

THE LANCET Infectious Diseases

Supplementary webappendix

This webappendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

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Contents

A. Methods appendix.....	2
A1. GBD Locations.....	2
A2. Search strategy	3
A3. Overview of modelling process	4
A4. Incidence models.....	5
A5. Equations for splitting incidence between serovars	6
A6. Calculating YLDs.....	7
A7. Case fatality calculations	9
A8. Vital registration data	10
A9. Mortality modelling approaches	11
A10. Mortality calculations.....	11
A11. CoDCorrect	12
B. Supplemental results	14
C. Data sources.....	54
Incidence data.....	54
Vital registration data	59
Etiology proportion data.....	85
Case fatality data	90
D. References	94

A. Methods appendix

A1. GBD Locations

GBD uses a set of nested geographies for both analysis and reporting, with countries being nested inside of regions, regions being nested inside of super-regions, and super-regions being nested inside the world. Figure S1 below shows each region and super-region. Note that North Africa and Middle East super-region, and South Asia super-region, each contain only one region. All other super-regions contain between three and five regions. In total, there are seven super-regions and 21 regions.

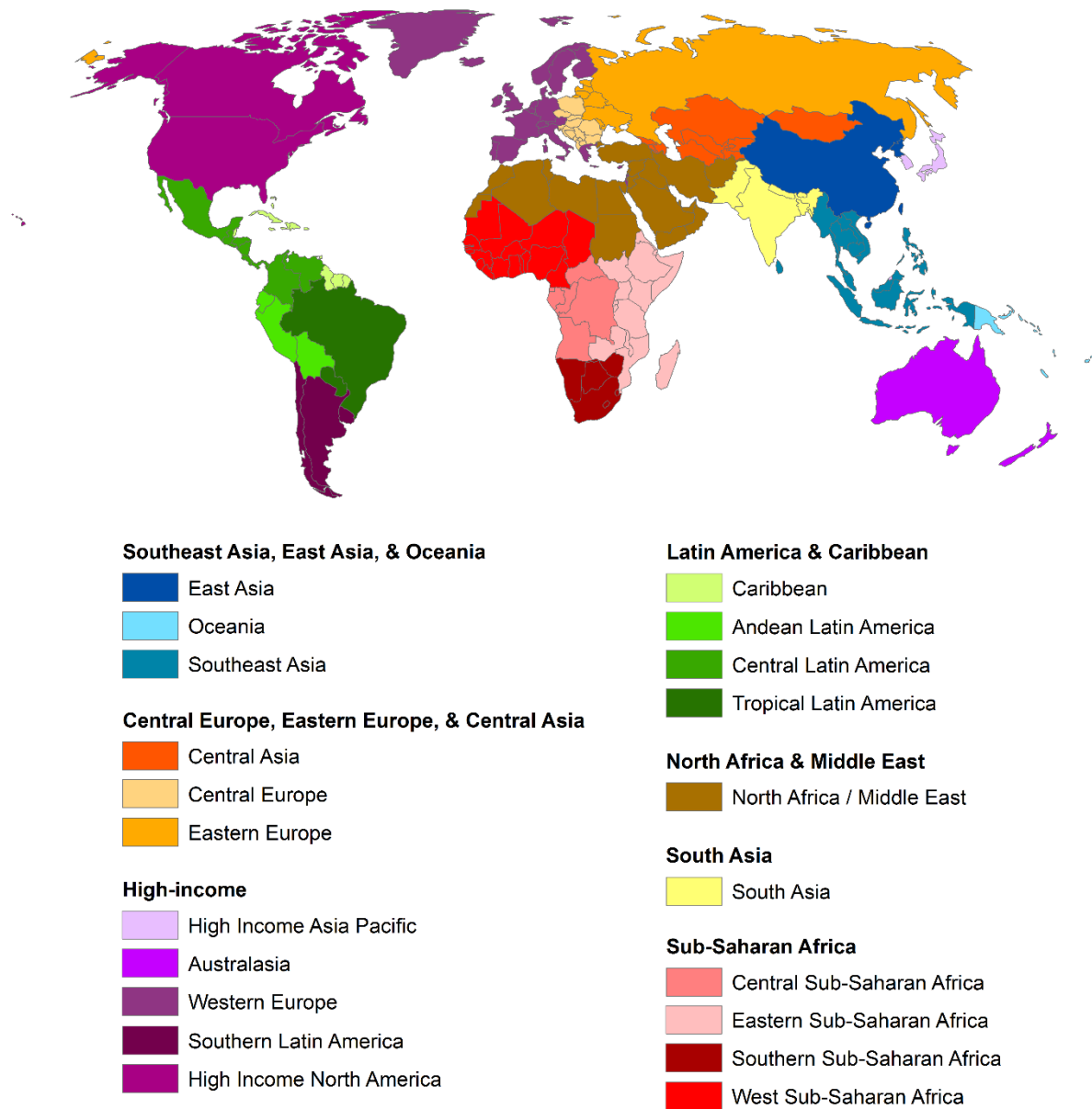


Figure S1: Global Burden of Disease regions and super-regions.

A2. Search strategy

Our data search strategy included three components: 1) data sources that were used in previous iterations of the GBD study, 2) a PubMed search of the published literature, and 3) reviewing citations from other published typhoid burden estimation studies.

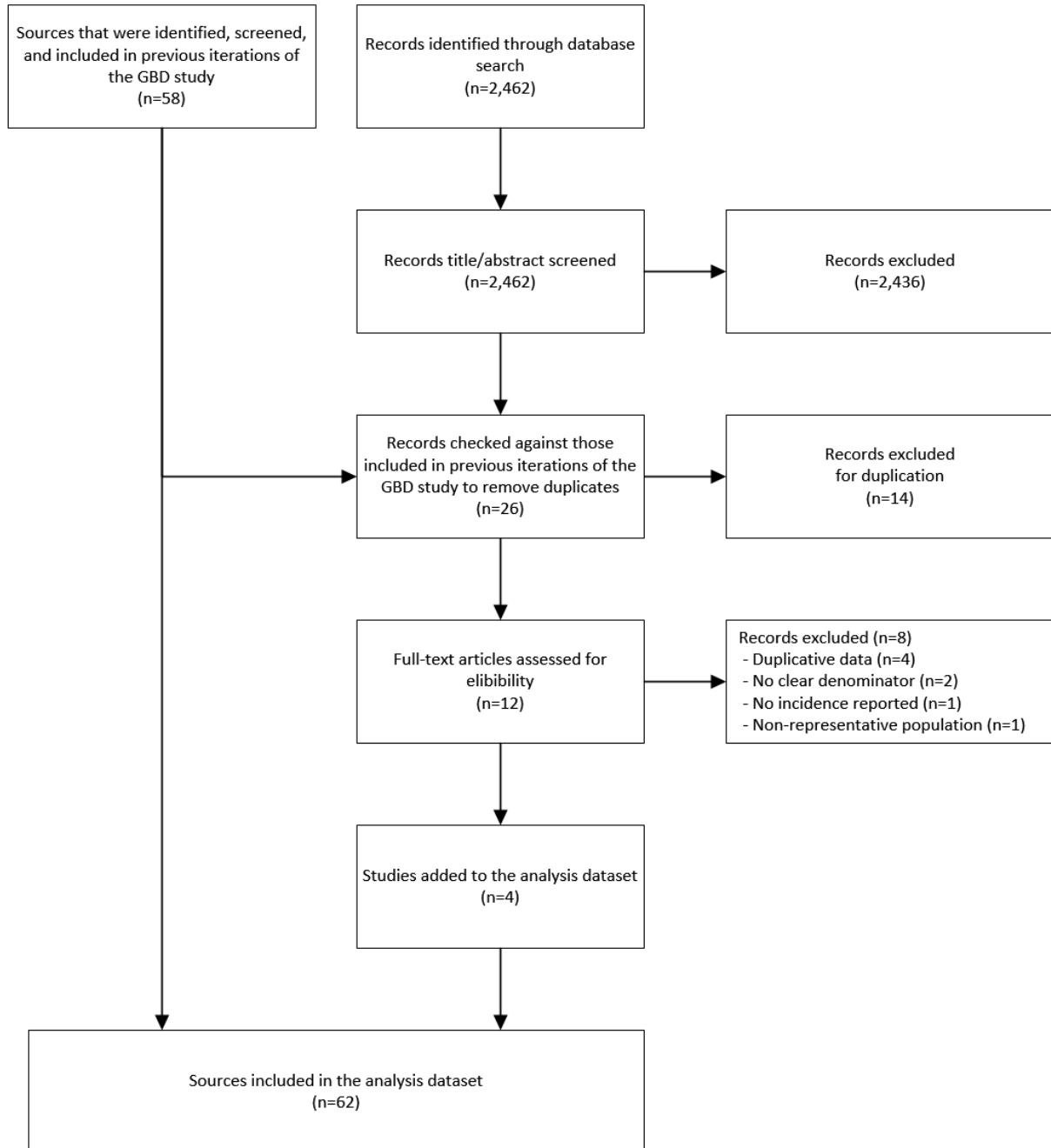


Figure S2: Flow diagram for systematic review of enteric fever incidence

A PubMed search conducted on 19 April 2017 with the term “(“Paratyphoid Fever”[Mesh] OR “Typhoid Fever”[Mesh]) AND incidence” yielded 2,462 results. After title/abstract review, 26 sources were

identified as potentially having useful primary data. These 26 sources were crosschecked against those that were already in our database from previous iterations of the GBD study to avoid duplication: 14 articles were already in our database, had been used in previous iterations of the GBD study and were included in our analysis; we conducted a full-text screen on the remaining 12 articles. Of those 12 articles, after full-text screening, four were included and eight were excluded (four reported data that were duplicative of data from other included sources, two reported cases with no clear denominator, one reported no incidence, and one was not representative)(Figure S1). Finally, our review of the sources used in four previously published typhoid burden estimation studies¹⁻⁴ found no sources with data that were not otherwise captured (i.e. sources were either duplicates, or contained duplicative data).

A3. Overview of modelling process

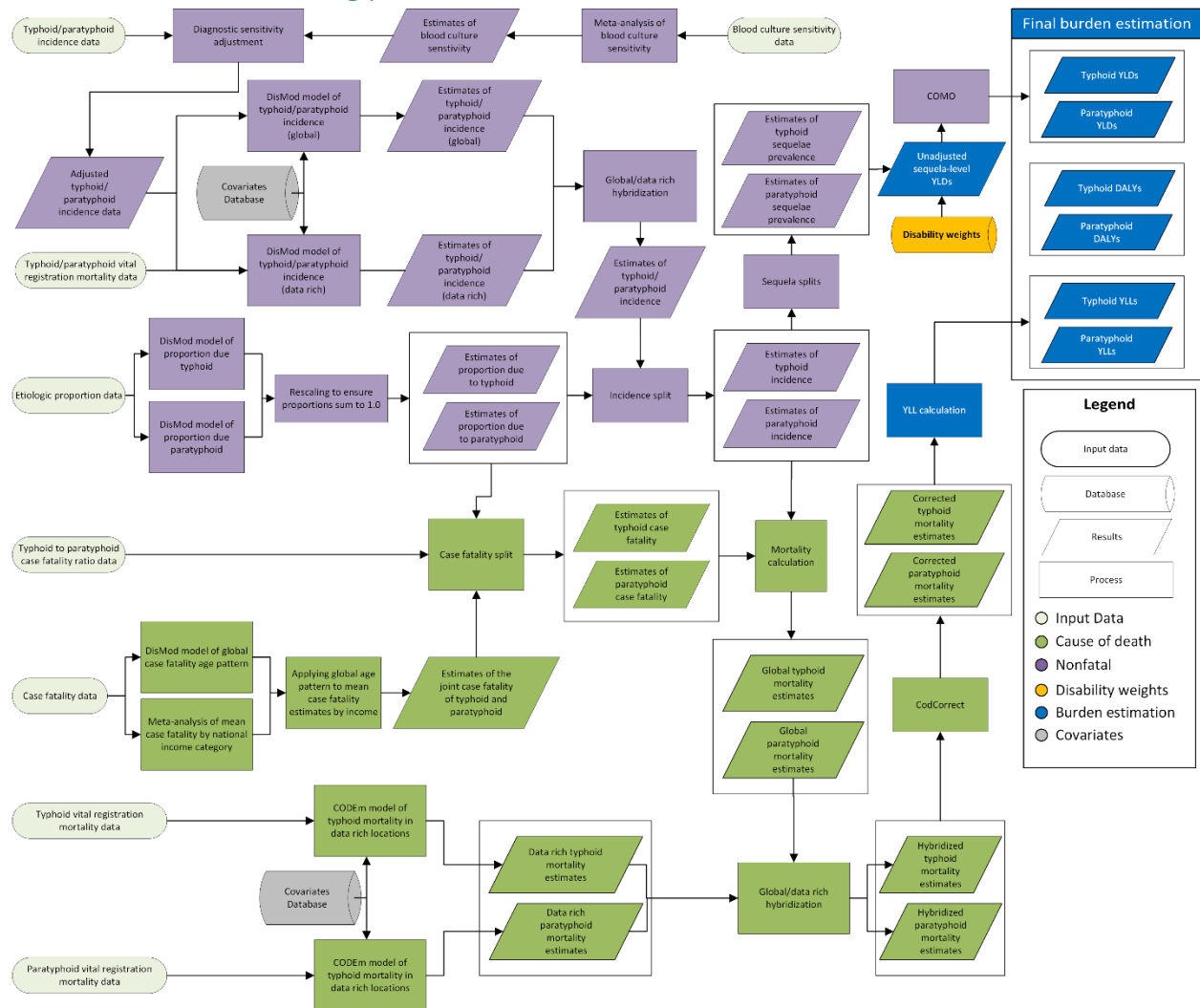


Figure S3: Flow diagram for typhoid and paratyphoid modelling process.

A4. Incidence models

The DisMod model

We modelled incidence using the Bayesian meta-regression tool DisMod-MR, which has been described elsewhere⁵. Briefly, DisMod-MR models incidence using a non-linear mixed effects model with an offset log-normal distribution, and produces estimates by age, sex, year, and location. It uses age-integration to accommodate data with disparate age categorization schemes. Country-level covariates may be used to help inform estimates where data are sparse. The tool uses a cascading geographic hierarchy in which all data are pooled to estimate a global fit, which then acts as a prior for each of the seven GBD super-regions. The model is refit within each super-region and the prior is modified based on any data within that super-region and the values of country-level covariates within that super-region. The fit in each super-region then becomes the prior for each region that falls within it. The model is again refit within each region, with each region's fit being derived from the prior, modified based on data and country-level covariates within the region. The cascade is then repeated for each country within each region. This cascade ensures that estimates have a strong spatial structure and allows extrapolations to countries with no data. In addition to country-level covariates, DisMod allows for study-level covariates that allow data to be adjusted to account for known sources of bias and heterogeneity.

Passive-to-active surveillance crosswalk

DisMod has the ability to adjust data points with known and identified sources of bias, a process we refer to as "crosswalking." To do this, we create a binary study-level covariate to identify each data point included in the model as either being in the reference category or the non-reference category. In this case, the reference category is active surveillance, and the non-reference category is passive surveillance. DisMod then empirically assesses the effect of the bias through regression, estimating an adjustment factor by which non-reference data must be multiplied to account for the given source of bias. DisMod then adjusts the non-reference data points, incorporating uncertainty in the adjustment factor with uncertainty from the original data. This adjustment factor for passive surveillance was 5.88 (3.44 – 7.14), meaning that incidence values from passive sources were inflated by a factor of 5.88 before being included in the final model.

Hybridization

Where a single DisMod model was used to produce incidence estimates for all locations, we found that the model fit was not universally acceptable, especially with regard to fitting the different age patterns observed in low and high burden settings. To solve this problem we used two separate DisMod models to estimate global incidence: one model was used to estimate incidence in super-regions with low burden (defined as those super-regions with age-standardized incidence rates <10 per 100,000, as estimated by the aforementioned global model); and a second model to estimate incidence in super-regions with moderate or high burden (defined as those super-regions with age-standardized incidence rates above 10 per 100,000). The results of these two models were then hybridized to create the final set of incidence estimates. Hybridization consisted of simply combining the incidence estimates from the two models such that the final set of estimates contained estimates from the high-burden model in high-burden super-regions, and estimates from the low-burden model in low-burden super-regions.

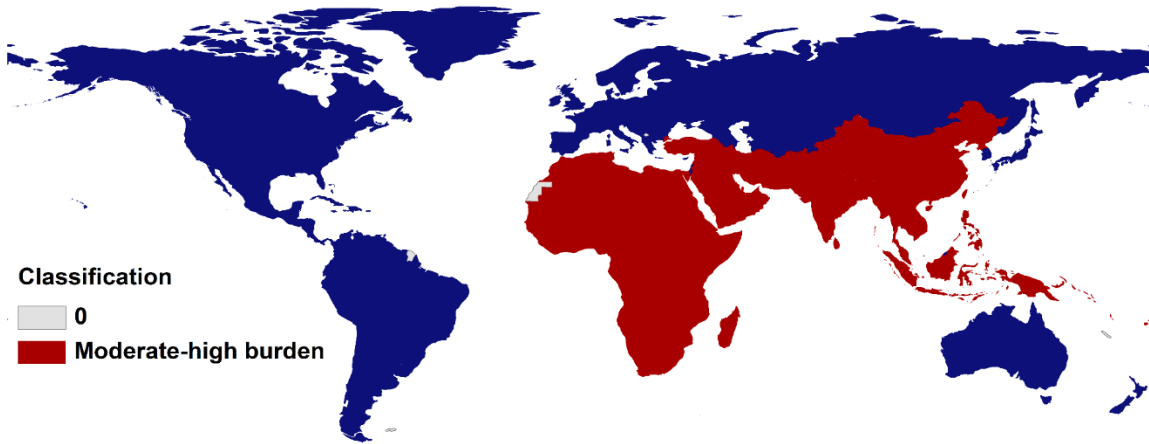


Figure S4: Map of low and moderate-high burden region classifications used in the hybridization scheme

A5. Equations for splitting incidence between serovars

Rescaling etiological proportions

We create two etiological proportion DisMod models: 1) the proportion of all cases due to typhoid, and 2) the proportion of all cases due to paratyphoid. While these models are based on the same data sources, they are independent models and, therefore, the proportions from the two models are not constrained to sum to 1.0. We impose this constraint, however, by rescaling the proportions from these two models to always sum to 1.0 for each draw and each age, sex, year and location. For each age-sex-year-location, and for each draw, the rescaled estimate of the proportion due to typhoid was calculated as unscaled estimate of the proportion due to typhoid divided by the sum of the unscaled estimates of the proportions for both typhoid and paratyphoid; the rescaled estimate for paratyphoid was calculated as unscaled estimate for paratyphoid divided by the sum of the unscaled estimates for both typhoid and paratyphoid.

$$P_{typh}' = \frac{P_{typh}}{P_{typh} + P_{para}}$$

$$P_{para}' = \frac{P_{para}}{P_{typh} + P_{para}}$$

Where P_{typh} is the model-based estimate of the proportion of cases due to typhoid, P_{para} is the model-based estimate of the proportion of cases due to paratyphoid, and P_{typh}' and P_{para}' are the rescaled proportions due to typhoid and paratyphoid, respectively.

Splitting incidence

We then calculate separate incidence estimates for typhoid and paratyphoid as the product of total incidence (*i.e.* the incidence of typhoid and paratyphoid combined), i_{total} , and the corresponding rescaled proportion derived above:

$$i_{typh} = i_{total} \times P_{typh}'$$

$$i_{para} = i_{total} \times P_{para}'$$

Where i_{typh} and i_{para} are the incidence rates of typhoid and paratyphoid, respectively.

A6. Calculating YLDs

Years lived with disability (YLDs) are calculated as the product of the prevalence of a sequela — calculated as the product of the incidence and duration of that sequela — and disability weight for the health state associated with that sequela:

$$YLDs = cases \times duration \times disability\ weight$$

All calculations were performed at the draw level to propagate uncertainty from incidence, duration and disability weights. Typhoid and paratyphoid cases were split proportionally between eight sequelae, four sequelae each for typhoid and paratyphoid (Tables S1a and S1b). Each sequela was assigned a duration and the disability weight of the most closely matching health state (or states) from the 235 GBD health states⁶ (Tables S2a and S2b).

Table S1a: Proportions used to split typhoid fever cases between sequelae.

Sequela	Proportion of cases
Moderate typhoid fever	0.35
Severe typhoid fever	0.43
Severe typhoid fever with gastrointestinal bleeding	0.05
Typhoid fever with abdominal complications (other than gastrointestinal bleeding)	0.17

Table S1b: Proportions used to split paratyphoid fever cases between sequelae.

Sequela	Proportion of cases
Mild paratyphoid fever	0.29
Moderate paratyphoid fever	0.52
Severe paratyphoid fever	0.14
Paratyphoid fever with abdominal complications	0.05

Table S2a: Sequelae of typhoid fever and their associated health states and durations

Sequela	Health State	Duration (years)	Disability weight
Moderate typhoid fever	“Infectious disease, acute episode, moderate”	0.038 (0.019-0.058)	0.051 (0.032-0.074)
Severe typhoid fever	“Infectious disease, acute episode, severe”	0.079 (0.038-0.134)	0.133 (0.088-0.19)
Severe typhoid fever with gastrointestinal bleeding	“Infectious disease, acute episode, severe”	0.071 (0.036-0.125)	0.133 (0.088-0.19)
	“Gastric bleeding”	0.005 (0.003-0.010)	0.325 (0.209-0.462)
Typhoid fever with abdominal complications other than	“Abdominopelvic problem, severe”	0.079 (0.038-0.134)	0.324 (0.22-0.442)

Table S2b: Sequelae of paratyphoid fever and their associated health states and durations

Sequela	Health State	Duration (years)	Disability weight
Mild paratyphoid fever	“Infectious disease, acute episode, mild”	0.038 (0.019-0.058)	0.006 (0.002-0.012)
Moderate paratyphoid fever	“Infectious disease, acute episode, moderate”	0.038 (0.019-0.058)	0.051 (0.032-0.074)
Severe paratyphoid fever	“Infectious disease, acute episode, severe”	0.079 (0.038-0.134)	0.133 (0.088-0.19)
Paratyphoid fever with abdominal complications	“Abdominopelvic problem, moderate”	0.038 (0.019-0.058)	0.114 (0.078-0.159)

When we apply these sequela splits, durations and disability weights we arrive at 1,578 YLD per 100,000 typhoid cases and 605 YLDs per 100,000 paratyphoid cases (Tables S3a and S3b).

Table S3a: Example YLD calculation for 100,000 hypothetical typhoid fever cases

Sequela	YLD Calculation	YLDs
Moderate typhoid fever	$100000 * 0.35 * 0.038 * 0.051$	67.8
Severe typhoid fever	$100000 * 0.43 * 0.079 * 0.133$	451.8
Severe typhoid fever with gastrointestinal bleeding	$100000 * 0.05 * (0.071 * 0.133 + 0.005 * 0.325)$	55.3
Typhoid fever with abdominal complications (other than gastrointestinal bleeding)	$100000 * 0.17 * 0.079 * 0.324$	435.1
Total		1010.1

Table S3b: Example YLD calculation for 100,000 hypothetical paratyphoid fever cases

Sequela	YLD Calculation	YLDs
Mild paratyphoid fever	100000 * 0.29 * 0.038 * 0.006	6.6
Moderate paratyphoid fever	100000 * 0.52 * 0.038 * 0.051	100.8
Severe paratyphoid fever	100000 * 0.14 * 0.079 * 0.133	147.1
Paratyphoid fever with abdominal complications	100000 * 0.05 * 0.038 * 0.114	21.7
Total		276.1

A7. Case fatality calculations

We used a DisMod model to estimate the age-pattern for case fatality but, since we had insufficient data to run a full DisMod model, we did not use the DisMod model to estimate the overall magnitude of case fatality. Instead, we converted DisMod’s age-specific case fatality estimates to age-specific relative risks (RR), where each age-specific RR was the risk of a case resulting in death relative to the mean age-specific case fatality for all ages, \overline{cf}' . The mean age-specific case-fatality depends on the age-structure of cases (*e.g.* assuming higher case fatalities among those of younger ages, a case distribution centered among children would yield a higher mean age-specific case fatality than would a case distribution centered among adults). Since we were estimating case fatality by national income category, and since the age distribution of cases differs between these income categories, we estimated \overline{cf}' and age-specific RRs separately for each income category. For each income category, i , we, calculated the mean age-specific case fatality, \overline{cf}'_i , as the case-weighted mean of age-specific case fatalities:

$$\overline{cf}'_i = \frac{\sum_{a=1}^n cf_{ai}' \times cases_{ai}}{\sum_{a=1}^n cases_{ai}}$$

Where cf_{ai}' is the DisMod case fatality estimate in age category a and income category i , and $cases_{ai}$ is the number of typhoid/paratyphoid cases in age category a and income category i (as estimated from the DisMod incidence model described in the main Methods section).

For each income category, we converted age-specific case fatality estimates to age-specific RRs:

$$RR_{ai} = \frac{cf_{ai}'}{\overline{cf}'_i}$$

We estimated overall case fatality in each national income category, cf_i , through a meta-analysis, using the “metaprop” function⁷ in Stata 13 (StataCorp, College Station, Texas), and imposed the age-structures derived from the DisMod case fatality model. The final age- and income-specific case fatality estimates, cf_{ai} , were calculated as,

$$cf_{ai} = cf_i \times RR_{ai}$$

Here, cf_{ai} , is the age- and income-specific case fatality estimate for typhoid and paratyphoid combined and, for simplicity, may now be referred to as cf_{total} . We treated cf_{total} as a weighted average of the case fatalities for typhoid (cf_{typh}) and paratyphoid (cf_{para}):

$$cf_{total} = (pr_{typh} \times cf_{typh}) + (pr_{para} \times cf_{para})$$

Where pr_{typh} and pr_{para} are the proportion of all cases due to typhoid and paratyphoid, respectively. Using data from China CDC,⁸ we estimated the RR of a case resulting in death comparing typhoid to paratyphoid, $RR_{cf_t:cf_p}$, as 1.89 (95% CI 1.09 – 3.28):

$$RR_{cf_t:cf_p} = \frac{cf_{typh}}{cf_{para}} = 1.89$$

$$cf_{typh} = 1.89 \times cf_{para}$$

$$cf_{total} = (1.89 \times pr_{para} \times cf_{typh}) + (pr_{para} \times cf_{para})$$

$$cf_{para} = \frac{cf_{total}}{1.89 \times pr_{typh} + pr_{para}}$$

A8. Vital registration data

For locations with four and five star rated CoD data, we derived incidence and etiological proportion data from vital registration (VR) death data. Before being used, several adjustments are applied to CoD data to correct for unambiguously erroneous coding (e.g. prostate cancer deaths among women), vague codes, and absolute numbers of deaths are adjusted to account for incomplete death reporting. These correction and redistribution processes are detailed elsewhere.⁹ For each location, 5-year estimation period, GBD age group, and sex, we calculated the total number of typhoid or paratyphoid deaths as the sum of all such deaths in the final CoD database. We derive incidence, i , from deaths by dividing deaths by case fatality, cf , and population:

$$i_{typh} = \frac{deaths_{typh}}{population \cdot cf_{typh}}$$

$$i_{para} = \frac{deaths_{para}}{population \cdot cf_{para}}$$

We then derive etiologic proportion, Pr , data:

$$Pr_{typh} = \frac{i_{typh}}{i_{typh} + i_{para}}$$

$$Pr_{para} = \frac{i_{para}}{i_{typh} + i_{para}}$$

All calculations are done at the draw-level, using 1,000 draws to propagate uncertainty in inputs into the derived data points. We derive the point estimate from the mean of the draws, and the lower and upper bounds of the 95% uncertainty interval from the 2.5th and 97.5th percentiles of the draws.

A9. Mortality modelling approaches

For locations with CoD data rated 4 stars or higher, we estimated mortality directly from vital registration data using the CoD ensemble model (CODEm) tool.⁹ For other locations we estimated mortality using a natural history approach. Figure S5 shows the modelling approach used for each location: locations for which mortality was estimated directly using CODEm are shown in blue, and those for which mortality was estimated using a natural history model are shown in red.

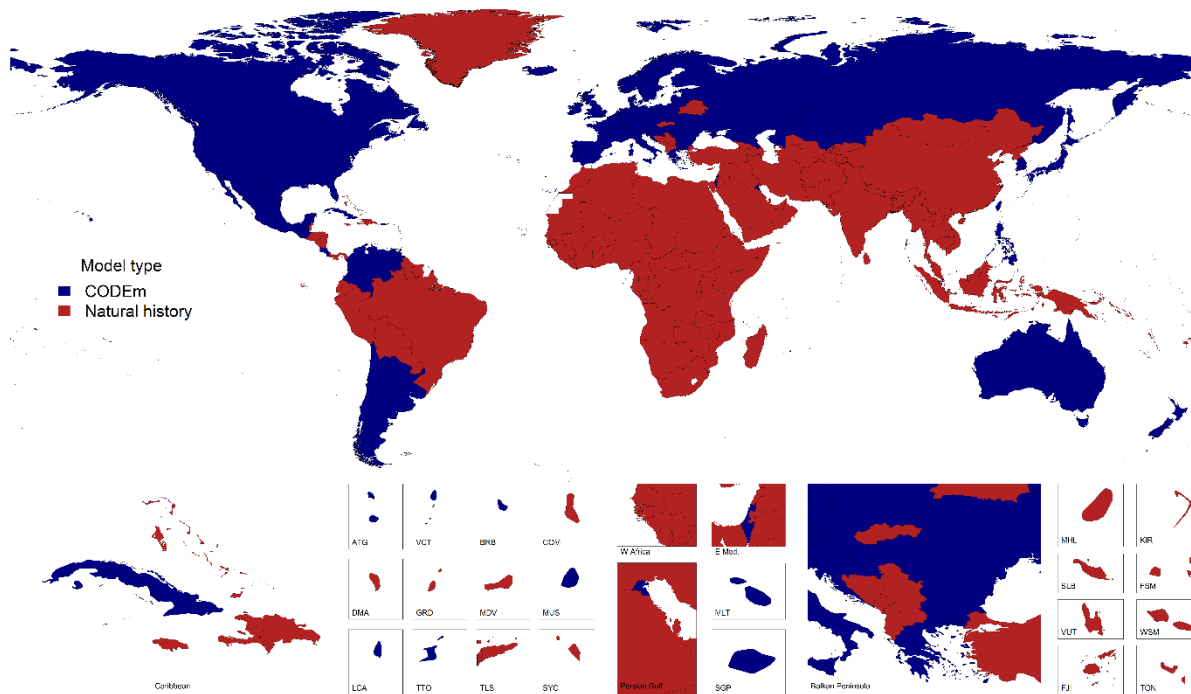


Figure S5: Map of mortality modelling approach by country

A10. Mortality calculations

For locations where we estimate mortality using a natural history approach, we calculate mortality rates, MR, as the product of incidence and case fatality:

$$MR_{typh} = i_{typh} \times cf_{typh}$$

$$MR_{para} = i_{para} \times cf_{para}$$

A11. CoDCorrect

To ensure consistency the GBD Study imposes two constraints in estimating cause-specific mortality: 1) that each death has a single underlying cause, and 2) that the sum all cause-specific mortality estimates must equal the estimated all-cause mortality within every location, year, sex, and age group. We impose these constraints through a hierarchical rescaling process called CoDCorrect, which has been described in detail previously.⁹ In general, where data are sparser (i.e. where we have less data on cause-specific mortality), our mortality estimates are less certain, aggregated cause-specific estimates are likely to deviate more greatly from the all-cause mortality estimate, and the effect of CoDCorrect is likely to be more pronounced. Note that data sparsity here, refers not just to data on typhoid, but to data on all causes of death. Conversely, where we have nearly complete vital registration data (i.e. where the underlying cause is known for nearly every death), little uncertainty exists in our mortality estimates, aggregated cause-specific estimates are unlikely to notably deviate from the all-cause mortality estimate, and the effect of CoDCorrect will be negligible.

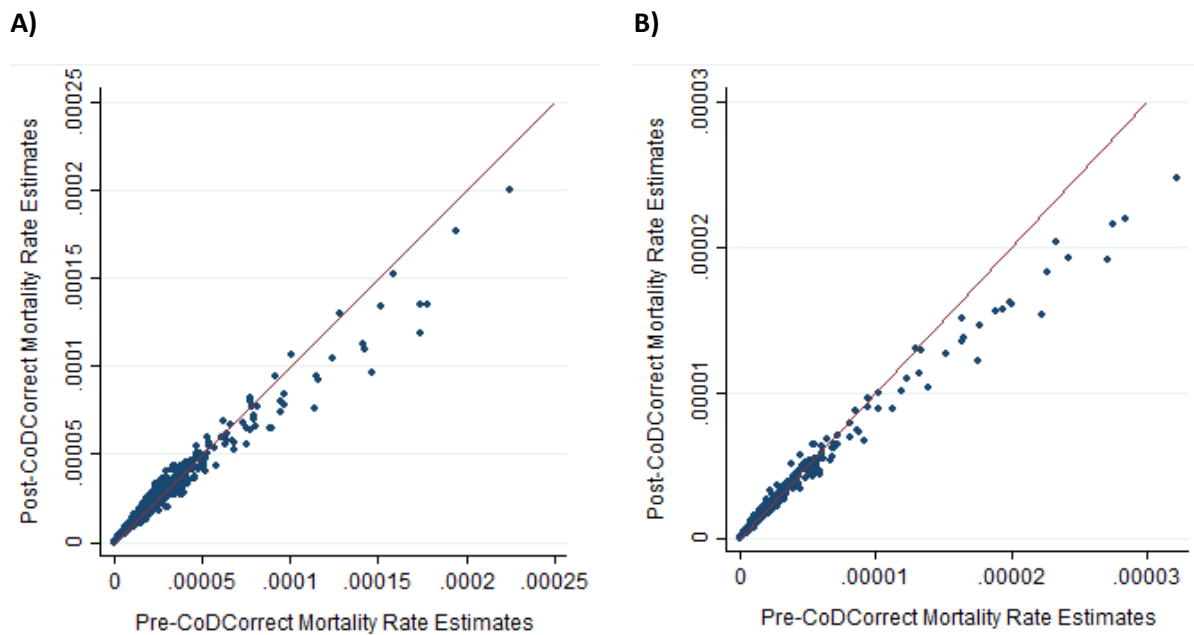


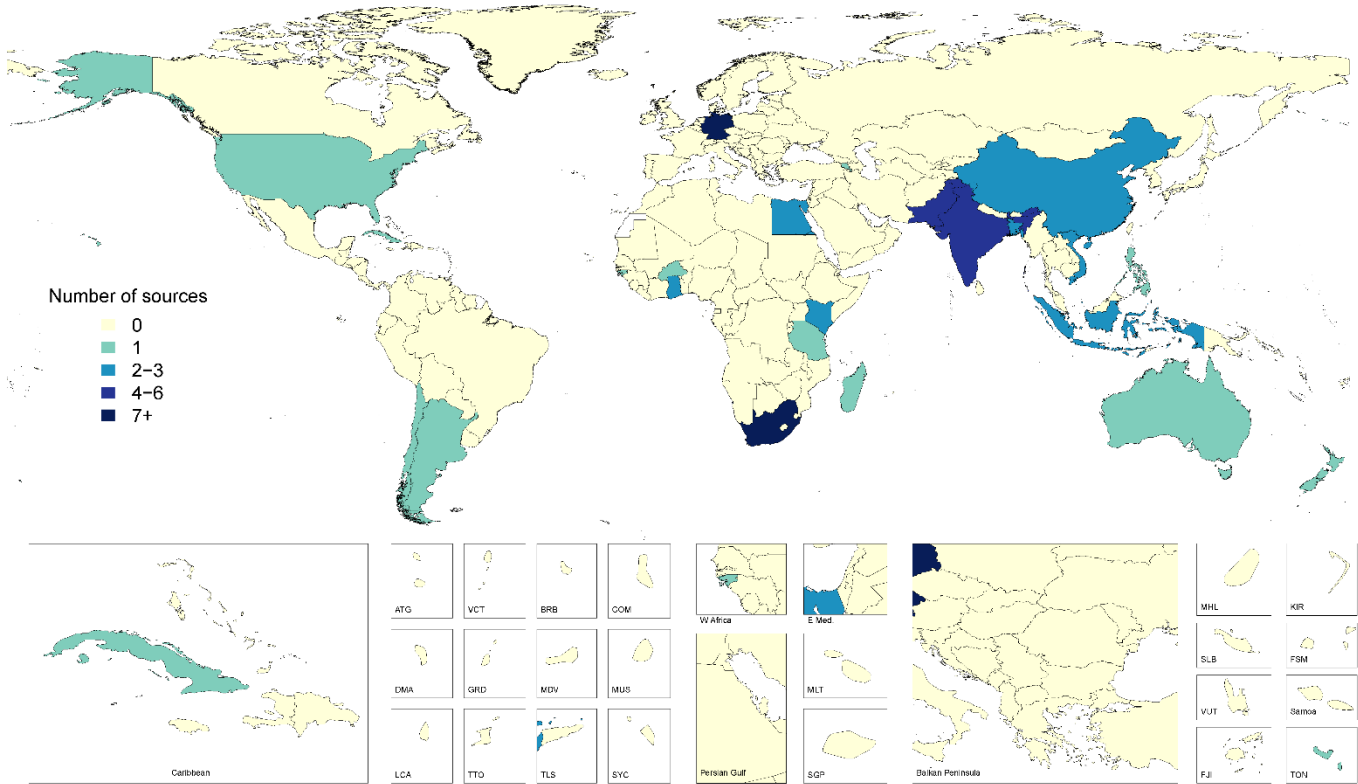
Figure S6: Comparison of typhoid (A) and paratyphoid (B) mortality rate estimates before and after CoDCorrect for each country, and year. The red line shows equality (i.e. points that fall along this line represent country-years for which mortality estimates were unchanged by the CodCorrect process).

Table S4: Comparison of global estimates of typhoid and paratyphoid deaths before and after CoDCorrect, by year

Year	Pre-CoDCorrect	Post-CoDCorrect	Absolute Change	Percent Change
Typhoid				
1990	249,938	202,039	-47,899	-19.20%
1995	223,640	185,445	-38,195	-17.10%
2000	202,194	171,566	-30,629	-15.10%
2005	183,929	160,197	-23,733	-12.90%
2010	163,202	145,424	-17,778	-10.90%
2017	127,078	116,815	-10,263	-8.10%
Paratyphoid				
1990	35,926	28,506	-7,420	-20.70%
1995	33,570	27,302	-6,267	-18.70%
2000	30,346	25,241	-5,105	-16.80%
2005	27,299	23,018	-4,281	-15.70%
2010	24,213	20,881	-3,332	-13.80%
2017	21,672	19,108	-2,564	-11.80%
Typhoid + Paratyphoid				
1990	285,864	230,545	-55,319	-19.40%
1995	257,210	212,747	-44,462	-17.30%
2000	232,540	196,806	-35,734	-15.40%
2005	211,228	183,214	-28,014	-13.30%
2010	187,415	166,305	-21,110	-11.30%
2017	148,750	135,922	-12,828	-8.60%

B. Supplemental results

A)



B)

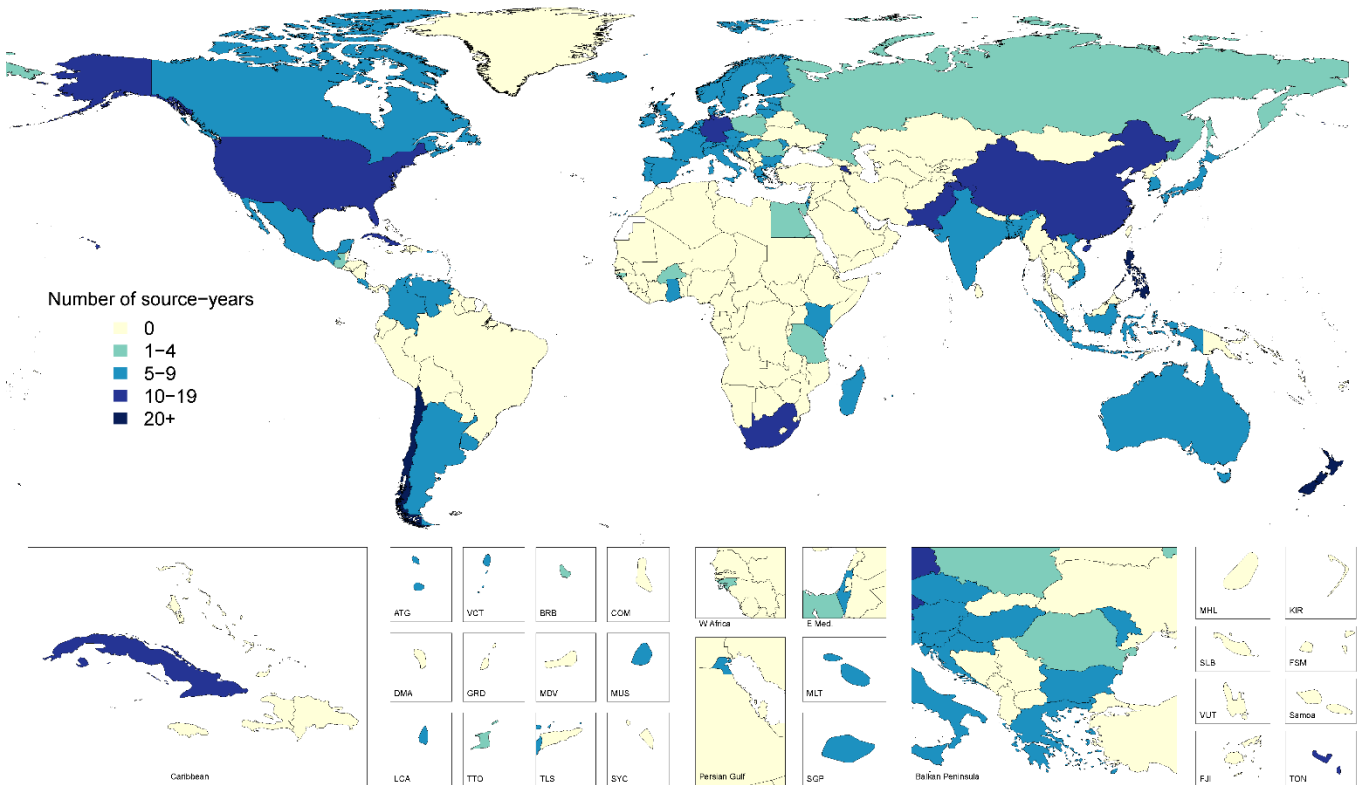


Figure S7: The number of incidence data sources, by country, excluding vital registration sources (A), and the number of source-years, by country, including vital registration sources (B).

Source-years are calculated for each location as the sum of the number of years of observation across all sources.

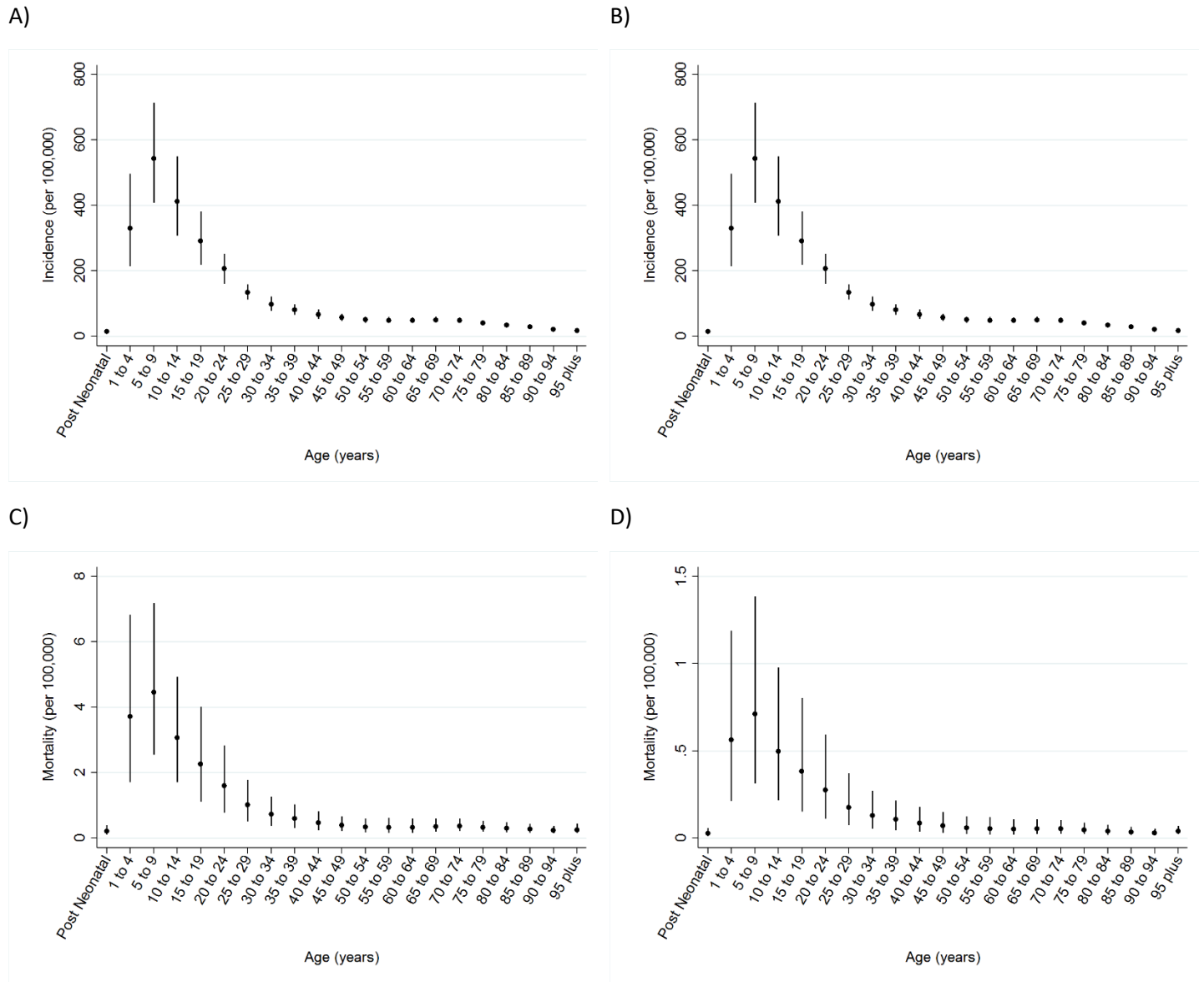


Figure S8: Incidence rates (per 100,000) of typhoid (A) and paratyphoid (B), by age; and mortality rates (per 100,000) for typhoid (C) and paratyphoid (D), by age, in 2017

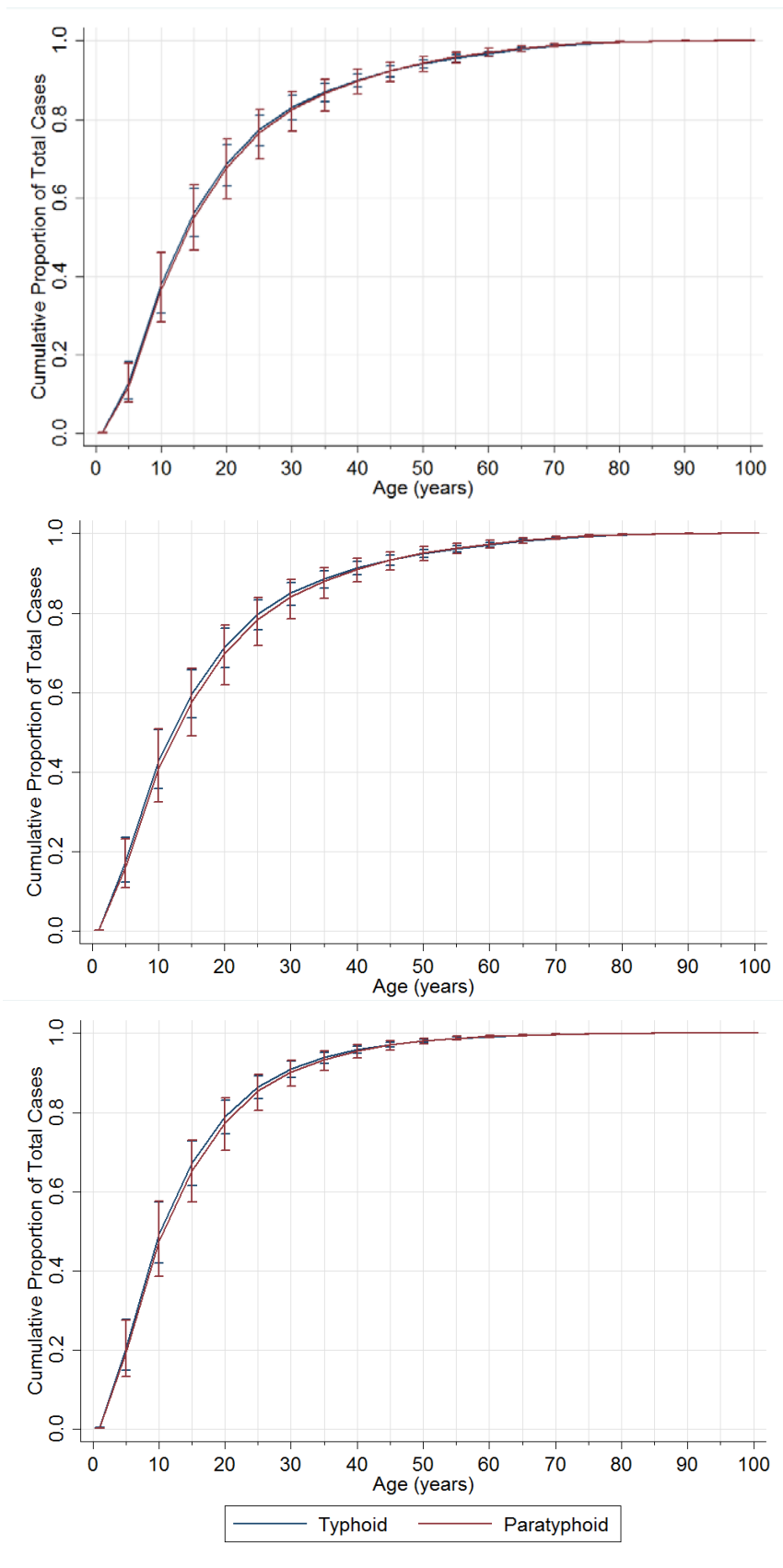


Figure S9: The cumulative proportion of total cases (top), deaths (middle), and DALYs (bottom), by age, for typhoid and paratyphoid, in 2017

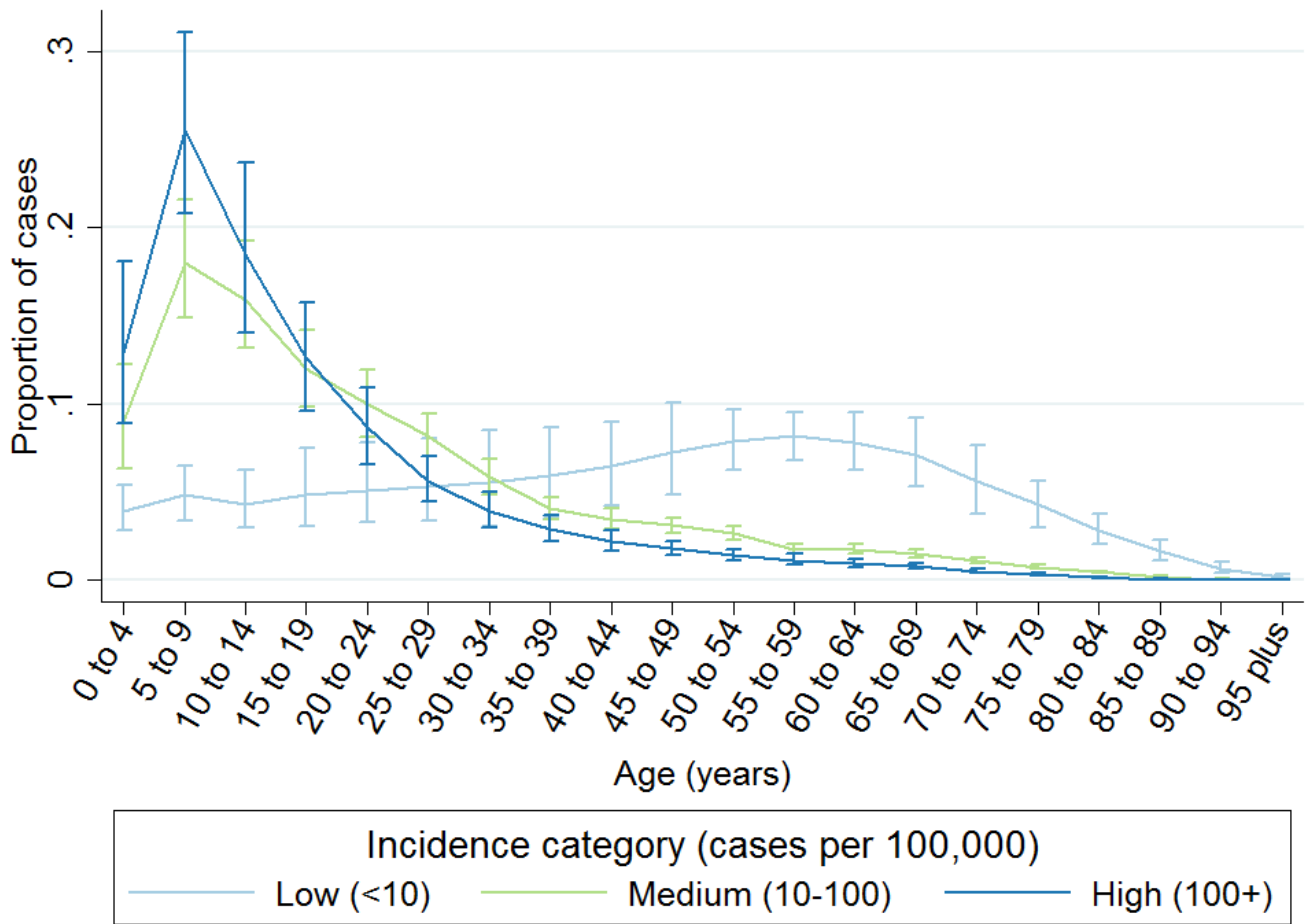


Figure S10: Age patterns of typhoid and paratyphoid by incidence category

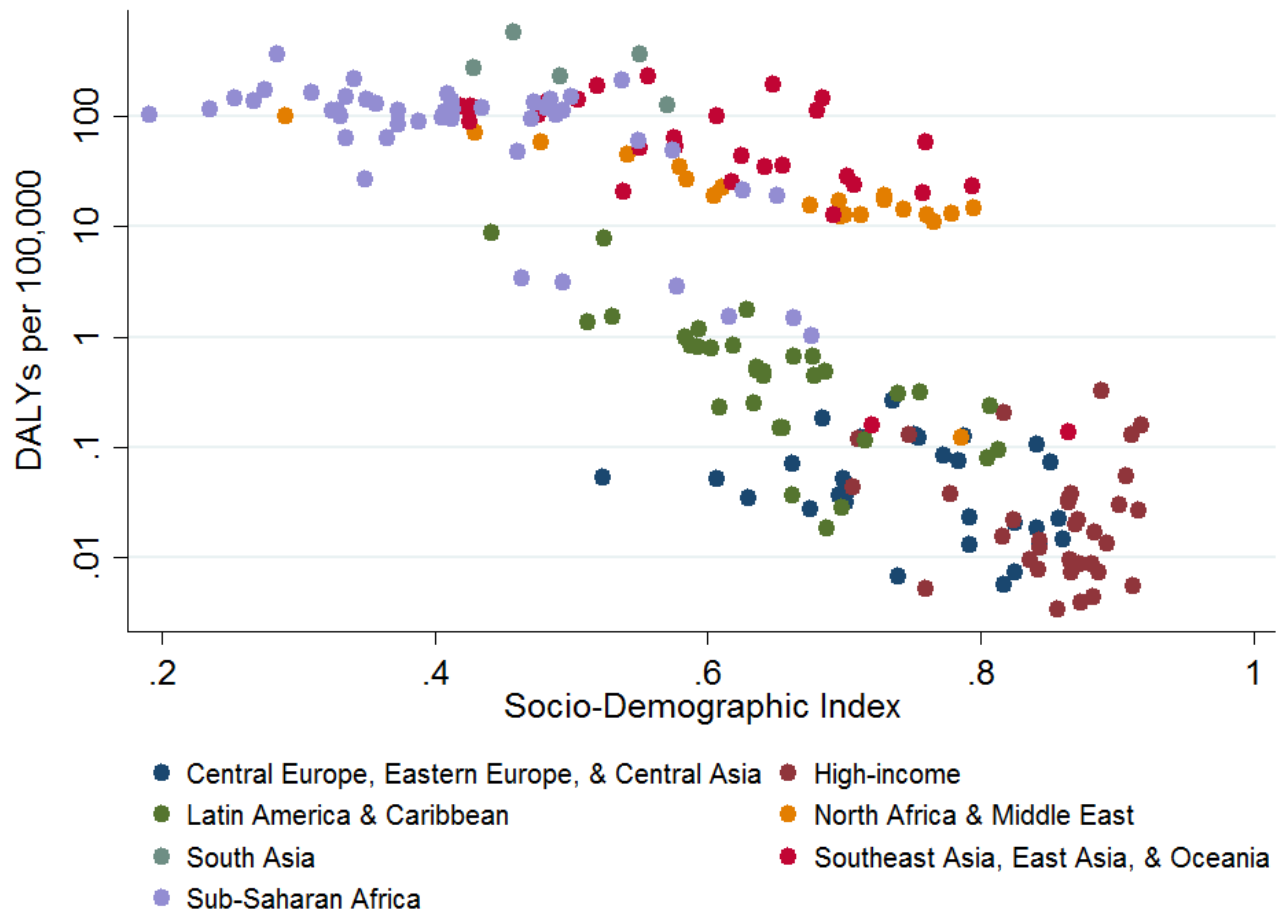


Figure S11: Age-standardized DALY rates (per 100,000) by socio-demographic index (SDI) and super-region, in 2017.

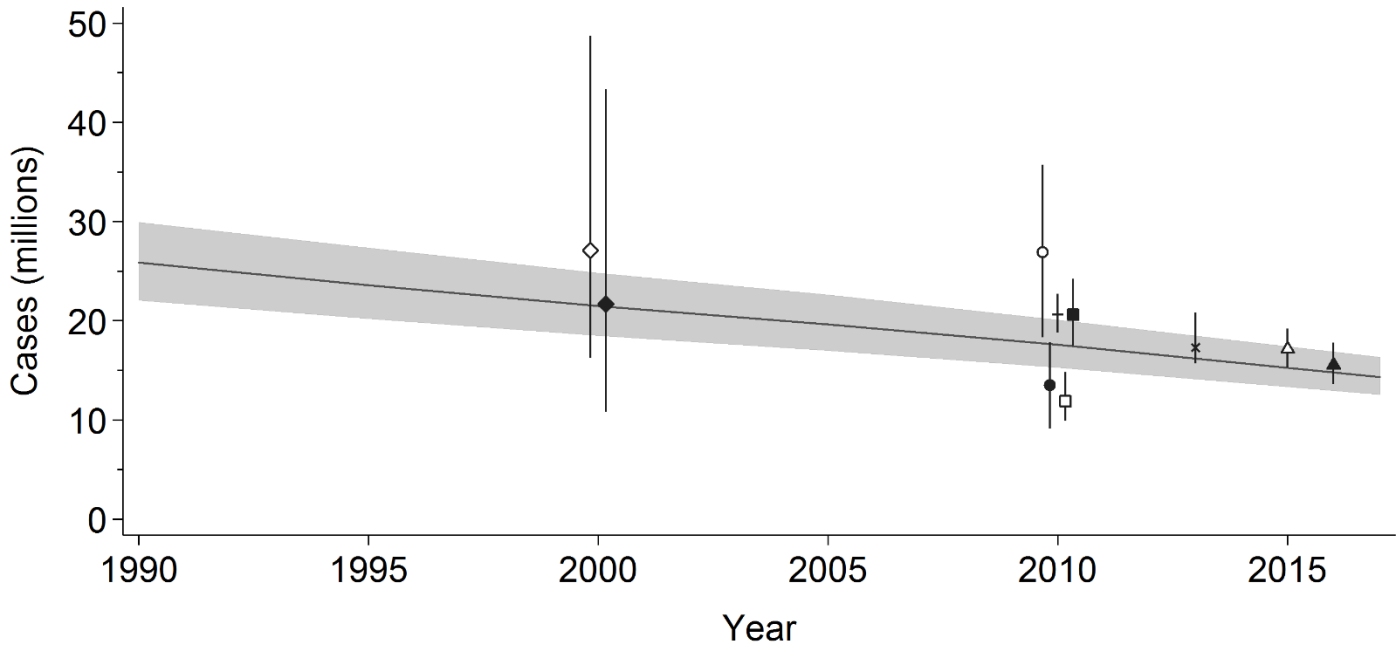


Figure S12: Comparison of previous case estimates for typhoid and paratyphoid against the GBD 2017 global trend estimates. The trend line and shaded area represent our estimates and 95% uncertainty interval for the global number of typhoid and paratyphoid cases, by year. The solid and hollow diamonds represent the Crump et al² estimates for typhoid only and typhoid plus paratyphoid, respectively. The solid and hollow circles represent the Buckle et al³ estimates for cases before and after adjustment for diagnostic sensitivity, respectively. The plus, “x”, hollow triangle, and solid triangle represent the estimate from GBD 2010¹⁰, GBD 2013¹¹, and GBD 2015¹², and GBD 2016¹³ respectively. The solid and hollow squares represent the estimates from Mogasale et al¹⁴ before and after adjusting for water-related risk, respectively. Points for the years 2000 and 2010 have been offset on the x-axis to prevent overlap. Note that estimates from Antillón et al.¹ and Kim et al.¹⁵ are not shown, since the absence of a specified estimation year precluded their placement on the x-axis.

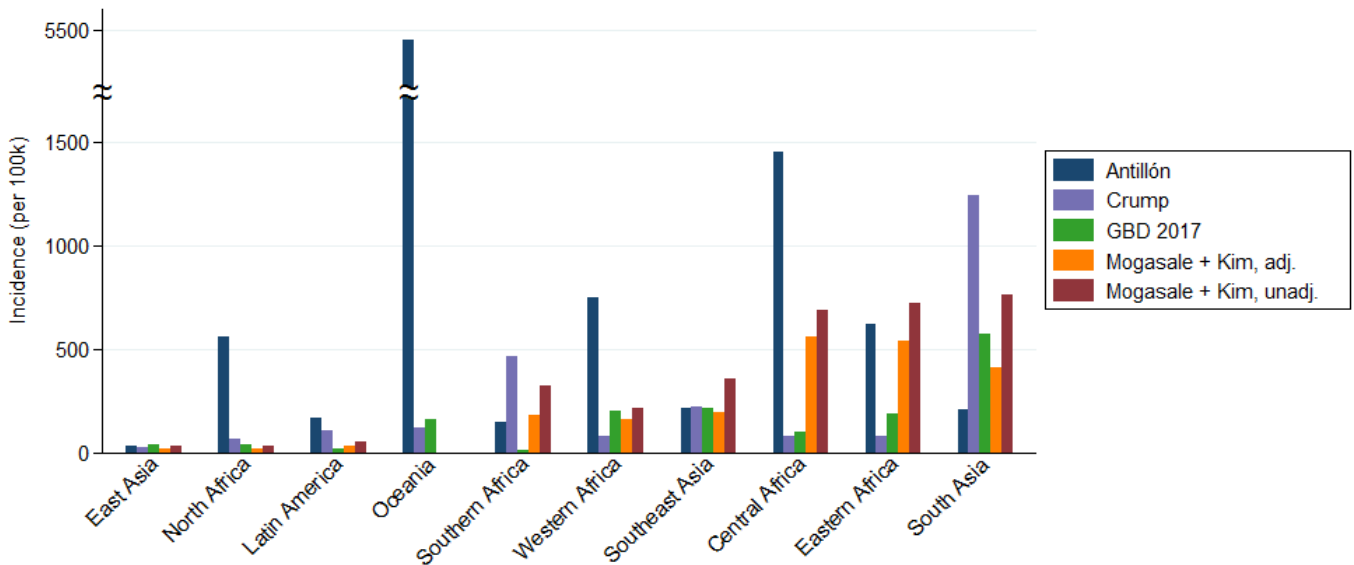


Figure S13: Comparison of regional estimates of typhoid incidence from this study (GBD 2017), Antillón et al¹, Crump et al.², and estimates from Mogasale et al.¹⁴ combined with updated estimates for sub-Saharan Africa by Kim et al.¹⁵, including estimates that were adjusted for water-related risk, and those that were unadjusted. Note the y-axis break.

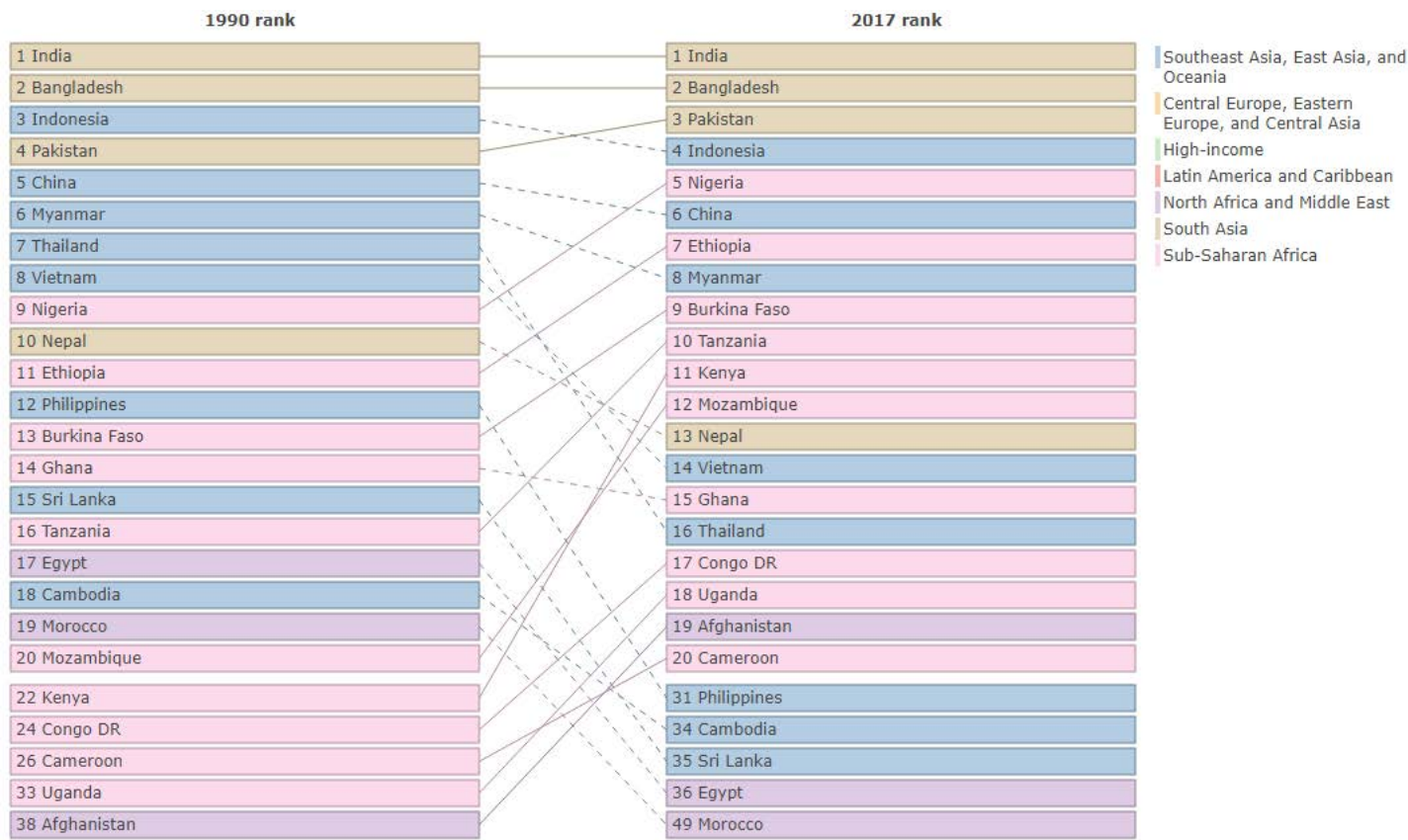


Figure S14: Countries ranked by absolute number of all-age DALYs in 1990 and 2017, showing the 20 countries with the largest number of DALYs in either 1990 or 2017. Colors indicate the region in which a given country falls.

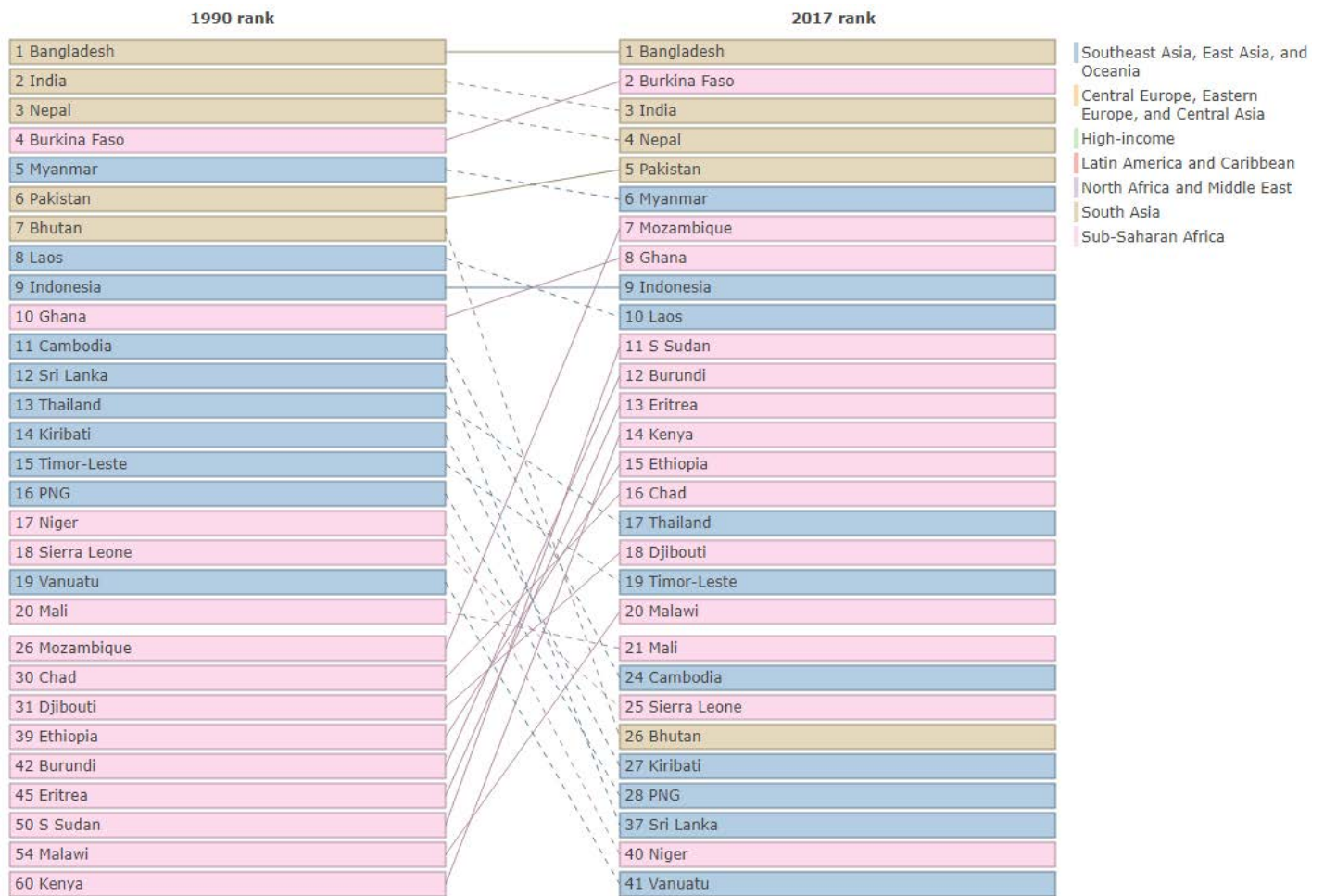


Figure S15: Countries ranked by age-standardized DALY rates in 1990 and 2017, showing the 20 countries with the highest DALY rates in either 1990 or 2017. Colors indicate the region in which a given country falls.

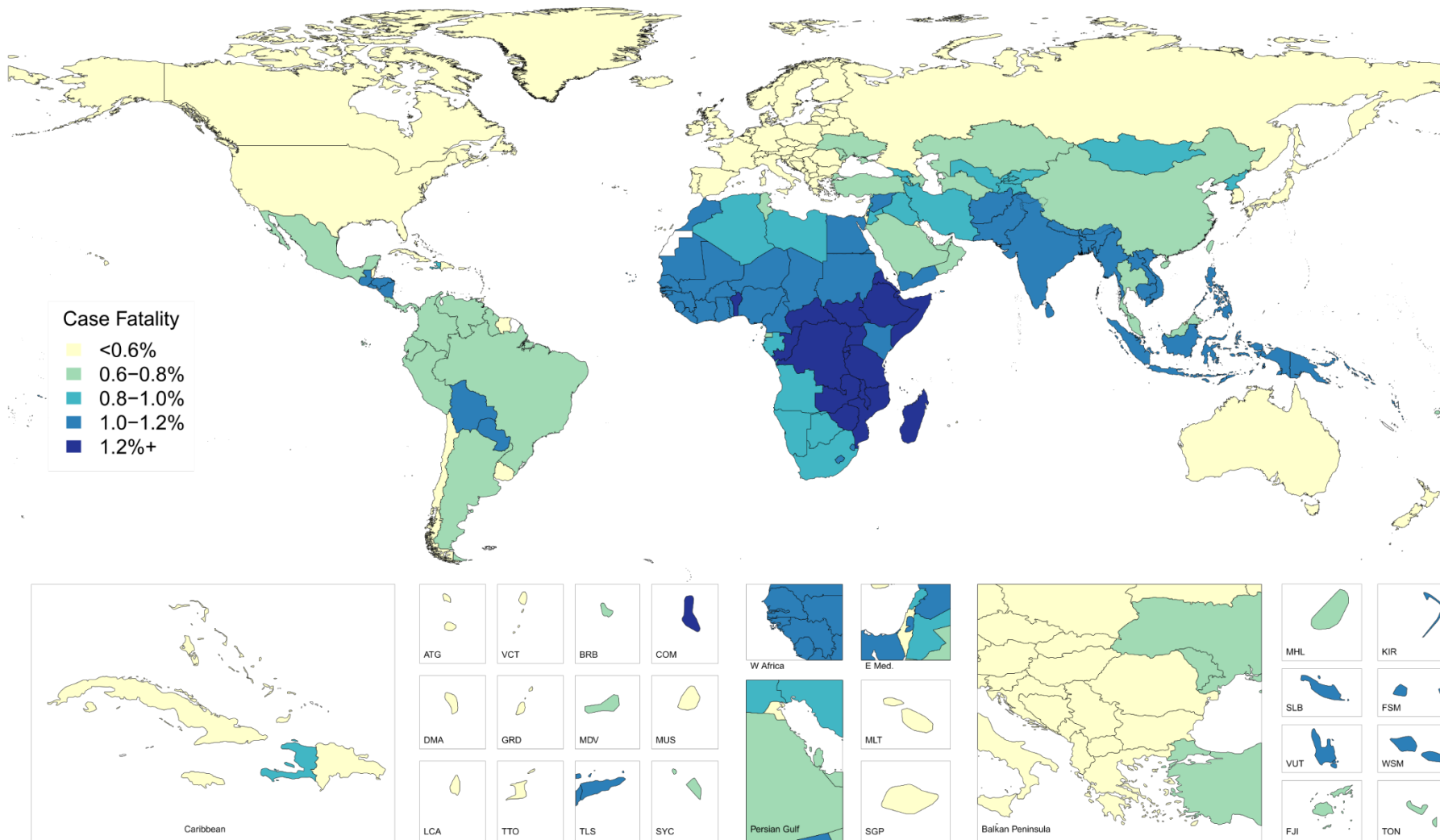


Figure S16: Estimated all-age case fatality, by country for typhoid and paratyphoid combined, in 2017

Table S5: Mean all-age case fatality by region

Region	Case fatality (95% UI), %
East Asia	0.67 (0.32, 1.20)
Southeast Asia	1.07 (0.58, 1.83)
Oceania	1.07 (0.57, 1.82)
Central Asia	0.81 (0.43, 1.37)
Central Europe	0.39 (0.19, 0.76)
Eastern Europe	0.57 (0.26, 1.14)
High-income Asia Pacific	0.41 (0.13, 0.95)
Australasia	0.39 (0.12, 0.93)
Western Europe	0.40 (0.13, 0.96)
Southern Latin America	0.47 (0.17, 1.03)
High-income North America	0.39 (0.13, 0.93)
Caribbean	0.77 (0.39, 1.33)
Andean Latin America	0.77 (0.40, 1.34)
Central Latin America	0.76 (0.40, 1.31)
Tropical Latin America	0.70 (0.35, 1.26)
North Africa and Middle East	1.02 (0.54, 1.75)
South Asia	1.06 (0.57, 1.80)
Central Sub-Saharan Africa	1.15 (0.62, 1.96)
Eastern Sub-Saharan Africa	1.23 (0.66, 2.10)
Southern Sub-Saharan Africa	0.98 (0.52, 1.70)
Western Sub-Saharan Africa	1.11 (0.59, 1.91)
East Asia	0.67 (0.32, 1.20)

Table S6: Global estimates of case fatality by age group

Age group	Case fatality (95% UI), %
Post Neonatal	1.45 (0.71, 2.67)
1 to 4	1.36 (0.73, 2.34)
5 to 9	1.22 (0.66, 2.07)
10 to 14	1.06 (0.57, 1.81)
15 to 19	0.93 (0.48, 1.63)
20 to 24	0.87 (0.44, 1.54)
25 to 29	0.86 (0.45, 1.48)
30 to 34	0.85 (0.45, 1.44)
35 to 39	0.84 (0.46, 1.39)
40 to 44	0.81 (0.45, 1.34)
45 to 49	0.78 (0.43, 1.32)
50 to 54	0.77 (0.41, 1.32)
55 to 59	0.76 (0.38, 1.38)
60 to 64	0.77 (0.39, 1.38)
65 to 69	0.81 (0.46, 1.31)
70 to 74	0.84 (0.50, 1.33)
75 to 79	0.89 (0.53, 1.40)
80 to 84	0.93 (0.55, 1.46)
85 to 89	0.96 (0.58, 1.52)
90 to 94	1.00 (0.59, 1.58)
95 plus	1.17 (0.69, 1.86)

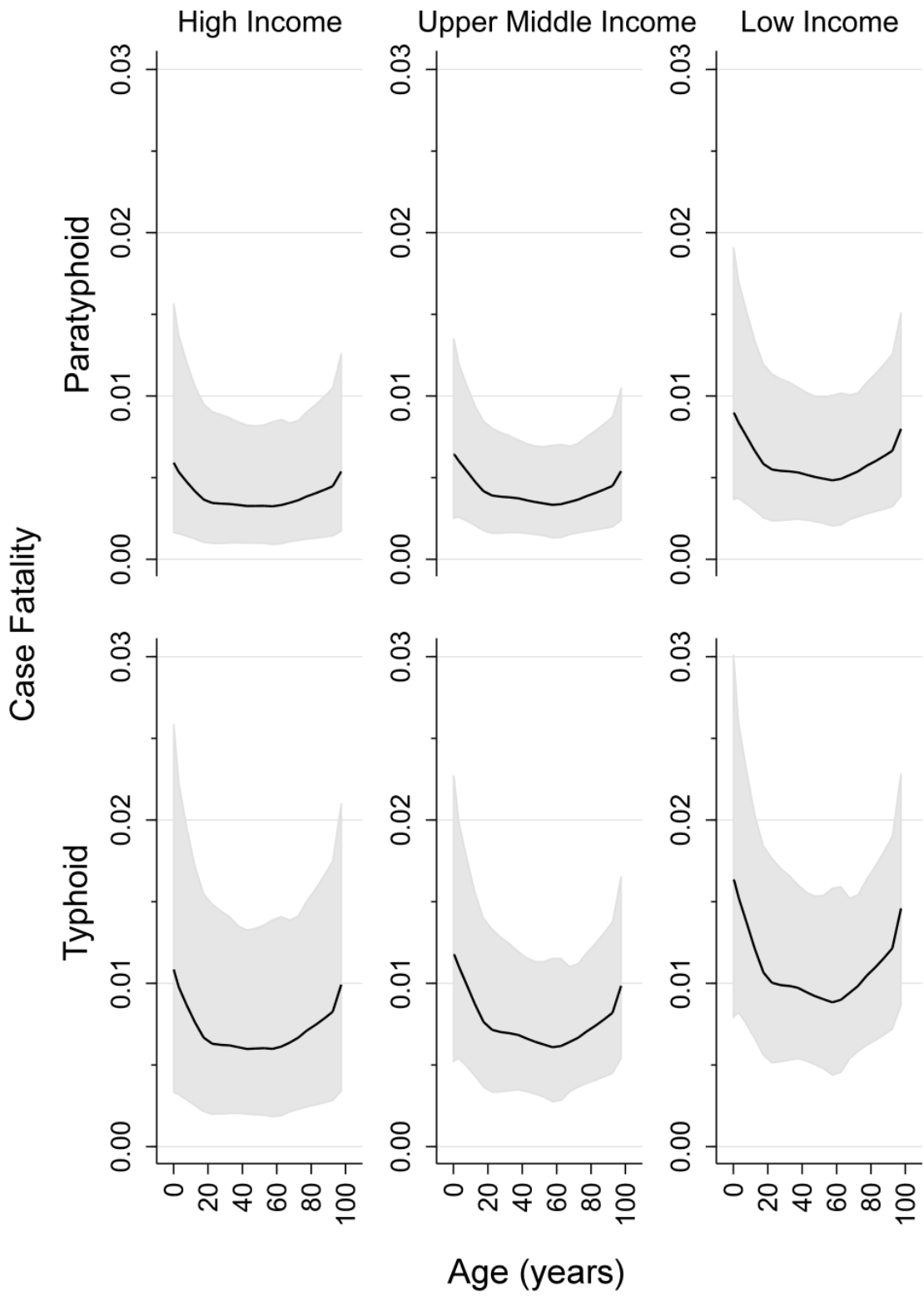


Figure S17: Case fatality estimates for paratyphoid (top row) and typhoid (bottom row) in high income (left column), upper middle income (middle) and low income (right) countries, by age. 95% uncertainty intervals are represented by shaded areas

Table S7: Numbers of typhoid/paratyphoid deaths and mortality rates (MR) by region, for 1990 and 2017 and the percent change in mortality rates between 1990 and 2017, with 95% uncertainty intervals.

Region	1990		2017		Percent change
	Deaths (hundreds)	MR (per million)	Deaths (hundreds)	MR (per million)	
Asia Pacific, High Income	0.21 (0.04, 0.34)	0.11 (0.02, 0.18)	0.01 (0.01, 0.03)	0.00 (0.00, 0.01)	-95.5 (-98.4, -82.0)
Asia, Central	0.14 (0.03, 0.36)	0.26 (0.05, 0.70)	0.02 (0.01, 0.04)	0.03 (0.01, 0.05)	-85.4 (-95.4, -69.8)
Asia, East	57.6 (28.4, 103.1)	4.4 (2.2, 7.9)	37.0 (18.8, 64.5)	3.4 (1.7, 5.9)	-23.9 (-33.4, -15.6)
Asia, South	1,738.2 (999.1, 2,788.1)	129.3 (74.1, 207.7)	946.7 (545.6, 1,530.8)	50.7 (29.2, 82.0)	-60.6 (-65.5, -55.6)
Asia, Southeast	283.9 (164.7, 454.3)	53.1 (30.8, 84.9)	128.0 (72.3, 209.8)	20.0 (11.3, 32.6)	-62.5 (-67.0, -59.1)
Australasia	0.00 (0.00, 0.00)	0.01 (0.00, 0.01)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	-79.9 (-86.5, -54.8)
Caribbean	0.34 (0.20, 0.58)	0.94 (0.57, 1.55)	0.20 (0.10, 0.36)	0.46 (0.23, 0.83)	-52.0 (-64.3, -38.5)
Europe, Central	0.31 (0.06, 0.55)	0.23 (0.04, 0.41)	0.03 (0.02, 0.05)	0.02 (0.01, 0.03)	-87.4 (-95.9, -66.2)
Europe, Eastern	0.05 (0.03, 0.06)	0.02 (0.01, 0.02)	0.01 (0.01, 0.02)	0.00 (0.00, 0.01)	-78.1 (-85.0, -67.0)
Europe, Western	0.31 (0.19, 0.37)	0.06 (0.04, 0.07)	0.14 (0.08, 0.19)	0.01 (0.01, 0.02)	-75.7 (-81.5, -68.5)
Latin America, Andean	0.06 (0.03, 0.11)	0.18 (0.09, 0.33)	0.07 (0.03, 0.13)	0.12 (0.06, 0.22)	-35.8 (-44.1, -26.7)
Latin America, Central	9.6 (6.1, 12.6)	7.3 (4.7, 9.9)	0.98 (0.61, 2.50)	0.41 (0.26, 1.07)	-94.3 (-96.1, -86.3)
Latin America, Southern	1.3 (0.8, 1.6)	2.8 (1.8, 3.4)	0.03 (0.02, 0.06)	0.04 (0.03, 0.08)	-98.4 (-99.0, -97.2)
Latin America, Tropical	0.27 (0.13, 0.52)	0.20 (0.09, 0.37)	0.30 (0.14, 0.55)	0.13 (0.06, 0.25)	-32.7 (-37.7, -27.8)
North Africa / Middle East	51.3 (26.8, 88.4)	12.4 (6.5, 21.4)	27.7 (14.9, 48.2)	4.4 (2.4, 7.6)	-64.3 (-68.9, -56.4)
North America, High Income	0.16 (0.07, 0.19)	0.05 (0.02, 0.06)	0.03 (0.02, 0.08)	0.01 (0.00, 0.02)	-85.8 (-93.0, -61.0)
Oceania	3.1 (1.6, 5.2)	39.2 (21.0, 66.0)	2.2 (1.2, 4.0)	15.5 (8.1, 27.4)	-60.5 (-66.1, -54.4)
Sub-Saharan Africa, Central	7.5 (3.4, 13.7)	10.7 (5.0, 19.3)	12.5 (6.4, 22.1)	8.1 (4.2, 14.3)	-23.2 (-36.4, 8.0)
Sub-Saharan Africa, East	61.7 (28.5, 112.3)	24.9 (12.0, 43.9)	99.9 (53.0, 170.7)	19.7 (10.4, 33.5)	-19.2 (-35.8, 6.4)
Sub-Saharan Africa, Southern	0.19 (0.10, 0.34)	0.30 (0.16, 0.54)	0.19 (0.10, 0.34)	0.23 (0.12, 0.41)	-22.4 (-30.7, -12.1)
Sub-Saharan Africa, West	89.2 (45.4, 158.3)	36.3 (19.0, 63.5)	103.2 (53.4, 183.6)	18.4 (9.7, 32.4)	-49.4 (-54.5, -42.9)
Global	2,305.4 (1,312.3, 3,726.3)	39.0 (22.3, 62.9)	1,359.2 (769.0, 2,188.8)	18.9 (10.7, 30.4)	-51.5 (-57.4, -45.8)

Table S8: Number of typhoid/paratyphoid cases and deaths, by country or non-sovereign location, in 1990 and 2017

Location	Cases		Deaths	
	1990	2017	1990	2017
Afghanistan	28,748 (23,818, 34,376)	42,756 (34,976, 51,563)	296 (44, 576)	618 (321, 1,083)
Albania	38 (29, 49)	32 (24, 42)	0 (0, 0)	0 (0, 0)
Algeria	29,350 (24,760, 34,429)	9,473 (8,204, 10,893)	276 (132, 493)	94 (44, 175)
American Samoa	96 (80, 115)	33 (28, 39)	1 (0, 1)	0 (0, 0)
Andorra	0 (0, 0)	0 (0, 0)	0 (0, 0)	0 (0, 0)
Angola	17,550 (14,229, 21,696)	27,140 (22,090, 32,958)	135 (52, 265)	247 (114, 473)
Antigua and Barbuda	1 (1, 2)	1 (1, 2)	0 (0, 0)	0 (0, 0)
Argentina	195 (147, 257)	32 (23, 42)	100 (60, 125)	2 (1, 4)
Armenia	5 (4, 7)	4 (3, 5)	0 (0, 0)	0 (0, 0)
Australia	1 (1, 1)	1 (1, 2)	0 (0, 0)	0 (0, 0)
Austria	19 (14, 25)	11 (8, 15)	0 (0, 0)	0 (0, 0)
Azerbaijan	9 (7, 12)	11 (9, 15)	0 (0, 0)	0 (0, 0)
Bahrain	422 (365, 484)	291 (256, 332)	3 (1, 7)	2 (1, 5)
Bangladesh	2,022,009 (1,598,647, 2,537,711)	1,046,157 (857,671, 1,267,974)	22,425 (11,422, 38,183)	12,811 (7,366, 20,775)
Barbados	10 (8, 13)	9 (7, 12)	1 (0, 1)	0 (0, 0)
Belarus	61 (46, 78)	49 (37, 64)	0 (0, 1)	0 (0, 0)
Belgium	17 (13, 22)	7 (5, 10)	1 (0, 1)	0 (0, 0)
Belize	6 (5, 8)	12 (9, 16)	0 (0, 0)	0 (0, 0)
Benin	18,444 (15,002, 22,571)	19,748 (16,371, 23,474)	239 (123, 425)	237 (116, 426)
Bermuda	2 (2, 3)	2 (2, 3)	0 (0, 0)	0 (0, 0)
Bhutan	4,460 (3,703, 5,255)	1,419 (1,215, 1,639)	48 (26, 84)	17 (9, 30)

Location	Cases		Deaths	
	1990	2017	1990	2017
Bolivia	161 (122, 214)	173 (135, 219)	2 (1, 3)	2 (1, 3)
Bosnia and Herzegovina	44 (34, 57)	33 (24, 45)	0 (0, 0)	0 (0, 0)
Botswana	71 (60, 84)	54 (47, 63)	1 (0, 1)	0 (0, 1)
Brazil	3,643 (2,765, 4,878)	4,202 (3,248, 5,365)	26 (12, 49)	29 (14, 53)
Brunei	0 (0, 0)	0 (0, 0)	0 (0, 0)	0 (0, 0)
Bulgaria	207 (162, 271)	199 (149, 267)	0 (0, 1)	0 (0, 0)
Burkina Faso	129,607 (100,360, 168,593)	130,095 (103,998, 161,924)	1,387 (690, 2,475)	1,426 (720, 2,610)
Burundi	18,523 (15,355, 22,191)	26,326 (21,838, 31,375)	193 (96, 353)	321 (167, 563)
Cambodia	88,491 (73,644, 105,924)	36,172 (30,909, 41,750)	746 (406, 1,302)	328 (172, 551)
Cameroon	38,675 (31,737, 46,783)	44,787 (37,501, 53,104)	466 (238, 807)	579 (291, 1,066)
Canada	3 (2, 4)	1 (1, 2)	1 (0, 1)	0 (0, 0)
Cape Verde	1,305 (1,071, 1,568)	318 (272, 368)	15 (8, 25)	4 (2, 8)
Central African Republic	4,586 (3,721, 5,587)	4,914 (4,064, 5,940)	43 (17, 84)	50 (24, 94)
Chad	26,027 (21,271, 31,603)	32,836 (26,947, 39,317)	273 (135, 490)	439 (224, 799)
Chile	1,340 (1,141, 1,564)	437 (330, 570)	30 (21, 36)	1 (1, 3)
China	699,483 (627,107, 787,440)	569,618 (537,965, 604,842)	5,546 (2,721, 9,952)	3,581 (1,813, 6,216)
Colombia	2,816 (2,358, 3,345)	1,934 (1,567, 2,456)	52 (36, 64)	3 (2, 7)
Comoros	1,136 (945, 1,360)	851 (726, 996)	17 (9, 29)	14 (7, 24)
Congo	3,310 (2,704, 4,005)	3,114 (2,606, 3,722)	36 (19, 66)	39 (20, 69)
Costa Rica	11 (9, 14)	10 (8, 13)	1 (0, 1)	0 (0, 0)
Cote d'Ivoire	41,872 (34,411, 50,329)	29,788 (24,995, 35,724)	472 (236, 828)	415 (213, 733)
Croatia	53 (40, 67)	52 (38, 69)	0 (0, 0)	0 (0, 0)

Location	Cases		Deaths	
	1990	2017	1990	2017
Cuba	174 (139, 218)	153 (117, 202)	3 (2, 4)	0 (0, 0)
Cyprus	2 (1, 3)	2 (1, 3)	0 (0, 0)	0 (0, 0)
Czech Republic	128 (97, 164)	187 (138, 248)	0 (0, 0)	1 (0, 3)
Democratic Republic of the	59,019 (47,778, 72,277)	85,891 (70,421, 104,558)	521 (228, 956)	907 (451, 1,584)
Denmark	46 (34, 61)	38 (28, 50)	0 (0, 1)	1 (0, 2)
Djibouti	1,521 (1,272, 1,807)	1,548 (1,330, 1,807)	21 (8, 39)	25 (12, 46)
Dominica	2 (2, 3)	1 (1, 2)	0 (0, 0)	0 (0, 0)
Dominican Republic	215 (162, 285)	335 (256, 440)	1 (1, 3)	2 (1, 3)
Ecuador	210 (159, 280)	247 (194, 317)	2 (1, 3)	2 (1, 3)
Egypt	71,388 (61,612, 82,329)	24,276 (20,803, 28,126)	793 (413, 1,354)	290 (147, 504)
El Salvador	218 (164, 292)	144 (113, 185)	2 (1, 5)	2 (1, 3)
Equatorial Guinea	646 (527, 791)	807 (663, 971)	4 (1, 10)	5 (2, 12)
Eritrea	9,640 (7,959, 11,592)	10,446 (8,797, 12,324)	95 (31, 190)	163 (85, 289)
Estonia	25 (19, 34)	24 (18, 31)	0 (0, 0)	0 (0, 0)
Ethiopia	175,232 (149,694, 203,931)	208,683 (181,513, 237,188)	1,909 (853, 3,496)	2,782 (1,472, 4,826)
Federated States of Micronesia	402 (331, 483)	88 (73, 104)	5 (3, 8)	1 (0, 2)
Fiji	1,700 (1,418, 2,017)	523 (443, 616)	14 (7, 25)	5 (2, 8)
Finland	0 (0, 1)	0 (0, 0)	0 (0, 1)	0 (0, 0)
France	293 (221, 380)	190 (142, 250)	5 (3, 6)	3 (2, 4)
Gabon	1,201 (988, 1,453)	579 (482, 694)	9 (4, 17)	5 (2, 10)
Georgia	10 (7, 13)	6 (5, 8)	0 (0, 0)	0 (0, 0)
Germany	102 (74, 138)	51 (38, 65)	5 (2, 6)	2 (1, 3)

Location	Cases		Deaths	
	1990	2017	1990	2017
Ghana	100,304 (79,644, 126,577)	79,100 (65,646, 94,925)	1,100 (572, 1,934)	1,048 (561, 1,821)
Greece	52 (40, 67)	37 (29, 47)	0 (0, 1)	1 (1, 2)
Greenland	0 (0, 0)	0 (0, 0)	0 (0, 0)	0 (0, 0)
Grenada	2 (2, 3)	2 (2, 3)	0 (0, 0)	0 (0, 0)
Guam	168 (141, 199)	80 (68, 94)	1 (0, 2)	1 (0, 1)
Guatemala	3,481 (2,672, 4,403)	4,045 (3,386, 4,932)	240 (167, 360)	26 (17, 37)
Guinea	22,338 (18,259, 27,064)	19,058 (15,802, 22,709)	291 (147, 524)	244 (123, 436)
Guinea-Bissau	832 (644, 1,071)	677 (528, 865)	10 (5, 18)	9 (4, 17)
Guyana	20 (15, 27)	19 (15, 25)	0 (0, 0)	0 (0, 0)
Haiti	2,220 (1,783, 2,803)	1,720 (1,387, 2,148)	24 (12, 45)	16 (8, 30)
Honduras	176 (133, 238)	227 (176, 290)	2 (1, 4)	2 (1, 5)
Hungary	104 (77, 137)	96 (70, 129)	0 (0, 0)	0 (0, 0)
Iceland	2 (1, 2)	1 (1, 2)	0 (0, 0)	0 (0, 0)
India	16,483,775 (14,109,529,	8,365,375 (7,359,075, 9,432,685)	138,910 (79,885, 220,862)	72,400 (41,825, 117,033)
Indonesia	1,247,882 (1,097,279, 1,406,168)	698,419 (625,608, 774,690)	13,116 (7,227, 21,728)	7,027 (3,884, 11,378)
Iran	62,116 (54,605, 69,622)	16,688 (15,078, 18,305)	554 (273, 984)	137 (67, 242)
Iraq	28,213 (23,815, 33,278)	23,183 (19,686, 27,186)	235 (110, 440)	194 (93, 347)
Ireland	7 (5, 10)	4 (3, 6)	0 (0, 0)	0 (0, 0)
Israel	17 (13, 23)	20 (14, 26)	2 (1, 2)	0 (0, 0)
Italy	183 (137, 240)	82 (61, 108)	2 (1, 3)	1 (0, 1)
Jamaica	53 (41, 70)	52 (39, 67)	0 (0, 1)	0 (0, 1)
Japan	860 (672, 1,073)	716 (550, 918)	3 (1, 3)	1 (0, 2)

Location	Cases		Deaths	
	1990	2017	1990	2017
Jordan	4,862 (4,075, 5,698)	2,573 (2,200, 2,977)	43 (21, 79)	21 (10, 39)
Kazakhstan	22 (17, 28)	19 (15, 26)	13 (2, 35)	2 (0, 3)
Kenya	54,556 (46,432, 63,745)	109,275 (95,218, 124,304)	545 (287, 935)	1,256 (679, 2,099)
Kiribati	354 (294, 425)	170 (142, 204)	5 (2, 8)	2 (1, 4)
Kuwait	1,212 (1,045, 1,400)	764 (668, 869)	0 (0, 0)	0 (0, 0)
Kyrgyzstan	7 (5, 9)	7 (5, 9)	0 (0, 0)	0 (0, 0)
Laos	31,430 (26,380, 37,315)	16,767 (14,262, 19,461)	351 (186, 605)	202 (106, 345)
Latvia	39 (30, 51)	30 (23, 40)	0 (0, 0)	0 (0, 0)
Lebanon	4,376 (3,701, 5,105)	2,731 (2,357, 3,155)	41 (20, 74)	25 (12, 44)
Lesotho	119 (101, 139)	79 (68, 92)	1 (1, 2)	1 (0, 2)
Liberia	6,270 (5,097, 7,567)	8,658 (7,255, 10,288)	73 (37, 129)	92 (46, 165)
Libya	3,819 (3,219, 4,511)	1,442 (1,249, 1,655)	34 (17, 62)	13 (6, 23)
Lithuania	47 (36, 60)	36 (27, 47)	0 (0, 0)	0 (0, 0)
Luxembourg	3 (2, 4)	2 (2, 3)	0 (0, 0)	0 (0, 0)
Macedonia	14 (10, 18)	18 (13, 24)	0 (0, 0)	0 (0, 0)
Madagascar	28,336 (20,849, 38,743)	40,056 (30,350, 53,508)	337 (164, 636)	461 (218, 834)
Malawi	31,242 (25,897, 37,181)	32,966 (27,614, 39,213)	269 (66, 562)	436 (226, 770)
Malaysia	60,400 (51,166, 70,019)	35,144 (30,461, 40,166)	423 (214, 737)	245 (124, 430)
Maldives	651 (505, 837)	335 (270, 414)	5 (2, 9)	2 (1, 4)
Mali	35,555 (29,159, 42,783)	36,841 (30,547, 44,021)	448 (222, 798)	530 (267, 963)
Malta	0 (0, 0)	0 (0, 0)	0 (0, 0)	0 (0, 0)
Marshall Islands	172 (140, 209)	53 (45, 63)	1 (1, 3)	0 (0, 1)

Location	Cases		Deaths	
	1990	2017	1990	2017
Mauritania	6,248 (5,150, 7,493)	4,494 (3,762, 5,314)	72 (37, 126)	66 (34, 114)
Mauritius	600 (434, 866)	254 (192, 345)	0 (0, 1)	0 (0, 0)
Mexico	22,772 (19,304, 27,261)	13,367 (10,946, 16,597)	635 (383, 851)	61 (33, 158)
Moldova	5 (4, 7)	4 (3, 6)	0 (0, 1)	0 (0, 0)
Mongolia	2 (2, 3)	5 (4, 7)	0 (0, 0)	0 (0, 0)
Montenegro	5 (4, 7)	6 (4, 8)	0 (0, 0)	0 (0, 0)
Morocco	57,626 (48,894, 67,267)	12,454 (10,760, 14,426)	737 (386, 1,247)	175 (91, 307)
Mozambique	49,091 (40,879, 58,510)	72,343 (60,014, 86,475)	657 (327, 1,175)	1,201 (613, 2,130)
Myanmar	363,062 (306,161, 428,702)	141,588 (122,065, 163,600)	4,207 (2,252, 7,153)	1,742 (945, 2,950)
Namibia	84 (71, 98)	64 (55, 75)	1 (0, 1)	1 (0, 1)
Nepal	343,904 (287,696, 411,990)	145,455 (123,411, 168,236)	2,665 (1,329, 4,434)	1,261 (654, 2,133)
Netherlands	79 (60, 101)	44 (33, 57)	0 (0, 0)	0 (0, 0)
New Zealand	35 (26, 46)	47 (35, 61)	0 (0, 0)	0 (0, 0)
Nicaragua	140 (106, 188)	181 (139, 231)	2 (1, 3)	2 (1, 4)
Niger	35,310 (28,684, 42,952)	37,967 (31,132, 45,888)	434 (219, 801)	433 (215, 791)
Nigeria	322,620 (267,311, 389,023)	376,103 (314,701, 449,606)	2,903 (1,471, 5,173)	4,215 (2,143, 7,694)
North Korea	9,163 (7,937, 10,555)	4,984 (4,373, 5,623)	116 (60, 206)	63 (33, 111)
Northern Mariana Islands	59 (51, 70)	20 (17, 23)	0 (0, 1)	0 (0, 0)
Norway	49 (39, 64)	71 (55, 90)	0 (0, 1)	0 (0, 1)
Oman	6,334 (5,346, 7,512)	1,180 (1,025, 1,338)	43 (15, 90)	9 (3, 19)
Pakistan	1,137,286 (960,636, 1,331,869)	727,834 (612,823, 862,508)	9,773 (5,121, 16,454)	8,175 (4,295, 14,104)
Palestine	3,203 (2,692, 3,784)	3,149 (2,657, 3,698)	43 (22, 74)	37 (20, 65)

Location	Cases		Deaths	
	1990	2017	1990	2017
Panama	58 (44, 75)	75 (59, 97)	0 (0, 1)	1 (0, 1)
Papua New Guinea	21,362 (17,608, 25,778)	16,850 (13,929, 20,328)	227 (119, 390)	185 (95, 330)
Paraguay	135 (102, 181)	114 (89, 145)	1 (1, 3)	1 (1, 2)
Peru	371 (284, 475)	482 (378, 616)	3 (1, 5)	3 (2, 6)
Philippines	309,361 (263,461, 360,232)	154,353 (131,089, 180,986)	1,984 (1,228, 4,514)	487 (266, 963)
Poland	45 (34, 60)	54 (39, 73)	5 (3, 6)	0 (0, 1)
Portugal	197 (155, 245)	100 (77, 129)	2 (2, 3)	0 (0, 1)
Puerto Rico	119 (99, 145)	86 (70, 107)	3 (2, 3)	0 (0, 0)
Qatar	307 (266, 349)	514 (449, 588)	3 (1, 6)	3 (1, 8)
Romania	879 (661, 1,140)	318 (237, 421)	24 (1, 48)	1 (0, 1)
Russia	692 (531, 911)	667 (506, 887)	4 (2, 5)	1 (0, 2)
Rwanda	19,621 (16,172, 23,474)	16,659 (14,060, 19,721)	228 (118, 409)	240 (125, 429)
Saint Lucia	8 (7, 10)	6 (4, 7)	0 (0, 0)	0 (0, 0)
Saint Vincent and the Grenadines	5 (4, 6)	3 (3, 4)	0 (0, 0)	0 (0, 0)
Samoa	498 (412, 593)	168 (139, 202)	6 (3, 10)	2 (1, 3)
Sao Tome and Principe	374 (308, 450)	220 (186, 258)	6 (3, 10)	3 (2, 6)
Saudi Arabia	30,394 (25,753, 35,591)	8,854 (7,739, 10,120)	204 (71, 458)	61 (20, 133)
Senegal	23,996 (19,574, 28,830)	13,824 (11,564, 16,323)	319 (166, 576)	218 (112, 379)
Serbia	110 (83, 142)	93 (69, 123)	0 (0, 1)	0 (0, 1)
Seychelles	44 (31, 63)	22 (17, 31)	0 (0, 1)	0 (0, 0)
Sierra Leone	14,982 (12,346, 18,025)	15,030 (12,533, 17,876)	190 (97, 333)	177 (88, 318)
Singapore	2 (1, 2)	1 (1, 2)	0 (0, 0)	0 (0, 0)

Location	Cases		Deaths	
	1990	2017	1990	2017
Slovakia	40 (30, 52)	49 (36, 64)	0 (0, 0)	0 (0, 0)
Slovenia	30 (23, 39)	37 (28, 49)	0 (0, 0)	0 (0, 0)
Solomon Islands	1,499 (1,238, 1,814)	848 (702, 1,022)	16 (8, 28)	10 (5, 17)
Somalia	22,637 (18,650, 27,272)	30,464 (25,258, 36,184)	197 (36, 428)	355 (173, 657)
South Africa	1,272 (1,131, 1,428)	998 (900, 1,101)	10 (5, 18)	8 (4, 14)
South Korea	10 (6, 16)	1 (1, 2)	18 (2, 31)	1 (0, 1)
South Sudan	20,030 (16,665, 24,012)	25,030 (20,752, 29,991)	171 (40, 378)	314 (153, 564)
Spain	290 (227, 366)	188 (141, 248)	4 (2, 6)	1 (1, 2)
Sri Lanka	115,655 (99,052, 133,676)	33,298 (28,965, 38,118)	1,092 (611, 1,780)	317 (174, 522)
Sudan	43,447 (36,521, 51,416)	32,526 (27,337, 38,422)	413 (180, 751)	415 (212, 742)
Suriname	10 (8, 13)	12 (9, 16)	0 (0, 0)	0 (0, 0)
Swaziland	54 (46, 65)	39 (33, 46)	1 (0, 1)	1 (0, 1)
Sweden	77 (63, 94)	73 (60, 90)	0 (0, 0)	0 (0, 0)
Switzerland	9 (6, 12)	2 (2, 3)	7 (3, 10)	4 (2, 7)
Syria	19,614 (16,512, 23,192)	5,487 (4,652, 6,424)	237 (125, 419)	71 (37, 126)
Taiwan	7,621 (6,622, 8,760)	2,581 (2,278, 2,882)	2 (1, 3)	0 (0, 0)
Tajikistan	7 (5, 9)	9 (7, 12)	0 (0, 0)	0 (0, 0)
Tanzania	89,725 (66,989, 119,777)	80,205 (62,102, 101,860)	940 (281, 1,906)	1,330 (635, 2,388)
Thailand	460,058 (395,497, 535,556)	156,196 (137,111, 175,818)	3,337 (1,698, 5,675)	1,093 (554, 1,898)
The Bahamas	4 (3, 5)	5 (4, 7)	0 (0, 0)	0 (0, 0)
The Gambia	3,520 (2,900, 4,262)	2,598 (2,168, 3,093)	42 (21, 76)	37 (18, 69)
Timor-Leste	4,043 (3,418, 4,736)	2,435 (2,069, 2,827)	44 (23, 73)	31 (15, 55)

Location	Cases		Deaths	
	1990	2017	1990	2017
Togo	15,063 (12,340, 18,201)	13,950 (11,742, 16,541)	185 (93, 332)	147 (74, 259)
Tonga	347 (290, 412)	95 (79, 113)	2 (1, 4)	1 (0, 1)
Trinidad and Tobago	1 (1, 1)	1 (1, 2)	1 (0, 1)	0 (0, 0)
Tunisia	11,301 (9,571, 13,178)	3,267 (2,850, 3,737)	84 (41, 150)	23 (11, 42)
Turkey	82,321 (70,375, 96,188)	23,025 (20,046, 26,520)	684 (340, 1,238)	183 (88, 328)
Turkmenistan	6 (5, 8)	6 (4, 7)	0 (0, 0)	0 (0, 0)
Uganda	44,733 (36,746, 54,049)	56,512 (46,605, 67,603)	353 (166, 665)	660 (333, 1,158)
Ukraine	321 (246, 417)	307 (230, 401)	0 (0, 1)	0 (0, 0)
United Arab Emirates	1,950 (1,688, 2,243)	1,702 (1,489, 1,937)	18 (6, 38)	15 (5, 33)
United Kingdom	333 (270, 416)	359 (280, 456)	1 (0, 1)	0 (0, 0)
United States	4,758 (4,062, 5,596)	4,137 (3,246, 5,301)	16 (6, 19)	3 (2, 8)
Uruguay	42 (32, 54)	3 (2, 3)	3 (2, 3)	0 (0, 0)
Uzbekistan	18 (14, 23)	25 (19, 33)	0 (0, 0)	0 (0, 0)
Vanuatu	735 (607, 886)	441 (364, 534)	7 (4, 13)	5 (2, 9)
Venezuela	26 (20, 34)	25 (19, 34)	25 (14, 35)	1 (1, 2)
Vietnam	343,120 (280,465, 417,400)	137,599 (115,894, 163,521)	3,048 (1,663, 5,123)	1,304 (701, 2,210)
Virgin Islands, U.S.	1 (1, 2)	2 (1, 2)	0 (0, 0)	0 (0, 0)
Yemen	39,631 (32,581, 47,553)	30,051 (25,006, 35,852)	382 (84, 721)	384 (195, 672)
Zambia	18,273 (15,195, 21,991)	27,670 (23,047, 32,631)	238 (92, 442)	422 (215, 754)
Zimbabwe	551 (463, 659)	656 (552, 781)	6 (3, 10)	9 (5, 16)

Table S9: Typhoid/paratyphoid incidence and mortality rates, by country or non-sovereign location, in 1990 and 2017

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	244.3	104.4	25.5	14.9
Afghanistan	(209.4, 284.9)	(88.8, 121.9)	(4.5, 48.6)	(7.6, 26.0)
Albania	1.4 (1.1, 1.8)	0.90 (0.69, 1.17)	0.06 (0.03, 0.12)	0.04 (0.02, 0.08)
Algeria	95.5 (82.4, 109.9)	24.1 (20.9, 27.8)	8.7 (4.2, 15.6)	2.4 (1.1, 4.5)
American Samoa	172.4 (146.2, 202.8)	55.7 (47.3, 65.0)	12.7 (6.5, 22.7)	4.0 (2.0, 7.4)
Andorra	0.26 (0.19, 0.35)	0.15 (0.11, 0.20)	0.01 (<0.01, 0.02)	0.01 (<0.01, 0.01)
Angola	140.1 (118.4, 166.7)	75.5 (63.9, 88.9)	10.4 (4.3, 20.2)	6.6 (3.1, 12.3)
Antigua and Barbuda	2.3 (1.8, 2.9)	1.5 (1.2, 2.0)	0.75 (0.48, 0.91)	0.03 (0.01, 0.06)
Argentina	0.60 (0.45, 0.79)	0.07 (0.05, 0.09)	3.2 (1.9, 3.9)	0.04 (0.02, 0.07)
Armenia	0.18 (0.14, 0.23)	0.11 (0.08, 0.14)	0.02 (0.01, 0.03)	0.01 (0.01, 0.02)
Australia	0.01 (<0.01, 0.01)	0.01 (<0.01, 0.01)	0.01 (<0.01, 0.01)	<0.01 (<0.01, <0.01)
Austria	0.23 (0.17, 0.31)	0.12 (0.09, 0.16)	<0.01 (<0.01, 0.01)	<0.01 (<0.01, 0.01)
Azerbaijan	0.16 (0.12, 0.20)	0.11 (0.09, 0.15)	0.01 (0.01, 0.02)	0.01 (<0.01, 0.01)
Bahrain	77.8 (67.2, 89.1)	23.2 (20.1, 26.7)	5.7 (1.9, 12.6)	1.8 (0.6, 4.0)
Bangladesh	1,459.2 (1,206.8, 1,772.1)	641.2 (527.2, 779.8)	157.7 (81.8, 265.2)	78.7 (45.2, 126.8)
Barbados	3.7 (2.9, 4.7)	2.4 (1.9, 3.0)	2.0 (1.4, 2.4)	0.07 (0.05, 0.15)
Belarus	0.51 (0.40, 0.66)	0.40 (0.30, 0.50)	0.02 (0.01, 0.05)	0.02 (0.01, 0.03)
Belgium	0.16 (0.12, 0.21)	0.06 (0.05, 0.08)	0.05 (0.03, 0.07)	<0.01 (<0.01, 0.01)
Belize	4.2 (3.2, 5.6)	3.4 (2.6, 4.5)	0.24 (0.11, 0.44)	0.18 (0.08, 0.32)
Benin	292.5 (249.8, 341.5)	136.2 (116.5, 157.7)	35.7 (18.5, 61.8)	16.0 (8.0, 28.1)
Bermuda	3.6 (2.8, 4.7)	2.8 (2.2, 3.6)	0.46 (0.24, 0.62)	0.02 (0.01, 0.03)
Bhutan	646.4 (551.1, 748.5)	144.9 (124.2, 168.0)	67.4 (36.7, 117.5)	17.4 (8.8, 31.2)
Bolivia	3.2 (2.4, 4.2)	1.7 (1.3, 2.1)	0.33 (0.17, 0.59)	0.18 (0.09, 0.31)
Bosnia and Herzegovina	0.98 (0.76, 1.25)	0.69 (0.53, 0.90)	0.04 (0.02, 0.08)	0.03 (0.01, 0.06)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	4.4	2.2	0.34	0.21
Botswana	(3.8, 5.1)	(2.0, 2.6)	(0.16, 0.64)	(0.10, 0.37)
	2.8	1.9	0.19	0.13
Brazil	(2.1, 3.6)	(1.5, 2.4)	(0.09, 0.36)	(0.06, 0.24)
	0.01	0.01	<0.01	<0.01
Brunei	(0.01, 0.02)	(0.01, 0.02)	(<0.01, <0.01)	(<0.01, <0.01)
	1.9	1.8	0.05	<0.01
Bulgaria	(1.5, 2.3)	(1.4, 2.3)	(0.03, 0.07)	(<0.01, 0.01)
	1,050.5	491.8	110.4	52.2
Burkina Faso	(863.1, 1,287.0)	(408.9, 591.0)	(57.5, 195.4)	(26.5, 93.3)
	268.5	193.5	27.1	22.6
Burundi	(231.1, 311.0)	(166.1, 225.0)	(13.9, 49.3)	(11.8, 39.3)
	684.7	211.5	58.7	19.2
Cambodia	(586.8, 794.1)	(181.1, 242.8)	(31.7, 101.9)	(10.1, 32.4)
	297.5	131.1	35.1	16.6
Cameroon	(253.4, 348.8)	(112.4, 151.9)	(18.5, 60.0)	(8.5, 29.8)
	0.01	<0.01	0.02	<0.01
Canada	(0.01, 0.02)	(<0.01, 0.01)	(0.01, 0.02)	(<0.01, 0.01)
	296.2	56.7	31.8	8.1
Cape Verde	(253.6, 346.7)	(48.4, 65.9)	(16.8, 53.9)	(4.2, 14.2)
	137.4	89.0	12.5	9.0
Central African Republic	(116.3, 161.8)	(75.3, 106.1)	(5.0, 23.3)	(4.4, 16.7)
	339.8	164.2	34.7	20.5
Chad	(291.0, 396.0)	(141.1, 190.1)	(17.7, 59.9)	(10.7, 36.7)
	10.6	2.2	2.5	0.05
Chile	(9.0, 12.4)	(1.7, 2.8)	(1.8, 3.0)	(0.03, 0.11)
	56.2	52.1	4.5	3.4
China	(50.4, 63.5)	(48.4, 56.3)	(2.2, 8.0)	(1.8, 6.0)
	10.3	3.7	1.9	0.06
Colombia	(8.5, 12.6)	(3.0, 4.6)	(1.3, 2.3)	(0.04, 0.13)
	197.6	106.2	28.8	16.9
Comoros	(169.9, 229.4)	(91.6, 123.0)	(15.2, 49.4)	(8.8, 29.5)
	110.6	55.5	11.6	6.9
Congo	(93.6, 130.1)	(47.2, 65.2)	(6.0, 20.8)	(3.5, 12.1)
	0.44	0.21	0.26	0.03
Costa Rica	(0.34, 0.55)	(0.16, 0.28)	(0.16, 0.33)	(0.02, 0.04)
	269.3	99.3	29.8	13.3
Cote d'Ivoire	(230.6, 312.9)	(85.1, 116.2)	(15.3, 52.3)	(6.9, 23.6)
	0.91	0.81	0.02	<0.01
Croatia	(0.71, 1.13)	(0.62, 1.04)	(<0.01, 0.02)	(<0.01, <0.01)
	1.6	1.1	0.28	<0.01
Cuba	(1.3, 2.0)	(0.8, 1.4)	(0.16, 0.37)	(<0.01, 0.01)
	0.26	0.15	0.01	0.01
Cyprus	(0.19, 0.35)	(0.11, 0.19)	(<0.01, 0.03)	(<0.01, 0.01)
	1.1	1.2	0.01	0.06
Czech Republic	(0.8, 1.4)	(0.9, 1.6)	(<0.01, 0.01)	(0.01, 0.14)
Democratic Republic of the Congo	124.7	86.2	10.8	8.9
	(105.8, 147.8)	(72.8, 101.6)	(4.9, 19.5)	(4.5, 15.4)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	0.78	0.57	0.06	0.09
Denmark	(0.58, 1.04)	(0.44, 0.76)	(0.03, 0.08)	(0.02, 0.14)
	248.0	127.7	32.9	19.9
Djibouti	(213.9, 286.5)	(110.5, 147.6)	(13.9, 60.7)	(9.9, 36.9)
	2.8	1.9	0.17	0.10
Dominica	(2.2, 3.7)	(1.4, 2.4)	(0.08, 0.32)	(0.05, 0.19)
	3.8	3.3	0.22	0.18
Dominican Republic	(2.9, 5.0)	(2.5, 4.4)	(0.10, 0.41)	(0.08, 0.33)
	2.6	1.5	0.18	0.11
Ecuador	(2.0, 3.3)	(1.2, 2.0)	(0.09, 0.34)	(0.05, 0.20)
	112.7	23.1	12.2	2.7
Egypt	(98.7, 128.0)	(20.0, 26.7)	(6.3, 20.7)	(1.4, 4.7)
	5.2	2.4	0.56	0.25
El Salvador	(4.0, 6.9)	(1.9, 3.1)	(0.28, 0.99)	(0.13, 0.44)
	124.4	47.8	8.0	3.0
Equatorial Guinea	(105.5, 146.4)	(40.4, 56.3)	(2.6, 18.7)	(0.9, 7.3)
	261.7	147.7	25.6	22.4
Eritrea	(225.0, 303.1)	(127.0, 171.3)	(9.2, 49.3)	(11.6, 39.2)
	1.4	1.2	0.01	0.01
Estonia	(1.1, 1.8)	(0.9, 1.6)	(0.01, 0.02)	(<0.01, 0.02)
	271.4	163.0	28.2	20.9
Ethiopia	(240.3, 304.9)	(144.4, 182.2)	(13.3, 50.1)	(11.1, 36.0)
Federated States of Micronesia	310.4	76.8	36.4	9.1
	(264.0, 362.9)	(65.2, 90.0)	(19.5, 61.3)	(4.2, 16.0)
	191.9	56.8	15.7	4.9
Fiji	(162.6, 223.8)	(48.2, 66.8)	(7.9, 27.8)	(2.4, 8.9)
	0.01	0.01	0.09	0.01
Finland	(0.01, 0.01)	(<0.01, 0.01)	(0.05, 0.13)	(<0.01, 0.01)
	0.46	0.27	0.06	0.02
France	(0.35, 0.59)	(0.20, 0.36)	(0.04, 0.07)	(0.01, 0.02)
	103.3	30.6	7.4	2.7
Gabon	(88.0, 122.1)	(25.8, 36.5)	(3.5, 13.6)	(1.3, 5.0)
	0.16	0.13	0.02	0.01
Georgia	(0.12, 0.21)	(0.10, 0.17)	(0.01, 0.03)	(0.01, 0.02)
	0.12	0.06	0.05	0.01
Germany	(0.08, 0.15)	(0.04, 0.08)	(0.03, 0.06)	(<0.01, 0.01)
	544.3	228.3	59.5	29.8
Ghana	(449.7, 658.3)	(193.5, 270.7)	(31.4, 103.5)	(16.0, 51.5)
	0.47	0.33	0.04	0.06
Greece	(0.36, 0.60)	(0.26, 0.43)	(0.03, 0.08)	(0.04, 0.07)
	0.03	0.03	<0.01	<0.01
Greenland	(0.02, 0.04)	(0.02, 0.04)	(<0.01, <0.01)	(<0.01, <0.01)
	3.1	1.7	0.19	0.09
Grenada	(2.4, 4.0)	(1.3, 2.2)	(0.09, 0.35)	(0.04, 0.18)
	116.1	49.5	7.5	3.3
Guam	(97.7, 137.5)	(41.8, 58.4)	(2.6, 16.2)	(1.1, 7.5)
	59.1	28.6	33.5	1.9
Guatemala	(46.4, 75.8)	(23.5, 35.5)	(24.1, 58.9)	(1.2, 2.7)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	296.1	129.1	36.2	16.0
Guinea	(253.7, 345.8)	(110.8, 149.9)	(18.8, 62.8)	(8.2, 28.2)
	64.8	29.5	7.3	3.8
Guinea-Bissau	(52.8, 79.4)	(23.8, 36.7)	(3.7, 13.2)	(1.9, 6.9)
	3.3	2.7	0.28	0.21
Guyana	(2.5, 4.3)	(2.1, 3.5)	(0.14, 0.50)	(0.10, 0.39)
	29.4	13.1	3.0	1.2
Haiti	(24.3, 36.0)	(10.7, 16.1)	(1.5, 5.6)	(0.6, 2.2)
	5.2	2.9	0.62	0.31
Honduras	(4.0, 6.9)	(2.2, 3.7)	(0.31, 1.11)	(0.16, 0.56)
	0.77	0.62	0.01	<0.01
Hungary	(0.58, 0.99)	(0.47, 0.81)	(<0.01, 0.01)	(<0.01, <0.01)
	0.68	0.42	0.09	0.02
Iceland	(0.54, 0.86)	(0.32, 0.56)	(0.05, 0.12)	(0.01, 0.03)
	1,604.4	586.3	133.8	51.0
India	(1,401.0, 1,833.0)	(515.7, 661.8)	(76.9, 213.7)	(29.6, 82.4)
	579.4	273.1	59.9	27.6
Indonesia	(515.2, 645.3)	(244.1, 303.6)	(33.1, 98.9)	(15.4, 44.8)
	87.8	21.6	7.5	1.8
Iran	(78.8, 97.1)	(19.3, 23.9)	(3.7, 13.1)	(0.9, 3.2)
	134.1	47.1	10.9	3.9
Iraq	(116.3, 154.6)	(40.5, 54.7)	(5.2, 19.9)	(1.9, 7.0)
	0.20	0.08	<0.01	<0.01
Ireland	(0.15, 0.26)	(0.06, 0.11)	(<0.01, 0.01)	(<0.01, <0.01)
	0.36	0.22	0.32	0.01
Israel	(0.27, 0.48)	(0.16, 0.29)	(0.20, 0.40)	(<0.01, 0.03)
	0.29	0.13	0.03	0.01
Italy	(0.21, 0.38)	(0.09, 0.17)	(0.02, 0.04)	(<0.01, 0.01)
	2.6	1.8	0.14	0.10
Jamaica	(2.0, 3.3)	(1.4, 2.3)	(0.07, 0.25)	(0.04, 0.18)
	0.62	0.37	0.03	<0.01
Japan	(0.50, 0.75)	(0.30, 0.46)	(0.01, 0.03)	(<0.01, <0.01)
	104.9	21.7	9.0	1.8
Jordan	(90.4, 121.1)	(18.8, 25.0)	(4.4, 16.5)	(0.9, 3.2)
	0.14	0.11	0.95	0.09
Kazakhstan	(0.11, 0.19)	(0.08, 0.14)	(0.16, 2.58)	(0.02, 0.18)
	183.3	188.0	18.2	21.4
Kenya	(161.2, 207.3)	(166.6, 211.5)	(9.8, 30.9)	(11.5, 35.7)
	411.3	128.6	52.7	17.7
Kiribati	(347.7, 482.6)	(108.8, 152.1)	(28.9, 88.5)	(9.3, 30.5)
	63.2	20.1	0.04	<0.01
Kuwait	(54.6, 72.7)	(17.3, 23.1)	(0.03, 0.06)	(<0.01, 0.01)
	0.20	0.13	0.02	0.01
Kyrgyzstan	(0.15, 0.26)	(0.10, 0.17)	(0.01, 0.03)	(0.01, 0.02)
	622.9	220.6	67.0	26.3
Laos	(536.6, 721.3)	(188.8, 255.3)	(35.6, 114.7)	(13.8, 45.1)
	1.2	1.1	0.01	<0.01
Latvia	(1.0, 1.6)	(0.9, 1.5)	(<0.01, 0.03)	(<0.01, 0.01)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	90.4	30.3	8.3	2.7
Lebanon	(78.3, 103.9)	(26.2, 35.0)	(4.0, 14.8)	(1.3, 4.9)
	5.6	3.7	0.57	0.44
Lesotho	(4.8, 6.4)	(3.2, 4.2)	(0.30, 0.98)	(0.23, 0.79)
	253.8	152.1	28.1	16.0
Liberia	(216.4, 296.6)	(130.4, 177.2)	(14.3, 48.7)	(8.2, 28.2)
	74.7	20.5	6.6	1.9
Libya	(64.7, 86.5)	(17.8, 23.5)	(3.3, 11.9)	(0.9, 3.3)
	1.1	0.91	0.02	0.01
Lithuania	(0.9, 1.4)	(0.71, 1.15)	(0.01, 0.04)	(<0.01, 0.01)
	0.65	0.36	0.09	0.01
Luxembourg	(0.49, 0.84)	(0.27, 0.49)	(0.05, 0.16)	(<0.01, 0.02)
	0.68	0.64	0.03	0.03
Macedonia	(0.51, 0.88)	(0.48, 0.84)	(0.01, 0.06)	(0.01, 0.05)
	192.9	125.8	22.3	14.2
Madagascar	(149.6, 249.5)	(98.7, 162.2)	(11.1, 40.4)	(7.1, 25.2)
	261.6	155.5	22.0	19.9
Malawi	(224.7, 301.7)	(133.8, 180.3)	(5.9, 44.6)	(10.4, 34.9)
	297.8	116.4	20.6	8.2
Malaysia	(256.0, 341.7)	(100.1, 134.4)	(10.5, 35.6)	(4.1, 14.2)
	235.4	77.4	16.9	5.1
Maldives	(189.9, 293.0)	(61.1, 97.4)	(8.2, 30.8)	(2.4, 9.2)
	327.8	142.5	38.7	18.9
Mali	(280.7, 379.9)	(122.2, 166.0)	(19.8, 67.5)	(9.7, 33.6)
	0.08	0.03	0.02	<0.01
Malta	(0.06, 0.11)	(0.02, 0.04)	(0.01, 0.03)	(<0.01, 0.01)
	289.4	85.4	24.4	7.5
Marshall Islands	(245.8, 340.1)	(72.5, 100.2)	(12.2, 43.1)	(3.7, 13.6)
	243.6	94.7	27.5	13.3
Mauritania	(208.4, 283.7)	(81.3, 109.1)	(14.6, 47.0)	(6.8, 22.6)
	51.0	23.6	0.40	0.01
Mauritius	(37.2, 72.9)	(17.4, 33.6)	(0.17, 0.53)	(0.01, 0.05)
	34.6	11.3	9.9	0.54
Mexico	(28.7, 43.4)	(9.2, 14.2)	(6.1, 13.6)	(0.28, 1.39)
	0.12	0.10	0.08	0.01
Moldova	(0.09, 0.16)	(0.07, 0.13)	(0.03, 0.13)	(0.01, 0.03)
	0.16	0.18	0.02	0.02
Mongolia	(0.13, 0.21)	(0.14, 0.24)	(0.01, 0.03)	(0.01, 0.03)
	0.83	0.70	0.04	0.03
Montenegro	(0.64, 1.07)	(0.54, 0.90)	(0.02, 0.07)	(0.01, 0.06)
	197.7	35.0	24.4	5.0
Morocco	(170.6, 228.3)	(30.2, 40.6)	(12.7, 41.1)	(2.6, 8.7)
	276.6	189.4	35.8	30.2
Mozambique	(239.2, 318.9)	(162.9, 220.9)	(18.3, 63.5)	(15.7, 52.4)
	776.1	267.2	89.5	33.1
Myanmar	(665.7, 907.5)	(229.2, 309.9)	(48.1, 152.6)	(18.0, 55.6)
	4.9	2.4	0.38	0.21
Namibia	(4.3, 5.6)	(2.1, 2.8)	(0.18, 0.71)	(0.10, 0.40)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	1,442.2	448.6	111.9	39.0
Nepal	(1,239.7, 1,685.9)	(383.4, 521.4)	(56.9, 184.4)	(20.2, 66.1)
	0.48	0.24	0.01	<0.01
Netherlands	(0.38, 0.62)	(0.18, 0.32)	(<0.01, 0.02)	(<0.01, <0.01)
	1.0	1.1	0.01	<0.01
New Zealand	(0.8, 1.3)	(0.8, 1.4)	(<0.01, 0.01)	(<0.01, <0.01)
	5.0	3.2	0.54	0.33
Nicaragua	(3.9, 6.7)	(2.5, 4.2)	(0.28, 0.97)	(0.17, 0.59)
	338.9	133.9	39.6	14.7
Niger	(290.7, 396.7)	(115.0, 155.2)	(20.7, 71.8)	(7.4, 26.6)
	298.7	146.6	26.1	15.4
Nigeria	(255.5, 349.5)	(126.2, 170.3)	(13.2, 45.3)	(7.9, 27.8)
	44.8	22.4	5.7	2.9
North Korea	(38.8, 51.7)	(19.3, 25.8)	(3.0, 10.1)	(1.5, 5.2)
	128.8	51.2	7.4	2.9
Northern Mariana Islands	(108.6, 151.7)	(43.1, 60.4)	(2.5, 16.2)	(1.0, 6.7)
	1.0	1.2	0.06	0.04
Norway	(0.8, 1.3)	(0.9, 1.6)	(0.03, 0.21)	(0.01, 0.06)
	283.8	27.6	18.9	2.1
Oman	(243.9, 329.9)	(23.9, 31.7)	(6.4, 40.2)	(0.7, 4.7)
	847.7	294.7	70.0	32.0
Pakistan	(732.7, 972.0)	(251.2, 345.1)	(37.2, 118.1)	(16.8, 55.5)
	130.1	55.9	16.9	6.5
Palestine	(112.3, 149.9)	(48.2, 64.7)	(9.0, 29.0)	(3.5, 11.3)
	2.9	1.9	0.21	0.14
Panama	(2.2, 3.8)	(1.5, 2.5)	(0.10, 0.38)	(0.07, 0.26)
	442.3	161.1	46.1	17.3
Papua New Guinea	(373.6, 519.9)	(135.7, 190.2)	(24.5, 78.7)	(9.0, 30.8)
	4.1	1.8	0.42	0.18
Paraguay	(3.1, 5.5)	(1.4, 2.3)	(0.21, 0.75)	(0.09, 0.32)
	2.1	1.5	0.14	0.10
Peru	(1.6, 2.6)	(1.2, 1.9)	(0.07, 0.26)	(0.05, 0.19)
	411.4	139.5	35.6	5.3
Philippines	(356.6, 470.3)	(119.3, 162.8)	(21.9, 84.7)	(2.9, 10.4)
	0.10	0.09	0.12	0.01
Poland	(0.08, 0.14)	(0.07, 0.12)	(0.08, 0.14)	(<0.01, 0.01)
	1.8	0.87	0.20	0.02
Portugal	(1.4, 2.2)	(0.66, 1.12)	(0.17, 0.26)	(0.01, 0.03)
	3.3	1.8	0.81	0.02
Puerto Rico	(2.7, 4.0)	(1.5, 2.1)	(0.52, 0.99)	(0.01, 0.04)
	69.1	21.6	6.0	1.6
Qatar	(59.7, 79.5)	(18.8, 24.8)	(2.0, 13.4)	(0.5, 3.4)
	3.4	1.2	1.0	0.02
Romania	(2.6, 4.4)	(0.9, 1.5)	(0.0, 2.1)	(0.01, 0.03)
	0.42	0.38	0.02	<0.01
Russian Federation	(0.32, 0.55)	(0.29, 0.49)	(0.02, 0.03)	(<0.01, 0.01)
	214.7	110.8	23.8	15.3
Rwanda	(184.3, 248.7)	(95.6, 128.5)	(12.5, 42.6)	(7.9, 27.0)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	7.3	2.9	1.5	0.03
Saint Lucia	(5.8, 9.2)	(2.3, 3.6)	(0.9, 1.9)	(0.02, 0.06)
Saint Vincent and the Grenadines	5.4	2.6	1.2	0.05
	(4.3, 6.9)	(2.1, 3.2)	(0.8, 1.5)	(0.03, 0.08)
	244.8	74.9	28.8	7.9
Samoa	(208.0, 285.7)	(63.5, 88.1)	(15.7, 49.2)	(4.0, 13.7)
	242.4	94.2	34.3	14.4
Sao Tome and Principe	(207.4, 282.6)	(81.1, 109.3)	(17.8, 60.0)	(7.4, 25.5)
	160.2	26.6	10.5	1.9
Saudi Arabia	(138.7, 185.3)	(23.0, 30.9)	(3.6, 23.2)	(0.6, 4.1)
	247.0	77.8	31.1	11.8
Senegal	(211.7, 286.8)	(66.7, 89.8)	(16.4, 54.6)	(6.1, 20.6)
	1.0	0.75	0.04	0.03
Serbia	(0.8, 1.3)	(0.57, 0.97)	(0.02, 0.09)	(0.01, 0.06)
	54.5	24.7	3.9	1.8
Seychelles	(39.5, 77.4)	(18.1, 35.0)	(1.8, 7.5)	(0.8, 3.4)
	325.3	158.4	38.5	18.1
Sierra Leone	(279.4, 380.3)	(135.5, 184.3)	(19.8, 66.6)	(9.1, 31.9)
	0.06	0.02	0.04	<0.01
Singapore	(0.05, 0.08)	(0.02, 0.03)	(0.01, 0.06)	(<0.01, 0.01)
	0.69	0.65	0.03	0.03
Slovakia	(0.52, 0.90)	(0.50, 0.85)	(0.01, 0.07)	(0.01, 0.07)
	1.3	1.2	0.01	0.01
Slovenia	(1.0, 1.7)	(0.9, 1.5)	(<0.01, 0.01)	(<0.01, 0.01)
	356.2	114.4	39.4	13.0
Solomon Islands	(303.7, 417.1)	(96.7, 134.3)	(20.5, 67.4)	(6.8, 22.4)
	251.7	143.8	21.5	16.3
Somalia	(217.2, 291.8)	(123.8, 166.1)	(4.8, 45.3)	(8.1, 30.0)
	3.0	1.8	0.23	0.14
South Africa	(2.7, 3.4)	(1.6, 2.0)	(0.11, 0.42)	(0.07, 0.26)
	0.02	<0.01	0.66	0.01
South Korea	(0.01, 0.03)	(<0.01, <0.01)	(0.07, 1.22)	(<0.01, 0.02)
	277.6	199.9	23.6	24.0
South Sudan	(238.1, 323.8)	(171.7, 232.8)	(6.1, 51.1)	(12.1, 42.3)
	0.68	0.37	0.09	0.01
Spain	(0.54, 0.87)	(0.28, 0.50)	(0.05, 0.12)	(0.01, 0.02)
	615.1	166.4	58.1	16.0
Sri Lanka	(530.8, 707.5)	(143.5, 192.4)	(32.6, 94.8)	(8.7, 26.4)
	182.7	67.8	17.2	8.4
Sudan	(157.6, 211.5)	(58.3, 78.8)	(7.7, 31.1)	(4.3, 14.9)
	3.1	2.1	0.18	0.11
Suriname	(2.4, 4.0)	(1.6, 2.7)	(0.08, 0.33)	(0.05, 0.19)
	5.3	3.0	0.58	0.40
Swaziland	(4.6, 6.1)	(2.6, 3.4)	(0.30, 1.00)	(0.20, 0.73)
	0.85	0.69	0.02	<0.01
Sweden	(0.69, 1.02)	(0.56, 0.83)	(0.01, 0.04)	(<0.01, 0.01)
	0.11	0.03	0.57	0.21
Switzerland	(0.08, 0.15)	(0.02, 0.04)	(0.30, 0.91)	(0.10, 0.34)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
	124.0	25.8	14.3	3.2
Syria	(107.3, 143.6)	(22.3, 29.6)	(7.5, 24.8)	(1.7, 5.7)
	36.2	14.7	0.10	0.01
Taiwan	(31.4, 41.7)	(12.6, 16.8)	(0.05, 0.16)	(<0.01, 0.02)
	0.18	0.13	0.02	0.01
Tajikistan	(0.13, 0.23)	(0.10, 0.16)	(0.01, 0.03)	(0.01, 0.02)
	279.9	122.1	28.3	18.7
Tanzania	(220.1, 356.9)	(97.7, 150.5)	(9.5, 55.8)	(9.1, 32.9)
	751.2	279.5	54.6	20.3
Thailand	(645.9, 874.6)	(239.5, 322.7)	(27.9, 92.3)	(10.3, 35.2)
	1.7	1.4	0.09	0.07
The Bahamas	(1.3, 2.2)	(1.1, 1.8)	(0.03, 0.22)	(0.02, 0.16)
	280.9	99.5	31.7	13.7
The Gambia	(241.0, 328.6)	(85.0, 115.7)	(16.0, 57.3)	(6.7, 25.1)
	436.2	159.5	46.1	20.0
Timor-Leste	(376.9, 498.7)	(137.8, 183.3)	(24.6, 77.2)	(9.3, 34.7)
	315.2	156.1	37.2	16.5
Togo	(269.0, 367.2)	(134.1, 181.6)	(19.2, 66.1)	(8.3, 29.2)
	295.2	83.4	19.6	6.2
Tonga	(254.1, 343.8)	(70.5, 97.7)	(10.0, 34.4)	(3.0, 11.3)
	0.10	0.08	0.75	0.01
Trinidad and Tobago	(0.07, 0.13)	(0.06, 0.10)	(0.42, 0.97)	(<0.01, 0.03)
	116.9	30.9	8.4	2.2
Tunisia	(100.6, 135.1)	(26.8, 35.7)	(4.1, 14.8)	(1.0, 4.1)
	125.6	30.4	10.2	2.5
Turkey	(108.8, 145.6)	(26.3, 35.4)	(5.1, 18.5)	(1.2, 4.5)
	0.24	0.13	0.02	0.01
Turkmenistan	(0.18, 0.32)	(0.10, 0.17)	(0.01, 0.03)	(<0.01, 0.02)
	203.7	112.4	15.4	12.4
Uganda	(174.5, 237.3)	(96.8, 130.6)	(7.3, 28.6)	(6.5, 21.7)
	0.53	0.53	<0.01	<0.01
Ukraine	(0.41, 0.67)	(0.41, 0.67)	(<0.01, 0.01)	(<0.01, <0.01)
	99.6	22.9	9.0	2.1
United Arab Emirates	(86.3, 114.8)	(19.8, 26.4)	(3.1, 19.4)	(0.7, 4.6)
	0.58	0.65	0.01	<0.01
United Kingdom	(0.46, 0.73)	(0.49, 0.86)	(0.01, 0.02)	(<0.01, <0.01)
	1.7	1.0	0.06	0.01
United States	(1.5, 2.0)	(0.8, 1.3)	(0.02, 0.07)	(<0.01, 0.02)
	1.3	0.07	0.81	0.02
Uruguay	(1.0, 1.7)	(0.05, 0.10)	(0.57, 1.01)	(0.01, 0.05)
	0.12	0.09	0.01	0.01
Uzbekistan	(0.09, 0.15)	(0.07, 0.12)	(0.01, 0.02)	(<0.01, 0.01)
	403.1	132.8	40.5	14.6
Vanuatu	(341.6, 471.6)	(112.1, 157.6)	(20.7, 70.4)	(7.1, 26.5)
	0.17	0.08	1.4	0.05
Venezuela	(0.13, 0.22)	(0.06, 0.11)	(0.8, 1.8)	(0.03, 0.08)
	424.2	154.7	38.1	14.7
Vietnam	(351.5, 507.5)	(128.1, 186.0)	(20.8, 63.6)	(7.9, 24.8)

Location	Incidence (per 100,000)		Mortality (per million)	
	1990	2017	1990	2017
Virgin Islands, U.S.	1.4 (1.1, 1.8)	1.2 (0.9, 1.6)	0.08 (0.03, 0.19)	0.05 (0.02, 0.13)
Yemen	234.6 (202.1, 271.5)	82.8 (70.5, 96.9)	22.1 (5.5, 41.9)	10.3 (5.3, 18.0)
Zambia	183.1 (158.3, 212.8)	128.2 (109.7, 147.6)	23.1 (9.6, 41.4)	18.6 (9.6, 32.5)
Zimbabwe	4.2 (3.7, 4.9)	3.7 (3.2, 4.3)	0.45 (0.23, 0.79)	0.48 (0.25, 0.86)

Table S10: Years lived with disability (YLDs), years of life lost to premature mortality (YLLs), and disability-adjusted life years (DALYs) due to typhoid and paratyphoid, by country or non-sovereign location, in 2017.

Location	YLDs	YLLs	DALYs
Afghanistan	413 (263, 617)	44,744 (22,893, 79,404)	45,157 (23,302, 79,890)
Albania	0 (0, 0)	5 (2, 10)	5 (2, 10)
Algeria	91 (61, 132)	6,525 (3,023, 12,095)	6,617 (3,115, 12,180)
American Samoa	0 (0, 0)	17 (8, 32)	17 (8, 32)
Andorra	0 (0, 0)	0 (0, 0)	0 (0, 0)
Angola	262 (168, 391)	18,742 (8,601, 35,730)	19,004 (8,882, 35,966)
Antigua and Barbuda	0 (0, 0)	0 (0, 0)	0 (0, 0)
Argentina	0 (0, 0)	54 (34, 87)	55 (34, 87)
Armenia	0 (0, 0)	1 (1, 2)	1 (1, 2)
Australia	0 (0, 0)	1 (1, 2)	1 (1, 2)
Austria	0 (0, 0)	1 (0, 2)	1 (0, 2)
Azerbaijan	0 (0, 0)	3 (1, 6)	3 (2, 6)
Bahrain	3 (2, 4)	144 (47, 315)	147 (50, 318)
Bangladesh	9,788 (6,224, 14,781)	924,923 (526,219, 1,497,921)	934,711 (533,508, 1,508,179)
Barbados	0 (0, 0)	1 (1, 2)	1 (1, 2)
Belarus	0 (0, 0)	8 (4, 16)	8 (4, 16)
Belgium	0 (0, 0)	1 (1, 2)	1 (1, 2)
Belize	0 (0, 0)	3 (1, 6)	3 (1, 6)
Benin	185 (119, 278)	17,822 (8,732, 32,309)	18,007 (8,950, 32,461)
Bermuda	0 (0, 0)	0 (0, 0)	0 (0, 0)
Bhutan	12 (8, 18)	1,216 (617, 2,208)	1,228 (628, 2,220)
Bolivia	2 (1, 2)	95 (46, 178)	97 (48, 181)

Location	YLDs	YLLs	DALYs
Bosnia and Herzegovina	0 (0, 0)	4 (2, 9)	5 (2, 9)
Botswana	1 (0, 1)	36 (17, 66)	36 (18, 66)
Brazil	41 (25, 60)	1,352 (630, 2,492)	1,393 (672, 2,525)
Brunei	0 (0, 0)	0 (0, 0)	0 (0, 0)
Bulgaria	1 (0, 1)	1 (1, 4)	2 (1, 5)
Burkina Faso	984 (601, 1,507)	107,723 (54,084, 196,953)	108,707 (54,840, 197,824)
Burundi	255 (159, 393)	24,271 (12,436, 43,076)	24,527 (12,768, 43,336)
Cambodia	318 (203, 473)	22,652 (11,654, 37,917)	22,969 (11,900, 38,207)
Cameroon	393 (250, 584)	43,291 (21,522, 80,317)	43,684 (21,982, 80,806)
Canada	0 (0, 0)	3 (2, 9)	3 (2, 9)
Cape Verde	3 (2, 4)	324 (168, 567)	327 (171, 569)
Central African Republic	48 (31, 71)	3,696 (1,750, 6,894)	3,743 (1,803, 6,954)
Chad	286 (179, 429)	33,728 (16,911, 61,096)	34,014 (17,117, 61,410)
Chile	2 (2, 4)	25 (15, 58)	28 (17, 60)
China	4,170 (2,836, 5,871)	229,742 (117,640, 400,088)	233,912 (121,902, 404,479)
Colombia	19 (12, 27)	108 (68, 218)	127 (85, 236)
Comoros	8 (5, 12)	1,001 (518, 1,773)	1,009 (527, 1,780)
Congo	30 (20, 44)	2,887 (1,445, 5,084)	2,918 (1,474, 5,121)
Costa Rica	0 (0, 0)	2 (1, 3)	2 (1, 3)
Cote d'Ivoire	262 (170, 389)	31,162 (15,991, 55,368)	31,424 (16,188, 55,615)
Croatia	0 (0, 0)	0 (0, 1)	0 (0, 1)
Cuba	1 (0, 1)	2 (1, 4)	2 (1, 5)
Cyprus	0 (0, 0)	0 (0, 1)	0 (0, 1)

Location	YLDs	YLLs	DALYs
Czech Republic	1 (0, 1)	14 (2, 30)	15 (2, 31)
Democratic Republic of the Congo	831 (523, 1,229)	67,812 (33,658, 118,414)	68,642 (34,378, 119,319)
Denmark	0 (0, 0)	17 (5, 28)	17 (5, 28)
Djibouti	15 (10, 22)	1,823 (884, 3,392)	1,838 (896, 3,408)
Dominica	0 (0, 0)	0 (0, 1)	0 (0, 1)
Dominican Republic	2 (1, 3)	84 (37, 157)	86 (39, 159)
Ecuador	2 (1, 4)	86 (39, 159)	88 (42, 162)
Egypt	234 (154, 341)	20,396 (10,362, 35,664)	20,630 (10,623, 35,881)
El Salvador	1 (1, 2)	70 (34, 127)	71 (35, 128)
Equatorial Guinea	8 (5, 12)	372 (112, 928)	380 (119, 936)
Eritrea	102 (64, 152)	12,210 (6,362, 22,047)	12,312 (6,451, 22,153)
Estonia	0 (0, 0)	0 (0, 1)	1 (0, 1)
Ethiopia	2,029 (1,318, 2,991)	208,656 (110,644, 360,776)	210,686 (112,374, 363,048)
Federated States of Micronesia	1 (0, 1)	74 (34, 131)	74 (34, 131)
Fiji	4 (3, 6)	321 (154, 588)	325 (158, 593)
Finland	0 (0, 0)	1 (1, 2)	1 (1, 2)
France	1 (0, 1)	36 (24, 52)	37 (25, 52)
Gabon	6 (4, 8)	372 (171, 708)	378 (178, 716)
Georgia	0 (0, 0)	2 (1, 4)	2 (1, 4)
Germany	0 (0, 0)	27 (16, 43)	27 (16, 43)
Ghana	705 (445, 1,065)	76,989 (40,783, 134,376)	77,694 (41,430, 135,056)
Greece	0 (0, 0)	22 (16, 29)	22 (16, 29)
Greenland	0 (0, 0)	0 (0, 0)	0 (0, 0)

Location	YLDs	YLLs	DALYs
Grenada	0 (0, 0)	0 (0, 1)	0 (0, 1)
Guam	1 (0, 1)	36 (12, 84)	37 (13, 85)
Guatemala	40 (26, 56)	1,261 (780, 1,724)	1,300 (818, 1,766)
Guinea	167 (106, 245)	18,368 (9,195, 33,025)	18,535 (9,351, 33,255)
Guinea-Bissau	6 (4, 9)	677 (323, 1,268)	682 (328, 1,276)
Guyana	0 (0, 0)	7 (4, 14)	7 (4, 14)
Haiti	10 (6, 15)	1,186 (581, 2,190)	1,196 (592, 2,202)
Honduras	2 (1, 3)	123 (59, 235)	126 (61, 237)
Hungary	0 (0, 0)	0 (0, 1)	1 (0, 1)
Iceland	0 (0, 0)	0 (0, 0)	0 (0, 0)
India	62,928 (42,391, 88,465)	5,113,164 (2,934,073, 8,232,805)	5,176,092 (2,996,424, 8,307,312)
Indonesia	6,498 (4,337, 9,251)	483,263 (271,204, 786,701)	489,762 (277,552, 794,178)
Iran	164 (110, 231)	9,283 (4,559, 16,404)	9,446 (4,703, 16,569)
Iraq	224 (147, 329)	13,900 (6,689, 24,890)	14,123 (6,890, 25,104)
Ireland	0 (0, 0)	0 (0, 0)	0 (0, 0)
Israel	0 (0, 0)	2 (1, 6)	2 (1, 6)
Italy	0 (0, 0)	12 (7, 18)	12 (8, 18)
Jamaica	0 (0, 0)	12 (5, 24)	12 (6, 24)
Japan	3 (2, 4)	9 (7, 23)	12 (9, 26)
Jordan	25 (16, 36)	1,500 (731, 2,782)	1,525 (750, 2,802)
Kazakhstan	0 (0, 0)	49 (11, 94)	49 (11, 94)
Kenya	1,015 (673, 1,475)	91,761 (49,800, 153,404)	92,776 (50,650, 154,652)
Kiribati	1 (1, 2)	169 (88, 300)	170 (89, 302)

Location	YLDs	YLLs	DALYs
Kuwait	4 (3, 6)	0 (0, 1)	5 (3, 7)
Kyrgyzstan	0 (0, 0)	3 (2, 6)	3 (2, 6)
Laos	148 (93, 217)	14,561 (7,643, 24,995)	14,709 (7,787, 25,113)
Latvia	0 (0, 0)	0 (0, 0)	0 (0, 1)
Lebanon	26 (17, 38)	1,712 (811, 3,090)	1,738 (837, 3,118)
Lesotho	1 (0, 1)	70 (36, 128)	71 (36, 129)
Liberia	76 (48, 115)	6,818 (3,367, 12,198)	6,894 (3,454, 12,250)
Libya	14 (9, 20)	890 (421, 1,594)	904 (436, 1,610)
Lithuania	0 (0, 0)	0 (0, 1)	1 (0, 1)
Luxembourg	0 (0, 0)	0 (0, 0)	0 (0, 0)
Macedonia	0 (0, 0)	3 (1, 5)	3 (1, 5)
Madagascar	392 (238, 615)	33,886 (16,052, 61,668)	34,278 (16,422, 62,361)
Malawi	321 (203, 478)	32,588 (16,780, 58,200)	32,909 (17,118, 58,522)
Malaysia	311 (206, 454)	16,845 (8,526, 29,579)	17,156 (8,789, 29,823)
Maldives	3 (2, 5)	147 (70, 266)	150 (72, 270)
Mali	324 (203, 490)	40,974 (20,619, 74,154)	41,297 (20,940, 74,540)
Malta	0 (0, 0)	0 (0, 0)	0 (0, 0)
Marshall Islands	0 (0, 1)	33 (16, 61)	34 (17, 61)
Mauritania	40 (26, 58)	4,983 (2,486, 8,676)	5,023 (2,521, 8,708)
Mauritius	1 (1, 2)	1 (0, 3)	2 (1, 4)
Mexico	127 (82, 183)	2,009 (1,113, 5,313)	2,136 (1,240, 5,411)
Moldova	0 (0, 0)	1 (1, 2)	1 (1, 2)
Mongolia	0 (0, 0)	2 (1, 4)	2 (1, 4)

Location	YLDs	YLLs	DALYs
Montenegro	0 (0, 0)	1 (0, 2)	1 (0, 2)
Morocco	120 (80, 173)	12,143 (6,278, 21,037)	12,263 (6,393, 21,140)
Mozambique	704 (438, 1,073)	90,599 (45,876, 161,836)	91,303 (46,692, 162,689)
Myanmar	1,239 (785, 1,838)	120,518 (65,426, 203,217)	121,757 (66,796, 204,182)
Namibia	1 (0, 1)	42 (19, 79)	43 (20, 80)
Nepal	1,131 (699, 1,670)	89,741 (46,551, 150,471)	90,873 (47,712, 151,429)
Netherlands	0 (0, 0)	1 (1, 2)	1 (1, 2)
New Zealand	0 (0, 0)	0 (0, 0)	0 (0, 0)
Nicaragua	2 (1, 3)	94 (46, 182)	96 (48, 184)
Niger	333 (210, 496)	33,103 (16,395, 60,093)	33,436 (16,688, 60,467)
Nigeria	2,824 (1,803, 4,236)	322,238 (162,128, 592,050)	325,062 (164,766, 594,478)
North Korea	39 (26, 55)	4,137 (2,158, 7,434)	4,175 (2,202, 7,468)
Northern Mariana Islands	0 (0, 0)	7 (2, 17)	7 (3, 17)
Norway	0 (0, 0)	7 (2, 10)	8 (3, 10)
Oman	11 (8, 16)	571 (188, 1,281)	582 (200, 1,291)
Pakistan	5,615 (3,567, 8,239)	608,497 (321,247, 1,053,596)	614,112 (326,240, 1,058,525)
Palestine	30 (20, 45)	2,687 (1,414, 4,675)	2,718 (1,437, 4,694)
Panama	1 (0, 1)	25 (11, 47)	26 (12, 48)
Papua New Guinea	141 (87, 210)	13,379 (6,788, 23,708)	13,520 (6,955, 23,857)
Paraguay	1 (1, 2)	57 (28, 107)	58 (29, 108)
Peru	5 (3, 7)	160 (74, 300)	164 (79, 305)
Philippines	1,486 (954, 2,122)	25,046 (13,609, 49,038)	26,532 (15,203, 50,738)
Poland	0 (0, 0)	7 (4, 18)	7 (4, 18)

Location	YLDs	YLLs	DALYs
Portugal	0 (0, 0)	7 (2, 11)	7 (2, 11)
Puerto Rico	0 (0, 0)	3 (2, 6)	3 (2, 6)
Qatar	5 (3, 7)	222 (73, 490)	227 (78, 494)
Romania	1 (1, 2)	19 (13, 27)	20 (14, 28)
Russia	5 (3, 8)	19 (9, 34)	25 (14, 39)
Rwanda	163 (106, 240)	18,055 (9,308, 32,462)	18,218 (9,499, 32,627)
Saint Lucia	0 (0, 0)	0 (0, 0)	0 (0, 0)
Saint Vincent and the Grenadines	0 (0, 0)	0 (0, 0)	0 (0, 0)
Samoa	1 (1, 2)	126 (62, 223)	127 (63, 224)
Sao Tome and Principe	2 (1, 3)	258 (129, 460)	260 (131, 462)
Saudi Arabia	85 (57, 123)	4,064 (1,349, 9,009)	4,150 (1,430, 9,095)
Senegal	123 (80, 182)	16,447 (8,448, 28,661)	16,570 (8,575, 28,798)
Serbia	0 (0, 0)	12 (5, 24)	12 (6, 25)
Seychelles	0 (0, 0)	11 (5, 20)	11 (5, 20)
Sierra Leone	131 (83, 201)	13,223 (6,602, 24,032)	13,355 (6,741, 24,170)
Singapore	0 (0, 0)	1 (0, 1)	1 (0, 1)
Slovakia	0 (0, 0)	6 (2, 16)	6 (2, 17)
Slovenia	0 (0, 0)	0 (0, 1)	0 (0, 1)
Solomon Islands	7 (5, 11)	698 (366, 1,203)	705 (373, 1,210)
Somalia	298 (185, 450)	26,472 (12,967, 49,210)	26,770 (13,240, 49,590)
South Africa	9 (6, 13)	559 (263, 1,023)	568 (272, 1,034)
South Korea	0 (0, 0)	15 (4, 32)	15 (4, 32)
South Sudan	243 (149, 367)	23,742 (11,481, 42,678)	23,985 (11,655, 42,891)

Location	YLDs	YLLs	DALYs
Spain	1 (0, 1)	15 (10, 27)	16 (11, 27)
Sri Lanka	293 (193, 427)	21,317 (11,691, 35,120)	21,610 (11,943, 35,530)
Sudan	314 (204, 464)	30,142 (15,268, 53,597)	30,456 (15,593, 53,874)
Suriname	0 (0, 0)	3 (1, 5)	3 (1, 5)
Swaziland	0 (0, 1)	39 (20, 73)	39 (20, 73)
Sweden	0 (0, 0)	2 (1, 3)	2 (1, 3)
Switzerland	0 (0, 0)	57 (32, 94)	57 (32, 94)
Syria	53 (34, 77)	5,059 (2,626, 9,064)	5,112 (2,673, 9,124)
Taiwan	20 (14, 28)	6 (3, 14)	26 (18, 38)
Tajikistan	0 (0, 0)	5 (2, 8)	5 (2, 8)
Tanzania	782 (475, 1,213)	101,630 (47,396, 185,513)	102,412 (48,039, 186,630)
Thailand	1,369 (897, 1,964)	70,071 (35,532, 121,491)	71,440 (36,927, 122,438)
The Bahamas	0 (0, 0)	1 (0, 3)	1 (0, 3)
The Gambia	23 (15, 34)	2,798 (1,316, 5,282)	2,821 (1,332, 5,303)
Timor-Leste	21 (13, 33)	2,307 (1,059, 4,067)	2,329 (1,086, 4,084)
Togo	123 (78, 183)	10,772 (5,362, 19,017)	10,894 (5,476, 19,107)
Tonga	1 (1, 1)	51 (24, 94)	51 (25, 94)
Trinidad and Tobago	0 (0, 0)	0 (0, 1)	0 (0, 1)
Tunisia	32 (21, 45)	1,540 (723, 2,824)	1,572 (756, 2,862)
Turkey	222 (147, 321)	12,293 (5,794, 22,268)	12,515 (6,012, 22,477)
Turkmenistan	0 (0, 0)	2 (1, 3)	2 (1, 3)
Uganda	553 (352, 823)	50,282 (25,210, 89,166)	50,835 (25,668, 89,650)
Ukraine	1 (1, 2)	2 (1, 7)	4 (2, 8)

Location	YLDs	YLLs	DALYs
United Arab Emirates	16 (11, 23)	923 (303, 2,043)	940 (323, 2,060)
United Kingdom	2 (1, 2)	7 (3, 11)	8 (5, 13)
United States	16 (10, 23)	99 (64, 282)	115 (77, 297)
Uruguay	0 (0, 0)	2 (1, 6)	2 (1, 6)
Uzbekistan	0 (0, 0)	11 (5, 19)	11 (6, 20)
Vanuatu	4 (2, 5)	356 (174, 654)	360 (177, 658)
Venezuela	0 (0, 0)	47 (29, 78)	47 (30, 78)
Vietnam	1,211 (771, 1,791)	86,378 (46,096, 145,920)	87,589 (47,458, 146,947)
Virgin Islands, U.S.	0 (0, 0)	0 (0, 1)	0 (0, 1)
Yemen	290 (187, 430)	27,776 (14,151, 48,844)	28,066 (14,412, 49,024)
Zambia	271 (171, 409)	31,859 (16,367, 56,427)	32,129 (16,594, 56,670)
Zimbabwe	6 (4, 9)	656 (342, 1,191)	663 (348, 1,197)

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