disability-adjusted life year rates of subarachnoid hemorrhage per 100,000 people in 2021 by five sociodemographic index levels, seven Global Burden of Disease super-regions, and 21 Global Burden of Disease regions.

Region	Incidence (95% UI)	Prevalence (95% UI)	Mortality (95% UI)	DALY (95% UI)
By 5 SDI levels				
Low SDI	7.41 (6.46–8.56)	85.38 (78.61–92.74)	3.79 (2.06–7.35)	120.87 (71.27–221.66)
Low-middle SDI	8.86 (7.79–10.17)	89.40 (81.44–98.17)	4.90 (3.77–6.29)	154.18 (122.57–193.50)
Middle SDI	9.16 (8.08–10.43)	90.81 (82.22–99.93)	5.23 (4.29–6.08)	143.43 (122.51–161.79)
High-middle SDI	7.42 (6.59–8.35)	75.57 (68.69–82.70)	3.52 (3.09–4.15)	99.55 (89.94–115.08)
High SDI	7.85 (6.91–8.97)	112.40 (103.72–121.30)	2.89 (2.64–3.04)	91.84 (86.03–97.38)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	8.73 (7.78–9.77)	80.08 (72.61–88.23)	4.69 (4.40–5.00)	140.21 (130.79–149.09)
High-income	8.02 (7.07–9.14)	113.70 (104.90–122.41)	2.97 (2.70–3.12)	94.52 (88.72–100.10)
Latin America and Caribbean	10.80 (9.56–12.23)	133.53 (123.75–144.16)	5.18 (4.75–5.60)	170.29 (157.91–183.84)
North Africa and the Middle East	5.96 (5.27–6.66)	73.37 (67.78–79.19)	2.85 (2.28–3.69)	82.79 (67.60–104.61)
South Asia	8.44 (7.33–9.75)	79.17 (70.58–88.77)	4.47 (3.14–6.23)	142.60 (106.78–189.60)
Southeast Asia, East Asia, and Oceania	8.79 (7.75–10.03)	80.79 (72.86–89.24)	5.10 (4.10–6.23)	136.70 (112.24–162.70)
Sub-Saharan Africa	6.11 (5.30–7.16)	86.31 (79.85–92.85)	2.55 (1.25–6.24)	86.08 (46.99–189.72)
By 21 GBD regions				
Andean Latin America	12.29 (11.04–13.73)	172.03 (164.02–180.40)	6.01 (4.87–7.29)	199.49 (166.06–238.99)
Australasia	6.06 (5.34–6.86)	79.75 (74.31–85.82)	2.48 (2.22–2.68)	73.27 (68.07–78.65)
Caribbean	10.40 (9.34–11.71)	136.89 (129.73–143.78)	5.02 (3.88–6.25)	191.37 (146.14–234.04)
Central Asia	8.97 (8.10–9.98)	82.54 (77.09–88.06)	5.20 (4.73–5.76)	143.22 (129.04–158.53)
Central Europe	7.27 (6.55–8.02)	71.25 (65.34–77.44)	3.39 (3.11–3.65)	106.16 (97.77–114.30)
Central Latin America	11.07 (9.92–12.51)	148.55 (138.64–159.21)	4.76 (4.22–5.31)	151.45 (135.49–170.06)
Central Sub-Saharan Africa	7.29 (6.26–8.51)	93.43 (86.78–100.05)	3.15 (1.24–8.95)	99.08 (47.49–248.36)
East Asia	7.89 (6.94–9.03)	70.06 (62.78–77.98)	4.71 (3.49–5.87)	116.37 (89.68–141.75)
Eastern Europe	9.59 (8.42–10.87)	85.36 (75.88–95.62)	5.49 (5.03–5.93)	162.91 (150.36–175.08)
Eastern Sub-Saharan Africa	7.25 (6.25–8.62)	93.53 (86.32–100.98)	2.92 (1.10–8.24)	96.66 (42.93–245.35)
High-income Asia Pacific	14.09 (12.30–16.39)	193.60 (175.43–212.12)	3.90 (3.48–4.20)	135.70 (124.59–146.65)
High-income North America	6.37 (5.56–7.31)	98.19 (89.57–107.94)	3.15 (2.87–3.31)	97.81 (92.56–103.14)
North Africa and Middle East	5.96 (5.27–6.66)	73.37 (67.78–79.19)	2.85 (2.28–3.69)	82.79 (67.60–104.61)
Oceania	12.52 (11.25–13.97)	146.97 (138.61–155.53)	8.61 (6.03–11.95)	285.62 (209.42–379.65)
South Asia	8.44 (7.33–9.75)	79.17 (70.58–88.77)	4.47 (3.14–6.23)	142.60 (106.78–189.60)
Southeast Asia	10.89 (9.66–12.36)	110.62 (101.73–120.43)	6.02 (5.02–8.42)	182.03 (155.77–235.86)
Southern Latin America	10.65 (9.51–11.93)	122.33 (113.61–133.73)	4.13 (3.82–4.39)	134.19 (125.36–142.61)
Southern Sub-Saharan Africa	5.26 (4.59–6.10)	73.10 (66.70–79.97)	2.05 (1.70–2.62)	69.35 (58.45–86.11)
Tropical Latin America	10.21 (8.88–11.79)	108.52 (96.83–121.84)	5.45 (5.12–5.68)	177.53 (169.49–184.75)
Western Europe	6.31 (5.57–7.13)	86.40 (80.64–92.25)	2.28 (2.07–2.41)	67.75 (63.56–71.94)
Western Sub-Saharan Africa	5.00 (4.34–5.84)	81.64 (75.45–88.12)	2.22 (1.12–5.09)	77.81 (44.39–161.92)

DALY= disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index; UI = uncertainty intervals

Supplementary Table 6. Age-standardized incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for men by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Region	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	8.24 (7.16–9.56)	92.54 (85.14–100.70)	4.47 (1.78–11.70)	140.62 (63.49–348.93)
Low-middle SDI	9.30 (8.13–10.62)	90.81 (82.86–99.97)	5.28 (3.21–8.11)	167.14 (109.96–247.01)
Middle SDI	9.57 (8.42–10.93)	84.34 (76.20–93.12)	5.69 (4.12–6.92)	154.34 (120.79–183.71)
High-middle SDI	7.81 (6.90–8.83)	69.45 (62.83–76.60)	3.95 (3.31–5.33)	110.12 (95.56–138.57)
High SDI	6.94 (6.07–7.88)	93.23 (85.54–101.02)	2.76 (2.59–2.89)	87.61 (83.22–92.29)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	9.80 (8.66–11.01)	78.18 (70.43–86.80)	5.38 (5.00–5.78)	165.31 (153.36–177.39)
High-income	7.02 (6.16–7.93)	94.95 (87.13–102.75)	2.86 (2.69–2.96)	90.41 (86.25–94.58)
Latin America and Caribbean	9.32 (8.23–10.52)	112.58 (104.31–121.69)	4.56 (4.16–4.99)	150.29 (138.16–164.37)
North Africa and the Middle East	5.75 (5.10–6.44)	63.69 (58.52–69.27)	2.84 (1.99–4.13)	81.08 (60.92–113.57)
South Asia	9.12 (7.90–10.50)	86.09 (76.95–96.53)	5.09 (2.47–8.35)	161.16 (87.73–248.39)
Southeast Asia, East Asia, and Oceania	9.60 (8.46–10.99)	74.54 (67.13–82.49)	5.82 (4.00–7.84)	152.35 (112.56–195.69)
Sub-Saharan Africa	7.10 (6.14–8.31)	94.93 (87.73–102.51)	3.13 (0.98–11.15)	106.16 (41.75–329.79)
By 21 GBD regions				
Andean Latin America	11.02 (9.82–12.43)	157.27 (148.63–165.20)	5.16 (4.05–6.38)	179.70 (144.13–220.19)
Australasia	5.15 (4.51–5.83)	63.29 (57.92–69.10)	2.37 (2.16–2.58)	67.75 (63.05–72.85)
Caribbean	8.82 (7.86–9.97)	111.62 (104.96–118.25)	4.37 (3.17–5.88)	160.79 (117.34–206.86)
Central Asia	10.20 (9.17–11.31)	86.30 (80.07–92.12)	6.30 (5.68–7.06)	176.40 (158.86–197.43)
Central Europe	7.46 (6.67–8.26)	64.12 (58.57–69.91)	3.54 (3.25–3.85)	110.43 (101.11–120.26)
Central Latin America	9.59 (8.50–10.84)	123.79 (115.25–133.16)	4.40 (3.85–4.98)	143.00 (126.16–162.59)
Central Sub-Saharan Africa	8.58 (7.36–10.06)	102.04 (94.99–110.23)	3.97 (0.87–16.73)	120.36 (37.58–445.13)
East Asia	8.84 (7.73–10.20)	65.24 (58.24–72.82)	5.62 (3.37–7.77)	133.76 (86.14–178.88)
Eastern Europe	11.19 (9.80–12.78)	85.20 (75.03–96.84)	6.54 (5.90–7.16)	200.83 (181.05–220.18)
Eastern Sub-Saharan Africa	8.77 (7.54–10.31)	106.59 (98.17–115.40)	3.95 (0.98–15.05)	127.42 (41.61–429.22)
High-income Asia Pacific	11.93 (10.22–13.76)	167.95 (151.32–185.47)	3.73 (3.49–3.96)	136.84 (128.08–146.82)
High-income North America	5.62 (4.94–6.39)	71.83 (65.36–79.47)	2.97 (2.77–3.13)	89.40 (84.76–94.00)
North Africa and Middle East	5.75 (5.10–6.44)	63.69 (58.52–69.27)	2.84 (1.99–4.13)	81.08 (60.92–113.57)
Oceania	11.55 (10.35–13.11)	149.54 (141.34–159.06)	7.23 (4.18–12.80)	269.77 (173.00–436.66)
South Asia	9.12 (7.90–10.50)	86.09 (76.95–96.53)	5.09 (2.47–8.35)	161.16 (87.73–248.39)
Southeast Asia	11.12 (9.82–12.61)	100.31 (92.00–109.56)	6.00 (4.56–9.23)	190.48 (151.77–268.36)
Southern Latin America	9.01 (8.10–10.17)	106.47 (99.57–113.54)	4.12 (3.80–4.43)	129.99 (120.33–139.57)
Southern Sub-Saharan Africa	5.53 (4.83–6.36)	73.61 (67.00–80.45)	2.24 (1.72–3.16)	76.17 (60.43–104.79)
Tropical Latin America	8.66 (7.50–10.00)	90.05 (80.27–101.04)	4.61 (4.35–4.87)	147.03 (140.10–154.33)
Western Europe	5.81 (5.15–6.54)	77.82 (72.26–83.64)	2.28 (2.14–2.39)	65.66 (62.01–69.54)
Western Sub-Saharan Africa	5.64 (4.87–6.54)	88.14 (81.41–95.50)	2.51 (0.76–8.51)	91.73 (37.43–266.26)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 7. Age-standardized incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for women by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Region	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	6.63 (5.76–7.71)	78.39 (71.81–85.12)	3.16 (2.15–6.42)	101.83 (72.93–180.72)
Low-middle SDI	8.47 (7.45–9.72)	87.94 (80.09–96.35)	4.55 (3.59–6.07)	141.55 (112.27–183.05)
Middle SDI	8.81 (7.79–10.04)	96.81 (87.97–106.22)	4.85 (3.94–5.91)	133.13 (113.81–154.51)
High-middle SDI	7.11 (6.27–7.99)	81.07 (73.87–88.47)	3.16 (2.74–3.70)	89.59 (79.90–101.36)
High SDI	8.72 (7.65–10.01)	129.75 (119.95–139.68)	2.97 (2.63–3.18)	95.08 (87.74–102.07)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	7.79 (6.91–8.70)	80.94 (73.73–89.01)	4.07 (3.73–4.40)	117.44 (107.65–126.61)
High-income	8.95 (7.88–10.26)	130.42 (120.69–140.02)	3.05 (2.70–3.24)	97.76 (90.86–104.51)
Latin America and Caribbean	12.15 (10.80–13.80)	152.10 (140.93–163.88)	5.71 (5.23–6.21)	187.89 (172.76–203.62)
North Africa and the Middle East	6.22 (5.50–7.01)	83.58 (77.78–89.57)	2.86 (2.15–3.77)	84.64 (65.68–109.65)
South Asia	7.80 (6.74–9.05)	72.38 (64.41–81.24)	3.90 (2.94–5.49)	124.34 (96.59–166.87)
Southeast Asia, East Asia, and Oceania	8.11 (7.14–9.22)	86.59 (78.26–95.35)	4.54 (3.53–5.70)	122.22 (100.15–146.27)
Sub-Saharan Africa	5.24 (4.52–6.12)	78.37 (72.23–84.27)	2.04 (1.33–4.65)	67.74 (47.97–137.39)
By 21 GBD regions				
Andean Latin America	13.48 (12.02–15.11)	185.62 (176.47–195.18)	6.77 (5.46–8.40)	217.34 (179.04–264.63)
Australasia	6.94 (6.04–7.94)	95.00 (88.97–101.66)	2.59 (2.27–2.83)	78.37 (71.78–85.49)
Caribbean	11.93 (10.65–13.47)	160.15 (151.80–168.07)	5.64 (3.99–7.19)	220.85 (146.49–283.13)
Central Asia	7.86 (7.04–8.77)	79.01 (73.54–84.49)	4.32 (3.86–4.81)	114.41 (102.27–127.13)
Central Europe	7.15 (6.39–7.92)	77.75 (71.65–84.01)	3.24 (2.93–3.55)	101.77 (93.08–110.76)
Central Latin America	12.40 (11.13–14.08)	170.23 (158.67–181.73)	5.05 (4.41–5.74)	158.25 (139.19–180.17)
Central Sub-Saharan Africa	6.22 (5.32–7.35)	84.92 (78.66–91.22)	2.55 (1.38–6.28)	80.51 (49.44–175.09)
East Asia	7.05 (6.16–8.03)	74.62 (67.03–82.85)	4.03 (2.84–5.41)	100.87 (76.37–130.67)
Eastern Europe	8.22 (7.22–9.36)	84.22 (75.17–94.16)	4.62 (4.12–5.14)	130.59 (116.00–144.77)
Eastern Sub-Saharan Africa	5.89 (5.05–6.94)	81.17 (74.82–87.48)	2.03 (1.07–5.46)	68.25 (41.18–161.60)
High-income Asia Pacific	15.95 (13.81–18.66)	214.37 (194.44–235.95)	3.88 (3.28–4.29)	131.39 (118.46–144.12)
High-income North America	7.15 (6.21–8.28)	122.54 (111.50–134.36)	3.30 (2.98–3.50)	105.46 (99.00–112.12)
North Africa and Middle East	6.22 (5.50–7.01)	83.58 (77.78–89.57)	2.86 (2.15–3.77)	84.64 (65.68–109.65)
Oceania	13.50 (12.10–15.08)	144.54 (135.78–153.05)	9.96 (6.78–14.27)	302.38 (215.65–404.09)
South Asia	7.80 (6.74–9.05)	72.38 (64.41–81.24)	3.90 (2.94–5.49)	124.34 (96.59–166.87)
Southeast Asia	10.70 (9.47–12.16)	119.37 (109.99–129.74)	5.91 (4.61–8.95)	171.75 (138.38–232.82)
Southern Latin America	12.17 (10.73–13.85)	137.27 (125.92–153.41)	4.17 (3.81–4.48)	138.22 (128.30–148.36)
Southern Sub-Saharan Africa	5.07 (4.37–5.91)	72.00 (65.35–78.89)	1.89 (1.53–2.34)	63.05 (52.41–75.64)
Tropical Latin America	11.66 (10.10–13.57)	124.99 (111.68–140.14)	6.20 (5.71–6.53)	204.92 (194.01–214.57)
Western Europe	6.81 (5.94–7.75)	94.27 (87.82–100.51)	2.29 (2.05–2.45)	69.78 (64.68–74.36)
Western Sub-Saharan Africa	4.42 (3.79–5.16)	75.78 (69.67–82.07)	1.95 (1.26–4.38)	65.08 (45.87–124.61)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 8. Incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for children (0–14 years of age) by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Region	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	1.68 (1.22–2.25)	9.52 (7.87–11.57)	0.21 (0.14–0.30)	19.34 (13.02–27.06)
Low-middle SDI	1.57 (1.09–2.15)	9.33 (7.64–11.50)	0.22 (0.17–0.27)	20.13 (15.69–24.64)
Middle SDI	1.82 (1.24–2.50)	11.29 (9.38–13.64)	0.13 (0.11–0.15)	12.67 (11.02–14.51)
High-middle SDI	1.73 (1.15–2.41)	11.11 (9.22–13.33)	0.07 (0.06–0.08)	7.51 (6.46–9.02)
High SDI	1.43 (0.96–2.03)	10.97 (8.97–13.59)	0.06 (0.06–0.07)	6.96 (6.24–7.69)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	1.46 (0.97–2.06)	8.78 (7.10–10.91)	0.05 (0.04–0.05)	5.42 (4.76–6.13)
High-income	1.28 (0.85–1.80)	9.94 (7.96–12.46)	0.07 (0.06–0.07)	7.02 (6.33–7.72)
Latin America and Caribbean	2.28 (1.61–3.08)	13.99 (11.89–16.59)	0.28 (0.23–0.35)	25.18 (20.29–30.38)
North Africa and the Middle East	2.22 (1.60–2.98)	14.61 (12.51–17.07)	0.24 (0.17–0.36)	22.66 (16.64–32.81)
South Asia	1.29 (0.86–1.81)	7.39 (5.80–9.30)	0.20 (0.14–0.26)	17.86 (13.16–23.05)
Southeast Asia, East Asia, and Oceania	1.83 (1.24–2.52)	11.51 (9.53–13.94)	0.14 (0.12–0.17)	14.25 (12.05–16.69)
Sub-Saharan Africa	1.71 (1.24–2.32)	9.78 (8.09–11.85)	0.13 (0.07–0.22)	12.46 (7.09–20.03)
By 21 GBD regions				
Andean Latin America	2.59 (1.87–3.44)	14.71 (12.62–17.05)	0.40 (0.33–0.50)	35.21 (29.11–43.36)
Australasia	1.23 (0.82–1.73)	8.66 (7.00–10.70)	0.03 (0.02–0.03)	3.32 (2.85–3.87)
Caribbean	3.08 (2.31–3.97)	21.12 (18.84–23.74)	1.05 (0.66–1.48)	92.81 (58.79–130.11)
Central Asia	1.38 (0.94–1.94)	7.40 (5.93–9.19)	0.04 (0.03–0.05)	4.99 (4.13–6.01)
Central Europe	1.46 (0.97–2.06)	10.01 (8.13–12.32)	0.05 (0.05–0.06)	6.34 (5.44–7.26)
Central Latin America	2.31 (1.60–3.13)	14.82 (12.47–17.69)	0.21 (0.17–0.25)	18.57 (15.25–22.59)
Central Sub-Saharan Africa	1.20 (0.82–1.66)	7.01 (5.50–8.73)	0.11 (0.06–0.18)	10.19 (6.25–16.15)
East Asia	1.75 (1.15–2.45)	11.23 (9.16–13.73)	0.06 (0.05–0.08)	7.46 (6.10–9.30)
Eastern Europe	1.53 (0.99–2.15)	9.24 (7.45–11.47)	0.04 (0.04–0.05)	5.30 (4.60–6.02)
Eastern Sub-Saharan Africa	1.25 (0.85–1.72)	7.35 (5.82–9.21)	0.10 (0.05–0.21)	9.23 (4.80–19.14)
High-income Asia Pacific	1.54 (1.02–2.20)	11.37 (9.24–13.90)	0.05 (0.04–0.05)	5.72 (4.93–6.49)
High-income North America	1.28 (0.85–1.81)	11.72 (9.32–14.95)	0.11 (0.10–0.12)	10.98 (9.98–12.03)
North Africa and Middle East	2.22 (1.60–2.98)	14.61 (12.51–17.07)	0.24 (0.17–0.36)	22.66 (16.64–32.81)
Oceania	4.58 (3.67–5.64)	29.93 (27.41–32.76)	1.40 (0.91–2.03)	128.21 (83.82–183.84)
South Asia	1.29 (0.86–1.81)	7.39 (5.80–9.30)	0.20 (0.14–0.26)	17.86 (13.16–23.05)
Southeast Asia	1.87 (1.30–2.56)	11.40 (9.53–13.75)	0.23 (0.18–0.28)	21.41 (17.48–25.61)
Southern Latin America	1.61 (1.09–2.26)	10.38 (8.49–12.80)	0.08 (0.07–0.09)	7.97 (6.96–9.17)
Southern Sub-Saharan Africa	1.39 (0.96–1.92)	8.67 (7.10–10.67)	0.08 (0.06–0.10)	7.52 (5.98–9.35)
Tropical Latin America	1.94 (1.34–2.66)	11.04 (9.03–13.51)	0.16 (0.13–0.19)	14.43 (11.95–17.00)
Western Europe	1.13 (0.75–1.60)	7.77 (6.14–9.74)	0.03 (0.03–0.04)	3.73 (3.27–4.18)
Western Sub-Saharan Africa	2.27 (1.66–3.01)	12.68 (10.74–14.96)	0.17 (0.09–0.27)	16.32 (9.03–24.35)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 9. Incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for young adults (15–49 years of age) by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Region	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	4.66 (3.67–5.70)	52.97 (47.31–59.22)	1.06 (0.54–2.13)	62.32 (35.18–117.78)
Low-middle SDI	6.55 (5.22–7.94)	65.67 (58.92–73.55)	1.64 (1.24–2.18)	93.22 (72.93–119.98)
Middle SDI	6.47 (5.10–7.98)	72.82 (64.86–82.03)	1.53 (1.31–1.73)	87.99 (76.92–98.66)
High-middle SDI	5.88 (4.58–7.25)	70.88 (63.46–79.34)	1.22 (1.10–1.36)	72.48 (65.75–81.08)
High SDI	6.30 (4.96–7.85)	78.16 (70.57–86.84)	1.14 (1.10–1.18)	67.46 (63.93–71.21)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	7.89 (6.31–9.61)	78.22 (70.80–86.75)	2.10 (1.95–2.24)	117.91 (109.77–125.72)
High-income	6.56 (5.20–8.16)	82.91 (74.46–92.59)	1.21 (1.18–1.25)	70.58 (67.38–74.20)
Latin America and Caribbean	8.68 (7.09–10.46)	71.40 (63.47–80.34)	2.38 (2.19–2.57)	130.52 (120.34–141.29)
North Africa and the Middle East	4.38 (3.36–5.40)	64.57 (58.63–71.37)	0.76 (0.59–1.00)	48.02 (38.33–61.26)
South Asia	6.62 (5.24–8.15)	95.78 (86.69–105.69)	1.51 (1.09–2.05)	85.54 (63.70–113.99)
Southeast Asia, East Asia, and Oceania	6.10 (4.74–7.59)	61.39 (54.27–70.23)	1.46 (1.17–1.75)	86.71 (71.27–103.24)
Sub-Saharan Africa	3.86 (2.99–4.80)	49.93 (44.46–56.26)	0.78 (0.34–1.88)	47.51 (24.35–105.80)
By 21 GBD regions				
Andean Latin America	10.24 (8.51–11.94)	122.45 (114.49–131.02)	2.58 (2.09–3.15)	148.42 (121.82–178.44)
Australasia	4.77 (3.69–5.94)	57.83 (52.00–64.65)	0.95 (0.86–1.04)	54.40 (49.80–59.71)
Caribbean	8.82 (7.26–10.49)	102.86 (95.56–110.75)	2.78 (1.99–3.69)	153.13 (112.31–200.78)
Central Asia	6.77 (5.36–8.12)	71.84 (66.40–78.15)	1.35 (1.18–1.55)	80.08 (70.00–90.21)
Central Europe	6.32 (5.06–7.57)	79.79 (72.54–87.82)	1.58 (1.44–1.71)	91.62 (83.86–99.15)
Central Latin America	8.23 (6.70–9.94)	100.05 (90.58–110.19)	1.92 (1.69–2.17)	108.22 (95.76–121.62)
Central Sub-Saharan Africa	4.45 (3.41–5.51)	47.99 (43.12–53.71)	0.77 (0.31–2.06)	45.96 (21.84–112.37)
East Asia	5.01 (3.78–6.37)	63.78 (55.60–72.69)	1.06 (0.77–1.34)	64.83 (48.74–78.77)
Eastern Europe	9.31 (7.40–11.45)	90.22 (78.98–103.51)	2.77 (2.54–3.00)	151.47 (139.57–163.74)
Eastern Sub-Saharan Africa	4.41 (3.45–5.44)	49.72 (44.31–55.94)	0.88 (0.31–2.34)	53.43 (22.81–132.14)
High-income Asia Pacific	12.38 (9.75–15.77)	102.11 (89.99–114.74)	2.03 (1.94–2.14)	112.43 (105.54–119.15)
High-income North America	4.82 (3.72–6.01)	79.25 (70.22–89.89)	1.18 (1.11–1.24)	69.95 (65.44–74.55)
North Africa and Middle East	4.38 (3.36–5.40)	64.57 (58.63–71.37)	0.76 (0.59–1.00)	48.02 (38.33–61.26)
Oceania	7.72 (6.30–9.28)	105.48 (98.71–114.00)	3.01 (1.98–4.36)	175.37 (120.93–243.14)
South Asia	6.62 (5.24–8.15)	61.39 (54.27–70.23)	1.51 (1.09–2.05)	85.54 (63.70–113.99)
Southeast Asia	8.10 (6.48–9.87)	84.91 (76.72–94.36)	2.16 (1.79–2.68)	125.63 (105.50–151.34)
Southern Latin America	8.98 (7.43–10.66)	92.60 (86.07–100.08)	1.71 (1.59–1.84)	99.99 (93.06–106.82)
Southern Sub-Saharan Africa	3.55 (2.73–4.37)	46.01 (40.44–52.41)	0.77 (0.59–1.06)	45.65 (36.81–60.09)
Tropical Latin America	8.70 (6.91–10.76)	81.83 (71.82–93.42)	2.76 (2.66–2.86)	145.54 (139.98–151.38)
Western Europe	5.40 (4.23–6.63)	66.29 (60.19–73.10)	0.84 (0.81–0.87)	49.62 (46.94–52.62)
Western Sub-Saharan Africa	3.26 (2.48–4.13)	51.41 (45.69–58.15)	0.69 (0.31–1.59)	42.89 (23.17–90.08)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 10. Incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for old adults (50–74 years of age) by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Region	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	17.00 (13.63–21.66)	229.63 (207.56–252.92)	10.89 (5.98–21.27)	348.90 (201.03–658.69)
Low-middle SDI	19.58 (16.04–24.48)	240.28 (215.07–269.35)	14.08 (10.98–18.02)	442.86 (353.15–558.68)
Middle SDI	18.87 (15.42–23.67)	235.66 (208.15–265.15)	12.34 (10.18–14.28)	380.91 (322.49–432.82)
High-middle SDI	14.65 (12.07–18.20)	188.52 (168.33–210.94)	8.19 (7.25–9.66)	257.92 (231.69–301.99)
High SDI	18.82 (15.42–23.37)	317.65 (289.09–348.83)	7.17 (6.82–7.41)	244.85 (229.71–259.29)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	16.71 (13.87–20.46)	199.11 (176.14–223.96)	12.05 (11.27–12.87)	372.74 (347.15–398.07)
High-income	19.49 (16.10–24.09)	328.23 (299.47–358.13)	7.35 (7.02–7.56)	250.19 (236.04–264.96)
Latin America and Caribbean	24.15 (19.93–29.81)	352.17 (319.78–386.68)	14.09 (12.96–15.17)	441.86 (410.35–476.57)
North Africa and the Middle East	10.85 (8.86–13.67)	168.27 (155.98–181.40)	6.00 (4.70–7.79)	193.95 (156.49–244.60)
South Asia	18.54 (15.07–23.33)	214.83 (187.09–246.83)	13.66 (9.84–18.87)	425.53 (314.78–573.59)
Southeast Asia, East Asia, and Oceania	17.44 (14.20–21.86)	206.87 (181.54–233.75)	11.17 (9.09–13.60)	345.90 (289.10–417.24)
Sub-Saharan Africa	14.04 (11.02–18.22)	226.33 (206.51–246.70)	7.03 (3.38–17.41)	238.76 (126.19–546.11)
By 21 GBD regions				
Andean Latin America	26.00 (21.55–31.37)	451.86 (427.01–476.53)	16.14 (12.93–19.67)	501.11 (407.50–607.27)
Australasia	13.27 (10.70–16.73)	222.48 (206.93–238.36)	5.57 (5.06–6.02)	186.49 (171.41–202.63)
Caribbean	22.24 (18.29–27.43)	344.68 (325.74–364.26)	12.88 (9.69–16.40)	407.32 (312.85–513.03)
Central Asia	17.57 (14.57–21.09)	215.95 (200.71–232.42)	12.74 (11.42–14.29)	405.78 (363.13–452.76)
Central Europe	13.21 (11.20–15.60)	164.07 (149.86–180.68)	9.29 (8.49–10.13)	286.40 (262.32–310.11)
Central Latin America	24.91 (20.69–30.50)	393.67 (362.29–424.97)	12.50 (11.03–14.20)	393.61 (350.85–444.44)
Central Sub-Saharan Africa	18.39 (14.43–24.07)	261.86 (242.46–281.93)	8.63 (3.40–25.54)	290.22 (132.90–792.46)
East Asia	15.62 (12.54–19.75)	177.07 (153.09–204.90)	10.27 (7.68–13.07)	308.15 (238.20–382.05)
Eastern Europe	18.47 (14.96–22.89)	214.48 (184.36–248.93)	13.44 (12.34–14.63)	412.96 (377.38–448.11)
Eastern Sub-Saharan Africa	17.73 (13.97–22.87)	258.57 (235.15–281.15)	8.06 (3.01–23.10)	270.95 (119.43–707.04)
High-income Asia Pacific	40.67 (33.48–49.49)	640.51 (572.57–717.50)	10.08 (9.31–10.72)	376.17 (343.18–411.08)
High-income North America	13.99 (11.11–17.84)	259.52 (231.95–289.93)	7.98 (7.58–8.29)	257.79 (245.16–271.24)
North Africa and Middle East	10.85 (8.86–13.67)	168.27 (155.98–181.40)	6.00 (4.70–7.79)	193.95 (156.49–244.60)
Oceania	24.58 (20.29–30.02)	361.17 (338.00–383.98)	19.63 (12.81–28.76)	657.96 (443.90–923.25)
South Asia	18.54 (15.07–23.33)	214.83 (187.09–246.83)	13.66 (9.84–18.87)	425.53 (314.78–573.59)
Southeast Asia	23.25 (19.15–29.00)	301.59 (272.78–333.58)	14.02 (11.69–19.26)	464.53 (392.25–610.51)
Southern Latin America	24.87 (20.90–29.49)	350.15 (323.13–377.65)	11.20 (10.45–11.94)	366.60 (341.76–392.17)
Southern Sub-Saharan Africa	12.10 (9.63–15.59)	189.52 (168.61–211.98)	5.52 (4.54–7.25)	186.42 (156.79–237.57)
Tropical Latin America	23.38 (18.83–29.73)	290.33 (250.51–337.61)	15.44 (14.76–16.10)	483.04 (461.23–504.00)
Western Europe	14.13 (11.60–17.53)	246.49 (230.23–262.88)	5.30 (5.01–5.52)	178.41 (167.07–190.05)
Western Sub-Saharan Africa	10.23 (7.91–13.33)	199.29 (181.86–217.33)	6.11 (2.96–14.02)	211.49 (114.57–450.17)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 11. Incidence, prevalence, mortality and DALY rates (with 95% uncertainty intervals) of SAH per 100,000 people in 2021 for very old adults (≥ 75 years of age) by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	28.38 (21.41–36.67)	274.83 (231.71–320.78)	26.36 (14.22–51.12)	402.42 (235.47–740.72)
Low-middle SDI	36.57 (28.33–45.93)	239.87 (196.01–289.14)	35.27 (26.16–49.07)	503.49 (383.08–682.60)
Middle SDI	56.43 (45.10–69.62)	284.61 (236.07–339.21)	57.10 (44.47–68.36)	767.64 (606.50–905.37)
High-middle SDI	45.69 (37.70–54.73)	196.40 (161.05–234.07)	41.51 (35.07–49.88)	537.12 (462.41–646.30)
High SDI	38.07 (31.69–45.19)	532.16 (466.28–601.14)	33.78 (27.00–37.28)	482.91 (405.56–531.86)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	52.40 (44.45–61.25)	147.44 (117.00–178.46)	47.87 (43.35–51.13)	603.70 (554.02–643.59)
High-income	37.09 (31.28–43.75)	524.09 (461.01–589.97)	34.43 (27.47–38.00)	486.25 (409.42–534.00)
Latin America and Caribbean	42.32 (34.05–51.15)	519.29 (459.01–584.81)	37.50 (32.69–40.86)	532.13 (474.21–579.26)
North Africa and the Middle East	30.61 (25.08–36.52)	187.13 (158.68–215.52)	32.24 (24.46–42.09)	438.29 (340.49–564.01)
South Asia	32.65 (24.80–41.73)	177.77 (136.93–226.91)	28.60 (17.92–43.39)	412.40 (269.25–606.62)
Southeast Asia, East Asia, and Oceania	61.13 (48.70–75.73)	214.23 (167.94–267.36)	60.47 (46.06–74.71)	802.96 (619.94–988.08)
Sub-Saharan Africa	21.37 (15.93–27.74)	344.36 (300.90–389.00)	18.29 (9.50–44.85)	300.78 (177.41–653.04)
By 21 GBD regions				
Andean Latin America	45.96 (38.10–54.07)	650.27 (601.53–698.48)	44.24 (35.88–52.33)	642.18 (534.31–753.40)
Australasia	32.73 (27.85–38.14)	323.08 (294.54–353.88)	31.28 (25.56–34.76)	411.81 (352.04–453.90)
Caribbean	31.97 (26.73–37.70)	487.07 (449.83–524.27)	27.78 (22.48–33.37)	408.30 (338.61–485.42)
Central Asia	55.12 (48.30–62.88)	176.04 (146.31–206.17)	57.57 (51.37–64.15)	760.45 (681.09–845.05)
Central Europe	49.16 (43.10–55.27)	121.44 (100.42–145.70)	31.81 (28.41–34.28)	415.11 (375.82–445.13)
Central Latin America	49.50 (40.81–58.91)	631.83 (569.56–699.09)	39.53 (34.20–43.88)	569.75 (502.69–629.33)
Central Sub-Saharan Africa	25.17 (19.02–33.28)	382.56 (331.89–436.05)	24.69 (9.44–71.78)	397.48 (187.53–1,031.57)
East Asia	62.16 (49.40–76.87)	188.82 (143.47–240.12)	60.74 (44.13–76.37)	800.45 (581.98–998.39)
Eastern Europe	54.34 (44.08–66.61)	161.88 (124.34–202.76)	58.06 (51.81–63.13)	716.53 (648.55–773.79)
Eastern Sub-Saharan Africa	26.99 (20.10–35.46)	377.15 (320.24–433.62)	21.20 (8.07–61.69)	345.80 (162.12–876.07)
High-income Asia Pacific	49.87 (41.02–60.21)	1,175.06 (1,016.69–1,345.32)	43.31 (32.08–49.63)	713.00 (583.12–813.98)
High-income North America	35.81 (28.96–43.57)	331.79 (287.59–373.75)	34.20 (28.13–37.30)	450.55 (382.70–490.44)
North Africa and Middle East	30.61 (25.08–36.52)	187.13 (158.68–215.52)	32.24 (24.46–42.09)	438.29 (340.49–564.01)
Oceania	63.91 (52.23–76.37)	438.37 (376.47–501.77)	68.70 (46.81–99.17)	986.91 (695.89–1,389.22)
South Asia	32.65 (24.80–41.73)	177.77 (136.93–226.91)	28.60 (17.92–43.39)	412.40 (269.25–606.62)
Southeast Asia	56.82 (46.01–68.77)	317.99 (264.05–376.55)	59.26 (45.67–94.24)	811.88 (645.69–1,252.81)
Southern Latin America	38.51 (33.35–45.01)	340.57 (265.91–485.72)	35.90 (31.18–39.35)	497.24 (441.76–541.01)
Southern Sub-Saharan Africa	21.77 (16.57–27.92)	334.50 (284.55–384.84)	15.91 (13.29–19.49)	265.10 (224.66–315.41)
Tropical Latin America	36.98 (28.56–46.84)	388.04 (312.24–470.24)	36.24 (30.86–39.39)	498.95 (434.81–540.22)
Western Europe	31.25 (27.00–35.69)	321.59 (289.99–353.77)	29.96 (24.31–32.85)	391.43 (332.43–426.47)
Western Sub-Saharan Africa	15.76 (11.87–20.46)	312.14 (278.06–347.57)	15.27 (8.26–35.38)	254.14 (157.78–516.81)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 12. Percentage changes (with 95% uncertainty intervals) of the incidence, prevalence, mortality, and DALYs of subarachnoid hemorrhage in the world between 1990 and 2021, separately for men, women, and different age groups.

	Changes in % (95% uncertainty interval) between 1990 and 2021			
	Incidence	Prevalence	Deaths	DALY
Overall				
In absolute numbers	37.09 (32.20–42.30)	60.21 (56.86–63.39)	-5.89 (-22.78–25.51)	-11.55 (-25.22–10.25)
In age-standardized rates per 100,000 people	-28.78 (-31.59–25.66)	-16.13 (-17.70–14.76)	-56.12 (-64.27–40.74)	-54.61 (-61.88–42.81)
Men				
In absolute numbers	39.86 (34.40–46.09)	61.68 (57.93–65.11)	-3.98 (-25.98–57.27)	-10.16 (-28.09–30.22)
In age-standardized rates per 100,000 people	-27.41 (-30.67–23.88)	-14.16 (-15.73–12.76)	-55.15 (-65.76–23.58)	-53.56 (-63.18–30.54)
Women				
In absolute numbers	34.54 (29.99–39.13)	59.01 (55.62–62.07)	-7.67 (-25.96–26.54)	-12.98 (-26.89–14.37)
In age-standardized rates per 100,000 people	-30.39 (-32.91–27.57)	-17.64 (-19.20–16.20)	-57.16 (-65.47–41.07)	-55.80 (-62.98–42.24)
Children (0–14 years old)				
In absolute numbers	-10.15 (-14.15–6.71)	-2.46 (-5.04–0.08)	-69.12 (-75.81–59.14)	-67.49 (-74.20–57.70)
In rates per 100,000 people	-22.33 (-25.78–19.35)	-15.68 (-17.91–13.63)	-73.31 (-79.09–64.68)	-71.90 (-77.70–63.43)
Young adults (15–49 years old)				
In absolute numbers	24.02 (18.59–29.33)	31.89 (28.74–35.01)	-16.80 (-26.71–3.51)	-14.75 (-24.28–2.71)
In rates per 100,000 people	-14.87 (-18.60–11.22)	-9.47 (-11.63–7.33)	-42.89 (-49.69–33.77)	-41.48 (-48.02–33.22)
Old adults (50–74 years old)				
In absolute numbers	41.31 (34.16–48.90)	78.58 (74.15–83.30)	-13.26 (-29.39–16.31)	-7.84 (-23.92–19.60)
In rates per 100,000 people	-34.04 (-37.37–30.49)	-16.64 (-18.71–14.44)	-59.51 (-67.04–45.71)	-56.98 (-64.49–44.17)
Very old adults (≥75 years old)				
In absolute numbers	87.45 (72.06–107.96)	134.65 (126.86–144.10)	23.30 (-5.74–89.29)	19.36 (-7.55–78.30)
In rates per 100,000 people	-23.76 (-30.02–15.42)	-4.57 (-7.73–0.72)	-49.86 (-61.66–23.01)	-51.46 (-62.40–27.48)

DALY = disability-adjusted life years

Supplementary Table 13. Percentage changes (with 95% uncertainty intervals) in the absolute number of SAH incidents, prevalent cases, deaths, and DALYs between 1990 and 2021 by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

	Changes in % (95% UI) between 1990 and 2021			
	Incidence	Prevalence	Deaths	DALY
By 5 SDI levels				
Low SDI	92.06 (86.39–98.31)	105.47 (101.57–109.54)	62.08 (30.98–93.63)	58.84 (32.50–91.64)
Low-middle SDI	70.56 (65.17–76.54)	86.44 (82.47–90.40)	50.97 (24.93–88.24)	34.18 (15.97–57.04)
Middle SDI	36.31 (27.74–43.46)	61.74 (56.66–66.53)	-22.05 (-42.00–26.30)	-25.09 (-41.66–9.57)
High-middle SDI	9.53 (5.29–14.22)	27.64 (24.57–30.59)	-23.73 (-41.75–8.07)	-32.39 (-46.10–11.06)
High SDI	26.77 (22.08–32.01)	57.70 (54.33–61.01)	7.07 (-1.34–13.12)	-10.09 (-14.75–6.18)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	12.10 (7.80–16.61)	7.21 (5.11–9.25)	20.25 (11.57–28.99)	2.90 (-3.66–9.44)
High-income	27.35 (22.61–32.93)	55.50 (52.14–58.77)	13.76 (5.56–19.82)	-7.59 (-11.59–4.09)
Latin America and Caribbean	76.22 (67.92–85.26)	93.46 (88.40–98.13)	99.77 (83.41–115.03)	57.09 (44.17–68.59)
North Africa and the Middle East	58.17 (51.33–66.57)	86.73 (83.59–89.95)	6.86 (-33.25–43.84)	-13.10 (-39.14–10.81)
South Asia	76.24 (69.83–84.43)	95.92 (90.63–101.23)	59.93 (27.68–112.61)	44.06 (20.29–77.71)
Southeast Asia, East Asia, and Oceania	14.92 (7.41–21.58)	40.17 (35.17–44.85)	-38.23 (-56.85–7.33)	-40.94 (-56.43–7.14)
Sub-Saharan Africa	101.12 (97.06–105.71)	111.32 (107.73–115.06)	68.26 (32.31–103.72)	71.87 (41.89–107.63)
By 21 GBD regions				
Andean Latin America	72.53 (64.81–80.99)	103.32 (98.34–107.93)	83.99 (37.72–133.73)	46.37 (13.36–80.02)
Australasia	55.56 (45.24–67.66)	77.14 (70.11–83.77)	28.33 (17.13–38.94)	4.73 (-2.66–12.16)
Caribbean	55.25 (47.40–63.49)	60.99 (57.80–64.35)	44.57 (20.75–74.27)	27.04 (5.78–53.81)
Central Asia	57.86 (51.92–63.96)	61.36 (57.87–65.18)	86.44 (58.83–114.54)	68.85 (45.23–92.40)
Central Europe	-2.15 (-6.18–2.05)	-9.91 (-11.56–8.23)	-9.95 (-17.64–1.95)	-29.59 (-35.31–23.81)
Central Latin America	107.98 (97.00–119.61)	121.96 (115.99–127.74)	181.66 (150.14–217.01)	116.16 (93.04–142.57)
Central Sub-Saharan Africa	144.47 (134.94–155.60)	150.39 (143.27–157.22)	106.60 (39.55–222.11)	91.92 (29.37–197.39)
East Asia	-1.96 (-9.76–5.29)	21.31 (15.98–26.58)	-50.40 (-67.05–11.53)	-55.40 (-69.04–25.88)
Eastern Europe	10.46 (5.24–16.29)	5.22 (2.66–7.67)	26.72 (15.70–38.86)	11.52 (3.15–21.18)
Eastern Sub-Saharan Africa	92.18 (87.41–97.48)	104.27 (99.78–108.57)	51.80 (20.25–85.85)	56.16 (29.58–90.04)
High-income Asia Pacific	33.80 (26.29–42.69)	93.64 (87.12–100.25)	-0.91 (-13.34–10.29)	-16.04 (-23.83–8.73)
High-income North America	48.04 (40.98–57.40)	68.10 (61.02–75.25)	57.14 (48.11–63.63)	26.00 (20.57–30.50)
North Africa and Middle East	58.17 (51.33–66.57)	86.73 (83.59–89.95)	6.86 (-33.25–43.84)	-13.10 (-39.14–10.81)
Oceania	108.58 (100.30–118.22)	119.00 (114.01–124.27)	79.47 (38.33–135.79)	77.48 (38.45–130.48)
South Asia	76.24 (69.83–84.43)	95.92 (90.63–101.23)	59.93 (27.68–112.61)	44.06 (20.29–77.71)
Southeast Asia	74.65 (68.69–80.82)	89.96 (85.36–94.41)	58.19 (23.91–96.46)	44.42 (20.31–73.84)
Southern Latin America	11.17 (4.86–17.35)	33.61 (27.69–45.42)	-22.56 (-29.50–14.79)	-31.12 (-36.27–25.51)
Southern Sub-Saharan Africa	71.25 (64.90–78.28)	79.04 (74.83–83.00)	131.14 (94.14–170.65)	111.45 (84.31–143.03)
Tropical Latin America	55.52 (45.87–65.89)	69.08 (62.59–75.43)	73.14 (62.75–82.47)	35.07 (28.70–41.07)
Western Europe	11.60 (7.36–15.92)	20.94 (18.90–23.15)	7.34 (-0.89–13.29)	-17.05 (-21.30–13.54)
Western Sub-Saharan Africa	106.06 (101.19–111.20)	116.15 (112.01–119.93)	66.02 (24.03–114.32)	77.23 (38.20–120.85)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 14. Percentage changes (with 95% uncertainty intervals) in the absolute number of SAH incidents, prevalent cases, deaths and DALYs in 204 countries and territories of the world between 1990 and 2021.

	Changes in % (95% uncertainty interval) between 1990 and 2021			
	Incidence	Prevalence	Deaths	DALY
Afghanistan	97.95 (71.44–127.37)	99.52 (89.46–110.76)	10.04 (–35.70–76.38)	36.83 (–6.28–94.64)
Albania	34.52 (22.02–46.88)	18.42 (13.03–23.72)	27.09 (–20.15–99.65)	–9.45 (–38.95–31.72)
Algeria	63.87 (53.35–76.55)	90.63 (83.97–97.69)	51.07 (–10.80–143.10)	16.14 (–21.03–68.65)
American Samoa	27.90 (19.20–37.55)	45.85 (40.68–51.15)	63.56 (20.44–129.39)	35.97 (2.14–85.04)
Andorra	91.34 (78.59–105.69)	104.02 (95.36–112.88)	49.84 (–5.79–134.89)	20.88 (–19.45–77.83)
Angola	164.37 (149.76–178.76)	183.26 (172.86–192.22)	110.21 (44.39–218.55)	99.40 (40.34–204.34)
Antigua and Barbuda	56.06 (44.41–67.99)	71.48 (65.00–78.55)	15.76 (4.20–29.32)	15.61 (4.26–27.79)
Argentina	–0.92 (–8.19–6.30)	20.97 (14.18–33.14)	–38.48 (–44.90–31.24)	–42.97 (–47.97–37.36)
Armenia	–11.21 (–17.19–4.77)	1.16 (–2.81–4.81)	–15.41 (–27.75–0.74)	–22.99 (–32.75–11.86)
Australia	64.85 (51.13–81.39)	84.20 (75.81–92.44)	32.59 (20.23–45.14)	7.43 (–0.35–15.96)
Austria	–0.51 (–8.82–13.15)	25.14 (19.08–32.93)	8.79 (–3.02–19.20)	–11.01 (–17.92–4.78)
Azerbaijan	44.46 (29.23–62.46)	74.51 (67.80–82.20)	28.98 (–20.48–98.68)	28.36 (–10.12–76.77)
Bahamas	85.46 (72.65–99.88)	102.06 (94.23–109.47)	84.97 (46.39–140.14)	67.19 (35.56–114.83)
Bahrain	163.19 (140.86–187.17)	218.91 (205.42–230.69)	76.99 (18.95–152.84)	71.32 (22.25–134.74)
Bangladesh	111.32 (93.88–135.63)	122.39 (113.05–133.28)	44.14 (–4.14–120.16)	20.29 (–17.89–70.21)
Barbados	30.17 (20.86–41.28)	49.40 (43.77–55.32)	37.60 (7.99–73.46)	28.26 (1.06–61.16)
Belarus	–4.24 (–10.60–2.30)	2.77 (–1.75–7.88)	12.94 (–18.14–54.07)	1.62 (–25.30–33.83)
Belgium	24.61 (16.52–33.55)	20.60 (15.91–25.77)	40.20 (26.37–51.92)	5.99 (–1.57–13.38)
Belize	151.43 (135.48–170.29)	177.83 (168.16–186.92)	108.87 (78.32–142.85)	87.43 (62.35–115.85)
Benin	141.13 (128.20–154.55)	158.03 (149.92–165.66)	99.97 (41.86–182.90)	115.40 (58.90–197.20)
Bermuda	12.60 (4.45–21.94)	34.41 (29.97–39.17)	8.28 (–12.73–35.30)	–11.53 (–27.78–6.53)
Bhutan	42.54 (33.35–53.59)	60.18 (53.69–68.11)	27.73 (–12.37–102.93)	4.26 (–26.47–54.50)
Bolivia (Plurinational State of)	70.77 (60.17–83.80)	92.82 (86.44–98.78)	51.28 (3.18–115.99)	21.29 (–13.10–71.52)
Bosnia and Herzegovina	–12.67 (–20.24–4.07)	–18.29 (–21.71–14.68)	–40.77 (–62.17–10.37)	–52.66 (–68.33–33.29)
Botswana	114.57 (98.98–129.32)	130.49 (122.45–139.18)	35.88 (–5.44–110.28)	47.45 (5.25–112.88)
Brazil	54.64 (44.91–65.29)	68.10 (61.55–74.45)	72.84 (62.35–81.96)	34.47 (27.99–40.85)
Brunei Darussalam	97.37 (74.35–132.49)	140.25 (129.02–150.70)	57.99 (16.84–120.47)	52.87 (15.40–107.47)
Bulgaria	8.78 (1.79–16.56)	–10.46 (–14.14–6.78)	41.84 (21.62–68.44)	1.87 (–12.57–19.47)
Burkina Faso	112.01 (101.43–125.16)	119.08 (111.51–126.79)	91.95 (40.53–182.44)	97.96 (50.86–169.84)
Burundi	97.89 (87.61–108.47)	106.99 (100.15–115.25)	21.69 (–34.92–120.44)	26.15 (–22.10–118.31)
Côte d'Ivoire	116.40 (104.96–130.11)	135.82 (128.03–143.55)	121.18 (48.62–226.66)	111.03 (49.87–209.60)
Cabo Verde	70.34 (52.77–85.11)	92.05 (86.45–99.35)	53.98 (4.17–141.20)	48.17 (10.74–103.70)
Cambodia	98.53 (85.37–111.72)	116.83 (108.10–125.24)	50.30 (2.04–116.14)	34.56 (–2.51–84.06)
Cameroon	180.72 (168.06–196.87)	191.76 (179.86–202.29)	162.66 (74.06–287.88)	175.65 (92.31–290.09)
Canada	36.27 (26.58–47.41)	51.11 (45.04–56.99)	32.59 (18.46–45.67)	5.45 (–3.80–14.37)
Central African Republic	101.52 (90.78–113.75)	103.51 (96.53–110.38)	72.20 (9.09–159.22)	69.89 (9.80–154.33)
Chad	149.36 (137.04–163.22)	140.37 (131.60–148.99)	136.46 (76.67–241.67)	161.17 (99.70–259.66)
Chile	67.98 (55.96–80.31)	100.02 (90.43–116.26)	74.38 (58.17–90.60)	35.68 (25.44–46.69)
China	–3.60 (–11.38–3.77)	19.80 (14.43–25.17)	–51.58 (–68.15–13.71)	–56.65 (–70.18–28.03)
Colombia	111.34 (93.25–129.90)	121.36 (113.06–129.78)	147.26 (104.97–191.65)	85.03 (55.09–116.80)
Comoros	81.48 (71.17–90.78)	101.95 (95.67–108.68)	48.89 (–4.49–125.62)	37.68 (–4.78–101.68)
Congo	119.99 (107.38–134.45)	138.55 (130.10–148.14)	83.14 (25.55–178.77)	84.35 (32.26–176.33)
Cook Islands	–4.03 (–10.25–2.79)	21.11 (17.29–25.31)	–36.41 (–62.94–5.78)	–44.83 (–64.02–16.38)
Costa Rica	94.77 (79.38–110.12)	127.84 (119.97–135.37)	179.71 (142.63–219.00)	134.51 (105.34–163.61)
Croatia	–20.51 (–27.28–14.24)	–20.81 (–24.18–17.02)	–21.73 (–33.32–9.61)	–42.68 (–50.71–33.94)
Cuba	11.72 (2.60–21.39)	28.58 (23.67–33.40)	16.99 (–1.07–36.69)	–4.21 (–17.17–10.93)
Cyprus	46.85 (36.06–58.92)	70.91 (64.60–76.99)	–16.39 (–43.28–16.27)	–19.15 (–43.35–5.59)
Czechia	–11.10 (–16.58–5.56)	–1.52 (–5.40–2.06)	–37.96 (–46.04–27.64)	–46.87 (–53.19–38.66)
Democratic People's Republic of Korea	46.88 (37.56–55.55)	49.07 (43.52–55.19)	37.58 (–15.77–148.58)	27.07 (–21.39–123.43)
Democratic Republic of the Congo	146.24 (133.39–160.23)	147.86 (139.04–156.36)	114.50 (27.08–251.91)	94.56 (15.94–221.27)
Denmark	–7.62 (–15.60–0.85)	4.82 (0.97–9.03)	–16.00 (–24.71–8.00)	–35.02 (–40.68–29.46)
Djibouti	258.30 (237.35–282.01)	290.49 (276.46–306.07)	224.17 (110.11–468.60)	206.05 (109.14–392.62)
Dominica	3.68 (–3.68–12.18)	13.86 (10.06–17.86)	1.78 (–18.60–29.87)	3.88 (–16.18–31.50)
Dominican Republic	123.84 (104.62–142.89)	125.69 (116.78–134.91)	73.82 (18.08–144.65)	41.93 (4.21–90.22)
Ecuador	111.75 (95.40–127.84)	133.38 (125.37–141.62)	235.61 (163.95–330.04)	137.52 (89.94–196.99)
Egypt	54.65 (46.74–62.49)	77.00 (70.44–82.86)	–25.61 (–56.32–18.18)	–41.30 (–61.11–16.62)
El Salvador	13.02 (4.98–22.08)	34.34 (30.32–38.95)	8.42 (–29.97–49.06)	–12.31 (–39.64–15.41)
Equatorial Guinea	133.92 (116.02–154.01)	170.55 (158.90–184.18)	2.42 (–47.57–109.96)	18.27 (–31.62–118.64)
Eritrea	104.38 (90.95–119.35)	121.57 (113.00–129.50)	49.90 (6.47–124.25)	46.90 (8.21–114.76)
Estonia	–30.20 (–35.04–24.83)	–30.41 (–33.53–27.37)	–10.49 (–25.14–2.48)	–38.93 (–47.79–29.61)
Eswatini	63.72 (53.68–73.33)	73.57 (66.67–80.35)	76.53 (10.84–170.68)	79.65 (15.86–163.88)
Ethiopia	43.54 (37.72–50.48)	60.89 (54.53–67.08)	1.37 (–31.41–42.04)	3.26 (–23.88–33.75)
Fiji	29.77 (20.35–40.53)	41.20 (36.44–46.13)	34.76 (–1.69–85.39)	18.09 (–10.48–56.32)
Finland	2.91 (–8.43–12.46)	22.10 (17.54–26.37)	–9.06 (–19.09–0.70)	–28.00 (–34.45–21.80)
France	47.88 (37.90–57.89)	46.65 (40.87–52.65)	30.62 (17.96–41.79)	12.36 (4.56–20.74)

Gabon	67.46 (58.02–77.18)	79.95 (73.10–87.53)	36.94 (-11.34–113.00)	47.05 (1.91–116.51)
Gambia	126.59 (111.55–138.76)	144.95 (136.93–153.86)	173.64 (78.34–292.76)	156.39 (75.01–255.55)
Georgia	3.50 (-3.82–11.61)	-14.40 (-18.26–-10.65)	46.99 (9.84–102.17)	15.00 (-12.45–50.70)
Germany	-5.02 (-11.48–2.56)	9.62 (5.76–13.85)	-12.21 (-23.21–0.58)	-28.80 (-35.87–21.38)
Ghana	128.76 (114.71–144.33)	141.33 (133.82–149.85)	107.93 (48.91–230.20)	95.87 (44.64–186.47)
Greece	28.73 (19.14–38.90)	37.40 (31.94–43.15)	42.97 (23.81–81.91)	18.21 (5.28–42.01)
Greenland	49.03 (-9.63–84.95)	28.53 (-4.91–43.59)	-33.15 (-46.85–15.45)	-44.26 (-55.20–31.51)
Grenada	23.62 (14.52–33.59)	41.99 (36.60–46.99)	0.19 (-19.88–29.61)	0.39 (-18.90–27.69)
Guam	44.08 (32.52–56.30)	69.37 (62.54–75.56)	25.73 (4.45–53.34)	21.72 (3.57–41.99)
Guatemala	140.61 (124.60–160.45)	162.22 (152.96–172.54)	250.11 (185.67–324.76)	183.04 (135.78–235.09)
Guinea	91.11 (81.34–102.46)	91.04 (85.03–98.28)	69.26 (18.11–145.24)	75.76 (26.26–154.43)
Guinea-Bissau	75.42 (64.88–86.06)	82.78 (76.32–90.09)	59.60 (7.59–127.05)	60.62 (11.81–129.52)
Guyana	6.20 (-0.59–13.67)	19.94 (15.78–24.70)	10.91 (-18.59–44.87)	0.20 (-25.40–30.10)
Haiti	114.83 (92.70–140.40)	116.71 (109.67–124.54)	59.76 (9.11–133.63)	44.64 (1.00–106.71)
Honduras	150.34 (133.98–167.04)	143.80 (136.21–152.55)	228.44 (125.16–371.55)	137.59 (70.79–230.24)
Hungary	-11.04 (-16.49–5.02)	-13.54 (-17.12–9.17)	-29.45 (-39.99–18.49)	-42.49 (-50.59–34.12)
Iceland	31.27 (22.77–40.80)	48.45 (43.06–53.47)	11.00 (-2.35–25.34)	-10.74 (-19.04–1.15)
India	67.21 (61.14–75.13)	88.10 (82.48–93.58)	59.96 (25.28–117.46)	43.21 (15.82–82.09)
Indonesia	68.04 (60.53–77.00)	77.89 (71.28–83.60)	66.15 (27.02–119.51)	47.93 (18.99–89.95)
Iran (Islamic Republic of)	53.23 (42.06–63.71)	92.03 (84.29–100.10)	11.13 (-34.49–46.54)	-10.77 (-40.65–15.19)
Iraq	64.19 (53.73–75.13)	112.50 (103.95–121.13)	37.01 (-20.99–100.86)	19.56 (-20.45–64.97)
Ireland	9.45 (1.35–19.28)	23.87 (18.73–29.82)	-11.40 (-21.05–2.35)	-26.80 (-32.67–21.18)
Israel	90.21 (79.56–101.95)	101.66 (93.86–109.48)	94.10 (72.47–116.05)	42.02 (30.44–54.50)
Italy	4.15 (-4.35–15.21)	10.84 (7.31–14.87)	33.76 (19.83–43.02)	-11.97 (-17.88–7.33)
Jamaica	38.71 (27.80–50.90)	45.01 (39.89–50.38)	30.19 (-3.99–70.12)	8.24 (-18.13–38.43)
Japan	34.77 (25.60–44.62)	92.52 (85.20–100.20)	9.34 (-4.07–17.78)	-7.98 (-14.49–2.37)
Jordan	212.48 (185.64–240.02)	292.72 (277.72–306.39)	91.17 (17.63–197.71)	87.48 (32.91–155.55)
Kazakhstan	35.42 (28.11–43.64)	32.42 (27.23–37.55)	39.97 (4.26–81.94)	24.80 (-4.99–58.58)
Kenya	129.71 (121.66–138.49)	151.02 (145.23–156.42)	153.93 (97.55–239.27)	149.90 (106.51–209.12)
Kiribati	104.62 (68.49–128.13)	104.42 (95.96–112.91)	64.83 (20.52–125.69)	54.11 (15.10–106.33)
Kuwait	192.43 (167.05–219.11)	237.94 (226.07–249.21)	3.90 (-15.20–26.20)	25.91 (6.95–47.75)
Kyrgyzstan	48.90 (39.58–61.64)	54.21 (48.10–60.65)	47.68 (13.04–87.50)	47.29 (12.84–89.78)
Lao People's Democratic Republic	68.95 (59.43–80.69)	91.56 (84.08–98.96)	-4.30 (-36.33–47.33)	-5.88 (-34.02–39.48)
Latvia	-39.91 (-43.76–35.96)	-33.19 (-36.68–29.35)	-21.06 (-32.15–9.08)	-40.07 (-48.55–30.67)
Lebanon	54.88 (45.54–64.11)	82.91 (76.51–88.74)	-22.49 (-52.97–18.95)	-33.12 (-56.09–2.00)
Lesotho	40.10 (30.08–50.37)	36.23 (31.07–41.93)	74.28 (8.66–182.64)	88.97 (20.52–184.39)
Liberia	85.53 (72.20–98.84)	97.11 (89.22–104.93)	87.10 (-0.70–234.71)	85.67 (6.60–242.34)
Libya	63.33 (47.33–77.81)	99.79 (92.84–107.44)	69.69 (-10.29–157.93)	28.14 (-23.74–88.59)
Lithuania	-24.24 (-29.66–18.89)	-9.35 (-14.15–2.97)	17.20 (-1.86–37.63)	-16.00 (-29.28–1.02)
Luxembourg	40.77 (32.40–49.26)	53.78 (47.73–60.00)	-0.32 (-12.23–11.76)	-18.03 (-26.58–8.97)
Madagascar	140.63 (126.93–156.41)	141.22 (133.13–150.32)	89.67 (29.15–165.22)	101.45 (43.83–186.26)
Malawi	85.50 (75.35–94.96)	91.82 (85.85–99.20)	80.75 (27.70–137.71)	76.57 (29.21–138.23)
Malaysia	68.28 (56.25–79.09)	111.11 (103.49–118.94)	64.22 (7.12–123.78)	56.62 (12.98–99.68)
Maldives	126.94 (102.63–149.82)	188.45 (179.26–199.15)	14.76 (-22.94–62.71)	10.98 (-19.40–50.72)
Mali	119.10 (107.97–131.33)	126.29 (119.26–133.88)	78.17 (30.69–151.24)	88.17 (44.16–149.92)
Malta	26.50 (18.16–37.57)	48.82 (42.93–55.34)	22.71 (8.83–39.76)	3.78 (-6.28–15.74)
Marshall Islands	82.17 (67.04–100.57)	89.49 (83.03–96.34)	54.55 (15.45–108.07)	55.09 (16.68–105.71)
Mauritania	76.46 (67.86–85.65)	93.02 (86.46–99.18)	41.03 (-10.50–114.28)	41.30 (-1.87–100.06)
Mauritius	50.04 (38.51–63.35)	75.83 (68.33–85.19)	61.31 (46.71–74.93)	41.34 (29.01–54.24)
Mexico	114.11 (101.44–128.46)	122.73 (112.96–131.28)	231.40 (195.08–270.00)	149.91 (124.87–175.25)
Micronesia (Federated States of)	26.50 (17.10–39.40)	34.84 (30.14–39.89)	-3.41 (-30.95–37.76)	-5.12 (-31.88–32.12)
Monaco	-10.81 (-16.65–3.62)	10.45 (6.04–14.85)	-43.87 (-62.80–12.48)	-42.24 (-59.70–16.36)
Mongolia	121.48 (106.21–138.82)	111.91 (102.69–122.63)	107.85 (24.80–242.96)	115.41 (32.64–243.33)
Montenegro	10.38 (3.10–17.90)	12.72 (8.30–17.53)	31.49 (-10.27–78.22)	3.73 (-23.77–32.65)
Morocco	47.55 (37.92–58.01)	61.99 (56.09–68.74)	36.16 (-11.43–125.51)	3.13 (-24.39–49.32)
Mozambique	112.02 (96.41–128.27)	108.03 (100.26–116.67)	116.17 (47.94–210.64)	129.35 (63.08–213.26)
Myanmar	32.68 (25.08–41.82)	51.16 (45.83–57.57)	-3.91 (-37.50–42.56)	-12.45 (-40.53–23.03)
Namibia	74.03 (64.66–84.38)	86.19 (80.09–92.82)	73.53 (23.71–145.39)	72.62 (27.83–134.07)
Nauru	20.11 (11.05–31.33)	20.02 (15.94–24.29)	7.99 (-27.69–64.11)	6.08 (-25.98–54.47)
Nepal	72.59 (61.09–84.22)	86.69 (79.43–95.38)	39.86 (-5.19–111.12)	21.10 (-14.83–74.61)
Netherlands	2.18 (-4.70–9.44)	19.74 (14.86–24.31)	-4.35 (-12.67–3.55)	-25.51 (-31.12–20.50)
New Zealand	18.72 (9.92–28.71)	44.13 (38.50–49.80)	12.12 (2.07–23.24)	-5.21 (-12.27–1.92)
Nicaragua	104.17 (90.88–119.37)	136.73 (127.99–144.95)	83.39 (32.10–137.23)	52.88 (18.96–91.81)
Niger	168.78 (152.98–186.57)	173.24 (164.74–182.58)	127.92 (56.09–238.36)	114.18 (56.52–214.18)
Nigeria	85.28 (79.88–90.67)	95.14 (89.67–100.18)	16.48 (-21.40–76.57)	37.95 (-4.44–98.28)
Niue	-36.29 (-40.11–31.80)	-20.21 (-23.00–17.43)	-42.46 (-59.88–20.70)	-29.86 (-49.37–5.34)
North Macedonia	49.87 (38.59–62.88)	29.84 (24.63–35.02)	25.00 (-12.46–70.45)	2.95 (-24.37–35.23)
Northern Mariana Islands	32.56 (20.02–46.94)	51.24 (45.95–57.07)	49.94 (8.60–112.81)	17.45 (-13.83–60.54)
Norway	1.17 (-4.19–7.03)	17.97 (14.69–21.18)	-34.30 (-39.35–30.23)	-41.84 (-45.18–38.31)
Oman	144.08 (80.71–174.34)	172.13 (163.19–182.74)	-3.57 (-46.96–52.34)	3.89 (-34.09–50.25)
Pakistan	103.72 (92.54–115.27)	121.29 (112.26–129.41)	95.54 (48.97–153.89)	105.66 (61.59–160.57)

Palau	42.44 (32.98–53.95)	75.95 (69.66–82.54)	38.16 (–5.32–90.42)	28.42 (–8.36–72.73)
Palestine	131.47 (116.53–147.01)	178.94 (168.61–188.92)	23.19 (–17.45–76.27)	23.94 (–4.43–62.95)
Panama	116.55 (101.85–132.11)	130.85 (122.97–138.62)	184.61 (118.20–250.15)	138.83 (91.20–188.41)
Papua New Guinea	145.46 (131.01–162.42)	160.53 (151.66–169.35)	97.70 (40.88–192.55)	98.94 (45.10–184.56)
Paraguay	94.48 (79.36–108.78)	111.10 (103.16–118.83)	86.31 (27.18–152.27)	63.61 (17.40–118.23)
Peru	53.65 (44.46–63.88)	91.60 (85.01–98.31)	47.04 (–7.99–108.07)	25.88 (–13.22–71.14)
Philippines	190.47 (169.21–214.52)	187.09 (174.53–198.96)	182.91 (122.64–247.87)	153.12 (113.84–199.55)
Poland	–18.88 (–23.09–13.60)	–11.02 (–13.81–8.16)	–22.82 (–29.91–15.63)	–37.36 (–42.77–31.75)
Portugal	8.74 (–9.20–17.68)	1.84 (–2.15–6.43)	13.50 (1.34–23.63)	–19.47 (–25.52–13.21)
Puerto Rico	5.93 (–1.68–14.40)	23.28 (18.35–27.63)	20.57 (–0.52–43.10)	–6.81 (–20.64–8.84)
Qatar	523.78 (467.33–581.10)	626.21 (601.17–652.08)	183.66 (56.79–387.97)	218.26 (92.67–389.62)
Republic of Korea	26.28 (14.25–40.62)	95.00 (85.00–106.40)	–31.75 (–49.93–9.22)	–39.74 (–53.76–22.64)
Republic of Moldova	–12.82 (–17.67–7.20)	–3.67 (–7.87–1.73)	5.03 (–10.12–23.76)	–7.60 (–21.03–8.60)
Romania	24.66 (17.25–32.55)	–10.53 (–14.05–6.76)	30.20 (6.50–59.63)	–1.20 (–19.66–17.52)
Russian Federation	22.00 (15.29–29.59)	8.88 (6.02–11.90)	53.76 (41.95–65.71)	25.47 (16.22–35.04)
Rwanda	51.26 (43.54–59.92)	70.14 (64.80–76.38)	–13.54 (–45.20–34.46)	–15.68 (–42.85–26.43)
Saint Kitts and Nevis	37.73 (26.29–48.87)	56.63 (50.80–62.45)	2.75 (–19.87–34.56)	5.68 (–16.99–37.97)
Saint Lucia	64.71 (52.54–78.06)	94.56 (86.50–102.36)	41.80 (13.98–72.35)	28.57 (4.47–55.41)
Saint Vincent and the Grenadines	21.26 (12.35–30.26)	40.53 (35.40–46.78)	38.03 (17.16–60.03)	24.95 (6.06–43.56)
Samoa	40.16 (31.71–50.53)	49.76 (44.78–54.80)	18.29 (–14.05–58.73)	14.25 (–13.29–49.42)
San Marino	42.53 (33.36–51.34)	62.78 (56.01–69.79)	–17.28 (–47.05–25.64)	–11.32 (–36.25–17.82)
Sao Tome and Principe	79.16 (66.86–91.64)	86.03 (79.72–93.22)	83.44 (24.18–157.85)	88.94 (33.90–167.02)
Saudi Arabia	151.00 (124.99–173.93)	204.79 (192.50–216.57)	102.69 (–3.10–246.90)	95.34 (7.66–205.86)
Senegal	91.41 (80.17–104.80)	113.51 (106.29–120.43)	92.08 (36.89–165.86)	76.82 (29.15–146.80)
Serbia	9.04 (1.19–18.49)	–20.66 (–23.70–17.89)	–23.13 (–45.23–5.02)	–39.56 (–55.92–18.68)
Seychelles	37.34 (28.83–46.93)	69.55 (63.21–75.57)	–9.71 (–37.18–15.10)	–0.29 (–21.31–21.01)
Sierra Leone	89.58 (79.40–100.81)	95.96 (88.65–103.19)	77.31 (21.80–157.31)	76.49 (23.57–153.55)
Singapore	101.28 (84.26–118.74)	158.38 (148.32–168.62)	0.68 (–10.24–10.41)	9.74 (–0.72–19.97)
Slovakia	–17.91 (–22.65–13.09)	0.19 (–3.28–4.03)	–21.83 (–39.46–0.12)	–29.67 (–43.28–12.76)
Slovenia	–2.13 (–8.33–4.53)	4.56 (0.24–8.87)	–21.80 (–34.05–9.06)	–40.85 (–48.71–32.44)
Solomon Islands	191.76 (141.33–236.22)	155.38 (145.31–165.81)	112.91 (43.14–257.81)	108.61 (45.37–237.25)
Somalia	155.04 (141.69–169.91)	154.21 (145.43–165.13)	84.99 (6.09–186.11)	88.24 (20.11–186.87)
South Africa	59.87 (52.71–66.24)	73.48 (68.65–77.63)	117.45 (85.18–150.85)	79.69 (57.13–102.49)
South Sudan	49.45 (40.19–57.66)	53.48 (48.51–58.85)	27.56 (–26.24–128.62)	36.61 (–14.60–129.56)
Spain	51.61 (41.38–63.07)	52.70 (46.36–60.40)	100.43 (76.38–120.42)	33.29 (24.19–43.49)
Sri Lanka	47.00 (36.88–57.19)	61.81 (55.95–67.80)	33.27 (–17.70–105.42)	18.51 (–13.86–62.45)
Sudan	50.83 (42.30–60.27)	79.84 (73.67–86.54)	–1.15 (–35.35–54.16)	–10.10 (–37.29–35.13)
Suriname	77.22 (65.11–90.29)	85.52 (78.87–93.04)	71.37 (24.21–128.93)	51.41 (14.33–94.48)
Sweden	–4.15 (–10.47–2.84)	6.96 (2.66–11.45)	–32.96 (–40.56–25.03)	–42.01 (–47.85–36.35)
Switzerland	14.88 (6.32–24.90)	42.10 (36.72–48.59)	–0.78 (–11.81–8.95)	–23.13 (–55.96–15.99)
Syrian Arab Republic	2.52 (–30.00–21.02)	35.86 (30.01–41.61)	–4.90 (–51.53–71.14)	–34.61 (–61.36–9.54)
Taiwan (Province of China)	25.46 (16.07–36.90)	49.63 (44.41–55.28)	–6.14 (–44.56–39.94)	–32.33 (–57.41–4.03)
Tajikistan	66.92 (48.04–88.56)	70.57 (62.91–77.48)	74.35 (56.50–89.60)	46.53 (34.44–56.96)
Thailand	130.04 (117.22–143.61)	125.56 (116.79–133.83)	58.45 (3.17–145.18)	66.62 (14.78–150.95)
Timor-Leste	61.71 (49.81–76.32)	81.54 (73.38–89.75)	61.96 (11.92–119.29)	42.74 (3.16–90.77)
Togo	96.81 (84.69–110.23)	109.84 (101.93–117.91)	105.20 (33.87–201.50)	65.58 (16.32–137.96)
Tokelau	134.27 (118.64–152.87)	158.97 (150.24–167.91)	172.61 (79.21–300.83)	148.23 (73.83–265.51)
Tonga	–21.18 (–25.70–15.48)	–10.31 (–13.24–7.24)	–36.71 (–61.58–6.67)	–28.25 (–52.44–3.24)
Trinidad and Tobago	7.70 (2.09–13.79)	15.49 (11.74–19.12)	10.29 (–23.35–53.67)	–0.85 (–26.34–31.98)
Tunisia	40.49 (30.39–49.48)	52.35 (46.86–58.42)	55.57 (18.81–103.52)	36.69 (6.51–76.11)
Turkey	50.52 (40.26–61.63)	75.32 (68.42–82.39)	38.72 (–25.42–151.79)	9.51 (–32.77–70.64)
Turkmenistan	141.00 (123.61–158.24)	135.41 (123.20–146.65)	209.47 (132.82–312.06)	186.46 (119.25–274.57)
Tuvalu	22.27 (13.66–32.83)	31.38 (26.77–36.50)	–15.70 (–37.28–11.22)	–22.05 (–41.55–0.88)
Uganda	120.45 (108.33–132.86)	128.14 (120.32–136.02)	46.05 (5.92–126.43)	58.72 (18.65–129.42)
Ukraine	–10.62 (–16.73–4.27)	–1.08 (–4.98–3.49)	–20.39 (–42.07–2.98)	–17.59 (–40.09–6.85)
United Arab Emirates	476.14 (413.99–543.96)	573.02 (542.06–599.79)	230.31 (90.09–498.41)	237.06 (131.06–471.23)
United Kingdom	0.28 (–4.02–5.67)	6.48 (4.32–8.81)	–15.29 (–20.74–11.76)	–32.92 (–35.44–30.68)
United Republic of Tanzania	110.30 (99.66–124.10)	121.77 (113.93–130.20)	52.12 (5.28–124.42)	57.85 (17.41–116.73)
United States of America	49.72 (42.20–60.09)	70.58 (62.72–78.91)	59.91 (50.98–66.93)	28.35 (22.63–33.13)
United States Virgin Islands	5.78 (–3.41–15.45)	19.33 (14.21–24.59)	–26.54 (–46.93–0.92)	–39.77 (–54.67–18.22)
Uruguay	–0.45 (–8.09–7.50)	3.31 (–2.16–12.52)	–10.77 (–19.42–0.52)	–27.30 (–33.21–19.93)
Uzbekistan	106.08 (88.15–124.01)	126.27 (115.85–137.77)	318.28 (222.00–439.08)	224.52 (163.16–306.45)
Vanuatu	155.70 (140.80–172.49)	161.79 (152.02–170.63)	104.43 (41.01–185.40)	97.55 (38.28–167.74)
Venezuela (Bolivarian Republic of)	93.98 (80.40–110.06)	125.08 (116.53–134.02)	172.25 (97.69–256.09)	117.21 (61.31–180.73)
Viet Nam	81.05 (69.12–94.89)	97.89 (90.91–106.28)	45.06 (–13.06–120.53)	45.45 (–3.45–111.43)
Yemen	121.56 (108.24–135.97)	146.03 (138.80–154.38)	77.08 (15.72–162.35)	48.53 (–4.12–126.28)
Zambia	143.07 (130.21–158.08)	146.16 (137.80–155.31)	100.30 (29.86–196.01)	105.87 (42.17–189.91)
Zimbabwe	112.15 (97.81–127.96)	98.82 (91.03–107.11)	183.63 (102.56–285.63)	207.11 (122.08–316.97)

DALY = disability-adjusted life years

Supplementary Table 15. Percentage changes (with 95% uncertainty intervals) in the age-standardized incidence, prevalence, mortality, and DALY rates of SAH per 100,000 people between 1990 and 2021 by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

	Changes in % (95% UI) between 1990 and 2021			
	Incidence	Prevalence	Mortality	DALY rate
By 5 SDI levels				
Low SDI	-17.96 (-20.62--15.00)	-12.24 (-13.88--10.49)	-27.43 (-42.95--11.20)	-27.48 (-40.94--14.72)
Low-middle SDI	-19.37 (-22.25--15.99)	-11.82 (-13.71--10.15)	-31.80 (-45.75--11.92)	-33.22 (-43.95--18.30)
Middle SDI	-38.35 (-42.70--34.57)	-22.89 (-24.84--21.24)	-70.78 (-78.64--50.08)	-67.91 (-75.47--50.76)
High-middle SDI	-35.96 (-38.55--33.33)	-22.52 (-24.10--21.01)	-62.06 (-70.97--46.44)	-62.22 (-69.83--50.32)
High SDI	-22.41 (-24.42--19.96)	-5.22 (-7.09--3.47)	-44.96 (-48.41--42.38)	-46.92 (-49.37--44.86)
By 7 GBD super-regions				
Central Europe, Eastern Europe, and Central Asia	-9.40 (-12.26--6.56)	-9.43 (-10.92--8.05)	-13.14 (-19.47--6.65)	-18.30 (-23.56--13.11)
High-income	-18.82 (-21.04--16.10)	-2.59 (-4.45--0.93)	-40.09 (-43.22--37.71)	-43.36 (-45.43--41.57)
Latin America and Caribbean	-17.50 (-20.30--14.66)	-15.90 (-17.32--14.49)	-16.98 (-23.82--10.44)	-26.24 (-32.51--20.79)
North Africa and the Middle East	-31.70 (-34.57--28.40)	-22.08 (-23.48--20.72)	-54.39 (-72.71--35.22)	-57.91 (-72.30--45.39)
South Asia	-22.64 (-25.89--19.19)	-11.79 (-14.16--9.69)	-33.95 (-49.58--7.69)	-33.80 (-46.98--14.05)
Southeast Asia, East Asia, and Oceania	-47.38 (-51.08--43.92)	-28.25 (-30.33--26.35)	-76.92 (-84.14--58.84)	-73.87 (-80.89--57.75)
Sub-Saharan Africa	-15.52 (-17.42--13.28)	-11.96 (-13.54--10.34)	-26.96 (-44.20--11.22)	-25.77 (-40.95--12.03)
By 21 GBD regions				
Andean Latin America	-24.63 (-27.64--21.07)	-17.54 (-19.51--15.36)	-25.66 (-44.86--4.72)	-32.37 (-48.04--15.88)
Australasia	-20.70 (-25.39--14.72)	-9.33 (-12.39--6.29)	-45.30 (-49.67--41.04)	-48.43 (-51.85--44.79)
Caribbean	-9.25 (-12.62--5.45)	-9.77 (-11.32--8.00)	-22.34 (-35.47--7.26)	-21.77 (-35.07--5.67)
Central Asia	-3.58 (-7.17--0.05)	-7.27 (-9.20--5.05)	13.39 (-3.34--30.04)	-0.55 (-14.23--13.10)
Central Europe	-23.32 (-25.72--21.31)	-19.98 (-21.13--18.76)	-37.60 (-42.97--31.95)	-43.87 (-48.41--39.42)
Central Latin America	-6.56 (-9.30--3.61)	-8.76 (-10.26--7.15)	8.86 (-3.00--22.55)	-2.70 (-13.03--9.24)
Central Sub-Saharan Africa	-6.05 (-10.05--2.18)	-3.17 (-6.02--0.20)	-12.26 (-40.89--30.96)	-14.96 (-39.03--25.85)
East Asia	-55.53 (-59.16--52.31)	-35.17 (-37.34--33.22)	-82.22 (-88.28--67.16)	-80.65 (-86.69--67.31)
Eastern Europe	-2.43 (-6.36--1.62)	-3.49 (-5.66--1.53)	-1.20 (-9.42--8.41)	-3.29 (-10.59--5.00)
Eastern Sub-Saharan Africa	-19.35 (-21.50--16.65)	-15.02 (-16.86--13.16)	-35.00 (-49.74--20.40)	-32.76 (-45.87--19.23)
High-income Asia Pacific	-18.40 (-22.66--13.33)	1.07 (-1.77--3.85)	-56.38 (-60.36--52.57)	-52.24 (-56.01--48.68)
High-income North America	-10.93 (-14.22--6.60)	3.26 (-1.06--7.70)	-16.83 (-21.07--13.40)	-26.05 (-29.05--23.27)
North Africa and Middle East	-31.70 (-34.57--28.40)	-22.08 (-23.48--20.72)	-54.39 (-72.71--35.22)	-57.91 (-72.30--45.39)
Oceania	-15.82 (-19.72--11.72)	-9.42 (-11.62--7.32)	-30.23 (-45.93--9.75)	-27.06 (-42.62--6.78)
South Asia	-22.64 (-25.89--19.19)	-11.79 (-14.16--9.69)	-33.95 (-49.58--7.69)	-33.80 (-46.98--14.05)
Southeast Asia	-20.10 (-22.45--17.40)	-13.59 (-15.09--11.93)	-35.20 (-50.67--18.90)	-34.46 (-46.40--21.13)
Southern Latin America	-34.03 (-37.72--30.38)	-21.21 (-24.59--14.95)	-58.19 (-61.82--54.02)	-59.71 (-62.73--56.45)
Southern Sub-Saharan Africa	-9.48 (-12.31--5.59)	-10.15 (-12.19--8.16)	12.72 (-6.81--32.32)	7.14 (-6.58--23.15)
Tropical Latin America	-26.67 (-30.40--22.56)	-25.61 (-27.85--23.65)	-27.03 (-31.04--23.15)	-37.37 (-40.22--34.44)
Western Europe	-22.28 (-24.30--19.96)	-13.57 (-14.94--12.19)	-40.07 (-43.45--37.30)	-46.29 (-48.45--44.13)
Western Sub-Saharan Africa	-17.26 (-18.99--15.32)	-12.61 (-14.32--11.01)	-30.19 (-48.64--9.80)	-27.59 (-44.89--8.59)

DALY = disability-adjusted life years; GBD = Global Burden of Disease; SDI = sociodemographic index

Supplementary Table 16. Percentage changes (with 95% uncertainty intervals) in the age-standardized incidence, prevalence, mortality and DALY rates of subarachnoid hemorrhage per 100,000 people in 204 countries and territories of the world between 1990 and 2021.

	Changes in % (95% uncertainty interval) between 1990 and 2021			
	Incidence	Prevalence	Mortality	DALY rate
Afghanistan	-14.20 (-25.26–0.10)	-17.49 (-20.68–14.16)	-33.93 (-61.07–8.46)	-33.63 (-58.41–1.93)
Albania	-6.97 (-11.82–1.57)	-9.58 (-12.81–6.30)	-36.25 (-59.55–0.29)	-39.75 (-58.52–14.08)
Algeria	-33.33 (-36.93–28.84)	-22.87 (-25.37–19.96)	-43.76 (-68.25–8.95)	-48.34 (-66.66–24.03)
American Samoa	-9.35 (-14.82–3.53)	-5.13 (-8.34–1.90)	-13.37 (-35.04–17.85)	-10.39 (-31.75–20.59)
Andorra	-12.84 (-16.96–7.58)	-9.08 (-12.60–5.22)	-46.01 (-65.72–14.90)	-48.80 (-65.87–24.62)
Angola	-18.50 (-23.56–13.36)	-10.79 (-14.24–7.35)	-28.08 (-51.24–9.37)	-28.74 (-48.57–2.50)
Antigua and Barbuda	-17.50 (-22.96–11.21)	-12.64 (-15.83–9.38)	-39.76 (-45.93–32.72)	-43.26 (-48.63–37.22)
Argentina	-38.35 (-43.00–33.87)	-24.69 (-28.71–17.99)	-64.26 (-67.94–60.09)	-64.81 (-67.90–61.31)
Armenia	-27.99 (-33.01–22.98)	-16.25 (-19.45–13.14)	-47.53 (-55.68–38.37)	-43.83 (-51.32–35.51)
Australia	-16.49 (-22.80–8.41)	-6.45 (-10.03–2.62)	-44.65 (-49.31–39.63)	-47.66 (-51.11–43.70)
Austria	-27.65 (-33.00–18.65)	-12.69 (-16.63–8.26)	-37.00 (-43.11–31.38)	-42.93 (-47.13–38.62)
Azerbaijan	-19.96 (-29.40–9.14)	-11.04 (-14.40–7.36)	-31.76 (-57.77–5.40)	-34.39 (-54.02–9.77)
Bahamas	-9.52 (-14.80–3.83)	-5.88 (-9.27–2.51)	-22.46 (-39.07–0.22)	-23.08 (-37.93–1.55)
Bahrain	-29.74 (-34.15–25.25)	-19.96 (-22.83–17.15)	-59.40 (-72.86–43.36)	-59.62 (-71.48–45.61)
Bangladesh	-10.74 (-17.65–1.20)	-9.46 (-13.24–5.09)	-42.89 (-61.69–8.54)	-45.11 (-62.54–17.04)
Barbados	-16.53 (-21.79–10.34)	-7.63 (-10.73–4.01)	-21.58 (-38.69–1.10)	-25.03 (-40.98–5.36)
Belarus	-12.27 (-17.44–6.79)	-5.17 (-9.14–0.68)	-7.34 (-33.23–26.44)	-10.61 (-33.91–17.81)
Belgium	-11.64 (-16.73–6.24)	-9.37 (-12.64–5.88)	-16.74 (-23.16–10.48)	-29.15 (-33.98–24.22)
Belize	-12.59 (-17.72–7.28)	-9.18 (-12.49–5.81)	-29.15 (-39.65–17.23)	-33.35 (-42.78–22.72)
Benin	-13.45 (-17.76–8.18)	-9.33 (-12.27–6.47)	-25.81 (-46.67–5.34)	-23.76 (-43.86–4.70)
Bermuda	-23.01 (-27.20–18.13)	-13.93 (-16.48–11.19)	-48.11 (-58.42–35.10)	-48.16 (-57.57–37.52)
Bhutan	-27.95 (-33.10–22.00)	-17.73 (-21.26–13.52)	-43.00 (-62.50–3.94)	-43.84 (-61.78–13.22)
Bolivia (Plurinational State of)	-27.33 (-31.79–21.37)	-23.63 (-26.31–21.06)	-38.47 (-58.43–13.46)	-44.27 (-61.39–21.62)
Bosnia and Herzegovina	-25.58 (-31.70–19.78)	-16.71 (-20.29–13.02)	-57.44 (-73.80–35.28)	-57.84 (-72.04–40.96)
Botswana	-12.18 (-17.43–7.16)	-9.11 (-12.23–5.61)	-49.07 (-63.63–22.19)	-43.41 (-59.00–17.37)
Brazil	-26.93 (-30.74–22.73)	-25.93 (-28.19–23.95)	-27.02 (-31.18–23.19)	-37.51 (-40.33–34.51)
Brunei Darussalam	-32.29 (-39.98–18.02)	-21.93 (-26.10–17.79)	-48.74 (-62.15–29.54)	-47.92 (-59.94–30.49)
Bulgaria	2.86 (-2.42–9.02)	-0.79 (-4.21–2.64)	18.05 (1.33–39.49)	-0.56 (-15.13–16.89)
Burkina Faso	-10.15 (-14.91–4.43)	-7.28 (-10.47–4.00)	-14.87 (-37.23–25.29)	-14.27 (-35.71–18.61)
Burundi	-16.77 (-21.23–12.23)	-13.22 (-16.43–9.84)	-42.07 (-68.87–3.49)	-43.11 (-65.37–1.04)
Côte d'Ivoire	-12.87 (-17.70–7.61)	-9.66 (-12.55–6.43)	-17.79 (-43.68–23.08)	-16.77 (-41.38–19.34)
Cabo Verde	-13.01 (-17.58–8.37)	-7.42 (-10.10–3.76)	-23.86 (-49.28–27.42)	-27.96 (-47.73–0.86)
Cambodia	-17.52 (-22.70–11.41)	-10.63 (-13.89–7.11)	-39.99 (-60.65–12.26)	-42.16 (-59.45–20.28)
Cameroon	-7.41 (-12.11–2.77)	-5.96 (-9.97–2.70)	-13.76 (-41.72–27.17)	-10.57 (-37.70–26.60)
Canada	-24.57 (-28.91–19.33)	-16.86 (-20.05–13.58)	-40.52 (-46.20–34.51)	-43.89 (-48.55–38.98)
Central African Republic	-3.35 (-8.79–2.39)	-1.89 (-5.56–1.86)	-11.31 (-40.69–29.63)	-12.44 (-40.20–27.30)
Chad	-6.41 (-11.14–0.74)	-5.31 (-8.89–1.86)	1.89 (-22.42–46.04)	1.89 (-21.72–38.32)
Chile	-16.44 (-21.99–10.86)	-3.54 (-7.83–4.03)	-25.68 (-32.48–19.12)	-34.01 (-38.86–28.82)
China	-56.50 (-60.17–53.32)	-36.16 (-38.34–34.17)	-82.71 (-88.71–67.93)	-81.28 (-87.24–68.37)
Colombia	-8.86 (-15.89–1.68)	-12.17 (-15.31–8.88)	-10.25 (-25.34–5.96)	-20.21 (-33.26–6.50)
Comoros	-17.38 (-21.68–13.13)	-12.88 (-15.89–9.83)	-35.80 (-57.32–3.25)	-35.00 (-54.39–5.16)
Congo	-19.17 (-24.18–13.66)	-11.89 (-15.31–7.72)	-30.05 (-51.82–4.36)	-29.55 (-49.48–2.74)
Cook Islands	-29.63 (-33.61–25.61)	-15.99 (-18.43–13.24)	-65.13 (-79.25–42.22)	-59.92 (-73.50–38.86)
Costa Rica	-16.60 (-22.37–11.15)	-10.33 (-13.20–7.36)	-3.27 (-15.52–10.86)	-6.83 (-18.00–4.66)
Croatia	-31.54 (-36.92–26.92)	-19.44 (-22.69–15.72)	-47.44 (-55.23–39.16)	-53.28 (-59.71–46.14)
Cuba	-22.28 (-27.08–17.51)	-15.37 (-18.38–12.46)	-35.82 (-45.77–25.05)	-40.11 (-47.94–30.89)
Cyprus	-33.47 (-38.26–28.31)	-23.82 (-26.45–21.06)	-69.87 (-79.11–58.05)	-67.10 (-76.59–56.74)
Czechia	-31.80 (-35.48–28.17)	-19.97 (-23.03–17.18)	-59.65 (-64.96–52.62)	-60.60 (-65.41–54.61)
Democratic People's Republic of Korea	-21.00 (-25.03–16.19)	-12.84 (-15.93–9.59)	-36.78 (-60.38–9.81)	-32.51 (-57.51–15.39)
Democratic Republic of the Congo	-0.62 (-5.74–5.06)	0.26 (-3.21–4.12)	-4.34 (-42.61–50.34)	-8.15 (-39.18–41.99)
Denmark	-30.90 (-36.12–25.38)	-20.85 (-23.87–17.83)	-47.92 (-53.11–43.00)	-56.16 (-60.00–52.24)
Djibouti	-11.77 (-16.27–6.87)	-8.00 (-11.18–4.52)	-26.67 (-50.86–23.18)	-24.92 (-46.99–21.34)
Dominica	-16.28 (-21.46–11.09)	-12.99 (-15.85–10.05)	-26.78 (-41.41–7.33)	-23.72 (-38.64–3.38)
Dominican Republic	9.90 (2.13–17.98)	3.54 (-0.33–7.30)	-24.74 (-49.99–7.30)	-25.95 (-47.98–0.40)
Ecuador	-10.86 (-16.71–4.69)	-10.56 (-13.62–7.54)	31.91 (4.32–68.99)	4.28 (-15.85–31.34)
Egypt	-26.73 (-31.30–21.87)	-18.49 (-21.70–15.44)	-60.64 (-77.46–30.13)	-64.81 (-77.74–46.60)
El Salvador	-30.80 (-35.58–25.90)	-23.34 (-25.67–20.43)	-40.23 (-61.76–17.62)	-43.73 (-61.94–25.76)
Equatorial Guinea	-33.92 (-37.70–29.33)	-20.18 (-23.13–16.73)	-64.31 (-82.44–19.92)	-61.15 (-78.80–25.43)
Eritrea	-12.52 (-17.95–5.67)	-6.35 (-10.21–2.68)	-35.37 (-52.31–6.13)	-35.16 (-51.49–7.28)
Estonia	-33.82 (-38.01–29.56)	-28.74 (-31.33–25.81)	-36.77 (-47.19–27.12)	-47.93 (-55.48–39.57)
Eswatini	-4.85 (-10.80–1.70)	-5.52 (-8.84–1.80)	-12.35 (-42.71–31.23)	-6.16 (-38.13–36.13)
Ethiopia	-37.44 (-39.87–34.60)	-31.40 (-33.83–29.06)	-54.38 (-69.12–34.07)	-53.50 (-66.53–37.50)
Fiji	-17.92 (-22.89–11.46)	-14.35 (-17.54–11.28)	-22.18 (-41.91–6.59)	-24.60 (-42.76–0.14)
Finland	-24.10 (-31.93–16.89)	-17.68 (-20.66–14.87)	-49.03 (-54.30–43.98)	-52.21 (-56.29–48.34)
France	-0.27 (-5.92–5.16)	0.93 (-2.68–4.71)	-27.33 (-32.97–21.96)	-25.25 (-30.28–20.06)

Gabon	-17.74 (-22.76–12.37)	-10.30 (-13.75–6.51)	-27.13 (-53.12–9.33)	-25.40 (-48.57–8.35)
Gambia	-8.51 (-13.09–3.26)	-7.12 (-10.27–3.57)	0.76 (-35.30–42.25)	-0.97 (-33.37–36.80)
Georgia	17.82 (10.03–26.70)	7.21 (2.94–11.43)	49.11 (11.66–105.55)	31.99 (0.83–73.43)
Germany	-26.77 (-31.11–21.80)	-16.03 (-18.94–12.89)	-45.38 (-51.50–38.33)	-49.88 (-54.40–44.60)
Ghana	-7.51 (-12.39–1.58)	-6.94 (-9.95–3.75)	-18.97 (-43.37–31.33)	-21.10 (-42.48–18.17)
Greece	-3.29 (-9.38–3.20)	6.50 (2.26–10.64)	-17.66 (-28.14–3.24)	-15.21 (-24.27–0.67)
Greenland	3.23 (-38.72–25.83)	-15.52 (-36.52–6.01)	-61.01 (-68.93–50.71)	-62.31 (-69.18–53.34)
Grenada	-20.41 (-25.49–15.04)	-13.17 (-16.33–10.32)	-37.23 (-49.44–18.63)	-41.11 (-52.66–24.60)
Guam	-18.00 (-22.43–12.19)	-3.22 (-6.48–0.36)	-53.40 (-61.78–39.43)	-31.22 (-40.82–19.03)
Guatemala	-0.45 (-6.75–6.01)	-2.14 (-5.35–1.52)	26.35 (2.40–52.35)	18.79 (-0.90–40.71)
Guinea	-4.97 (-10.11–0.72)	-3.94 (-7.27–0.03)	-6.69 (-33.98–37.43)	-7.02 (-31.54–31.69)
Guinea-Bissau	-12.44 (-17.12–7.34)	-10.41 (-13.54–6.88)	-17.14 (-43.67–14.26)	-18.72 (-44.51–12.77)
Guyana	-20.58 (-25.33–15.25)	-12.65 (-15.81–9.38)	-26.66 (-45.79–4.34)	-26.30 (-44.55–4.53)
Haiti	-3.91 (-14.21–8.66)	-5.06 (-8.49–1.15)	-23.73 (-48.53–12.04)	-27.37 (-49.58–4.11)
Honduras	1.90 (-4.83–8.93)	-12.18 (-15.12–8.79)	30.76 (-11.41–93.34)	2.99 (-28.46–46.36)
Hungary	-23.30 (-27.45–19.00)	-18.41 (-21.51–14.80)	-46.55 (-54.89–37.97)	-51.37 (-58.13–44.16)
Iceland	-26.00 (-30.16–21.27)	-17.82 (-20.65–14.99)	-48.03 (-53.77–41.25)	-52.57 (-57.10–47.45)
India	-25.73 (-28.88–22.23)	-13.31 (-15.80–11.02)	-33.94 (-49.76–5.96)	-34.32 (-48.49–13.05)
Indonesia	-19.11 (-22.37–15.60)	-18.28 (-20.74–16.17)	-24.16 (-43.54–0.59)	-28.73 (-43.47–8.52)
Iran (Islamic Republic of)	-30.87 (-33.06–28.67)	-16.98 (-18.83–15.17)	-61.92 (-78.75–47.47)	-60.76 (-75.16–49.06)
Iraq	-40.93 (-44.63–36.99)	-27.24 (-30.31–24.23)	-45.42 (-70.78–18.75)	-50.48 (-68.94–30.00)
Ireland	-39.10 (-43.70–33.80)	-30.69 (-33.51–27.34)	-56.87 (-61.22–52.61)	-61.37 (-64.36–58.48)
Israel	-17.49 (-21.72–13.12)	-12.19 (-15.56–8.89)	-29.09 (-36.35–21.05)	-41.14 (-45.91–35.83)
Italy	-27.98 (-33.26–21.28)	-17.46 (-19.63–15.17)	-31.61 (-36.50–27.84)	-44.39 (-47.19–41.64)
Jamaica	-11.44 (-18.71–3.74)	-9.72 (-12.78–6.06)	-24.72 (-44.55–1.09)	-33.48 (-50.13–14.05)
Japan	-5.56 (-10.87–1.18)	12.11 (8.82–15.62)	-47.08 (-50.14–44.54)	-40.80 (-43.62–38.18)
Jordan	-27.16 (-33.03–22.35)	-15.68 (-18.86–12.81)	-50.97 (-70.94–21.28)	-47.84 (-63.67–28.71)
Kazakhstan	2.62 (-3.10–8.51)	-2.86 (-6.47–0.85)	6.84 (-20.64–38.48)	-7.59 (-29.41–17.21)
Kenya	-12.17 (-14.45–9.50)	-7.73 (-9.71–5.75)	-7.90 (-30.38–24.92)	-6.34 (-24.90–17.75)
Kiribati	9.92 (-6.37–20.93)	8.88 (3.98–13.93)	-6.77 (-30.85–29.22)	-8.90 (-31.19–20.49)
Kuwait	-13.70 (-17.62–9.89)	-9.77 (-12.74–6.91)	-72.42 (-77.41–66.87)	-64.16 (-69.35–58.70)
Kyrgyzstan	-14.84 (-20.08–7.87)	-13.80 (-17.38–10.00)	-9.96 (-29.96–11.84)	-15.43 (-34.93–7.53)
Lao People's Democratic Republic	-25.67 (-29.60–20.73)	-15.17 (-18.79–11.84)	-55.93 (-70.47–32.34)	-55.49 (-69.48–32.70)
Latvia	-30.70 (-34.86–26.93)	-20.65 (-23.96–17.17)	-30.08 (-40.28–19.09)	-37.35 (-46.45–27.35)
Lebanon	-34.62 (-38.81–30.72)	-20.58 (-23.31–17.94)	-74.64 (-84.90–60.57)	-73.01 (-82.43–60.16)
Lesotho	12.95 (4.19–21.44)	3.62 (-0.43–8.11)	31.95 (-16.15–112.67)	39.66 (-9.67–110.23)
Liberia	-12.81 (-16.80–7.95)	-10.70 (-13.85–7.54)	-7.38 (-50.94–59.48)	-9.74 (-48.09–53.24)
Libya	-24.65 (-30.22–19.80)	-15.71 (-18.40–12.64)	-17.29 (-56.41–23.97)	-22.65 (-54.92–9.13)
Lithuania	-21.00 (-25.69–16.56)	-5.20 (-8.82–0.51)	-8.97 (-23.99–6.56)	-22.57 (-34.65–8.69)
Luxembourg	-25.36 (-29.93–21.03)	-16.34 (-19.57–13.07)	-54.17 (-59.45–48.47)	-59.45 (-63.66–54.98)
Madagascar	-5.01 (-10.07–0.80)	-3.68 (-7.24–0.20)	-20.36 (-45.67–9.30)	-18.52 (-41.11–11.39)
Malawi	-9.44 (-14.38–4.44)	-6.66 (-9.73–2.93)	-8.92 (-35.87–16.00)	-7.10 (-31.54–19.88)
Malaysia	-33.01 (-37.50–28.97)	-17.13 (-20.36–13.56)	-41.37 (-62.66–19.70)	-41.02 (-57.89–23.84)
Maldives	-41.36 (-45.30–37.44)	-25.94 (-28.69–22.97)	-69.08 (-79.94–55.46)	-69.44 (-77.80–59.06)
Mali	-14.26 (-18.68–9.62)	-10.25 (-13.02–7.18)	-25.13 (-45.21–8.35)	-23.53 (-41.96–4.06)
Malta	-21.26 (-25.20–16.94)	-14.32 (-17.54–10.81)	-42.93 (-49.01–35.17)	-39.64 (-45.37–32.66)
Marshall Islands	-0.73 (-8.32–8.89)	0.70 (-3.15–4.64)	-25.55 (-43.94–2.83)	-18.66 (-37.72–6.38)
Mauritania	-19.20 (-22.79–14.69)	-13.46 (-16.60–10.61)	-34.47 (-58.47–1.43)	-34.30 (-55.38–5.76)
Mauritius	-15.49 (-21.25–9.93)	-7.68 (-11.60–3.56)	-30.19 (-36.43–24.56)	-28.11 (-34.23–21.78)
Mexico	-0.78 (-4.26–3.39)	-6.06 (-8.19–3.77)	30.58 (16.60–45.07)	16.02 (3.95–27.81)
Micronesia (Federated States of)	-4.62 (-11.16–4.46)	-3.45 (-6.77–0.10)	-31.68 (-50.70–5.16)	-29.73 (-48.49–1.50)
Monaco	-29.06 (-32.98–24.58)	-15.73 (-18.64–12.87)	-59.66 (-73.32–37.56)	-55.69 (-69.61–34.67)
Mongolia	12.10 (3.92–21.59)	-3.51 (-7.42–0.90)	-2.39 (-40.75–62.29)	-3.73 (-41.61–57.54)
Montenegro	-9.31 (-14.20–4.70)	-7.64 (-10.95–4.03)	-8.39 (-38.74–23.35)	-22.82 (-43.02–2.68)
Morocco	-23.66 (-29.30–18.32)	-19.29 (-22.25–15.90)	-34.49 (-59.52–15.57)	-42.97 (-60.84–12.80)
Mozambique	0.01 (-7.43–7.90)	1.30 (-2.78–5.70)	6.17 (-27.40–55.89)	11.91 (-21.78–54.64)
Myanmar	-31.00 (-35.20–25.93)	-19.69 (-22.75–16.29)	-51.15 (-67.77–26.45)	-51.58 (-66.72–31.34)
Namibia	-15.60 (-19.94–10.77)	-12.34 (-15.47–9.10)	-20.33 (-44.99–11.87)	-19.25 (-40.00–8.83)
Nauru	-6.04 (-12.78–2.43)	1.09 (-2.81–4.96)	-10.82 (-42.12–34.30)	-9.37 (-37.80–32.24)
Nepal	-18.21 (-23.19–13.03)	-12.57 (-15.82–8.52)	-38.74 (-60.61–6.93)	-40.04 (-58.80–12.43)
Netherlands	-29.75 (-34.24–25.10)	-20.07 (-23.04–17.05)	-47.80 (-51.82–43.64)	-54.04 (-57.17–51.05)
New Zealand	-37.58 (-42.27–32.29)	-23.27 (-26.20–20.31)	-47.84 (-52.18–43.04)	-51.38 (-55.00–47.82)
Nicaragua	-19.58 (-24.49–13.40)	-12.94 (-16.10–9.99)	-31.77 (-51.99–11.60)	-34.28 (-50.42–17.53)
Niger	-8.84 (-13.68–3.38)	-8.94 (-11.80–5.76)	-17.67 (-42.81–21.89)	-20.85 (-43.19–11.41)
Nigeria	-25.81 (-27.57–24.05)	-18.74 (-20.76–16.74)	-48.60 (-65.31–22.51)	-43.57 (-61.19–18.25)
Niue	-25.84 (-30.18–21.14)	-15.00 (-17.93–12.12)	-31.14 (-51.55–5.42)	-14.59 (-38.82–15.52)
North Macedonia	7.54 (0.39–17.15)	-10.07 (-13.43–6.93)	-19.21 (-43.50–9.90)	-32.69 (-50.01–12.13)
Northern Mariana Islands	-14.49 (-19.78–8.68)	-9.68 (-12.61–6.51)	-30.77 (-49.12–5.76)	-30.07 (-47.23–7.33)
Norway	-30.40 (-33.87–26.18)	-18.89 (-21.05–16.55)	-60.10 (-62.68–57.68)	-63.31 (-65.53–61.06)
Oman	5.54 (-25.65–22.80)	-10.89 (-14.77–7.26)	-59.66 (-78.99–33.35)	-59.07 (-74.15–40.22)
Pakistan	-16.69 (-21.07–12.25)	-8.81 (-12.41–5.54)	-14.18 (-35.56–14.15)	-10.04 (-30.96–14.57)

Palau	-20.30 (-24.65–14.90)	-8.66 (-12.03–5.33)	-27.03 (-49.53–1.15)	-24.68 (-46.30–0.32)
Palestine	-18.91 (-23.09–14.77)	-9.77 (-13.03–6.40)	-47.83 (-66.24–22.07)	-46.04 (-61.31–28.35)
Panama	-11.72 (-17.86–5.11)	-8.32 (-11.48–5.43)	1.41 (-22.65–24.61)	-3.02 (-22.98–17.03)
Papua New Guinea	-15.65 (-20.49–9.84)	-7.78 (-11.11–4.76)	-31.62 (-52.94–1.21)	-29.39 (-49.10–0.50)
Paraguay	-14.96 (-22.14–8.89)	-12.16 (-15.54–8.79)	-23.92 (-49.18–3.74)	-28.68 (-49.66–5.14)
Peru	-30.93 (-35.53–26.59)	-19.73 (-22.54–17.00)	-39.72 (-63.10–13.00)	-40.52 (-59.81–18.64)
Philippines	25.04 (18.20–32.09)	23.26 (19.08–26.86)	7.55 (-19.34–35.70)	11.70 (-9.38–33.88)
Poland	-37.51 (-40.17–34.52)	-28.91 (-30.94–26.87)	-49.38 (-54.07–44.72)	-53.59 (-57.71–49.47)
Portugal	-31.96 (-42.98–26.77)	-25.85 (-28.90–22.81)	-43.43 (-47.82–39.04)	-50.32 (-53.40–46.67)
Puerto Rico	-19.84 (-23.72–15.84)	-13.18 (-16.17–10.22)	-36.62 (-47.47–24.14)	-37.46 (-47.09–26.57)
Qatar	-11.81 (-16.92–5.81)	-10.88 (-13.64–8.03)	-66.18 (-81.68–43.02)	-63.95 (-78.60–41.13)
Republic of Korea	-46.22 (-50.91–40.31)	-24.68 (-28.87–20.27)	-77.90 (-84.03–70.86)	-75.08 (-81.23–68.22)
Republic of Moldova	-20.11 (-23.87–15.93)	-10.61 (-14.19–6.18)	-27.18 (-38.02–13.97)	-24.45 (-35.41–11.14)
Romania	-4.40 (-9.45–0.75)	-10.16 (-13.39–6.60)	-5.43 (-23.27–14.87)	-13.24 (-29.72–3.14)
Russian Federation	2.38 (-2.49–7.37)	-5.10 (-7.50–2.94)	16.02 (7.14–25.06)	3.95 (-3.90–11.67)
Rwanda	-31.32 (-35.31–26.61)	-25.66 (-28.33–22.89)	-58.76 (-74.04–38.00)	-59.33 (-72.81–40.17)
Saint Kitts and Nevis	-29.79 (-34.42–25.12)	-22.19 (-24.78–19.33)	-45.36 (-56.53–29.96)	-49.28 (-59.60–34.88)
Saint Lucia	-23.92 (-28.84–18.83)	-14.13 (-17.41–10.76)	-47.64 (-57.83–36.40)	-46.82 (-56.64–35.78)
Saint Vincent and the Grenadines	-22.31 (-26.91–17.70)	-15.42 (-18.20–12.38)	-24.92 (-36.10–13.14)	-24.14 (-35.80–13.10)
Samoa	-10.75 (-16.54–4.75)	-2.31 (-5.72–0.99)	-28.90 (-48.62–5.19)	-24.32 (-43.02–0.36)
San Marino	-18.05 (-22.10–13.50)	-9.25 (-12.73–5.90)	-62.95 (-76.87–43.99)	-52.88 (-66.62–37.18)
Sao Tome and Principe	-7.10 (-11.62–2.56)	-5.91 (-9.31–2.22)	-3.72 (-33.93–31.26)	-4.09 (-30.97–29.40)
Saudi Arabia	-22.01 (-25.79–18.03)	-11.13 (-13.92–8.11)	-39.70 (-70.56–2.28)	-39.70 (-67.27–6.17)
Senegal	-12.23 (-16.36–7.85)	-8.67 (-12.09–5.53)	-15.40 (-40.71–13.71)	-18.64 (-39.15–9.09)
Serbia	-18.21 (-23.28–12.90)	-25.38 (-28.00–22.99)	-48.73 (-63.04–30.61)	-51.82 (-64.85–35.57)
Seychelles	-27.99 (-31.70–24.17)	-15.82 (-18.79–12.58)	-54.62 (-69.12–42.11)	-51.54 (-62.03–40.75)
Sierra Leone	-6.54 (-12.16–1.47)	-5.21 (-8.46–1.96)	-7.69 (-34.48–29.61)	-8.29 (-33.59–27.93)
Singapore	-33.61 (-38.32–28.58)	-22.93 (-25.96–20.27)	-71.28 (-74.37–68.52)	-65.18 (-68.41–61.98)
Slovakia	-36.93 (-40.74–33.30)	-22.89 (-25.33–19.88)	-48.59 (-59.98–34.50)	-49.57 (-59.37–37.58)
Slovenia	-28.71 (-32.58–24.59)	-18.83 (-21.98–15.74)	-58.83 (-65.16–52.17)	-61.71 (-66.97–56.15)
Solomon Islands	20.85 (-0.91–41.09)	6.31 (2.02–10.76)	-19.41 (-43.63–25.25)	-15.97 (-41.51–33.68)
Somalia	-2.93 (-7.85–2.72)	-2.73 (-6.24–1.30)	-28.01 (-56.87–9.53)	-26.24 (-51.13–9.93)
South Africa	-16.78 (-19.51–13.49)	-15.55 (-17.72–13.24)	8.23 (-8.46–25.40)	-7.70 (-18.49–3.73)
South Sudan	-11.15 (-15.84–5.73)	-8.68 (-11.69–5.33)	-19.20 (-52.63–44.30)	-18.25 (-49.95–37.36)
Spain	-7.84 (-13.41–1.93)	-1.89 (-6.00–2.65)	-8.01 (-15.60–0.42)	-26.30 (-30.95–21.59)
Sri Lanka	-28.43 (-32.77–23.59)	-16.60 (-19.31–13.87)	-45.17 (-66.32–15.81)	-41.25 (-57.69–20.01)
Sudan	-31.35 (-35.62–26.93)	-23.29 (-25.94–20.45)	-49.47 (-68.91–14.46)	-51.76 (-67.91–26.28)
Suriname	-10.89 (-16.05–5.08)	-10.48 (-13.64–7.19)	-24.05 (-44.79–1.68)	-24.69 (-43.59–3.07)
Sweden	-29.75 (-33.87–25.18)	-19.95 (-23.04–16.89)	-58.90 (-63.40–54.00)	-61.42 (-65.41–57.53)
Switzerland	-25.94 (-30.54–20.30)	-9.18 (-12.65–5.38)	-50.41 (-55.47–45.82)	-56.65 (-60.34–52.59)
Syrian Arab Republic	-22.96 (-36.59–15.82)	-16.47 (-19.42–13.52)	-44.30 (-74.80–1.35)	-51.37 (-72.69–20.41)
Taiwan (Province of China)	-39.16 (-44.08–33.46)	-28.84 (-31.47–26.08)	-60.71 (-77.31–40.68)	-66.49 (-79.10–52.18)
Tajikistan	-13.71 (-23.60–4.44)	-3.54 (-6.97–0.55)	-35.63 (-41.69–30.19)	-29.91 (-35.42–24.72)
Thailand	13.92 (7.40–21.25)	-3.66 (-7.89–0.03)	-18.68 (-46.64–24.40)	-22.64 (-44.98–14.32)
Timor-Leste	-33.71 (-38.10–28.18)	-18.47 (-21.77–15.06)	-49.69 (-65.87–30.47)	-42.32 (-58.52–23.24)
Togo	-11.39 (-16.38–6.42)	-4.68 (-8.11–1.14)	-22.39 (-49.24–11.41)	-22.09 (-46.00–8.32)
Tokelau	-9.55 (-13.93–4.80)	-7.82 (-10.76–4.31)	-5.51 (-35.64–37.16)	-8.34 (-35.41–30.48)
Tonga	-25.38 (-30.20–18.79)	-14.28 (-17.35–11.48)	-43.82 (-65.55–17.82)	-29.38 (-52.81–1.46)
Trinidad and Tobago	-18.01 (-22.29–13.16)	-9.69 (-12.79–6.71)	-25.58 (-48.04–3.77)	-23.16 (-43.06–2.53)
Tunisia	-18.99 (-23.61–13.94)	-15.54 (-18.30–12.36)	-26.01 (-43.51–2.75)	-24.04 (-40.71–1.76)
Turkey	-26.75 (-31.13–21.57)	-15.30 (-18.20–12.17)	-46.34 (-72.20–1.21)	-48.28 (-69.26–16.11)
Turkmenistan	25.23 (17.77–33.53)	18.61 (13.22–23.82)	49.84 (13.21–99.34)	41.70 (8.98–85.43)
Tuvalu	-16.28 (-21.80–9.09)	-9.51 (-12.57–5.91)	-44.76 (-60.46–27.05)	-42.78 (-56.93–25.18)
Uganda	-13.66 (-18.91–8.14)	-9.53 (-12.93–6.27)	-40.09 (-56.44–1.30)	-34.96 (-52.05–4.55)
Ukraine	-8.64 (-14.31–2.77)	3.17 (-0.74–7.78)	-29.52 (-48.85–8.25)	-17.86 (-39.75–6.40)
United Arab Emirates	-25.23 (-29.63–20.95)	-17.63 (-20.31–14.71)	-42.51 (-73.04–9.46)	-50.54 (-72.90–24.22)
United Kingdom	-28.00 (-30.62–24.80)	-20.03 (-21.61–18.44)	-47.20 (-49.98–45.28)	-54.27 (-55.75–52.84)
United Republic of Tanzania	-14.85 (-19.88–8.70)	-10.26 (-13.64–6.51)	-36.74 (-58.12–2.41)	-34.29 (-53.05–7.50)
United States of America	-8.99 (-12.73–3.86)	6.03 (1.06–11.19)	-13.94 (-18.27–10.31)	-23.92 (-27.05–21.07)
United States Virgin Islands	-19.26 (-23.92–14.01)	-15.04 (-17.92–11.85)	-57.75 (-70.38–41.00)	-54.01 (-66.72–37.23)
Uruguay	-25.13 (-30.80–19.12)	-19.48 (-23.04–14.19)	-39.18 (-44.61–32.39)	-45.56 (-50.01–40.36)
Uzbekistan	2.99 (-6.21–13.16)	-0.68 (-5.12–4.42)	111.13 (60.68–170.21)	56.77 (25.93–95.94)
Vanuatu	2.16 (-3.93–8.52)	4.34 (0.70–8.12)	-22.86 (-43.92–3.87)	-18.52 (-40.82–9.64)
Venezuela (Bolivarian Republic of)	-11.20 (-16.52–5.17)	-7.93 (-11.25–4.52)	5.92 (-21.91–38.47)	-2.40 (-27.36–26.28)
Viet Nam	-19.27 (-24.94–13.85)	-13.19 (-16.36–9.92)	-39.73 (-64.02–7.86)	-38.60 (-59.57–10.52)
Yemen	-17.25 (-22.55–11.39)	-14.85 (-17.63–11.81)	-29.73 (-55.32–3.84)	-35.17 (-56.12–6.23)
Zambia	-6.92 (-12.40–0.87)	-6.71 (-10.00–2.97)	-22.19 (-50.23–21.55)	-19.18 (-45.98–15.30)
Zimbabwe	23.85 (15.63–33.69)	17.06 (12.36–22.17)	51.55 (11.75–102.44)	64.56 (20.18–119.06)

DALY = disability-adjusted life years

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Supplementary Table 17. Rankings of subarachnoid hemorrhage (SAH) by the number of global deaths and disability-adjusted life years (DALY) in 1990 and 2021 among all diseases, non-communicable diseases, cardiovascular diseases, neurological disorders, and strokes.

	All diseases	Non-communicable diseases	Cardiovascular diseases	Neurological disorders including strokes	Strokes
Deaths, ranking (% of all) in 1990					
Overall	27 (0.81)	13 (1.40)	6 (3.04)	4 (6.25)	3 (7.45)
Men	32 (0.73)	17 (1.29)	6 (2.97)	4 (6.56)	3 (7.56)
Women	24 (0.91)	15 (1.52)	6 (3.10)	4 (5.99)	3 (7.35)
Deaths, ranking (% of all) in 2021					
Overall	36 (0.52)	23 (0.81)	6 (1.82)	5 (3.58)	3 (4.86)
Men	37 (0.46)	22 (0.74)	6 (1.70)	5 (3.64)	3 (4.60)
Women	31 (0.59)	20 (0.88)	7 (1.95)	4 (3.52)	3 (5.15)
Deaths, decrease in ranking as units (decrease in proportional burden as %) between 1990 and 2021					
Overall	9 (35.80)	10 (42.14)	0 (40.13)	1 (42.72)	0 (34.77)
Men	5 (36.99)	5 (42.64)	0 (42.76)	1 (44.51)	0 (39.15)
Women	7 (35.16)	5 (42.11)	1 (37.10)	0 (41.24)	0 (29.93)
DALY, ranking (% of all with 95% UI) in 1990					
Overall	44 (0.47)	23 (1.05)	6 (4.04)	5 (6.59)	3 (9.91)
Men	51 (0.44)	24 (1.04)	6 (3.81)	5 (6.98)	3 (9.84)
Women	47 (0.49)	25 (1.06)	6 (4.31)	5 (6.24)	3 (9.99)
DALY, ranking (% of all with 95% UI) in 2021					
Overall	59 (0.37)	39 (0.62)	6 (2.48)	6 (3.91)	3 (6.63)
Men	60 (0.35)	35 (0.62)	6 (2.25)	6 (4.07)	3 (6.21)
Women	54 (0.39)	35 (0.61)	6 (2.80)	6 (3.74)	3 (7.15)
DALYs, decrease in ranking as units (decrease in proportional burden as %) between 1990 and 2021					
Overall	15 (21.28)	16 (40.95)	0 (38.61)	1 (40.67)	0 (33.10)
Men	9 (20.45)	11 (40.38)	0 (40.94)	1 (41.69)	0 (36.89)
Women	7 (20.41)	10 (42.45)	0 (35.03)	1 (40.06)	0 (28.43)

DALY = disability-adjusted life years; UI = uncertainty interval

Supplementary Table 18. Regional rankings and proportions of subarachnoid hemorrhage-related deaths and disability-adjusted life years (DALY) in 2021 among all 300 diseases/injuries by five country-specific sociodemographic index (SDI) levels, seven GBD super-regions and 21 GBD regions.

Colors illustrate the levels of ranking gradually.

	Death ranking	% (95% UI) of all deaths	DALY ranking	% (95% UI) of all DALYs
Global	36	0.52 (0.45–0.59)	59	0.37 (0.32–0.43)
Low SDI	65	0.23 (0.13–0.46)	102	0.15 (0.09–0.28)
Low-middle SDI	40	0.46 (0.36–0.58)	58	0.34 (0.27–0.43)
Middle SDI	26	0.68 (0.56–0.77)	47	0.49 (0.41–0.56)
High-middle SDI	27	0.52 (0.46–0.61)	49	0.42 (0.37–0.49)
High SDI	37	0.57 (0.50–0.60)	51	0.45 (0.40–0.49)
Central Europe, Eastern Europe, and Central Asia	24	0.49 (0.46–0.51)	42	0.43 (0.39–0.46)
High-income	37	0.59 (0.52–0.63)	50	0.47 (0.42–0.51)
Latin America and Caribbean	28	0.65 (0.61–0.68)	49	0.51 (0.46–0.56)
North Africa and Middle East	42	0.30 (0.25–0.39)	74	0.22 (0.18–0.28)
South Asia	34	0.46 (0.32–0.62)	58	0.34 (0.25–0.45)
Southeast Asia, East Asia, and Oceania	24	0.75 (0.61–0.89)	46	0.56 (0.46–0.67)
Sub-Saharan Africa	81	0.15 (0.08–0.36)	123	0.10 (0.06–0.23)
Andean Latin America	25	0.64 (0.55–0.73)	40	0.57 (0.48–0.66)
Australasia	38	0.63 (0.55–0.68)	55	0.41 (0.36–0.47)
Caribbean	33	0.53 (0.42–0.65)	49	0.48 (0.38–0.58)
Central Asia	24	0.55 (0.51–0.60)	54	0.40 (0.36–0.44)
Central Europe	32	0.40 (0.36–0.43)	51	0.38 (0.34–0.41)
Central Latin America	28	0.57 (0.53–0.62)	52	0.45 (0.40–0.49)
Central Sub-Saharan Africa	70	0.17 (0.08–0.45)	113	0.11 (0.06–0.28)
East Asia	22	0.79 (0.59–0.94)	37	0.57 (0.44–0.70)
Eastern Europe	23	0.52 (0.49–0.56)	36	0.46 (0.42–0.50)
Eastern Sub-Saharan Africa	77	0.17 (0.07–0.48)	121	0.12 (0.05–0.30)
High-income Asia Pacific	26	0.99 (0.83–1.09)	24	0.91 (0.81–1.01)
High-income North America	38	0.52 (0.47–0.55)	51	0.38 (0.35–0.42)
Oceania	27	0.65 (0.46–0.90)	42	0.52 (0.40–0.67)
Southeast Asia	27	0.68 (0.56–0.92)	40	0.55 (0.46–0.69)
Southern Latin America	32	0.64 (0.59–0.67)	45	0.53 (0.48–0.58)
Southern Sub-Saharan Africa	77	0.12 (0.10–0.15)	107	0.10 (0.08–0.12)
Tropical Latin America	24	0.76 (0.71–0.79)	38	0.57 (0.52–0.63)
Western Europe	41	0.48 (0.42–0.52)	58	0.37 (0.33–0.41)
Western Sub-Saharan Africa	84	0.13 (0.07–0.30)	123	0.09 (0.05–0.18)

DALY = disability-adjusted life years; SDI = sociodemographic index; UI = uncertainty interval