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ORIGINAL RESEARCH

Targeting Hypertension Screening in Low- and Middle-Income Countries: A Cross-Sectional Analysis of 1.2 Million Adults in 56 Countries

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BACKGROUND: As screening programs in low- and middle-income countries (LMICs) often do not have the resources to screen the entire population, there is frequently a need to target such efforts to easily identifiable priority groups. This study aimed to determine (1) how hypertension prevalence in LMICs varies by age, sex, body mass index, and smoking status, and (2) the ability of different combinations of these variables to accurately predict hypertension.

METHODS AND RESULTS: We analyzed individual-level, nationally representative data from 1 170 629 participants in 56 LMICs, of whom 220 636 (18.8%) had hypertension. Hypertension was defined as systolic blood pressure ≥140 mm Hg, diastolic blood pressure ≥90 mm Hg, or reporting to be taking blood pressure–lowering medication. The shape of the positive association of hypertension with age and body mass index varied across world regions. We used logistic regression and random forest models to compute the area under the receiver operating characteristic curve in each country for different combinations of age, body mass index, sex, and smoking status. The area under the receiver operating characteristic curve for the model with all 4 predictors ranged from 0.64 to 0.85 between countries, with a country-level mean of 0.76 across LMICs globally. The mean absolute increase in the area under the receiver operating characteristic curve from the model including only age to the model including all 4 predictors was 0.05.

CONCLUSIONS: Adding body mass index, sex, and smoking status to age led to only a minor increase in the ability to distinguish between adults with and without hypertension compared with using age alone. Hypertension screening programs in LMICs could use age as the primary variable to target their efforts.

Key Words: cardiovascular disease ■ epidemiology ■ low- and middle-income countries ■ noncommunicable diseases ■ prevention

Cardiovascular and cerebrovascular disease (CCVD) is the leading cause of mortality globally,[1] and accounted for an estimated 17.8 million deaths in 2016.[2] Hypertension is the most important modifiable risk factor for CCVD, causing an estimated 18% of myocardial infarctions and 48% of strokes.[3–5]

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CLINICAL PERSPECTIVE

What Is New?

- This study provides evidence on how hypertension prevalence in low- and middle-income countries varies by age, sex, body mass index, and smoking status, and how useful these simply and affordably measurable variables are in targeting hypertension screening efforts.

What Are the Clinical Implications?

- Compared with using age alone, the addition of body mass index, sex, and smoking status resulted in only a marginal increase in the ability to distinguish between adults with and without hypertension.
- Age could be used as the main, and possibly only, variable to define priority groups for hypertension screening in low- and middle-income countries.

Nonstandard Abbreviations and Acronyms

CCVD	cardiovascular and cerebrovascular disease
STEPS	Stepwise Approach to Surveillance

Worldwide, the number of adults with hypertension has increased substantially in the past 4 decades, with the main increase having occurred in low- and middle-income countries (LMICs).[6] Largely as a result of rapid population aging in these countries,[7] almost three quarters of all adults with hypertension are projected to be living in LMICs by 2025.[8] Already in 2015, the world regions with the highest hypertension prevalence, sub-Saharan Africa, South Asia, and Central and Eastern Europe, were those containing predominantly LMICs.[6]

Hypertension is simple and inexpensive to diagnose, and can be controlled using highly cost-effective medications.[9–11] Yet, less than half of those with hypertension in LMICs are aware of their diagnosis,[12–14] and only 1 in 10 adults has achieved control.[12,13] Given that diagnosing hypertension is a precondition for reducing blood pressure (BP) through medications and lifestyle advice, improving detection of hypertension in LMICs is an important global health priority. In many low-resource settings, however, it is not feasible to screen the entire adult population for hypertension. With increasing policy interest in the rapid increase of CCVD and its risk factors in LMICs, evidence is needed to effectively target hypertension screening activities. To date, such evidence from large-scale population-based studies is lacking.

To inform the more focused targeting of hypertension screening in LMICs, this collaboration has collected and pooled nationally representative individual-level data with BP measurements from 1.2 million adults across 56 LMICs. These countries represent 71% of the global population living in LMICs.[15] Given the highly underresourced health systems in many LMICs, targeting hypertension screening programs in these settings must rely on variables that can be measured quickly and inexpensively. Our analysis, thus, examines age, sex, body mass index (BMI), and smoking status as potential targeting variables because they can all be estimated by briefly inspecting a patient's appearance or ascertained through one question (in the case of smoking). Specifically, the aims of this study were to determine (1) how hypertension prevalence varies by age, sex, BMI, and smoking status in different countries and world regions, and (2) the usefulness of these variables for targeting hypertension screening efforts in LMICs.

METHODS

Data Disclosure Statement

The following surveys used in this study are in the public domain: Demographic Health Survey (https://www.dhsprogram.com/data/available-datasets.cfm), Stepwise Approach to Surveillance (STEPS) (https://extranet.who.int/ncdsmicrodata/index.php/catalog/STEPS), Chile National Health Survey (http://ghdx.healthdata.org/record/chile-national-health-survey-2009-2010), China Health and Nutrition Survey (https://www.cpc.unc.edu/projects/china/data/datasets/index.html), Indonesian Family Life Survey (https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/download.html), Mexico Family Life Survey (http://www.ennvih-mxfls.org/english/ennhiv-3.html), and the Study on Global Ageing and Adult Health (https://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/sage).

Data access to other surveys used in this study can be requested from the corresponding author.

Data Sources

We pooled nationally representative household survey data from 56 LMICs. To identify eligible data sets, we performed a systematic search with the following inclusion criteria: (1) study performed during or after 2005, (2) nationally representative for at least two 10-year age groups above the age of 15 years, (3) conducted in an LMIC (as per the

classification of the World Bank at the time of each survey),[16] (4) response rate ≥50%, and (5) measured BP, with at least 2 measurements per participant. We first identified those countries in which a World Health Organization STEPS survey had been performed because STEPS surveys use a standardized questionnaire and are the official World Health Organization–approved method for monitoring of noncommunicable disease risk factors at the population level. We identified World Health Organization STEPS surveys for 118 countries, of which 64 met our inclusion criteria. Of the 64 surveys, 5 had no valid contact information, 13 contacts did not respond to our request for data, 9 contacts rejected our request to share data, and 1 could not locate its data set (Figure S1). Hence, our analysis included a total of 36 STEPS surveys from Algeria, Azerbaijan, Belarus, Benin, Bhutan, Botswana, Burkina Faso, Cambodia, Comoros, Costa Rica, Eswatini, Georgia, Grenada, Guyana, Iran, Iraq, Kenya, Kyrgyzstan, Lebanon, Liberia, Malawi, Moldova, Mongolia, Morocco, Mozambique, Nepal, Saint Vincent and the Grenadines, Seychelles, Sudan, Tajikistan, Tanzania, Timor-Leste, Togo, Uganda, Vanuatu, and Zanzibar. Zanzibar was included as a separate country (even though it is a semiautonomous region of the United Republic of Tanzania) because Zanzibar has its own Ministry of Health and administers its health system largely independently of the remainder of Tanzania.[17]

For those countries for which we were unable to access an eligible STEPS data set, we conducted a systematic Google search (Data S1), which led to the inclusion of an additional 20 surveys (Figure S2): the Belize Central America Diabetes Initiative, Brazil Pesquisa Nacional de Saúde, Chile National Health Survey, China Health and Nutrition Survey, the Demographic and Health Survey (Albania, Bangladesh, Egypt, India, Lesotho, Namibia, Peru, South Africa, and Ukraine), La Encuesta Nacional de Salud y Nutrición (Ecuador), Indonesian Family Life Survey, Kazakhstan Household Survey Health Module, Mexico Family Life Survey, Study for the Evaluation of Prevalence of Hypertension and Cardiovascular Risk (Romania), and the Study on Global Ageing and Adult Health (Ghana and Russia). Data S2 provides more detailed information about the sampling methods of each survey.

Most (n=46) countries measured BP using a digital upper arm meter, 2 countries used a digital wrist meter, and 2 used a manual mercury sphygmomanometer (Table S1). For 6 countries, either the survey report did not state what device was used to measure BP or the survey report was not available. BP was measured 3 times in 48 countries, twice in 4 countries, twice with a third measurement if the first 2 differed by a predefined margin in 3 countries, and 5 times in the Seychelles survey.

Definition of Hypertension

Hypertension was defined as systolic BP ≥140 mm Hg, diastolic BP ≥90 mm Hg, or reporting to be taking BP-lowering medication. For participants with 3 BP measurements, we used the mean of the last 2 measurements; for the survey with 5 BP measurements, we averaged the last 4 measurements, and where 2 measurements were provided, we computed the mean of both available measurements. For participants who had only one measurement, we used the single value provided. To inform efforts to identify individuals with undiagnosed hypertension, we additionally conducted all analyses when defining hypertension based on an increased BP only (systolic BP ≥140 mm Hg or diastolic BP ≥90 mm Hg; Figures S3 through S5 and Tables S2 through S4).

Definition of Age Group, BMI Group, and Smoking Status

We assumed that healthcare workers are able to accurately estimate the broad age and BMI category of an adult (but not his/her exact age and BMI) through simple visual inspection. Thus, even though using the continuous rather than categorical form of a variable tends to increase the variable's predictive ability, we used age and BMI as both continuous and categorical variables in our analyses. When used categorically, we grouped age into 5-year age categories, with the youngest age category including participants aged 15 to 19 years and the oldest participants aged ≥65 years, and BMI was classified as underweight (BMI <18.5 kg/m^2), normal weight (18.5 kg/m^2 ≤ BMI <25.0 kg/m^2), overweight (25.0 kg/m^2 ≤ BMI <30.0 kg/m^2), obese (30.0 kg/m^2 ≤ BMI <40.0 kg/m^2), and morbidly obese (BMI ≥40.0 kg/m^2). Seven of 56 surveys only asked about current smoking. In the remaining surveys, smoking status was categorized as being a current smoker, a past smoker, or a nonsmoker.

Statistical Analysis

All analyses at the global and regional level used sampling weights that accounted for the sampling strategy of the given survey and, because the unit of interest was a health system regardless of the size of the population that it serves, each country was weighted equally. In the appendix, we show all results when weighting countries proportional to their population size (Figures S6 and S7 and Tables S5 and S6). We categorized countries into 6 world regions following the World Health Organization's regional groupings[18]: Africa, the

Eastern Mediterranean, Europe, the Americas (henceforth referred to as "Latin America and the Caribbean"), South-East Asia, and the Western Pacific. In all regression analyses, we adjusted the SEs for clustering at the level of the primary sampling unit. The surveys from Grenada, Romania, and the Seychelles did not have a primary sampling unit identifier; we adjusted the SEs for clustering in these surveys at the country level instead.

Our analysis had 4 steps. We first computed hypertension prevalence across all countries and in each world region by 5-year age group and sex. Second, to examine the association of hypertension with age, sex, BMI, and smoking status, we used Poisson regressions with a robust error structure to regress, separately for each region, hypertension onto age, BMI, sex, a binary indicator for current tobacco smoking, and a binary indicator for each country. We chose Poisson rather than logistic regressions for this analysis because the resulting risk ratios (RRs) are more intuitive to interpret than odds ratios. To obtain estimates on the absolute rather than relative scale, we generated average adjusted predictions of hypertension from these regressions.

Third, we quantified the degree to which age, BMI, sex, and smoking status predict hypertension (and thus their usefulness as variables to target hypertension screening) in each country using the area under the receiver operating characteristic curve (AUC) as a summary metric. We computed the AUC using logistic regression. These regression models regressed hypertension onto (1) age only (model 1); (2) age, BMI, and an interaction term between age and BMI (model 2); (3) model 2 plus sex and an interaction term between sex and age (model 3); and (4) model 3 plus a binary indicator for current smoking and an interaction term between current smoking and age (model 4). The interaction terms with age were included because we found age to be the variable that is most predictive of hypertension. We show results for regressions run with both categorical age and BMI and continuous age and BMI. We used restricted cubic splines with 5 knots placed at the 5th, 27.5th, 50th, 72.5th, and 95th percentile of age and BMI to allow for nonlinearities when using the continuous variables. To test whether our results are heavily influenced by the parametric assumptions of the logistic regression, we also used random forests (a nonparametric machine learning technique) to compute the AUCs (Table S7).[19]

Fourth, to help national policy makers and program managers in setting a possible age threshold for guiding hypertension screening programs, we plotted hypertension prevalence against age as a continuous variable (in 1-year increments) for each country using locally estimated scatterplot smoothing regression with a span of 1 year of age. We additionally display in these figures the percentage of the population that is younger than each given age. These plots can, thus, be used to read off both the probability that a person at a given age has hypertension (and, thus, the number of adults who would, on average, be identified as having hypertension when a given number is screened) and the proportion of all adults in a country who would need to be screened for hypertension if a certain age threshold is used as the eligibility criterion. We used country-specific population estimates for the year of the survey by 1-year increments in age from the United Nations Department of Economic and Social Affairs.[15]

Smoking data were not available for Peru and Bangladesh. In addition, the surveys in Egypt and Ukraine provided no BMI data, and the survey in Peru measured BMI only among women. These countries were thus excluded from regressions and random forest analyses in which one or several of these variables were included as independent variables.

This was a complete case analysis. All analyses were conducted in R version 3.5.2 and Stata version 15.

Ethical Approval

This study received a determination of "not human subjects research" by the institutional review board of the Harvard T.H. Chan School of Public Health on May 9, 2018, as only pseudonymized data have been shared with the analysts.

RESULTS

Sample Characteristics

The surveys had a total of 1 230 026 participants, of whom 59 397 (4.8%) had missing BP measurements or missing information on whether they were taking BP-lowering medication. The sample size for the analysis was, thus, 1 170 629 participants, of whom 220 636 (18.8%) had hypertension (Table 1 and Table S8). The survey-level median proportion of participants who were women was 58.7%, and the survey-level median age was 40 years, ranging from 27 years in Lesotho to 62 years in Russia. Tables S9 and S10 show the sampling characteristics of those who were excluded from our analysis because of missing BP measurements or missing information on BP-lowering medication.

Table 1. Survey Characteristics by World Region

Country	Year*	Survey	Response Rate, %†	Sample Size	Women, %	Median Age, y	Age Range, y	Hypertensive, % (n)‡	Missing Outcome, %§
Africa									
Algeria	2016	STEPS	93.0	6797	56.0	40.0	18–69	27.5 (1866)	2.7
Benin	2015	STEPS	97.9	5090	54.6	35.0	18–69	30.8 (1570)	0.7
Botswana	2014	STEPS	63.0	4003	67.6	34.0	15–69	33.6 (1346)	1.6
Burkina Faso	2013	STEPS	97.8	3993	53.9	36.0	25–64	17.9 (713)	15.1
Comoros	2011	STEPS	96.5	5377	71.2	38.0	25–64	26.8 (1440)	1.5
Eswatini	2014	STEPS	81.8	3180	65.1	33.0	15–70	29.7 (945)	9.9
Ghana	2007/2008	SAGE	79.4	4967	46.9	60.0	18–114	52.6 (2614)	10.7
Kenya	2015	STEPS	95.0	4401	60.2	35.0	18–69	26.8 (1181)	1.6
Lesotho	2014	DHS	90.8	5689	52.6	27.0	15–59	17.4 (988)	3.9
Liberia	2011	STEPS	87.1	1835	55.4	34.0	24–64	26.9 (494)	2.0
Malawi	2009	STEPS	95.5	3908	69.7	37.0	25–64	31.5 (1232)	24.9
Mozambique	2005	STEPS	98.3	3069	58.4	38.0	25–64	35.8 (1098)	7.1
Namibia	2013	DHS	96.9	3613	57.6	46.0	35–64	42.6 (1540)	17.9
Seychelles	2013	STEPS	73.0	1239	57.2	47.0	25–64	33.3 (412)	0.1
South Africa	2016	DHS	83.1	8099	60.3	36.0	15–95	46.6 (3772)	19.9
Tanzania	2012	STEPS	94.7	5633	53.8	40.0	25–64	30.8 (1734)	1.3
Togo	2010	STEPS	91.0	4127	51.9	32.0	15–64	20.5 (844)	5.2
Uganda	2014	STEPS	99.0	3893	59.7	33.0	18–69	25.0 (972)	2.4
Zanzibar	2011	STEPS	91.0	2452	61.4	40.0	24–64	34.2 (838)	1.3
Total for Africa	…		93.0‖	81 365¶	57.6‖	36.0‖	…	30.8‖ (25 599)¶	2.7‖
Eastern Mediterranean									
Egypt	2015	DHS	95.0	14 788	53.0	33.0	15–59	16.7 (2475)	0.5
Iran	2016	STEPS	98.4	28 164	47.6	43.0	18–100	28.6 (8062)	7.8
Iraq	2015	STEPS	98.6	4018	60.5	40.0	18–100	43.1 (1730)	1.0
Lebanon	2017	STEPS	67.0	3761	58.5	42.0	16–70	38.4 (1445)	6.7
Morocco	2017	STEPS	89.0	5398	65.2	44.0	18–100	33.0 (1779)	0.6
Sudan	2016	STEPS	95.0	7652	65.1	36.0	18–69	35.4 (2710)	0.9
Total for Eastern Mediterranean	…		95.0‖	63 781¶	59.5‖	41.0‖	…	34.2‖ (18 201)¶	1.0‖
Europe									
Albania	2008	DHS	95.4	6379	55.2	33.0	15–45	23.4 (1493)	4.3
Azerbaijan	2017	STEPS	97.0	2789	59.4	45.0	18–69	38.0 (1060)	0.4

(*Continued*)

Table 1. Continued

Country	Year*	Survey	Response Rate, %†	Sample Size	Women, %	Median Age, y	Age Range, y	Hypertensive, % (n)‡	Missing Outcome, %§
Belarus	2016	STEPS	87.1	5006	58.3	45.0	18–69	51.5 (2577)	0.1
Georgia	2016	STEPS	75.7	4027	70.5	50.0	17–70	44.5 (1793)	4.4
Kazakhstan	2012	KHSHM	93.0	10 883	57.3	43.0	15–90	27.4 (2987)	13.9
Kyrgyzstan	2013	STEPS	100.0	2613	64.0	44.0	25–64	48.9 (1278)	0.4
Moldova	2013	STEPS	83.5	4585	62.3	45.0	18–69	48.6 (2229)	4.6
Romania	2015/2016	SEPHAR	69.1	1970	52.5	45.0	18–80	49.6 (978)	0.0
Russia	2007/2008	SAGE	61.4	4191	64.1	62.0	18–100	63.9 (2679)	3.8
Tajikistan	2016	STEPS	94.0	2699	59.5	39.0	18–70	43.8 (1183)	0.7
Ukraine	2007	DHS	81.5	7898	68.4	33.0	15–45	25.1 (1979)	18.3
Total for Europe	…		87.1‖	53 040¶	59.5‖	45.0‖	…	44.5‖ (20 236)¶	3.8‖
Latin America and the Caribbean									
Belize	2005/2006	CAMDI	92.6	2429	58.9	44.0	19–97	28.5 (693)	0.2
Brazil	2013	PNS	86.0	57 394	56.5	41.0	18–100	30.5 (17 495)	4.7
Chile	2009/2010	NHS	85.0	4848	59.8	45.0	15–100	30.8 (1494)	8.4
Costa Rica	2010	STEPS	87.8	3445	72.1	45.0	18–110	36.1 (1244)	5.0
Ecuador	2012	ENSANUT	81.5	29 640	58.7	34.0	20–59	9.5 (2828)	19.8
Grenada	2009–2011	STEPS	67.8	1097	59.9	44.0	24–64	41.9 (460)	2.8
Guyana	2016	STEPS	66.7	2632	59.9	40.0	18–69	29.2 (768)	0.9
Mexico	2009–2012	MXFLS	90.0	20 938	56.6	35.0	15–99	24.2 (5058)	30.2
Peru	2012	DHS	94.4#	29 412	52.6	54.0	40–96	26.4 (7771)	5.3
SVG	2013	STEPS	67.8	3456	55.9	42.0	18–70	30.6 (1056)	0.40
Total for Latin America and the Caribbean	…		85.5‖	155 291¶	58.8‖	43.0‖	…	29.9‖ (38 867)¶	4.9‖
Southeast Asia									
Bangladesh	2011	DHS	95.0	7592	49.5	45.0	35–96	26.3 (1997)	10.4
Bhutan	2014	STEPS	96.9	2810	62.0	38.0	18–69	39.3 (1103)	0.3
India	2015/2016	DHS	96.0	742 618	85.6	30.0	15–54	13.2 (98 297)	2.0
Indonesia	2014	IFLS	83.0	32 467	53.2	35.0	15–100	24.2 (7859)	0.2
Nepal	2013	STEPS	98.6	4121	67.9	40.0	15–69	29.3 (1208)	0.5
Timor-Leste	2014	STEPS	96.3	2565	58.6	40.0	18–69	27.7 (710)	1.7
Total for Southeast Asia	…		96.2‖	792 173¶	60.3‖	39.0‖	…	27.0‖ (111 174)¶	1.1‖
Western Pacific									
Cambodia	2010	STEPS	94.2	5314	64.6	43.0	25–64	12.6 (671)	2.2

(*Continued*)

Table 1. Continued

Country	Year*	Survey	Response Rate, %†	Sample Size	Women, %	Median Age, y	Age Range, y	Hypertensive, % (n)‡	Missing Outcome, %§
China	2009	CHNS	88.0**	9741	52.4	50.0	15–99	29.1 (2832)	9.3
Mongolia	2009	STEPS	95.0	5409	40.9	36.0	15–64	31.6 (1708)	0.6
Vanuatu	2011	STEPS	94.0	4515	49.7	40.0	25–64	29.9 (1348)	2.4
Total for Western Pacific	-		94.1‖	24 979¶	51.1‖	41.5‖	…	29.5‖ (6559)¶	2.3‖
Total	…		92.8††	1 170 629‡‡	58.7††	40.0††	…	30.6†† (220 636)‡‡	2.4††

All values are unweighted. CAMDI indicates Belize Central America Diabetes Initiative; CHNS, China Health and Nutrition Survey; DHS, Demographic Health Survey; ENSANUT, La Encuesta Nacional de Salud y Nutrición; IFLS, Indonesian Family Life Survey; KHSHM, Kazakhstan Household Survey Health Module; MXFLS, Mexico Family Life Survey; NHS, National Health Survey; PNS, Brazil Pesquisa Nacional de Saúde; SAGE, Study on Global Ageing and Adult Health; SEPHAR, Study for the Evaluation of Prevalence of Hypertension and Cardiovascular Risk; STEPS, Stepwise Approach to Surveillance; and SVG, St. Vincent and the Grenadines.

*Years in which the data of a survey were sampled.

†The response rate includes both the household and the individual response rate.

‡Unweighted values. Weighted prevalences are shown in Table S8.

§Missingness refers to a missing value of either the blood pressure measurements or the questionnaire response for the use of blood pressure–lowering medication.

‖Median across all countries in the respective region.

¶Sum across all countries in the respective region.

#As the response rate among men in Peru was not available, this is the women's response rate.

**Response rate for the most recent wave for which a response rate was published (2006 wave of the survey).

††Median across all countries.

‡‡Sum across all countries.

Hypertension Prevalence by Age and Sex

Globally, hypertension prevalence increased with age in both men and women, from 7.1% (95% CI, 6.2%–8.1%) to 66.7% (95% CI, 65.2%–68.2%) in women and from 10.0% (95% CI, 8.9%–11.1%) to 59.8% (95% CI, 57.4%–62.2%) in men between the age groups of 15 to 19 and ≥65 years, respectively (Table S11). The increase in hypertension prevalence with age group tended to be steepest in Europe, increasing from 8.7% (95% CI, 6.9%–10.8%) to 75.4% (95% CI, 73.1%–77.7%) between the age groups 15 to 19 and ≥65 years, and least steep in South-East Asia, increasing from 6.6% (95% CI, 5.1%–8.2%) to 51.6% (95% CI, 47.7%–55.5%) between the same age groups (Figure 1 and Table S11). In all regions except for the Western Pacific and Eastern Mediterranean region, we observed that women tended to have a lower hypertension prevalence than men in younger age groups and a higher prevalence than men in older age groups. This pattern by sex was attenuated after adjusting (in addition to age and sex) for BMI group, smoking status, a binary indicator for each country in a region, and an interaction term between sex and age group (Figure S8).

Association of Hypertension With Age, Sex, BMI, and Smoking Status

After adjusting for age group, BMI group, and smoking status, women had a lower risk of hypertension than men, ranging from an RR of 0.80 (95% CI, 0.74–0.85; P<0.001) in Latin America and the Caribbean to an RR of 0.92 (95% CI, 0.87–0.97; P=0.003) in the Eastern Mediterranean region, in all regions except for the Western Pacific region (Table 2). Past smoking was positively associated with hypertension in all regions in the covariate-unadjusted regression, but only in the Eastern Mediterranean region (RR, 1.09; 95% CI, 1.00–1.18; P=0.038) in the covariate-adjusted regression. After adjusting for sex, age group, and BMI group, current smoking was positively associated with hypertension in the Western Pacific region only (RR, 1.17; 95% CI, 1.11–1.24; P<0.001) and trends remained similarly when defining smoking as a binary variable (Table S12). The average adjusted predictions of hypertension by smoking status, sex, age group, and region are shown in Figure S9.

Older age and higher BMI were associated with hypertension in all regressions in all regions (Table 2). However, the shape of the association of hypertension with age varied both by region and BMI group (Figure 2, Figure S10, and Table S13). Notably, the association between age and hypertension was least steep in the underweight category. In addition, although the association of hypertension with age continued into the older age groups in all regions,

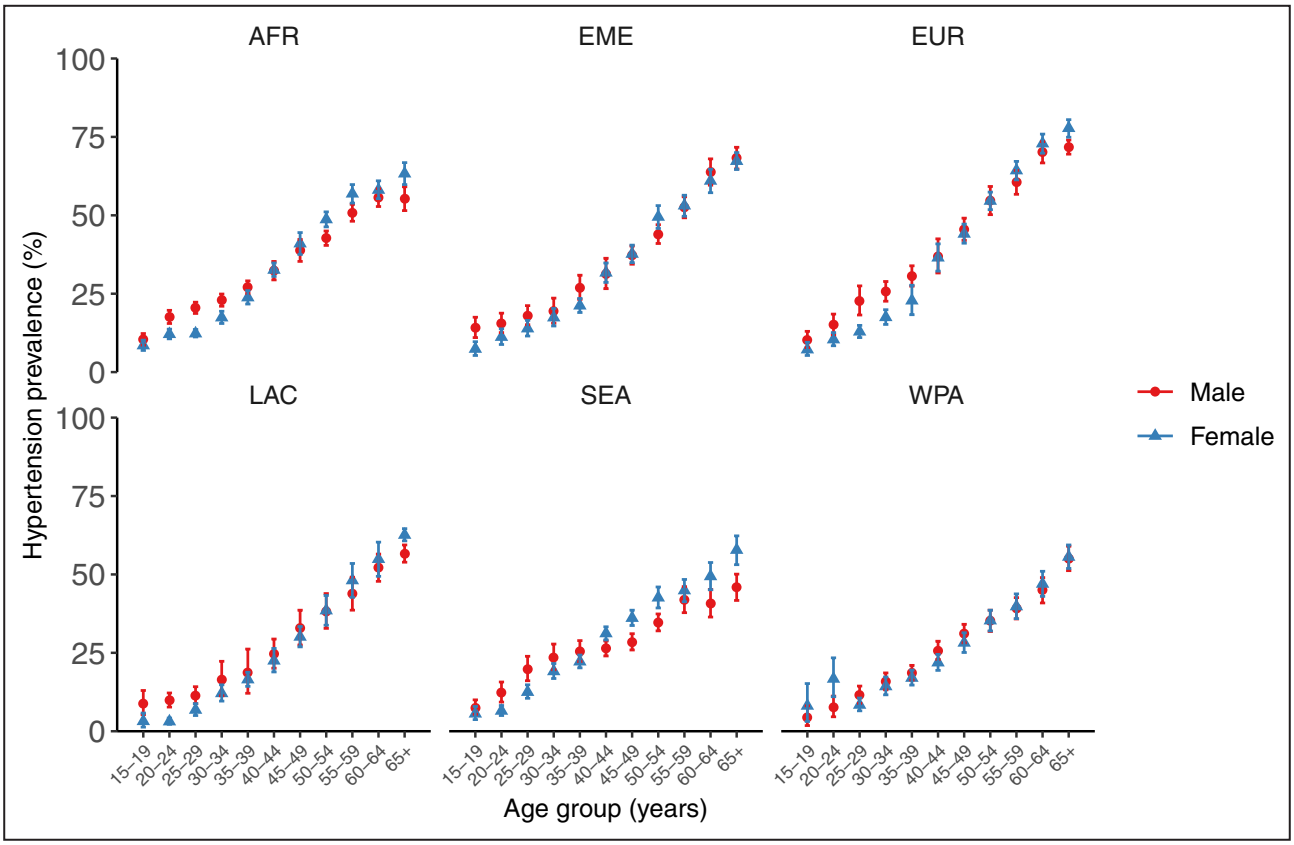

Figure 1. Hypertension prevalence by 5-year age group, sex, and region.
AFR indicates Africa; EME, Eastern Mediterranean; EUR, Europe; LAC, Latin America and the Caribbean; SEA, Southeast Asia; and WPA, Western Pacific.

in Africa the association "flattened" and, on average, even became negative in the oldest age groups. The relationship between hypertension and BMI and age did not change substantially when using continuous rather than categorial variables (Figures S11 and S12 and Table S14).

AUC Achieved With Age, BMI, Sex, and Smoking Status

The AUC for age as a continuous variable as the only predictor ranged from 0.55 in Ghana to 0.83 in Chile. In general, the AUC increased only modestly when adding variables to age. Across countries, the mean absolute increase in the AUC from the model that included only age to the most complex model (which also included BMI, sex, smoking status, and interaction terms between age and each of these variables) was 0.07 when using categorical age and BMI and 0.05 when using continuous age and BMI. The maximum absolute increase in the AUC between the age-only model and the most complex model was 0.13 (in Namibia) and 0.09 (in Ghana) for the regressions with categorical age and BMI and continuous age and BMI, respectively. The AUC for the most complex model with all 4 predictors ranged from 0.57 in Ghana to 0.84 in Chile and from 0.64 in Ghana to 0.85 in Chile for the model with categorical age and BMI and continuous age and BMI, respectively (Table 3). The AUCs remained similar when using a 3-level variable for smoking status (Table S15) and when defining hypertension based only on the BP readings rather than also including self-reported use of BP-lowering medication in the definition (Table S4). The use of random forests instead of logistic regression did not substantially increase the AUC values (Table S7). The AUC for models including only BMI, only sex, or only smoking status are shown in Table S16.

Figure 3 and Table S17 show the (smoothed) prevalence of hypertension across the age range that was sampled in each survey. The figure, thus, displays for each country the number of adults who would, on average, be identified as having hypertension if 100 people of the given age are screened for hypertension. In addition, because the figure plots (in gray) the percentage of the population that is younger than each given age, it also shows the percentage of the population

Table 2. Association of Hypertension With Age, Sex, BMI, and Smoking Status, by Region

Variable	Africa		EME		Europe		LAC		SEA		WPA	
	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value
Covariate unadjusted*												
Sex												
Men	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Women	0.91 (0.86–0.96)	0.001	0.96 (0.91–1.00)	0.064	0.98 (0.92–1.04)	0.506	0.95 (0.90–1.00)	0.033	1.01 (0.96–1.07)	0.626	0.98 (0.92–1.04)	0.438
Age group, y												
15–19	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
20–24	1.61 (1.38–1.87)	<0.001	1.13 (0.90–1.42)	0.295	1.40 (1.11–1.76)	0.005	1.16 (0.79–1.71)	0.452	1.28 (0.95–1.73)	0.099	2.07 (1.15–3.73)	0.016
25–29	1.82 (1.57–2.10)	<0.001	1.40 (1.13–1.74)	0.002	1.93 (1.51–2.47)	<0.001	1.43 (0.99–2.06)	0.057	2.16 (1.66–2.80)	<0.001	2.35 (1.36–4.07)	0.002
30–34	2.26 (1.96–2.62)	<0.001	1.65 (1.32–2.05)	<0.001	2.36 (1.92–2.90)	<0.001	2.32 (1.58–3.41)	<0.001	2.86 (2.22–3.69)	<0.001	3.43 (1.96–5.99)	<0.001
35–39	2.83 (2.46–3.26)	<0.001	2.18 (1.77–2.68)	<0.001	3.02 (2.40–3.80)	<0.001	2.84 (1.95–4.13)	<0.001	3.49 (2.72–4.46)	<0.001	4.16 (2.45–7.07)	<0.001
40–44	3.66 (3.18–4.21)	<0.001	2.81 (2.30–3.43)	<0.001	4.21 (3.37–5.26)	<0.001	4.00 (2.80–5.73)	<0.001	4.47 (3.52–5.67)	<0.001	5.87 (3.46–9.94)	<0.001
45–49	4.44 (3.85–5.11)	<0.001	3.42 (2.81–4.15)	<0.001	5.13 (4.10–6.41)	<0.001	5.54 (3.86–7.96)	<0.001	5.04 (3.97–6.38)	<0.001	7.11 (4.16–12.14)	<0.001
50–54	5.29 (4.61–6.07)	<0.001	4.30 (3.55–5.20)	<0.001	6.33 (4.93–8.12)	<0.001	6.62 (4.60–9.53)	<0.001	5.80 (4.56–7.39)	<0.001	8.86 (5.18–15.14)	<0.001
55–59	6.13 (5.34–7.03)	<0.001	4.82 (3.97–5.85)	<0.001	7.21 (5.61–9.27)	<0.001	7.94 (5.52–11.44)	<0.001	6.31 (4.92–8.07)	<0.001	10.11 (5.90–17.30)	<0.001
60–64	6.63 (5.77–7.61)	<0.001	5.45 (4.48–6.61)	<0.001	8.30 (6.37–10.82)	<0.001	9.04 (6.24–13.10)	<0.001	6.67 (5.23–8.50)	<0.001	11.94 (7.03–20.29)	<0.001
≥65	6.18 (5.32–7.17)	<0.001	6.35 (5.23–7.71)	<0.001	9.43 (6.68–13.32)	<0.001	11.45 (8.00–16.40)	<0.001	8.34 (6.53–10.65)	<0.001	16.01 (9.40–27.25)	<0.001
BMI group												
Underweight	0.89 (0.83–0.96)	0.002	0.63 (0.54–0.73)	<0.001	0.70 (0.52–0.93)	0.014	0.78 (0.62–0.99)	0.037	0.69 (0.63–0.75)	<0.001	0.58 (0.49–0.70)	<0.001
Normal weight	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Overweight	1.44 (1.38–1.50)	<0.001	1.52 (1.40–1.65)	<0.001	1.83 (1.71–1.97)	<0.001	1.70 (1.57–1.84)	<0.001	1.60 (1.52–1.69)	<0.001	1.72 (1.61–1.84)	<0.001
Obese	1.86 (1.77–1.96)	<0.001	2.06 (1.90–2.24)	<0.001	2.78 (2.50–3.10)	<0.001	2.39 (2.16–2.64)	<0.001	2.08 (1.93–2.25)	<0.001	2.53 (2.32–2.75)	<0.001
Morbidly obese	2.21 (1.98–2.46)	<0.001	2.44 (2.13–2.79)	<0.001	3.54 (3.16–3.97)	<0.001	2.80 (2.35–3.33)	<0.001	1.44 (1.02–2.02)	0.036	2.95 (2.28–3.80)	<0.001
Tobacco smoking												
Nonsmoker	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Current smoker	1.08 (1.02–1.14)	0.009	0.98 (0.89–1.07)	0.592	0.90 (0.84–0.96)	<0.001	0.96 (0.88–1.03)	0.259	0.98 (0.91–1.05)	0.505	1.12 (1.05–1.19)	<0.001
Past smoker	1.31 (1.24–1.39)	<0.001	1.45 (1.34–1.57)	<0.001	1.18 (1.12–1.24)	<0.001	1.37 (1.29–1.45)	<0.001	1.28 (1.15–1.42)	<0.001	1.25 (1.13–1.38)	<0.001
Covariate adjusted†												
Sex												
Men	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	

(*Continued*)

Table 2. Continued

Variable	Africa		EME		Europe		LAC		SEA		WPA	
	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value	RR (95% CI)	*P* Value
Women	0.85 (0.80–0.91)	<0.001	0.92 (0.87–0.97)	0.003	0.91 (0.87–0.96)	<0.001	0.80 (0.74–0.85)	<0.001	0.87 (0.82–0.93)	<0.001	1.00 (0.94–1.06)	0.947
Age group, y												
15–19	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
20–24	1.53 (1.29–1.80)	<0.001	0.99 (0.76–1.29)	0.959	1.22 (0.96–1.54)	0.104	1.05 (0.72–1.53)	0.811	1.23 (0.92–1.65)	0.159	1.84 (1.03–3.31)	0.043
25–29	1.59 (1.35–1.86)	<0.001	1.13 (0.88–1.46)	0.318	1.53 (1.19–1.96)	0.001	1.23 (0.86–1.78)	0.259	1.92 (1.48–2.48)	<0.001	1.88 (1.10–3.21)	0.021
30–34	1.95 (1.67–2.29)	<0.001	1.28 (0.99–1.65)	0.059	1.73 (1.41–2.12)	<0.001	1.90 (1.31–2.77)	0.001	2.43 (1.89–3.14)	<0.001	2.64 (1.54–4.52)	<0.001
35–39	2.38 (2.04–2.79)	<0.001	1.63 (1.28–2.07)	<0.001	2.03 (1.63–2.53)	<0.001	2.23 (1.53–3.25)	<0.001	3.02 (2.35–3.88)	<0.001	3.04 (1.82–5.07)	<0.001
40–44	3.04 (2.61–3.54)	<0.001	1.98 (1.56–2.50)	<0.001	2.70 (2.18–3.35)	<0.001	3.30 (2.31–4.71)	<0.001	3.65 (2.87–4.63)	<0.001	4.22 (2.53–7.04)	<0.001
45–49	3.66 (3.13–4.28)	<0.001	2.33 (1.86–2.92)	<0.001	3.19 (2.60–3.92)	<0.001	4.43 (3.09–6.34)	<0.001	4.19 (3.30–5.31)	<0.001	5.02 (3.00–8.43)	<0.001
50–54	4.33 (3.72–5.03)	<0.001	2.86 (2.29–3.59)	<0.001	3.89 (3.11–4.86)	<0.001	5.25 (3.65–7.53)	<0.001	4.86 (3.81–6.19)	<0.001	6.27 (3.73–10.52)	<0.001
55–59	5.00 (4.29–5.83)	<0.001	3.19 (2.55–3.99)	<0.001	4.38 (3.50–5.49)	<0.001	6.19 (4.31–8.89)	<0.001	5.30 (4.13–6.81)	<0.001	7.21 (4.29–12.10)	<0.001
60–64	5.58 (4.79–6.49)	<0.001	3.73 (2.98–4.66)	<0.001	4.99 (3.96–6.29)	<0.001	7.17 (4.98–10.33)	<0.001	5.91 (4.61–7.56)	<0.001	8.81 (5.28–14.71)	<0.001
≥65	5.32 (4.52–6.25)	<0.001	4.53 (3.62–5.67)	<0.001	5.76 (4.28–7.76)	<0.001	9.21 (6.45–13.16)	<0.001	7.35 (5.67–9.51)	<0.001	12.03 (7.19–20.11)	<0.001
BMI group												
Underweight	0.82 (0.77–0.88)	0.002	0.71 (0.62–0.82)	<0.001	0.88 (0.65–1.18)	0.387	0.81 (0.68–0.98)	0.026	0.72 (0.65–0.79)	<0.001	0.60 (0.50–0.71)	<0.001
Normal weight	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Overweight	1.34 (1.28–1.39)	<0.001	1.29 (1.20–1.39)	<0.001	1.39 (1.31–1.48)	<0.001	1.45 (1.37–1.54)	<0.001	1.45 (1.38–1.53)	<0.001	1.49 (1.40–1.58)	<0.001
Obese	1.69 (1.62–1.77)	<0.001	1.61 (1.49–1.75)	<0.001	1.84 (1.70–2.00)	<0.001	2.01 (1.88–2.14)	<0.001	1.85 (1.72–1.99)	<0.001	1.95 (1.81–2.10)	<0.001
Morbidly obese	1.92 (1.74–2.10)	<0.001	1.94 (1.70–2.21)	<0.001	2.22 (2.05–2.39)	<0.001	2.61 (2.31–2.94)	<0.001	1.21 (0.80–1.85)	0.362	2.30 (1.88–2.81)	<0.001
Tobacco smoking												
Nonsmoker	1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)		1.00 (Reference)	
Current smoker	0.99 (0.93–1.05)	0.728	1.03 (0.93–1.13)	0.575	1.00 (0.94–1.07)	0.891	1.03 (0.97–1.09)	0.354	0.87 (0.81–0.94)	0.001	1.17 (1.11–1.24)	<0.001
Past smoker	0.99 (0.93–1.05)	0.712	1.09 (1.00–1.18)	0.038	0.99 (0.94–1.04)	0.698	1.03 (0.97–1.08)	0.364	0.95 (0.85–1.06)	0.344	1.09 (0.99–1.19)	0.067

SEs were adjusted for clustering at the level of the primary sampling unit. BMI indicates body mass index; EME, Eastern Mediterranean; LAC, Latin America and the Caribbean; RR, risk ratio; SEA, Southeast Asia; and WPA, Western Pacific.

*These regressions included only one of the variables shown in the table and a binary indicator for each country.

†These regressions included sex, age by 5-year groups, BMI group, a 3-level variable for tobacco smoking, and a binary indicator for each country.

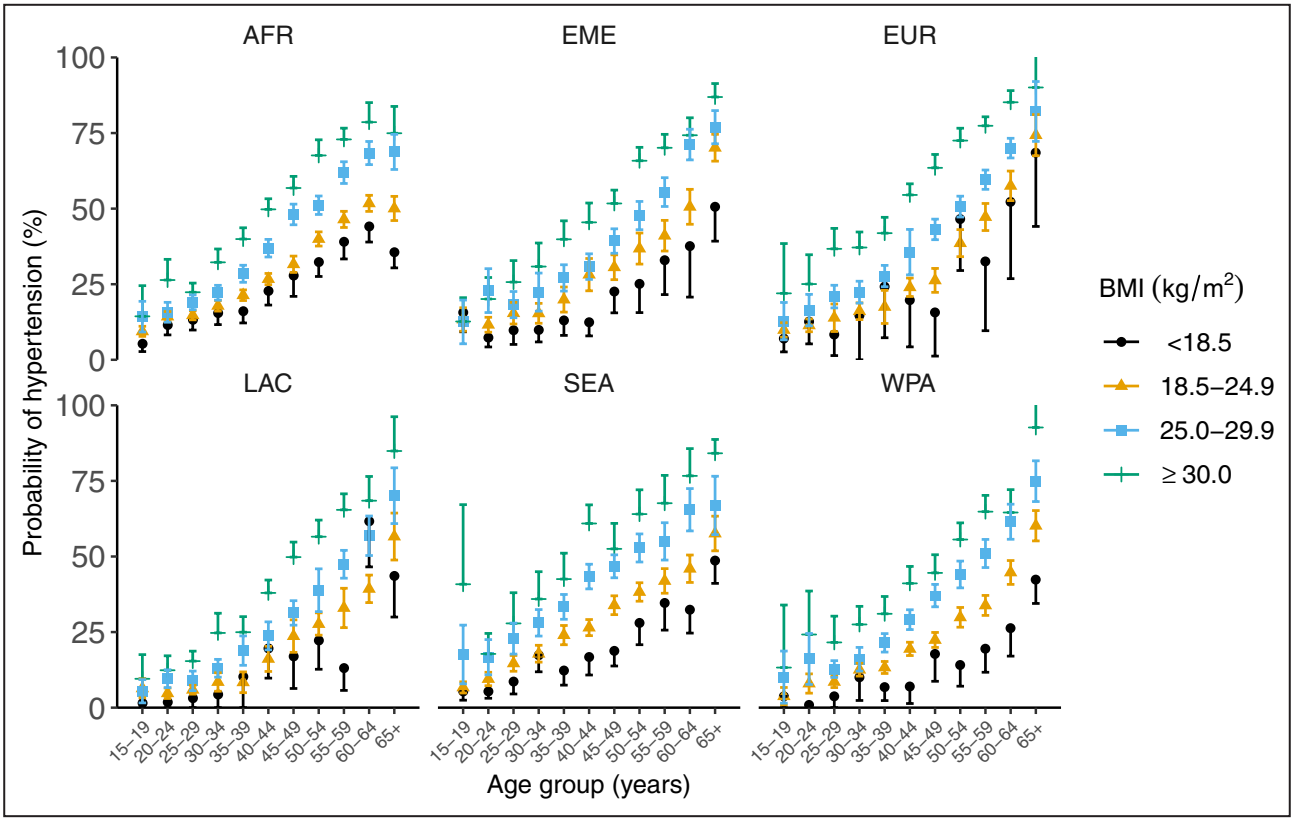

Figure 2. Average adjusted predictions of hypertension by body mass index (BMI) group, age group, and region.
CIs were computed using the Δ method. We only show one side of each CI for visual clarity. Figure S10 and Table S13 show the full CIs. All countries were weighted equally for this analysis. These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI group as independent variables. AFR indicates Africa; EME, Eastern Mediterranean; EUR, Europe; LAC, Latin America and the Caribbean; SEA, Southeast Asia; and WPA, Western Pacific.

that would not be targeted if a certain age is used to define a priority group for hypertension screening. For example, if Chile was to set an age of 50 years as the threshold for defining its priority group for hypertension screening, 71.6% of the population would not be screened, and for every 1000 people screened, 567 are expected to have hypertension.

DISCUSSION

Although measuring BP is simple and requires neither expensive equipment nor extensively trained staff, resource constraints often require targeting of hypertension screening in LMICs to certain priority groups. For instance, community health workers (who are often not equipped with BP-measuring devices) may need to decide whom to refer to a healthcare facility for a BP measurement. Similarly, large-scale household- or community-based hypertension screening programs may require eligibility criteria (as opposed to simply screening all adults) to ensure the campaign is financially and logistically feasible and can be repeated at reasonably frequent intervals (eg, annually). Even at healthcare facilities, healthcare workers may need to make decisions about whom to prioritize for hypertension screening, given that primary healthcare facilities in many LMICs often have few functioning BP meters and are faced with large patient numbers.[20,21] With some caveats and considerations discussed further below, this study suggests that such efforts may simply use age to define their priority group for screening. The addition of sex, BMI, and smoking status only marginally improved diagnostic ability, as assessed by AUC values.

This study provides an in-depth analysis of only one possible approach to defining priority groups for hypertension screening. We see 3 additional approaches. First, one could allocate screening priority according to an individual's predicted risk of a CCVD event. Although CCVD risk equations exist that do not require blood lipid measurements (which are infeasible in many settings in LMICs), they all require at a minimum a fasting blood glucose, glycated hemoglobin, or oral glucose tolerance test to diagnose diabetes mellitus, a measurement of systolic BP, and a measurement (or estimate) of BMI.[22] CCVD risk itself is,

Table 3. AUCs for Predicting Hypertension Using Age, BMI, Sex, and Smoking Status

Categorical Predictors					Continuous Predictors				
Country	Age*	Age*+BMI†,‡	Age*+BMI‡+Sex†	Age*+BMI‡+Sex+Smoking Status†,§	Country	Age‖	Age‖+BMI†,¶	Age‖+BMI¶+Sex†	Age‖+BMI¶+Sex+Smoking Status†,§
Africa									
Algeria	0.71	0.76	0.77	0.77	Algeria	0.74	0.77	0.78	0.78
Benin	0.60	0.66	0.67	0.67	Benin	0.64	0.68	0.68	0.68
Botswana	0.68	0.73	0.75	0.75	Botswana	0.72	0.75	0.76	0.76
Burkina Faso	0.59	0.66	0.69	0.69	Burkina Faso	0.65	0.70	0.71	0.71
Comoros	0.64	0.72	0.73	0.73	Comoros	0.68	0.74	0.74	0.74
Eswatini	0.72	0.76	0.77	0.77	Eswatini	0.75	0.77	0.78	0.78
Ghana#	0.51	0.56	0.57	0.57	Ghana	0.55	0.64	0.64	0.64
Kenya	0.66	0.70	0.72	0.72	Kenya	0.69	0.72	0.73	0.73
Lesotho	0.65	0.72	0.73	0.73	Lesotho	0.70	0.75	0.75	0.75
Liberia	0.64	0.70	0.72	0.72	Liberia	0.69	0.72	0.73	0.73
Malawi	0.63	0.68	0.71	0.72	Malawi	0.68	0.71	0.73	0.73
Mozambique	0.62	0.66	0.69	0.69	Mozambique	0.66	0.70	0.71	0.71
Namibia	0.54	0.66	0.67	0.67	Namibia	0.60	0.69	0.69	0.69
Seychelles	0.64	0.70	0.74	0.75	Seychelles	0.68	0.71	0.75	0.75
South Africa	0.73	0.75	0.76	0.76	South Africa	0.74	0.74	0.75	0.75
Tanzania	0.62	0.68	0.70	0.70	Tanzania	0.66	0.72	0.72	0.72
Togo	0.65	0.69	0.72	0.72	Togo	0.69	0.72	0.73	0.73
Uganda	0.61	0.64	0.67	0.67	Uganda	0.65	0.67	0.68	0.68
Zanzibar	0.70	0.74	0.76	0.76	Zanzibar	0.73	0.76	0.77	0.77
Eastern Mediterranean									
Egypt	0.72	…	…	…	Egypt	0.75	…	…	…
Iran	0.76	0.80	0.81	0.81	Iran	0.79	0.82	0.82	0.82
Iraq	0.74	0.78	0.79	0.79	Iraq	0.77	0.79	0.80	0.80
Lebanon	0.66	0.69	0.70	0.70	Lebanon	0.70	0.72	0.72	0.72
Morocco	0.71	0.75	0.76	0.76	Morocco	0.74	0.77	0.77	0.77
Sudan	0.63	0.69	0.70	0.70	Sudan	0.67	0.71	0.72	0.72
Europe									
Albania	0.62	0.67	0.69	0.70	Albania	0.66	0.71	0.71	0.72
Azerbaijan	0.73	0.78	0.79	0.79	Azerbaijan	0.76	0.79	0.80	0.80
Belarus	0.75	0.81	0.82	0.82	Belarus	0.78	0.82	0.83	0.83
Georgia	0.71	0.78	0.79	0.79	Georgia	0.75	0.80	0.80	0.80
Kazakhstan	0.78	0.81	0.82	0.82	Kazakhstan	0.81	0.83	0.83	0.83

(*Continued*)

Table 3. Continued

Categorical Predictors					Continuous Predictors				
Country	Age*	Age*+BMI†,‡	Age*+BMI‡+Sex†	Age*+BMI‡+Sex+Smoking Status†,§	Country	Age‖	Age‖+BMI†,¶	Age‖+BMI¶+Sex†	Age‖+BMI¶+Sex+Smoking Status†,§
Kyrgyzstan	0.68	0.74	0.75	0.76	Kyrgyzstan	0.72	0.76	0.77	0.77
Moldova	0.72	0.78	0.78	0.79	Moldova	0.75	0.79	0.79	0.79
Romania	0.67	0.73	0.75	0.76	Romania	0.71	0.75	0.75	0.77
Russia#	0.55	0.63	0.67	0.67	Russia	0.70	0.75	0.75	0.75
Tajikistan	0.69	0.75	0.76	0.76	Tajikistan	0.73	0.77	0.77	0.77
Ukraine	0.68	…	…	…	Ukraine	0.72	…	…	…
Latin America and the Caribbean									
Belize	0.69	0.76	0.77	0.77	Belize	0.74	0.77	0.77	0.78
Brazil	0.73	0.78	0.79	0.79	Brazil	0.76	0.80	0.80	0.80
Chile	0.79	0.83	0.84	0.84	Chile	0.83	0.85	0.85	0.85
Costa Rica	0.71	0.78	0.79	0.79	Costa Rica	0.75	0.80	0.80	0.80
Ecuador	0.66	0.73	0.75	0.75	Ecuador	0.70	0.75	0.76	0.76
Grenada	0.67	0.75	0.77	0.77	Grenada	0.71	0.75	0.77	0.77
Guyana	0.72	0.77	0.79	0.79	Guyana	0.74	0.78	0.79	0.79
Mexico	0.74	0.78	0.79	0.79	Mexico	0.77	0.80	0.80	0.80
Peru	0.59	…	…	…	Peru	0.67	…	…	…
SVG	0.73	0.79	0.80	0.80	SVG	0.76	0.80	0.80	0.80
South-East Asia									
Bangladesh	0.56	0.66	0.70	…	Bangladesh	0.61	0.71	0.73	…
Bhutan	0.64	0.68	0.70	0.70	Bhutan	0.67	0.71	0.71	0.71
India	0.71	0.73	0.74	0.74	India	0.72	0.74	0.74	0.74
Indonesia	0.74	0.79	0.80	0.80	Indonesia	0.77	0.81	0.81	0.81
Nepal	0.66	0.71	0.73	0.74	Nepal	0.69	0.74	0.75	0.75
Timor-Leste	0.60	0.66	0.67	0.68	Timor-Leste	0.63	0.69	0.69	0.69
Western Pacific									
Cambodia	0.64	0.71	0.73	0.73	Cambodia	0.68	0.75	0.76	0.76
China	0.68	0.74	0.76	0.77	China	0.72	0.78	0.78	0.78
Mongolia	0.69	0.74	0.76	0.77	Mongolia	0.72	0.76	0.77	0.77
Vanuatu	0.63	0.69	0.71	0.71	Vanuatu	0.67	0.71	0.72	0.72

AUC indicates area under the receiver operating characteristic curve; BMI, body mass index; and SVG, St. Vincent and the Grenadines.
*Age was categorized into 5-year age groups.
†The regressions included age as well as an interaction term between age and each of the predictor variables.
‡BMI was grouped into 5 categories: underweight, normal weight, overweight, obese, and morbidly obese.
§Smoking status was grouped into 2 categories: current nonsmoker and current smoker.
‖Age is a continuous variable with restricted cubic splines with 5 knots placed at the 5th, 27.5th, 50th, 72.5th, and 95th percentiles.
¶BMI is a continuous variable with restricted cubic splines with 5 knots placed at the 5th, 27.5th, 50th, 72.5th, and 95th percentiles.
#For those countries with more than one third of the participants being aged ≥65 years (Russia and Ghana), we subdivided age into 5-year age groups up to the age of 80 years.

thus, not a suitable tool for defining target groups for hypertension screening, because the cost, time, and complexity of a CCVD risk assessment far exceeds that of a BP measurement. Nevertheless, analyses that assess the ability of simple-to-measure variables to predict CCVD risk, rather than hypertension, may prove useful in helping to define target groups for hypertension screening. Second, one could define priority groups for hypertension screening not only based on the probability that a person has hypertension, but also the probability of having additional treatable comorbidities and risk factors. Although this could encompass a wide variety of conditions (eg, anemia or an infection with schistosomiasis), diabetes mellitus may be at the forefront of policy makers' minds in this regard given that the condition is, like hypertension, strongly related to age and a major CCVD risk factor.[23,24] Third, one could prioritize screening younger individuals for hypertension based on the rationale that they have a longer time period ahead of them during which they could benefit from taking antihypertensive medications than older individuals. For instance, the May Measurement Month initiative of the International Society for Hypertension uses a low age threshold (≥18 years) as eligibility criterion for its hypertension screening activities.[25] However, this rationale also assumes that younger individuals, who, on average, have a lower CCVD risk than older individuals,[26] are sufficiently motivated to adhere to antihypertensive medications in the long-term.

Our analysis stops short of recommending a particular age eligibility threshold for hypertension screening for each of the included LMICs. We made this choice because these decisions involve trade-offs, which have to be made on the basis of the aims of the screening program, the available resources, and the degree to which the health system can effectively deal with an increase in demand for hypertension care. Thus, instead of recommending an age threshold, we have provided as much of the relevant information for such a decision as possible. Specifically, we have calculated and plotted the prevalence of hypertension at each possible age threshold, which shows policy makers the number of adults of a given age who need to be screened to identify one individual with hypertension. In addition, we have plotted the percentage of the population who is younger than each possible age alongside the age-specific hypertension prevalence, which allows policy makers to determine for each possible threshold in age both the proportion of the entire population who would be targeted with hypertension screening and the proportion of individuals with hypertension of each age who would not be targeted. This plot can also be used to assess the true positive rate (the proportion of those above the age threshold who have hypertension), the false positive rate (the proportion above the age threshold who do not have hypertension), the true negative rate (the proportion below the age threshold who do not have hypertension), and the false negative rate (the proportion below the age threshold who do have hypertension). These variables, in turn, can be used to calculate sensitivity, specificity, positive predictive value, and negative predictive value.

Although our analysis seeks to inform screening decisions for hypertension in LMICs, our regressions additionally provide insights into the epidemiology of hypertension in LMICs. One of these insights relates to the association between sex and hypertension in different world regions. A stream of literature has highlighted the higher BMI and prevalence of obesity among women in sub-Saharan Africa than among men.[27,28] The Noncommunicable Disease–Risk Factor Collaboration estimates a prevalence of obesity among women in sub-Saharan Africa of 14.6% compared with 4.8% among men,[29] which raises the concern that women may suffer more than men from the epidemiological transition from communicable to noncommunicable diseases in the region. In this study, however, we find that women had a lower risk of hypertension than men in all regions except the Western Pacific (where we observed no significant difference between men and women), including in sub-Saharan Africa (covariate-unadjusted regression: RR, 0.91; 95% CI, 0.86–0.96; covariate-adjusted regression: RR, 0.85; 95% CI, 0.80–0.91). This finding highlights that, at least with regards to BP, men are also greatly affected by the epidemiological transition toward noncommunicable diseases in LMICs.

This study has several limitations. First, although most clinical guidelines recommend confirming an increased BP measurement at a follow-up visit before diagnosing hypertension, the hypertension definition in our study was based on BP measurements on one single occasion. Therefore, the true prevalence of hypertension may be lower than detected in our study. BP measurements on a second occasion may also reduce random measurement error for hypertension. Reduced measurement error in the outcome variable often increases the precision of the predictors. A BP measurement on a second occasion may, thus, lead to higher AUCs than we obtained in this analysis. Second, our study countries are not a random sample of all LMICs and, thus, not necessarily representative of LMICs globally. However, 71% of the world's population in LMICs live in the countries that were included in our study.[15] Third, the surveys included in this study sampled different age ranges. Our AUC values are, thus, not directly comparable between countries. Instead, the AUC estimates should be interpreted as applying to the sampled age range of the given survey rather than the entire population of a given country. Fourth, even though the survey-level

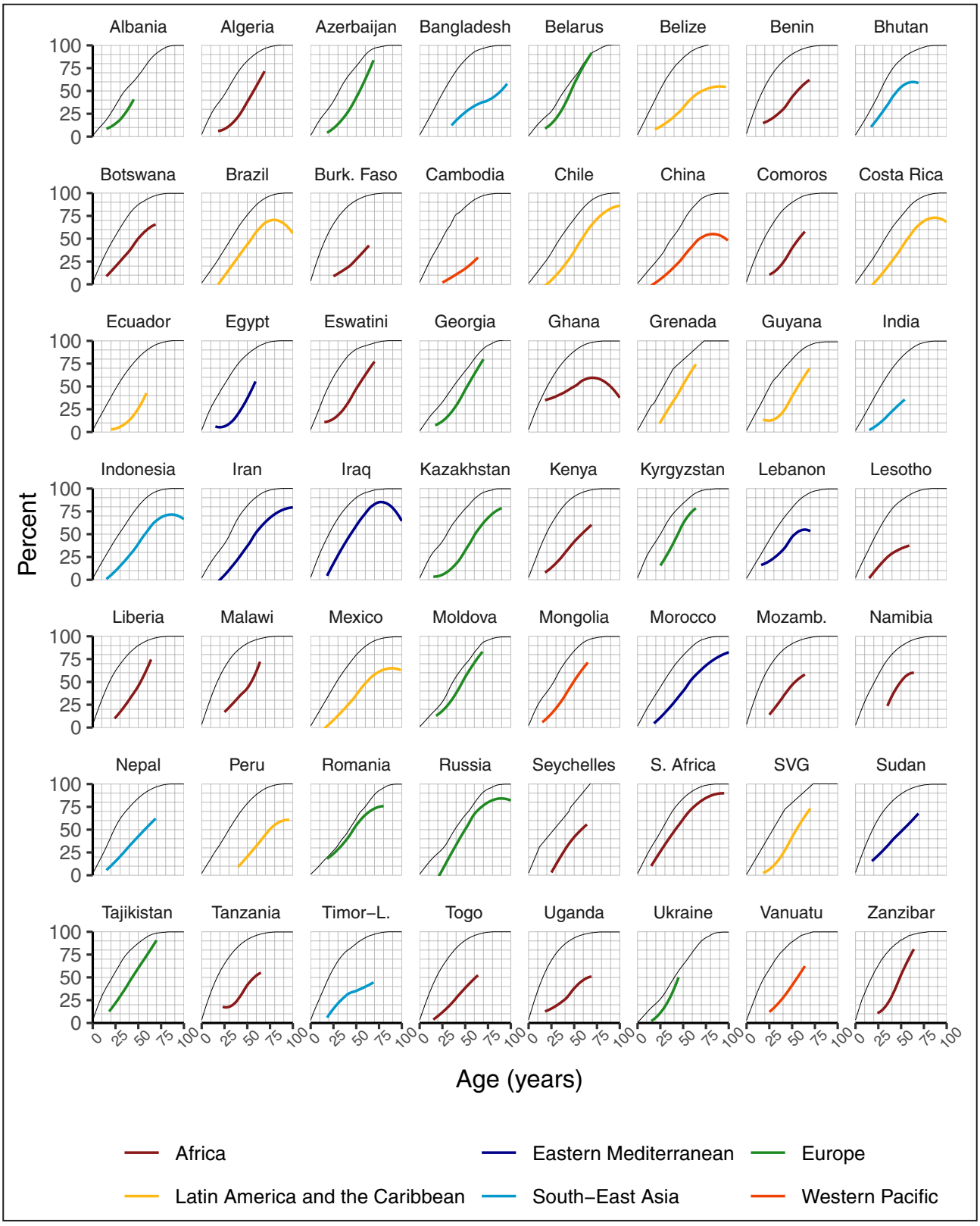

Figure 3. Smoothed age-specific prevalence of hypertension, by country.
The gray curve represents the percentage of a country's population that is under the given age. The curve for hypertension was plotted using locally estimated scatterplot smoothing regression with a span of 1.0 years. Burk. Faso indicates Burkina Faso; Mozamb., Mozambique; S. Africa, South Africa; SVG, St. Vincent and the Grenadines; and Timor-L., Timor-Leste.

median of missing values to ascertain hypertension in our data was relatively low (at 2.4%), some surveys had a substantially higher proportion of missing values. Results from these surveys may, thus, have a degree of selection bias. Fifth, the included surveys were conducted between 2005 and 2017. This would only bias our main finding that age is the dominant predictor of hypertension if the association between our predictor variables and hypertension changed substantially over time. Nonetheless, the results for each country should be interpreted as being applicable to the survey year, rather than as current. However, the association between our variables and hypertension is unlikely to change drastically over time. Sixth, the surveys used different BP measurement devices, which may be responsible for some of the variation in the hypertension prevalence between countries. We were able to identify the model of the BP measurement device used for 35 surveys and validation studies for the devices used in 21 of 35 surveys, of which all but 4 surveys (Grenada, Malawi, Saint Vincent and the Grenadines, and Vanuatu, which all used the Omron Digital Monitor M4-I) used a BP monitor that was validated by the American Association for the Advancement of Medical Instrumentation, the British Hypertension Society, or the European Society of Hypertension. We provide more detail on the BP measurement device used in each survey in Table S1. Seventh, for 7 of 54 surveys that provided information on smoking, information on whether a participant was a former smoker was not available. We were, therefore, unable to distinguish between past smokers and those who never smoked in our analyses of these surveys. Last, we would like to highlight that the survey we used for China (the China Health and Nutrition Survey) was not nationally representative. We still chose to include the China Health and Nutrition Survey because the 9 (of China's 23) provinces were chosen to provide significant variation in geography, health indicators, and economic development. Within provinces, the China Health and Nutrition Survey used a probabilistic sampling strategy to select between 190 and 216 neighborhoods in each province.

The prevalence of hypertension in LMICs is high, but it is largely undiagnosed,[30] and set to increase rapidly over the coming decades with adverse consequences for CCVD.[7] It is, thus, crucial that LMICs expand screening programs to increase the detection of hypertension as the first necessary step to achieving effective hypertension control at the population level and to reduce the burden of CCVD. This analysis shows that, among the easily measurable variables that we tested, using an age cutoff might be the most effective approach to define priority groups for hypertension screening in LMICs. The precise age threshold should be determined by the goals of the screening program, available resources, and the capacity of the health system to effectively deal with an increase in demand for hypertension care.

ARTICLE INFORMATION

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Disclosures

None.

Supplementary Material

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SUPPLEMENTAL MATERIAL

Supplemental Methods

Data S1. Search method for eligible surveys in low- and middle-income countries for which we were unable to acquire a WHO-STEPS survey

Search engine: Google

Search terms: "[country name]" AND ("population-based" OR household) AND ("blood pressure" OR hypertension OR hypertensive)

Number of hits reviewed: Hits were reviewed until an eligible survey was identified. If we could not identify an eligible survey, we reviewed the first 500 hits.

Inclusion criteria for a survey:
These were the same standards as for WHO-STEPS surveys, therefore the study:

1. was population-based, and nationally representative for at least three ten-year age aged 15 and above;
2. had measured blood pressure at least twice for each participant;
3. was conducted in an upper-middle-, lower-middle-, or low-income country, according to the World Bank at the time when the data was collected;
4. had a response rate ≥50%;
5. was carried out after or during 2005.

Countries included in search: Afghanistan, Albania, Algeria, American Samoa, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Belize, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Burundi, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Congo, Cook Islands, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Democratic Republic of the Congo, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Fiji, Gabon, Ghana, Guatemala, Guinea, Guinea-Bissau, Haiti, Honduras, India, Indonesia, Jamaica, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Libya, Macedonia, Madagascar, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia (Federated States of), Montenegro, Morocco, Namibia, Nicaragua, Niger, Nigeria, Occupied Palestinian Territory, Pakistan, Panama, Peru, Philippines, Romania, Russia, Saint Lucia, Samoa, São Tomé and Principe, Senegal, Serbia, Solomon Islands, Somalia, South Africa, South Sudan, Sudan, Suriname, Syrian Arab Republic, Tajikistan, Thailand, Tunisia, Turkey, Turkmenistan, Ukraine, Venezuela, Yemen, Zambia, Zimbabwe.

We conducted this search until April 1st, 2018, and then continuously observed the WHO NCD Microdata Repository for STEPS surveys until October 31st, 2019, and added the following surveys meeting our inclusion criteria: Surveys from Algeria (2016), Azerbaijan (2017), Belarus (2016), Benin (2015), Botswana (2014), Cambodia (2010), Iraq (2015), Kyrgyzstan (2013), Lebanon (2017), Malawi (2009), Moldova (2013), Morocco (2017), Sudan (2016), and Tajikistan (2016). After we conducted the Google search described above, the eligible non-STEPS surveys were replaced by eligible STEPS surveys for two countries (Azerbaijan and Kyrgyzstan) (**Figure S2**).

Data S2. Country-specific sampling methods

We pasted sampling methods from the stated sources in order to ensure accurateness of the information.

As survey reports for the STEPS surveys from Algeria (2016), Azerbaijan (2017), Kyrgyzstan (2013), Sudan (2016), and Tajikistan (2016) were not available, we supposed that the sampling strategies provided on the official website of the World Health Organization were used.

Source: *World Health Organization, STEPS Resources. 2019. Available at: https://www.who.int/ncds/surveillance/steps/resources/en/*

Albania: Demographic and Health Survey 2008-2009
“Data collection was conducted from 28 October, 2008 to 26 April, 2009 using a nationally representative sample of almost 9,000 households. All women age 15-49 in these households and all men age 15-49 in half of the households were eligible to be individually interviewed. In addition to the data collected through interviews with these women and men, capillary blood samples were collected from all children age 6-59 months and all eligible women and men age 15-49 for anaemia testing. All children under five years of age and eligible women and men age 15-49 were weighed and measured to assess their nutritional status. Finally, blood pressure (BP) was measured for eligible women and men in the households selected for the men’s interview to estimate the prevalence of hypertension in the adult population. […]

The 2008-09 Albania Demographic and Health Survey is based on a representative probability sample of almost 9,000 households. This sample was selected in such a manner as to allow separate urban and rural, as well as regional-level estimates for key population and health indicators, e.g., fertility, contraceptive prevalence, and infant mortality for children under five. The 2008-09 ADHS utilized a two-stage sample design. The first stage involved selection of a sample of primary sampling units (PSUs) from the PSUs used for the 2008 Living Standards Measurement Study (LSMS). In total, 450 PSUs were selected for the ADHS sample, including 245 urban PSUs and 205 rural PSUs, covering 4 geographic domains—mountains, central, coastal, and urban Tirana. A listing of each of the selected PSUs was carried out in preparation for the LSMS. The ADHS survey selected 20 households from the updated household listing in each PSU, excluding those households selected for the LSMS. In two PSUs, numbers 27 (13 households) and 172 (17 households), there were less than 20 households in the re-listed PSU—all households were selected in those cases. In a further 6 PSUs there were less than 20 households after the LSMS households were excluded. In these PSUs some of the households from the LSMS sample were included to bring the number of households selected up to 20. After selection of the households, the sample selection forms were printed and the list of selected households was adapted for use in a Personal Digital Assistant (PDA). All women age 15-49 in the total sample of households, and all men age 15-49 in the subsample of half of the households, who were either usual residents of the households or visitors present in the household on the night before the survey were eligible to be interviewed.“

Source: *Institute of Statistics, Institute of Public Health, ICF Macro. 2010. Albania Demographic and Health Survey 2008-09. Tirana, Albania, Maryland, USA.*
Available at: https://dhsprogram.com/pubs/pdf/fr230/fr230.pdf. Accessed December 20, 2020.

Bangladesh: Demographic and Health Survey 2011

"The sample for the 2011 BDHS is nationally representative and covers the entire population residing in non-institutional dwelling units in the country. The survey used as a sampling frame the list of enumeration areas (EAs) prepared for the 2011 Population and Housing Census, provided by the Bangladesh Bureau of Statistics (BBS). The primary sampling unit (PSU) for the survey is an EA that was created to have an average of about 120 households. Bangladesh has seven administrative divisions: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet. Each division is subdivided into zilas, and each zila into upazilas. Each urban area in an upazila is divided into wards, and into mohallas within a ward. A rural area in the upazila is divided into union parishads (UP) and mouzas within a UP. These divisions allow the country as a whole to be easily separated into rural and urban areas. The survey is based on a two-stage stratified sample of households. In the first stage, 600 EAs were selected with probability proportional to the EA size, with 207 clusters in urban areas and 393 in rural areas. A complete household listing operation was then carried out in all the selected EAs to provide a sampling frame for the second-stage selection of households. In the second stage of sampling, a systematic sample of 30 households on average was selected per EA to provide statistically reliable estimates of key demographic and health variables for the country as a whole, for urban and rural areas separately, and for each of the seven divisions. […] In one in three households selected in the 2011 BDHS survey, all ever-married men age 15-54 were selected and interviewed for the male survey. In this subsample, all woman and men age 35 and older were eligible to participate in the biomarker component, which included blood pressure measurements, testing for anemia, blood glucose testing, and height and weight measurements. […] Among these individuals, 92 percent of women and 86 percent of men participated in the blood pressure measurement, and 89 percent of women and 83 percent of men participated in the blood glucose measurement."

Source: *National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. 2013. Bangladesh Demographic and Health Survey 2011. Dhaka, Bangladesh and Calverton, Maryland, USA: NIPORT, Mitra and Associates, and ICF International. Available at: https://dhsprogram.com/pubs/pdf/FR265/FR265.pdf. Accessed December 20, 2020.*

Belarus: STEPS 2016
The original report is in Russian; therefore, we analogously translated the sampling strategies using google translate.

“The main goal of the sample design for the STEPS study in the Republic of Belarus is that the sample should have a national character in terms of scale and coverage, the measured indicators should reflect the situation in the country as a whole.
The main task of the sample is to obtain statistically reliable data at the national and subnational levels (for urban and rural areas), as well as for gender and age groups.
The general population, information about which is supposed to be obtained during the study, or the target group of the study is the population of the Republic of Belarus aged 18-69 years, with the exception of:

- the population permanently residing (staying) in boarding schools, in specialized institutions for minors in need of social assistance and rehabilitation; in children's villages (towns); in social service institutions; in hospitals and other healthcare organizations; in the barracks; in buildings owned or transferred to use by religious organizations; as well as those in arrest houses, correctional institutions or medical labor dispensaries, and so on;
- homeless (persons without a permanent residence).

Sampling method
When forming the sampling frame for STEPS research, the method of two-stage probabilistic sampling using the stratification and selection procedures at each of the sampling stages was used. The selection is based on the territorial principle of sample formation. […]

Stratification
To increase the accuracy of the results of sample observation and to ensure the required sample size, the stratification method is used, the essence of which is to divide the sample into strata that are as homogeneous as possible according to the main characteristics.
Given the differences in lifestyle and the incidence rate of the population living in cities, urban-type settlements and rural settlements, the following two strata were identified: urban area and rural area.
To ensure uniform distribution of the sample across the republic, the selection was carried out separately by region: Brest, Vitebsk, Gomel, Grodno, Minsk, Mogilev regions and the city of Minsk, which corresponds to the national administrative-territorial division.
When forming the primary sample array, to establish the geographical proximity of the selected units within each region, the principle of the serpentine arrangement of sample units from north to south was applied.

Sampling frame
[…] Census sites are on average approximately the same size. For each site there is a map-scheme providing a clear, non-overlapping delimitation of geographical areas, as well as information on the population and the number of households.
The largest in size is the census site, which includes several instructor sites. The smallest unit in the hierarchical structure of census plots is enumeration plots.
The positive point in using enumeration plots as primary sampling units (PSUs) is that they are small and approximately the same size (each of them includes an average of about 100 DX). As a consequence of this, PSU is a territory within which it is possible to effectively organize local work. For the census, the territory of the Republic of Belarus was divided into almost 32 thousand counting plots.
Due to the fact that the last census in the Republic of Belarus was carried out in 2009, the current data from polyclinics, medical outpatient clinics, FAPs and rural Soviet counts were used to update the sample.

Sampling algorithm
The sampling algorithm for the STEPS study involves the use of a procedure for constructing a stratified multi-stage sampling. In each stratum, the selection is organized in two stages according to one scenario.
At the first stage of constructing the sample, a systematic selection of PSUs was performed with a probability proportional to size. The indicator “population” was used as the size. Before the selection began, PSUs were geographically ordered along the serpentine line in order to provide implicit stratification and to obtain a sample that would be geographically representative.
At the second stage, a standard systematic selection procedure was used to construct the sample, in which the start of the selection was determined randomly.

At the third stage, during the field work, specific survey respondents are randomly determined from the total number of members of the selected household at the age of 18-69. […]
In general, 5760 HHs were selected in the republic, including 2880 HHs for urban and 2880 HHs of rural type.

Calculation of the probability of inclusion in the sample
Based on the results of the first and second stages of sample formation, the probabilities of inclusion (occurrence) in the sample of the household are determined."

Source: *РАСПРОСТРАНЕННОСТЬ ФАКТОРОВ РИСКА НЕИНФЕКЦИОННЫХ ЗАБОЛЕВАНИЙ В РЕСПУБЛИКЕ БЕЛАРУСЬ STEPS 2016.*
Available at: https://www.who.int/ncds/surveillance/steps/Belarus_2016-2017_STEPS_Report_RU.pdf?ua=1. Accessed December 20, 2020.

"The STEPS survey of noncommunicable disease (NCD) risk factors in Belarus was carried out from 09.2016 to 03.2017. Belarus carried out Step 1, Step 2 and Step 3. Sociodemographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels and urinary sodium and creatinine in Step 3. The survey was a population-based survey of adults aged 18-69. A multistage cluster sample design was used to produce representative data for that age range in Belarus. A total of 5760 adults participated in the survey. The overall response rate was 87.1%."

Source: *WHO STEPS noncommunicable disease risk factor surveillance, Belarus STEPS Survey 2016-2017. Fact Sheet.*
Available at: https//www.who.int/ncds/surveillance/steps/Belarus_2016-2017_FactSheet.pdf?ua=1. Accessed December 20, 2020.

Belize: Central America Diabetes Initiative (CAMDI) 2010

"The CAMDI survey was a cross-sectional survey based on a probabilistic, stratified, multistage, cluster sampling design of the noninstitutionalized population of five Central American sites. The survey sampled included the entire national population in Belize; the overall metropolitan populations in San Jose, Costa Rica; Tegucigalpa, Honduras; and Managua, Nicaragua; and was restricted to the municipalities of Santa Tecla and Villa Nueva, which are part of the metropolitan areas of San Salvador and Guatemala City, respectively. In each city, the primary sampling unit was a cluster of independent households within predetermined geographic areas. The primary sampling units were grouped into geographic strata (sectors and compact segments or blocks). The sample was allocated proportionally to the size of the population within each geographic stratum of each city. All eligible individuals aged 20 years or older in the randomly selected households were invited to participate. Data were weighted to account for differential selection probabilities and survey nonresponse, and weights were poststratified to the adult population of each site based on age group and sex. The total sample population was 10,822, of whom 7,234 (66.8%) underwent anthropometry measurement and laboratory tests. Data were weighted to represent the population of the sampled city, except in Belize, where data were weighted to the country's entire population."

Source: *Barcelo A, Gregg EW, Gerzoff RB, et al. Prevalence of Diabetes and Intermediate Hyperglycemia Among Adults From the First Multinational Study of Noncommunicable Diseases in Six Central American Countries: The Central America Diabetes Initiative (CAMDI). Diabetes Care. 2012;35(4):738-740. doi:10.2337/dc11-1614*

Benin: STEPS 2015
The original report is in French; therefore, we analogously translated the sampling strategies using google translate.

“This survey was national in scope and integrated all of Benin's 12 departments while taking into account urban and rural areas. It was a cross-sectional, descriptive and analytical study.
Study population: The target population consisted of adults from the twelve departments of Benin.
Inclusion criteria: Participants in the survey included those aged 18 years or older and 69 years old or younger on the day of the survey who had been living in Benin for at least 6 months and had given informed consent.
Exclusion criteria: Were excluded from the study:

- Participants who have not given their consent to participate in the survey and / or those who have made 02 unsuccessful visits.
- People who were not able to answer questions;

Sampling
Sample size: The sample size was estimated at 5123 participants. It has been calculated using the Schwartz formula […] and a spreadsheet developed by the WHO for the calculation of sample size in STEPS surveys […].
The study was conducted using a three-stage random probing technique. The sampling frame was provided by the National Institute of Statistics and Economic Analysis (INSAE) based on data from the Fourth General Population and Housing Census (RGPH4) in Benin in 2013.

- The first degree consisted of the random selection of 260 Enumeration Areas (DZ);
- The second degree consisted of drawing 20 households by DZ;
- The third degree consisted of randomly selecting one individual per household selected according to the Kish method recommended by WHO for STEPS.

[…] Blood pressure was measured in subjects sitting for at least 15 minutes (without crossing their legs), empty bladder, without taking coffee or other exciting. The participant was not allowed to speak during the measurement, the participant's elbow supported the left arm placed on the table, palm turned upward, appropriately sized armband placed above the elbow so that the tape was positioned 1 - 2 cm above the fold of the elbow. Three (03) measurements were taken with a rest of 3 minutes for the participant between measurements. All measurements were recorded in the PDA. The third measurement was recorded on the Participant's Action Results sheet.”

Source: *Ministère de la Santé, Direction Nationale de la Santé Publique, Programme National de Lutte contre les Maladies Non Transmissibles (PNLMNT). Rapport final de l’enquête pour la surveillance des facteurs de risque des maladies non transmissibles par l'approche ‘’STEPSwise’’ de l'OMS. Enquête “STEPS 2015” au Bénin. 2016.*
Available at: https://www.who.int/chp/steps/Benin_2015_STEPS_Report_FR.pdf?ua=1. Accessed December 20, 2020.

Bhutan: STEPS 2014

"To achieve a nationally representative sample, a multistage sampling method was used to select enumeration areas, households and eligible participants at each of the selected households in three stages. The 2005 National Census was chosen as the basis for the sampling frame, with "Geogs" (blocks) in rural areas and towns in urban areas forming the primary sampling units (PSUs). Since the population distribution for urbanicity is 70:30 (rural:urban), 63 PSUs in rural and 14 PSUs in urban areas were chosen. PSUs were selected through the probability proportionate to size (PPS) sampling using the number of households in each PSU. Two secondary sampling units (SSUs) for every rural PSU and 4 SSUs for every urban PSU were selected. This led to the selection of 126 SSUs from rural and 56 SSUs from urban areas. This was also carried out by PPS sampling, using the number of households in each SSU. A total of 16 households from each SSU (both rural and urban) were selected using systematic random sampling. The sampling frame for this was the list of households with a unique identification number (ID) developed by the enumerators for the survey. At the household level, the Kish sampling method was used to randomly select one eligible member (aged 18–69 years) of the household for the survey. The Kish method ranks eligible household members in order of decreasing age, starting with males and then females, and randomly selects a respondent using the automated program for Kish selection in the handheld personal digital assistant (PDA)."

Source: *World Health Organization, Regional Office for South-East Asia. National survey for noncommunicable disease risk factors and mental health using WHO STEPS approach in Bhutan, 2014.*
Available at: https://www.who.int/chp/steps/Bhutan_2014_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.

Botswana: STEPS 2015

“Botswana has a population of over 2 million with 27 districts and 4,845 enumeration areas and sample size of 300 enumeration areas with a target population of 6,400 people was systematically drawn from a pool of the whole enumeration areas. Against the identified enumeration areas numbers of households were listed and proportion of participants was calculated from the total sample size required for the country. Finally a computer generated random number was drawn to go into specific households in that specific enumeration area and at the end eligible participants residing in the household were listed into the electronic hand held data assistant (PDA) and at the end a name was picked automatically to participate in the survey.”

Source: *Ministry of Health Republic of Botswana, WHO. Botswana STEPS Survey Report on Non-communicable Disease Risk Factors. 2015.*
Available at:
https://www.who.int/ncds/surveillance/steps/STEPS_BOTSWANA_2014_Report_Final.pdf?ua=1. Accessed December 20, 2020.

Brazil: Pesquisa Nacional de Saúde 2013
The text below was translated from: https://www.pns.icict.fiocruz.br/index.php?pag=planoamostragem

“The Master Sample is a set of units of areas that are selected to meet various surveys of the IBGE Integrated System of Household Searches (SIPD). These units are considered primary sampling units (PSUs) in the sample planning of each of the surveys that use the Master Sample, such as PNS. The sampling plan consists of the stratification of the UPAs and selection of these units with probability proportional to the size, given by the number of permanent private households (DPPs).

The register for selection of the Master Sample was a file containing information from the Demographic Census 2010 on the census tracts of the geographic scope, whose limits are defined in the Operational Geographic Base 2010, totaling 316574 sectors. A sector or set of sectors with at least 60 DPPs was defined as UPA, with the exception of a few units, because it was not possible to aggregate sectors in some municipalities.

The stratification of the UPAs obeys four different criteria: administrative, including the division of the UF into capital, rest of the Metropolitan Region (RM) or Integrated Region of Economic Development - RIDE, and rest of the UF; geographical subdivision, which subdivides capitals and other large municipalities into more strata; situation that involves rural / urban categorization; and the statistician in order to improve the accuracy of the estimates.

As part of the SIPD, the sampling design of the PNS followed, in part, the sampling design of the Master Sample, especially with regard to the stratification of the UPAs.

The PNS sample is by clusters in three stages of selection:

1st stage: selection with probability proportional to the size (given by the number of DPPs in each unit) of the UPAs sub-sample in each stratum of the Master Sample;
2nd stage: selection by simple random sample of households in each UPA selected in the first stage;
3rd stage: selection by simple random sampling of the adult (person aged 18 years or older) among all adult residents of the household.

The PNS will integrate the SIPD, which will make it possible to relate the information collected with other researches, such as the PNAD and the Household Budget Survey (POF) at different levels of geographic aggregation.”

Source: *Pesquisa Nacional de Saúde. Plano de Amostragem. 2010. Available at: https://www.pns.icict.fiocruz.br/index.php?pag=planoamostragem. Accessed May 11, 2018.*

Burkina Faso: STEPS 2013
The text below was translated from:
https://www.who.int/chp/steps/BurkinaFaso_2013_STEPS_Report.pdf?ua=1

“Sampling methodology: The study was conducted on a sample obtained from a three-stage cluster stratified as recommended by the WHO for STEPS screening surveys. risk factors for noncommunicable diseases. The sampling frame used was that derived from the general census of the population and habitat 2006 (RGPH 2006) and updated in 2010 during the survey Demographic and Health Survey of Burkina Faso (EDS-BF, 2010). This update concerned the enumeration areas (EAs) that correspond to the cluster as part of this study.
Selection of clusters: The choice of clusters was made according to a systematic random selection proportional to their size (in number of households) within strata (regions). To do this clusters were organized by stratum and place of residence (urban / rural). A total of 240 clusters of which 185 were in rural areas and 55 in urban areas were selected for the investigation.
Selection of households: Households were randomly drawn after an enumeration exhaustive list of all households in the cluster. A draw tool designed on Excel by the team. The technique was used in the field for selecting households to investigate. In total, 20 households in clusters were selected to participate in the study.
Selection of individuals: The choice of individuals was made randomly using Kish's method. In total, an individual aged 25 to 64 living in a selected household was fired for participate in the survey.”

Source: *Rapport de l’enquete national sur la prevalence des principaux facteurs de risques communs aux maladies non transmissibles au Burkina Faso Enquete STEPS 2013.*
Available at: https://www.who.int./chp/steps/BurkinaFAso_2013_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.

Cambodia: STEPS 2010

„The initial planned sample size was designed to involve 5,760 persons in accordance with the NCD multi-stage cluster survey method (1.5 design effect, 95% confidence interval, 5% margin of error, and 50% baseline levels of the indicators) in order to provide an equivalent distribution of the participants in regards to age groups and gender after taking into consideration that the estimated potential rate for non-response in each age group and refusals in the next stages would equal to 20%. Estimates were obtained for each of the following eight age/sex groups: men aged 25-34 yeas, 35-44 years, 45-54 years, and 55-64 years; and women aged 25-34 years, 35-44 years, 45-54 years, and 55-64 years (See Appendix 1 for the calculation of sample size).

The survey was designed to cover all geographical areas of Cambodia and a 3-stage sampling process as part of the multi-stage cluster sampling was carried out to randomly select the target population: random selection of communes (Khum in rural areas and its equivalent Sangkat in urban area) as primary sampling unit (PSU), followed by villages (Phum) for the secondary sampling unit (SSU), and by households for the elementary unit (EU). Finally all members of the randomly chosen households aged 25-64 years were invited to participate in this survey.

The selection process was performed identically for urban and rural areas in order to get a self-weighted estimate for the whole population of the country.

A total of 180 clusters with 34 clusters from the urban area and 146 clusters from the rural area were randomly selected […]."

Source: *University of Health Sciences and the Preventive Medicine Department of the Ministry of Health, Kingdom of Cambodia: Prevalence of Non-communicable Disease Risk Factors in Cambodia. 2010.*
Available at: https://www.who.int/ncds/surveillance/steps/2010_STEPS_Report_Cambodia.pdf. Accessed December 20, 2020.

Chile: National Health Survey 2009-2010
The text below was translated from: http://epi.minsal.cl/encuesta-ens-anteriores/

“The sampling frame was constituted from the Population and Housing Census 2002. The design of the study was transversal, with a random sample of complex type households (stratified and multi-stage by clusters) with national, regional and area representation rural / urban. The target population was adults older than or equal to 15 years. The survey had a response rate in the eligible population of 85%. The refusal rate was of 12%. 5,434 people were interviewed. A nurse performed clinical and examinations to 5,043 participants and 4,956 accepted laboratory tests (blood and urine). The total sample loss of the oversized sample was 28% (this including rejection, non-contact and other causes of random loss). The raw sample was designed with overrepresentation of some population groups (older adults, regions other than the Metropolitan Region and rural areas) to increase sample efficiency and homogenize the accuracy of the estimators. The expansion of the sample data is because it grants each participant the weight that corresponds to it according to the design sample and at the same time corrects the distortion of the raw sample, making it coincide with the census population projection for January 2010 for Chilean adults over 15 years of age.”

Source: *Resumen Ejecutivo: Encuesta Nacional de Salud ENS Chile 2009-10. Available at: http://epi.minsal.cl/encuesta-ens-anteriores/. Accessed December 20, 2020.*

China: China Health and Nutrition Survey 2009
"The China Health and Nutrition Survey is a longitudinal study across 228 communities within nine provinces of China. Surveys began in 1989, with subsequent surveys every 2–4 years, for a total of nine rounds between 1989 and 2011. The China Health and Nutrition Survey was designed to provide representation of rural, urban and suburban areas varying substantially in geography, economic development, public resources and health indicators, and it is the only large-scale, longitudinal study of its kind in China. The original survey in 1989 used a multistage, random cluster design in eight provinces (Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi and Guizhou) to select a stratified probability sample; a ninth province, Heilongjiang, was added in 1997 using a similar sampling strategy. Essentially, two cities (one large and one small city—usually the provincial capital and a lower income city) and four counties (stratified by income: one high, one low and two middle income counties) were selected in each province. Within cities, two urban and two suburban communities were selected; within counties, one community in the capital city and three rural villages were chosen. Twenty households per community were then selected for participation. The study met the standards for the ethical treatment of participants and was approved by the Institutional Review Boards of the University of North Carolina at Chapel Hill and the Institute of Nutrition and Food Safety, Chinese Center for Disease Control and Prevention."

Source: *Attard SM, Herring AH, Wang H, et al. Implications of iron deficiency/anemia on the classification of diabetes using HbA1c. Nutr Diabetes. 2015;5(6):e166. Published 2015 Jun 22. doi:10.1038/nutd.2015.16*

Comoros: STEPS 2011
The text below was translated from: http://www.who.int/chp/steps/comoros/en/.

“The STEPS survey on risk factors for chronic diseases in the Union of the Comoros took place from January to March 2011. This study has undertaken Step 1, Step 2 and Step 3. Indeed, socio-demographic and behavioral measures were collected in Step 1. Physical measures such as height, weight and tension were collected in Step 2 and biochemical measurements were collected to assess the levels of blood glucose and cholesterol levels in Step 3. The STEPS survey conducted in Comoros Union is a survey of general population, targeting adults aged 25 to 64 years. A stratified survey was used to produce representative data for this age group. A total of 5556 adults aged 25 to 64 participated in the STEPS survey on a sample of 5760 people representing an overall response rate of 96.5%.”

Source: *Union des Comores. STEPS 2011 - Note de synthèse.*
Available at: https://www.who.int/chp/steps/2011_FactSheet_Comoros_FR.pdf?ua=1. Accessed December 20, 2020.

Costa Rica: STEPS 2010

"The Costa Rican NCRFSS survey was a cross-sectional survey based on a probabilistic cluster sampling design. The NCRFSS survey was conducted during 2010 under the supervision of the Caja Costarricense de Seguro Social, a government public healthcare provider, and covers the overall adult population aged ≥20 years. Multistage cluster sampling was performed stratified by geographical areas, age groups (20–39, 40–64, and ≥65 years) and gender. The first sample stage was the randomized selection of the country's geographical areas as primary sample units followed by the random selection of sectors in selected areas as secondary sample units. The random selection of areas and sectors was performed with probability proportional to size; the area or sector size was determined by the population >20 years during 2009, as estimated by the Costa Rican Census and Statistics National Institute (INEC). Households were chosen through a random number generator using dwelling lists obtained from the health technician assistant in every community until all age group and gender strata sample sizes were achieved. A family dwelling was defined as a group of people who share the same table to eat. Survey participants were selected by the Kish method, which samples participants within a household with equal probability of selection, as recommended by the WHO STEPwise methodology. To be eligible for inclusion in the study, subjects had to be ≥20 years of age, permanently residing in the selected homes, and to have provided written consent. Pregnant or lactating mothers and those who were within 6 months postpartum were excluded from the study. Each participant selected for the study was informed of the study objectives and details before agreeing to participate in the investigation. In all, 3653 noninstitutionalized adults were surveyed, with an 87.8% response rate of the eligible population."

Source: *Wong-McClure R, Gregg EW, Barcelo A, et al. Prevalence of diabetes and impaired fasting glucose in Costa Rica: Costa Rican National Cardiovascular Risk Factors Survey, 2010. J Diabetes. 2016;8(5):686-692. doi:10.1111/1753-0407.12348*

Ecuador: La Encuesta Nacional de Salud y Nutrición (ENSANUT) 2012
The text below was translated from: http://www.ecuadorencifras.gob.ec/documentos/web-inec/Estadisticas_Sociales/ENSANUT/MSP_ENSANUT-ECU_06-10-2014.pdf

“Each province is divided into rural and urban strata and, additionally, two only urban strata were defined for Quito and Guayaquil. This results in 50 territories (dominio). As a first step, in each province 64 census blocks in rural and urban areas were chosen with probability proportional to size according to the number of households. In each block, 19 households were preselected of which 12 were finally selected. Finally, in each of the selected households, depending on the household composition, one woman in childbearing age was randomly selected as well as one person of each age group with adjustments according to the administration of the questionnaires. General household information and anthropometric measurements were taken from each household member. For a subsample of 50% biochemical measurements were taken and consumption information using a 24h recall diary was collected. The sample for the biochemical analysis consists of individuals aged 6 months to 59 years as well as pregnant women. However, there only were 231 pregnant women which is why they were dropped from the analysis of the report. The samples were collected by the Instituto Nacional de Estadística y Censos during 10 working days in different census zones. In total, samples of 21,520 individuals were collected which are 107.6% of the calculated subsample of 19,040 individuals.”

Source: *Freire WB, Ramírez-Luzuriaga MJ, Belmont P, et al. Tomo I, Encuesta Nacional de Salud y Nutrición de la población ecuatoriana de cero a 59 años, ENSANUT-ECU 2012. 2014. Available at: http://www.ecuadorencifras.gob.ec/documentos/web-inec/Estadisticas_Sociales/ENSANUT/MSP_ENSANUT-ECU_06-10-2014.pdf. Accessed December 20, 2020.*

Egypt: Health Issues Survey 2015

"The 2015 EHIS took advantage of the sample developed for the ever-married women survey component of the 2014 EDHS. The 2014 EDHS was implemented in a total of 842 primary sampling units (PSUs) selected from 25 governorates. The frame for selection of these units was a list of all shiakhas and villages in Egypt. This list was obtained from the Central Agency for Public Mobilization and Statistics (CAPMAS) and updated as necessary to reflect any recent changes. For the EHIS, a sub-sample of 614 PSUs (shiakhas/villages) was selected from the 842 PSUs included in the 2014 EDHS sample. The household listing prepared during the 2014 EDHS for these PSUs was used to select the household sample for the 2015 EHIS. The selection was conducted in such a way that the EHIS household sample was totally independent of the 2014 EDHS sample, i.e., no household was included in both samples. It was expected that approximately 28,500 individuals age 6 months to 59 years, eligible for the 2015 EHIS testing and interviews, would be identified in the selected households. The sample for the 2015 EHIS was designed to provide estimates of the key health indicators that the survey was designed to measure including the prevalence of hepatitis B and C for the country as a whole and for six major subdivisions (Urban Governorates, urban Lower Egypt, rural Lower Egypt, urban Upper Egypt, rural Upper Egypt, and Frontier Governorates). The sample also allows for estimates of some key indicators at the governorate level. […]

The 2015 EHIS involved a systematic random selection of a subsample of 614 shiakhas/villages out of the 884 shiakhas/villages that had been chosen as Primary Sampling Units in the 2014 Egypt Demographic and Health Survey.1 A full description of the 2014 Egypt DHS sample design is included in the final report for the survey (Ministry of Health and Population et al. 2015). The first three columns in Table A.1 show the allocation of EHIS clusters by governorate and urban-rural residence. The household listings prepared during the 2014 EDHS were used to select the household sample for the EHIS. A total of 7,656 households were chosen from the EDHS listings in such manner the EHIS household sample was totally independent of the household sample selected for the EDHS, i.e., there were no households included in both surveys. The last three columns in Table A.1 show the distribution of the households selected for the 2015 EHIS by governorate and urban-rural residence. During the fieldwork, the EHIS teams found two rather than one household when they visited 175 of the originally selected households. As is DHS policy, the additional households were interviewed and added to the EHIS sample. In the Red Sea governorate, three clusters were dropped from the EHIS sample because the distance that the field teams needed to travel to the clusters (300 kilometers) made it problematic for the teams to preserve the venous blood samples. The exclusion of the 18 households in these governorates had no effect on the overall EHIS estimates. The 2015 EHIS was designed to provide estimates of the key health indicators including the prevalence of hepatitis B and C for the country as a whole and for six major subdivisions (Urban Governorates, urban Lower Egypt, rural Lower Egypt, urban Upper Egypt, rural Upper Egypt, and Frontier Governorates). Because the household sample for the 2015 EHIS is much smaller than the household sample for the 2014 EDHS, which included more than 29,000 households, the EHIS sample allows for estimates of only key indicators at the governorate level.

During the EHIS, usual household members and visitors who were present in the household during the night before the survey visit were identified and listed in the household questionnaire. All individuals 1-59 included in that list were eligible for the individual survey interview and for the hepatitis B and C testing. In addition, children 6-59 months were eligible for the special study on aflatoxin."

Footnote 1: "A total of 926 PSUs were originally selected for the 2014 EDHS. However, 42 PSUs selected in North and South Sinai governorates were not included due to security reasons."

Source*: Ministry of Health and Population, El-Zanaty and Associates, The DHS Program, ICF International. 2015 Egypt Health Issues Survey 2015. Cairo, Egypt, Maryland, USA. Available at: https://dhsprogram.com/pubs/pdf/FR313/FR313.pdf. Accessed December 20, 2020.*

Eswatini: STEPS 2014
“A multi-stage cluster sampling design was applied. The survey covered all the four regions of the country. The size of the country and the distances between the regions and communities made it possible for the survey to sample a population representing all the 4 regions. The multi-stage sampling procedure was implemented in the following procedural steps:

Stage 1: All four regions were included as a sampling frame of our Primary Sampling Unit (PSU).The number of the PSUs at this stage ensured precision in the survey estimates and as a result 216 PSUs were selected using probability proportional to size sampling.

Stage 2: The second stage of cluster sampling procedure entailed listing, sorting and random systematic sampling of the Secondary Sampling Units (Households) within the PSUs selected in stage1 where 20 households were selected from each PSU. Based on census data, only households with eligible participants were systematically sampled through random systematic sampling.

Stage 3: At this level, all the eligible participants within a household were sequentially listed into the PDAs and only one participant per household was randomly sampled using KISH method built into the PDAs. The KISH method is a widely used technique that uses a pre-assigned table of random numbers to identify the person to be interviewed.”

Source: *WHO STEPS: Noncommunicable Disease Risk Factor Surveillance Report Swaziland 2014. Available at: https://www.who.int/chp/steps/Swaziland_2014_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Georgia: STEPS 2016

“The STEPS survey of non-communicable disease (NCD) risk factors in Georgia was carried out from June 2016 to September 2016. Georgia carried out Step 1, Step 2 and Step 3. Socio demographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3. The survey was a population-based survey of adults aged 18-69. A Multi-stage cluster sampling design was used to produce representative data for that age range in Georgia. A total of 5554 adults participated in the survey. The overall response rate was 75.7%.”

Source: *Georgia STEPS Survey 2016 Fact Sheet.*
Available at: https://www.who.int/chp/steps/Georgia_2016_STEPS_FS.pdf?ua=1. Accessed December 20, 2020.

Ghana: Study on global AGEing and adult health (SAGE) 2007-8
"The sampling method used for the Ghana SAGE Wave 1 was based on the design for the World Health Survey, 2003, in which the primary sampling units (PSUs) were stratified by region and location (urban/rural). Selection of the PSUs was based on proportional allocation by size. Each enumeration area (EA) was selected independently within each stratum. In the WHS/SAGE Wave 0, a total of 6 000 households were to be interviewed and therefore 300 EAs were selected nationwide. Twenty households were to be randomly selected in each EA using systematic sampling. The number of EAs per region was based on the population size of the region. For SAGE Wave 1, a total of 5 000 50+ respondents and 1 000 18–49-year-old respondents were required and therefore 250 EAs out of the 298 EAs of the WHS/ SAGE Wave 0 were used based on the availability of respondents aged 50+ years within the EAs.

Enumeration areas with no 50+ individuals were not included. Within each EA, 20 households with one or more 50+ individuals and four households with members aged 18–49 were to be selected. All respondents aged 50+ within households with over 50s from the WHS were automatically selected and additional households with members aged 50+ years were randomly selected to make a total of 20 households for each EA. The four households of the 18–49 years age group were randomly selected from the WHS/SAGE Wave 0 households list per EA. All the 50+ year olds within the selected households were to be interviewed together with the four identified under-50 respondents. Field work and data entry were undertaken between May 2007 and June 2008."

Source: *Biritwum R, Mensah G, Yawson A, Minicuci N. Study on global AGEing and adult health (SAGE) Wave 1: The Ghana National Report. 2013.*
Available at: https://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/6/download/1940. Accessed December 20, 2020.

Grenada: STEPS 2010-11

"The sample frame comprised adults 25 to 64 years throughout Grenada, Carriacou and Petite Martinique. Administratively, the state of Grenada is divided into seven parishes with the islands of Carriacou and Petite Martinique being one parish. Each parish has a town (with the exception of St. David's) and several villages. A three-stage stratified sampling methodology was constructed using the Population and Housing Census 2001 as the sampling frame. The master frame was divided into 42 regions with an average size of eight (800) hundred households per region using a contiguous set of Enumeration Districts (EDs), where the approximate size of each ED is between 46 – 189 households (refer to Table 36 in the appendix). In the first stage, a paired design, i.e. samples of two EDs were randomly selected per region using a 3-digit table of random numbers. Since the frame was stratified by parish it would mean that in the large parishes, a larger number of EDs were selected. Since the ED size was fairly consistent, there was no need to use PPS sampling and hence simple random sampling was used. The number of households enumerated per ED was calculated ((1736/42)/2) =21 There were therefore twenty-one households per selected ED. At the second stage, the sampling interval was computed by dividing the total number of households in the selected ED by the determined sample size of twenty-one (21) households per ED. Once the ED had been listed and the listing returned to the CSO a random table was used to select a random number (k) between 1 and the sample interval value, I, inclusive then to this number was added the sampling interval for the full list of households within the ED. Thus, the list of selected households was k, k+I, k+2I, … k+(n-1)I where n is the size assigned to each ED (21). The third stage of the sampling required a listing of the members of the selected household then using the KISH Method the eligible person to be interviewed was selected."

Source: *Grenada STEPS team. Grenada WHO STEPS Country Report 2010-2011. Available at: https://www.who.int/chp/steps/Grenada_2010-11_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Guyana: STEPS 2016

“A response rate of 66.68% will be selected based on the experience and response rates of other surveys over the years such as the recent Demographic Health Survey 2009. [...] STEPS 3 involve taking blood samples from a proportion of the sample, in this case 50% of the sample, in order to measure raised blood glucose levels and abnormal blood lipids. [...] The STEPS sample will be prepared by the Bureau of Statistics Guyana following the recommended STEPS sample methodology. A multi-stage cluster sampling design will be used. Guyana is divided into 10 administrative regions and within the administrative regions there are seven towns and each region is further divided into enumeration districts. For the STEPS survey 288 enumeration districts will be selected using the population probability sampling method and from each enumeration district 12 households will be selected giving a total sample size of 3456. Further at the household level each participant will be randomly selected by the electronic tablet. For STEP 3 50% of the sample will be randomly selected to participate. A re-listing of some households may also be necessary, such as those interior region locations, in which case in addition to household listings, enumeration districts maps will also be provided so that a re-listing can be done where required.”

Source: *STEPwise Approach to Chronic Disease risk factor surveillance (STEPS): Guyana’s Implementation Plan. June 20, 2016. Ministry of Public Health, Guyana.*

India: National Family and Health Survey (NFHS-4) 2015-16

"Decisions about the overall sample size required for NFHS-4 were guided by several considerations, paramount among which was the need to produce indicators at the district, state/union territory (UT), and national levels, as well as separate estimates for urban and rural areas in the 157 districts that have 30-70 percent of the population living in urban areas as per the 2011 census, with a reasonable level of precision. In addition, the NFHS-4 sample was designed to be able to produce separate estimates for slum and non-slum areas in eight cities (Chennai, Delhi, Hyderabad, Indore, Kolkata, Meerut, Mumbai, and Nagpur), and to provide general population estimates of HIV prevalence for women and men for India as a whole, for urban and rural areas of India, and for 11 groups of states/union territories. NFHS-4 was designed to provide information on sexual behaviour; husband's background and women's work; HIV/AIDS knowledge, attitudes, and behaviour; and domestic violence only at the state level (in the state module), while most indicators in the district module are reported at the district level. A subsample of 15 percent of households was selected for the implementation of the state module, in addition to the district module. In the 15 percent of households selected for the state module, a long questionnaire was administered that included all the questions needed for district-level estimates plus additional questions for the topics listed above. To achieve a representative sample of 15 percent of households, NFHS-4 conducted interviews in every alternate selected household in 30 percent of the selected clusters. In all, 28,586 Primary Sampling Units (PSUs) were selected across the country in NFHS-4, of which fieldwork was completed in 28,522 clusters. The NFHS-4 sample is a stratified two-stage sample. The 2011 census served as the sampling frame for the selection of PSUs. PSUs were villages in rural areas and Census Enumeration Blocks (CEBs) in urban areas. PSUs with fewer than 40 households were linked to the nearest PSU. Within each rural stratum, villages were selected from the sampling frame with probability proportional to size (PPS). In each stratum, six approximately equal substrata were created by crossing three substrata, each created based on the estimated number of households in each village, with two substrata, each created based on the percentage of the population belonging to scheduled castes and scheduled tribes (SCs/STs).

Within each explicit sampling stratum, PSUs were sorted according to the literacy rate of women age 6+ years. The final sample PSUs were selected with PPS sampling. In urban areas, CEB information was obtained from the Office of the Registrar General and Census Commissioner, New Delhi. CEBs were sorted according to the percentage of the SC/ST population in each CEB, and sample CEBs were selected with PPS sampling. In every selected rural and urban PSU, a complete household mapping and listing operation was conducted prior to the main survey. Selected PSUs with an estimated number of at least 300 households were segmented into segments of approximately 100-150 households. Two of the segments were randomly selected for the survey using systematic sampling with probability proportional to segment size. Therefore, an NFHS-4 cluster is either a PSU or a segment of a PSU. In the second stage, in every selected rural and urban cluster, 22 households were randomly selected with systematic sampling."

Source: *International Institute for Population Sciences. 2017. National Family and Health Survey (NFHS-4) 2015-16.*
Available at: https://dhsprogram.com/pubs/pdf/FR339/FR339.pdf. Accessed December 20, 2020.

Indonesia: Indonesia Family Life Survey 2014-15

"Because it is a longitudinal survey, IFLS5 drew its sample from IFLS1, IFLS2, IFLS2+, IFLS3 and IFLS4. The IFLS1 sampling scheme stratified on provinces and urban/rural location, then randomly sampled within these strata (see Frankenberg and Karoly, 1995, for a detailed description). Provinces were selected to maximize representation of the population, capture the cultural and socioeconomic diversity of Indonesia, and be costeffective to survey given the size and terrain of the country. For mainly cost-effectiveness reasons, 14 of the then existing 27 provinces were excluded.3 The resulting sample included 13 of Indonesia's 27 provinces containing 83% of the population: four provinces on Sumatra (North Sumatra, West Sumatra, South Sumatra, and Lampung), all five of the Javanese provinces (DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java), and four provinces covering the remaining major island groups (Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi).

Within each of the 13 provinces, enumeration areas (EAs) were randomly chosen from a nationally representative sample frame used in the 1993 SUSENAS, a socioeconomic survey of about 60,000 households. The IFLS randomly selected 321 enumeration areas in the 13 provinces, over-sampling urban EAs and EAs in smaller provinces to facilitate urban-rural and Javanese–non-Javanese comparisons.

Within a selected EA, households were randomly selected based upon 1993 SUSENAS listings obtained from regional BPS office. A household was defined as a group of people whose members reside in the same dwelling and share food from the same cooking pot (the standard BPS definition). Twenty households were selected from each urban EA, and 30 households were selected from each rural EA. This strategy minimized expensive travel between rural EAs while balancing the costs of correlations among households. For IFLS1 a total of 7,730 households were sampled to obtain a final sample size goal of 7,000 completed households. This strategy was based on BPS experience of about 90% completion rates. In fact, IFLS1 exceeded that target and interviews were conducted with 7,224 households in late 1993 and early 1994.

In IFLS1 it was determined to be too costly to interview all household members, so a sampling scheme was used to randomly select several members within a household to provide detailed individual information."

Source: *Strauss, J, Witoelar F, Sikoki B. The Fifth Wave of the Indonesia Family Life Survey (IFLS5): Overview and Field Report, 2016. WR-1143/1-NIA/NICHD.*
Available at:
https://www.rand.org/content/dam/rand/pubs/working_papers/WR1100/WR1143z1/RAND_WR1143z1.pdf. Accessed December 20, 2020.

Iran: STEPS 2016

“For proportional to size sampling, we designed a systematic cluster random sampling frame through which 31,050 participants (3105 clusters) were selected from urban and rural areas of 31 provinces of Iran. To estimate the minimum sample at the 95% country with 384 samples (Ilam) was considered as the basis of calculations. The sample size of other provinces was calculated according to the population ratio of each to the referenced province. To consider the effect of sampling design and to control non–response error, 10% was added to the estimated samples of each province. With a view to reducing costs and increasing productivity, it was decided that for provinces with 800 or more samples through weighting methods, half of calculated sample size taken along with the twice weight in estimating. In this regard, national individual ID and postal code were used as part of individual characteristics in the questionnaire that has to be validated by interviewer through seeing national ID card.

The eligible population for study was defined according to the criteria of being among 18 ≤ years old Iranian adults that resided in Iran at the time of data collection. The first and second steps of study have been run for all selected samples and the third step was considered for those who were 25 ≤ years of age. Data were collected from individuals who agreed to participate and completed inform consent forms. The software features enabled us to analyze non–participation in each of study steps.”

Source: *Djalalinia S, Modirian M, Sheidaei A, et al. Protocol Design for Large-Scale Cross-Sectional Studies of Surveillance of Risk Factors of Non-Communicable Diseases in Iran: STEPs 2016. Arch Iran Med. 2017;20(9):608-616.*

Iraq: STEPS 2015
„Sample frame.
The sample frame consisted of the population of Iraq of (18+) years for both sexes residing in the urban and rural area. It was based on the results of listing and numbering operation for the year 2009 that covered all governorates. Due to the unstable conditions at the time of the survey three governorates (Naynawa, Salahaddin and Al-Anbar) were excluded. A major challenge confronted was the late demographic change due to population movement, displacement and migration.

Inclusion criteria.
All permanent residents of (18+) years of age, who were resident in Iraq within one month at the time of implementation of the survey were considered eligible.

Exclusion criteria.
Temporary residents in Iraq, displaced individuals and those living in institutionalized settings.

[…] Sampling design.
A cross-sectional community based survey covering 15 governorates in Iraq. A Multi-stage cluster sampling technique was depended to select the minimum representative sample size to estimate the prevalence of the risk factors of noncommunicable disease through direct interview, physical examination and laboratory examination of blood samples of study participants. A total of 412 clusters were randomly selected each contain ten households. One subject from each household was randomly selected using KISH table to participate in the survey with a total sample size of 4120.

[…] Primary sampling units
The Sample was designed to provide estimates on a number of indicators on the situation of Noncommunicable diseases risk factors in Iraq at the national level. A national based rather than a governorate based sample is selected. A multi stage cluster sampling was used with stratification to urban and rural areas. Primary sampling units (PSUs) were the blocks, which consisted of 70 households or more before selection."

Source: *WHO, Noncommunicable Diseases Risk Factors STEPS Survey Iraq 2015 Available at: https://www.who.int/ncds/surveillance/steps/Iraq_2015_STEPS_Report.pdf. Accessed December 20, 2020.*

Kazakhstan: Household Survey Health Module 2012

- "KHHS 2012 uses a nationally representative sample consisting of 452 sample clusters and 13560 households, with 30 households to be interviewed per cluster;
- A cluster is a Census Control Area (CCA) created for the Population and Housing Census in 2009 (PHC 2009), with an average size of 1200 inhabitants per CCA;
- The sampling frame used for the KHHS 2012 is a complete list of all CCAs covering the entire country, provided by the Central Statistical Office of Kazakhstan;
- The target population of the survey: all residential households, all individuals living in residential households age of 15 years and over;
- The survey was expected to complete 12200 household interviews (assuming a household response rate 90%), and 11000 individual interviews of 15 years and over (assuming an individual response rate 90%); the survey interviewed only one eligible individual per household randomly selected from all the eligible;
- The survey is designed to provide representative results for all survey indicators for Kazakhstan; for the country's five geographical regions: West, North, East, South and Central; for the capital city Astana, and for the city of Almaty; for the urban and rural areas separately;
- The target sample was allocated to 16 Oblasts (Astana and Almaty are considered as special Oblasts) proportional to the Oblast population size with small adjustments."

Source: *Pasted verbatim from an email exchange with the study team.*

Kenya: STEPS 2015

"The 2015 Kenya STEPs survey was a national cross-sectional household survey designed to provide estimates for indicators on risk factors for non-communicable diseases for persons age 18 – 69 years. The sample was designed with a sample size of 6,000 individuals to allow national estimates by sex (male and female) and residence (urban and rural areas). The survey used the fifth National Sample Surveys and Evaluation Programme (NASSEP V) master sample frame that was developed and maintained by KNBS. The frame was developed using the Enumeration Areas (EAs) generated from the 2009 Kenya Population and Housing Census to form 5,360 clusters split into four equal sub-samples. A three-stage cluster sample design was adopted for the survey involving selection of clusters, households and eligible individuals. In the first stage, 200 clusters (100 urban and 100 rural) were selected from one sub-sample of NASSEP V frame. A uniform sample of 30 households from the listed households in each cluster was selected in the second stage of sampling. The last stage of sampling was done using Personal Digital Assistants (PDAs) at the time of survey, where one individual was randomly selected from all eligible listed household members using a programmed KISH method of sampling."

Source: *WHO. Kenya STEPwise Survey for Non Communicable Diseases Risk Factors 2015 Report. Available at: http://www.who.int/chp/steps/Kenya_2015_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Lebanon: STEPS 2016-2017

"This study is a national study that targeted all 8 governorates of Lebanon. The survey targeted the Lebanese population and Syrian refugees residing in communities across Lebanon, aged 18 to 69 years. Steps 1, 2, and 3 were administered on all participants who consented. Inclusion and exclusion criteria were set as presented in Table 1.

Table 1: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
• Lebanese population and Syrian refugees (both registered and non-registered residing in Lebanon) • Males and females • Aged 18 to 69 years old	• Pregnant women (from the weight, height, waist and hip circumferences measurement in Step 2 and all of Step 3)

Sample Size

The calculation of sample size was based on the recommended values for the STEPS survey (WHO, 2016). Two samples were collected for each of the Lebanese population and Syrian refugees. For the Lebanese sample, the initial sample size was determined by assuming a level of confidence measure of 1.96, a margin of error of 0.05, a risk factor prevalence of 0.5, and a design effect of 1.5. p=0.5 (50%) was chosen to produce the largest sample size, thus allowing us to account for all possibilities without relying on previous data, leading to a needed sample size of 576. The calculated sample size was multiplied by 4 (number of age-sex groups) and divided by 0.8 to account for an anticipated response rate of 80%. The final sample size was 2880 (720 participants for each of the 4 age-sex groups).

The size of the Syrian sample was calculated using the same parameters listed above, and was determined at 2880 target participants, 720 participants for each of the 4 age-sex groups. The 4 age-sex groups were: Females 18 - 44 years, Females 45 - 69 years, Males 18 - 44 years, Males 45 - 69 years The total sample size was 5760.

[…] A national cross-sectional survey adopting a two-stage cluster sampling design was conducted for Steps 1, 2 and 3. […]

The sampling frames references used were the population distribution in Lebanon 2014, retrieved from the Central Administration for Statistics (CAS) and the Syrian population distribution data 2015, retrieved from UNHCR. 144 clusters were selected for the Lebanese sample and 144 clusters for the Syrian sample. The Primary Sampling Units (PSUs) were cadastral areas (cadasters) and the Secondary Sampling Units (SSUs) were the households. Twenty participants were recruited from each cluster. The latest available population estimates (cadastral data) were used, to randomly recruit PSUs by Probability Proportionate to Size (PPS). To account for the issue of the variability in the cadasters' sizes, very small cadasters (<200 individuals) were combined with neighboring PSUs before selecting the sample, to enhance the likelihood of finding 20 target participants. On the other hand, cadasters with a large population size that were guaranteed to be sampled at least twice were handled as strata and each stratum were assigned a fixed number of random starting points based on how often it was selected with certainty. This was done using satellite images divided into grids, previously obtained from the Centers for Disease Control and Prevention (CDC)1 for all Lebanese cadasters.

For the Lebanese sample, the research team relied on the standard Expanded Program for Immunization (EPI) method for a systematic random selection of the households. Accordingly, within each selected PSU, households were identified using a systematic random approach following the WHO-UNICEF-EPI cluster method. The fieldworkers started with the highest floor on the right side of a building. If the household hosted an eligible participant, they proceeded with data collection, if not, they visited a second household which is selected by skipping 5 households. If during sampling, non-Lebanese households were selected, the fieldworker skipped them in a straight line until a Lebanese household was identified. This method has been previously used for national surveys in Lebanon. One participant was randomly selected within each household, using the eSTEPS application. Households were chosen until the target of 20 participants was reached.

The PSUs for the Syrian refugees' sample were identified, using the most recent available refugee estimates to randomly recruit PSUs by PPS. The same measures aforementioned were done to account for the variation in the cadasters' sizes. The WHO-UNICEF- EPI cluster method was employed to select households. The fieldworkers targeted Syrian households; accordingly, when during sampling, non-Syrian households were selected, the fieldworker skipped them in a straight line until a Syrian household was identified. One participant was randomly selected within each household, using the eSTEPS application.

For both samples, following STEPS' team recommendations, sampling of participants was done without replacement, i.e. once a person was selected that person was not replaced with another one. Efforts were made to include all selected households. If the house was unoccupied at the time of the visit or if an adult was not available for an interview at the time of the visit, that house was revisited up to 4 times, with different visiting times. The number of refusals and non-responses was recorded."

Source: *Republic of Lebanon, Ministry of Public Health, World Health Organisation, WHO Stepwise Approach for Non-communicable Diseases Risk Factor Surveillance. Lebanon, 2016-2017. Available at: https://www.who.int/ncds/surveillance/steps/Lebanon_STEPS_report_2016-2017.pdf?ua=1. Accessed December 20, 2020.*

Lesotho: Demographic and Health Survey 2014

"The sampling frame used for the 2014 LDHS is an updated frame from the 2006 Lesotho Population and Housing Census (PHC) provided by the Lesotho Bureau of Statistics (BOS). The sampling frame excluded nomadic and institutional populations such as persons in hotels, barracks, and prisons. The 2014 LDHS followed a two-stage sample design and was intended to allow estimates of key indicators at the national level as well as in urban and rural areas, four ecological zones,[1] and each of Lesotho's 10 districts.[2] The first stage involved selecting sample points (clusters) consisting of enumeration areas (EAs) delineated for the 2006 PHC. A total of 400 clusters were selected, 118 in urban areas and 282 in rural areas.[3] The second stage involved systematic sampling of households. A household listing operation was undertaken in all of the selected EAs in July 2014, and households to be included in the survey were randomly selected from these lists. About 25 households were selected from each sample point, for a total sample size of 9,942 households. Because of the approximately equal sample sizes in each district, the sample is not self-weighting at the national level, and weighting factors have been added to the data file so that the results will be proportional at the national level. All women age 15-49 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. In half of the households, all men age 15-59 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. In the subsample of households selected for the male survey, blood pressure measurements and anaemia testing were performed among eligible women and men who consented to being tested. With the parent's or guardian's consent, children age 6-59 months were also tested for anaemia. In the same subsample of households, blood specimens were collected for laboratory testing of HIV from eligible women and men who consented; height and weight were measured for eligible women, men, and children age 0-59 months; and mid-upper-arm circumference (MUAC) measurements were collected for children age 6-59 months."

Footnotes: "1 Lowlands, Foothills, Mountains, and Senqu River Valley. 2 Butha-Buthe, Leribe, Berea, Maseru, Mafeteng, Mohale's Hoek, Quthing, Qacha's Nek, Mokhotlong, and Thaba-Tseka. 3 One rural EA was inadvertently dropped from the sample. After the fieldwork was completed, it was determined that the EA had not been visited."

Source: Ministry of Health, The DHS Program, ICF International. 2016. Lesotho Demographic and Health Survey 2014. Maseru, Lesotho, Maryland, USA.
Available at: https://www.dhsprogram.com/pubs/pdf/FR309/FR309.pdf. Accessed December 20, 2020.

Liberia: STEPS 2011

“Random multi-cluster sampling method was used to collect data during this survey in 5 of the 15 counties of Liberia with the district serving as the primary sampling unit. Different sampling frames were designed and used at the district (Primary Sampling Unit-PSU), Chiefdoms (Secondary Sampling Unit-SSU) and household levels. Households listing generated from the 2008 National Population Census was used, and in each household, the list of individuals’ resident was obtained and the Kish Method was used. Kish Method is a household sampling technique developed by WHO for STEPS. The field team selected households by using nutrition sampling method (throwing a pencil to get a selected direction). When the household enumeration sampling point is established, the interviewer counts all the households and using interval sample to get the household number. In each household, one person was selected using the Kish method.”

Source: *WHO: The Final Report on the Liberia STEPS Survey 2011. Available at: http://www.who.int/chp/steps/Liberia_2011_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Malawi: STEPS 2009

„Stage 1: Selection of enumeration areas (EAs): […] Administratively, Malawi is divided into twenty-eight districts. In turn, each district is subdivided into smaller administrative units. Each administrative unit is sub-divided into enumeration areas (EAs) by the National Statistical Office (NSO). Enumeration areas are classified as urban or rural. Each EA has a sketch map drawn by NSO. The sketch map shows the EA boundaries, location of buildings, and other landmarks. The list of EAs in Malawi from the latest population and housing census conducted in June 2008 was obtained from NSO. This list was used as a sampling frame for random selection of EAs for the NCD STEPs Survey as described below.

Number of enumeration areas selected: […] [T]he recommended number of participants to be selected at each primary sampling unit (in our case in each EA) was 30- 50 (WHO 2005). For this survey it was decided that at least 40 participants in each enumeration area were to be recruited. Given that the estimated required sample size was 5,760 (including the 20% non-response rate), the total number of EAs selected was therefore 5,760/40= 144. Thus a total of 144 EAs were randomly selected from the list of all EAs in Malawi.

Sampling method for EA selection: Probability Proportional to Size (PPS) sampling method was used to randomly sample the 144 EAs from the whole country as follows:

The EAs in Microsoft Excel® were first sorted in descending order of population (largest to the smallest).

- Then the total population of all EAs in Malawi were calculated.
- A column of cumulative total population of EAs was then created.
- Then the sampling interval was calculated by dividing total population by 144 (total number of EAs to be selected).
- Random number (the seed) was generated by computer in the excel® using the formula RANDBETWEEN(sampling interval).
- The EA whose cumulative total contained the seed was the first to be selected.
- The 2nd, 3rd, ..., 144th EA was selected by systematically adding the random number to the sampling interval. […]

Stage 2: Selection of households: The EA sampling frame obtained from NSO had information on the total number of households in each EA. Forty households were to be selected from each EA (as described above under of number of EAs to be selected). The sampling interval for household selection in each EA was therefore determined by dividing total EA population by 40. Systematic sampling method (every nth household) was then used to randomly select the required 40 households.

Stage 3: Selection of eligible participants at household level: Only one eligible participant (an adult aged 25-64 years) in the selected households was enrolled in the survey. In households with more than one eligible participant, Kish Method sampling method was used to randomly select one. By Kish Method, eligible participants in each household were ranked in order of decreasing age, starting with males then females."

Source: *Ministry of Health Malawi, WHO. Malawi National STEPS Survey for Chronic Non-Communicable Diseases and their Risk Factors. Final Report. 2010.*
Available at: https://www.who.int/ncds/surveillance/steps/Malawi_2009_STEPS_Report.pdf. Accessed December 20, 2020.

Mexico: Mexico Family Life Survey 2009-12
"The design of the first round, the baseline survey (MxFLS-1), was undertaken by the National Institute of Statistics and Geography (INEGI, per its name in Spanish). The baseline sample is probabilistic, stratified, multi-staged, and independent at every phase of the study. The population is comprised by Mexican households in 2002. Primary sampling units were selected under criterions of national, urban-rural and regional representation on pre-established demographic and economic variables. Regional definitions are in accordance with the National Development Plan 2000-2006.

Currently, the MxFLS contains information for a 10-year period, collected in three rounds: 2002 (MxFLS-1), 2005-2006 (MxFLS-2) and 2009-2012 (MxFLS-3). Future rounds have been programmed in order to have a database that allows studying efficiently the well-being of the Mexican population at different moments in time. The first round or baseline survey (MXFLS-1), implemented in 2002, collected information on a sample of 35,000 individuals from 8,400 households in 150 communities throughout the country. The second (MxFLS-2) and third round (MxFLS-3) were conducted during 2005-2006 and 2009-2012, respectively. Given the longitudinal design of the survey, the MxFLS-2 and MxFLS-3 aimed to relocate and reinterview the sample of the MxFLS-1—including those individuals who migrated within Mexico or emigrated to the United States of America—and to interview the individuals or households that grew out from previous samples. The MxFLS-2 and MxFLS-3 relocated and reinterviewed almost 90 percent of the original sampled households. A primary goal of the Mexican Family Life Survey (MxFLS) is to create a longitudinal and multi-thematic database. On the one hand, the longitudinal design allows a long term tracking of individuals regardless of changes in residence and new household formations (split-offs). On the other hand, the multi-thematic design allows collecting—with a single tool—a wide range of socioeconomic and demographic indicators of the Mexican population. The first round of the survey (MxFLS-1) took place during 2002 reaching a sample of 8,400 households (35,000 individuals) in 150 urban and rural communities throughout the country. The second (MxFLS-2) and third round (MxFLS-3) were conducted during 2005-2006 and 2009-2012, respectively. Given the longitudinal design of the survey, the MxFLS-2 and MxFLS-3 aimed to relocate and reinterview the sample of the MxFLS- 1—including those individuals who migrated within Mexico or emigrated to the Unites States—and to interview the individuals or households that grew out from previous samples. The MxFLS-2 and MxFLS-3 relocated and reinterviewed almost 90 percent of the original sampled households."

Source: *The Mexican Family Life Survey website.*
Available at: http://www.ennvih-mxfls.org/english/introduccion.html. Accessed November 16, 2017.

Moldova: STEPS 2013

"A total of 4807 randomly selected respondents participated in the survey. They were all aged 18–69 years, and the group comprised both sexes, as well as residents of all districts and the territorial-administrative unit "Gagauz-Yeri", along with Chişinău and Balti municipalities. The survey did not cover the districts from the left bank of the Nistru River and the municipality of Bender. For calculating the survey size, the prevalence of overweight and obesity (P=50.0%) identified during the previous survey on the health status of the population was used […], assuming a 95% confidence interval (CI) (Z=1.96), a 5% acceptable margin of error, a complex sampling design effect coefficient of 1.5, and equal representation of sexes in each age group (four age groups for each sex or a total of eight groups). Calculations resulted in a sample size of 4608 individuals, which was further increased by 20% (5760) to account for contingencies such as non-response and recording errors […]. A two-stage cluster sampling procedure was carried out to select randomly participants from among the target population. Cluster sectors from the 2004 Moldova Population Census were used as a basic unit […]. Given the differences in lifestyle and disease status between populations in urban and rural areas, the target population was stratified into urban and rural areas of residence for the STEPS survey. At the first stage, within each stratum, primary sampling units (PSUs) (enumeration areas (EAs)) were selected systematically with probability proportional to the 2004 Population Census EAs (measure of size equal to the number of population in the EAs, provided by the census). Before selection, the census sectors were sorted geographically from north to south within each stratum, in order to ensure additional implicit stratification according to geographical criteria.

A total of 400 clusters representing 400 EAs were selected from the 10 991 census EAs. These probabilistically selected clusters were used also in Moldova's DHS conducted in 2005, and the Multiple Indicator Cluster Surveys (MICS) conducted in 2012 […].

Cartographic materials from the Population Census conducted in Moldova in 2004 were not available, thus it was not possible to use them for the STEPS survey. Therefore, for the first stage the probabilistic samples from the above- mentioned surveys were used.

Out of the 400 selected clusters, 167 were rural and 233 were urban. The distribution of the sample of 400 PSUs (EAs) for the DHS/MICS surveys was inversely proportional to the number of population within each stratum, taking into account that the response rate is lower in urban areas than rural owing to the smaller average size of the households in urban areas compared with rural areas. Thus, disproportional allocation with oversampling for urban areas was applied in the STEPS survey. A final weighting adjustment procedure was carried out to enable estimates at national and urban/rural levels.

At the second stage, 15 households (secondary sampling units (SSUs)) were selected within each of the 400 PSUs. From the updated list of households used for the MICS 2012 survey, 15 households were selected randomly per cluster, using the Microsoft Excel® random sample tool. A total of 6000 individuals were selected from among the 400 clusters.

The Kish method […] was applied for the random selection of one individual aged 18–69 years from each household."

Source: *WHO. Prevalence of Noncommunicable Disease Risk Factors in the Republic of Moldova. STEPS 2013.*
Available at: https://www.who.int/ncds/surveillance/steps/Moldova_2013_STEPS_Report.pdf. Accessed December 20, 2020.

Mongolia: STEPS 2009

"A total of 5,438 randomly selected 15-64 year-old Mongolian residents of both sexes from 36 soums of 20 aimags and 24 khoroos of 6 districts of Ulaanbaatar city participated in the survey. All participants completed STEPS 1 and 2 of the survey except pregnant women, persons with disabilities and bedridden patients, for whom physiological measurements were not performed.
Every third person aged 25-64 randomly selected into the study completed STEP 3 or biochemical testing. Response rate of the survey was 95% in both STEP1, 2 and STEP3.
The survey was designed to cover all geographical areas of Mongolia, and a four-stage cluster sampling process was carried out to randomly select participants from the target population. Given the urban vs. rural differences in lifestyle and disease status, the target population was stratified into urban and rural areas and the sample was drawn proportionally from each based on the target population in each area. Thus, out of the 60 total clusters selected, 28 were urban and 32 were rural. Ulaanbaatar city, Darkhan-Uul and Orkhon aimags represented urban areas, while the rest of aimags and soums represented rural areas (Table 1).

Table 1. Number of urban and rural clusters

Setting	*Target population*	*As % of total population*	*Survey population*	*Number of clusters*
Urban	831802	0.48	2733	28
Rural	919417	0.52	2961	32
Total	1751219	1.00	5694	60

Ninety-five participants were selected from each cluster. In the urban areas, khoroos were selected, then family groups, then households. In rural areas, soums were selected, then baghs then households How this selection was proceeded is explained in the following paragraph.
A total of 28 khoroos were selected from a list of all khoroos (n=173) in the urban area using probability proportional to size sampling, where the size was 25.5% of the total target population of 851,062 persons aged 15-64 years old. From each selected khoroo, three of the family groups were selected using probability proportional to its total number of households. Within each of the three family groups, 95 households were selected using simple random sampling from updated household registries.

For the rural area, 32 of the soums were selected from a list of all soums (n=324) using probability proportional to size sampling, where the size was 23.1% of the total target population of 919,417 persons aged 15-64 years old. From each selected soum, 2 baghs were selected using probability proportional to its total number of households. Within each selected baghs, 95 of the households were selected using simple random sampling from updated household registries.

From each selected household in urban and rural areas, only one person aged 15-64 years was selected using Kish Method as the last step."

Source: *WHO. Mongolian STEPS Survey on the prevalence of Non-Communicable Disease and Injury Risk Factors – 2009.*
Available at: http://www.who.int/ncds/surveillance/steps/2009_STEPS_Report_Mongolia.pdf . Accessed December 20, 2020.

Morocco: STEPS 2017
The sampling methods of the Morocco STEPS survey 2017 were analogously translated into English from https://www.who.int/ncds/surveillance/steps/STEPS-REPORT-2017-2018-Morocco-final.pdf?ua=1

“Inclusion criteria:

- Men and women aged 18 and over on the day of the survey, who are living in ordinary households (defined as a group of people living in the same residence and sharing their consumption expenses).

Exclusion criteria:

- Those who did not give their consent to participate in the survey.
- Those to whom three (03) unsuccessful visits of the same household at three different times in two days were made.
- People who were unable to answer questions.
- People not living in ordinary, but collective or nomadic households.

Sampling: […] The sample frame used was based on the master survey 2014, which was elaborated by the HCP, basing on population and housing census data. The results of the sample are extrapolated to the target population and estimations have the desired accuracy.

Stratification Criteria: Stratification in Morocco, where cities contain several social categories with people of different demographic and socioeconomic backgrounds make stratification difficult. Therefore, the sample was stratified by geographic region for two milieus:
The stratification adopted was of geographical order for the two mediums according to the weight in terms of households, each of which has a specific stratification:

- For urban units, the criterion used was an administrative division into regions, provinces/prefectures and the type of habitats.
- For rural areas, the primary sampling units were stratified according the dominating type at the communal level. […]

Stages of stratifications
First degree (primary units PU): 244 (158 Urban Primary units: UPU and 86 Primary rural units: PRU) primary units were drawn from the 4500 PUs constituting the master sample. Each PU is a geographical area with clear boundaries and contains 300 households on average.
Second degree (secondary units (SU) or clusters): Primary units were clustered in 50 households each, resulting in 6 SU per PU on average. To conform to the STEPS survey design, only one secondary unit or cluster was selected for each sample PU.
Third degree (households): Based on the secondary units (cluster), starting from the point mentioned on the SU limit sheet, and in a clockwise direction, we selected households to be surveyed by applying a two-household step.
Fourth degree (individuals): From all individuals meeting the selection criteria, a random sample was drawn, and only one participant of each household was randomly selected via the e-Steps application.

Source: *WHO: Enquête Nationale sur les Facteurs de Risque communs des Maladies Non Transmissibles 2017 – 2018: Rapport. Available at: https://www.who.int/ncds/surveillance/steps/STEPS-REPORT-2017-2018-Morocco-final.pdf?ua=1. Accessed December 20, 2020.*

Mozambique: STEPS 2005

"For the present community-based cross-sectional study, a sample of adults aged 25 to 64 years was assembled using the sampling frame of the 1997 census, which was designed to be representative at a national level and by place of residence (urban or rural). Ninety-five geographical clusters were selected, among which all of the households were listed and 25 randomly selected and visited. All of the eligible subjects in the same household were invited for the study. Fifty-five subjects refused to participate, and 3323 were evaluated between September and November 2005.

Subjects were evaluated following the World Health Organization Stepwise Approach to Chronic Disease Risk Factor Surveillance (STEPS), which included a questionnaire on sociodemographic and behavioral factors (including smoking and drinking habits), medical and health history, and physical measurements (including blood pressure, weight, height, and waist circumference), using standardized methods. The World Health Organization STEPS instrument for non-communicable disease risk factors (core and expanded version 2.18) was used for data collection, after translation to Portuguese.

Blood pressure was measured on a single occasion by non-physician trained interviewers using a semiautomatic sphygmomanometer (Omron 3) with an appropriate cuff size. After a 5-minute rest, blood pressure was measured twice, 1 minute apart, and a third measurement was performed if the difference between the first 2 was >10 mm Hg for systolic or diastolic blood pressure. […]

Anthropometric measurements were obtained with the participant wearing light clothing and no footwear. Body weight was measured to the nearest 0.1 kg using a digital scale and height to the nearest 0.1 cm in the standing position using a portable stadiometer."

Source: *Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D, Lunet N. Hypertension prevalence, awareness, treatment, and control in mozambique: urban/rural gap during epidemiological transition. Hypertension. 2009;54(1):77-83. doi:10.1161/HYPERTENSIONAHA.109.132423*

Namibia: Demographic and Health Survey 2013
“The sample for the 2013 NDHS was a stratified sample selected in two stages. In the first stage, 554 EAs were selected with a stratified probability proportional to size within the sampling frame. The EA size is the number of households residing in the EA and recorded in the 2011 NPHC. Stratification was achieved by separating each region into urban and rural areas. Therefore, the 13 regions were stratified into 26 sampling strata: 13 rural strata, and 13 urban strata. Samples were selected independently in each stratum, with a predetermined number of EAs selected as shown in Table A.3. Implicit stratification with proportional allocation was achieved at each of the lower administrative unit levels by sorting the sampling frame before the sample selection. Sorting was done according to the constituency and the EA code within a sampling stratum, and by using a probability proportional-to-size selection procedure.

After the selection of EAs and before the main survey, a household listing operation was carried out in all selected EAs, and the resulting lists of households served as a sampling frame for the selection of households in the second stage. Some of the selected EAs may large. To limit the amount of work done to list each household, selected EAs with more than 200 households were segmented by the listing team in the field before the household listing. Only one segment was selected for the survey, with probability proportional to the segment size. Household listing was conducted only in the selected segment (see detailed instructions for segmentation in the DHS Manual for Household Listing). So a 2013 NDHS cluster is either an EA or a segment of an EA. In the second-stage selection, a fixed number of 20 households was selected in every urban cluster and rural cluster, by equal probability systematic sampling. A spreadsheet indicating the selected household numbers for each cluster was prepared. The survey interviewers interviewed only the pre-selected households. To prevent bias, no replacements and no changes of the pre-selected households were allowed in the implementing stages. In half of the selected households where there was no male survey, all women age 15-49 were interviewed; in the other half of the selected households where there was a male survey, all males and females age 15-64 were interviewed.”

Source: *Namibia Ministry of Health and Social Services Windhoek. Namibia Demographic and Health Survey 2013. 2014.*
Available at: https://dhsprogram.com/pubs/pdf/FR298/FR298.pdf. Accessed December 20, 2020.

Nepal: STEPS 2013

“The surveyed population included men and women aged 15–69 years who had been living at their place of residence for at least six months. [...] The sample size was calculated to represent the entre target population in Nepal. In order to achieve this statistical inference, the sample size calculator by WHO (sample_size_calculator STEPS) was used to derive a sample size of 4,200. […] Probability proportionate to size (PPS) was applied in the sampling strategy to improve the precision of the survey estimates. [...] For this survey, the Ilaka was taken as the primary sampling unit (PSU). Out of the 921 Ilakas in Nepal, 159 are in the mountains, 467 in the hills and 295 in the Terai. The Steering Committee and the WHO NCD STEPS team at WHO headquarters in Geneva predetermined the number of PSUs to be taken in the study as 70. Thus, 70 Ilakas were sampled. Considering the varied distribution of the population across the ecological belts and to avoid the risk of under selection of the sample from the sparsely populated mountain belt, the distribution of ""Ilakas across ecological belts was determined on the basis of the population distribution pattern in the ecological belts (mountains 7%, hills 43% and Terai 50%). Hence, 30 Ilakas were selected from the hills, 5 from the mountains and 35 from the Terai using PPS. [...]

For the survey, wards (sub-units of VDCs and municipalities) were considered as clusters and taken as the secondary sampling unit (SSU). Three clusters were selected from each of the sampled Ilakas using PPS. All wards for each of the selected Ilakas were listed in order according to their numeric code, then 210 wards were selected (3 wards from each of the 70 Ilakas). To select the three wards from the list, all of the wards in the Ilaka were given a unique identification number, listed in ascending order along with household size and populated in the software. The software then selected the wards randomly on the basis of PPS.

Twenty households were selected from each cluster using systematic sampling. Thus, a total of 4,200 households were selected from the 210 clusters (20 households per cluster or ward). The sampling interval was determined by dividing the total number of households in the selected wards by 20. [...]

In municipalities, one ward covers a large number of households and each ward has more than 5 and sometimes up to 100 streets (margs or toles). Two margs or toles were selected and ten households were selected from each of the two margs or toles using systematic random sampling. If two or more families were found living in a house, one family was selected randomly. Eligible candidates (15–69 years) from the selected household were listed according to age and sex (males first and then females, in descending order), which was then fed into the Kish program in the personal digital assistants (PDAs), which automatically randomly selected one eligible candidate from each house.”

Source: *WHO. Non Communicable Diseases Risk Factors: STEPS Survey Nepal 2013. Available at: https://www.who.int/chp/steps/2012-13_Nepal_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Peru: Encuesta Demográfica y de Salud Familiar 2012

The Peruvian Encuesta Demografica y de Salud Familiar was a cross-sectional, multistage survey based on a probabilistic cluster sampling design. The survey took place between March and December of 2012 and was performed by the Instituto Nacional de Estadistica e Informatica (INEI). The sample population were females of childbearing age (15 and 49 years). The sample was selected in two stages. The first stage utilized information from the Population and Household Census 2007 and entailed the random selection of clusters as the primary sampling unit (UPM) with probability proportional to their population size. Each UPM had an average size of 120 households. In the second stage, individual households were selected as the secondary sampling unit (USM). Prior to the second stage, a cartographic update and registry of the households within each cluster was performed. Out of the 28,376 households selected, the interview was performed in 27,488 households, yielding a response rate of 99 percent. Out of 24,552 eligible women, 23,888 were interviewed, yielding a response rate of 97.3 percent. Blood pressure measurements were performed in all men and women 40 years or older living in each sampled household. When a household was visited and the target population was not present, the household was visited again, with an average of 3-4 visits per household. Immediately after obtaining consent for blood pressure measurements, the interviewer asked the participant whether he or she had consumed tea, coffee, hot beverages, alcohol or whether he/she had smoked. If the answer was yes, they were instructed to wait 30 minutes to perform the first blood pressure measurement. Regardless of the participant's answer to this question, the first blood pressure measurement was obtained after the participant had sat down for 5 minutes. The second blood pressure measurement was obtained after waiting 2 minutes in between readings. Both measurements were performed in the same arm.

Source: *Instituto Nacional de Estadística e Informática. 2013. Encuesta Demográfica y de Salud Familiar 2012.*
Available at: https://dhsprogram.com/pubs/pdf/FR284/FR284.pdf. Accessed March 4, 2019.
Blood pressure measurement details were obtained directly from the Oficina Tecnica de Difusion at the Instituto Nacional de Estadistica e Informatica on April 11, 2019.

Romania: Study for the Evaluation of Prevalence of Hypertension and Cardiovascular Risk (SEPHAR II)

“Sampling was performed by a multi-stratified procedure, leading to the selection of a representative sample of 1942 adults. Subject selection followed the principle of equality of chances of being enrolled in the study, regardless of the size of the place of residency.

Stratification criteria for sample selection were:

- territorial regions (Romania's territory was divided into 7 regions plus the capital city Bucharest, based on the National Statistics Institute recommendations: the North-East region, the South-East region, the South region, the South-West region, the West region, the North-West region, the Central region and the Bucharest region);
- locality type (cities with over 200 000 inhabitants, cities with 50 000–200 000 inhabitants, cities with less than 50 000 inhabitants, Commune);
- gender (male and female);
- age groups (18–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65–80 years).

In the first stage of selection, the adult population weighted average was calculated for each region and each district, and, based on this, the number of adult persons from each region/district was calculated from the working sample of 1942 subjects.

In the second stage of selection, the number of localities of a certain size from which the subjects were later selected was established for each district. This number was directly proportional to the population in the respective district. A random selection of a certain locality in a certain category was done using a computer software (generation of random numbers). The selected localities represent the interview centers where the study was to take place. The weighted average of the specific locality population in the district was calculated, and, based on this, the number of people selected to participate in the study.

The third stage of selection consisted of distribution by gender of adult people selected from each locality, using Romania's population gender distribution according to the 2002 census (F : M = 51.25% vs. 48.75%) and the fourth stage of selection consisted of distribution by age of male and female adult people selected from each locality, using Romania's population age distribution according to the 2002 census.”

Source: *Dorobantu M, Tautu OF, Darabont R, et al. Objectives and methodology of Romanian SEPHAR II Survey. Project for comparing the prevalence and control of cardiovascular risk factors in two East-European countries: Romania and Poland. Arch Med Sci. 2015;11(4):715-723. doi:10.5114/aoms.2015.53290*

Russian Federation: Study on global AGEing and adult health, Wave 1 (2007-2008)
"The SAGE Russian national sample was constructed using data from two sources:
1. The sample for the 2003 World Health Survey (WHS)
2. The 2002 All-Russia Population Census.

In constructing the SAGE Russian national sample, efforts were made to ensure even representation across administrative units. The largest administrative unit in the Russian Federation is the Federal District (FD). In 2007, there were seven FDs: Central, Southern, Northwestern, Urals, Volga, Siberian, and Far Eastern. Each FD is made up of federal subjects, administrative divisions which have varying levels of autonomy, but equal representation in the federal government; these include republics, krais, oblasts, federal cities, autonomous oblasts and autonomous okrugs. In 2007, there were 86 federal subjects. For the purpose of SAGE, federal subjects with particularly low population densities (making up 0.2% of the total population of Russia) were excluded: these included the Yamal-Nenets, Taimyr, Evenki, Koryak, and Chutkhotka autonomous okrugs, the republic of Sakha (Yakutia), Khabarovsk krai, and Magadan oblast.

2.1.1 First stage
The first stage of sample design was the definition of strata for selection. The sample was initially stratified by FDs, according to the distribution of population.

2.1.2 Second stage
The second stage of the sample design was selection of primary sampling units (PSUs), mainly according to the data from the 2002 Russian Census. For the selection of PSUs, first, all households which had participated in the WHS and which had a member aged 50-plus were listed again, as well as some WHS households with a member aged 18-49. These households were drawn from the three FDs that were included in the WHS: Central, Northwestern, and Volga.
Next, PSUs were selected for the remaining four FDs (Southern, Siberian, Urals and Far Eastern). Within FDs, administrative and territorial formations (ATF) constituted the primary sampling units (PSU). The population distribution within the four districts was used to determine the number of sample localities in each district, which were then weighted to reflect their representation in the four districts.
A computer program (according to the PPS method) was then used to select specific settlements in each district from the total number of ATFs, according to census data. ATFs were selected randomly and proportionally to the size of federal districts' population. This resulted in 39 ATFs from the Southern FD, 34 from the Siberian FD, 20 from the Urals FD and 7 from the Far Eastern FD. From each ATF, households, which constituted the study's secondary sampling units (SSU), were chosen at random, using a special formula for each territory sample. The probability of being including in the sample was equal for all households (0.00247). Between 1 and 551 households were selected from each ATF. Address lists for all selected households (including house and apartment numbers) were compiled with the help of out-patient clinic staff. In each territory, the sample was based on a household listing and enumeration, randomly selecting houses/ apartments until the desired sample size was reached. All members of each household selected for the survey sample were enumerated on the household roster and all eligible people aged 50-plus were invited to participate in the survey. If a household had at least one person aged 50 or older, then that household was included in the 50-plus sample. In the remaining households (that is, with no member aged 50 or older) one respondent aged 18–49 was randomly selected using Kish tables (Kish, 1965; Kish, 1987).
In selected households, the individuals eligible for interview formed the ultimate sampling unit. The total sample size of individuals was targeted to be 1000 people in the age group 18–49 years old and 5000 people aged 50 or older.

2.1.3 Stratification and allocation of enumeration areas
From a total of 288 enumeration areas, 176 ATFs were visited: the coverage was 61.1% of the targeted ATFs, with the highest percent of visited enumeration areas in the Southern FD (71.8%). Of 7,200 eligible households, 4,644 HHs were included in the final sample and visited (both in urban and rural territories. 1,407 of them took part in the WHS survey.

Source: *National Research Institute of Public Health, Russian Academy of Medical Sciences (RAMS). Study on global AGEing and adult health (SAGE) Wave 1: Russian Federation National Report. 2013. Available at: http://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/68/download/2042. Accessed December 20, 2020.*

Seychelles: STEPS 2013

"The survey was performed in a sex and age stratified random sample of all adults aged 25-64 years of Seychelles between October and December 2013 on Mahé and during 2 weeks in February 2014 in the islands of Praslin and La Digue. These three islands account for >98% of the total population of Seychelles. The eligible sample was extracted from the population registry. The survey was attended by 1240 adults, with a participation rate of 73%. Participants were invited to attend the survey on selected days in study centers located in Mahé, Praslin, and La Digue. All the eligible participants who did not attend were actively traced using (telephone, local administration, announcements on radio, etc) and invited to attend the survey. Since participants were randomly selected from the general adult population, findings of the survey can be inferred to the general adult population of Seychelles."

Source: *National Survey of Noncommunicable Diseases in Seychelles 2013-2014 (Seychelles Heart Study IV): methods and main findings.*
Available at: https://www.who.int/chp/steps/Seychelles_2013_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.

South Africa: DHS 2016
"[A] nationally representative sample of 15,000 dwelling units (DUs) was selected; all residential households in the selected DUs were eligible to be included in the survey. In all sampled households, all women age 15-49 who are usual members of the households or who stayed in the households on the night before the interview were eligible for interviews. In addition, in a subsample of the DUs (every second DU), all men age 15-59 who are usual members of the households or who stayed in the households on the night before the interview were eligible for interviews. In this same subsample, all women and men age 15 and older who are usual members of the selected households and those who spent the night before the survey in the selected households were eligible to complete a module on adult health and to have biomarker measurements and tests. […]

The sampling frame used for the SADHS 2016 is the Master Sample Frame (MSF) prepared by Statistics South Africa (Stats SA); the MSF was compiled from the Census 2011 frame. The latter is a list of 103,576 enumeration areas (EAs) that cover the whole country. An EA is a geographic area consisting of a convenient number of DUs that serve as counting units for the census. The MSF is a list of 71,241 primary sampling units (PSUs). For each PSU, the MSF contains information about location (province, district, and municipality), type of residence (urban, traditional, or farm), and estimated number of residential households. An MSF PSU can be an EA, a group of small EAs, or part of an EA. In preparation for the MSF, out-of- scope EAs were removed from the frame. These out-of-scope areas were defined as institutional EAs and EAs that had zero DU counts at the time of the Census 2011. Furthermore, EAs with a very small number of households were excluded from the frame, which has been adjusted for during the sampling weight adjustment for under-coverage. Households in the excluded EAs accounted for less than 1% of households in the population. Moreover, all of the identified large EAs were conceptually split into one or more PSUs of equal size depending on the number of DUs in the EA. Finally, small EAs with DU counts of between 20 and 99 were pooled with neighbouring EAs that had the same geographical characteristics to form a new PSU. Administratively, South Africa is divided into nine provinces; each province is subdivided into districts, and each district is subdivided into municipalities. […] In South Africa, about 68.3% of households are in urban areas and 31.7% in non-urban areas. […] There are a total of 71,241 PSUs in the MSF, 45,651 in urban areas, 22,214 in traditional areas, and 3,376 in farms. The average PSU size is 210 households; urban and farm PSUs are larger in size (averages of 224 and 237 households, respectively), whereas traditional PSUs have a smaller size (an average of 178 households).

The sample for the SADHS 2016 is a stratified sample selected in two stages from the MSF. Stratification was achieved by separating each province into urban, traditional, and farm areas. In total, 26 sampling strata were created (since there are no traditional areas in Western Cape). Samples were selected independently in each sampling stratum by a two-stage selection. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels within a given sampling stratum by sorting the sampling frame according to administrative units at different levels in each stratum and using probability proportional to size selection at the first stage of sampling.
In the first stage, 750 PSUs were selected (468 in urban areas, 224 in traditional areas, and 58 in farm areas) with probability proportional to PSU size and with independent selection in each sampling stratum […]. A listing operation was carried out in all of the selected PSUs, and the resulting lists of DUs served as a sampling frame for the selection of DUs in the second stage. Before the listing activities, informal or congested PSUs were identified so that a segmentation process could be administered. These PSUs were divided into segments of about 20 DUs each, with only one segment selected at random for the survey. Therefore, a cluster in the SADHS 2016 was either a PSU or a segment of a PSU.

In the second stage of selection, a fixed number of 20 DUs per cluster was selected with an equal probability systematic selection from the newly created household listing. In segmented PSUs, if the segment contained 20 DUs or fewer, all DUs in the selected segment were eligible for the survey. In segments with more than 20 DUs, 20 DUs were randomly selected and were eligible for the survey. The survey interviewer interviewed only the households in the pre-selected DUs. No replacements and no changes of the pre-selected DUs were allowed in the implementing stages in order to prevent bias. […] To ensure that the survey precision is comparable across provinces, a power allocation was used to allocate between provinces and between different types of residence within each province. The survey was expected to be conducted in about 15,000 residential households, 9,360 in urban areas, 4,480 in traditional areas, and 1,160 in farms. The sample was expected to result in about 10,335 completed interviews with women age 15-49 and about 4,573 completed interviews with men age 15-59."

Source: *National Department of Health. South Africa Demographic and Health Survey 2016. 2019. Available at: https://www.dhsprogram.com/pubs/pdf/FR337/FR337.pdf. Accessed December 20, 2020.*

St. Vincent and the Grenadines: STEPS 2013

"The sample size was proportionately divided between the three main reporting strata (St.Vincent/Northern Grenadines/Southern Grenadines). The country's most recent age breakdown is based on the 2001 national census, and was used to approximate the adult population 18-69 years by Island grouping. The survey was stratified by sex, age group (18-29, 30-44 and 45-69 years) and geographical location (St. Vincent/Northern Grenadines/Southern Grenadines). A three stage cluster sampling approach was used. Enumeration districts were randomly selected using Probability Proportional to Size (PPS) from the sampling frame. A total of 199 enumeration districts were selected. The sampling frame was developed using the number of households per enumeration district taken from the 2012 preliminary census report; enumeration districts had been subsequently revised (2010-2011) so that no enumeration district containing more than 150 Households would be randomly selected from the selected enumeration districts. Twenty-six (26) households per enumeration district were selected. Where an enumeration district had been split into 2 or more new enumeration districts the number of households in the previously defined enumeration district was divided equally between the newly revised enumeration districts. The household list for each selected enumeration district was updated prior to selection of households during a re-listing exercise.

Eligible persons at the household level were randomly selected using the Kish method. If no one is present in the selected household, a notification of visit card was left and the interviewer revisited at a later time. There were a total of three visits to a household before it was listed as non-response (i.e., one initial recruitment visit and two call backs). The person selected for interview must be at least 18 years on the last birthday but not older than 69 years old.

The collection of blood samples and the nutrition intake (24 hour recall) were also conducted at participants' homes. Collection of these data was completed during a morning revisit, during which participants were fasting."

Source: *Ministry of Health, Wellness & the Environment. National Health & Nutrition Survey, Non-Communicable Disease Risk Factor Surveillance, Report for St. Vincent & the Grenadines. 2015. Available at: https://www.who.int/ncds/surveillance/steps/StVincent_STEPS_Report_2013-14.pdf?ua=1. Accessed December 20, 2020.*

Tanzania: STEPS 2012

“The STEPS survey in the United Republic of Tanzania was a population-based survey of adults aged 25-64. The study used both multistage cluster and random probability sampling procedures. Fifty of 119 total districts were randomly selected as primary sampling units (PSUs). Within these PSUs, enumeration areas (EAs) of > 50 households were randomly selected. Any EA with < 50 households was merged with a neighboring EA. Within the EAs, households were randomly selected from a list of all eligible households in the EA. A total of 5762 adults participated in the Tanzania STEPS survey. Within each selected household, the Kish method was used to select the STEPS participant. This procedure was followed until the predetermined sample was obtained for the enumeration area. The response rate for this survey was 94.7%.”

Source: *Ministry of Health and Social Welfare & National Institute for Medical Research. Tanzania STEPS Survey Report. 2013. Available at: http://www.who.int/chp/steps/UR_Tanzania_2012_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Timor-Leste: STEPS 2014

"Note: Data from Census 2010 were used for all sampling considerations. Even though planning and mapping for 2015 Census is ongoing, data from the Census will only be available after July 2015.

STEP 1: Selection of Enumeration Area

(1) List of EA with number of HH by district for Census 2010 was obtained from the Directorate of Statistics. There are 1826 EAs in Timor-Leste. Out of these, 150 EAs were selected.
(2) The number of EAs to be selected from each district was based on their proportion in the country's population as per Census 2010.
(3) The numbers of Households (HH) per EAs varied from 0 to more than 300. Therefore, probability proportion to size (PPS) was used.
(4) For each district, the EAs were arranged in ascending order of HH size.
(5) Sampling interval was obtained by dividing the total number of HH in the district by the number of EA to be selected from that district.
(6) A random number was generated between one and the sampling interval for that district, using tools available at random.org.
(7) The EA where that random number fell was the first EA to be selected.
(8) Subsequently, the sampling interval was added to the random number and the EA where this new number fell was selected. For the next number, the sampling interval was added to the number and so on, till the population of HH was exhausted or target number of EA achieved.
(9) This was done separately for each district.
(10) The final list was compiled and had 150 EAs. These are spread over about 125 sucos.

STEP 2. Selection of Households in an Enumeration Area

Listing the house numbers to be visited

(1) It was decided to use the 2010 HH size of each EA. Based on past experience, it was expected that the increase would be on an average about 4–5%.
(2) The list of households to be selected by enumerators was decided centrally.
(3) Sampling interval was calculated by dividing the total number of households in the EA by 18.
(4) The first HH number was selected randomly by reading the last two digits of a currency note. If the number represented by the two digits was more than 18, the last digit was taken into consideration. For each EA, a different currency note was used. This could also be done it by using the tool at random.org. or by draw of lots.
(5) The subsequent HH are identified by adding the sampling interval as was done for selection of EA."

Source: *WHO. Timor-Leste STEPS Survey Report. 2015. Available at: http://www.who.int/entity/chp/steps/Timor-Leste_2014_STEPS_Report.pdf?ua=1. Accessed December 20, 2020.*

Togo: STEPS 2010
Translated from WHO: The Final Report on the Togo STEPS Survey 2010

“Those included in this survey are male or female subjects, living in urban or rural areas, aged 15 to 64 on the day of the survey, residing in the enumeration area for at least 6 months and having given their informed consent to participate in this study. [...] Three hundred clusters were randomly selected in a systematic draw with probability proportional to the size of the cluster (number of households) in the 4620 areas of enumeration of the DGSCN (General Directorate of Statistics and National Accounts) sampling frame. In order to obtain the 4,800 households at the rate of 1 individual / household, 16 households per cluster were randomly selected at the second stage of survey. In each of the selected households, one individual was selected as a survey participant via the Kish Method. A household was defined as the group of persons, who regularly share the main meal (regardless of their relationship). Households were not replaced in the event of a refusal or two unsuccessful visits to the eligible person selected by Kish's method. If the selected person was unwell or not present at the time of the interview, the investigators either tried to find a new appointment or searched for the respondent.”

Source: *Ministère de la santé Togo. Rapport final de l’enquête STEPS Togo 2010. 2012. Available at: http://www.who.int/chp/steps/2010STEPS_Report_Togo_FR.pdf?ua=1. Accessed December 20, 2020.*

Uganda STEPS 2014

“Uganda has a total population of 34.9 million people, approximately 43% of which are adults aged 18 years or older [14]. The survey covered the whole country, and a three stage sampling design was used to select participants. The sampling procedure utilized the Uganda Bureau of Statistics (UBOS) master sampling frame of Enumeration Areas (EAs) that had just been demarcated throughout the country in preparation for the 2014 population and housing census. Each EA included 150–200 households. In the first stage, a random sample of 350 out of 78,950 EAs was selected with selection probability proportional to the size (PPS) of the number of households in the EAs. The EAs were stratified across the four regions of Uganda namely: Central, Eastern, Northern and Western region; and were selected with separate estimates for rural and urban areas. Urban areas were defined as EAs within government designated urban areas, or those within other geographic divisions with population density of more than 1000 per square kilometer.

After selecting the 350 EAs, trained teams of UBOS staff were dispatched throughout the country to list the households and their household heads within the 350 EAs. A household was defined as a group of individuals that usually shared meals together, and had a household head who usually made major decisions for the household. In the second stage of sampling, 14 households were randomly selected from the listed households in each of the sampled EAs.

Research Assistants (RA) that had received a five-day training on procedures and administration of the STEPs tool, enumerated eligible household members who were recorded in Personal Digital Assistants (PDA), which was then used to randomly select one subject for inclusion in the survey giving a total sample of 4900. Eligible subjects were household members aged 18 to 69 years, who had resided in the sampled households for at least six months preceding the date of interview.”

Source: *Guwatudde D, Mutungi G, Wesonga R, et al. The Epidemiology of Hypertension in Uganda: Findings from the National Non-Communicable Diseases Risk Factor Survey. PLoS One. 2015;10(9):e0138991. Published 2015 Sep 25. doi:10.1371/journal.pone.0138991*

Ukraine: Demographic and Health Survey 2007
"The sample was designed to allow detailed analysis of indicators—including the estimation of fertility, abortion and infant/child mortality rates at the national level and for urban and rural areas. Many indicators can also be estimated for the following five domains or geographical areas: North, Central, South, East, and West. Each domain consists of a few administrative divisions out of the total 27 administrative regions existing in Ukraine (24 regions, the capital city Kyiv, the city of Sevastopol, and the Autonomous Republic of Crimea), except for the clusters affected by the Chernobyl disaster and are uninhabitable.[1]

- North: the city of Kyiv, and the regions of Kyiv, Zhytomyr, Sumy and Chernihiv;
- Central: the regions of Cherkasy, Poltava, Kirovohrad and Vinnytsia;
- South: the Autonomous Republic of Crimea, the city of Sevastopol' and the regions of Odesa, Mykolaiv and Kherson;
- East: the regions of Dnipropetrovs'k, Donets'k, Zaporizhzhia, Luhans'k, and Kharkiv;
- West: the regions of Ivano-Frankivs'k, Khmel'nyts'kyi, Chernivtsi, L'viv, Rivne, Ternopil', Volyn' and Zakarpattia.

A representative sample of households was selected for the 2007 UDHS. The sample was selected in two stages. In the first stage, 500 clusters were selected in Kyiv and the 26 other administrative divisions from the list of enumeration areas in the master sample frame of the 2001 Ukraine Population Census (SSC 2003a). In the second stage, a complete listing of households was carried out in each selected cluster. Households were then systematically selected from each cluster for participation in the survey. This design resulted in a final sample of 15,004 households selected. All women age 15-49 who were either permanent residents of the selected households or visitors present in the household the night before the survey were eligible to be interviewed. In addition, all men age 15-49 in one-half of the selected households were eligible to be interviewed if they were either permanent residents or visitors present in the household the night before the survey. Interviews were completed for 6,841 women and 3,178 men."

Footnote 1 "One cluster was originally selected from the Chernobyl area and was replaced."

Source: Ukrainian Center for Social Reforms, State Statistical Committee, Ministry of Health, Macro International Inc. Ukraine Demographic and Health Survey 2007. 2008.
Available at: https://dhsprogram.com/pubs/pdf/FR210/FR210.pdf. Accessed December 20, 2020.

Vanuatu STEPS 2011

"3.2 Survey Sampling Methodology

3.2.1 Provincial and Household Level Sampling

The survey used a cluster sampling design where the primary sampling unit was enumeration area (EA) and the secondary sampling unit was households. All 6 provinces in Vanuatu were included in the survey. One hundred and thirteen (113) EAs were randomly selected proportion to the size of the EA from a total of 411 EAs. Forty four (44) households were then randomly selected in each EA proportional to the number of households in each EA. The selection of participants within each household was done using the Kish method. The total number of households selected by combined Enrolment Areas was 4,972.

Figure 2 Vanuatu NCD STEPS Survey province and household Samples

PROVINCE	TOTAL HOUSEHOLDS	HOUSEHOLDS SELECTED
TORBA	588	176
SANMA	2,817	968
PENAMA	1,779	704
SHEFA	4,391	1,672
MALAMPA	2,290	836
TAFEA	1,646	616
TOTAL	13,511	4,972

3.3 Sample Size Calculation and Response Rates

The required sample size was calculated as 4972 households on a margin of error of 0.05, an anticipated response rate of 89% and with 80% power to detect statistically significant differences between six age/sex groups. Accordingly, from the 4,972 selected households 4,649 individuals aged 25-64 years participated in STEP 1 and STEP 2 giving an overall response rate of 94%. The response rate dropped to 85% for STEP 3 with 4,224 people participating."

Source: *Ministry of Health Vanuatu, WHO. Vanuatu, NCD Risk Factors, STEPS Report. 2013. Available at: https://www.who.int/ncds/surveillance/steps/Vanuatu_STEPS_Report_2013.pdf. Accessed December 20, 2020.*

Zanzibar STEPS 2011

"The survey took place in June and July 2011, followed by data cleaning and analysis. One Principal Investigator and five assistant researchers coordinated the survey on site, checked completed questionnaires daily, and organised logistics. The six data collection teams consisted each of six interviewers, one supervisor, one laboratory technician and one driver. Interviewers were either health care workers or professional interviewers familiar with household surveys such as DHS. The sample size was calculated to be 2800 participants. Each interviewer did on average 3 – 4 interviews a day and was assisted on site by local village guides.

Study design:

Cross-sectional population based survey with a sample of a sufficient size with a power to determine the proportion of adults that are exposed to selected risk factors associated with NCDs; including those having raised BP, FBG or blood lipids, had experienced injuries or traumas in recent times, and/or were mentally unwell (anxiety, depression), as well as linking these conditions with one another and with the sociodemographic and economic information obtained.

Study population:

People reported to be permanent residents (spending on average maximum 3 nights per week outside the house, and not holding an address in another place) in the selected households and fulfilled the inclusion criteria were enrolled into the survey. A person could only appear once in the study. Therefore we classified a husband practicing polygamy to be listed in the household of his first wife but not to be a member in the household of the following wives.

Inclusion/exclusion criteria:

Inclusion criteria was

- Age between 25 - 64 years
- Able to understand the information given by the interviewer about the study prior to the beginning of the interview
- Signing of the informed consent for accepting participation.

Exclusion criteria was

- Inability to understand or comprehend the information given by data collector
- Inability to communicate through verbal expression for consent and for responding to the questionnaires
- Severe/terminal illness that hinders participation in the survey.
- Age below 25 years or above 64 years

Sampling Frame:

The target population is the entire population in Zanzibar whereby the whole of Zanzibar was selected as the survey site, and hence all districts included. The total population is estimated to be 1.2 million distributed unevenly between 10 districts. The sampling frame represented the entire population in Zanzibar.

Sampling Technique:

The sampling strategy used is a multi-stage cluster sampling with stratification. The ten districts are considered as different strata, and the total number of primary sampling units, PSU, is allocated proportionately across all strata. Each district is divided into smaller clusters. These clusters are the geographical and administrative units called Shehia11. The Shehia are divided into smaller clusters called zones (also called mitaa, vitongoji, or vijiji) which typically consist of 100-300 households. Zones smaller than that were merged to make up one larger cluster, and zones much larger were split in smaller clusters.

At the first stage clusters were selected using Simple Random Selection, SRS, from the list of clusters (Shehia) within each district. At the second stage clusters (zones) were randomly selected using probability proportionate to size (PPS). At the third stage households were randomly selected from the household lists provided by the administrative leader of the Shehia.

The two last stages of sampling was done using the software STEPSsampling.xls from WHO. Finally participants were selected from the household using Kish method. The household lists were complete and included households with no eligible participants for the survey. Therefore an extra 7 households were sampled at third stage in each cluster for replacement in case a selected household had no eligible participants and had to be changed. This was done before data collectors went to the cluster.

Resources allowed for 100 PSU which was why 2800/100 = 28 households were selected from each PSU (and disproportionate from each SSU).

Data collection procedure and types of data collected:
A structured questionnaire was used, based on WHO STEPwise approach to chronic diseases risk factor surveillance. After getting behavioural and socio-demographic information, anthropometric measurements (BP, height, weight, waist and hip circumference) was done the same day. Answers were recorded electronically during interview using a Personal Digital Assistant (PDA).

Biochemical measurements (fasting blood glucose, triglyceride, and cholesterol levels) were done the next day at a central place in each study site according to appointment and were done by Laboratory technicians using dry chemistry for rapid and convenient results and to avoid suspicion surrounding sending away blood samples. Results were recorded electronically on site using a PDA, and participants received a paper copy of the results.

Every study site was visited one day for interviews. Sampled households/ participants were visited at least three times before recorded as non-respondent. The following day the site was visited for biochemical measurements. Laboratory technicians called participants who did not show up to ask them to set up appointment for the following day (at a new study site). After all study sites had been visited call-backs were made to all eligible participants (non-respondents) who's number we had obtained. A time and place near the participants was identified for data collection. Participants met fasting and started with having blood sample drawn, afterwards the interviews and anthropometric measurements were conducted. Laboratory technicians continued biochemistry measurements for another few days."

Source: Ministry of Health, Zanzibar. NCD Survey Report. Main findings from the National Non-Communicable Disease Risk Factor Survey 2011. 2012.
Available at: https://www.who.int/ncds/surveillance/steps/2011_Zanzibar_STEPS_Report.pdf. Accessed December 20, 2020.

Table S1. Details of blood pressure measurement methodology by country

Country	Measurement device	Number of measurements	Interval between measurements	Validation
Albania	Omron M6 Comfort and Omron HEM-711ac; Life Source Model UA-789 for individuals with a wide upper arm circumference	3	10 minutes	ESH International Protocol[31]
Algeria	Not specified	3	Not specified	-
Azerbaijan	Not specified	3	Not specified	-
Bangladesh	Life Source UA-767 Plus Digital Monitor	3	10 minutes	AAMI, BHS[32]
Belarus	Boso-Medicus Uno	3	3 minutes	No information
Belize	Omron Digital Monitor HEM-712C	3	5 minutes	No information
Benin	Boso-Medicus Uno	3	3 minutes	No information
Bhutan	Boso Medicus Control	3	3 minutes	No information
Botswana	Not specified	3	Not specified	-
Burkina Faso	Omron Digital Monitor HEM-705CP	3	10 minutes	AAMI[33]
Brazil	G-TECH Model MA 100	3	2 minutes	Validated[34]
Cambodia	NISSEI Digital Blood Pressure Monitor (Model DS-500)	3	Not specified	ESH International Protocol[35]
Chile	Omron Digital Monitor HEM-742	3	2 minutes	BHS[36]
China	Manual mercury sphygmomanometer	3	10 minutes	-
Comoros	Digital upper arm meter (model not specified)	2	5-10 minutes	-
Costa Rica	Digital upper arm meter (Welch Allyn and Omron, models not specified)	2 with a third measurement if the first two differed by >10 mmHg	5 minutes	-
Ecuador	Digital upper arm meter (model not specified)	2 with a third measurement if the first two differed by >5 mmHg	5 minutes	-
Egypt	Life Source Digital Monitors Model UA-767V; Life Source Digital Monitors Model UA-789 for individuals with a wide upper arm circumference	3	10 minutes	AAMI, BHS[32]
Eswatini	Boso Medicus PC (model not specified)	3	3-5 minutes	-
Georgia	Boso Medicus Uno	3	3 minutes	No information
Ghana	Boso Medistar wrist Blood Pressure Monitor Model S	3	1 minute	No information
Grenada	Omron Digital Monitor M4 - I	3	3 minutes	Did not meet requirements (BHS)[37]
Guyana	Omron digital upper arm meter (model not specified)	3	3 minutes	-

Country	Measurement device	Number of measurements	Interval between measurements	Validation
India	Omron Blood pressure monitor (model not specified)	3	5 minutes	-
Indonesia	Omron Digital Monitor HEM-7203	3	First measurement at beginning of interview, subsequent two during interview	No information
Iraq	Manual mercury sphygmomanometer	3	Not specified	-
Iran	Beurer medical, type: BM 20	3	5 minutes	No information
Kazakhstan	Microlife A80	3	1 minute	No information
Kenya	Omron M2 Digital Monitor	3	3-5 minutes	ESH International Protocol[38]
Kyrgyzstan	Not specified	3	Not specified	-
Lebanon	Omron M6 comfort	3	Not specified	ESH International Protocol[31]
Lesotho	Omron M3W Digital Monitor	3	10 minutes	ESH International Protocol[38]
Liberia	Omron digital upper arm meter (model not specified)	3	Not specified	-
Malawi	Omron Digital Monitor M4 - I	3	3-5 minutes	Did not meet requirements (BHS)[37]
Mexico	Omron digital upper arm meter (model not specified)	2	Not specified	-
Moldova	Boso-Medicus Uno	3	3 minutes	No information
Mongolia	Omron M5 Digital Monitor	3	3 minutes	ESH International Protocol[39]
Morocco	Spengler ES 60	3	Not specified	No information
Mozambique	Omron 3 Series Digital Monitor	2 with a third measurement if the first two differed by >10 mmHg	1 minute	No information
Namibia	Life Source Digital Monitor Model UA-767	3	Not specified	AAMI, BHS[32]
Nepal	Omron digital upper arm meter (model not specified)	3	3 minutes	-
Peru	Omron Digital Monitor HEM-7113	2	2 minutes	No information
Romania	A&D Medical UA-767PC Automatic Monitor	3	1 minute	AAMI, BHS[32]
Russian Federation	Omron R6 Wrist Blood Pressure Monitor HEM-6000-E	2	Not specified	Validated[40]
Seychelles	Omron M3 Digital Monitor	5	Once upon arrival, three times during	ESH International Protocol[38]

Country	Measurement device	Number of measurements	Interval between measurements	Validation
			interview, once before leaving	
South Africa	Omron 1300 Digital Monitor	3	3 minutes or more	AAMI[41]
Sudan	Not specified	3	Not specified	-
SVG	Omron Digital Monitor M4 - I	3	3 minutes	Did not meet requirements (BHS)[37]
Tajikistan	Not specified	3	Not specified	-
Tanzania	Omron digital upper arm meter (model not specified)	3	Not specified	-
Timor-Leste	Omron digital upper arm meter (model not specified)	3	2 minutes	-
Togo	Omron digital upper arm meter (model not specified)	3	5 minutes	-
Uganda	Boso Medicus Uno	3	3-5 minutes	No information
Ukraine	Digital upper arm meter (brand and model not specified)	3	10 minutes	-
Vanuatu	Omron M4	3	2-3 minutes	Did not meet requirements (BHS)[37]
Zanzibar	Omron M2 Digital Monitor	3	5 minutes	ESH International Protocol[38]

Abbreviations: AAMI = American Association for the Advancement of Medical Instrumentation; BHS = British Hypertension Society; ESH = European Society of Hypertension; SVG = St. Vincent and the Grenadines

Table S2. Prevalence of hypertension, defined by systolic BP ≥140 mmHg, or diastolic BP ≥90 mmHg, by five-year age group, sex, and world regions *

Age group	Men	Women	Both sexes
Global			
15-19	9.5 (8.4-10.6)	6.2 (5.4-7.1)	7.9 (7.2-8.6)
20-24	13.6 (12.5-14.8)	8.2 (7.4-9.0)	10.9 (10.2-11.6)
25-29	18.0 (16.7-19.3)	10.4 (9.7-11.1)	13.9 (13.2-14.7)
30-34	20.3 (19.0-21.5)	14.9 (14.0-15.8)	17.4 (16.6-18.2)
35-39	24.0 (22.6-25.4)	19.3 (18.2-20.4)	21.4 (20.6-22.3)
40-44	28.5 (27.0-30.1)	26.6 (25.3-27.9)	27.5 (26.5-28.5)
45-49	34.4 (32.6-36.2)	33.0 (31.7-34.3)	33.6 (32.6-34.7)
50-54	38.9 (37.4-40.4)	39.0 (37.7-40.4)	39.0 (37.9-40.0)
55-59	44.3 (42.7-45.8)	45.4 (44.0-46.7)	44.8 (43.7-46.0)
60-64	49.5 (47.8-51.1)	49.2 (47.6-50.8)	49.3 (48.2-50.5)
≥65	50.6 (48.5-52.7)	53.3 (51.8-54.8)	52.1 (50.9-53.2)
Africa			
15-19	9.9 (8.2-11.8)	7.8 (6.3-9.4)	8.8 (7.7-10.1)
20-24	17.1 (15.1-19.2)	10.7 (9.2-12.2)	13.8 (12.6-15.1)
25-29	20.1 (18.3-21.9)	11.3 (10.2-12.4)	15.1 (14.0-16.2)
30-34	22.5 (20.6-24.4)	16.4 (14.6-18.2)	19.0 (17.7-20.5)
35-39	26.2 (24.3-28.2)	22.1 (20.1-24.1)	23.9 (22.5-25.3)
40-44	31.2 (28.2-34.3)	29.9 (28.0-31.9)	30.5 (29.0-32.1)
45-49	37.4 (33.8-41.1)	37.9 (34.7-41.1)	37.7 (35.8-39.6)
50-54	41.0 (38.8-43.3)	44.9 (42.8-47.0)	43.1 (41.5-44.7)
55-59	47.5 (44.7-50.4)	52.5 (49.9-55.1)	50.1 (48.2-51.9)
60-64	52.4 (49.5-55.4)	52.8 (50.2-55.4)	52.6 (50.7-54.5)
≥65	52.1 (48.2-55.9)	57.2 (53.7-60.7)	54.8 (52.2-57.5)
Eastern Mediterranean			
15-19	13.5 (10.4-16.8)	6.0 (4.5-7.7)	10.1 (8.2-12.1)
20-24	14.7 (11.8-17.9)	8.9 (7.1-10.8)	12.0 (10.1-14.0)
25-29	17.1 (14.2-20.3)	12.6 (10.2-15.2)	14.9 (13.0-17.0)
30-34	16.0 (13.1-19.1)	15.0 (12.4-17.8)	15.5 (13.4-17.6)
35-39	22.6 (19.4-25.9)	18.8 (16.8-21.0)	20.6 (18.7-22.6)
40-44	28.7 (23.9-33.8)	27.1 (24.2-30.1)	27.9 (24.8-31.0)
45-49	31.9 (29.1-34.8)	31.5 (28.9-34.2)	31.7 (29.7-33.8)
50-54	36.9 (34.0-39.8)	39.2 (36.2-42.2)	38.1 (36.0-40.2)
55-59	41.7 (38.2-45.2)	42.4 (39.0-45.8)	42.0 (39.5-44.6)
60-64	52.2 (48.0-56.5)	46.7 (42.4-51.0)	49.5 (46.3-52.7)
≥65	56.3 (52.9-59.7)	54.5 (51.6-57.4)	55.5 (53.1-57.7)
Europe			
15-19	9.8 (7.6-12.3)	5.9 (4.4-7.5)	7.8 (6.5-9.3)
20-24	14.0 (11.0-17.2)	8.8 (6.9-10.9)	11.3 (9.5-13.2)
25-29	21.6 (17.1-26.5)	11.3 (9.4-13.4)	16.6 (14.0-19.5)
30-34	23.7 (20.8-26.8)	14.9 (13.1-16.9)	19.0 (17.3-20.8)
35-39	29.0 (26.1-32.1)	20.6 (16.4-25.0)	24.2 (21.2-27.4)
40-44	33.8 (30.0-37.8)	31.8 (26.3-37.7)	32.8 (29.2-36.4)
45-49	42.1 (38.8-45.5)	37.5 (33.9-41.2)	39.6 (36.7-42.4)
50-54	50.1 (45.6-54.5)	47.0 (41.9-52.1)	48.5 (44.8-52.2)
55-59	54.3 (50.9-57.5)	55.8 (52.0-59.5)	55.1 (52.1-58.0)
60-64	61.7 (57.7-65.6)	59.0 (51.4-66.5)	60.2 (54.8-65.5)
≥65	62.6 (59.3-65.8)	60.7 (54.3-67.0)	61.5 (56.8-66.1)

Age group	Men	Women	Both sexes
Latin America and the Caribbean			
15-19	8.7 (5.2-12.9)	2.8 (1.0-5.4)	5.9 (3.8-8.3)
20-24	9.5 (7.4-11.9)	2.5 (1.7-3.5)	6.1 (4.9-7.5)
25-29	10.6 (8.2-13.3)	5.0 (3.5-6.9)	7.6 (5.8-9.6)
30-34	15.6 (10.7-21.2)	9.6 (7.5-11.9)	12.5 (9.3-16.0)
35-39	17.7 (10.9-25.6)	11.3 (9.3-13.3)	14.3 (10.2-19.0)
40-44	22.2 (17.8-27.1)	16.5 (14.0-19.1)	19.0 (15.8-22.4)
45-49	29.1 (23.3-35.2)	21.8 (18.5-25.3)	25.1 (20.8-29.6)
50-54	33.1 (28.2-38.3)	26.7 (21.7-32.1)	29.7 (24.9-34.8)
55-59	37.2 (31.9-42.7)	32.4 (26.8-38.3)	34.7 (29.5-40.1)
60-64	41.6 (37.2-46.0)	37.1 (31.7-42.7)	39.3 (35.2-43.5)
≥65	43.4 (40.7-46.0)	44.9 (42.6-47.2)	44.2 (42.2-46.2)
South-East Asia			
15-19	7.2 (5.1-9.7)	4.9 (3.1-7.2)	6.1 (4.7-7.7)
20-24	12.1 (9.1-15.4)	6.0 (4.6-7.7)	8.9 (7.2-10.7)
25-29	19.3 (15.7-23.3)	12.2 (10.1-14.4)	15.6 (13.4-17.8)
30-34	22.5 (18.5-26.7)	18.2 (15.8-20.7)	20.3 (18.0-22.7)
35-39	24.5 (21.3-27.9)	20.5 (18.5-22.6)	22.5 (20.5-24.5)
40-44	24.6 (22.3-26.9)	28.4 (26.4-30.5)	26.6 (25.0-28.2)
45-49	26.8 (24.2-29.4)	32.9 (30.4-35.4)	30.0 (28.0-31.9)
50-54	32.4 (29.6-35.1)	37.4 (34.0-40.9)	34.6 (32.2-36.9)
55-59	38.5 (34.4-42.8)	40.3 (36.5-44.0)	39.4 (36.4-42.4)
60-64	37.9 (33.6-42.4)	47.2 (42.9-51.5)	42.5 (39.0-46.1)
≥65	41.8 (37.4-46.4)	53.9 (48.6-59.1)	47.7 (43.3-52.1)
Western Pacific			
15-19	3.5 (1.5-6.4)	7.0 (2.5-13.5)	5.2 (2.6-8.6)
20-24	6.1 (3.8-8.9)	15.6 (10.0-22.1)	11.1 (7.5-15.2)
25-29	11.1 (8.5-14.0)	8.0 (6.1-10.1)	9.5 (7.8-11.4)
30-34	15.1 (12.6-17.8)	14.0 (11.4-16.7)	14.5 (12.6-16.6)
35-39	17.7 (15.5-20.1)	16.6 (14.3-19.0)	17.1 (15.5-18.9)
40-44	23.8 (21.2-26.5)	21.0 (18.5-23.6)	22.4 (20.5-24.3)
45-49	28.0 (25.3-30.7)	26.5 (23.3-29.7)	27.2 (24.9-29.5)
50-54	33.0 (29.6-36.5)	32.2 (29.0-35.5)	32.6 (30.0-35.2)
55-59	35.9 (32.6-39.2)	37.3 (33.3-41.4)	36.7 (33.7-39.6)
60-64	41.3 (37.2-45.5)	41.7 (37.7-45.7)	41.5 (38.4-44.6)
≥65	49.1 (45.2-53.1)	49.6 (46.0-53.3)	49.4 (46.5-52.3)

* All countries contributed equally to the analysis.

Table S3. Association of hypertension, defined by systolic BP ≥ 140mmHg or diastolic BP ≥ 90 mmHg, with five-year age group, BMI group, sex, and smoking status, by world regions *,†

Africa, Eastern Mediterranean, Europe

	AFR		EME		EUR	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.87 (0.83-0.92)	<0.001	0.93 (0.87-0.98)	0.007	0.91 (0.84- 0.98)	0.016
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.57 (1.33-1.84)	<0.001	1.09 (0.87-1.38)	0.455	1.42 (1.12- 1.80)	0.004
25-29 years	1.75 (1.50-2.04)	<0.001	1.45 (1.16-1.81)	0.001	2.01 (1.58- 2.55)	<0.001
30-34 years	2.20 (1.89-2.57)	<0.001	1.58 (1.26-1.97)	<0.001	2.39 (1.96- 2.91)	<0.001
35-39 years	2.75 (2.37-3.18)	<0.001	2.14 (1.74-2.64)	<0.001	3.20 (2.60- 3.94)	<0.001
40-44 years	3.52 (3.04-4.08)	<0.001	2.87 (2.32-3.54)	<0.001	4.33 (3.55- 5.28)	<0.001
45-49 years	4.27 (3.68-4.96)	<0.001	3.26 (2.67-3.98)	<0.001	5.21 (4.31- 6.30)	<0.001
50-54 years	5.07 (4.40-5.86)	<0.001	4.03 (3.31-4.90)	<0.001	6.51 (5.32- 7.95)	<0.001
55-59 years	5.82 (5.04-6.72)	<0.001	4.41 (3.61-5.39)	<0.001	7.44 (6.14- 9.01)	<0.001
60-64 years	6.23 (5.39-7.19)	<0.001	4.93 (4.03-6.03)	<0.001	8.35 (6.86-10.16)	<0.001
≥ 65 years	5.69 (4.87-6.65)	<0.001	5.86 (4.81-7.15)	<0.001	10.10 (8.20-12.44)	<0.001
BMI group						
Underweight	0.90 (0.83-0.97)	0.004	0.60 (0.52-0.70)	<0.001	0.65 (0.51- 0.84)	0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.42 (1.36-1.48)	<0.001	1.56 (1.44-1.70)	<0.001	1.88 (1.74- 2.03)	<0.001
Obese	1.80 (1.71-1.89)	<0.001	2.11 (1.93-2.32)	<0.001	2.90 (2.67- 3.14)	<0.001
Morbidly obese	2.09 (1.87-2.35)	<0.001	2.54 (2.18-2.95)	<0.001	3.50 (3.10- 3.96)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.12 (1.05-1.19)	0.001	1.00 (0.90-1.10)	989	0.94 (0.87- 1.02)	0.147
Past smoking	1.33 (1.25-1.41)	<0.001	1.43 (1.31-1.57)	<0.001	1.20 (1.12- 1.27)	<0.001
Covariate-adjusted§						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	

	AFR		EME		EUR	
Female	0.82 (0.77-0.88)	<0.001	0.90 (0.84-0.96)	0.001	0.84 (0.77-0.91)	<0.001
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.47 (1.24-1.74)	<0.001	1.00 (0.76-1.30)	0.985	1.23 (0.95-1.58)	0.111
25-29 years	1.52 (1.29-1.80)	<0.001	1.20 (0.93-1.55)	0.161	1.58 (1.23-2.03)	<0.001
30-34 years	1.89 (1.61-2.23)	<0.001	1.26 (0.97-1.64)	0.083	1.74 (1.41-2.14)	<0.001
35-39 years	2.30 (1.96-2.69)	<0.001	1.64 (1.29-2.09)	<0.001	2.12 (1.70-2.63)	<0.001
40-44 years	2.91 (2.48-3.40)	<0.001	2.07 (1.60-2.66)	<0.001	2.74 (2.21-3.39)	<0.001
45-49 years	3.50 (2.98-4.10)	<0.001	2.30 (1.82-2.91)	<0.001	3.17 (2.60-3.87)	<0.001
50-54 years	4.11 (3.51-4.80)	<0.001	2.75 (2.18-3.47)	<0.001	3.91 (3.18-4.79)	<0.001
55-59 years	4.70 (4.02-5.50)	<0.001	3.00 (2.38-3.80)	<0.001	4.43 (3.63-5.41)	<0.001
60-64 years	5.18 (4.43-6.06)	<0.001	3.46 (2.74-4.37)	<0.001	4.91 (4.02-6.00)	<0.001
≥ 65 years	4.86 (4.12-5.74)	<0.001	4.31 (3.42-5.44)	<0.001	6.04 (4.90-7.45)	<0.001
BMI group						
Underweight	0.83 (0.77-0.89)	<0.001	0.67 (0.58-0.78)	<0.001	0.82 (0.64-1.06)	0.135
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.33 (1.28-1.39)	<0.001	1.33 (1.23-1.44)	<0.001	1.44 (1.35-1.53)	<0.001
Obese	1.66 (1.58-1.74)	<0.001	1.68 (1.53-1.84)	<0.001	1.95 (1.83-2.08)	<0.001
Morbidly obese	1.85 (1.67-2.04)	<0.001	2.04 (1.75-2.38)	<0.001	2.25 (2.04-2.49)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.00 (0.94-1.07)	0.883	1.04 (0.93-1.16)	0.531	1.00 (0.91-1.09)	0.947
Past smoking	1.00 (0.94-1.06)	0.948	1.07 (0.97-1.18)	0.175	0.96 (0.89-1.03)	0.231

Latin America and the Caribbean, South-East Asia, Western Pacific

	LAC		SEA		WPA	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.77 (0.73- 0.81)	<0.001	0.99 (0.93- 1.05)	0.751	0.98 (0.92- 1.05)	0.638
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.16 (0.78- 1.74)	0.469	1.32 (0.97- 1.80)	0.082	2.20 (1.19- 4.07)	0.012
25-29 years	1.30 (0.87- 1.93)	0.202	2.24 (1.70- 2.95)	<0.001	2.56 (1.43- 4.58)	0.002
30-34 years	2.21 (1.50- 3.25)	<0.001	2.91 (2.22- 3.82)	<0.001	3.77 (2.07- 6.85)	<0.001
35-39 years	2.47 (1.67- 3.68)	<0.001	3.59 (2.76- 4.67)	<0.001	4.57 (2.58- 8.10)	<0.001
40-44 years	3.39 (2.33- 4.93)	<0.001	4.49 (3.49- 5.78)	<0.001	6.30 (3.55-11.17)	<0.001
45-49 years	4.72 (3.23- 6.90)	<0.001	5.10 (3.96- 6.57)	<0.001	7.47 (4.20-13.26)	<0.001
50-54 years	5.42 (3.71- 7.90)	<0.001	5.72 (4.43- 7.39)	<0.001	9.33 (5.23-16.63)	<0.001
55-59 years	6.37 (4.36- 9.31)	<0.001	6.17 (4.75- 8.03)	<0.001	10.70 (6.00-19.07)	<0.001
60-64 years	7.05 (4.78-10.40)	<0.001	6.81 (5.27- 8.81)	<0.001	12.24 (6.93-21.62)	<0.001
≥ 65 years	9.14 (6.27-13.32)	<0.001	8.48 (6.54-11.00)	<0.001	16.40 (9.25-29.07)	<0.001
BMI group						
Underweight	0.74 (0.58- 0.94)	0.013	0.69 (0.63- 0.76)	<0.001	0.61 (0.50- 0.73)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.64 (1.52- 1.78)	<0.001	1.57 (1.49- 1.66)	<0.001	1.70 (1.59- 1.83)	<0.001
Obese	2.14 (1.94- 2.36)	<0.001	2.04 (1.89- 2.20)	<0.001	2.48 (2.27- 2.69)	<0.001
Morbidly obese	2.39 (1.97- 2.89)	<0.001	1.32 (0.92- 1.91)	0.136	2.79 (2.14- 3.65)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.05 (0.96- 1.14)	0.269	0.98 (0.91- 1.06)	0.641	1.18 (1.11- 1.25)	<0.001
Past smoking	1.38 (1.28- 1.48)	<0.001	1.25 (1.12- 1.39)	<0.001	1.24 (1.12- 1.37)	<0.001
Covariate-adjusted§						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.68 (0.64- 0.72)	<0.001	0.86 (0.81-0.92)	<0.001	1.02 (0.96- 1.09)	0.510
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.07 (0.72- 1.59)	0.736	1.26 (0.93-1.72)	0.138	1.93 (1.05- 3.55)	0.034

	LAC		SEA		WPA	
25-29 years	1.15 (0.78- 1.70)	0.489	1.98 (1.50-2.60)	<0.001	2.02 (1.14- 3.58)	0.016
30-34 years	1.85 (1.26- 2.71)	0.002	2.47 (1.88-3.23)	<0.001	2.88 (1.61- 5.14)	<0.001
35-39 years	2.01 (1.35- 2.97)	0.001	3.09 (2.37-4.04)	<0.001	3.31 (1.90- 5.77)	<0.001
40-44 years	2.89 (1.99- 4.21)	<0.001	3.67 (2.85-4.73)	<0.001	4.50 (2.57- 7.87)	<0.001
45-49 years	3.92 (2.68- 5.73)	<0.001	4.23 (3.28-5.45)	<0.001	5.25 (3.01- 9.16)	<0.001
50-54 years	4.45 (3.05- 6.50)	<0.001	4.76 (3.68-6.16)	<0.001	6.57 (3.75-11.51)	<0.001
55-59 years	5.14 (3.51- 7.52)	<0.001	5.16 (3.95-6.74)	<0.001	7.61 (4.35-13.32)	<0.001
60-64 years	5.72 (3.89- 8.40)	<0.001	6.04 (4.65-7.83)	<0.001	9.02 (5.19-15.68)	<0.001
≥ 65 years	7.54 (5.16-11.00)	<0.001	7.42 (5.64-9.75)	<0.001	12.29 (7.04-21.43)	<0.001
BMI group						
Underweight	0.76 (0.62- 0.94)	0.012	0.69 (0.62-0.76)	<0.001	0.62 (0.52- 0.74)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.44 (1.34- 1.54)	<0.001	1.43 (1.35-1.52)	<0.001	1.48 (1.39- 1.58)	<0.001
Obese	1.92 (1.78- 2.07)	<0.001	1.83 (1.70-1.98)	<0.001	1.94 (1.80- 2.08)	<0.001
Morbidly obese	2.45 (2.15- 2.80)	<0.001	1.16 (0.74-1.80)	0.521	2.21 (1.77- 2.76)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.03 (0.96- 1.10)	0.432	0.88 (0.81-0.95)	0.001	1.24 (1.17- 1.32)	<0.001
Past smoking	0.99 (0.92- 1.06)	0.744	0.92 (0.83-1.03)	0.161	1.09 (1.00- 1.20)	0.064

Abbreviations: AFR=Africa; BMI=body mass index; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; P=P-value; Ref.=reference category; RR=Risk Ratio; SEA=South-East Asia; WPA=Western Pacific

* Standard errors were adjusted for clustering at the level of the primary sampling unit.
† All countries were weighted equally for this analysis.
‡ These regressions included only one of the variables shown in the table and a binary indicator for each country.
§ These regressions included sex, age by five-year groups, BMI group, a binary variable for current tobacco smoking, and a binary indicator for each country.

Table S4. Area under the curve (AUC) for predicting hypertension, defined by systolic BP ≥ 140mmHg or diastolic BP ≥ 90 mmHg, using age, BMI, sex, and smoking status, by world regions and country

Categorical predictors					Continuous predictors				
Country	**Age***	**Age* + BMI†,‡**	**Age* + BMI‡ + sex†**	**Age* + BMI‡ + sex + smoking status†,§**	**Country**	**Age‖**	**Age‖ + BMI†,#**	**Age‖ + BMI# + sex†**	**Age‖ + BMI# + sex + smoking status†,§**
Africa (AFR)									
Algeria	0.69	0.73	0.75	0.75	Algeria	0.72	0.75	0.75	0.75
Benin	0.60	0.66	0.67	0.67	Benin	0.64	0.68	0.68	0.68
Botswana	0.64	0.69	0.71	0.71	Botswana	0.68	0.70	0.72	0.72
B. Faso	0.59	0.66	0.68	0.68	B. Faso	0.64	0.70	0.70	0.70
Comoros	0.64	0.71	0.72	0.73	Comoros	0.68	0.73	0.73	0.73
Eswatini	0.70	0.74	0.75	0.75	Eswatini	0.73	0.75	0.76	0.76
Ghana**	0.50	0.60	0.62	0.62	Ghana	0.54	0.62	0.62	0.62
Kenya	0.65	0.70	0.71	0.72	Kenya	0.69	0.71	0.72	0.72
Lesotho	0.64	0.71	0.73	0.73	Lesotho	0.69	0.74	0.75	0.75
Liberia	0.64	0.70	0.72	0.73	Liberia	0.69	0.72	0.73	0.73
Malawi	0.64	0.68	0.72	0.72	Malawi	0.68	0.71	0.74	0.74
Moz.	0.62	0.66	0.69	0.69	Moz.	0.66	0.69	0.70	0.70
Namibia	0.50	0.60	0.62	0.62	Namibia	0.56	0.63	0.63	0.63
Seychelles	0.64	0.70	0.74	0.75	Seychelles	0.68	0.71	0.75	0.75
S. Africa	0.68	0.69	0.71	0.71	S. Africa	0.72	0.69	0.70	0.70
Tanzania	0.62	0.68	0.70	0.70	Tanzania	0.66	0.72	0.72	0.72
Togo	0.65	0.69	0.71	0.71	Togo	0.68	0.71	0.72	0.72
Uganda	0.61	0.64	0.66	0.66	Uganda	0.64	0.67	0.67	0.67
Zanzibar	0.70	0.74	0.75	0.76	Zanzibar	0.73	0.76	0.77	0.77
Eastern Mediterranean (EME)									
Egypt	0.68	-	-	-	Egypt	0.72	-	-	-
Iran	0.71	0.76	0.77	0.77	Iran	0.74	0.77	0.77	0.78
Iraq	0.71	0.75	0.76	0.76	Iraq	0.74	0.76	0.77	0.77
Lebanon	0.60	0.63	0.64	0.65	Lebanon	0.63	0.65	0.66	0.67
Morocco	0.70	0.74	0.75	0.75	Morocco	0.74	0.76	0.76	0.76
Sudan	0.62	0.68	0.69	0.69	Sudan	0.66	0.70	0.71	0.71
Europe (EUR)									
Albania	0.61	0.67	0.69	0.70	Albania	0.66	0.70	0.71	0.71
Azerbaijan	0.69	0.75	0.76	0.77	Azerbaijan	0.72	0.77	0.77	0.77
Belarus	0.71	0.77	0.78	0.78	Belarus	0.74	0.79	0.79	0.79
Georgia	0.65	0.73	0.74	0.74	Georgia	0.69	0.75	0.75	0.75
Kazakhstan	0.73	0.78	0.79	0.79	Kazakhstan	0.77	0.79	0.79	0.80
Kyrgyzstan	0.67	0.73	0.74	0.75	Kyrgyzstan	0.71	0.75	0.76	0.76
Moldova	0.70	0.75	0.76	0.77	Moldova	0.73	0.77	0.77	0.78
Romania	0.67	0.74	0.77	0.78	Romania	0.72	0.75	0.77	0.77
Russia**	0.51	0.61	0.63	0.63	Russia	0.67	0.71	0.71	0.71
Tajikistan	0.69	0.75	0.76	0.76	Tajikistan	0.72	0.76	0.76	0.76
Ukraine	0.67	-	-	-	Ukraine	0.71	-	-	-
Latin America and the Caribbean (LAC)									
Belize	0.68	0.74	0.75	0.76	Belize	0.73	0.75	0.76	0.76
Brazil	0.66	0.71	0.73	0.73	Brazil	0.70	0.73	0.74	0.74
Chile	0.76	0.80	0.82	0.82	Chile	0.80	0.82	0.83	0.83
Costa Rica	0.58	0.66	0.67	0.68	Costa Rica	0.62	0.67	0.68	0.68

Categorical predictors					Continuous predictors				
Country	**Age***	**Age* + BMI†,‡**	**Age* + BMI‡ + sex†**	**Age* + BMI‡ + sex + smoking status†,§**	**Country**	**Age‖**	**Age‖ + BMI†,#**	**Age‖ + BMI# + sex†**	**Age‖ + BMI# + sex + smoking status†,§**
Ecuador	0.64	0.71	0.74	0.74	Ecuador	0.68	0.73	0.75	0.75
Grenada	0.63	0.71	0.74	0.75	Grenada	0.68	0.72	0.75	0.75
Guyana	0.68	0.74	0.76	0.76	Guyana	0.71	0.74	0.76	0.76
Mexico	0.71	0.75	0.76	0.76	Mexico	0.74	0.77	0.78	0.78
Peru	0.58	-	-	-	Peru	0.66	-	-	-
SVG	0.71	0.75	0.76	0.77	SVG	0.74	0.77	0.77	0.77
South-East Asia (SEA)									
Bangladesh	0.56	0.64	0.68	-	Bangladesh	0.61	0.69	0.71	-
Bhutan	0.62	0.67	0.69	0.69	Bhutan	0.66	0.70	0.70	0.70
India	0.72	0.74	0.75	0.75	India	0.72	0.75	0.75	0.75
Indonesia	0.74	0.78	0.80	0.80	Indonesia	0.77	0.80	0.81	0.81
Nepal	0.65	0.70	0.72	0.73	Nepal	0.68	0.73	0.74	0.74
T.-Leste	0.59	0.65	0.67	0.68	T.-Leste	0.63	0.68	0.69	0.69
Western Pacific (WPA)									
Cambodia	0.62	0.69	0.71	0.72	Cambodia	0.66	0.73	0.74	0.74
China	0.66	0.73	0.74	0.75	China	0.71	0.76	0.77	0.77
Mongolia	0.67	0.68	0.70	0.70	Mongolia	0.71	0.75	0.76	0.76
Vanuatu	0.63	0.69	0.71	0.71	Vanuatu	0.68	0.71	0.72	0.72

Abbreviation: B. Faso=Burkina Faso, Moz.=Mozambique, S. Africa=South Africa, SVG=St. Vincent and the Grenadines, T.-Leste=Timor-Leste

* Age was categorized into five-year age groups.
† The logistic regressions included age as well as an interaction term between age and each of the predictor variables.
‡ BMI was grouped into five categories: underweight, normal weight, overweight, obese, and morbidly obese.
§ Smoking status was grouped into two categories: current non-smoker, and current smoker.
‖ Age is a continuous variable with restricted cubic splines with five knots placed at the fifth, 27.5th, 50th, 72.5th, and 95th percentiles.
BMI is a continuous variable with restricted cubic splines with five knots placed at the fifth, 27.5th, 50th, 72.5th, and 95th percentiles.
** For those countries with more than one third of the participants being 65 years or older (Russia and Ghana), we subdivided age into five-year age groups up to the age of 80 years.

Table S5. Prevalence of hypertension by five-year age group, sex, and world regions with countries weighted proportionate to their population size

Age group	Men	Women	Both sexes
Global			
15-19	5.1 (4.6-5.7)	3.3 (3.1-3.6)	4.3 (4.0-4.6)
20-24	9.6 (8.8-10.5)	5.4 (5.0-5.8)	7.5 (7.0-8.0)
25-29	14.9 (12.8-17.1)	8.0 (7.5-8.5)	11.3 (10.2-12.4)
30-34	17.8 (16.6-18.9)	11.9 (11.2-12.6)	14.7 (14.0-15.4)
35-39	20.6 (19.4-22.0)	15.2 (13.9-16.5)	17.7 (16.7-18.7)
40-44	25.2 (23.6-26.9)	23.4 (21.5-25.3)	24.2 (22.9-25.5)
45-49	30.4 (28.8-32.1)	28.5 (26.9-30.1)	29.4 (28.2-30.6)
50-54	35.6 (33.6-37.7)	37.0 (34.8-39.3)	36.2 (34.7-37.8)
55-59	42.0 (39.4-44.6)	41.4 (38.7-44.2)	41.7 (39.6-43.8)
60-64	45.8 (42.7-48.9)	49.7 (46.5-52.8)	47.8 (45.5-50.2)
≥65	56.0 (53.4-58.5)	60.9 (58.4-63.4)	58.6 (56.6-60.7)
Africa			
15-19	12.0 (9.7-14.5)	10.4 (8.2-12.9)	11.2 (9.5-12.9)
20-24	19.1 (16.5-21.9)	13.9 (11.7-16.2)	16.3 (14.6-18.2)
25-29	20.4 (18.3-22.5)	13.9 (12.4-15.5)	16.7 (15.3-18.1)
30-34	25.3 (22.9-27.8)	19.1 (17.2-21.1)	21.9 (20.4-23.5)
35-39	28.6 (25.8-31.5)	25.6 (23.4-27.9)	27.0 (25.1-28.9)
40-44	31.0 (27.7-34.5)	32.5 (30.1-35.0)	31.8 (29.7-33.9)
45-49	38.2 (34.9-41.6)	41.8 (38.7-44.9)	40.1 (37.9-42.4)
50-54	42.1 (39.1-45.1)	49.6 (46.2-53.1)	45.8 (43.5-48.1)
55-59	51.5 (47.8-55.1)	54.7 (51.2-58.1)	52.9 (50.3-55.6)
60-64	50.7 (47.1-54.4)	58.6 (55.0-62.2)	54.4 (51.8-57.0)
≥65	55.4 (51.3-59.6)	61.7 (57.5-65.8)	58.7 (55.7-61.7)
Eastern Mediterranean			
15-19	11.3 (9.0-13.8)	5.6 (4.4-6.9)	8.6 (7.2-10.1)
20-24	13.1 (11.0-15.3)	8.7 (7.3-10.1)	11.0 (9.6-12.3)
25-29	14.2 (12.1-16.4)	11.3 (10.0-12.7)	12.7 (11.5-14.1)
30-34	13.9 (12.1-15.8)	15.0 (13.6-16.4)	14.4 (13.3-15.7)
35-39	20.4 (18.4-22.4)	19.1 (17.5-20.7)	19.7 (18.4-21.1)
40-44	27.0 (24.7-29.3)	28.6 (26.5-30.7)	27.8 (26.2-29.4)
45-49	34.8 (32.5-37.2)	35.0 (32.8-37.2)	34.9 (33.2-36.6)
50-54	41.6 (39.2-44.0)	45.9 (43.4-48.4)	43.7 (41.9-45.5)
55-59	50.2 (47.5-53.0)	53.0 (50.4-55.6)	51.6 (49.7-53.6)
60-64	62.3 (59.3-65.3)	59.1 (56.2-62.0)	60.8 (58.7-62.8)
≥65	71.4 (69.4-73.4)	65.3 (63.2-67.2)	68.4 (66.9-69.8)
Europe			
15-19	6.5 (3.9-9.7)	4.7 (2.8-7.0)	5.5 (3.5-8.0)
20-24	6.7 (2.9-12.0)	6.8 (4.7-9.2)	6.7 (4.1-10.1)
25-29	23.6 (5.4-49.6)	12.9 (8.3-18.2)	19.1 (7.4-34.7)
30-34	26.7 (17.7-36.9)	16.1 (11.7-21.1)	20.8 (15.9-26.2)
35-39	26.5 (17.5-36.7)	14.0 (4.8-27.1)	17.9 (8.9-29.2)
40-44	22.1 (10.5-36.4)	48.0 (30.6-65.7)	36.2 (22.0-51.8)
45-49	32.4 (21.9-43.9)	37.0 (26.7-48.0)	35.3 (27.4-43.7)
50-54	58.6 (42.6-73.6)	49.1 (42.3-55.8)	53.8 (43.7-63.8)
55-59	60.6 (52.8-68.0)	64.2 (58.7-69.5)	62.5 (57.4-67.4)
60-64	69.8 (62.8-76.4)	73.6 (68.4-78.5)	72.0 (68.3-75.5)
≥65	73.2 (67.4-78.7)	79.8 (75.5-83.9)	77.6 (73.6-81.3)

Age group	Men	Women	Both sexes
Latin America and the Caribbean			
15-19	9.3 (5.8-13.5)	2.3 (1.5-3.4)	5.7 (3.9-7.8)
20-24	9.2 (7.7-10.8)	3.7 (2.8-4.7)	6.2 (5.3-7.1)
25-29	14.6 (12.3-17.0)	6.2 (5.0-7.6)	10.0 (8.7-11.3)
30-34	16.4 (14.2-18.8)	12.7 (10.9-14.6)	14.2 (12.8-15.7)
35-39	20.5 (18.3-22.8)	16.6 (14.5-18.8)	18.1 (16.5-19.7)
40-44	26.5 (23.9-29.2)	22.0 (19.4-24.7)	23.7 (21.8-25.6)
45-49	33.5 (30.5-36.6)	32.2 (29.5-35.0)	32.7 (30.7-34.8)
50-54	43.1 (39.7-46.5)	38.5 (35.4-41.7)	40.4 (38.1-42.8)
55-59	46.1 (42.4-49.8)	47.4 (44.0-50.9)	46.9 (44.3-49.4)
60-64	52.1 (47.2-57.0)	51.0 (47.3-54.8)	51.5 (48.5-54.5)
≥65	59.3 (56.6-62.0)	66.5 (64.2-68.8)	63.4 (61.6-65.2)
South-East Asia			
15-19	4.3 (3.8-4.9)	2.8 (2.7-3.0)	3.6 (3.3-4.0)
20-24	8.2 (7.6-8.9)	4.6 (4.4-4.8)	6.5 (6.1-6.8)
25-29	12.9 (12.0-13.7)	7.5 (7.2-7.8)	10.2 (9.7-10.6)
30-34	17.2 (16.2-18.2)	11.5 (11.2-11.9)	14.3 (13.8-14.8)
35-39	20.0 (19.1-21.0)	16.7 (16.1-17.3)	18.3 (17.8-18.9)
40-44	25.4 (24.3-26.5)	23.7 (22.7-24.6)	24.5 (23.8-25.2)
45-49	28.2 (27.0-29.4)	29.6 (28.3-30.9)	28.9 (27.9-29.9)
50-54	32.0 (30.6-33.4)	43.2 (39.3-47.2)	34.7 (32.5-36.8)
55-59	36.0 (31.2-40.9)	46.4 (43.0-49.7)	41.6 (38.1-45.2)
60-64	41.1 (35.3-47.1)	50.3 (44.5-56.0)	45.8 (40.4-51.3)
≥65	44.4 (38.3-50.7)	63.8 (59.3-68.2)	54.4 (48.8-59.9)
Western Pacific			
15-19	1.8 (0.4-4.3)	0.9 (0.0-3.2)	1.4 (0.4-3.1)
20-24	9.5 (5.8-13.9)	1.5 (0.4-3.2)	5.5 (3.4-8.1)
25-29	12.4 (8.2-17.3)	1.0 (0.2-2.4)	6.1 (4.1-8.5)
30-34	14.7 (11.0-18.9)	5.3 (3.1-8.2)	9.9 (7.4-12.8)
35-39	18.1 (14.3-22.2)	8.1 (5.8-10.7)	12.8 (10.5-15.4)
40-44	23.3 (19.2-27.6)	15.3 (12.6-18.2)	19.0 (16.5-21.6)
45-49	29.9 (25.6-34.3)	20.5 (17.1-24.3)	25.0 (22.1-27.9)
50-54	33.2 (28.9-37.5)	30.5 (26.9-34.3)	31.8 (28.9-34.7)
55-59	38.4 (34.4-42.6)	34.1 (29.8-38.6)	36.2 (32.9-39.4)
60-64	41.8 (36.8-46.8)	45.2 (40.2-50.2)	43.6 (40.0-47.2)
≥65	55.1 (51.2-59.1)	55.6 (51.8-59.3)	55.4 (52.3-58.4)

Table S6. Association of hypertension with five-year age group, sex, BMI group, and smoking status, by world regions with countries weighted proportionate to their population size *

Africa, Eastern Mediterranean, Europe

	AFR		EME		EUR	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted†						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.91 (0.87-0.95)	<0.001	0.98 (0.94-1.01)	0.158	1.13 (0.92-1.40)	0.237
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.65 (1.37-1.97)	<0.001	1.15 (0.95-1.39)	0.152	1.34 (0.82-2.18)	0.238
25-29 years	1.80 (1.51-2.13)	<0.001	1.42 (1.18-1.70)	<0.001	3.79 (1.78-8.08)	0.001
30-34 years	2.32 (1.96-2.74)	<0.001	1.67 (1.40-1.99)	<0.001	4.06 (2.57-6.42)	<0.001
35-39 years	2.83 (2.39-3.34)	<0.001	2.31 (1.95-2.74)	<0.001	3.69 (1.98-6.88)	<0.001
40-44 years	3.35 (2.84-3.94)	<0.001	3.20 (2.71-3.80)	<0.001	7.45 (4.44-12.50)	<0.001
45-49 years	4.11 (3.49-4.85)	<0.001	4.08 (3.45-4.83)	<0.001	7.17 (4.54-11.33)	<0.001
50-54 years	5.10 (4.32-6.02)	<0.001	5.20 (4.40-6.13)	<0.001	11.95 (6.82-20.92)	<0.001
55-59 years	5.70 (4.84-6.71)	<0.001	6.09 (5.15-7.21)	<0.001	13.78 (7.90-24.04)	<0.001
60-64 years	6.29 (5.34-7.40)	<0.001	6.72 (5.68-7.95)	<0.001	15.78 (8.98-27.71)	<0.001
≥ 65 years	6.08 (5.10-7.24)	<0.001	8.08 (6.85-9.54)	<0.001	17.55 (9.57-32.20)	<0.001
BMI group						
Underweight	0.89 (0.83-0.96)	0.002	0.63 (0.54-0.73)	<0.001	0.70 (0.52-0.93)	0.014
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.44 (1.38-1.50)	<0.001	1.52 (1.40-1.64)	<0.001	1.83 (1.70-1.96)	<0.001
Obese	1.86 (1.77-1.96)	<0.001	2.05 (1.89-2.23)	<0.001	2.78 (2.50-3.09)	<0.001
Morbidly obese	2.21 (1.98-2.46)	<0.001	2.43 (2.12-2.78)	<0.001	3.54 (3.16-3.96)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.10 (1.02-1.17)	0.009	0.98 (0.89-1.08)	0.669	0.86 (0.82-0.91)	<0.001
Past smoking	1.30 (1.21-1.39)	<0.001	1.45 (1.34-1.57)	<0.001	1.16 (1.11-1.22)	<0.001
Covariate-adjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	

	AFR		EME		EUR	
Female	0.88 (0.84-0.92)	<0.001	0.94 (0.90-0.97)	<0.001	0.91 (0.69-1.22)	0.540
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.54 (1.24-1.93)	<0.001	0.92 (0.73-1.18)	0.525	0.66 (0.23-1.86)	0.430
25-29 years	1.51 (1.21-1.87)	<0.001	1.07 (0.85-1.35)	0.584	2.91 (0.96-8.76)	0.058
30-34 years	1.98 (1.60-2.45)	<0.001	1.15 (0.92-1.43)	0.228	2.01 (0.97-4.17)	0.062
35-39 years	2.29 (1.85-2.83)	<0.001	1.53 (1.23-1.90)	<0.001	1.13 (0.58-2.20)	0.709
40-44 years	2.73 (2.22-3.36)	<0.001	1.92 (1.56-2.37)	<0.001	1.55 (1.04-2.32)	0.032
45-49 years	3.23 (2.62-3.98)	<0.001	2.38 (1.93-2.95)	<0.001	1.99 (1.13-3.49)	0.017
50-54 years	4.02 (3.26-4.95)	<0.001	2.90 (2.35-3.57)	<0.001	4.34 (2.80-6.72)	<0.001
55-59 years	4.33 (3.51-5.33)	<0.001	3.41 (2.76-4.20)	<0.001	4.22 (2.69-6.62)	<0.001
60-64 years	5.15 (4.18-6.34)	<0.001	4.01 (3.25-4.93)	<0.001	4.80 (3.06-7.53)	<0.001
≥ 65 years	5.11 (4.11-6.34)	<0.001	5.02 (4.08-6.17)	<0.001	5.10 (3.11-8.37)	<0.001
BMI group						
Underweight	0.85 (0.78-0.92)	<0.001	0.72 (0.64-0.81)	<0.001	0.62 (0.28-1.37)	0.238
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.36 (1.28-1.45)	<0.001	1.36 (1.30-1.43)	<0.001	1.08 (0.71-1.66)	0.710
Obese	1.65 (1.55-1.77)	<0.001	1.68 (1.60-1.76)	<0.001	1.84 (1.31-2.59)	<0.001
Morbidly obese	1.89 (1.65-2.17)	<0.001	2.04 (1.84-2.26)	<0.001	2.09 (1.65-2.64)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.00 (0.92-1.08)	0.917	1.03 (0.97-1.10)	0.334	0.98 (0.81-1.19)	0.836
Past smoking	1.02 (0.94-1.10)	0.690	1.07 (1.01-1.13)	0.029	0.98 (0.86-1.12)	0.772

Latin American and the Caribbean, South-East Asia, Western Pacific

	LAC		SEA		WPA	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted†						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.93 (0.89-0.96)	<0.001	0.89 (0.84-0.95)	<0.001	0.86 (0.81-0.92)	<0.001
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.11 (0.77-1.61)	0.580	1.76 (1.61-1.93)	<0.001	3.84 (1.49-9.89)	0.005
25-29 years	1.81 (1.25-2.63)	0.002	2.77 (2.51-3.05)	<0.001	4.33 (1.72-10.91)	0.002
30-34 years	2.58 (1.80-3.69)	<0.001	3.89 (3.54-4.29)	<0.001	7.01 (2.73-18.00)	<0.001
35-39 years	3.31 (2.32-4.73)	<0.001	5.18 (4.76-5.64)	<0.001	9.05 (3.68-22.26)	<0.001
40-44 years	4.59 (3.22-6.54)	<0.001	6.86 (6.30-7.47)	<0.001	13.38 (5.43-32.95)	<0.001
45-49 years	6.29 (4.43-8.93)	<0.001	8.12 (7.54-8.74)	<0.001	17.57 (7.01-44.04)	<0.001
50-54 years	7.75 (5.46-10.99)	<0.001	9.63 (8.93-10.39)	<0.001	22.39 (9.00-55.75)	<0.001
55-59 years	8.90 (6.27-12.64)	<0.001	11.29 (10.31-12.37)	<0.001	25.44 (10.34-62.58)	<0.001
60-64 years	9.72 (6.84-13.81)	<0.001	12.62 (11.69-13.62)	<0.001	30.66 (12.30-76.41)	<0.001
≥ 65 years	12.07 (8.53-17.08)	<0.001	15.55 (14.29-16.92)	<0.001	38.88 (15.65-96.60)	<0.001
BMI group						
Underweight	0.78 (0.62-0.99)	0.037	0.69 (0.63-0.75)	<0.001	0.58 (0.49-0.70)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.70 (1.57-1.84)	<0.001	1.60 (1.52-1.69)	<0.001	1.72 (1.61-1.84)	<0.001
Obese	2.39 (2.16-2.64)	<0.001	2.08 (1.93-2.25)	<0.001	2.53 (2.32-2.75)	<0.001
Morbidly obese	2.80 (2.35-3.33)	<0.001	1.44 (1.02-2.02)	0.036	2.95 (2.28-3.80)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	0.96 (0.88-1.04)	0.299	0.91 (0.84-0.99)	0.028	1.19 (1.12-1.27)	<0.001
Past smoking	1.36 (1.28-1.45)	<0.001	1.27 (1.14-1.41)	<0.001	1.58 (1.39-1.79)	<0.001
Covariate-adjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.87 (0.83-0.91)	<0.001	0.87 (0.84-0.90)	<0.001	0.83 (0.77-0.89)	<0.001
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.04 (0.72-1.52)	0.828	1.61 (1.34-1.93)	<0.001	3.20 (1.26-8.12)	0.015

	LAC		SEA		WPA	
25-29 years	1.61 (1.11-2.35)	0.012	2.40 (2.00-2.88)	<0.001	3.61 (1.44-9.03)	0.006
30-34 years	2.15 (1.49-3.08)	<0.001	3.33 (2.79-3.99)	<0.001	5.69 (2.22-14.57)	<0.001
35-39 years	2.62 (1.83-3.76)	<0.001	3.73 (3.17-4.39)	<0.001	7.39 (3.01-18.13)	<0.001
40-44 years	3.70 (2.58-5.29)	<0.001	4.83 (4.10-5.68)	<0.001	10.65 (4.33-26.23)	<0.001
45-49 years	4.98 (3.49-7.10)	<0.001	5.56 (4.76-6.48)	<0.001	13.59 (5.46-33.85)	<0.001
50-54 years	5.97 (4.19-8.50)	<0.001	6.10 (5.26-7.08)	<0.001	17.70 (7.12-44.02)	<0.001
55-59 years	6.91 (4.85-9.86)	<0.001	8.41 (7.20-9.82)	<0.001	20.20 (8.21-49.71)	<0.001
60-64 years	7.55 (5.29-10.79)	<0.001	10.25 (8.88-11.83)	<0.001	24.38 (9.79-60.74)	<0.001
≥ 65 years	9.79 (6.90-13.91)	<0.001	13.72 (11.76-16.00)	<0.001	31.66 (12.78-78.44)	<0.001
BMI group						
Underweight	0.81 (0.66-0.98)	0.030	0.69 (0.64-0.73)	<0.001	0.64 (0.55-0.74)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.40 (1.32-1.48)	<0.001	1.65 (1.56-1.73)	<0.001	1.55 (1.45-1.66)	<0.001
Obese	1.88 (1.77-1.99)	<0.001	2.01 (1.88-2.15)	<0.001	2.33 (2.11-2.57)	<0.001
Morbidly obese	2.42 (2.17-2.70)	<0.001	1.75 (1.32-2.30)	<0.001	1.86 (1.04-3.33)	0.036
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.07 (1.00-1.15)	0.044	0.87 (0.84-0.91)	<0.001	0.98 (0.91-1.05)	0.551
Past smoking	1.07 (1.03-1.12)	0.002	0.96 (0.91-1.02)	0.244	1.13 (1.02-1.26)	0.023

Abbreviations: AFR=Africa; BMI=body mass index; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; P=P-value; Ref.=reference category; RR=Risk Ratio; SEA=South-East Asia; WPA=Western Pacific

* Standard errors were adjusted for clustering at the level of the primary sampling unit.
† These regressions included only one of the variables shown in the table and a binary indicator for each country.
‡ These regressions included sex, age by five-year groups, BMI group, a three-level variable for tobacco smoking, and a binary indicator for each country.

Table S7. Area under the curve (AUC) for predicting hypertension using age, BMI, sex, and smoking status, by world regions and country, with random forest regression

Country	Age*	Age* + BMI†	Age* + BMI† + sex	Age* + BMI† + sex + smoking status‡
Africa (AFR)				
Algeria	0.64	0.64	0.61	0.64
Benin	0.55	0.59	0.57	0.59
Botswana	0.64	0.66	0.64	0.66
Burkina Faso	0.61	0.62	0.62	0.61
Comoros	0.60	0.59	0.55	0.58
Eswatini	0.68	0.66	0.65	0.67
Ghana§	0.54	0.58	0.58	0.58
Kenya	0.55	0.62	0.58	0.60
Lesotho	0.67	0.67	0.67	0.66
Liberia	0.59	0.58	0.57	0.60
Malawi	0.63	0.64	0.60	0.62
Mozambique	0.56	0.60	0.59	0.61
Namibia	0.55	0.60	0.59	0.63
Seychelles	0.61	0.54	0.53	0.58
South Africa	0.71	0.70	0.70	0.69
Tanzania	0.60	0.62	0.59	0.62
Togo	0.50	0.53	0.51	0.53
Uganda	0.50	0.54	0.52	0.56
Zanzibar	0.67	0.68	0.66	0.66
Eastern Mediterranean (EME)				
Egypt	0.70	-	-	-
Iran	0.67	0.72	0.69	0.71
Iraq	0.69	0.71	0.70	0.70
Lebanon	0.64	0.66	0.65	0.66
Morocco	0.65	0.65	0.66	0.65
Sudan	0.58	0.63	0.61	0.62
Europe (EUR)				
Albania	0.50	0.52	0.51	0.51
Azerbaijan	0.67	0.72	0.71	0.71
Belarus	0.73	0.73	0.74	0.74
Georgia	0.70	0.72	0.71	0.70
Kazakhstan	0.72	0.72	0.68	0.73
Kyrgyzstan	0.69	0.69	0.69	0.69
Moldova	0.70	0.71	0.70	0.70
Romania	0.67	0.70	0.70	0.68
Russia§	0.65	0.66	0.64	0.65
Tajikistan	0.68	0.69	0.70	0.69
Ukraine	0.61	-	-	-
Latin America and the Caribbean (LAC)				
Belize	0.64	0.61	0.57	0.64
Brazil	0.68	0.68	0.66	0.68
Chile	0.73	0.72	0.72	0.74
Costa Rica	0.65	0.71	0.70	0.70
Ecuador	0.67	0.71	0.71	0.71
Grenada	0.66	0.65	0.64	0.64
Guyana	0.66	0.64	0.59	0.65
Mexico	0.63	0.67	0.55	0.62

Country	Age*	Age* + BMI†	Age* + BMI† + sex	Age* + BMI† + sex + smoking status‡
Peru	0.50	-	-	-
SVG	0.61	0.67	0.63	0.67
South-East Asia (SEA)				
Bangladesh	0.50	0.54	0.53	-
Bhutan	0.64	0.60	0.60	0.62
India	0.66	0.72	0.72	0.72
Indonesia	0.62	0.64	0.62	0.65
Nepal	0.58	0.56	0.54	0.59
Timor-Leste	0.50	0.53	0.53	0.53
Western Pacific (WPA)				
Cambodia	0.64	0.68	0.69	0.77
China	0.62	0.59	0.56	0.63
Mongolia	0.60	0.67	0.61	0.64
Vanuatu	0.59	0.58	0.58	0.61

Country abbreviation: SVG = St. Vincent and the Grenadines

* Age was categorized into five-year age groups.
† BMI was grouped into five categories: underweight, normal weight, overweight, obese, and morbidly obese.
‡ Smoking status was grouped into two categories: current non-smoker, and current smoker.
§ For those countries with more than one third of the participants being 65 years or older (Russia and Ghana), we subdivided age into five-year age groups up to the age of 80 years.

Table S8. Hypertension prevalence, weighted and unweighted, by world regions and country

Country	**Hypertension prevalence, unweighted** in Percent (95% CI)	**Hypertension prevalence, weighted** in Percent (95% CI)
Africa (AFR)		
Algeria	27.5 (26.0-28.9)	23.5 (22.2-24.9)
Benin	30.8 (29.0-32.8)	25.9 (22.6-29.4)
Botswana	33.6 (31.7-35.6)	29.4 (27.3-31.6)
Burkina Faso	17.9 (16.3-19.5)	18.9 (16.9-21.0)
Comoros	26.8 (24.2-29.5)	26.8 (24.2-29.5)
Eswatini	29.7 (28.0-31.5)	24.0 (22.1-26.0)
Ghana	52.6 (50.1-55.1)	42.5 (38.9-46.1)
Kenya	26.8 (25.0-28.7)	23.7 (21.4-26.0)
Lesotho	17.4 (16.3-18.5)	17.6 (16.2-18.9)
Liberia	26.9 (24.5-29.4)	26.9 (24.5-29.4)
Malawi	31.5 (29.5-33.6)	32.9 (30.6-35.2)
Mozambique	35.8 (32.6-39.0)	32.1 (27.1-37.3)
Namibia	42.6 (40.9-44.4)	43.2 (41.0-45.3)
Seychelles*	33.3	30.2
South Africa	46.6 (45.2-48.0)	34.2 (32.0-36.3)
Tanzania	30.8 (29.0-32.6)	25.9 (23.7-28.2)
Togo	20.5 (19.0-22.0)	19.8 (18.1-21.6)
Uganda	25.0 (23.5-26.4)	24.4 (22.5-26.4)
Zanzibar	34.2 (32.3-36.1)	30.9 (27.3-34.6)
Total for AFR	31.5 (30.9-32.0)	28.0 (27.4-28.7)
Eastern Mediterranean (EME)		
Egypt	16.7 (16.0-17.4)	17.6 (16.7-18.4)
Iran	28.6 (28.0-29.3)	28.5 (27.8-29.1)
Iraq	43.1 (41.2-44.9)	35.6 (33.4-37.8)
Lebanon	38.4 (36.0-40.8)	35.2 (30.5-40.1)
Morocco	33.0 (31.7-34.2)	29.3 (28.0-30.7)
Sudan	35.4 (33.5-37.4)	31.5 (29.7-33.3)
Total for EME	28.5 (28.0-29.1)	29.6 (28.6-30.6)
Europe (EUR)		
Albania	23.4 (21.9-24.9)	23.9 (21.9-25.9)
Azerbaijan	38.0 (35.8-40.2)	29.3 (27.1-31.7)
Belarus	51.5 (49.6-53.4)	44.9 (42.7-47.0)
Georgia	44.5 (42.6-46.4)	37.0 (34.9-39.2)
Kazakhstan	27.4 (26.4-28.5)	27.4 (26.4-28.5)
Kyrgyzstan	48.9 (46.3-51.5)	42.9 (39.5-46.3)
Moldova	48.6 (46.7-50.6)	39.6 (37.2-42.0)
Romania*	49.6	49.6
Russia	63.9 (60.8-67.0)	39.3 (30.2-48.8)
Tajikistan	43.8 (41.0-46.7)	32.1 (28.6-35.7)
Ukraine	25.1 (23.5-26.6)	25.4 (23.9-27.0)
Total for EUR	38.2 (36.7-39.6)	35.6 (32.9-38.4)
Latin America and the Caribbean (LAC)		
Belize	28.5 (26.1-31.0)	21.0 (17.9-24.3)
Brazil	30.5 (30.0-30.9)	32.2 (31.4-32.9)
Chile	30.8 (28.8-32.8)	25.8 (23.7-27.9)
Costa Rica	36.1 (33.2-39.1)	28.3 (25.3-31.5)
Ecuador	9.5 (9.0-10.1)	13.1 (12.3-13.9)
Grenada*	41.9	38.8
Guyana	29.2 (27.4-31.0)	25.7 (23.7-27.7)

Mexico	24.2 (23.5-24.8)	30.2 (28.6-31.9)
Peru	26.4 (25.7-27.1)	27.7 (26.8-28.6)
St. Vincent & the Grenadines	30.6 (28.3-32.9)	20.7 (17.6-24.0)
Total for LAC	25.0 (24.5-25.6)	26.3 (23.8-28.9)
South-East Asia (SEA)		
Bangladesh	26.3 (25.1-27.5)	25.6 (24.3-27.0)
Bhutan	39.3 (37.0-41.5)	35.7 (32.8-38.6)
India	13.2 (13.1-13.3)	14.7 (14.5-14.9)
Indonesia	24.2 (22.7-25.7)	31.1 (29.5-32.8)
Nepal	29.3 (27.3-31.4)	25.6 (23.5-27.8)
Timor-Leste	27.7 (25.6-29.8)	27.7 (25.6-29.8)
Total for SEA	14.0 (13.8-14.3)	26.7 (25.7-27.8)
Western Pacific (WPA)		
Cambodia	12.6 (11.5-13.8)	11.2 (10.1-12.3)
China	29.1 (27.5-30.7)	29.1 (27.5-30.7)
Mongolia	31.6 (29.7-33.5)	26.6 (24.4-28.9)
Vanuatu	29.8 (27.7-32.0)	28.1 (25.8-30.6)
Total for WPA	26.3 (25.2-27.3)	23.8 (22.6-24.9)
Total	18.8 (18.6-19.1)	28.9 (28.1-29.8)

* Standard errors were adjusted at the level of Primary Sampling Unit (PSU). We adjusted for standard errors at the country-level for Seychelles, Romania, and Grenada, as those surveys did not provide information on PSU.

Table S9. Survey characteristics for those with missing blood pressure measurement or no information about taking blood pressure lowering medication by world regions and country *

Country	No.	Median age (y)	Female (%)	Age range (y)	Difference to the sample used in the analysis … … in median age (y)†	… in the percent who is female (% points)‡
Africa (AFR)						
Algeria	192	40.0	51.6	18-68	0.0	-4.4
Benin	36	36.0	52.8	18-66	1.0	-1.8
Botswana	65	30.0	67.7	15-69	-4.0	0.1
Burkina Faso	711	37.0	41.2	25-64	1.0	-12.7
Comoros	82	38.5	75.6	25-64	0.5	4.4
Eswatini	351	34.0	66.4	15-71	1.0	1.3
Ghana	598	58.0	63.9	18-102	-2.0	17.0
Kenya	71	39.0	54.9	20-65	4.0	-5.3
Lesotho	233	28.0	43.3	15-59	1.0	-9.3
Liberia	37	35.0	54.1	25-64	1.0	-1.3
Malawi	1,298	33.0	60.9	25-64	-4.0	-8.8
Mozambique	235	35.0	56.2	25-64	-3.0	-2.2
Namibia	790	44.0	39.4	35-64	-2.0	-18.2
Seychelles	1	45.0	0.0	45-45	-2.0	-57.2
South Africa	2,017	34.0	53.5	15-95	-2.0	-6.8
Tanzania	72	48.0	56.9	24-64	8.0	3.1
Togo	226	30.0	59.3	15-64	-2.0	7.4
Uganda	94	34.5	62.8	19-69	1.5	3.1
Zanzibar	33	49.0	90.9	26-63	9.0	29.5
Total for AFR	**7,142**§	**36.0**‖	**56.2**‖	**-**	**0.0**‖	**-1.4**‖
Eastern Mediterranean (EME)						
Egypt	74	21.0	63.5	15-59	-12.0	10.5
Iran	2,377	39.0	48.5	18-92	-4.0	0.9
Iraq	42	36.0	52.4	18-76	-4.0	-8.1
Lebanon	272	46.0	58.8	17-69	4.0	0.3
Morocco	31	41.0	58.1	20-75	-3.0	-7.1
Sudan	70	35.0	45.7	18-68	-1.0	-19.4
Total for EME	**2,866**§	**37.5**‖	**55.3**‖	**-**	**-3.5**‖	**-3.4**‖
Europe (EUR)						
Albania	285	27.0	50.2	15-49	-6.0	-5.0
Azerbaijan	12	49.0	75.0	23-68	2.0	15.6
Belarus	4	51.5	25.0	37-59	3.5	-33.3
Georgia	185	46.0	54.6	18-69	-4.0	-15.9
Kazakhstan	1,762	38.0	62.8	15-90	-5.0	5.5
Kyrgyzstan	10	40.0	40.0	33-62	-4.0	-24.0
Moldova	222	46.0	55.4	19-69	-2.0	-6.9
Romania	0	-	-	-	-	-
Russia	164	62.0	65.9	19-90	0.0	1.8
Tajikistan	18	36.0	66.7	19-66	-3.0	7.2
Ukraine	1,766	33.0	64.9	15-49	0.0	-3.5
Total for EUR	**4,428**§	**43.0**‖	**59.1**‖	**-**	**-4.0**‖	**-0.4**‖
Latin America and the Caribbean (LAC)						
Belize	6	36.5	83.3	21-55	-7.5	24.4
Brazil	2,808	38.0	51.0	18-107	-3.0	-5.5
Chile	445	47.0	54.4	15-94	1.0	-5.4
Costa Rica	182	45.0	68.1	19-89	-2.0	-4.0
Ecuador	7,310	17.0	55.7	15-59	-17.0	-3.0

Country	No.	Median age (y)	Female (%)	Age range (y)	Difference to the sample used in the analysis … … in median age (y)†	… in the percent who is female (% points)‡
Grenada	32	38.0	37.5	25-64	-6.0	-22.4
Guyana	23	48.0	52.2	20-69	8.0	-7.7
Mexico	9,071	29.0	41.8	15-99	-6.0	-14.8
Peru	1,649	53.0	39.1	40-98	-1.0	-13.5
SVG	15	55.0	53.3	41-66	13.0	-2.6
Total for LAC	**21,541**§	**41.5**‖	**52.8**‖	**-**	**-1.5**‖	**-6.1**‖
South-East Asia (SEA)						
Bangladesh	882	48.0	33.7	35-95	0.0	-15.8
Bhutan	9	47.0	44.4	35-64	9.0	-17.6
India	15,037	28.0	77.9	15-54	-2.0	-7.7
Indonesia	70	51.0	54.3	15-86	16.0	1.1
Nepal	22	45.0	45.5	18-65	5.0	-22.4
Timor-Leste	44	45.0	54.5	18-69	5.0	-4.1
Total for SEA	**16,064**§	**46.0**‖	**49.9**‖	**-**	**7.0**‖	**-10.4**‖
Western Pacific (WPA)						
Cambodia	119	40.0	54.6	25-64	-3.0	-10.0
China	7,096	32.3	53.7	15-106	-17.8	1.3
Mongolia	32	49.5	25.0	20-64	13.5	-15.9
Vanuatu	109	39.5	52.7	25-64	-0.5	3.0
Total for WPA	**7,356**§	**39.8**‖	**53.2**‖	**-**	**-1.8**‖	**2.2**‖
Total	**59,397**#	**39.0****	**54.4****	**-**	**-1.0****	**-4.3****

Country abbreviation: SVG=St. Vincent and the Grenadines

* All values are unweighted.
† The difference was calculated by subtracting, separately for each country, the median age of the sample included in the analysis from the median age of the excluded sample.
‡ The difference was calculated by subtracting, separately for each country, the percentage of females in the sample included in the analysis from the percentage of females in the excluded sample.
§ Sum across all countries in the respective region.
‖ Median across all countries in the respective region.
Sum across all countries.
** Median across all countries.

Table S10. Sample characteristics among those excluded due to a missing outcome variable

	Included in analysis	Missing outcome variable
Characteristic	**Percent***	**Percent***
Sex		
Male	47.4	47.3
Female	52.6	52.7
Age		
15-19 years	5.7	13.1
20-24 years	10.3	9.7
25-29 years	14.6	12.2
30-24 years	12.3	10.1
35-39 years	12.1	11.7
40-44 years	11.4	10.6
45-49 years	9.6	8.5
40-54 years	7.8	7.1
55-59 years	6.2	5.3
60-64 years	5.0	4.5
≥65 years	5.0	7.3
Body Mass Index		
<18.5 kg/m^2	7.1	7.4
18.5-24.9 kg/m^2	49.5	54.6
25.0-29.9 kg/m^2	26.6	24.4
30.0-39.9 kg/m^2	15.1	12.0
≥ 40 kg/m^2	1.7	1.6
Smoking		
Non-smoker	70.2	69.0
Current smoker	21.5	24.3
Past smoker	8.3	6.6

* Values are weighted with the same weight for each country.

Table S11. Prevalence of hypertension by five-year age group, sex, and world regions *

Age group	Men	Women	Both sexes
Global			
15-19	10.0 (8.9-11.1)	7.1 (6.2-8.1)	8.6 (7.8-9.3)
20-24	14.3 (13.1-15.5)	9.5 (8.7-10.4)	11.9 (11.1-12.6)
25-29	18.6 (17.3-20.0)	11.5 (10.8-12.3)	14.8 (14.1-15.6)
30-34	21.5 (20.2-22.8)	16.5 (15.5-17.5)	18.8 (17.9-19.7)
35-39	25.4 (24.0-26.8)	21.6 (20.4-22.8)	23.3 (22.4-24.3)
40-44	30.5 (28.8-32.3)	30.4 (29.2-31.7)	30.5 (29.4-31.5)
45-49	37.2 (35.4-39.0)	37.9 (36.5-39.4)	37.6 (36.5-38.7)
50-54	42.5 (40.8-44.1)	46.0 (44.7-47.2)	44.3 (43.1-45.4)
55-59	49.8 (48.0-51.5)	53.6 (52.2-55.1)	51.8 (50.5-53.0)
60-64	55.9 (54.0-57.8)	59.4 (57.8-60.9)	57.7 (56.3-59.1)
≥65	59.8 (57.4-62.2)	66.7 (65.2-68.2)	63.5 (61.9-65.2)
Africa			
15-19	10.4 (8.6-12.3)	8.5 (6.9-10.2)	9.4 (8.2-10.7)
20-24	17.6 (15.5-19.7)	12.1 (10.6-13.7)	14.7 (13.5-16.0)
25-29	20.5 (18.7-22.3)	12.3 (11.2-13.6)	15.8 (14.7-17.0)
30-34	22.9 (21.0-24.9)	17.4 (15.5-19.4)	19.8 (18.4-21.3)
35-39	27.1 (25.1-29.1)	23.8 (21.7-26.0)	25.3 (23.8-26.7)
40-44	32.3 (29.4-35.3)	32.6 (30.5-34.8)	32.5 (31.0-33.9)
45-49	38.8 (35.3-42.3)	41.0 (37.5-44.5)	40.0 (38.1-41.9)
50-54	42.7 (40.4-45.0)	48.7 (46.3-51.1)	45.9 (44.1-47.6)
55-59	50.8 (48.1-53.5)	56.9 (53.9-59.8)	53.9 (51.9-55.9)
60-64	55.7 (52.8-58.5)	58.1 (55.3-61.0)	56.9 (54.9-58.9)
≥65	55.3 (51.5-59.1)	63.3 (59.8-66.8)	59.6 (56.9-62.2)
Eastern Mediterranean			
15-19	14.1 (11.0-17.5)	7.4 (5.3-9.7)	11.0 (9.1-13.2)
20-24	15.6 (12.6-18.8)	11.2 (8.8-13.8)	13.5 (11.5-15.7)
25-29	18.0 (15.1-21.2)	13.9 (11.5-16.5)	16.0 (14.0-18.1)
30-34	19.4 (15.6-23.6)	17.4 (14.7-20.3)	18.4 (16.0-20.9)
35-39	26.9 (23.2-30.9)	21.2 (19.0-23.5)	24.0 (21.7-26.4)
40-44	31.3 (26.6-36.3)	31.7 (28.6-34.8)	31.5 (28.5-34.6)
45-49	37.3 (34.4-40.2)	37.7 (34.9-40.5)	37.5 (35.4-39.6)
50-54	44.0 (41.0-47.0)	49.5 (45.8-53.1)	46.9 (44.4-49.3)
55-59	52.5 (49.2-55.9)	53.1 (49.7-56.4)	52.8 (50.3-55.3)
60-64	63.8 (59.6-68.0)	61.0 (57.2-64.7)	62.4 (59.7-65.1)
≥65	68.3 (64.8-71.7)	67.3 (64.6-70.0)	67.8 (65.6-70.1)
Europe			
15-19	10.3 (7.8-13.0)	7.2 (5.3-9.5)	8.7 (6.9-10.8)
20-24	15.1 (11.9-18.5)	10.4 (8.4-12.6)	12.6 (10.7-14.7)
25-29	22.7 (18.2-27.5)	12.9 (11.0-14.9)	17.9 (15.4-20.7)
30-34	25.7 (22.6-28.9)	17.5 (15.2-19.9)	21.3 (19.2-23.5)
35-39	30.6 (27.4-33.9)	22.8 (18.3-27.7)	26.2 (22.9-29.6)
40-44	36.9 (31.6-42.5)	36.5 (32.2-40.9)	36.7 (33.4-40.1)
45-49	45.5 (42.0-49.1)	44.1 (41.1-47.2)	44.7 (42.3-47.2)
50-54	54.7 (50.2-59.2)	54.6 (51.8-57.4)	54.7 (51.9-57.4)
55-59	60.5 (56.7-64.3)	64.3 (61.3-67.2)	62.5 (60.4-64.5)
60-64	70.2 (66.7-73.5)	72.9 (69.8-75.9)	71.7 (69.8-73.5)
≥65	71.8 (69.5-74.0)	77.8 (74.9-80.5)	75.4 (73.1-77.7)
Latin America and the Caribbean			
15-19	8.8 (5.3-13.0)	3.2 (1.3-5.8)	6.1 (4.0-8.5)
20-24	9.9 (7.7-12.2)	3.1 (2.2-4.2)	6.6 (5.3-8.0)

Age group	Men	Women	Both sexes
25-29	11.4 (8.8-14.2)	6.8 (5.0-8.8)	8.9 (7.1-10.9)
30-34	16.5 (11.3-22.3)	12.1 (9.6-14.8)	14.2 (10.7-18.1)
35-39	18.7 (12.1-26.2)	16.5 (14.3-18.8)	17.5 (13.5-22.0)
40-44	24.6 (20.1-29.4)	22.5 (18.9-26.4)	23.4 (19.6-27.5)
45-49	32.9 (27.5-38.6)	30.1 (26.9-33.4)	31.4 (27.4-35.5)
50-54	38.2 (32.8-43.9)	38.5 (33.8-43.3)	38.4 (33.6-43.3)
55-59	43.8 (38.6-49.1)	48.1 (42.7-53.5)	46.0 (41.1-51.0)
60-64	52.2 (47.8-56.5)	54.9 (49.4-60.3)	53.6 (49.3-57.8)
≥65	56.6 (53.9-59.4)	62.6 (60.7-64.6)	59.9 (58.2-61.6)
South-East Asia			
15-19	7.5 (5.4-10.0)	5.6 (3.7-7.9)	6.6 (5.1-8.2)
20-24	12.3 (9.3-15.7)	6.5 (5.0-8.2)	9.2 (7.5-11.0)
25-29	19.8 (16.1-23.9)	12.5 (10.5-14.8)	16.0 (13.8-18.3)
30-34	23.5 (19.6-27.8)	19.1 (16.8-21.6)	21.3 (19.0-23.7)
35-39	25.5 (22.2-28.9)	22.2 (20.2-24.3)	23.8 (21.8-25.8)
40-44	26.4 (24.0-28.8)	31.2 (29.1-33.3)	29.0 (27.3-30.6)
45-49	28.4 (25.9-31.1)	36.1 (33.7-38.6)	32.4 (30.6-34.3)
50-54	34.7 (32.0-37.4)	42.6 (39.3-46.0)	38.1 (35.9-40.4)
55-59	41.9 (37.8-46.1)	44.9 (41.3-48.4)	43.4 (40.6-46.3)
60-64	40.7 (36.4-45.2)	49.4 (45.1-53.8)	45.0 (41.5-48.6)
≥65	45.9 (41.7-50.1)	57.8 (53.1-62.3)	51.6 (47.7-55.5)
Western Pacific			
15-19	4.4 (1.8-8.1)	8.1 (3.1-15.2)	6.2 (3.2-10.0)
20-24	7.6 (4.6-11.2)	16.7 (11.0-23.4)	12.4 (8.8-16.6)
25-29	11.4 (8.8-14.3)	8.4 (6.5-10.5)	9.9 (8.2-11.8)
30-34	15.9 (13.3-18.7)	14.3 (11.6-17.3)	15.1 (13.0-17.3)
35-39	18.6 (16.3-21.0)	17.0 (14.6-19.5)	17.8 (16.0-19.6)
40-44	25.7 (22.9-28.6)	21.9 (19.4-24.5)	23.8 (21.8-25.9)
45-49	31.2 (28.3-34.1)	28.2 (25.1-31.4)	29.6 (27.2-32.0)
50-54	35.1 (31.8-38.6)	35.2 (32.0-38.6)	35.2 (32.6-37.9)
55-59	39.2 (35.8-42.6)	39.8 (35.8-43.8)	39.5 (36.6-42.4)
60-64	45.0 (40.9-49.0)	46.9 (42.9-50.9)	45.9 (42.9-48.9)
≥65	55.1 (51.2-59.0)	55.6 (51.9-59.4)	55.4 (52.3-58.4)

* All countries contributed equally to the analysis.

Table S12. Association of hypertension with five-year age group, sex, BMI group, and a binary variable for current smoking status, by world regions *

Africa, Eastern Mediterranean, Europe

	AFR		EME		EUR	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted†						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.91 (0.86-0.96)	0.001	0.96 (0.91-1.00)	0.064	0.98 (0.92-1.04)	0.506
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.61 (1.38-1.87)	<0.001	1.13 (0.90-1.42)	0.295	1.40 (1.11-1.76)	0.005
25-29 years	1.82 (1.57-2.10)	<0.001	1.40 (1.13-1.74)	0.002	1.93 (1.51-2.47)	<0.001
30-34 years	2.26 (1.96-2.62)	<0.001	1.65 (1.32-2.05)	<0.001	2.36 (1.92-2.90)	<0.001
35-39 years	2.83 (2.46-3.26)	<0.001	2.18 (1.77-2.68)	<0.001	3.02 (2.40-3.80)	<0.001
40-44 years	3.66 (3.18-4.21)	<0.001	2.81 (2.30-3.43)	<0.001	4.21 (3.37-5.26)	<0.001
45-49 years	4.44 (3.85-5.11)	<0.001	3.42 (2.81-4.15)	<0.001	5.13 (4.10-6.41)	<0.001
50-54 years	5.29 (4.61-6.07)	<0.001	4.30 (3.55-5.20)	<0.001	6.33 (4.93-8.12)	<0.001
55-59 years	6.13 (5.34-7.03)	<0.001	4.82 (3.97-5.85)	<0.001	7.21 (5.61-9.27)	<0.001
60-64 years	6.63 (5.77-7.61)	<0.001	5.45 (4.48-6.61)	<0.001	8.30 (6.37-10.82)	<0.001
≥ 65 years	6.18 (5.32-7.17)	<0.001	6.35 (5.23-7.71)	<0.001	9.43 (6.68-13.32)	<0.001
BMI group						
Underweight	0.89 (0.83-0.96)	0.002	0.63 (0.54-0.73)	<0.001	0.70 (0.52-0.93)	0.014
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.44 (1.38-1.50)	<0.001	1.52 (1.40-1.64)	<0.001	1.83 (1.70-1.96)	<0.001
Obese	1.86 (1.77-1.96)	<0.001	2.05 (1.89-2.23)	<0.001	2.78 (2.50-3.09)	<0.001
Morbidly obese	2.21 (1.98-2.46)	<0.001	2.43 (2.12-2.78)	<0.001	3.54 (3.16-3.96)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.06 (1.00-1.12)	0.056	0.95 (0.87-1.04)	0.255	0.88 (0.82-0.94)	<0.001
Covariate-adjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.85 (0.80-0.91)	<0.001	0.91 (0.87-0.96)	0.001	0.91 (0.88-0.95)	<0.001

	AFR		EME		EUR	
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.53 (1.29-1.80)	<0.001	1.00 (0.77-1.29)	0.295	1.21 (0.96-1.54)	0.104
25-29 years	1.59 (1.35-1.86)	<0.001	1.14 (0.89-1.46)	0.002	1.53 (1.19-1.96)	<0.001
30-34 years	1.95 (1.67-2.29)	<0.001	1.28 (0.99-1.66)	<0.001	1.73 (1.41-2.12)	<0.001
35-39 years	2.38 (2.04-2.78)	<0.001	1.64 (1.29-2.08)	<0.001	2.03 (1.62-2.53)	<0.001
40-44 years	3.04 (2.61-3.54)	<0.001	1.99 (1.57-2.52)	<0.001	2.70 (2.17-3.35)	<0.001
45-49 years	3.66 (3.13-4.27)	<0.001	2.35 (1.87-2.94)	<0.001	3.19 (2.59-3.92)	<0.001
50-54 years	4.32 (3.72-5.03)	<0.001	2.89 (2.31-3.62)	<0.001	3.88 (3.11-4.85)	<0.001
55-59 years	5.00 (4.29-5.82)	<0.001	3.22 (2.57-4.03)	<0.001	4.38 (3.49-5.48)	<0.001
60-64 years	5.57 (4.79-6.48)	<0.001	3.77 (3.02-4.71)	<0.001	4.99 (3.96-6.29)	<0.001
≥ 65 years	5.31 (4.52-6.24)	<0.001	4.59 (3.67-5.74)	<0.001	5.75 (4.27-7.75)	<0.001
BMI group						
Underweight	0.82 (0.77-0.88)	0.002	0.71 (0.62-0.82)	<0.001	0.88 (0.65-1.18)	0.387
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.34 (1.28-1.39)	<0.001	1.29 (1.20-1.39)	<0.001	1.45 (1.37- 1.54)	<0.001
Obese	1.69 (1.62-1.77)	<0.001	1.61 (1.49-1.75)	<0.001	2.01 (1.88- 2.14)	<0.001
Morbidly obese	1.92 (1.74-2.10)	<0.001	1.93 (1.69-2.20)	<0.001	2.61 (2.32- 2.94)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	0.99 (0.94-1.05)	0.756	1.02 (0.93-1.12)	0.708	1.02 (0.96- 1.08)	0.805

Latin America and the Caribbean, South-East Asia, Western Pacific

	LAC		SEA		WPA	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted†						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.95 (0.90-1.00)	0.033	1.01 (0.96-1.07)	0.626	0.98 (0.92-1.04)	0.418
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.16 (0.79-1.71)	0.452	1.28 (0.95-1.73)	0.099	2.07 (1.15-3.73)	0.016
25-29 years	1.43 (0.99-2.06)	0.057	2.16 (1.66-2.80)	<0.001	2.35 (1.36-4.07)	0.002
30-34 years	2.32 (1.58-3.41)	<0.001	2.86 (2.22-3.69)	<0.001	3.44 (1.97-6.01)	<0.001
35-39 years	2.84 (1.95-4.13)	<0.001	3.49 (2.72-4.46)	<0.001	4.17 (2.45-7.07)	<0.001
40-44 years	4.00 (2.80-5.73)	<0.001	4.47 (3.52-5.67)	<0.001	5.86 (3.46-9.93)	<0.001
45-49 years	5.54 (3.86-7.96)	<0.001	5.04 (3.97-6.38)	<0.001	7.11 (4.16-12.15)	<0.001
50-54 years	6.62 (4.60-9.53)	<0.001	5.80 (4.56-7.39)	<0.001	8.86 (5.19-15.15)	<0.001
55-59 years	7.94 (5.52-11.44)	<0.001	6.31 (4.92-8.07)	<0.001	10.10 (5.90-17.29)	<0.001
60-64 years	9.04 (6.24-13.10)	<0.001	6.67 (5.23-8.50)	<0.001	11.92 (7.02-20.26)	<0.001
≥ 65 years	11.45 (8.00-16.40)	<0.001	8.34 (6.53-10.65)	<0.001	16.00 (9.40-27.24)	<0.001
BMI group						
Underweight	0.78 (0.62-0.99)	0.037	0.69 (0.63-0.75)	<0.001	0.58 (0.49-0.70)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.70 (1.57-1.84)	<0.001	1.60 (1.52-1.69)	<0.001	1.72 (1.61-1.84)	<0.001
Obese	2.39 (2.16-2.64)	<0.001	2.08 (1.93-2.25)	<0.001	2.52 (2.32-2.75)	<0.001
Morbidly obese	2.80 (2.35-3.33)	<0.001	1.44 (1.02-2.02)	0.036	2.92 (2.26-3.76)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	0.91 (0.83-0.99)	0.024	0.95 (0.89-1.03)	0.206	1.09 (1.02-1.15)	0.005
Covariate-adjusted‡						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.83 (0.78- 0.89)	<0.001	0.88 (0.83-0.93)	<0.001	0.99 (0.94- 1.05)	0.822
Age group						
15-19 years	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
20-24 years	1.05 (0.72- 1.53)	0.804	1.23 (0.92-1.65)	0.163	1.85 (1.03- 3.33)	0.040
25-29 years	1.24 (0.86- 1.78)	0.253	1.91 (1.47-2.48)	<0.001	1.89 (1.11- 3.22)	0.020

	LAC		SEA		WPA	
30-34 years	1.91 (1.31- 2.77)	0.001	2.43 (1.89-3.13)	<0.001	2.66 (1.55- 4.55)	<0.001
35-39 years	2.23 (1.53- 3.25)	<0.001	3.01 (2.34-3.88)	<0.001	3.05 (1.83- 5.09)	<0.001
40-44 years	3.31 (2.32- 4.72)	<0.001	3.64 (2.87-4.62)	<0.001	4.24 (2.54- 7.07)	<0.001
45-49 years	4.44 (3.11- 6.36)	<0.001	4.17 (3.29-5.29)	<0.001	5.06 (3.01- 8.49)	<0.001
50-54 years	5.27 (3.67- 7.54)	<0.001	4.83 (3.79-6.17)	<0.001	6.30 (3.75-10.58)	<0.001
55-59 years	6.21 (4.33- 8.91)	<0.001	5.27 (4.10-6.77)	<0.001	7.26 (4.32-12.20)	<0.001
60-64 years	7.20 (5.00-10.35)	<0.001	5.86 (4.58-7.50)	<0.001	8.91 (5.33-14.89)	<0.001
≥ 65 years	9.25 (6.49-13.19)	<0.001	7.27 (5.62-9.41)	<0.001	12.13 (7.25-20.31)	<0.001
BMI group						
Underweight	0.81 (0.68- 0.98)	0.025	0.72 (0.65-0.79)	<0.001	0.59 (0.50- 0.71)	<0.001
Normal weight	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Overweight	1.45 (1.37- 1.54)	<0.001	1.45 (1.37-1.53)	<0.001	1.49 (1.40- 1.58)	<0.001
Obese	2.01 (1.88- 2.14)	<0.001	1.84 (1.71-1.98)	<0.001	1.95 (1.81- 2.10)	<0.001
Morbidly obese	2.61 (2.32- 2.94)	<0.001	1.22 (0.80-1.85)	0.349	2.29 (1.88- 2.80)	<0.001
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.02 (0.96- 1.08)	0.470	0.88 (0.82-0.95)	0.001	1.16 (1.10- 1.22)	<0.001

Abbreviations: AFR=Africa; BMI=body mass index; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; P=P-value; Ref.=reference category; RR=Risk Ratio; SEA=South-East Asia; WPA=Western Pacific

* Standard errors were adjusted for clustering at the level of the primary sampling unit.
† These regressions included only one of the variables shown in the table and a binary indicator for each country.
‡ These regressions included sex, age by five-year groups, BMI group, a binary variable for current tobacco smoking, and a binary indicator for each country.

Table S13. Average adjusted predictions of hypertension by BMI group, five-year age group, and world regions *, †, ‡

Age group	BMI <18.5	BMI 18.5-24.9	BMI 25.0-29.9	BMI ≥30.0
Africa				
15-19	5.3 (2.7-8.0)	9.4 (7.8-11.1)	14.3 (9.2-19.3)	14.4 (4.2-24.5)
20-24	11.5 (8.2-14.8)	14.3 (12.7-16.0)	15.7 (12.4-19.0)	26.4 (19.5-33.2)
25-29	13.2 (9.8-16.5)	14.7 (13.2-16.2)	19.0 (16.6-21.5)	22.3 (19.3-25.4)
30-34	15.4 (11.6-19.2)	17.8 (16.1-19.6)	22.2 (19.7-24.6)	32.2 (27.8-36.7)
35-39	16.1 (12.2-20.0)	21.4 (19.6-23.1)	28.4 (25.6-31.3)	39.9 (36.2-43.7)
40-44	22.8 (18.1-27.5)	26.7 (24.9-28.6)	36.9 (34.0-39.8)	49.8 (46.2-53.3)
45-49	27.8 (21.0-34.6)	31.6 (28.9-34.3)	48.1 (44.7-51.5)	56.8 (53.0-60.7)
50-54	32.3 (27.6-37.1)	40.0 (37.6-42.3)	51.1 (48.1-54.2)	67.6 (62.4-72.8)
55-59	39.1 (33.4-44.8)	46.4 (43.8-49.1)	61.9 (58.3-65.5)	72.9 (69.2-76.6)
60-64	44.2 (38.9-49.4)	51.7 (49.1-54.4)	68.4 (64.5-72.2)	78.6 (72.1-85.1)
≥65	35.6 (30.4-40.7)	50.0 (46.1-54.1)	68.8 (62.9-74.6)	74.9 (66.1-83.8)
Eastern Mediterranean				
15-19	15.6 (9.3-22.0)	13.3 (9.5-17.2)	12.5 (5.3-19.8)	12.7 (4.8-20.5)
20-24	7.4 (4.2-10.5)	11.6 (9.1-14.1)	22.9 (15.6-30.1)	20.1 (13.0-27.2)
25-29	9.8 (5.1-14.4)	15.4 (11.8-19.0)	18.2 (13.9-22.6)	25.7 (18.6-32.8)
30-34	9.9 (5.9-13.9)	15.4 (12.1-18.7)	22.4 (16.1-28.7)	30.8 (23.1-38.6)
35-39	13.0 (8.1-18.0)	19.9 (15.8-24.1)	27.1 (22.7-31.4)	39.9 (33.7-46.0)
40-44	12.4 (7.9-16.9)	28.2 (22.8-33.5)	30.8 (26.6-35.1)	45.5 (39.1-51.9)
45-49	22.6 (15.5-29.6)	30.6 (26.5-34.7)	39.3 (35.2-43.3)	51.7 (47.3-56.1)
50-54	25.1 (15.6-34.6)	36.8 (31.6-41.9)	47.7 (43.0-52.4)	65.8 (61.4-70.3)
55-59	32.9 (21.6-44.3)	41.0 (36.0-46.1)	55.5 (50.7-60.2)	70.1 (65.7-74.6)
60-64	37.6 (20.7-54.5)	50.6 (44.8-56.4)	71.2 (66.1-76.3)	74.3 (68.5-80.0)
65+	50.6 (39.2-61.9)	70.1 (65.7-74.6)	76.9 (71.5-82.4)	86.9 (82.5-91.4)
Europe				
15-19	7.0 (2.6-11.4)	9.9 (7.5-12.3)	12.8 (6.6-19.0)	22.0 (5.5-38.5)
20-24	12.5 (5.3-19.8)	11.4 (9.3-13.5)	16.4 (11.2-21.6)	25.1 (15.3-34.8)
25-29	8.4 (1.4-15.4)	13.9 (9.3-18.5)	20.9 (17.2-24.6)	36.7 (29.9-43.5)
30-34	14.7 (0.0-29.4)	16.1 (13.3-18.8)	22.4 (18.8-26.0)	37.1 (32.0-42.3)
35-39	24.2 (7.3-41.1)	17.5 (12.0-23.0)	27.7 (24.2-31.2)	41.9 (36.6-47.1)
40-44	19.8 (4.3-35.2)	24.0 (20.9-27.0)	35.6 (28.1-43.1)	54.5 (50.8-58.2)
45-49	15.7 (1.2-30.1)	26.3 (22.3-30.2)	43.1 (39.7-46.5)	63.5 (59.1-67.9)
50-54	46.6 (29.5-63.7)	38.6 (34.1-43.1)	50.7 (47.2-54.1)	72.5 (68.4-76.6)
55-59	32.5 (9.6-55.4)	47.2 (42.8-51.7)	59.6 (56.4-62.8)	77.4 (74.4-80.4)
60-64	52.2 (26.8-77.5)	57.5 (52.6-62.4)	70.0 (66.8-73.3)	85.2 (81.3-89.0)
≥65	68.4 (44.1-92.7)	74.3 (67.5-81.1)	82.2 (72.2-92.0)	90.1 (79.3-100.8)
Latin America and the Caribbean				
15-19	1.5 (-1.2-4.2)	6.4 (3.3-9.5)	5.4 (1.6-9.3)	9.5 (1.5-17.5)
20-24	1.8 (-0.4-4.1)	4.8 (3.0-6.5)	9.6 (6.6-12.5)	12.4 (7.6-17.2)
25-29	3.2 (-0.6-7.1)	5.9 (4.5-7.4)	8.8 (5.6-12.1)	15.4 (12.1-18.7)
30-34	4.3 (-0.3-8.9)	8.5 (5.4-11.5)	13.0 (10.1-16.0)	24.7 (18.2-31.2)
35-39	10.3 (0.0-24.2)	8.4 (5.0-11.8)	18.9 (14.0-23.7)	25.0 (19.8-30.1)
40-44	19.6 (9.8-29.3)	16.1 (12.0-20.3)	23.7 (19.1-28.4)	38.0 (33.7-42.2)
45-49	16.9 (6.3-27.4)	23.7 (18.3-29.0)	31.3 (27.3-35.4)	49.8 (44.8-54.8)
50-54	22.2 (12.7-31.6)	27.7 (24.0-31.4)	38.8 (31.8-45.9)	56.5 (51.0-62.0)
55-59	13.1 (5.7-20.6)	33.0 (26.5-39.5)	47.4 (42.8-52.0)	65.4 (60.1-70.7)
60-64	61.6 (46.6-76.7)	39.3 (34.7-43.9)	56.9 (50.3-63.4)	68.5 (60.4-76.5)
≥65	43.5 (30.0-57.1)	56.6 (48.8-64.4)	70.1 (60.9-79.3)	84.9 (73.6-96.2)
South-East Asia				
15-19	5.3 (2.5-8.2)	6.7 (4.8-8.6)	17.6 (7.9-27.3)	40.8 (14.5-67.2)
20-24	5.3 (3.1-7.5)	9.5 (7.3-11.7)	16.7 (10.9-22.5)	17.8 (11.0-24.6)

Age group	BMI <18.5	BMI 18.5-24.9	BMI 25.0-29.9	BMI ≥30.0
25-29	8.5 (4.5-12.6)	14.6 (12.0-17.3)	22.8 (17.7-28.0)	27.9 (17.7-38.0)
30-34	17.4 (11.8-22.9)	17.8 (15.0-20.6)	28.1 (23.7-32.4)	35.9 (26.9-45.0)
35-39	12.3 (7.4-17.1)	24.0 (20.8-27.2)	33.3 (29.2-37.4)	42.5 (33.9-51.1)
40-44	16.7 (10.8-22.6)	26.5 (23.8-29.1)	43.4 (39.3-47.4)	60.9 (54.8-67.1)
45-49	18.8 (13.8-23.9)	33.9 (30.8-37.0)	46.8 (43.0-50.5)	52.5 (44.1-61.0)
50-54	28.0 (20.8-35.2)	38.3 (35.2-41.3)	52.8 (48.2-57.5)	64.0 (56.0-72.1)
55-59	34.5 (25.6-43.5)	41.9 (37.8-46.0)	55.0 (48.8-61.2)	67.6 (58.4-76.8)
60-64	32.4 (24.7-40.2)	46.0 (41.4-50.5)	65.5 (58.5-72.5)	76.7 (67.6-85.7)
≥65	48.6 (41.1-56.1)	57.6 (51.9-63.3)	66.9 (57.2-76.5)	84.1 (79.6-88.7)
Western Pacific				
15-19	3.7 (-1.0-8.5)	3.8 (0.9-6.7)	10.1 (1.5-18.7)	13.3 (0.0-34.0)
20-24	0.8 (-0.3-2.0)	8.0 (4.8-11.2)	16.1 (7.7-24.5)	24.2 (9.8-38.6)
25-29	3.7 (-0.1-7.6)	8.5 (6.6-10.4)	12.8 (10.0-15.5)	21.6 (12.9-30.3)
30-34	10.1 (2.4-17.8)	12.6 (10.4-14.7)	16.0 (12.1-19.9)	27.5 (21.5-33.5)
35-39	6.8 (2.3-11.3)	13.3 (11.3-15.3)	21.4 (18.4-24.5)	31.0 (25.3-36.8)
40-44	7.0 (1.4-12.7)	19.4 (17.2-21.6)	29.1 (25.8-32.4)	41.1 (35.5-46.7)
45-49	17.7 (8.7-26.7)	22.4 (19.9-24.9)	37.1 (33.4-40.8)	44.6 (38.6-50.6)
50-54	14.1 (7.1-21.1)	29.9 (26.6-33.1)	44.0 (39.6-48.5)	55.6 (50.1-61.1)
55-59	19.5 (11.7-27.2)	33.8 (30.5-37.1)	51.0 (46.3-55.6)	64.8 (59.5-70.2)
60-64	26.2 (17.0-35.5)	44.7 (40.8-48.7)	61.5 (55.7-67.3)	64.5 (57.0-72.1)
≥65	42.3 (34.5-50.2)	60.2 (55.1-65.2)	74.9 (68.2-81.7)	92.7 (81.1-104.3)

* Confidence intervals were computed using the delta method.
† All countries were weighted equally for this analysis.
‡ These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI group as independent variables.

Table S14. Association of hypertension with continuous age, continuous BMI, sex, and smoking status, by world regions *,†,‡

Africa, Eastern Mediterranean, Europe

	AFR		EME		EUR	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted§						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.91 (0.86-0.96)	0.001	0.96 (0.91-1.00)	0.064	0.98 (0.92-1.04)	0.506
Age						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.06 (1.04-1.08)	<0.001	1.03 (1.01-1.06)	0.002	1.06 (1.04-1.08)	<0.001
knot 3	0.90 (0.81-1.00)	0.049	1.09 (0.95-1.25)	0.229	1.00 (0.92-1.08)	0.961
knot 4	1.50 (1.09-2.07)	0.013	0.80 (0.53-1.20)	0.282	0.95 (0.75-1.21)	0.684
knot 5	0.46 (0.32-0.68)	<0.001	1.09 (0.74-1.60)	0.658	1.03 (0.81-1.30)	0.825
BMI						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.00 (0.97-1.03)	0.958	1.12 (1.07-1.17)	<0.001	1.12 (1.06-1.18)	<0.001
knot 3	1.56 (1.07-2.26)	0.020	0.89 (0.69-1.14)	0.353	1.15 (0.78-1.67)	0.481
knot 4	0.43 (0.13-1.41)	0.162	1.45 (0.52-4.03)	0.474	0.59 (0.17-2.13)	0.424
knot 5	1.10 (0.36-3.33)	0.865	0.59 (0.18-2.01)	0.402	1.32 (0.37-4.72)	0.674
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.10 (1.02-1.17)	0.009	0.98 (0.89-1.08)	0.669	0.86 (0.82-0.91)	<0.001
Past smoking	1.30 (1.21-1.39)	<0.001	1.45 (1.34-1.57)	<0.001	1.16 (1.11-1.22)	<0.001
Covariate-adjusted‖						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.86 (0.80-0.93)	<0.001	0.92 (0.87-0.97)	0.002	0.88 (0.83- 0.93)	<0.001
Age						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.03 (1.02-1.05)	<0.001	1.02 (1.00-1.04)	0.099	1.04 (1.01- 1.06)	0.002
knot 3	1.01 (0.91-1.12)	0.850	1.13 (0.99-1.28)	0.060	1.00 (0.88- 1.14)	0.949
knot 4	1.05 (0.78-1.41)	0.749	0.72 (0.50-1.03)	0.070	1.00 (0.66- 1.52)	0.993
knot 5	0.79 (0.60-1.06)	0.113	1.27 (0.91-1.79)	0.159	0.92 (0.56- 1.49)	0.731
BMI						

	AFR		EME		EUR	
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.01 (0.97-1.04)	0.762	1.09 (1.05-1.13)	<0.001	1.11 (1.00- 1.24)	0.045
knot 3	1.53 (1.03-2.27)	0.033	0.84 (0.66-1.07)	0.162	0.66 (0.28- 1.60)	0.362
knot 4	0.38 (0.11-1.33)	0.128	1.89 (0.72-4.96)	0.199	4.63 (0.23-94.74)	0.319
knot 5	1.49 (0.46-4.85)	0.511	0.45 (0.14-1.43)	0.177	0.16 (0.01- 3.34)	0.238
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.03 (0.96-1.10)	0.478	1.04 (0.94-1.14)	0.461	0.95 (0.89- 1.01)	0.095
Past smoking	1.01 (0.93-1.08)	0.857	1.09 (1.01-1.18)	0.036	0.96 (0.91- 1.02)	0.197

Latin American and the Caribbean, South-East Asia, Western Pacific

	LAC		SEA		WPA	
	RR	*P*	*RR*	*P*	*RR*	*P*
Covariate-unadjusted[§]						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.95 (0.90-1.00)	0.033	1.01 (0.96-1.07)	0.626	0.98 (0.92-1.04)	0.438
Age						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.05 (1.02-1.09)	0.001	1.09 (1.02-1.15)	0.006	1.07 (1.04-1.10)	<0.001
knot 3	1.10 (0.92-1.33)	0.300	0.98 (0.74-1.29)	0.865	0.96 (0.84-1.10)	0.556
knot 4	0.69 (0.41-1.15)	0.155	1.03 (0.51-2.10)	0.931	1.03 (0.68-1.57)	0.888
knot 5	1.40 (0.90-2.16)	0.135	0.90 (0.48-1.71)	0.754	1.02 (0.66-1.56)	0.936
BMI						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.08 (1.03-1.13)	0.001	1.01 (0.96-1.06)	0.659	1.07 (1.01-1.14)	0.023
knot 3	1.20 (0.89-1.63)	0.233	1.43 (0.92-2.23)	0.110	1.50 (0.98-2.31)	0.064
knot 4	0.55 (0.18-1.68)	0.294	0.67 (0.15-2.98)	0.601	0.31 (0.07-1.45)	0.136
knot 5	1.28 (0.37-4.45)	0.693	0.49 (0.10-2.29)	0.362	1.85 (0.35-9.81)	0.472
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	0.96 (0.88-1.04)	0.299	0.91 (0.84-0.99)	0.028	1.19 (1.12-1.27)	<0.001
Past smoking	1.36 (1.28-1.45)	<0.001	1.27 (1.14-1.41)	<0.001	1.58 (1.39-1.79)	<0.001
Covariate-adjusted[‖]						
Sex						
Male	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Female	0.79 (0.73-0.84)	<0.001	0.89 (0.83- 0.95)	<0.001	1.00 (0.93- 1.08)	0.938
Age						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.03 (0.99-1.07)	0.161	1.06 (1.03- 1.10)	<0.001	1.05 (1.02- 1.08)	<0.001
knot 3	1.16 (0.81-1.67)	0.424	0.98 (0.84- 1.14)	0.778	0.95 (0.82- 1.10)	0.514
knot 4	0.79 (0.30-2.04)	0.623	0.96 (0.57- 1.63)	0.890	1.13 (0.70- 1.84)	0.608
knot 5	0.84 (0.31-2.25)	0.733	1.13 (0.63- 2.00)	0.686	0.89 (0.50- 1.57)	0.684
BMI						
knot 1	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
knot 2	1.07 (1.01-1.13)	0.016	1.09 (1.03- 1.15)	0.004	1.13 (1.05- 1.22)	0.001

	LAC		SEA		WPA	
knot 3	1.09 (0.72-1.65)	0.692	0.79 (0.50- 1.24)	0.304	0.89 (0.50- 1.57)	0.684
knot 4	0.80 (0.16-3.94)	0.784	3.61 (0.75-17.42)	0.110	1.76 (0.19-16.51)	0.621
knot 5	0.95 (0.16-5.70)	0.953	0.13 (0.02- 0.72)	0.019	0.38 (0.03- 5.08)	0.465
Tobacco smoking						
Not currently smoking	1.00 (Ref.)		1.00 (Ref.)		1.00 (Ref.)	
Currently smoking	1.03 (0.96-1.10)	0.432	0.87 (0.80- 0.95)	0.002	1.20 (1.13- 1.28)	<0.001
Past smoking	1.01 (0.96-1.07)	0.711	0.95 (0.86- 1.06)	0.384	1.27 (1.14- 1.42)	<0.001

Abbreviations: AFR=Africa; BMI=body mass index; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; P=P-value; Ref.=reference category; RR=Risk Ratio; SEA=South-East Asia; WPA=Western Pacific

* Standard errors were adjusted for clustering at the level of the primary sampling unit.
† Countries are weighted equally.
‡ To allow for non-linearities in BMI and age, we used restricted cubic splines with five knots placed at 0.05th, 0.275th, 0.5th, 0.725th and 0.95th percentile.
§ These regressions included only one of the variables shown in the table and a binary indicator for each country.
‖ These regressions included sex as a binary variable, age and BMI as continuous variables, a three-level variable for tobacco smoking, and a binary indicator for each country.

Table S15. Area under the curve (AUC) for predicting hypertension using age, BMI, sex, and 3-level smoking status, by world regions and country

Categorical predictors					Continuous predictors				
Country	**Age***	**Age* + BMI†,‡**	**Age* + BMI‡ + sex†**	**Age* + BMI‡ + sex + smoking status†,§**		**Age‖**	**Age‖ + BMI†,#**	**Age‖ + BMI# + sex†**	**Age‖ + BMI# + sex + smoking status†,§**
Africa (AFR)									
Algeria	0.71	0.76	0.77	0.77	Algeria	0.74	0.77	0.78	0.78
Benin	0.60	0.66	0.67	0.67	Benin	0.64	0.68	0.68	0.68
Botswana	0.68	0.73	0.75	0.75	Botswana	0.72	0.75	0.76	0.76
B. Faso	0.59	0.66	0.69	0.69	B. Faso	0.65	0.70	0.71	0.71
Comoros	0.64	0.72	0.73	0.73	Comoros	0.68	0.74	0.74	0.74
Eswatini	0.72	0.76	0.77	0.77	Eswatini	0.75	0.77	0.78	0.78
Ghana**	0.51	0.56	0.57	0.64	Ghana	0.55	0.64	0.64	0.64
Kenya	0.66	0.70	0.72	0.72	Kenya	0.69	0.72	0.73	0.73
Lesotho	0.65	0.72	0.73	-	Lesotho	0.70	0.75	0.75	-
Liberia	0.64	0.70	0.72	0.72	Liberia	0.69	0.72	0.73	0.73
Malawi	0.63	0.68	0.71	0.71	Malawi	0.68	0.71	0.73	0.73
Moz.	0.62	0.66	0.69	0.70	Moz.	0.66	0.70	0.71	0.71
Namibia	0.54	0.66	0.67	-	Namibia	0.60	0.69	0.69	-
Seychelles	0.64	0.70	0.74	0.76	Seychelles	0.68	0.71	0.75	0.75
S. Africa	0.73	0.75	0.76	0.76	S. Africa	0.74	0.74	0.75	0.75
Tanzania	0.62	0.68	0.70	0.70	Tanzania	0.66	0.72	0.72	0.72
Togo	0.65	0.69	0.72	0.72	Togo	0.69	0.72	0.73	0.73
Uganda	0.61	0.64	0.67	0.67	Uganda	0.65	0.67	0.68	0.68
Zanzibar	0.70	0.74	0.76	0.76	Zanzibar	0.73	0.76	0.77	0.77
Eastern Mediterranean (EME)									
Egypt	0.72	-	-	-	Egypt	0.75	-	-	-
Iran	0.76	0.80	0.81	0.81	Iran	0.79	0.82	0.82	0.82
Iraq	0.74	0.78	0.79	0.79	Iraq	0.77	0.79	0.80	0.80
Lebanon	0.66	0.69	0.70	0.70	Lebanon	0.70	0.72	0.72	0.72
Morocco	0.71	0.75	0.76	0.77	Morocco	0.74	0.77	0.77	0.77
Sudan	0.63	0.69	0.70	0.70	Sudan	0.67	0.71	0.72	0.72
Europe (EUR)									
Albania	0.62	0.67	0.69	-	Albania	0.66	0.71	0.71	-
Azerbaijan	0.73	0.78	0.79	0.79	Azerbaijan	0.76	0.79	0.80	0.80
Belarus	0.75	0.81	0.82	0.82	Belarus	0.78	0.82	0.83	0.83
Georgia	0.71	0.78	0.79	0.79	Georgia	0.75	0.80	0.80	0.80
Kazakhstan	0.78	0.81	0.82	0.82	Kazakhstan	0.81	0.83	0.83	0.83
Kyrgyzstan	0.68	0.74	0.75	0.76	Kyrgyzstan	0.72	0.76	0.77	0.77
Moldova	0.72	0.78	0.78	0.79	Moldova	0.75	0.79	0.79	0.80
Romania	0.67	0.73	0.75	0.77	Romania	0.71	0.75	0.75	0.77
Russia**	0.55	0.63	0.67	-	Russia	0.70	0.75	0.75	-
Tajikistan	0.69	0.75	0.76	0.76	Tajikistan	0.73	0.77	0.77	0.77
Ukraine	0.68	-	-	-	Ukraine	0.72	-	-	-
Latin America and the Caribbean (LAC)									
Belize	0.69	0.76	0.77	0.77	Belize	0.74	0.77	0.77	0.77
Brazil	0.73	0.78	0.79	0.79	Brazil	0.76	0.80	0.80	0.80
Chile	0.79	0.83	0.84	0.84	Chile	0.83	0.85	0.85	0.85
Costa Rica	0.71	0.78	0.79	-	Costa Rica	0.75	0.80	0.80	-
Ecuador	0.66	0.73	0.75	0.75	Ecuador	0.70	0.75	0.76	0.76
Grenada	0.67	0.75	0.77	0.78	Grenada	0.71	0.75	0.77	0.77

Categorical predictors					Continuous predictors				
Country	**Age***	**Age* + BMI†,‡**	**Age* + BMI‡ + sex†**	**Age* + BMI‡ + sex + smoking status†,§**		**Age‖**	**Age‖ + BMI†,#**	**Age‖ + BMI# + sex†**	**Age‖ + BMI# + sex + smoking status†,§**
Guyana	0.72	0.77	0.79	0.79	Guyana	0.74	0.78	0.79	0.79
Mexico	0.74	0.78	0.79	0.79	Mexico	0.77	0.80	0.80	0.80
Peru	0.59	-	-	-	Peru	0.67	-	-	-
SVG	0.73	0.79	0.80	0.80	SVG	0.76	0.80	0.80	0.80
South-East Asia (SEA)									
Bangladesh	0.56	0.66	0.70	-	Bangladesh	0.61	0.71	0.73	-
Bhutan	0.64	0.68	0.70	0.71	Bhutan	0.67	0.71	0.71	0.72
India	0.74	0.74	0.74	-	India	0.72	0.74	0.74	-
Indonesia	0.74	0.79	0.80	0.80	Indonesia	0.77	0.81	0.81	0.81
Nepal	0.66	0.71	0.73	0.74	Nepal	0.69	0.74	0.75	0.75
Timor-Leste	0.60	0.66	0.67	0.69	Timor-Leste	0.63	0.69	0.69	0.70
Western Pacific (WPA)									
Cambodia	0.64	0.71	0.73	0.73	Cambodia	0.68	0.75	0.76	0.76
China	0.68	0.74	0.76	0.77	China	0.72	0.78	0.78	0.78
Mongolia	0.69	0.74	0.76	0.77	Mongolia	0.72	0.76	0.77	0.77
Vanuatu	0.63	0.69	0.71	0.72	Vanuatu	0.67	0.71	0.72	0.72

Abbreviation: B. Faso=Burkina Faso, Moz.=Mozambique, S. Africa=South Africa, SVG = St. Vincent and the Grenadines

* Age was categorized into five-year age groups.
† The logistic regressions included age as well as an interaction term between age and each of the predictor variables.
‡ BMI was grouped into five categories: underweight, normal weight, overweight, obese, and morbidly obese.
§ Smoking status was grouped into three categories: non-smoker, current smoker, and past smoker.
‖ Age is a continuous variable with restricted cubic splines with five knots placed at the fifth, 27.5th, 50th, 72.5th, and 95th percentiles.
BMI is a continuous variable with restricted cubic splines with five knots placed at the fifth, 27.5th, 50th, 72.5th, and 95th percentiles.
** For those countries with more than one third of the participants being 65 years or older (Russia and Ghana), we subdivided age into five-year age groups up to the age of 80 years.

Table S16. Area under the curve (AUC) for predicting hypertension using BMI group only, sex only, and smoking status only, by world regions and country *

Country	BMI†	sex	smoking status (binary)‡	smoking status (three-level)§
Africa (AFR)				
Algeria	0.47	0.25	0.14	0.26
Benin	0.37	0.26	0.06	0.08
Botswana	0.49	0.21	0.12	0.18
Burkina Faso	0.36	0.29	0.10	0.17
Comoros	0.45	0.22	0.08	0.14
Eswatini	0.52	0.26	0.05	0.09
Ghana	0.39	0.22	0.13	0.20
Kenya	0.43	0.24	0.08	0.17
Lesotho	0.48	0.27	0.16	-
Liberia	0.41	0.26	0.10	0.15
Malawi	0.30	0.27	0.12	0.20
Mozambique	0.34	0.26	0.14	0.19
Namibia	0.47	0.25	0.16	-
Seychelles	0.41	0.34	0.16	0.25
South Africa	0.44	0.24	0.17	0.20
Tanzania	0.40	0.26	0.11	0.18
Togo	0.34	0.28	0.10	0.13
Uganda	0.32	0.26	0.07	0.16
Zanzibar	0.38	0.27	0.07	0.16
Eastern Mediterranean (EME)				
Egypt	-	0.26	0.17	-
Iran	0.49	0.27	0.13	0.21
Iraq	0.50	0.26	0.13	0.25
Lebanon	0.47	0.30	0.20	0.23
Morocco	0.46	0.22	0.08	0.16
Sudan	0.48	0.21	0.06	0.10
Europe (EUR)				
Albania	0.44	0.29	0.24	-
Azerbaijan	0.55	0.26	0.19	0.24
Belarus	0.57	0.24	0.23	0.30
Georgia	0.58	0.20	0.20	0.26
Kazakhstan	0.52	0.30	0.17	0.23
Kyrgyzstan	0.54	0.22	0.16	0.23
Moldova	0.56	0.25	0.18	0.26
Romania	0.52	0.29	0.24	0.37
Russia	0.48	0.30	0.23	-
Tajikistan	0.53	0.24	0.05	0.09
Ukraine	-	0.25	0.21	0.21
Latin America and the Caribbean (LAC)				
Belize	0.44	0.25	0.08	0.16
Brazil	0.48	0.26	0.13	0.32
Chile	0.48	0.27	0.29	0.41
Costa Rica	0.48	0.20	0.11	-
Ecuador	0.50	0.28	0.18	0.34
Grenada	0.48	0.26	0.14	0.20
Guyana	0.51	0.26	0.12	0.24
Mexico	0.50	0.28	0.11	0.11
Peru	-	0.25	-	-
SVG	0.49	0.25	0.13	0.25

Country	BMI†	sex	smoking status (binary)‡	smoking status (three-level)§
South-East Asia (SEA)				
Bangladesh	0.41	0.34	-	-
Bhutan	0.38	0.23	0.06	0.19
India	0.64	0.53	0.53	-
Indonesia	0.43	0.25	0.22	0.28
Nepal	0.38	0.29	0.16	0.25
Timor-Leste	0.33	0.25	0.23	0.28
Western Pacific (WPA)				
Cambodia	0.38	0.27	0.20	0.29
China	0.40	0.28	0.20	0.25
Mongolia	0.50	0.29	0.21	0.26
Vanuatu	0.44	0.27	0.20	0.32

Country abbreviation: SVG = St. Vincent and the Grenadines

* The regressions included only one of the predictor variables.
† BMI was grouped into five categories: underweight, normal weight, overweight, obese, and morbidly obese.
‡ Smoking status was grouped into two categories: current non-smoker, and current smoker.
§ Smoking status was grouped into three categories: non-smoker, current smoker, and past smoker.

Table S17. Weighted prevalence of hypertension, by age and age distribution of each country, ordered by world regions

Africa

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Algeria							
18	1.3	36.4	3.4 (0.9-7.5)	**44**	1.3	76.3	21.2 (14.9-28.2)
19	1.3	37.7	4.0 (0.9-9.2)	**45**	1.2	77.5	23.8 (17.4-30.9)
20	1.3	39.0	5.1 (1.6-10.4)	**46**	1.2	78.7	32.6 (26.1-39.5)
21	1.3	40.3	8.5 (3.6-15.1)	**47**	1.1	79.8	39.0 (31.3-47.0)
22	1.4	41.7	7.9 (3.7-13.5)	**48**	1.1	80.9	27.3 (20.0-35.2)
23	1.4	43.1	11.3 (5.8-18.3)	**49**	1.0	81.9	39.1 (30.4-48.0)
24	1.5	44.6	6.4 (2.6-11.8)	**50**	1.0	82.9	43.2 (34.9-51.6)
25	1.5	46.1	15.2 (8.6-23.3)	**51**	1.0	83.9	40.7 (32.7-49.0)
26	1.6	47.7	7.9 (3.7-13.3)	**52**	0.9	84.8	44.4 (35.5-53.4)
27	1.7	49.4	9.6 (4.6-16.1)	**53**	0.9	85.7	44.3 (36.8-52.0)
28	1.7	51.1	10.8 (6.2-16.5)	**54**	0.9	86.6	49.3 (40.7-58.0)
29	1.7	52.8	10.8 (6.3-16.5)	**55**	0.9	87.5	46.7 (37.2-56.4)
30	1.7	54.5	9.5 (5.3-14.8)	**56**	0.8	88.3	48.1 (38.5-57.8)
31	1.7	56.2	12.0 (7.1-17.9)	**57**	0.8	89.1	49.5 (38.9-60.1)
32	1.7	57.9	11.7 (7.5-16.6)	**58**	0.8	89.9	53.3 (42.2-64.2)
33	1.7	59.6	10.4 (6.0-15.7)	**59**	0.7	90.6	61.5 (51-0-71.6)
34	1.7	61.3	19.8 (14.2-26.1)	**60**	0.7	91.3	60.1 (49.3-70.4)
35	1.7	63.0	13.2 (8.4-19.0)	**61**	0.7	92.0	48.4 (37.5-59.5)
36	1.7	64.7	15.2 (9.7-21.7)	**62**	0.6	92.6	52.6 (43.3-61.8)
37	1.6	66.3	15.9 (10.5-22.2)	**63**	0.6	93.2	60.1 (49.5-70.3)
38	1.6	67.9	20.1 (14.5-26.3)	**64**	0.6	93.8	66.3 (55.6-76.1)
39	1.5	69.4	24.0 (17.9-30.7)	**65**	0.6	94.4	71.2 (59.8-81.3)
40	1.5	70.9	27.0 (21.1-33.4)	**66**	0.6	95.0	66.8 (54.2-78.2)
41	1.4	72.3	19.8 (13.6-26.8)	**67**	0.5	95.5	59.9 (46.8-72.4)
42	1.4	73.7	23.0 (17.3-29.2)	**68**	0.5	96.0	68.9 (57.1-79.5)
43	1.3	75.0	21.7 (16.2-27.8)	**69**	0.4	96.4	72.2 (60.3-82.7)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Benin							
18	2.1	50.6	15.0 (4.9-29.5)	**46**	0.8	87.6	41.2 (31.2-51.5)
19	2.0	52.6	9.2 (4.6-15.2)	**47**	0.7	88.3	31.8 (17.4-48.4)
20	2.0	54.6	11.9 (6.3-19.0)	**48**	0.7	89	69.5 (40.5-91.9)
21	1.9	56.5	8.7 (2.5-18.2)	**49**	0.7	89.7	39.3 (21.6-58.5)
22	1.8	58.3	16.7 (10.2-24.4)	**50**	0.7	90.4	50.6 (38.7-62.6)
23	1.8	60.1	21.4 (12.4-32.1)	**51**	0.6	91.0	50.6 (39.2-61.9)
24	1.7	61.8	28.7 (18.7-39.8)	**52**	0.6	91.6	37.5 (22.6-53.6)
25	1.7	63.5	21.3 (14.4-29.1)	**53**	0.6	92.2	45.7 (29.1-62.8)
26	1.6	65.1	20.2 (12.0-29.9)	**54**	0.5	92.7	25.9 (8.9-47.9)
27	1.6	66.7	30.0 (19.6-41.5)	**55**	0.5	93.2	54.2 (42.1-66.1)
28	1.5	68.2	20.6 (13.9-28.3)	**56**	0.5	93.7	58.5 (43.3-73.0)
29	1.5	69.7	23.7 (14.7-34.2)	**57**	0.5	94.2	56.8 (37.0-75.5)
30	1.4	71.1	10.8 (3.7-20.8)	**58**	0.5	94.7	63.5 (40.7-83.5)
31	1.3	72.4	21.5 (14.5-29.4)	**59**	0.4	95.1	69.4 (43.0-90.4)
32	1.3	73.7	24.4 (16.1-33.8)	**60**	0.4	95.5	57.4 (46.5-67.8)
33	1.2	74.9	17.6 (10.6-25.8)	**61**	0.4	95.9	57.9 (41.3-73.7)
34	1.2	76.1	26.2 (14.1-40.5)	**62**	0.4	96.3	69.9 (42.0-91.5)
35	1.2	77.3	30.7 (23.4-38.5)	**63**	0.3	96.6	42.0 (17.0-69.5)
36	1.1	78.4	12.0 (2.3-27.9)	**64**	0.3	96.9	51.6 (25.3-77.5)
37	1.1	79.5	22.4 (13.3-33.1)	**65**	0.3	97.2	56.5 (40.6-71.8)
38	1.0	80.5	36.4 (27.2-46.2)	**66**	0.3	97.5	60.7 (41.2-78.5)
39	1.0	81.5	26.0 (15.7-37.8)	**67**	0.3	97.8	69.5 (46.7-88.1)
40	1.0	82.5	30.2 (21.7-39.5)	**68**	0.2	98.0	36.2 (15.6-59.9)
41	0.9	83.4	26.8 (18.3-36.1)	**69**	0.2	98.2	72.4 (55.2-86.7)
42	0.9	84.3	37.0 (25.4-49.4)				
43	0.9	85.2	32.7 (20.0-46.9)				
44	0.8	86.0	37.8 (22.0-55.0)				
45	0.8	86.8	20.7 (4.2-45.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Botswana							
15	2.0	35.3	3.1 (0.2-9.5)	**46**	1.0	83.9	51.7 (32.9-70.2)
16	2.0	37.3	5.6 (1.4-12.6)	**47**	0.9	84.8	38.7 (22.4-56.3)
17	1.9	39.2	12.3 (1.6-31.0)	**48**	0.9	85.7	34.3 (20.5-49.6)
18	1.9	41.1	13.9 (5.4-25.5)	**49**	0.9	86.6	69.2 (52.9-83.4)
19	1.8	42.9	14.9 (7.4-24.3)	**50**	0.8	87.4	42.2 (27.7-57.5)
20	1.8	44.7	9.4 (4.0-16.6)	**51**	0.7	88.1	39.2 (20.6-59.7)
21	1.7	46.4	9.8 (4.3-17.2)	**52**	0.7	88.8	62.6 (43.0-80.2)
22	1.7	48.1	24.4 (15.0-35.2)	**53**	0.6	89.4	51.8 (33.2-70.3)
23	1.7	49.8	14.2 (7.6-22.4)	**54**	0.6	90.0	61.7 (38.5-82.3)
24	1.7	51.5	29.3 (16.2-44.4)	**55**	0.6	90.6	45.8 (25.9-66.4)
25	1.7	53.2	32.2 (18.2-48.1)	**56**	0.6	91.2	68.3 (50.3-83.8)
26	1.7	54.9	21.1 (13.3-30.2)	**57**	0.6	91.8	60.1 (35.7-82.1)
27	1.7	56.6	28.4 (16.3-42.3)	**58**	0.6	92.4	72.5 (56.1-86.2)
28	1.7	58.3	21.1 (12.3-31.4)	**59**	0.6	93.0	54.4 (31.2-76.6)
29	1.7	60.0	21.8 (11.8-33.9)	**60**	0.5	93.5	70.8 (51.5-86.8)
30	1.6	61.6	15.6 (7.4-26.2)	**61**	0.5	94.0	67.2 (45.5-85.6)
31	1.6	63.2	31.2 (18.5-45.6)	**62**	0.5	94.5	44.2 (18.4-71.8)
32	1.6	64.8	22.2 (10.4-36.8)	**63**	0.5	95.0	76.9 (57.9-91.5)
33	1.6	66.4	31.9 (19.7-45.4)	**64**	0.5	95.5	55.3 (35.5-74.4)
34	1.6	68.0	22.2 (11.9-34.6)	**65**	0.4	95.9	75.5 (54.2-91.8)
35	1.6	69.6	28.9 (17.3-42.2)	**66**	0.4	96.3	59.9 (28.2-87.5)
36	1.5	71.1	39.5 (25.2-54.7)	**67**	0.4	96.7	74.5 (49.4-93.0)
37	1.5	72.6	25.9 (12.4-42.2)	**68**	0.3	97.0	21.2 (6.6-41.4)
38	1.5	74.1	31.4 (19.5-44.7)	**69**	0.3	97.3	85.6 (67.2-97.2)
39	1.4	75.5	35.6 (24.2-48.0)				
40	1.4	76.9	32.3 (16.8-50.1)				
41	1.3	78.2	15.1 (5.2-28.9)				
42	1.3	79.5	40.9 (20.8-62.8)				
43	1.2	80.7	68.7 (52.7-82.6)				
44	1.1	81.8	43.8 (29.0-59.2)				
45	1.1	82.9	50.0 (33.7-66.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Burkina Faso							
25	1.6	66.1	6.4 (3.8-9.6)	**46**	0.7	89.5	22.4 (11.8-35.2)
26	1.6	67.7	8.8 (5.0-13.6)	**47**	0.7	90.2	27.3 (16.2-40.1)
27	1.5	69.2	9.9 (5.7-15.2)	**48**	0.6	90.8	23.3 (12.3-36.6)
28	1.5	70.7	10.5 (5.6-16.6)	**49**	0.6	91.4	35.5 (18.2-55.0)
29	1.4	72.1	13.7 (7.9-20.6)	**50**	0.6	92.0	30.4 (21.9-39.5)
30	1.4	73.5	12.9 (7.8-19.0)	**51**	0.6	92.6	13.0 (5.2-23.6)
31	1.3	74.8	13.6 (6.5-22.8)	**52**	0.5	93.1	20.8 (9.7-34.8)
32	1.3	76.1	11.1 (6.4-16.9)	**53**	0.5	93.6	33.1 (17.9-50.4)
33	1.2	77.3	11.5 (6.0-18.6)	**54**	0.5	94.1	31.8 (18.2-47.2)
34	1.2	78.5	16.8 (9.1-26.2)	**55**	0.5	94.6	29.9 (17.3-44.4)
35	1.1	79.6	15.2 (9.5-21.8)	**56**	0.4	95.0	41.6 (26.1-57.9)
36	1.1	80.7	18.6 (10.4-28.5)	**57**	0.4	95.4	41.5 (24.5-59.5)
37	1.1	81.8	18.9 (10.7-28.9)	**58**	0.4	95.8	47.7 (27.7-68.1)
38	1.0	82.8	16.7 (8.1-27.7)	**59**	0.4	96.2	41.8 (24.8-59.8)
39	1.0	83.8	18.0 (9.6-28.2)	**60**	0.3	96.5	41.4 (26.7-57.0)
40	0.9	84.7	13.1 (8.1-19.1)	**61**	0.3	96.8	34.8 (15.3-57.5)
41	0.9	85.6	19.1 (11.0-28.9)	**62**	0.3	97.1	43.4 (28.2-59.4)
42	0.9	86.5	16.2 (8.7-25.4)	**63**	0.3	97.4	22.9 (10.4-38.5)
43	0.8	87.3	29.5 (17.4-43.4)	**64**	0.3	97.7	46.8 (29.5-64.6)
44	0.8	88.1	16.5 (8.2-27.1)				
45	0.7	88.8	28.1 (17.4-40.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Comoros							
25	1.7	60.3	13.8 (9.6-18.7)	**46**	0.8	86.8	36.0 (24.4-48.6)
26	1.7	62.0	12.6 (7.9-18.3)	**47**	0.8	87.6	33.8 (21.4-47.4)
27	1.6	63.6	9.1 (5.4-13.6)	**48**	0.8	88.4	33.8 (24.6-43.7)
28	1.6	65.2	12.7 (8.6-17.6)	**49**	0.7	89.1	36.2 (22.9-50.7)
29	1.6	66.8	11.1 (6.6-16.6)	**50**	0.7	89.8	36.1 (30.0-42.5)
30	1.5	68.3	16.5 (11.8-21.8)	**51**	0.7	90.5	38.9 (24.2-54.7)
31	1.5	69.8	11.0 (4.7-19.5)	**52**	0.7	91.2	45.7 (33.4-58.4)
32	1.5	71.3	14.7 (9.3-21.1)	**53**	0.6	91.8	43.1 (32.5-54.0)
33	1.4	72.7	16.6 (9.6-25.0)	**54**	0.6	92.4	44.6 (32.0-57.6)
34	1.4	74.1	11.4 (5.9-18.3)	**55**	0.6	93.0	47.2 (39.2-55.3)
35	1.4	75.5	19.8 (14.3-26.0)	**56**	0.6	93.6	47.6 (35.8-59.6)
36	1.3	76.8	17.2 (10.7-24.8)	**57**	0.6	94.2	57.8 (42.7-72.1)
37	1.3	78.1	15.1 (9.9-21.2)	**58**	0.5	94.7	57.8 (46.7-68.5)
38	1.2	79.3	18.2 (13.2-23.9)	**59**	0.5	95.2	50.0 (36.0-64.0)
39	1.2	80.5	26.0 (16.8-36.5)	**60**	0.5	95.7	53.2 (44.9-61.4)
40	1.0	81.5	26.4 (19.4-34.1)	**61**	0.5	96.2	48.4 (31.1-65.8)
41	1.0	82.5	27.6 (17.7-38.8)	**62**	0.5	96.7	54.1 (34.6-72.9)
42	0.9	83.4	24.8 (18.0-32.3)	**63**	0.3	97.0	59.3 (43.6-74.1)
43	0.9	84.3	30.2 (19.0-42.6)	**64**	0.3	97.3	55.6 (43.4-67.4)
44	0.9	85.2	27.1 (18.1-37.1)				
45	0.8	86.0	38.8 (30.5-47.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Eswatini							
15	2.4	39.9	13.3 (4.1-26.8)	**46**	0.8	88.0	15.4 (7.9-24.7)
16	2.3	42.2	13.9 (6.7-23.1)	**47**	0.8	88.8	40.7 (22.5-60.3)
17	2.2	44.4	11.3 (3.8-22.2)	**48**	0.7	89.5	50.0 (32.1-67.9)
18	2.2	46.6	11.1 (5.0-19.4)	**49**	0.7	90.2	55.1 (37.4-72.2)
19	2.1	48.7	6.9 (2.3-13.6)	**50**	0.6	90.8	44.4 (24.3-65.4)
20	2.1	50.8	12.9 (5.7-22.6)	**51**	0.5	91.3	45.7 (26.9-65.1)
21	2.0	52.8	17.9 (9.0-29.1)	**52**	0.5	91.8	39.5 (14.1-68.4)
22	1.9	54.7	15.3 (7.5-25.2)	**53**	0.4	92.2	50.0 (24.4-75.7)
23	1.9	56.6	9.9 (3.1-19.9)	**54**	0.4	92.6	57.2 (38.9-74.6)
24	1.9	58.5	15.5 (8.1-24.9)	**55**	0.4	93.0	64.3 (48.6-78.6)
25	1.8	60.3	8.7 (2.0-19.4)	**56**	0.4	93.4	66.3 (46.7-83.4)
26	1.8	62.1	8.8 (3.3-16.6)	**57**	0.3	93.7	68.3 (46.2-86.7)
27	1.7	63.8	18.8 (8.4-32.1)	**58**	0.3	94.0	68.5 (47.9-85.8)
28	1.6	65.4	11.0 (5.1-18.7)	**59**	0.3	94.3	62.3 (38.2-83.5)
29	1.6	67.0	20.6 (11.9-31.0)	**60**	0.3	94.6	57.0 (37.4-75.5)
30	1.6	68.6	14.3 (6.7-24.1)	**61**	0.3	94.9	60.3 (36.6-81.7)
31	1.5	70.1	19.4 (10.4-30.3)	**62**	0.3	95.2	67.7 (47.7-84.8)
32	1.4	71.5	18.6 (10.4-28.6)	**63**	0.3	95.5	72.2 (50.5-89.4)
33	1.4	72.9	26.6 (14.7-40.6)	**64**	0.3	95.8	70.5 (49.9-87.5)
34	1.4	74.3	18.3 (8.7-30.4)	**65**	0.3	96.1	65.9 (41.5-86.5)
35	1.4	75.7	32.5 (17.0-50.1)	**66**	0.3	96.4	77.7 (58.2-92.4)
36	1.4	77.1	20.2 (8.8-34.7)	**67**	0.3	96.7	55.7 (25.0-84.2)
37	1.4	78.5	29.6 (17.5-43.4)	**68**	0.3	97.0	73.0 (46.7-92.7)
38	1.4	79.9	22.2 (9.2-39.0)	**69**	0.3	97.3	55.3 (35.1-74.5)
39	1.3	81.2	18.4 (10.0-28.8)	**70**	0.3	97.6	100.0
40	1.2	82.4	27.3 (16.2-40.1)				
41	1.1	83.5	27.8 (15.3-42.3)				
42	1.0	84.5	49.0 (31.6-66.5)				
43	0.9	85.4	47.6 (30.8-64.7)				
44	0.9	86.3	31.2 (17.5-46.8)				
45	0.9	87.2	42.2 (26.5-58.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Ghana							
18	2.0	45.3	67.4 (3.9-97.5)	**61**	0.5	95.8	63.6 (50.7-75.6)
19	1.9	47.2	41.1 (6.0-82.9)	**62**	0.4	96.2	59.7 (49.9-69.2)
20	1.9	49.1	46.3 (31.4-75.2)	**63**	0.4	96.6	61.6 (48.6-73.8)
21	1.9	51.0	33.0 (2.5-76.4)	**64**	0.4	97.0	54.3 (42.2-66.2)
22	1.8	52.8	25.2 (1.8-62.9)	**65**	0.3	97.3	62.8 (54.7-70.7)
23	1.8	54.6	47.4 (12.5-84.0)	**66**	0.3	97.6	55.3 (43.4-67.0)
24	1.8	56.4	21.4 (8.5-90.6)	**67**	0.3	97.9	59.7 (48.3-70.6)
25	1.7	58.1	36.4 (11.3-66.4)	**68**	0.2	98.1	63.9 (51.3-75.6)
26	1.7	59.8	52.6 (21.3-82.9)	**69**	0.2	98.3	61.1 (49.0-72.5)
27	1.6	61.4	22.4 (2.8-53.5)	**70**	0.2	98.5	52.4 (44.8-60.0)
28	1.6	63.0	27.3 (10.3-48.7)	**71**	0.2	98.7	69.1 (53.6-82.6)
29	1.6	64.6	27.2 (4.5-59.8)	**72**	0.2	98.9	59.0 (48.6-69.0)
30	1.5	66.1	39.1 (12.0-70.6)	**73**	0.2	99.1	57.5 (44.9-69.6)
31	1.5	67.6	36.4 (14.7-61.4)	**74**	0.2	99.3	55.8 (40.9-70.2)
32	1.5	69.1	32.6 (17.1-50.4)	**75**	0.1	99.4	52.9 (44.3-61.5)
33	1.4	70.5	74.8 (50.1-93.0)	**76**	0.1	99.5	58.4 (39.3-76.3)
34	1.4	71.9	16.8 (4.1-35.9)	**77**	0.1	99.6	57.3 (42.4-71.6)
35	1.3	73.2	25.0 (11.7-41.2)	**78**	0.1	99.7	63.8 (48.0-78.1)
36	1.3	74.5	28.8 (12.2-49.1)	**79**	0.1	99.8	52.3 (31.7-72.5)
37	1.2	75.7	27.6 (7.7-54.0)	**80**	0.1	99.9	44.1 (33.4-55.1)
38	1.2	76.9	44.8 (26.5-63.9)	**81**	0.1	100	67.1 (47.1-84.3)
39	1.2	78.1	45.3 (24.0-67.5)	**82**	<0.05	100	64.4 (46.0-80.9)
40	1.1	79.2	18.0 (8.5-29.9)	**83**	<0.05	100	62.0 (33.3-86.8)
41	1.1	80.3	31.9 (10.4-58.5)	**84**	<0.05	100	59.3 (40.7-76.5)
42	1.0	81.3	54.3 (34.6-73.3)	**85**	<0.05	100	47.8 (31.9-63.9)
43	1.0	82.3	45.2 (23.6-67.8)	**86**	<0.05	100	39.1 (18.6-61.8)
44	1.0	83.3	51.3 (30.0-72.4)	**87**	<0.05	100	63.8 (27.1-92.9)
45	1.0	84.3	41.9 (26.4-58.3)	**88**	<0.05	100	40.1 (12.9-71.2)
46	0.9	85.2	46.2 (27.9-65.1)	**89**	<0.05	100	51.8 (16.0-86.5)
47	0.9	86.1	51.2 (30.0-72.2)	**90**	<0.05	100	71.8 (51.2-88.4)
48	0.9	87.0	43.2 (25.2-62.1)	**91**	<0.05	100	69.8 (30.4-96.9)
49	0.8	87.8	35.8 (18.6-55.1)	**92**	<0.05	100	32.9 (2.0-77.8)
50	0.8	88.8	54.6 (47.0-62.0)	**93**	<0.05	100	46.6 (3.9-93.1)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	0.8	89.6	54.0 (45.4-62.5)	**94**	<0.05	100	70.8 (30.6-97.5)
52	0.8	90.4	55.5 (47.4-63.5)	**95**	<0.05	100	15.5 (8.5-24.0)
53	0.7	91.2	51.5 (40.9-62.1)	**96**	<0.05	100	69.7 (5.8-63.5)
54	0.7	91.8	52.7 (44.3-60.9)	**98**	<0.05	100	35.5 (5.2-74.9)
55	0.7	92.5	54.3 (46.0-62.4)	**99**	<0.05	100	0
56	0.6	93.1	59.0 (49.9-67.8)	**100**	<0.05	100	48.7 (15.2-83.0)
57	0.6	93.2	49.8 (38.8-60.8)				
58	0.6	94.3	60.4 (51.6-68.9)				
59	0.5	94.8	57.5 (45.7-68.8)				
60	0.5	95.3	52.4 (45.1-59.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Kenya							
18	2.2	47.6	5.7 (1.9-11.4)	**46**	0.8	88.3	31.1 (16.6-47.8)
19	2.1	49.7	14.6 (6.8-24.6)	**47**	0.8	89.1	38.1 (20.1-58.1)
20	2.1	51.8	16.3 (8.5-26.0)	**48**	0.8	89.9	31.8 (10.9-57.7)
21	2.0	53.8	11.8 (3.7-23.6)	**49**	0.7	90.6	43.1 (25.5-61.7)
22	2.0	55.8	6.4 (2.4-12.2)	**50**	0.7	91.3	42.6 (26.5-59.6)
23	1.9	57.7	7.7 (3.0-14.4)	**51**	0.6	91.9	54.8 (35.5-73.4)
24	1.8	59.5	17.7 (9.6-27.6)	**52**	0.6	92.5	47.5 (27.1-68.4)
25	1.7	61.2	12.7 (5.1-23.0)	**53**	0.6	93.1	45.2 (24.5-66.7)
26	1.7	62.9	16.2 (9.4-24.4)	**54**	0.5	93.6	37.2 (18.7-57.9)
27	1.6	64.5	11.0 (4.4-20.0)	**55**	0.5	94.1	45.5 (31.7-59.6)
28	1.6	66.1	13.4 (6.9-21.6)	**56**	0.5	94.6	31.6 (18.1-46.9)
29	1.6	67.7	15.8 (8.3-25.0)	**57**	0.4	95.0	49.5 (34.4-64.7)
30	1.5	69.2	14.7 (8.1-22.8)	**58**	0.4	95.4	55.1 (38.9-70.7)
31	1.5	70.7	16.3 (8.6-25.9)	**59**	0.4	95.8	61.4 (41.3-79.6)
32	1.5	72.2	13.3 (6.8-21.6)	**60**	0.4	96.2	53.2 (36.8-69.3)
33	1.5	73.7	13.0 (7.1-20.4)	**61**	0.3	96.5	46.5 (27.1-66.5)
34	1.4	75.1	20.5 (10.4-33.0)	**62**	0.3	96.8	43.2 (23.7-63.9)
35	1.4	76.5	20.2 (13.1-28.4)	**63**	0.3	97.1	52.7 (36.7-68.5)
36	1.3	77.8	30.8 (14.7-49.9)	**64**	0.3	97.4	55.1 (36.6-73.0)
37	1.3	79.1	30.2 (22.0-39.0)	**65**	0.3	97.7	55.7 (37.5-73.0)
38	1.2	80.3	19.2 (10.0-30.6)	**66**	0.3	98.0	60.2 (35.6-82.3)
39	1.2	81.5	35.3 (20.1-52.2)	**67**	0.2	98.2	47.2 (27.7-67.0)
40	1.1	82.6	33.5 (18.8-50.1)	**68**	0.2	98.4	64.7 (35.6-88.8)
41	1.1	83.7	22.2 (12.6-33.5)	**69**	0.2	98.6	71.4 (45.9-91.2)
42	1.0	84.7	32.4 (18.6-47.9)				
43	1.0	85.7	32.6 (18.7-48.2)				
44	0.9	86.6	46.3 (28.9-64.2)				
45	0.9	87.5	39.0 (27.8-50.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Lesotho							
15	2.0	34.3	2.4 (0.8-4.7)	**41**	1.2	78.8	24.6 (14.8-36.0)
16	2.1	36.4	4.4 (2.3-7.3)	**42**	1.1	79.9	33.5 (22.6-45.3)
17	2.1	38.5	6.6 (3.7-10.4)	**43**	1.1	81.0	21.8 (11.7-34.0)
18	2.1	40.6	4.3 (2.0-7.4)	**44**	1.0	82.0	33.6 (23.1-45.1)
19	2.0	42.6	5.7 (2.1-10.7)	**45**	0.9	82.9	26.9 (16.4-38.9)
20	2.0	44.6	7.3 (4.1-11.5)	**46**	0.9	83.8	35.8 (25.6-46.8)
21	1.9	46.5	6.7 (3.4-10.9)	**47**	0.8	84.6	39.1 (27.6-51.3)
22	1.9	48.4	18.6 (13-24.9)	**48**	0.8	85.4	45.2 (32.2-58.5)
23	1.9	50.3	14.3 (8.8-20.8)	**49**	0.8	86.2	41.3 (27.8-55.5)
24	1.9	52.2	9.6 (4.3-16.7)	**50**	0.7	86.9	35.9 (18.8-55.0)
25	1.8	54.0	10.2 (5.1-16.8)	**51**	0.7	87.6	17.6 (4.2-37.5)
26	1.8	55.8	9.3 (5.4-14.2)	**52**	0.7	88.3	23.6 (7.8-44.7)
27	1.8	57.6	18.4 (11.5-26.5)	**53**	0.7	89.0	43.1 (22.0-65.6)
28	1.8	59.4	12.2 (7.4-18.1)	**54**	0.7	89.7	41.2 (25.1-58.3)
29	1.7	61.1	26.7 (17.4-37.3)	**55**	0.7	90.4	19.6 (4.8-41.1)
30	1.7	62.8	10.6 (5.2-17.6)	**56**	0.7	91.1	45.8 (24.1-68.4)
31	1.7	64.5	17.2 (10.5-25.2)	**57**	0.6	91.7	40.2 (17.8-65.0)
32	1.6	66.1	18.1 (11.6-25.6)	**58**	0.6	92.3	36.5 (16.7-59.0)
33	1.6	67.7	27.4 (17.9-38.2)	**59**	0.6	92.9	43.7 (19.5-69.6)
34	1.5	69.2	24.3 (15.3-34.6)				
35	1.5	70.7	29.3 (20.7-38.7)				
36	1.5	72.2	19.7 (10.8-30.5)				
37	1.4	73.6	27.3 (18.3-37.3)				
38	1.4	75.0	35.8 (24.7-47.8)				
39	1.3	76.3	27.6 (17.9-38.6)				
40	1.3	77.6	37.1 (26.4-48.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Liberia							
24	1.7	60.6	11.9 (5.7-20.1)	**46**	0.8	86.9	45.2 (27.0-64.0)
25	1.6	62.2	14.4 (8.3-21.9)	**47**	0.8	87.7	35.5 (19.1-53.9)
26	1.5	63.7	11.8 (6.0-19.1)	**48**	0.8	88.5	43.5 (22.3-66.0)
27	1.5	65.2	9.2 (3.7-16.8)	**49**	0.7	89.2	39.1 (20.4-59.7)
28	1.4	66.6	11.1 (5.2-18.8)	**50**	0.7	89.9	60.0 (43.3-75.6)
29	1.4	68.0	14.3 (7.6-22.7)	**51**	0.7	90.6	41.2 (17.4-67.4)
30	1.4	69.4	23.7 (15.5-32.9)	**52**	0.6	91.2	55.2 (36.7-73.0)
31	1.3	70.7	13.4 (6.9-21.6)	**53**	0.6	91.8	40.0 (14.3-69.1)
32	1.3	72.0	20.0 (12.1-29.4)	**54**	0.6	92.4	54.5 (33.8-74.5)
33	1.3	73.3	19.7 (9.7-32.1)	**55**	0.6	93.0	56.5 (34.0-77.7)
34	1.3	74.6	24.7 (15.2-35.6)	**56**	0.5	93.5	29.4 (9.2-55.2)
35	1.2	75.8	16.9 (8.8-26.9)	**57**	0.5	94.0	65.0 (42.6-84.4)
36	1.2	77.0	27.6 (16.7-40.0)	**58**	0.5	94.5	66.7 (35.4-91.4)
37	1.2	78.2	24.1 (13.2-37.1)	**59**	0.5	95.0	60.0 (25.4-89.7)
38	1.1	79.3	26.4 (14.8-40.0)	**60**	0.4	95.4	64.3 (31.0-91.2)
39	1.1	80.4	38.0 (26.7-50.1)	**61**	0.4	95.8	100.0
40	1.0	81.4	37.0 (20.8-54.8)	**62**	0.4	96.2	55.6 (16.8-90.7)
41	1.0	82.4	31.7 (17.9-47.4)	**63**	0.4	96.6	80.0 (59.4-94.5)
42	1.0	83.4	29.8 (17.2-44.1)	**64**	0.3	96.9	62.5 (22.5-94.3)
43	0.9	84.3	22.2 (8.9-39.5)				
44	0.9	85.2	37.8 (23.1-53.8)				
45	0.9	86.1	33.3 (15.3-54.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Malawi							
25	1.7	65.7	16.3 (11.4-21.8)	**46**	0.7	89.7	37.8 (25.9-50.5)
26	1.7	67.4	17.5 (11.7-24.3)	**47**	0.7	90.4	40.7 (29.5-52.4)
27	1.6	69.0	14.4 (8.5-21.5)	**48**	0.6	91.0	33.7 (20.7-48.2)
28	1.6	70.6	21.0 (14.0-29.0)	**49**	0.6	91.6	48.0 (33.8-62.4)
29	1.5	72.1	26.0 (17.1-36.0)	**50**	0.6	92.2	58.9 (48.5-68.8)
30	1.5	73.6	26.4 (19.2-34.2)	**51**	0.5	92.7	50.5 (36.8-64.1)
31	1.4	75.0	18.4 (10.9-27.4)	**52**	0.5	93.2	37.5 (23.8-52.3)
32	1.4	76.4	25.1 (16.7-34.5)	**53**	0.5	93.7	37.9 (23.2-53.9)
33	1.3	77.7	21.7 (13.4-31.3)	**54**	0.4	94.1	49.4 (36.2-62.6)
34	1.2	78.9	30.6 (22.3-39.5)	**55**	0.4	94.5	53.7 (37.9-69.1)
35	1.2	80.1	33.5 (25.8-41.8)	**56**	0.4	94.9	52.0 (38.3-65.4)
36	1.1	81.2	23.9 (16.7-32.1)	**57**	0.4	95.3	51.5 (35.9-67.0)
37	1.0	82.2	35.5 (25.0-46.8)	**58**	0.4	95.7	47.9 (30.8-65.2)
38	1.0	83.2	20.0 (12.6-28.6)	**59**	0.3	96.0	51.6 (38.2-65.0)
39	0.9	84.1	29.3 (20.2-39.5)	**60**	0.3	96.3	60.0 (49.1-70.4)
40	0.9	85.0	34.4 (25.5-43.9)	**61**	0.3	96.6	63.4 (47.0-78.3)
41	0.9	85.9	26.8 (17.2-37.7)	**62**	0.3	96.9	64.6 (48.0-79.7)
42	0.8	86.7	36.4 (24.8-48.9)	**63**	0.3	97.2	66.1 (51.9-78.9)
43	0.8	87.5	35.5 (23.0-49.2)	**64**	0.3	97.5	89.4 (76.6-97.5)
44	0.8	88.3	40.8 (31.2-50.8)				
45	0.7	89.0	33.1 (24.5-42.4)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Mozambique							
25	1.6	66.4	19.8 (13.7-26.7)	**46**	0.7	89.5	46.5 (30.2-63.2)
26	1.6	68.0	22.5 (14.0-32.3)	**47**	0.6	90.1	44.7 (23.6-66.8)
27	1.5	69.5	9.9 (4.1-17.8)	**48**	0.6	90.7	44.2 (28.0-61.1)
28	1.5	71.0	17.6 (8.9-28.5)	**49**	0.6	91.3	41.5 (24.3-59.7)
29	1.4	72.4	9.5 (4.5-16.1)	**50**	0.6	91.9	44.9 (35.5-54.4)
30	1.4	73.8	21.2 (11.4-33.2)	**51**	0.5	92.4	32.8 (11.8-58.5)
31	1.3	75.1	23.3 (15.1-32.6)	**52**	0.5	92.9	65.4 (48.8-80.3)
32	1.3	76.4	14.6 (6.8-24.7)	**53**	0.5	93.4	45.8 (28.0-64.3)
33	1.2	77.6	32.2 (17.0-49.6)	**54**	0.5	93.9	46.8 (25.9-68.3)
34	1.2	78.8	30.6 (23.2-38.4)	**55**	0.4	94.3	53.0 (36.0-69.7)
35	1.1	79.9	21.9 (13.9-31.1)	**56**	0.4	94.7	60.0 (39.6-78.7)
36	1.1	81.0	19.8 (9.2-33.3)	**57**	0.4	95.1	47.0 (19.9-75.2)
37	1.0	82.0	31.4 (18.0-46.7)	**58**	0.4	95.5	46.6 (23.5-70.6)
38	1.0	83.0	28.7 (13.2-47.2)	**59**	0.4	95.9	53.1 (22.1-82.8)
39	1.0	84.0	33.6 (14.8-55.8)	**60**	0.3	96.2	55.3 (39.7-70.4)
40	0.9	84.9	20.8 (9.6-35.0)	**61**	0.3	96.5	76.1 (55.0-92.0)
41	0.9	85.8	43.1 (30.9-55.7)	**62**	0.3	96.8	54.4 (28.0-79.5)
42	0.8	86.6	34.8 (21.5-49.4)	**63**	0.3	97.1	41.6 (17.7-67.9)
43	0.8	87.4	40.5 (28.6-53.0)	**64**	0.3	97.4	65.5 (46.4-82.3)
44	0.7	88.1	49.1 (27.6-70.8)				
45	0.7	88.8	39.5 (28.9-50.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Namibia							
35	1.4	74.3	25.2 (17.5-33.8)	**50**	0.7	89.1	46.7 (36.8-56.7)
36	1.3	75.6	20.8 (14.7-27.5)	**51**	0.7	89.8	55.0 (44.4-65.5)
37	1.3	76.9	31.3 (22.5-40.8)	**52**	0.6	90.4	54.0 (43.6-64.1)
38	1.2	78.1	28.9 (21.0-37.5)	**53**	0.6	91.0	49.4 (38.9-59.8)
39	1.1	79.2	29.0 (21.9-36.6)	**54**	0.6	91.6	46.7 (34.5-59.2)
40	1.1	80.3	38.3 (29.7-47.2)	**55**	0.6	92.2	55.0 (43.0-66.8)
41	1.1	81.4	37.7 (28.3-47.5)	**56**	0.6	92.8	66.0 (53.1-77.8)
42	1.0	82.4	46.1 (36.4-55.8)	**57**	0.6	93.4	66.8 (56.0-76.8)
43	1.0	83.4	37.2 (27.5-47.4)	**58**	0.5	93.9	62.4 (47.8-76.0)
44	0.9	84.3	40.3 (31.1-49.9)	**59**	0.5	94.4	56.3 (42.8-69.3)
45	0.9	85.2	44.5 (40.2-48.9)	**60**	0.5	94.9	61.4 (48.7-73.2)
45	0.9	85.2	38.8 (29.6-48.3)	**61**	0.4	95.3	55.2 (44.2-66.1)
46	0.9	86.1	51.4 (41.5-61.2)	**62**	0.4	95.7	60.4 (47.1-73.0)
47	0.8	86.9	43.0 (33.4-52.9)	**63**	0.4	96.1	51.3 (38.5-64.0)
48	0.8	87.7	41.4 (30.8-52.5)	**64**	0.4	96.5	65.2 (50.9-78.2)
49	0.7	88.4	48.1 (38.0-58.4)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*
Seychelles							
25	1.2	46.8	5.6	**46**	2.4	74.4	37.8
26	1.2	48.0	0.0	**47**	1.2	75.6	49.1
27	1.2	49.2	14.9	**48**	1.2	76.8	39.2
28	1.2	50.4	8.8	**49**	1.2	78.0	40.5
29	1.2	51.6	11.6	**50**	1.2	79.2	43.7
30	1.2	52.8	5.3	**51**	1.2	80.4	42.3
31	1.2	54.0.	19.5	**52**	1.2	81.6	28.6
32	1.2	55.2	4.4	**53**	1.2	82.8	49.6
33	1.2	56.4	23.6	**54**	1.2	84.0	48.5
34	1.2	57.6	14.2	**55**	1.2	85.2	49.7
35	1.2	58.8	12.3	**56**	1.2	86.4	54.0
36	1.2	60.0	19.7	**57**	1.2	87.6	38.9
37	1.2	61.2	23.2	**58**	1.2	88.8	56.1
38	1.2	62.4	34.2	**59**	1.2	90.0	50.9
39	1.2	63.6	13.8	**60**	1.2	91.2	34.1
40	1.2	64.8	24.8	**61**	1.2	92.4	55.2
41	1.2	66.0	39.5	**62**	1.2	93.6	58.3
42	1.2	67.2	26.2	**63**	1.2	94.8	61.3
43	1.2	68.4	53.9	**64**	1.2	96.0	56.1
44	1.2	69.6	23.6				
45	2.4	72.0	31.0				

* Standard errors were adjusted at the level of Primary Sampling Unit (PSU). We adjusted for standard errors at the country-level for Seychelles, Romania, and Grenada, as those surveys did not provide information on PSU.

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
South Africa							
15	1.7	30.7	9.1 (4.8-14.7)	**61**	0.6	92.8	72.9 (62.7-82.1)
16	1.7	32.4	10.6 (7.0-14.9)	**62**	0.6	93.4	80.7 (71.6-88.5)
17	1.6	34.0	10.2 (6.0-15.3)	**63**	0.6	94.0	74.1 (64.5-82.7)
18	1.6	35.6	15.8 (10.2-22.3)	**64**	0.5	94.5	82.0 (72.9-89.6)
19	1.6	37.2	18.5 (13.0-24.8)	**65**	0.5	95.0	81.4 (71.3-89.8)
20	1.6	38.8	20.6 (14.1-27.8)	**66**	0.5	95.5	77.5 (67.7-86.0)
21	1.6	40.4	17.2 (10.3-25.4)	**67**	0.5	96.0	81.5 (72.0-89.4)
22	1.7	42.1	32.5 (23.1-42.8)	**68**	0.4	96.4	84.6 (75.5-91.9)
23	1.7	43.8	32.1 (24.3-40.5)	**69**	0.4	96.8	83.3 (73.6-91.2)
24	1.7	45.5	26.3 (19.3-33.8)	**70**	0.4	97.2	92.1 (84.1-97.4)
25	1.7	47.2	18.6 (11.9-26.5)	**71**	0.3	97.5	77.1 (64.5-87.6)
26	1.7	48.9	29.0 (21.3-37.5)	**72**	0.3	97.8	86.4 (74.3-95.0)
27	1.8	50.7	34.4 (25.6-43.9)	**73**	0.3	98.1	84.2 (70.3-94.3)
28	1.8	52.5	27.9 (19.4-37.4)	**74**	0.3	98.4	84.0 (72.2-93.0)
29	1.8	54.3	27.4 (18.3-37.5)	**75**	0.2	98.6	90.3 (76.9-98.3)
30	1.8	56.1	39.8 (30.2-49.8)	**76**	0.2	98.8	79.6 (66.2-90.3)
31	1.8	57.9	33.7 (23.6-44.6)	**77**	0.2	99.0	88.6 (75.5-97.1)
32	1.8	59.7	19.1 (12.8-26.4)	**78**	0.2	99.2	84.4 (70.5-94.4)
33	1.8	61.5	36.7 (27.4-46.6)	**79**	0.2	99.4	81.5 (63.9-94.1)
34	1.8	63.3	37.4 (27.5-47.9)	**80**	0.1	99.5	95.5 (82.1-100)
35	1.7	65.0	45.3 (34.0-56.8)	**81**	0.1	99.6	90.9 (74.3-99.3)
36	1.7	66.7	42.6 (32.9-52.6)	**82**	0.1	99.7	90.5 (74.4-99.1)
37	1.6	68.3	34.2 (24.8-44.4)	**83**	0.1	99.8	80.6 (65.6-92.2)
38	1.6	69.9	44.0 (32.2-56.1)	**84**	0.1	99.9	75.0 (52.8-91.8)
39	1.5	71.4	51.2 (40.1-62.2)	**85**	0.1	100	86.7 (63.3-99.1)
40	1.4	72.8	45.7 (34.5-57.1)	**86**	<0.05	100	86.7 (62.8-99.2)
41	1.3	74.1	43.8 (34.0-53.8)	**87**	<0.05	100	71.4 (43.3-92.6)
42	1.3	75.4	47.9 (35.7-60.3)	**88**	<0.05	100	83.3 (28.7-97.3)
43	1.2	76.6	60.2 (47.5-72.2)	**89**	<0.05	100	85.7 (44.0-99.5)
44	1.2	77.8	39.6 (29.0-50.8)	**90**	<0.05	100	100.0
45	1.2	79.0	47.8 (34.7-61.0)	**91**	<0.05	100	80.0 (46.4-98.9)
46	1.1	80.1	50.5 (38.8-62.2)	**92**	<0.05	100	100.0
47	1.1	81.2	58.1 (46.9-68.8)	**93**	<0.05	100	100.0

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.1	82.3	60.9 (48.8-72.3)	**94**	<0.05	100	100.0
49	1.0	83.3	65.3 (52.5-77.1)	**95**	<0.05	100	87.5 (50.6-99.7)
50	1.0	84.3	58.8 (33.6-81.7)				
51	0.9	85.2	82.6 (67.6-93.6)				
52	0.9	86.1	51.6 (26.1-76.7)				
53	0.9	87.0	62.5 (47.0-76.9)				
54	0.8	87.8	60.2 (34.8-83.0)				
55	0.8	88.6	70.5 (51.5-86.4)				
56	0.8	89.4	74.7 (49.3-93.3)				
57	0.7	90.1	66.7 (47.9-83.1)				
58	0.7	90.8	73.9 (55.3-88.9)				
59	0.7	91.5	68.7 (44.4-88.5)				
60	0.7	92.2	70.8 (60.9-79.8)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Tanzania							
23	1.7	61.5	35.9 (1.1-85.5)	**46**	0.7	88.8	26.6 (18.1-36.1)
24	1.7	63.2	14.4 (7.3-23.4)	**47**	0.7	89.5	40.5 (31.3-50.1)
25	1.6	64.8	12.0 (6.1-19.6)	**48**	0.7	90.2	27.6 (15.8-41.3)
26	1.6	66.4	11.5 (5.3-19.7)	**49**	0.6	90.8	51.6 (28.4-74.4)
27	1.5	67.9	13.6 (8.2-20.1)	**50**	0.6	91.4	46.1 (34.2-58.2)
28	1.5	69.4	11.3 (6.3-17.6)	**51**	0.6	92.0	48.1 (33.0-63.3)
29	1.4	70.8	13.8 (8.6-19.9)	**52**	0.6	92.6	42.5 (31.7-53.6)
30	1.4	72.2	14.4 (9.3-20.3)	**53**	0.5	93.1	42.7 (27.8-58.3)
31	1.4	73.6	23.7 (13.9-35.1)	**54**	0.5	93.6	51.8 (26.9-76.2)
32	1.3	74.9	17.7 (10.6-26.2)	**55**	0.5	94.1	55.6 (40.7-70.1)
33	1.3	76.2	25.3 (12.9-40.3)	**56**	0.4	94.5	52.0 (36.1-67.8)
34	1.2	77.4	20.7 (10.3-33.5)	**57**	0.4	94.9	55.3 (40.5-69.7)
35	1.2	78.6	18.7 (11.1-27.9)	**58**	0.4	95.3	52.3 (34.7-69.6)
36	1.1	79.7	19.6 (12.0-28.5)	**59**	0.4	95.7	57.1 (41.7-71.7)
37	1.1	80.8	20.4 (13.0-28.9)	**60**	0.4	96.1	52.9 (42.9-62.9)
38	1.0	81.8	16.8 (11.0-23.6)	**61**	0.3	96.4	29.4 (6.1-61.1)
39	1.0	82.8	34.3 (19.7-50.5)	**62**	0.3	96.7	38.7 (22.5-56.2)
40	1.0	83.8	25.3 (16.9-34.7)	**63**	0.3	97.0	65.8 (48.4-81.3)
41	0.9	84.7	29.5 (18.2-42.2)	**64**	0.3	97.3	57.9 (45.1-70.1)
42	0.9	85.6	20.7 (7.7-37.9)	**65**	0.3	97.6	56.6 (0.5-99.7)
43	0.9	86.5	22.5 (14.2-32.2)				
44	0.8	87.3	35.5 (21.9-50.4)				
45	0.8	88.1	33.1 (21.2-46.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Togo							
15	2.3	43.0	1.9 (0.1-6.1)	**46**	0.8	87.6	37.7 (22.6-54.2)
16	2.2	45.2	5.2 (1.7-10.4)	**47**	0.8	88.4	37.6 (22.8-53.7)
17	2.2	47.4	7 (2.1-14.5)	**48**	0.8	89.2	28.1 (16.3-41.6)
18	2.1	49.5	5.8 (2.1-11.3)	**49**	0.7	89.9	28.9 (11.7-50.0)
19	2.0	51.5	10.6 (3.9-20.2)	**50**	0.7	90.6	41.8 (29.6-54.4)
20	1.9	53.4	7.6 (3.6-12.9)	**51**	0.7	91.3	42.9 (27.0-59.6)
21	1.9	55.3	6.1 (2.5-11.3)	**52**	0.6	91.9	37.0 (18.2-58.2)
22	1.8	57.1	8.8 (3.6-16.0)	**53**	0.6	92.5	38.3 (20.3-58.1)
23	1.7	58.8	8.6 (2.4-18.0)	**54**	0.6	93.1	55.2 (34.2-75.2)
24	1.7	60.5	8.9 (3.7-16.2)	**55**	0.5	93.6	51.9 (37.4-66.3)
25	1.6	62.1	13.6 (8.5-19.6)	**56**	0.5	94.1	50.4 (27.5-73.2)
26	1.6	63.7	13.5 (7.0-21.6)	**57**	0.5	94.6	31.3 (12.5-54.1)
27	1.5	65.2	12.9 (6.2-21.7)	**58**	0.4	95.0	37.9 (18.0-60.3)
28	1.5	66.7	13.1 (6.1-22.2)	**59**	0.4	95.4	49.0 (23.0-75.2)
29	1.4	68.1	14.2 (5.4-26.2)	**60**	0.4	95.8	41.7 (31.3-52.4)
30	1.4	69.5	16.1 (11.1-21.9)	**61**	0.4	96.2	79.9 (58.4-94.8)
31	1.4	70.9	9.4 (1.3-24.0)	**62**	0.4	96.6	32.9 (11.2-59.6)
32	1.4	72.3	21.5 (11.8-33.3)	**63**	0.3	96.9	42.6 (21.5-65.2)
33	1.3	73.6	22.0 (12.7-33.1)	**64**	0.3	97.2	58.4 (38.3-77.2)
34	1.3	74.9	25.7 (14.0-39.6)				
35	1.3	76.2	19.4 (12.7-27.1)				
36	1.2	77.4	29.4 (18.2-42.1)				
37	1.2	78.6	28.4 (17.3-41.1)				
38	1.2	79.8	10.6 (4.9-18.1)				
39	1.1	80.9	30.9 (19.9-43.2)				
40	1.1	82.0	28.4 (19.9-37.7)				
41	1.0	83.0	23.1 (7.7-43.6)				
42	1.0	84.0	30.0 (19.8-41.3)				
43	1.0	85.0	35.7 (14.7-60.2)				
44	0.9	85.9	21.9 (8.9-38.7)				
45	0.9	86.8	36.3 (26.8-46.4)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Uganda							
18	2.2	55.4	8.4 (3.5-15.2)	**46**	0.6	91.0	41.5 (25.4-58.6)
19	2.1	57.5	11.5 (5.6-19.3)	**47**	0.6	91.6	37.9 (19.5-58.3)
20	2.0	59.5	12.7 (5.2-22.9)	**48**	0.6	92.2	47.1 (30.5-64.0)
21	2.0	61.5	12.4 (6.2-20.3)	**49**	0.5	92.7	36.4 (17.2-58.2)
22	1.9	63.4	11.9 (7.0-18.0)	**50**	0.5	93.2	40.1 (28.1-52.8)
23	1.8	65.2	20.4 (12.6-29.6)	**51**	0.5	93.7	53.0 (35.8-69.9)
24	1.7	66.9	17.8 (10.9-26.1)	**52**	0.5	94.2	39.4 (23.7-56.2)
25	1.7	68.6	17.6 (10.0-26.9)	**53**	0.4	94.6	21.4 (10.3-35.3)
26	1.6	70.2	17.7 (10.8-25.9)	**54**	0.4	95.0	44.1 (22.5-67.0)
27	1.6	71.8	14.3 (7.8-22.5)	**55**	0.4	95.4	47.7 (29.0-66.7)
28	1.5	73.3	20.4 (11.7-30.7)	**56**	0.4	95.8	38.9 (17.9-62.3)
29	1.4	74.7	22.0 (13.3-32.2)	**57**	0.3	96.1	49.2 (26.2-72.3)
30	1.4	76.1	19.6 (13.2-27.1)	**58**	0.3	96.4	52.9 (30.9-74.4)
31	1.3	77.4	25.1 (14.5-37.4)	**59**	0.3	96.7	45.7 (21.3-71.2)
32	1.2	78.6	17.4 (10.1-26.1)	**60**	0.3	97.0	65.9 (50.4-79.8)
33	1.2	79.8	14.7 (6.3-25.8)	**61**	0.3	97.3	61.8 (35.6-84.7)
34	1.1	80.9	31.0 (19.2-44.1)	**62**	0.2	97.5	43.2 (23.6-63.9)
35	1.1	82.0	24.9 (16.1-34.9)	**63**	0.2	97.7	50.4 (18.7-81.9)
36	1.0	83.0	15.7 (8.4-24.8)	**64**	0.2	97.9	46.2 (25.7-67.3)
37	1.0	84.0	26.7 (14.9-40.6)	**65**	0.2	98.1	54.1 (33.6-73.9)
38	0.9	84.9	17.6 (9.4-27.6)	**66**	0.2	98.3	65.4 (36.9-88.9)
39	0.9	85.8	22.1 (10.7-36.2)	**67**	0.2	98.5	50.2 (24.7-75.7)
40	0.9	86.7	33.0 (22.8-44.0)	**68**	0.2	98.7	43.9 (19.6-69.9)
41	0.8	87.5	34.0 (15.7-55.3)	**69**	0.2	98.9	28.8 (8.2-55.7)
42	0.8	88.3	15.5 (8.4-24.3)				
43	0.7	89.0	29.6 (17.2-43.7)				
44	0.7	89.7	16.8 (7.1-29.6)				
45	0.7	90.4	30.8 (19.5-43.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Zanzibar							
24	1.7	61.6	6.2 (0-24.6)	**46**	0.8	87.9	49.3 (27.2-71.5)
25	1.6	63.2	7.4 (2.9-13.9)	**47**	0.5	88.4	43.4 (29.3-58.2)
26	2.0	65.2	27.1 (10.7-47.7)	**48**	1.6	90.0	41.8 (27.0-57.4)
27	1.4	66.6	16.2 (6.0-30.2)	**49**	0.3	90.3	69.2 (52.5-83.6)
28	2.1	68.7	17.6 (8.7-28.8)	**50**	0.7	91.0	62.1 (50.3-73.2)
29	1.0	69.7	7.3 (2.1-15.1)	**51**	0.4	91.4	57.1 (32.6-80.0)
30	1.6	71.3	15.0 (8.2-23.4)	**52**	0.3	91.7	66.8 (47.4-83.6)
31	1.2	72.5	11.8 (2.9-25.7)	**53**	1.0	92.7	55.4 (33.8-76.0)
32	1.1	73.6	10.3 (3.0-21.2)	**54**	0.4	93.1	66.5 (39.9-88.4)
33	1.7	75.3	18.1 (4.3-38.7)	**55**	0.4	93.5	58.4 (41.5-74.5)
34	1.1	76.4	22.4 (5.3-46.8)	**56**	0.6	94.1	59.1 (24.6-89.1)
35	1.0	77.4	12.9 (4.7-24.3)	**57**	0.5	94.6	75.0 (49.2-93.7)
36	1.3	78.7	14.7 (5.5-27.5)	**58**	1.0	95.6	56.4 (28.2-82.4)
37	0.8	79.5	20.4 (8.1-36.5)	**59**	0.2	95.8	79.4 (55.8-95.5)
38	1.9	81.4	37.6 (25.3-50.8)	**60**	0.4	96.2	59.5 (41.5-76.2)
39	0.5	81.9	26.2 (14.1-40.5)	**61**	0.2	96.4	85.8 (63.0-98.6)
40	1.1	83.0	39.6 (28.7-51.1)	**62**	0.2	96.6	77.9 (51.7-95.6)
41	0.7	83.7	22.7 (6.3-45.5)	**63**	0.5	97.1	84.8 (58.8-98.9)
42	0.6	84.3	36.8 (20.6-54.7)	**64**	0.2	97.3	76.3 (53.4-93.1)
43	1.4	85.7	27.4 (11.6-47.0)				
44	0.7	86.4	34.0 (14.9-56.4)				
45	0.7	87.1	44.2 (32.2-56.4)				

Eastern Mediterranean

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Egypt							
15	1.7	35.6	4.0 (2.0-6.6)	**41**	1.2	76.1	22.1 (15.9-29.0)
16	1.7	37.3	4.8 (2.8-7.2)	**42**	1.2	77.3	23.7 (17.4-30.6)
17	1.7	39.0	6.0 (3.3-9.4)	**43**	1.1	78.4	24.5 (17.3-32.4)
18	1.7	40.7	5.9 (3.4-9.0)	**44**	1.1	79.5	29.2 (22.3-36.6)
19	1.7	42.4	4.8 (2.7-7.5)	**45**	1.0	80.5	23.2 (17.3-29.6)
20	1.7	44.1	6.2 (3.8-9.2)	**46**	1.0	81.5	28.2 (21.5-35.4)
21	1.7	45.8	6.4 (3.4-10.2)	**47**	1.0	82.5	38.7 (31.1-46.6)
22	1.7	47.5	7.9 (4.6-11.9)	**48**	0.9	83.4	35.6 (28.3-43.2)
23	1.6	49.1	5.3 (2.9-8.3)	**49**	0.9	84.3	29.6 (22.4-37.2)
24	1.6	50.7	6.3 (3.5-9.7)	**50**	0.9	85.2	39.1 (32.3-46.2)
25	1.6	52.3	5.3 (2.7-8.7)	**51**	0.8	86.0	39.1 (31.7-46.8)
26	1.6	53.9	9.0 (5.8-12.9)	**52**	0.8	86.8	47.7 (39.5-55.9)
27	1.6	55.5	6.4 (3.9-9.6)	**53**	0.8	87.6	38.0 (30.5-45.9)
28	1.6	57.1	9.0 (6.0-12.5)	**54**	0.8	88.4	45.7 (37.5-54.1)
29	1.6	58.7	7.1 (4.5-10.1)	**55**	0.8	89.2	47.4 (38.8-56.1)
30	1.6	60.3	9.9 (6.5-13.8)	**56**	0.7	89.9	48.2 (37.8-58.6)
31	1.6	61.9	8.4 (5.1-12.4)	**57**	0.7	90.6	47.3 (37.7-56.9)
32	1.6	63.5	14.8 (10.5-19.7)	**58**	0.7	91.3	52.1 (43.1-60.9)
33	1.6	65.1	10.8 (7.4-14.8)	**59**	0.7	92.0	56.4 (47.6-65.0)
34	1.5	66.6	8.7 (5.3-12.7)				
35	1.5	68.1	10.7 (7.5-14.4)				
36	1.4	69.5	11.0 (7.4-15.2)				
37	1.4	70.9	18.4 (12.8-24.6)				
38	1.4	72.3	15.1 (11.0-19.8)				
39	1.3	73.6	18.4 (13.6-23.8)				
40	1.3	74.9	21.3 (15.0-28.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Iran							
18	1.3	30.1	4.5 (0.4-12.8)	**61**	0.8	91.5	51.3 (46.0-56.5)
19	1.3	31.4	5.0 (2.8-7.6)	**62**	0.8	92.3	56.0 (50.7-61.2)
20	1.3	32.7	4.9 (2.9-7.4)	**63**	0.7	93.0	59.9 (54.9-64.8)
21	1.3	34.0	4.7 (2.5-7.4)	**64**	0.7	93.7	57.0 (51.3-62.6)
22	1.3	35.3	7.1 (4.8-9.9)	**65**	0.6	94.3	58.1 (52.9-63.1)
23	1.3	36.6	6.6 (4.0-9.8)	**66**	0.6	94.9	64.9 (59.2-70.5)
24	1.4	38.0	5.7 (3.8-8.1)	**67**	0.5	95.4	63.3 (57.1-69.4)
25	1.5	39.5	5.8 (3.9-8.0)	**68**	0.5	95.9	69.5 (62.9-75.8)
26	1.5	41.0	4.1 (2.7-5.9)	**69**	0.5	96.4	67.5 (60.6-74.1)
27	1.6	42.6	5.6 (4.0-7.5)	**70**	0.4	96.8	65.2 (58.7-71.5)
28	1.7	44.3	8.9 (6.6-11.4)	**71**	0.4	97.2	68.7 (61.9-75.1)
29	1.8	46.1	7.6 (5.6-9.9)	**72**	0.3	97.5	68.9 (62.3-75.1)
30	1.9	48.0	7.8 (5.9-9.9)	**73**	0.3	97.8	64.5 (56.3-72.3)
31	2.0	50.0	8.7 (6.6-11.1)	**74**	0.3	98.1	64.1 (56.3-71.6)
32	2.1	52.1	8.5 (6.4-10.7)	**75**	0.3	98.4	73.7 (65.1-81.4)
33	2.1	54.2	9.2 (7.1-11.5)	**76**	0.2	98.6	70.1 (62.5-77.2)
34	2.1	56.3	8.2 (6.2-10.4)	**77**	0.2	98.8	69.0 (60.6-76.7)
35	2.1	58.4	11.8 (9.4-14.4)	**78**	0.2	99.0	68.6 (59.4-77.2)
36	2.0	60.4	12.1 (9.6-14.9)	**79**	0.2	99.2	66.7 (58.3-74.6)
37	2.0	62.4	11.8 (9.4-14.6)	**80**	0.2	99.4	63.0 (54.7-70.9)
38	1.9	64.3	14.8 (12.0-17.9)	**81**	0.1	99.5	65.6 (56.8-74.0)
39	1.8	66.1	14.7 (11.7-17.9)	**82**	0.1	99.6	65.9 (55.6-75.5)
40	1.7	67.8	19.1 (15.2-23.4)	**83**	0.1	99.7	73.9 (63.5-83.2)
41	1.6	69.4	17.3 (14.1-20.8)	**84**	0.1	99.8	78.7 (68.8-87.1)
42	1.5	70.9	21.0 (17.7-24.5)	**85**	0.1	99.9	79.8 (69.4-88.5)
43	1.5	72.4	23.6 (19.9-27.5)	**86**	0.1	100	70.1 (55.3-83.0)
44	1.4	73.8	23.4 (19.6-27.4)	**87**	<0.05	100	81.0 (67.0-91.8)
45	1.3	75.1	28.3 (24.7-32.1)	**88**	<0.05	100	61.7 (45.6-76.7)
46	1.3	76.4	24.7 (21.1-28.6)	**89**	<0.05	100	72.6 (46.0-92.6)
47	1.2	77.6	28.1 (24.1-32.3)	**90**	<0.05	100	77.0 (60.1-90.3)
48	1.2	78.8	35.7 (31.6-40.0)	**91**	<0.05	100	86.4 (67.2-97.9)
49	1.2	80.0	32.7 (28.4-37.1)	**92**	<0.05	100	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
50	1.2	81.2	32.0 (27.5-36.7)	**93**	<0.05	100	90.2 (59.1-99.7)
51	1.1	82.3	42.8 (38.2-47.5)	**94**	<0.05	100	29.7 (0.1-85.8)
52	1.1	83.4	39.4 (35.0-43.8)	**95**	<0.05	100	83.1 (49.6-99.7)
53	1.1	84.5	37.2 (32.8-41.7)	**98**	<0.05	100	100
54	1.0	85.5	42.6 (38.0-47.3)	**99**	<0.05	100	100
55	1.0	86.5	48.6 (44.0-53.2)	**100**	<0.05	100	56.2 (0.0-98.9)
56	0.9	87.4	43.9 (39.4-48.5)				
57	0.9	88.3	48.6 (43.6-53.6)				
58	0.8	89.1	54.8 (50.1-59.4)				
59	0.8	89.9	48.0 (42.9-53.2)				
60	0.8	90.7	54.4 (49.2-59.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Iraq							
18	2.0	46.0	17.1 (9.3-26.7)	**58**	0.4	94.7	75.0 (54.2-91.0)
19	2.0	48.0	5.0 (1.7-9.9)	**59**	0.4	95.1	77.8 (63.1-89.6)
20	2.0	50.0	8.3 (3.3-15.2)	**60**	0.4	95.5	72.4 (58.4-84.5)
21	1.9	51.9	11.0 (5.0-19.0)	**61**	0.3	95.8	68.4 (51.6-83.0)
22	1.9	53.8	10.3 (1.7-24.8)	**62**	0.3	96.1	89.1 (79.7-95.8)
23	1.9	55.7	16.4 (8.6-26.0)	**63**	0.3	96.4	75.6 (61.3-87.4)
24	1.8	57.5	25.9 (13.0-41.3)	**64**	0.3	96.7	81.9 (66.3-93.4)
25	1.8	59.3	17.4 (8.2-29.2)	**65**	0.3	97.0	83.0 (70.7-92.5)
26	1.7	61.0	14.4 (6.1-25.6)	**66**	0.3	97.3	90.1 (77.7-97.8)
27	1.7	62.7	19.8 (9.5-32.7)	**67**	0.3	97.6	63.6 (36.1-87.0)
28	1.6	64.3	28.7 (15.8-43.6)	**68**	0.3	97.9	67.0 (47.3-83.9)
29	1.6	65.9	27.8 (15.9-41.5)	**69**	0.3	98.2	76.2 (51.3-94.0)
30	1.5	67.4	28.7 (15.3-44.4)	**70**	0.2	98.4	80.3 (62.9-93.2)
31	1.5	68.9	17.2 (8.8-27.7)	**71**	0.2	98.6	84.3 (60.0-98.3)
32	1.5	70.4	17.7 (10.3-26.5)	**72**	0.1	98.7	91.7 (73.9-99.8)
33	1.4	71.8	30.3 (18.1-44.1)	**73**	0.1	98.8	81.5 (50.7-98.8)
34	1.4	73.2	27.2 (16.5-39.5)	**74**	0.1	98.9	80.5 (49.0-98.6)
35	1.3	74.5	28.2 (15.6-42.7)	**75**	0.1	99.0	67.8 (27.2-96.6)
36	1.3	75.8	39.2 (28.1-51.0)	**76**	0.1	99.1	80.9 (42.2-99.8)
37	1.2	77.0	33.8 (22.7-45.9)	**77**	0.1	99.2	92.6 (65.8-99.5)
38	1.2	78.2	34.7 (20.7-50.2)	**78**	0.1	99.3	88.5 (67.8-99.2)
39	1.2	79.4	42.9 (31.9-54.3)	**79**	0.1	99.4	100
40	1.1	80.5	47.1 (33.9-60.4)	**80**	0.1	99.5	100
41	1.1	81.6	39.9 (26.0-54.6)	**81**	0.1	99.6	77.1 (23.1-99.5)
42	1.1	82.7	48.5 (36.7-60.3)	**82**	0.1	99.7	100
43	1.0	83.7	52.8 (40.9-64.5)	**83**	0.1	99.8	92.1 (61.4-99.0)
44	1.0	84.7	40.6 (28.3-53.6)	**84**	<0.05	99.8	100
45	1.0	85.7	52.2 (39.2-65.0)	**85**	<0.05	99.8	86.8 (41.7-98.5)
46	0.9	86.6	52.5 (40.3-64.5)	**86**	<0.05	99.9	24.1 (3.4-87.7)
47	0.9	87.5	48.4 (34.8-62.1)	**87**	<0.05	99.9	100
48	0.9	88.4	67.6 (53.9-80.0)	**88**	<0.05	99.9	100
49	0.8	89.2	46.8 (28.9-65.2)	**90**	<0.05	100	100
50	0.8	90.0	68.2 (57.5-77.9)	**91**	<0.05	100	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	0.8	90.8	59.2 (44.0-73.7)	**93**	<0.05	100	100
52	0.7	91.5	64.9 (52.0-76.9)	**95**	<0.05	100	77.8 (22.1-99.0)
53	0.7	92.2	69.7 (50.9-85.6)	**98**	<0.05	100	72.0 (22.4-99.9)
54	0.6	92.8	56.9 (37.5-75.3)	**100**	<0.05	100	0
55	0.5	93.3	56.6 (42.1-70.5)				
56	0.5	93.8	59.8 (41.4-76.9)				
57	0.5	94.3	81.0 (64.7-93.1)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Lebanon							
16	1.7	28.3	0.0	**46**	1.2	74.2	37.9 (22.3-54.8)
17	1.7	30.0	16.2 (0.0-52.4)	**47**	1.2	75.4	46.8 (28.0-66.0)
18	1.7	31.7	25.1 (2.1-61.8)	**48**	1.2	76.6	32.3 (18.4-48.1)
19	1.7	33.4	3.0 (0.3-8.4)	**49**	1.2	77.8	41.9 (24.4-60.5)
20	1.7	35.1	28.4 (5.2-60.7)	**50**	1.2	79.0	56.3 (37.0-74.7)
21	1.7	36.8	40.8 (12.5-73.0)	**51**	1.2	80.2	56.1 (42.7-69.0)
22	1.7	38.5	26.3 (4.3-58.3)	**52**	1.2	81.4	44.0 (23.8-65.2)
23	1.7	40.2	11.5 (1.6-28.7)	**53**	1.1	82.5	58.6 (41.6-74.6)
24	1.7	41.9	16.7 (4.5-34.5)	**54**	1.1	83.6	49.0 (34.9-63.1)
25	1.7	43.6	28.3 (9.1-52.9)	**55**	1.1	84.7	53.8 (36.0-71.1)
26	1.7	45.3	24.1 (6.8-47.9)	**56**	1.0	85.7	51.9 (32.0-71.6)
27	1.7	47.0	22.0 (3.5-50.1)	**57**	1.0	86.7	62.1 (43.8-78.7)
28	1.7	48.7	9.8 (1.7-23.5)	**58**	0.9	87.6	41.7 (25.8-58.5)
29	1.6	50.3	22.8 (4.3-50.2)	**59**	0.9	88.5	55.6 (32.4-77.5)
30	1.6	51.9	14.3 (4.6-28.0)	**60**	0.8	89.3	52.7 (30.5-74.4)
31	1.6	53.5	41.7 (18.4-67.1)	**61**	0.8	90.1	70.3 (49.2-87.6)
32	1.5	55.0	18.0 (8.5-30.0)	**62**	0.7	90.8	61.7 (31.0-87.9)
33	1.5	56.5	18.9 (3.5-42.6)	**63**	0.7	91.5	61.1 (42.7-78.0)
34	1.5	58.0	30.2 (9.7-56.1)	**64**	0.7	92.2	57.0 (38.6-74.5)
35	1.5	59.5	18.1 (5.7-35.5)	**65**	0.6	92.8	51.2 (13.6-87.9)
36	1.5	61.0	38.3 (18.4-60.6)	**66**	0.6	93.4	71.9 (47.0-91.1)
37	1.4	62.4	28.2 (12.6-47.2)	**67**	0.6	94.0	65.7 (39.5-87.6)
38	1.4	63.8	13.0 (3.9-26.5)	**68**	0.6	94.6	41.8 (19.8-65.7)
39	1.4	65.2	48.2 (29.1-67.7)	**69**	0.5	95.1	57.0 (16.6-92.5)
40	1.4	66.6	52.6 (31.0-73.7)	**70**	0.5	95.6	25.0 (36.6-98.4)
41	1.3	67.9	11.5 (3.2-24.1)				
42	1.3	69.2	32.4 (18.6-47.8)				
43	1.3	70.5	33.0 (17.2-51.1)				
44	1.3	71.8	39.7 (28.2-51.7)				
45	1.2	73.0	26.2 (12.7-42.6)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Morocco							
18	1.6	33.3	5.9 (1.4-13.3)	**60**	0.9	89.0	64.2 (54.0-73.8)
19	1.6	34.9	21.4 (10.8-34.3)	**61**	0.9	89.9	59.6 (47.2-71.4)
20	1.6	36.5	7.0 (2.2-14.2)	**62**	0.9	90.8	59.1 (47.4-70.3)
21	1.5	38.0	7.0 (2-14.7)	**63**	0.8	91.6	67.9 (55.5-79.1)
22	1.5	39.5	9.8 (4-17.8)	**64**	0.8	92.4	62.1 (50.7-73.0)
23	1.6	41.1	8.1 (3.2-15)	**65**	0.7	93.1	53.4 (40.9-65.7)
24	1.6	42.7	10.5 (4.4-18.8)	**66**	0.7	93.8	63.3 (47.9-77.4)
25	1.6	44.3	11.1 (5.4-18.5)	**67**	0.6	94.4	60.1 (48.0-71.6)
26	1.6	45.9	15.9 (8.1-25.7)	**68**	0.6	95.0	83.4 (68.8-94.0)
27	1.7	47.6	12.2 (5.7-20.6)	**69**	0.5	95.5	69.9 (56.9-81.4)
28	1.6	49.2	13.8 (7.6-21.5)	**70**	0.5	96.0	63.9 (52.7-74.5)
29	1.6	50.8	15.7 (8.2-25.1)	**71**	0.4	96.4	70.8 (51.4-87.0)
30	1.6	52.4	11.8 (5.3-20.5)	**72**	0.3	96.7	69.1 (49.1-85.9)
31	1.6	54.0	18.1 (10.2-27.7)	**73**	0.3	97.0	72.3 (50.2-89.8)
32	1.5	55.5	9.2 (4.3-15.8)	**74**	0.3	97.3	73.0 (55.3-87.6)
33	1.5	57.0	13.6 (6.9-22.2)	**75**	0.3	97.6	76.1 (61.5-88.1)
34	1.5	58.5	19.1 (11.6-27.9)	**76**	0.3	97.9	66.7 (40.9-88.1)
35	1.5	60.0	21.7 (12.7-32.3)	**77**	0.3	98.2	57.6 (32.5-80.8)
36	1.5	61.5	24.0 (15.5-33.6)	**78**	0.3	98.5	60.1 (32.0-85.0)
37	1.5	63.0	23.7 (15.3-33.2)	**79**	0.2	98.7	69.3 (47.5-87.4)
38	1.5	64.5	21.8 (13.6-31.4)	**80**	0.2	98.9	78.6 (60.3-92.3)
39	1.4	65.9	21.1 (13.3-30.1)	**81**	0.2	99.1	44.4 (8.4-84.4)
40	1.4	67.3	17.8 (11.3-25.4)	**82**	0.2	99.3	67.6 (36.0-92.1)
41	1.3	68.6	23.3 (14.0-34.0)	**83**	0.1	99.4	85.0 (58.7-99.1)
42	1.3	69.9	19.8 (12.6-28.2)	**84**	0.1	99.5	64.4 (10.5-66)
43	1.2	71.1	24.6 (16.4-33.9)	**85**	0.1	99.6	50.7 (16.1-84.9)
44	1.2	72.3	28.3 (20.4-37.0)	**86**	0.1	99.7	70.5 (38.3-94.1)
45	1.2	73.5	24.7 (16.2-34.3)	**87**	0.1	99.8	37.4 (5.7-77.3)
46	1.2	74.7	28.3 (19.9-37.6)	**88**	<0.05	99.8	100
47	1.1	75.8	33.6 (24.5-43.3)	**89**	<0.05	99.8	86.9 (62.3-99.4)
48	1.1	76.9	40.7 (30.0-51.9)	**90**	<0.05	99.9	100
49	1.1	78.0	39.8 (30.5-49.5)	**91**	<0.05	99.9	76.9 (8.3-92.6)
50	1.1	79.1	42.2 (32.8-51.8)	**92**	<0.05	99.9	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	1.1	80.2	34.2 (24.6-44.5)	**94**	<0.05	100	100
52	1.0	81.2	37.1 (27.4-47.3)	**95**	<0.05	100	100
53	1.0	82.2	41.5 (30.1-53.3)	**96**	<0.05	100	0
54	1.0	83.2	42.1 (32.1-52.5)	**98**	<0.05	100	100
55	1.0	84.2	54.4 (43.9-64.8)	**100**	<0.05	100	100
56	1.0	85.2	43.8 (31.8-56.2)				
57	1.0	86.2	47.0 (35.8-58.3)				
58	1.0	87.2	37.8 (26.2-50.1)				
59	0.9	88.1	49.1 (39.2-58.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Sudan							
18	2.1	48.5	19.1 (12.6-26.6)	**46**	0.8	86.2	52.0 (42.4-61.5)
19	2.1	50.6	21.0 (13.7-29.3)	**47**	0.8	87.0	33.3 (25.3-41.7)
20	2.0	52.6	21.8 (16.2-28.0)	**48**	0.7	87.7	47.3 (32.9-62.0)
21	2.0	54.6	10.3 (5.2-16.9)	**49**	0.7	88.4	66.3 (53.2-78.3)
22	1.9	56.5	20.6 (13.2-29.0)	**50**	0.7	89.1	45.6 (38.1-53.2)
23	1.8	58.3	21.2 (14.1-29.3)	**51**	0.7	89.8	51.1 (36.8-65.4)
24	1.8	60.1	16.2 (8.8-25.3)	**52**	0.7	90.5	52.7 (42.4-62.9)
25	1.7	61.8	22.2 (14.7-30.8)	**53**	0.6	91.1	62.4 (45.8-77.6)
26	1.6	63.4	20.1 (13.1-28.1)	**54**	0.6	91.7	47.0 (32.4-62.0)
27	1.6	65.0	21.9 (14.8-30.0)	**55**	0.6	92.3	52.0 (43.8-60.1)
28	1.5	66.5	24.0 (15.7-33.4)	**56**	0.5	92.8	45.6 (35.1-56.3)
29	1.5	68.0	27.2 (17.5-38.1)	**57**	0.5	93.3	48.0 (29.9-66.3)
30	1.4	69.4	22.3 (16.9-28.1)	**58**	0.5	93.8	63.1 (46.5-78.3)
31	1.3	70.7	34.3 (25.0-44.3)	**59**	0.5	94.3	57.0 (38.3-74.7)
32	1.3	72.0	27.6 (21.6-34.1)	**60**	0.4	94.7	57.3 (48.9-65.5)
33	1.2	73.2	24.7 (15.1-35.8)	**61**	0.4	95.1	57.2 (39.8-73.6)
34	1.2	74.4	27.5 (17.9-38.2)	**62**	0.4	95.5	52.2 (34.6-69.6)
35	1.2	75.6	30.7 (25.5-36.2)	**63**	0.4	95.9	48.3 (29.8-67.0)
36	1.1	76.7	34.7 (27.4-42.4)	**64**	0.4	96.3	71.5 (51.3-88.0)
37	1.1	77.8	31.8 (22.7-41.6)	**65**	0.3	96.6	57.3 (46.8-67.5)
38	1.1	78.9	37.2 (28.7-46.1)	**66**	0.3	96.9	67.0 (52.0-80.3)
39	1.0	79.9	38.6 (26.9-51.0)	**67**	0.3	97.2	68.5 (52.4-82.6)
40	1.0	80.9	42.6 (35.4-50.0)	**68**	0.3	97.5	73.9 (58.8-86.6)
41	1.0	81.9	35.8 (26.6-45.6)	**69**	0.3	97.8	68.2 (55.3-79.8)
42	0.9	82.8	43.3 (33.6-53.3)				
43	0.9	83.7	38.2 (26.0-51.2)				
44	0.9	84.6	44.1 (33.1-55.3)				
45	0.8	85.4	40.2 (33.3-47.2)				

Europe

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Albania							
15	1.3	18.5	8.2 (5.0-12.1)	**35**	1.3	49.9	30.8 (21.8-40.6)
16	1.4	19.9	7.9 (4.4-12.1)	**36**	1.2	51.1	22.6 (15.0-31.2)
17	1.4	21.3	8.3 (5.0-12.3)	**37**	1.1	52.2	23.9 (15.1-34.1)
18	1.5	22.8	11 (6.5-16.6)	**38**	1.1	53.3	29.1 (21.0-37.9)
19	1.5	24.3	8.2 (4.4-13.1)	**39**	1.1	54.4	34.8 (27.4-42.6)
20	1.5	25.8	13.7 (8.3-20.2)	**40**	1.0	55.4	31.3 (24.3-38.9)
21	1.6	27.4	10.9 (5.7-17.5)	**41**	1.0	56.4	31.5 (24.3-39.3)
22	1.6	29.0	15.5 (9.6-22.5)	**42**	1.0	57.4	40.0 (32.4-47.8)
23	1.6	30.6	12.6 (6.3-20.7)	**43**	1.1	58.5	35.9 (28.4-43.9)
24	1.7	32.3	15.0 (8.3-23.3)	**44**	1.1	59.6	34.8 (27.3-42.8)
25	1.7	34.0	13.4 (7.1-21.3)	**45**	1.1	60.7	38.1 (29.8-46.7)
26	1.7	35.7	16.1 (8.9-24.9)	**46**	1.1	61.8	43.9 (35.0-53.0)
27	1.7	37.4	14.0 (6.1-24.5)	**47**	1.2	63.0	48.1 (39.7-56.5)
28	1.7	39.1	18.4 (10.7-27.5)	**48**	1.2	64.2	40.8 (33.2-48.7)
29	1.7	40.8	13.0 (6.5-21.2)	**49**	1.2	65.4	42.3 (32.8-52.0)
30	1.7	42.5	17.9 (10.5-26.7)				
31	1.6	44.1	18.5 (11.4-26.9)				
32	1.6	45.7	19.2 (12.7-26.6)				
33	1.5	47.2	29.7 (19.9-40.5)				
34	1.4	48.6	20.3 (13.3-28.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Azerbaijan							
18	1.3	28.7	0.0	**46**	1.2	72.3	41.9 (27.3-57.4)
19	1.3	30.0	1.1 (0.0-4.7)	**47**	1.2	73.5	40.7 (27.4-54.7)
20	1.3	31.3	7.7 (2.0-16.7)	**48**	1.2	74.7	26.6 (16.0-38.9)
21	1.4	32.7	10.3 (1.2-26.9)	**49**	1.2	75.9	43.0 (30.1-56.4)
22	1.4	34.1	4.7 (0.4-13.5)	**50**	1.2	77.1	43.9 (33.2-54.8)
23	1.5	35.6	5.5 (0.9-13.4)	**51**	1.2	78.3	46.6 (32.5-61.0)
24	1.5	37.1	11.5 (2.8-25.2)	**52**	1.2	79.5	53.4 (39.0-67.4)
25	1.6	38.7	10.5 (2.6-22.7)	**53**	1.3	80.8	44.4 (30.2-59.0)
26	1.7	40.4	10.5 (2.7-22.6)	**54**	1.3	82.1	45.7 (33.1-58.6)
27	1.8	42.2	14.8 (2.0-36.3)	**55**	1.3	83.4	50.9 (40.3-61.4)
28	1.8	44.0	4.4 (0.3-13.0)	**56**	1.3	84.7	58.5 (45.5-70.9)
29	1.8	45.8	20.7 (7.2-38.7)	**57**	1.3	86.0	54.7 (43.2-66.0)
30	1.9	47.7	16.1 (8.0-26.4)	**58**	1.3	87.3	52.1 (39.5-64.6)
31	1.9	49.6	9.8 (2.5-21.3)	**59**	1.2	88.5	73.6 (62.4-83.5)
32	1.9	51.5	25 (11.7-41.3)	**60**	1.1	89.6	62.0 (49.1-74.0)
33	1.9	53.4	14.4 (5.9-25.9)	**61**	1.1	90.7	68.0 (55.4-79.4)
34	1.8	55.2	10.0 (3.6-19.1)	**62**	1.0	91.7	69.6 (52.4-84.3)
35	1.8	57.0	33.5 (18.9-49.8)	**63**	0.9	92.6	74.9 (59.8-87.5)
36	1.7	58.7	22.1 (10.9-35.8)	**64**	0.8	93.4	71.2 (54.8-85.2)
37	1.6	60.3	22.9 (10.6-38.2)	**65**	0.8	94.2	71.0 (53.4-85.7)
38	1.6	61.9	19.7 (7.6-35.8)	**66**	0.7	94.9	73.7 (54.3-89.2)
39	1.5	63.4	7.8 (2.4-15.8)	**67**	0.6	95.5	71.2 (52.2-86.9)
40	1.4	64.8	26.1 (13.9-40.5)	**68**	0.5	96.0	81.9 (69.5-91.6)
41	1.3	66.1	24.8 (14.0-37.4)	**69**	0.5	96.5	87.2 (70.6-97.5)
42	1.3	67.4	21.7 (10.2-35.9)				
43	1.3	68.7	35.9 (21.3-51.9)				
44	1.2	69.9	35.4 (22.0-50.1)				
45	1.2	71.1	38.5 (22.2-56.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Belarus							
18	0.9	21.3	7.9 (0.5-22.8)	**46**	1.4	59.7	40.6 (31.1-50.5)
19	0.9	22.2	19.1 (5.7-38.0)	**47**	1.4	61.1	51.6 (40.0-63.1)
20	0.9	23.1	9.5 (2.7-19.8)	**48**	1.3	62.4	52.7 (42.0-63.2)
21	0.8	23.9	10.4 (3.0-21.4)	**49**	1.3	63.7	60.7 (49.0-71.7)
22	0.8	24.7	8.5 (1.1-21.6)	**50**	1.2	64.9	57.8 (47.1-68.3)
23	0.9	25.6	9.2 (3.5-17.2)	**51**	1.2	66.1	64.8 (54.4-74.6)
24	1.0	26.6	11.0 (4.1-20.7)	**52**	1.2	67.3	63.9 (54.4-72.9)
25	1.2	27.8	16.1 (7.4-27.4)	**53**	1.3	68.6	61.6 (51.5-71.1)
26	1.3	29.1	10.4 (4.1-19.3)	**54**	1.4	70.0	70.8 (61.4-79.4)
27	1.4	30.5	18.3 (9.1-29.9)	**55**	1.5	71.5	66.2 (56.8-74.9)
28	1.5	32.0	25.8 (15.6-37.6)	**56**	1.6	73.1	73.5 (64.1-81.9)
29	1.6	33.6	10.7 (4.5-19.1)	**57**	1.7	74.8	73.4 (64.2-81.7)
30	1.7	35.3	18.7 (10.1-29.2)	**58**	1.7	76.5	73.8 (63.4-83.1)
31	1.7	37.0	18.9 (10.3-29.4)	**59**	1.6	78.1	80.4 (71.0-88.3)
32	1.8	38.8	25.2 (15.8-36.1)	**60**	1.5	79.6	80.1 (72.0-87.0)
33	1.8	40.6	19.3 (9.9-31.0)	**61**	1.4	81.0	82.6 (75.4-88.7)
34	1.7	42.3	23.1 (13.4-34.4)	**62**	1.4	82.4	82.2 (72.7-90.1)
35	1.6	43.9	21.4 (14.2-29.7)	**63**	1.4	83.8	71.5 (60.9-81.1)
36	1.6	45.5	28.3 (18.3-39.5)	**64**	1.4	85.2	89.7 (82.1-95.3)
37	1.5	47.0	34.1 (21.8-47.6)	**65**	1.4	86.6	87.0 (78.7-93.4)
38	1.5	48.5	36.3 (25.3-48.1)	**66**	1.3	87.9	84.5 (74.2-92.5)
39	1.4	49.9	38.1 (26.4-50.5)	**67**	1.3	89.2	88.5 (81.6-93.9)
40	1.4	51.3	37.3 (26.1-49.3)	**68**	1.2	90.4	88.7 (81.3-94.4)
41	1.4	52.7	36.7 (25.8-48.4)	**69**	1.0	91.4	86.4 (76.4-93.9)
42	1.4	54.1	36.4 (26.8-46.6)				
43	1.4	55.5	41.9 (31.7-52.4)				
44	1.4	56.9	30.8 (21.8-40.5)				
45	1.4	58.3	61.9 (51.1-72.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Georgia							
17	1.1	23.6	0.0	**46**	1.3	61.9	39.6 (27.0-53.0)
18	1.1	24.7	18.7 (3.8-41.3)	**47**	1.3	63.2	29.5 (17.1-43.7)
19	1.1	25.8	9.9 (2.3-22.0)	**48**	1.3	64.5	49.9 (34.3-65.6)
20	1.1	26.9	5.1 (1.1-11.7)	**49**	1.3	65.8	44.7 (32.7-56.9)
21	1.1	28.0	8.5 (0.7-23.8)	**50**	1.2	67.0	47.0 (34.3-59.9)
22	1.2	29.2	7.6 (0.5-22.0)	**51**	1.2	68.2	51.3 (39.7-62.8)
23	1.2	30.4	7.2 (0.8-19.3)	**52**	1.2	69.4	49.1 (37.3-61.0)
24	1.2	31.6	19.8 (7.4-36.3)	**53**	1.2	70.6	59.6 (47.6-71.0)
25	1.3	32.9	13.4 (5.0-25.1)	**54**	1.3	71.9	57.8 (46.5-68.8)
26	1.3	34.2	14.4 (5.4-26.8)	**55**	1.4	73.3	52.6 (40.9-64.2)
27	1.4	35.6	11.9 (3.6-24.1)	**56**	1.4	74.7	55.3 (45.1-65.2)
28	1.4	37.0	16.3 (6.2-30.0)	**57**	1.4	76.1	56.2 (45.1-67.1)
29	1.4	38.4	3.0 (0.4-7.9)	**58**	1.4	77.5	60.0 (48.1-71.3)
30	1.4	39.8	22.4 (10.7-36.9)	**59**	1.4	78.9	56.2 (45.8-66.4)
31	1.5	41.3	14.9 (6.0-26.9)	**60**	1.3	80.2	57.3 (45.3-68.9)
32	1.5	42.8	18.1 (7.9-31.3)	**61**	1.3	81.5	68.1 (56.0-79.1)
33	1.5	44.3	26.8 (13.4-42.9)	**62**	1.3	82.8	71.6 (56.1-84.9)
34	1.4	45.7	21.6 (10.2-35.9)	**63**	1.2	84.0	75.5 (63.0-86.1)
35	1.4	47.1	14.5 (5.2-27.4)	**64**	1.2	85.2	74.3 (64.6-82.9)
36	1.4	48.5	20.0 (10.0-32.3)	**65**	1.2	86.4	72.9 (62.2-82.4)
37	1.4	49.9	26.7 (11.6-45.4)	**66**	1.1	87.5	74.8 (64.7-83.8)
38	1.4	51.3	14.6 (7.0-24.3)	**67**	1.1	88.6	82.4 (72.0-90.7)
39	1.4	52.7	31.1 (18.6-45.2)	**68**	1.0	89.6	78.2 (68.6-86.4)
40	1.4	54.1	32.1 (19.7-46.0)	**69**	1.0	90.6	70.7 (57.5-82.3)
41	1.3	55.4	27.3 (13.8-43.4)	**70**	0.9	91.5	71.4 (26.8-99.0)
42	1.3	56.7	26.4 (16.0-38.3)				
43	1.3	58.0	36.8 (23.4-51.3)				
44	1.3	59.3	37.8 (25.5-50.9)				
45	1.3	60.6	42.8 (30.7-55.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Kazakhstan							
15	1.4	30.4	5.4 (2.4-9.4)	**53**	1.0	80.9	30.9 (24.7-37.4)
16	1.2	31.6	2.4 (0.6-5.4)	**54**	1.1	82.0	28.4 (20.4-37.1)
17	1.1	32.7	5.0 (1.5-10.4)	**55**	1.1	83.1	44.0 (36.3-52.0)
18	1.1	33.8	4.0 (1.9-6.9)	**56**	1.2	84.3	41.6 (34.5-48.8)
19	1.1	34.9	2.0 (0.1-5.8)	**57**	1.2	85.5	42.4 (34.3-50.7)
20	1.1	36.0	2.0 (0.4-4.8)	**58**	1.1	86.6	38.7 (30.2-47.5)
21	1.1	37.1	5.2 (3.1-7.9)	**59**	1.1	87.7	42.7 (32.0-53.9)
22	1.1	38.2	4.5 (2.1-7.8)	**60**	1.0	88.7	53.9 (45.8-62.0)
23	1.2	39.4	6.8 (3.3-11.5)	**61**	0.9	89.6	51.0 (43.2-58.7)
24	1.3	40.7	4.8 (2.2-8.5)	**62**	0.8	90.4	57.0 (49.1-64.6)
25	1.4	42.1	8.6 (5.7-12.1)	**63**	0.8	91.2	66.0 (56.9-74.6)
26	1.5	43.6	4.1 (1.6-7.5)	**64**	0.8	92.0	67.1 (59.9-74.0)
27	1.6	45.2	6.2 (3.1-10.3)	**65**	0.8	92.8	65.6 (56.6-74.1)
28	1.7	46.9	9.7 (5.7-14.5)	**66**	0.7	93.5	63.5 (53.0-73.3)
29	1.7	48.6	8.8 (5.4-13)	**67**	0.7	94.2	68.8 (58.9-78.0)
30	1.8	50.4	6.3 (3.1-10.5)	**68**	0.6	94.8	65.0 (52.0-77.0)
31	1.8	52.2	12.2 (7.6-17.8)	**69**	0.5	95.3	66.2 (53.5-77.8)
32	1.8	54.0	7.2 (4.3-10.7)	**70**	0.5	95.8	65.8 (56.6-74.5)
33	1.8	55.8	7.3 (4-11.4)	**71**	0.4	96.2	67.2 (57.5-76.3)
34	1.7	57.5	14.2 (10.2-18.8)	**72**	0.3	96.5	69.4 (61.9-76.4)
35	1.6	59.1	13.9 (10.0-18.2)	**73**	0.3	96.8	64.7 (54.0-74.6)
36	1.5	60.6	14.4 (10.1-19.2)	**74**	0.3	97.1	67.2 (56.7-76.9)
37	1.4	62.0	11.6 (7.2-17.0)	**75**	0.3	97.4	71.6 (63.4-79.1)
38	1.3	63.3	14.9 (10.0-20.4)	**76**	0.3	97.7	74.7 (63.9-84.1)
39	1.3	64.6	12.7 (8.2-18.1)	**77**	0.2	97.9	65.0 (54.3-75.0)
40	1.3	65.9	14.2 (9.3-20.0)	**78**	0.2	98.1	68.9 (54.2-81.8)
41	1.3	67.2	16.9 (12.5-21.8)	**79**	0.2	98.3	75.6 (59.4-88.8)
42	1.3	68.5	15.3 (11.1-20.0)	**80**	0.3	98.6	73.5 (59.8-85.3)
43	1.2	69.7	16.6 (11.8-21.9)	**81**	0.3	98.9	80.6 (64.3-92.9)
44	1.2	70.9	16.7 (12.4-21.4)	**82**	0.3	99.2	73.3 (55.0-88.3)
45	1.2	72.1	18.3 (13.6-23.4)	**83**	0.2	99.4	78.6 (55.8-94.5)
46	1.2	73.3	21.8 (15.8-28.6)	**84**	0.2	99.6	75.0 (61.3-86.5)
47	1.2	74.5	25.1 (19.1-31.7)	**85**	0.1	99.7	70.8 (47.2-89.6)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.2	75.7	18.9 (13.7-24.8)	**86**	0.1	99.8	77.3 (57.1-92.4)
49	1.1	76.8	29.4 (23.7-35.4)	**87**	<0.05	99.8	84.2 (65.0-96.6)
50	1.1	77.9	21.7 (16.1-27.9)	**88**	<0.05	99.8	84.6 (57.3-99.1)
51	1.0	78.9	30.4 (23.6-37.6)	**89**	<0.05	99.9	53.8 (26.7-79.8)
52	1.0	79.9	31.7 (25.5-38.2)	**90**	<0.05	99.9	71.4 (26.8-99.0)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Kyrgyzstan							
25	1.7	50.0	11.1 (5.1-19.0)	**46**	1.0	79.9	55.1 (37.1-72.5)
26	1.7	51.7	26.3 (10.5-46.2)	**47**	1.0	80.9	48.3 (27.7-69.3)
27	1.7	53.4	19.5 (9.4-32.1)	**48**	1.0	81.9	61.8 (46.0-76.4)
28	1.8	55.2	27.5 (12.9-45.3)	**49**	1.0	82.9	63.3 (52.2-73.8)
29	1.8	57.0	27.2 (14.6-42.1)	**50**	0.9	83.8	50.6 (34.8-66.3)
30	1.8	58.8	5.6 (0.5-15.8)	**51**	0.9	84.7	65.6 (52.6-77.6)
31	1.8	60.6	17.7 (7.2-31.5)	**52**	0.9	85.6	67.9 (54.3-80.0)
32	1.8	62.4	31.2 (18.7-45.4)	**53**	0.9	86.5	61.6 (50.1-72.4)
33	1.7	64.1	29.5 (15.6-45.9)	**54**	0.9	87.4	76.0 (62.1-87.5)
34	1.6	65.7	35.2 (21.3-50.5)	**55**	0.9	88.3	64.5 (46.6-80.5)
35	1.5	67.2	27.9 (9.9-50.7)	**56**	0.9	89.2	76.9 (57.5-91.7)
36	1.4	68.6	31.2 (17.3-47.1)	**57**	0.9	90.1	83.6 (69.8-93.8)
37	1.3	69.9	32.6 (21.5-44.8)	**58**	0.9	91.0	61.1 (38.7-81.3)
38	1.3	71.2	33.6 (21.0-47.4)	**59**	0.8	91.8	77.0 (62.0-89.1)
39	1.2	72.4	41.5 (28.6-55.1)	**60**	0.8	92.6	77.3 (56.1-92.9)
40	1.2	73.6	39.0 (26.7-52.0)	**61**	0.7	93.3	71.7 (56.3-84.8)
41	1.1	74.7	42.9 (29.4-57.0.)	**62**	0.7	94.0	78.7 (62.2-91.4)
42	1.1	75.8	49.3 (34.8-63.8)	**63**	0.6	94.6	78.8 (64.4-90.2)
43	1.1	76.9	60.7 (44.8-75.4)	**64**	0.6	95.2	75.3 (60.4-87.6)
44	1.0	77.9	42.0 (27.0-57.7)				
45	1.0	78.9	62.4 (43.4-79.7)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Moldova							
18	1.0	19.9	25.1 (12.8-40.0)	**46**	1.3	64.2	47.3 (35.5-59.3)
19	1.0	20.9	11.6 (3.5-23.6)	**47**	1.3	65.5	38.9 (25.6-53.2)
20	1.1	22.0	6.3 (1.2-15.1)	**48**	1.3	66.8	64.7 (52.4-76.1)
21	1.1	23.1	11.8 (0.6-34.2)	**49**	1.2	68.0	70.2 (58.1-81.1)
22	1.2	24.3	12.7 (3.6-26.4)	**50**	1.2	69.2	58.7 (45.2-71.6)
23	1.3	25.6	15.2 (5.4-28.9)	**51**	1.1	70.3	47.1 (36.3-58.0)
24	1.3	26.9	31.9 (13.4-54.0)	**52**	1.1	71.4	61.0 (50.2-71.3)
25	1.4	28.3	14.1 (6.5-24.1)	**53**	1.2	72.6	67.0 (56.3-76.9)
26	1.5	29.8	11.7 (4.8-21.2)	**54**	1.2	73.8	67.8 (58.2-76.7)
27	1.6	31.4	23.9 (11.9-38.4)	**55**	1.3	75.1	63.3 (52.6-73.5)
28	1.7	33.1	15.3 (7.6-25.1)	**56**	1.4	76.5	69.6 (59.5-78.8)
29	1.9	35.0	22.4 (11.4-35.9)	**57**	1.5	78.0	65.7 (55.8-75.0)
30	2.0	37.0	18.8 (8.1-32.7)	**58**	1.5	79.5	63.5 (50.7-75.3)
31	2.1	39.1	38.7 (24.7-53.7)	**59**	1.4	80.9	74.8 (65.8-82.9)
32	2.2	41.3	28.9 (18.9-40.2)	**60**	1.4	82.3	74.2 (64.1-83.1)
33	2.1	43.4	14.4 (5.8-26.0)	**61**	1.3	83.6	72.6 (62.7-81.5)
34	2.0	45.4	24.2 (12.6-38.2)	**62**	1.2	84.8	74.6 (63.8-84.1)
35	1.9	47.3	41.6 (29.1-54.6)	**63**	1.2	86.0	72.6 (61.3-82.6)
36	1.8	49.1	32.1 (22.2-42.9)	**64**	1.2	87.2	75.3 (67.1-82.7)
37	1.7	50.8	26.6 (14.8-40.4)	**65**	1.2	88.4	83.5 (73.4-91.6)
38	1.7	52.5	23.4 (14.0-34.4)	**66**	1.3	89.7	74.1 (61.9-84.6)
39	1.6	54.1	33.7 (23.6-44.7)	**67**	1.2	90.9	76.5 (59.5-89.9)
40	1.6	55.7	42.4 (29.1-56.2)	**68**	1.1	92.0	83.6 (72.2-92.5)
41	1.5	57.2	42.5 (29.8-55.7)	**69**	0.9	92.9	82.7 (67.8-93.7)
42	1.5	58.7	40.8 (29.0-53.2)				
43	1.4	60.1	50.3 (37.5-63.0)				
44	1.4	61.5	32.7 (19.3-47.8)				
45	1.4	62.9	42.2 (30.3-54.6)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*
Romania							
18	1.0	19.6	23.5	**50**	1.6	62.3	36.4
19	1.0	20.6	27.8	**51**	1.7	64.0	68.0
20	1.0	21.6	26.3	**52**	1.7	65.7	66.7
21	1.0	22.6	25.0	**53**	1.6	67.3	45.8
22	1.1	23.7	20.0	**54**	1.4	68.7	64.0
23	1.1	24.8	20.0	**55**	1.2	69.9	58.3
24	1.1	25.9	3.1	**56**	1.1	71.0	66.7
25	1.1	27.0	32.0	**57**	1.0	72.0	63.0
26	1.0	28.0	24.0	**58**	1.0	73.0	52.8
27	1.1	29.1	16.0	**59**	1.1	74.1	77.4
28	1.2	30.3	22.0	**60**	1.2	75.3	53.7
29	1.3	31.6	22.2	**61**	1.3	76.6	71.4
30	1.4	33.0	27.9	**62**	1.4	78.0	88.9
31	1.5	34.5	19.4	**63**	1.4	79.4	58.8
32	1.5	36.0	31.8	**64**	1.4	80.8	80.5
33	1.5	37.5	32.4	**65**	1.4	82.2	76.3
34	1.4	38.9	36.8	**66**	1.3	83.5	71.7
35	1.3	40.2	10.7	**67**	1.3	84.8	62.2
36	1.2	41.4	48.6	**68**	1.3	86.1	64.3
37	1.1	42.5	28.1	**69**	1.2	87.3	70.0
38	1.2	43.7	60.9	**70**	1.1	88.4	84.6
39	1.3	45.0	25.7	**71**	1.0	89.4	63.3
40	1.5	46.5	44.7	**72**	1.0	90.4	95.0
41	1.6	48.1	35.9	**73**	0.9	91.3	68.4
42	1.6	49.7	45.0	**74**	0.8	92.1	81.2
43	1.6	51.3	40.0	**75**	0.7	92.8	66.7
44	1.6	52.9	49.0	**76**	0.6	93.4	78.0
45	1.6	54.5	35.7	**77**	0.6	94.0	68.6
46	1.5	56.0	52.4	**78**	0.6	94.6	73.9
47	1.5	57.5	58.3	**79**	0.6	95.2	74.2
48	1.6	59.1	49.0	**80**	0.6	95.8	76.9
49	1.6	60.7	52.2				

* Standard errors were adjusted at the level of Primary Sampling Unit (PSU). We adjusted for standard errors at the country-level for Seychelles, Romania, and Grenada, as those surveys did not provide information on PSU.

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Russian Federation							
18	0.9	22.3	0	**60**	1.4	79.1	75.3 (63.5-85.4)
19	0.9	23.2	0	**61**	1.4	80.5	72.5 (57.1-85.5)
20	0.9	24.1	0	**62**	1.4	81.9	60.7 (43.2-76.9)
21	0.9	25.0	0	**63**	1.4	83.3	76.3 (58.4-90.3)
22	0.9	25.9	0	**64**	1.3	84.6	87.4 (75.9-95.6)
23	0.9	26.8	8.7 (0.3-26.9)	**65**	1.3	85.9	72.7 (56.2-86.5)
24	1.0	27.8	0.2 (0.1-1.5)	**66**	1.2	87.1	68.5 (52.7-82.3)
25	1.1	28.9	0	**67**	1.2	88.3	80.1 (66.8-90.6)
26	1.1	30.0	0	**68**	1.1	89.4	54.7 (29.0-79.1)
27	1.2	31.2	0	**69**	1.0	90.4	79.0 (62.4-91.6)
28	1.3	32.5	3.6 (0.0-13.6)	**70**	0.9	91.3	74.1 (60.3-85.9)
29	1.4	33.9	62.6 (15.6-97.8)	**71**	0.8	92.1	76.0 (62.1-87.5)
30	1.6	35.5	25.1 (0.4-69.4)	**72**	0.7	92.8	87.2 (78.3-94.0)
31	1.7	37.2	0	**73**	0.7	93.5	76.4 (57.7-90.8)
32	1.8	39.0	49.6 (7.8-91.8)	**74**	0.6	94.1	80.1 (68.3-89.8)
33	1.8	40.8	6.8 (0.2-29.8)	**75**	0.5	94.6	88.3 (75.2-96.9)
34	1.8	42.6	19.6 (1.0-53.3)	**76**	0.4	95.0	88.1 (76.6-96.1)
35	1.7	44.3	12.7 (0.1-46.6)	**77**	0.4	95.4	80.0 (66.5-90.8)
36	1.7	46.0	7.5 (0.1-25.5)	**78**	0.4	95.8	87.3 (73.6-96.5)
37	1.6	47.6	49.3 (21.4-77.3)	**79**	0.4	96.2	88.5 (76.1-96.8)
38	1.6	49.2	0	**80**	0.5	96.7	85.5 (70.4-95.8)
39	1.6	50.8	8.4 (0.1-28.3)	**81**	0.5	97.2	91.9 (81.6-98.2)
40	1.5	52.3	24.7 (5.6-51.5)	**82**	0.5	97.7	87.8 (75.6-96.1)
41	1.5	53.8	9.4 (1.3-44.9)	**83**	0.5	98.2	91.8 (81.6-98.1)
42	1.4	55.2	13.2 (0.7-37.7)	**84**	0.4	98.6	77.0 (52.5-94.4)
43	1.4	56.6	36.8 (4.7-78.2)	**85**	0.3	98.9	84.0 (62.2-97.5)
44	1.4	58.0	83.3 (38.6-99.6)	**86**	0.2	99.1	56.6 (24.1-86.2)
45	1.4	59.4	23.1 (10.2-39.4)	**87**	0.2	99.3	62.0 (22-94.1)
45	1.4	59.4	8.0 (0.3-24.4)	**88**	0.1	99.4	93.2 (71.6-99.9)
46	1.4	60.8	43.8 (15.9-74.1)	**89**	0.1	99.5	55.1 (4.1-99.0)
47	1.4	62.2	45.5 (16.2-76.5)	**90**	0.1	99.6	67.2 (7.0-99.3)
48	1.3	63.5	2.4 (0.0-9.9)	**91**	0.1	99.7	91.9 (56.1-97.8)
49	1.2	64.7	20.6 (2.6-49.5)	**92**	0.1	99.8	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	1.1	67.0	35.9 (20.5-53.0)	**93**	0.1	99.9	0
52	1.1	68.1	38.8 (23.2-55.7)	**94**	<0.05	99.9	100
53	1.2	69.3	66.8 (41.9-87.5)	**96**	<0.05	99.9	100
54	1.2	70.5	70.6 (45.4-90.4)	**98**	<0.05	100	100
55	1.3	71.8	56.0 (46.2-65.6)	**99**	<0.05	100	100
56	1.4	73.2	63.1 (49.3-75.9)	**100**	0	100	100
57	1.5	74.7	58.3 (45.4-70.6)				
58	1.5	76.2	71.9 (57.7-84.1)				
59	1.5	77.7	67.4 (50.5-82.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Tajikistan							
18	1.7	44.2	6.1 (0.8-15.8)	**46**	0.9	84.2	66.6 (51.6-80.1)
19	1.7	45.9	12.0 (4.3-22.8)	**47**	0.9	85.1	66.4 (49.3-81.5)
20	1.7	47.6	24.0 (13.1-37.1)	**48**	0.8	85.9	52.1 (37.0-67.1)
21	1.7	49.3	30.6 (17.9-44.9)	**49**	0.8	86.7	50.5 (27.9-73.1)
22	1.8	51.1	20.1 (10.6-31.7)	**50**	0.8	87.5	64.4 (48.1-79.1)
23	1.8	52.9	4.8 (0.9-11.7)	**51**	0.8	88.3	65.0 (44.6-82.9)
24	1.7	54.6	26.5 (14.3-40.9)	**52**	0.8	89.1	57.9 (41.8-73.1)
25	1.7	56.3	21.2 (12.5-31.6)	**53**	0.8	89.9	70.8 (50.0-87.9)
26	1.7	58.0	19.9 (6.8-37.7)	**54**	0.8	90.7	75.6 (61.3-87.5)
27	1.7	59.7	29.9 (16.4-45.5)	**55**	0.7	91.4	65.8 (47.9-81.7)
28	1.7	61.4	32.7 (19.0-48.0)	**56**	0.7	92.1	64.2 (44.4-81.7)
29	1.7	63.1	20.1 (9.7-33.1)	**57**	0.7	92.8	44.4 (24.2-65.6)
30	1.7	64.8	19.2 (7.4-34.9)	**58**	0.7	93.5	71.9 (50.0-89.3)
31	1.7	66.5	34.2 (21.6-48.1)	**59**	0.6	94.1	82.9 (63.1-96.0)
32	1.7	68.2	28.1 (15.0-43.5)	**60**	0.6	94.7	67.4 (45.6-85.8)
33	1.6	69.8	23.7 (10.5-40.2)	**61**	0.6	95.3	73.3 (48.6-92.0)
34	1.5	71.3	24.5 (9.9-43.0)	**62**	0.5	95.8	86.1 (72.7-95.4)
35	1.4	72.7	45.5 (27.9-63.8)	**63**	0.5	96.3	83.9 (63.9-96.8)
36	1.3	74.0	29.1 (11.3-51.0)	**64**	0.4	96.7	65.4 (43.6-84.2)
37	1.2	75.2	39.9 (25.4-55.3)	**65**	0.4	97.1	97.9 (89.9-99.9)
38	1.2	76.4	46.9 (30.9-63.3)	**66**	0.3	97.4	78.2 (43.6-98.5)
39	1.1	77.5	35.1 (21.7-50.0)	**67**	0.3	97.7	71.7 (45.4-91.7)
40	1.1	78.6	46.6 (33.4-60.0)	**68**	0.3	98.0	84.7 (52.8-99.8)
41	1.0	79.6	51.0 (32.2-69.6)	**69**	0.2	98.2	100
42	1.0	80.6	49.7 (33.0-66.6)	**70**	0.2	98.4	100
43	0.9	81.5	53.5 (36.3-70.3)				
44	0.9	82.4	52.8 (38.8-66.6)				
45	0.9	83.3	64.3 (48.9-78.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Ukraine							
15	1.0	16.7	2.0 (0.5-4.4)	**35**	1.7	41.3	28.7 (23.1-34.6)
16	0.9	17.6	2.4 (0.7-4.9)	**36**	1.7	43.0	29.4 (23.2-35.9)
17	0.9	18.5	4.0 (1.9-6.8)	**37**	1.7	44.7	34.8 (28.0-41.8)
18	0.9	19.4	2.9 (0.7-6.5)	**38**	1.6	46.3	32.8 (25.8-40.1)
19	0.9	20.3	4.1 (1.9-7.2)	**39**	1.6	47.9	36.2 (29.1-43.5)
20	0.9	21.2	8.7 (4.8-13.7)	**40**	1.6	49.5	30.8 (24.2-37.9)
21	0.9	22.1	7.1 (3.6-11.7)	**41**	1.6	51.1	41.0 (33.2-48.9)
22	1.0	23.1	7.4 (4.0-11.6)	**42**	1.5	52.6	45.5 (38.7-52.4)
23	1.0	24.1	9 (4.7-14.4)	**43**	1.5	54.1	45.5 (37.9-53.3)
24	1.1	25.2	8.7 (4.2-14.6)	**44**	1.5	55.6	43.6 (36.5-50.8)
25	1.1	26.3	13.3 (8.2-19.4)	**45**	1.5	57.1	46.5 (39.9-53.3)
26	1.2	27.5	13 (8.4-18.3)	**46**	1.4	58.5	49.5 (42.0-57.0)
27	1.2	28.7	12.7 (8.3-17.8)	**47**	1.4	59.9	51.1 (44.3-57.9)
28	1.3	30.0	19.6 (13.4-26.6)	**48**	1.4	61.3	55.2 (48.3-62.1)
29	1.4	31.4	13.4 (9.0-18.5)	**49**	1.3	62.6	59.2 (51.3-66.9)
30	1.5	32.9	16.9 (12.4-22.0)				
31	1.6	34.5	19.5 (13.8-26.0)				
32	1.7	36.2	22.4 (16.4-29.0)				
33	1.7	37.9	18.5 (13.2-24.5)				
34	1.7	39.6	24.7 (18.5-31.5)				

Latin America and the Caribbean

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Belize							
19	2.0	40.0	40.5 (7.8-99.2)	**60**	0.5	93.5	52.1 (21.3-82.0)
20	2.0	42.0	9.7 (2.9-19.8)	**61**	0.5	94.0	41.1 (16.3-68.7)
21	2.0	44.0	8.6 (2.3-18.3)	**62**	0.5	94.5	38.6 (12.3-69.1)
22	2.0	46.0	12.9 (5.3-23.3)	**63**	0.5	95.0	47.9 (28.2-68.0)
23	2.0	48.0	7.8 (1.0-20.2)	**64**	0.5	95.5	35.6 (13.2-62.0)
24	2.0	50.0	2.7 (0.0-10.9)	**65**	0.5	96.0	31.6 (14.5-51.7)
25	2.0	52.0	12.4 (4.5-23.7)	**66**	0.5	96.5	27.5 (12.1-46.4)
26	1.75	53.75	10.9 (3.1-22.6)	**67**	0.25	96.75	62.5 (43.5-79.7)
27	1.75	55.5	4.4 (0.0-17.6)	**68**	0.25	97.0	49.5 (27.9-71.2)
28	1.75	57.25	3.2 (0.2-9.5)	**69**	0.25	97.25	59.4 (42.0-75.7)
29	1.75	59.0	4.2 (0.2-12.8)	**70**	0.25	97.5	73.0 (56.1-87.0)
30	1.75	60.75	7.2 (0.9-18.8)	**71**	0.25	97.75	68.8 (46.5-87.2)
31	1.75	62.5	19.0 (9.8-30.4)	**72**	0.25	98.0	54.0 (26.6-80.1)
32	1.5	64.0	1.3 (0.0-4.1)	**73**	0.25	98.25	51.5 (34.9-68.0)
33	1.5	65.5	14.2 (5.1-26.7)	**74**	0.25	98.5	41.5 (17.7-67.6)
34	1.5	67.0	25.5 (12.0-42.0)	**75**	0.25	98.75	51.7 (31.4-71.7)
35	1.5	68.5	12.8 (5.0-23.6)	**76**	0.25	99.0	48.9 (27.7-70.4)
36	1.5	70.0	14.0 (6.2-24.2)	**77**	0.25	99.25	30.5 (11.4-54.0)
37	1.5	71.5	10.1 (2.2-22.8)	**78**	0.25	99.5	83.7 (50.5-99.7)
38	1.25	72.75	11.0 (2.4-24.7)	**79**	0.25	99.75	71.7 (53.7-86.7)
39	1.25	74.0	11.4 (2.3-26.0)	**80**	0.25	100	60.0 (30.1-86.3)
40	1.25	75.25	29.9 (16.3-45.6)	**81**	<0.05	100	80.0 (57.6-95.3)
41	1.25	76.5	27.6 (15.9-41.0)	**82**	<0.05	100	58.2 (21.3-90.4)
42	1.25	77.75	20.8 (11.7-31.6)	**83**	<0.05	100	50.6 (12.2-88.6)
43	1.0	78.75	24.0 (13.5-36.4)	**84**	<0.05	100	14.6 (0.9-59.4)
44	1.0	79.75	32.4 (17.6-49.2)	**85**	<0.05	100	50.7 (13.7-87.3)
45	1.0	80.75	33.3 (23.4-44.1)	**86**	<0.05	100	83.0 (36.2-99.4)
45	1.0	81.75	37.2 (14.8-63.1)	**87**	<0.05	100	26.3 (4.1-91.8)
46	1.0	82.75	34.4 (15.9-55.8)	**88**	<0.05	100	35.4 (3.9-99.0)
47	1.0	83.75	34.1 (15.9-55.1)	**89**	<0.05	100	34.7 (3.2-98.3)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.0	84.75	42.4 (26.5-59.1)	**90**	<0.05	100	50.0
49	1.0	85.75	20.0 (8.7-34.5)	**91**	<0.05	100	42.9 (31.1-81.2)
50	1.0	86.75	32.0 (18.8-46.9)	**93**	<0.05	100	100
51	1.0	87.75	38.1 (16.7-62.2)	**94**	<0.05	100	0
52	0.5	88.25	48.0 (24.3-72.2)	**97**	<0.05	100	100
53	0.5	88.75	9.4 (3.0-18.8)				
54	0.5	89.25	23.8 (9.1-42.8)				
55	0.75	90.0	33.8 (17.1-53.0)				
56	0.75	90.75	44.9 (23.8-67.1)				
57	0.75	91.5	31.7 (15.6-50.5)				
58	0.75	92.25	41.0 (21.3-62.3)				
59	0.75	93.0	48.2 (27.2-69.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Brazil							
18	1.6	27.1	4.6 (2.7-7.0)	**60**	1.0	87.2	49.5 (43.6-55.5)
19	1.6	28.7	7.7 (3.7-13.1)	**61**	0.9	88.1	58.0 (51.9-64.0)
20	1.6	30.3	2.8 (1.6-4.5)	**62**	0.9	89.0	61.0 (54.5-67.3)
21	1.6	31.9	6.4 (3.9-9.4)	**63**	0.8	89.8	60.8 (54.8-66.6)
22	1.6	33.5	7.9 (5.0-11.5)	**64**	0.8	90.6	64.0 (56.4-71.2)
23	1.6	35.1	8.4 (6.0-11.2)	**65**	0.8	91.4	64.4 (57.9-70.7)
24	1.6	36.7	8.4 (5.8-11.5)	**66**	0.7	92.1	69.1 (62.8-75.1)
25	1.6	38.3	11.1 (7.3-15.6)	**67**	0.7	92.8	64.1 (57.3-70.6)
26	1.6	39.9	11.4 (8.6-14.7)	**68**	0.7	93.5	64.6 (57.5-71.4)
27	1.6	41.5	9.8 (7.5-12.5)	**69**	0.6	94.1	64.6 (57.5-71.4)
28	1.6	43.1	12.5 (9.4-16.0)	**70**	0.6	94.7	77.1 (70.2-83.4)
29	1.6	44.7	12.4 (9.3-15.8)	**71**	0.5	95.2	70.4 (63.1-77.3)
30	1.6	46.3	16.3 (12.5-20.6)	**72**	0.5	95.7	65.2 (56.2-73.6)
31	1.6	47.9	13.7 (10.5-17.3)	**73**	0.5	96.2	72.4 (65.5-78.9)
32	1.6	49.5	16.0 (12.9-19.2)	**74**	0.4	96.6	65.6 (56.8-73.9)
33	1.6	51.1	19.8 (15.7-24.2)	**75**	0.4	97.0	74.3 (64.2-83.3)
34	1.6	52.7	18.3 (14.7-22.2)	**76**	0.4	97.4	71.1 (62.1-79.4)
35	1.6	54.3	19.2 (16.0-22.6)	**77**	0.3	97.7	70.6 (61.9-78.6)
36	1.7	56.0	17.4 (14.3-20.6)	**78**	0.3	98.0	74.1 (64.1-83.0)
37	1.6	57.6	24.8 (20.3-29.5)	**79**	0.3	98.3	74.0 (63.1-83.6)
38	1.6	59.2	20.6 (17.0-24.4)	**80**	0.3	98.6	79.1 (70.6-86.4)
39	1.6	60.8	24.7 (20.4-29.2)	**81**	0.2	98.8	73.5 (62.2-83.3)
40	1.6	62.4	25.2 (21.4-29.1)	**82**	0.2	99.0	73.8 (60.7-85.0)
41	1.5	63.9	26.4 (21.5-31.6)	**83**	0.2	99.2	71.1 (60.5-80.7)
42	1.5	65.4	27.2 (23.0-31.6)	**84**	0.2	99.4	75.5 (61.4-87.2)
43	1.4	66.8	33.2 (28.4-38.1)	**85**	0.1	99.5	60.5 (46.2-74.0)
44	1.4	68.2	35.2 (30.3-40.3)	**86**	0.1	99.6	82.8 (71.5-91.8)
45	1.4	69.6	33.1 (28.8-37.6)	**87**	0.1	99.7	60.4 (43.0-76.5)
46	1.3	70.9	37.0 (32.3-41.9)	**88**	<0.1	99.8	78.1 (64.6-89.0)
47	1.3	72.2	37.6 (32.9-42.5)	**89**	<0.1	99.9	77.3 (55.9-93.0)
48	1.3	73.5	42.6 (37.8-47.6)	**90**	<0.1	100	68.0 (39.0-90.9)
49	1.3	74.8	33.5 (28.6-38.7)	**91**	<0.1	100	80.0 (57.9-95.2)
50	1.2	76.0	43.1 (38.0-48.3)	**92**	<0.05	100	66.7 (29.1-94.8)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	1.2	77.2	42.5 (37.2-48.0)	**93**	<0.05	100	65.9 (29.8-93.8)
52	1.2	78.4	43.8 (37.6-50.1)	**94**	<0.05	100	60.9 (13.0-97.8)
53	1.2	79.6	51.0 (44.8-57.1)	**95**	<0.05	100	79.5 (42.9-99.3)
54	1.2	80.8	49.8 (43.8-55.9)	**96**	<0.05	100	79.2 (44.8-98.8)
55	1.1	81.9	52.8 (47.1-58.5)	**97**	<0.05	100	34.0 (1.6-80.9)
56	1.1	83.0	48.8 (42.8-54.9)	**98**	<0.05	100	74.1 (10.4-97.0)
57	1.1	84.1	55.9 (50.1-61.6)	**99**	<0.05	100	6.1 (4.5-42.9)
58	1.1	85.2	56.2 (50.2-62.2)	**100**	<0.05	100	53.7 (1.0-99.9)
59	1.0	86.2	52.4 (46.4-58.4)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Chile							
15	1.3	20.4	0.1 (0.0-0.4)	**60**	1.1	83.8	57.0 (41.6-71.7)
16	1.3	21.7	1.0 (0.1-3.1)	**61**	1.1	84.9	48.2 (28.4-68.4)
17	1.3	23.0	3.6 (0.1-12.0)	**62**	1.0	85.9	56.8 (35.4-76.9)
18	1.3	24.3	1.2 (0.0-4.7)	**63**	1.0	86.9	48.0 (27.2-69.3)
19	1.3	25.6	2.8 (0.2-7.9)	**64**	1.0	87.9	72.0 (51.9-88.3)
20	1.4	27.0	2.3 (0.3-6.2)	**65**	0.9	88.8	55.4 (32.2-77.4)
21	1.4	28.4	0.3 (0.0-1.3)	**66**	0.9	89.7	70.4 (50.0-87.3)
22	1.5	29.9	2.4 (0.0-9.3)	**67**	0.9	90.6	73.3 (52.7-89.6)
23	1.5	31.4	2.1 (0.0-8.4)	**68**	0.8	91.4	60.6 (35.0-83.5)
24	1.6	33.0	2.3 (0.1-7.5)	**69**	0.8	92.2	74.8 (54.9-90.4)
25	1.6	34.6	10.2 (1.4-25.6)	**70**	0.7	92.9	70.8 (55.2-84.2)
26	1.7	36.3	4.1 (0.0-14.5)	**71**	0.6	93.5	68.2 (35.0-93.4)
27	1.7	38.0	0.4 (0.0-1.4)	**72**	0.6	94.1	65.8 (43.2-85.2)
28	1.7	39.7	1.6 (0.1-4.9)	**73**	0.6	94.7	87.4 (73.8-96.5)
29	1.7	41.4	8.2 (1.7-18.8)	**74**	0.5	95.2	65.0 (45.3-82.3)
30	1.7	43.1	7.0 (0.6-19.3)	**75**	0.5	95.7	45.7 (25.3-66.9)
31	1.6	44.7	5.6 (0.6-15.2)	**76**	0.5	96.2	93.8 (85.0-98.9)
32	1.6	46.3	7.1 (1.9-15.4)	**77**	0.4	96.6	82.9 (62.2-96.4)
33	1.6	47.9	9.2 (0.9-24.7)	**78**	0.4	97.0	75.6 (53.6-92.2)
34	1.6	49.5	12.1 (2.9-26.4)	**79**	0.4	97.4	70.6 (45.5-90.3)
35	1.5	51.0	4.7 (1.4-9.8)	**80**	0.3	97.7	92.5 (80.7-99.0)
36	1.5	52.5	17.9 (6-34.3)	**81**	0.3	98.0	50.7 (17.1-84.0)
37	1.5	54.0	22.4 (4.2-49.5)	**82**	0.3	98.3	67.7 (32.9-93.9)
38	1.4	55.4	16.6 (1.0-45.4)	**83**	0.3	98.6	78.5 (37.0-99.8)
39	1.4	56.8	13.8 (4.2-27.7)	**84**	0.2	98.8	77.9 (50.0-96.3)
40	1.4	58.2	19.7 (10.4-31.2)	**85**	0.2	99.0	91.8 (69.7-100)
41	1.4	59.6	17.8 (8.2-30.2)	**86**	0.2	99.2	90.9 (47.7-96.2)
42	1.4	61.0	15.7 (5.7-29.4)	**87**	0.2	99.4	100
43	1.4	62.4	23.7 (10.0-41.1)	**88**	0.1	99.5	47.8 (9.9-87.3)
44	1.4	63.8	21.1 (9.5-35.7)	**89**	0.1	99.6	100
45	1.3	65.1	39.1 (22.6-57.1)	**90**	0.1	99.7	100
46	1.3	66.4	23.3 (12.1-36.8)	**91**	<0.1	99.8	100
47	1.3	67.7	29.4 (15.8-45.2)	**92**	<0.1	99.9	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.3	69.0	34.5 (15.1-57.1)	**93**	<0.1	100	82.4 (22.9-95.8)
49	1.3	70.3	36.1 (21.9-51.7)	**94**	<0.05	100	100
50	1.3	71.6	37.2 (21.7-54.2)	**95**	<0.05	100	0
51	1.3	72.9	39.8 (21.4-59.9)	**96**	<0.05	100	100
52	1.3	74.2	32.7 (19.9-46.9)	**97**	<0.05	100	100
53	1.3	75.5	46.5 (31.3-62.1)	**100**	<0.05	100	78.9 (29.4-99.8)
54	1.3	76.8	36.7 (19.6-55.7)				
55	1.2	78.0	27.6 (13.0-45.3)				
56	1.2	79.2	58.8 (39.9-76.4)				
57	1.2	80.4	43.5 (26.1-61.8)				
58	1.2	81.6	49.2 (30.9-67.6)				
59	1.1	82.7	46.5 (31.2-62.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Costa Rica							
18	1.4	26.5	0.0	**60**	1.1	86.3	60.7 (44.7-75.6)
19	1.5	28.0	0.0	**61**	1.0	87.3	29.6 (11.6-51.8)
20	1.5	29.5	0.8 (0.0-3.4)	**62**	1.0	88.3	72.0 (52.3-88.1)
21	1.6	31.1	9.8 (1.5-24.1)	**63**	0.9	89.2	61.2 (33.5-85.5)
22	1.6	32.7	6.3 (1.6-14)	**64**	0.8	90.0	60.8 (43.2-77.1)
23	1.6	34.3	5.3 (0.7-13.9)	**65**	0.8	90.8	69.7 (47.2-88.1)
24	1.6	35.9	14.7 (4.2-30.3)	**66**	0.7	91.5	61.4 (46.5-75.3)
25	1.6	37.5	12.5 (2.5-28.6)	**67**	0.7	92.2	36.2 (8.3-70.6)
26	1.6	39.1	7.8 (1.9-17.3)	**68**	0.6	92.8	60.3 (32.6-84.8)
27	1.7	40.8	5.0 (0.2-15.7)	**69**	0.6	93.4	70.7 (43.8-91.4)
28	1.7	42.5	11.5 (3.4-23.5)	**70**	0.6	94.0	71.9 (46.6-91.4)
29	1.7	44.2	7.0 (0.2-21.7)	**71**	0.6	94.6	73.2 (41.9-95.2)
30	1.7	45.9	15.0 (3.3-33.2)	**72**	0.5	95.1	76.2 (56.7-91.2)
31	1.7	47.6	17.9 (3.7-39.7)	**73**	0.5	95.6	59.8 (21.1-92.3)
32	1.7	49.3	13.9 (5.4-25.4)	**74**	0.5	96.1	80.1 (55.9-96.1)
33	1.7	51.0	7.4 (1.7-16.7)	**75**	0.4	96.5	80.5 (56.5-96.2)
34	1.6	52.6	6.7 (2.0-13.9)	**76**	0.4	96.9	80.2 (51.2-97.8)
35	1.6	54.2	14.0 (5.4-25.7)	**78**	0.3	97.6	71.8 (43.8-92.8)
36	1.6	55.8	14.7 (4.0-30.8)	**79**	0.3	97.9	93.6 (68.6-99.3)
37	1.6	57.4	13.8 (4.0-28.2)	**80**	0.3	98.2	65.6 (40.5-86.7)
38	1.5	58.9	5.5 (1.0-13.4)	**81**	0.3	98.5	80.1 (46.1-99.0)
39	1.5	60.4	17.2 (6.3-32.1)	**82**	0.2	98.7	40.8 (13.7-71.5)
40	1.5	61.9	39.9 (15.8-67.0)	**83**	0.2	98.9	94.0 (57.6-95.5)
41	1.4	63.3	22.1 (10.8-36.0)	**84**	0.2	99.1	87.7 (61.7-99.8)
42	1.4	64.7	22.6 (8.5-41.2)	**85**	0.2	99.3	90.7 (68.7-99.9)
43	1.3	66.0	35.8 (25.8-46.6)	**86**	0.2	99.5	79.0 (28.8-99.7)
44	1.3	67.3	33.4 (15.2-54.8)	**87**	0.1	99.6	28.3 (0.0-80.1)
45	1.2	68.5	22.9 (10.5-38.3)	**88**	0.1	99.7	42.7 (1.8-92.2)
46	1.2	69.7	30.4 (13.8-50.3)	**89**	<0.1	99.8	87.9 (41-97.3)
47	1.2	70.9	27.8 (16.2-41.1)	**90**	<0.1	99.9	59.6 (8.8-98.8)
48	1.2	72.1	25.3 (10.4-44.0)	**91**	<0.1	100	60.5 (11.6-98.2)
49	1.2	73.3	41.8 (25.0-59.7)	**92**	<0.1	100	100
50	1.2	74.5	23.8 (11.6-38.8)	**95**	<0.05	100	71 (6.8-58.8)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
51	1.2	75.7	50.3 (33.5-67.0)	**96**	<0.05	100	100
52	1.2	76.9	31.7 (16.1-49.8)	**97**	<0.05	100	74.3 (1.8-64.2)
53	1.2	78.1	33.4 (16.4-53.1)	**100**	<0.05	100	39.6 (22.1-58.6)
54	1.2	79.3	40.6 (20.0-63.1)				
55	1.2	80.5	50.5 (35.8-65.1)				
56	1.2	81.7	61.7 (40.1-81.2)				
57	1.2	82.9	46.0 (29.1-63.4)				
58	1.2	84.1	37.7 (16.6-61.6)				
59	1.1	85.2	68.1 (46.1-86.6)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Ecuador							
20	1.8	38.4	2.7 (1.6-4.1)	**41**	1.3	71.1	11.8 (9.0-14.9)
21	1.8	40.2	2.1 (1.2-3.4)	**42**	1.2	72.3	13.7 (10.2-17.6)
22	1.8	42.0	3.4 (1.9-5.4)	**43**	1.2	73.5	14.9 (11.0-19.2)
23	1.8	43.8	2.2 (1.2-3.4)	**44**	1.2	74.7	14.5 (10.9-18.4)
24	1.7	45.5	5.3 (3.5-7.4)	**45**	1.2	75.9	18.3 (14.8-22.2)
25	1.7	47.2	3.0 (1.8-4.5)	**46**	1.2	77.1	21.4 (15.8-27.6)
26	1.7	48.9	5.2 (3.2-7.7)	**47**	1.1	78.2	23.1 (17.7-29.0)
27	1.7	50.6	3.9 (2.5-5.6)	**48**	1.1	79.3	27.1 (21.9-32.7)
28	1.6	52.2	4.9 (2.9-7.4)	**49**	1.1	80.4	22.6 (18.2-27.3)
29	1.6	53.8	5.2 (3.3-7.6)	**50**	1.0	81.4	25.6 (20.0-31.6)
30	1.6	55.4	6.0 (4.3-8.0)	**51**	1.0	82.4	28.1 (18.4-38.9)
31	1.6	57.0	5.3 (3.5-7.4)	**52**	1.0	83.4	24.9 (19.1-31.3)
32	1.5	58.5	6.5 (4.5-8.9)	**53**	1.0	84.4	32.5 (25.7-39.8)
33	1.5	60.0	9.4 (6.1-13.3)	**54**	0.9	85.3	31.3 (24.9-38.1)
34	1.5	61.5	12.4 (8.6-16.8)	**55**	0.9	86.2	45.8 (37.5-54.2)
35	1.5	63.0	8.5 (6.2-11.0)	**56**	0.9	87.1	29.0 (19.3-39.7)
36	1.4	64.4	7.9 (5.3-10.9)	**57**	0.8	87.9	41.0 (30.3-52.2)
37	1.4	65.8	8.7 (6.3-11.5)	**58**	0.8	88.7	42.4 (32.9-52.2)
38	1.4	67.2	10.4 (7.9-13.2)	**59**	0.8	89.5	39.1 (27.9-50.8)
39	1.3	68.5	13.2 (10.0-16.8)				
40	1.3	69.8	14.3 (11.1-17.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)*
Grenada							
24	1.8	42.3	0.0	**46**	0.9	75.6	50.1
25	1.8	44.1	13.3	**47**	0.9	76.5	55.2
26	1.8	45.9	15.5	**48**	0.9	77.4	56.1
27	1.8	47.7	5.8	**49**	0.9	78.3	43.5
28	1.8	49.5	29.5	**50**	0.9	79.2	37.7
29	1.8	51.3	11.8	**51**	0.9	80.1	52.2
30	1.8	53.1	11.9	**52**	0.9	81.0	56.5
31	1.8	54.9	36.9	**53**	0.9	81.9	60.7
32	1.8	56.7	15.4	**54**	0.9	82.8	69.9
33	1.8	58.5	44.5	**55**	0.9	83.7	65.0
34	1.8	60.3	22.8	**56**	0.9	84.6	68.9
35	1.8	62.1	38.9	**57**	0.9	85.5	63.1
36	1.8	63.9	6.2	**58**	0.9	86.4	59.7
37	1.8	65.7	37.5	**59**	0.9	87.3	75.6
38	1.8	67.5	15.6	**60**	0.9	88.2	57.0
39	1.8	69.3	46.8	**61**	0.9	89.1	64.2
40	0.9	70.2	37.6	**62**	0.9	90.0	78.9
41	0.9	71.1	32.0	**63**	0.9	90.9	70.3
42	0.9	72.0	24.8	**64**	0.9	91.8	73.5
43	0.9	72.9	48.0				
44	0.9	73.8	42.2				
45	0.9	74.7	44.5				

* Standard errors were adjusted at the level of Primary Sampling Unit (PSU). We adjusted for standard errors at the country-level for Seychelles, Romania, and Grenada, as those surveys did not provide information on PSU.

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Guyana							
18	1.9	35.4	13.8 (1.8-34.4)	**46**	1.1	75.4	30.8 (17.4-46.1)
19	1.9	37.3	14.3 (5.3-26.8)	**47**	1.1	76.5	43.5 (27.4-60.4)
20	2.0	39.3	19.7 (5.9-38.9)	**48**	1.1	77.6	50.7 (33.9-67.5)
21	2.0	41.3	20.6 (5.9-41.1)	**49**	1.1	78.7	18.6 (6.1-35.8)
22	2.0	43.3	8.0 (1.6-18.5)	**50**	1.1	79.8	36.2 (22.1-51.6)
23	1.9	45.2	9.8 (2.6-21.1)	**51**	1.1	80.9	41.3 (24.2-59.6)
24	1.9	47.1	5.0 (0.2-15.4)	**52**	1.1	82.0	36.5 (18.9-56.3)
25	1.9	49.0	10.5 (3.0-21.8)	**53**	1.0	83.0	61.8 (44.4-77.8)
26	1.9	50.9	6.1 (0.5-17.1)	**54**	1.0	84.0	33.6 (18.7-50.4)
27	1.8	52.7	11.2 (1.8-27.2)	**55**	1.0	85.0	32.0 (14.8-52.3)
28	1.7	54.4	8.1 (1.9-18.1)	**56**	1.0	86.0	50.1 (37.0-63.2)
29	1.5	55.9	19.2 (7.5-34.7)	**57**	0.9	86.9	49.5 (27.4-71.8)
30	1.3	57.2	12.9 (5.3-23.2)	**58**	0.9	87.8	68.5 (52.8-82.2)
31	1.1	58.3	12.3 (4.0-24.4)	**59**	0.9	88.7	56.5 (39.2-73.0)
32	1.0	59.3	23.1 (10-39.6)	**60**	0.9	89.6	67.4 (44.2-86.8)
33	1.0	60.3	15.6 (6.1-28.5)	**61**	0.8	90.4	77.9 (61.2-90.8)
34	1.1	61.4	34.1 (20.3-49.5)	**62**	0.8	91.2	56.3 (37.2-74.4)
35	1.1	62.5	7.6 (1.8-16.7)	**63**	0.8	92.0	63.5 (49.0-76.8)
36	1.3	63.8	17.0 (7.9-28.8)	**64**	0.6	92.6	72.6 (54.5-87.5)
37	1.3	65.1	17.7 (7.0-32.0)	**65**	0.6	93.2	68.5 (49.5-84.7)
38	1.3	66.4	22.5 (10.5-37.5)	**66**	0.5	93.7	56.3 (36.0-75.6)
39	1.3	67.7	10.0 (3.6-19.1)	**67**	0.5	94.2	59.6 (35.8-81.3)
40	1.1	68.8	30.7 (17.7-45.6)	**68**	0.5	94.7	52.1 (31.4-72.4)
41	1.1	69.9	16.7 (6.7-30.0)	**69**	0.5	95.2	69.0 (42.9-89.9)
42	1.1	71.0	16.1 (6.1-29.6)				
43	1.1	72.1	29.9 (18.2-43.1)				
44	1.1	73.2	28.7 (17.1-41.9)				
45	1.1	74.3	53.3 (32.9-73.2)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Mexico							
15	1.7	27.2	0.0	**60**	0.8	89.0	48.1 (31.3-65.1)
16	1.7	28.9	2.0 (0.0-7.7)	**61**	0.8	89.8	47.9 (31.0-65.0)
17	1.7	30.6	4.3 (0.7-10.6)	**62**	0.7	90.5	51.5 (35.9-67.0)
18	1.7	32.3	2.7 (0.9-5.4)	**63**	0.7	91.2	51.9 (34.0-69.6)
19	1.7	34.0	13.5 (3.9-27.6)	**64**	0.7	91.9	37.0 (23.1-52.0)
20	1.7	35.7	3.4 (0.6-8.3)	**65**	0.6	92.5	39.5 (22.6-57.9)
21	1.7	37.4	6.9 (1.8-15.1)	**66**	0.6	93.1	61.9 (45.4-77.0)
22	1.7	39.1	2.4 (0.8-4.7)	**67**	0.6	93.7	49.3 (31.0-67.8)
23	1.7	40.8	7.6 (3.0-14.1)	**68**	0.5	94.2	51.8 (36.9-66.6)
24	1.7	42.5	9.3 (4.8-15.0)	**69**	0.5	94.7	65.0 (48.1-80.2)
25	1.7	44.2	7.7 (2.3-15.7)	**70**	0.4	95.1	60.6 (42.4-77.5)
26	1.7	45.9	10.6 (4.0-19.8)	**71**	0.4	95.5	56.8 (37.7-74.8)
27	1.7	47.6	6.6 (1.7-14.5)	**72**	0.4	95.9	66.0 (49.6-80.7)
28	1.7	49.3	6.9 (4.0-10.4)	**73**	0.4	96.3	59.8 (40.0-78.1)
29	1.6	50.9	13.7 (4.5-26.9)	**74**	0.3	96.6	54.5 (33.6-74.6)
30	1.6	52.5	9.7 (4.8-15.9)	**75**	0.3	96.9	68.9 (52.0-83.5)
31	1.5	54.0	7.0 (2.9-12.7)	**76**	0.3	97.2	69.6 (47.4-87.9)
32	1.5	55.5	11.9 (5.4-20.4)	**77**	0.3	97.5	71.4 (49.3-89.1)
33	1.5	57.0	14.6 (6.4-25.5)	**78**	0.2	97.7	73.2 (47.6-92.4)
34	1.5	58.5	11.9 (5.3-20.6)	**79**	0.2	97.9	61.0 (34.8-84.2)
35	1.4	59.9	12.3 (5.8-20.8)	**80**	0.2	98.1	52.5 (26.8-77.5)
36	1.4	61.3	12.3 (7.1-18.8)	**81**	0.2	98.3	65.1 (39.9-86.4)
37	1.4	62.7	13.9 (8.5-20.3)	**82**	0.2	98.5	89.1 (73.0-98.4)
38	1.4	64.1	20.4 (11.8-30.5)	**83**	0.1	98.6	52.4 (23.0-80.9)
39	1.4	65.5	20.3 (12.3-29.7)	**84**	0.1	98.7	73.6 (47.8-92.8)
40	1.4	66.9	13.1 (6.6-21.3)	**85**	0.1	98.8	66.9 (32.6-93.2)
41	1.3	68.2	31.0 (18.5-45.0)	**86**	0.1	98.9	85.4 (56.6-99.6)
42	1.3	69.5	20.4 (11.9-30.4)	**87**	0.1	99.0	57.3 (9.9-97.0)
43	1.3	70.8	24.1 (14.4-35.5)	**88**	0.1	99.1	95.2 (76.5-99.6)
44	1.3	72.1	23.7 (15.3-33.4)	**89**	0.1	99.2	57.7 (21.9-89.4)
45	1.3	73.4	23.0 (13.8-33.8)	**90**	0.1	99.3	16.7 (4.7-76.2)
46	1.3	74.7	41.9 (29.9-54.3)	**91**	0.1	99.4	100
47	1.3	76.0	30.8 (19.6-43.3)	**92**	<0.05	99.4	10.3 (9.3-67.6)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.2	77.2	35.5 (23.2-48.9)	**93**	<0.05	99.4	83.7 (17.3-90.7)
49	1.2	78.4	44.9 (32.6-57.6)	**94**	<0.05	99.4	100
50	1.1	79.5	39.3 (26.5-52.8)	**95**	<0.05	99.4	36.6 (17.7-97.4)
51	1.1	80.6	48.7 (36.4-61.0)	**96**	<0.05	99.4	25.0 (7.2-93.8)
52	1.1	81.7	42.5 (27.9-57.7)	**97**	<0.05	99.4	100
53	1.0	82.7	41.4 (28.7-54.7)	**98**	<0.05	99.4	100
54	1.0	83.7	36.2 (23.8-49.5)	**99**	<0.05	99.4	22.1 (9.9-92.8)
55	1.0	84.7	46.4 (32.8-60.3)				
56	0.9	85.6	31.4 (18.0-46.6)				
57	0.9	86.5	42.5 (29.1-56.3)				
58	0.9	87.4	58.1 (42.2-73.2)				
59	0.8	88.2	52.2 (36.7-67.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Peru							
40	1.5	65.9	9.7 (7.7-11.9)	**70**	0.5	95.2	41.1 (35.1-47.3)
41	1.4	67.3	9.5 (7.4-11.8)	**71**	0.5	95.7	47.6 (39.6-55.6)
42	1.4	68.7	11.0 (8.9-13.3)	**72**	0.4	96.1	47.2 (41.4-53.0)
43	1.4	70.1	12.2 (9.8-14.9)	**73**	0.4	96.5	46.7 (39.3-54.2)
44	1.3	71.4	15.4 (12.6-18.4)	**74**	0.4	96.9	56.0 (48.9-62.9)
45	1.3	72.7	12.5 (10.0-15.2)	**75**	0.4	97.3	46.8 (40.9-52.7)
46	1.3	74.0	16.2 (13.3-19.4)	**76**	0.3	97.6	58.0 (50.8-65.1)
47	1.2	75.2	16.0 (13.0-19.3)	**77**	0.3	97.9	54.7 (46.7-62.6)
48	1.2	76.4	16.1 (13.2-19.1)	**78**	0.3	98.2	57.8 (50.4-65.1)
49	1.2	77.6	22.1 (18.5-25.8)	**79**	0.3	98.5	54.1 (45.0-63.0)
50	1.1	78.7	17.9 (14.9-21.1)	**80**	0.3	98.8	52.5 (45.3-59.7)
51	1.1	79.8	23.4 (19.5-27.6)	**81**	0.2	99.0	53.7 (43.2-64.0)
52	1.1	80.9	23.5 (19.9-27.3)	**82**	0.2	99.2	55.0 (46.0-63.7)
53	1.1	82.0	23.4 (19.9-27.0)	**83**	0.2	99.4	55.3 (44.8-65.5)
54	1.0	83.0	24.9 (21.1-28.8)	**84**	0.2	99.6	57.3 (47.1-67.1)
55	1.0	84.0	24.6 (20.6-28.9)	**85**	0.1	99.7	64.2 (54.9-73.0)
56	1.0	85.0	26.4 (22.6-30.4)	**86**	0.1	99.8	58.5 (45.7-70.8)
57	0.9	85.9	27.3 (23.0-31.8)	**87**	0.1	99.9	62.0 (49.5-73.7)
58	0.9	86.8	28.0 (24.0-32.2)	**88**	<0.1	100	64.6 (51.1-76.9)
59	0.9	87.7	29.1 (24.2-34.3)	**89**	<0.1	100	62.9 (46.2-78.2)
60	0.8	88.5	31.4 (26.8-36.1)	**90**	<0.1	100	63.3 (47.8-77.5)
61	0.8	89.3	33.9 (28.0-40.0)	**91**	<0.05	100	63.4 (45.7-79.4)
62	0.8	90.1	36.7 (31.7-41.9)	**92**	<0.05	100	62.8 (39.7-83.2)
63	0.7	90.8	32.2 (27.1-37.5)	**93**	<0.05	100	47.3 (19.0-76.5)
64	0.7	91.5	35.0 (29.5-40.7)	**94**	<0.05	100	75.3 (48.2-94.5)
65	0.7	92.2	42.0 (37.1-47.0)	**95**	<0.05	100	58.3 (38.4-76.9)
66	0.7	92.9	37.4 (31.5-43.4)	**96**	<0.05	100	47.5 (25.3-70.1)
67	0.6	93.5	39.9 (34.2-45.7)				
68	0.6	94.1	39.7 (34.0-45.6)				
69	0.6	94.7	44.2 (37.5-51.0)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
St. Vincent and the Grenadines							
18	1.7	31.5	2.3 (0.3-6.3)	**46**	0.9	75.9	25.5 (15.3-37.2)
19	1.7	33.2	8.5 (1.2-21.7)	**47**	0.9	76.8	26.8 (16.4-38.6)
20	1.7	34.9	3.3 (0.1-10.8)	**48**	0.9	77.7	41.4 (22.8-61.3)
21	1.7	36.6	5.1 (0.7-12.9)	**49**	0.9	78.6	44.0 (32.7-55.8)
22	1.7	38.3	2.4 (0.8-4.8)	**50**	0.9	79.5	40.7 (28.8-53.1)
23	1.7	40.0	5.5 (1.2-12.7)	**51**	0.9	80.4	56.7 (39.1-73.6)
24	1.7	41.7	6.0 (1.0-14.8)	**52**	0.9	81.3	49.0 (35.9-62.1)
25	1.7	43.4	3.3 (0.6-7.9)	**53**	0.9	82.2	54.7 (35.0-73.7)
26	1.7	45.1	9.1 (1.9-21.0)	**54**	0.9	83.1	53.5 (33.6-72.9)
27	1.7	46.8	5.0 (1.9-9.6)	**55**	0.9	84.0	50.4 (40.8-59.9)
28	1.7	48.5	10.6 (3.3-21.3)	**56**	0.9	84.9	31.9 (19.4-46.0)
29	1.7	50.2	9.5 (3.8-17.4)	**57**	0.9	85.8	50.6 (33.3-67.8)
30	1.7	51.9	11.2 (5.5-18.7)	**58**	0.9	86.7	60.1 (39.1-79.4)
31	1.7	53.6	9.0 (1.8-20.7)	**59**	0.9	87.6	51.2 (29.6-72.5)
32	1.7	55.3	3.3 (1.0-7.0)	**60**	0.9	88.5	68.5 (50.9-83.8)
33	1.7	57.0	10.4 (6.0-15.9)	**61**	0.9	89.4	54.3 (29.9-77.6)
34	1.7	58.7	15.4 (3.6-33.3)	**62**	0.9	90.3	63.5 (39.6-84.3)
35	1.7	60.4	21.6 (13.0-31.8)	**63**	0.9	91.2	64.1 (30.1-91.6)
36	1.7	62.1	13.0 (7.8-19.4)	**64**	0.9	92.1	65.2 (55.0-74.7)
37	1.7	63.8	25.3 (17.2-34.4)	**65**	0.9	93.0	74.0 (52.7-90.6)
38	1.7	65.5	21.3 (14.3-29.2)	**66**	0.9	93.9	78.8 (59.2-93.2)
39	1.7	67.2	25.6 (15.8-37.0)	**67**	0.9	94.8	77.9 (60.9-91.1)
40	1.7	68.9	25.5 (16.0-36.3)	**68**	0.9	95.7	63.0 (43.6-80.5)
41	1.7	70.6	13.1 (7.0-20.9)	**69**	0.9	96.6	56.8 (29.0-82.4)
42	1.7	72.3	28.6 (14.1-45.9)	**70**	0.9	97.5	72.6 (2.4-90.4)
43	0.9	73.2	27.1 (17.4-38.1)				
44	0.9	74.1	29.7 (18.7-42.0)				
45	0.9	75.0	36.7 (23.1-51.6)				

South-East Asia

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Bangladesh							
35	1.6	64.3	13.7 (10.3-17.5)	**65**	0.4	95.2	39.3 (33.1-45.6)
36	1.6	65.9	15.9 (11.4-21.0)	**66**	0.4	95.6	48.9 (30.1-68.0)
37	1.6	67.5	9.7 (6.1-14.2)	**67**	0.3	95.9	44.0 (22.5-66.8)
38	1.5	69.0	9.0 (5.3-13.4)	**68**	0.3	96.2	53.4 (34.5-71.9)
39	1.5	70.5	20.2 (14.3-26.8)	**69**	0.3	96.5	56.8 (26.3-84.6)
40	1.4	71.9	16.2 (12.2-20.5)	**70**	0.3	96.8	39.3 (33.3-45.5)
41	1.4	73.3	17.9 (12.7-23.7)	**71**	0.3	97.1	18.3 (3.6-40.7)
42	1.4	74.7	22.8 (17.3-28.9)	**72**	0.3	97.4	31.0 (14.9-50.0)
43	1.3	76.0	26.5 (19.8-33.7)	**73**	0.3	97.7	46.1 (14.8-79.2)
44	1.3	77.3	25.6 (18.5-33.4)	**74**	0.3	98.0	42.1 (14.7-72.5)
45	1.2	78.5	15.9 (11.9-20.3)	**75**	0.2	98.2	36.1 (27.5-45.2)
46	1.2	79.7	26.0 (19.8-32.8)	**76**	0.2	98.4	42.3 (11.5-77.1)
47	1.1	80.8	24.1 (18.0-30.8)	**77**	0.2	98.6	0
48	1.1	81.9	22.8 (17.6-28.6)	**78**	0.2	98.8	44.1 (12.0-79.2)
49	1.1	83.0	30.2 (22.7-38.3)	**79**	0.2	99.0	41.0 (4.6-85.1)
50	1.1	84.1	19.8 (14.9-25.2)	**80**	0.2	99.2	41.1 (32.1-50.3)
51	1.0	85.1	25.4 (16.2-35.7)	**81**	0.1	99.3	59.0 (14.4-95.7)
52	1.0	86.1	22.8 (17.4-28.7)	**82**	0.1	99.4	8.0 (0.1-26.8)
53	1.0	87.1	35.5 (27.8-43.7)	**83**	0.1	99.5	40.5 (1.5-99.5)
54	0.9	88.0	29.9 (22.4-38.0)	**84**	0.1	99.6	100
55	0.9	88.9	27.6 (20.2-35.7)	**85**	0.1	99.7	42.0 (25.9-59)
56	0.9	89.8	32.3 (24.7-40.4)	**86**	0.1	99.8	47.5 (30.5-74.1)
57	0.8	90.6	33.9 (25.0-43.4)	**87**	0.1	99.9	81.4 (0.9-69.8)
58	0.8	91.4	27.2 (19.6-35.6)	**88**	<0.05	99.9	0
59	0.7	92.1	37.0 (24.4-50.6)	**89**	<0.05	99.9	13.8 (25.4-92.2)
60	0.7	92.8	30.8 (25.5-36.4)	**90**	<0.05	99.9	54.8 (38.7-70.5)
61	0.6	93.4	27.0 (14.1-42.4)	**91**	<0.05	99.9	58.5 (9.4-98.0)
62	0.5	93.9	30.9 (21.2-41.6)	**92**	<0.05	99.9	29.8 (40.6-92.6)
63	0.5	94.4	34.8 (18.7-52.9)	**94**	<0.05	99.9	60.4 (12.6-70.7)
64	0.4	94.8	31.3 (18.3-46.0)	**95**	<0.05	99.9	47.7 (34.4-61.2)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
				96	<0.05	99.9	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Bhutan							
18	1.8	32.2	5.1 (0.1-21.4)	**46**	1.0	80.9	49.4 (33.3-65.6)
19	1.8	34.0	11.1 (0.9-30.7)	**47**	1.0	81.9	53.3 (37.0-69.2)
20	1.8	35.8	13.9 (2.6-32.0)	**48**	0.9	82.8	46.3 (32.2-60.6)
21	1.9	37.7	11.9 (1.8-29.1)	**49**	0.9	83.7	57.0 (38.7-74.3)
22	1.9	39.6	10.6 (2.2-24.3)	**50**	0.9	84.6	66.4 (49.3-81.6)
23	1.9	41.5	10.0 (1.8-23.8)	**51**	0.9	85.5	53.6 (36.0-70.7)
24	1.9	43.4	14.1 (6.0-24.9)	**52**	0.9	86.4	49.8 (32.3-67.3)
25	2.1	45.5	9.6 (3.6-18.2)	**53**	0.8	87.2	49.6 (33.2-66.1)
26	2.1	47.6	19.4 (8.3-33.8)	**54**	0.8	88.0	54.1 (37.1-70.7)
27	2.1	49.7	28.5 (15.9-43.1)	**55**	0.8	88.8	64.6 (45.9-81.3)
28	2.1	51.8	26.4 (12.8-42.8)	**56**	0.6	89.4	62.6 (41.6-81.3)
29	2.1	53.9	27.2 (14.6-42.1)	**57**	0.6	90.0	55.1 (37.2-72.3)
30	2.1	56.0	28.7 (16.0-43.5)	**58**	0.6	90.6	54.0 (34.4-73.0)
31	2.1	58.1	17.8 (8.9-29.0)	**59**	0.6	91.2	55.4 (34.4-75.5)
32	1.9	60.0	23.8 (11.9-38.3)	**60**	0.6	91.8	56.9 (39.4-73.6)
33	1.9	61.9	21.8 (10.5-35.8)	**61**	0.5	92.3	56.9 (35.6-76.9)
34	1.8	63.7	44.7 (29.1-60.9)	**62**	0.5	92.8	79.1 (63.8-91.1)
35	1.8	65.5	37.3 (25.6-49.8)	**63**	0.5	93.3	61.7 (37.7-83.1)
36	1.7	67.2	36.4 (23.9-50.0)	**64**	0.5	93.8	39.0 (12.5-69.7)
37	1.7	68.9	36.2 (22.3-51.3)	**65**	0.5	94.3	68.1 (37.8-91.7)
38	1.6	70.5	39.0 (26.4-52.3)	**66**	0.4	94.7	63.3 (31.3-89.9)
39	1.6	72.1	46.4 (29.6-63.8)	**67**	0.4	95.1	84.0 (62.1-97.5)
40	1.4	73.5	46.9 (32.5-61.6)	**68**	0.4	95.5	54.7 (31.9-76.4)
41	1.4	74.9	36.2 (22.4-51.4)	**69**	0.4	95.9	40.1 (5.0-82.9)
42	1.3	76.2	46.6 (29.0-64.7)				
43	1.3	77.5	47.6 (33.5-62.0)				
44	1.2	78.7	49.9 (31.5-68.4)				
45	1.2	79.9	44.5 (30.5-58.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
India							
15	1.8	27.9	2.4 (2.0-2.8)	**40**	1.4	69.5	21.9 (20.7-23.1)
16	1.8	29.7	2.9 (2.5-3.4)	**41**	1.3	70.8	26.0 (24.0-28.1)
17	1.8	31.5	3.3 (2.8-3.8)	**42**	1.3	72.1	23.8 (22.5-25.1)
18	1.8	33.3	3.6 (3.2-4.1)	**43**	1.3	73.4	26.1 (24.3-28.0)
19	1.8	35.1	4.7 (4.1-5.4)	**44**	1.2	74.6	29.1 (27.1-31.0)
20	1.8	36.9	4.7 (4.2-5.2)	**45**	1.2	75.8	26.6 (25.4-27.8)
21	1.8	38.7	4.9 (4.3-5.5)	**46**	1.2	77.0	29.3 (27.4-31.2)
22	1.8	40.5	6.2 (5.6-6.8)	**47**	1.2	78.2	29.4 (27.6-31.3)
23	1.8	42.3	7.6 (6.8-8.5)	**48**	1.1	79.3	30.4 (28.8-32.0)
24	1.7	44.0	7.7 (7.0-8.5)	**49**	1.1	80.4	30.3 (28.4-32.2)
25	1.7	45.7	9.1 (8.2-10.0)	**50**	1.1	81.5	30.8 (28.3-33.4)
26	1.7	47.4	8.4 (7.7-9.2)	**51**	1.0	82.5	36.3 (32.4-40.3)
27	1.7	49.1	10.1 (9.1-11.0)	**52**	1.0	83.5	31.6 (28.1-35.2)
28	1.7	50.8	11.0 (9.9-12.1)	**53**	1.0	84.5	34.5 (30.6-38.5)
29	1.7	52.5	12.4 (11.0-13.9)	**54**	0.9	85.4	35.0 (31.3-38.9)
30	1.7	54.2	13.1 (12.2-14.1)				
31	1.6	55.8	14.2 (12.8-15.6)				
32	1.6	57.4	15.3 (14.2-16.4)				
33	1.6	59.0	15.3 (14.1-16.5)				
34	1.6	60.6	15.5 (14.1-17.0)				
35	1.6	62.2	16.9 (15.8-17.9)				
36	1.5	63.7	18.1 (16.7-19.6)				
37	1.5	65.2	20.5 (18.9-22.2)				
38	1.5	66.7	19.7 (18.5-20.9)				
39	1.4	68.1	22.4 (20.6-24.3)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Indonesia							
15	1.7	27.7	3.9 (2.7-5.3)	**60**	0.8	90.9	51.9 (43.9-59.9)
16	1.7	29.4	4.7 (2.3-7.9)	**61**	0.8	91.7	59.0 (48.4-69.3)
17	1.7	31.1	8.8 (6.8-11.1)	**62**	0.8	92.5	60.4 (50.5-69.9)
18	1.7	32.8	7.4 (4.0-11.8)	**63**	0.7	93.2	57.9 (51.4-64.3)
19	1.7	34.5	8.0 (5.6-10.8)	**64**	0.7	93.9	52.0 (44.7-59.4)
20	1.7	36.2	5.9 (3.3-9.1)	**65**	0.6	94.5	61.8 (51.9-71.3)
21	1.7	37.9	7.7 (5.3-10.5)	**66**	0.6	95.1	58.5 (50.3-66.5)
22	1.7	39.6	8.6 (5.6-12.1)	**67**	0.5	95.6	60.8 (56.8-64.7)
23	1.6	41.2	10.3 (7.7-13.3)	**68**	0.5	96.1	63.0 (52.7-72.7)
24	1.6	42.8	8.3 (6.1-10.8)	**69**	0.4	96.5	63.6 (55.7-71.2)
25	1.6	44.4	10.1 (8.1-12.2)	**70**	0.4	96.9	64.2 (58.7-69.5)
26	1.6	46.0	8.8 (7.5-10.3)	**71**	0.4	97.3	62.3 (54.9-69.4)
27	1.5	47.5	8.0 (6.4-9.7)	**72**	0.3	97.6	67.5 (60.8-74.0)
28	1.5	49.0	8.9 (6.6-11.5)	**73**	0.3	97.9	63.2 (54.2-71.7)
29	1.5	50.5	11.3 (8.4-14.5)	**74**	0.3	98.2	69.9 (61.8-77.4)
30	1.5	52.0	11.1 (9.4-12.9)	**75**	0.3	98.5	74.6 (60.2-86.7)
31	1.4	53.4	10.2 (8.1-12.5)	**76**	0.2	98.7	71.2 (64.4-77.5)
32	1.4	54.8	13.2 (9.2-17.8)	**77**	0.2	98.9	80.8 (69.0-90.2)
33	1.5	56.3	11.1 (9.6-12.7)	**78**	0.2	99.1	73.1 (62.4-82.5)
34	1.5	57.8	15.7 (12.3-19.4)	**79**	0.2	99.3	76.4 (66.4-85.1)
35	1.5	59.3	16.9 (15.2-18.7)	**80**	0.2	99.5	84.3 (77.5-90.1)
36	1.6	60.9	16.8 (13.7-20.3)	**81**	0.1	99.6	73.9 (60.4-85.3)
37	1.6	62.5	17.7 (13.6-22.2)	**82**	0.1	99.7	75.5 (69.7-80.8)
38	1.6	64.1	17.1 (12.6-22.1)	**83**	0.1	99.8	84.8 (69.5-95.4)
39	1.5	65.6	24.2 (21.6-27.0)	**84**	<0.1	99.9	71.4 (61.1-80.7)
40	1.5	67.1	22.8 (18.1-27.9)	**85**	<0.1	100	80.0 (58.5-94.9)
41	1.5	68.6	25.1 (21.7-28.6)	**86**	<0.1	100	76.6 (59.0-90.4)
42	1.4	70.0	27.5 (24.0-31.1)	**87**	<0.05	100	74.1 (32.6-98.9)
43	1.4	71.4	26.9 (21.2-32.9)	**88**	<0.05	100	85.8 (59.4-99.3)
44	1.4	72.8	31.2 (29.2-33.1)	**89**	<0.05	100	77.7 (54.9-94.0)
45	1.4	74.2	30.3 (27.8-32.8)	**90**	<0.05	100	64.7 (23.3-95.9)
46	1.4	75.6	32.8 (26.1-40.0)	**91**	<0.05	100	48.7 (29.8-67.8)
47	1.3	76.9	38.0 (33.3-42.8)	**92**	<0.05	100	71.7 (21.7-99.9)

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.3	78.2	36.2 (33.5-39.0)	**93**	<0.05	100	66.4 (4.2-98.4)
49	1.3	79.5	41.9 (37.8-46.0)	**94**	<0.05	100	82.8 (23.4-95.7)
50	1.2	80.7	42.3 (35.3-49.4)	**95**	<0.05	100	100
51	1.2	81.9	41.0 (35.0-47.2)	**96**	<0.05	100	0
52	1.2	83.1	44.2 (37.8-50.6)	**100**	<0.05	100	72.8 (26.1-99.6)
53	1.1	84.2	44.7 (39.8-49.7)				
54	1.1	85.3	45.5 (39.8-51.3)				
55	1.0	86.3	46.2 (39.7-52.7)				
56	1.0	87.3	45.7 (39.6-51.9)				
57	1.0	88.3	49.6 (45.1-54.1)				
58	0.9	89.2	45.3 (40.3-50.4)				
59	0.9	90.1	53.8 (47.5-59.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Nepal							
15	2.1	31.2	10.1 (1.6-24.8)	**46**	1.0	80.7	39.2 (26.6-52.6)
16	2.2	33.4	4.6 (0.2-14.0)	**47**	1.0	81.7	40.5 (26.7-55.0)
17	2.2	35.6	2.8 (0.0-11.0)	**48**	1.0	82.7	23.8 (12.0-38.0)
18	2.2	37.8	7.7 (0.7-21.3)	**49**	0.9	83.6	47.6 (31.5-64.0)
19	2.2	40.0	15.9 (6.0-29.4)	**50**	0.9	84.5	44.1 (35.3-53.2)
20	2.3	42.3	13.5 (3.1-29.4)	**51**	0.9	85.4	47.7 (31.7-63.9)
21	2.3	44.6	14.3 (5.2-27.0)	**52**	0.9	86.3	54.9 (40.2-69.1)
22	2.2	46.8	5.1 (0.9-12.5)	**53**	0.8	87.1	43.2 (26.5-60.8)
23	2.2	49.0	6.7 (1.4-15.4)	**54**	0.8	87.9	54.9 (37.2-72.1)
24	2.1	51.1	14.6 (6.2-25.7)	**55**	0.8	88.7	41.7 (30.4-53.6)
25	2.0	53.1	17.8 (9.9-27.5)	**56**	0.7	89.4	49.5 (36.8-62.3)
26	1.9	55.0	9.6 (2.6-20.2)	**57**	0.7	90.1	45.9 (30.4-61.8)
27	1.8	56.8	15.9 (6.3-28.8)	**58**	0.7	90.8	55.5 (42.3-68.4)
28	1.7	58.5	21.5 (11.9-33.0)	**59**	0.7	91.5	44.7 (30.6-59.1)
29	1.7	60.2	24.5 (8.4-45.6)	**60**	0.6	92.1	46.7 (36.6-56.9)
30	1.6	61.8	14.1 (7.2-22.9)	**61**	0.6	92.7	50.2 (28.5-71.9)
31	1.5	63.3	34.8 (19.2-52.3)	**62**	0.6	93.3	49.3 (34.6-64.1)
32	1.4	64.7	32.2 (21.3-44.2)	**63**	0.5	93.8	49.5 (28.7-70.4)
33	1.3	66.0	24.8 (13.2-38.7)	**64**	0.5	94.3	67.7 (45.2-86.6)
34	1.3	67.3	20.8 (8.9-36.0)	**65**	0.5	94.8	52.8 (41.3-64.1)
35	1.3	68.6	17.8 (12.5-23.8)	**66**	0.5	95.3	65.2 (45.0-82.9)
36	1.2	69.8	14.7 (6.8-24.9)	**67**	0.5	95.8	68.9 (45.3-88.2)
37	1.2	71.0	25.9 (15.7-37.7)	**68**	0.4	96.2	58.6 (44.0-72.5)
38	1.1	72.1	27.4 (15.9-40.6)	**69**	0.4	96.6	61.6 (44.2-77.5)
39	1.1	73.2	27.4 (14.4-42.8)				
40	1.1	74.3	28.7 (21.7-36.1)				
41	1.1	75.4	41.8 (28.0-56.3)				
42	1.1	76.5	28.1 (17.3-40.3)				
43	1.1	77.6	41.2 (27.4-55.8)				
44	1.1	78.7	40.7 (27.4-54.7)				
45	1.0	79.7	36.1 (27.8-44.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Timor-Leste							
18	2.3	45.8	16.7 (1.1-45.3)	**46**	0.8	83.8	29.5 (17.0-44.0)
19	2.2	48.0	10.9 (5.2-18.3)	**47**	0.8	84.6	29.3 (16.3-44.2)
20	2.1	50.1	7.7 (2.4-15.7)	**48**	0.8	85.4	37.8 (23.7-53.0)
21	2.0	52.1	3.0 (0.0-12.0)	**49**	0.8	86.2	33.3 (18.2-50.4)
22	2.0	54.1	14.5 (6.5-25.2)	**50**	0.8	87.0	36.4 (22.1-51.9)
23	1.9	56.0	11.4 (3.8-22.4)	**51**	0.8	87.8	42.4 (26.7-59.0)
24	1.9	57.9	6.3 (1.6-13.9)	**52**	0.8	88.6	34.1 (19.9-49.9)
25	1.8	59.7	9.1 (2.2-19.9)	**53**	0.7	89.3	34.4 (17.5-53.6)
26	1.8	61.5	14.5 (7.2-23.8)	**54**	0.7	90.0	28.1 (17.7-39.8)
27	1.7	63.2	19.2 (9.2-31.8)	**55**	0.7	90.7	28.1 (12.7-46.8)
28	1.7	64.9	19.0 (9.9-30.3)	**56**	0.6	91.3	35.5 (19.5-53.4)
29	1.6	66.5	16.2 (7.8-26.9)	**57**	0.6	91.9	52.4 (31.1-73.2)
30	1.5	68.0	23.6 (14.3-34.5)	**58**	0.6	92.5	30.0 (10.7-54.0)
31	1.4	69.4	17.7 (9.3-28.1)	**59**	0.5	93.0	43.3 (25.7-61.9)
32	1.4	70.8	17.9 (9.8-27.8)	**60**	0.5	93.5	32.4 (17.8-49.0)
33	1.3	72.1	36.7 (23.8-50.7)	**61**	0.5	94.0	35.5 (18.7-54.3)
34	1.2	73.3	36.7 (24.2-50.1)	**62**	0.5	94.5	41.0 (26.7-56.1)
35	1.2	74.5	25.5 (14.4-38.6)	**63**	0.5	95.0	37.1 (22.9-52.6)
36	1.1	75.6	34.6 (22.3-48.1)	**64**	0.4	95.4	42.6 (28.0-57.8)
37	1.1	76.7	26.1 (14.8-39.3)	**65**	0.4	95.8	48.6 (32.7-64.7)
38	1.0	77.7	37.5 (25.0-50.9)	**66**	0.3	96.1	48.9 (35.3-62.5)
39	0.9	78.6	19.7 (10.7-30.6)	**67**	0.3	96.4	40.0 (24.6-56.5)
40	0.8	79.4	24.4 (16.1-33.7)	**68**	0.3	96.7	47.6 (33.4-62.1)
41	0.7	80.1	38.9 (27.7-50.7)	**69**	0.3	97.0	43.6 (28.6-59.3)
42	0.7	80.8	26.7 (17.5-37.0)				
43	0.7	81.5	29.4 (19.4-40.6)				
44	0.7	82.2	39.7 (25.5-54.7)				
45	0.8	83.0	32.9 (22.2-44.6)				

Western Pacific

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Cambodia							
25	1.9	50.5	2.7 (0.5-6.7)	**46**	1.0	80.9	16.2 (10.3-23.0)
26	2.0	52.5	2.9 (0.2-8.3)	**47**	1.0	81.9	11.5 (6.0-18.5)
27	2.0	54.5	3.2 (0.5-8.0)	**48**	1.0	82.9	13.9 (8.2-20.9)
28	1.9	56.4	1.9 (0.3-4.6)	**49**	1.0	83.9	18.4 (11.9-26.0)
29	1.7	58.1	1.9 (0.4-4.6)	**50**	0.9	84.8	18.0 (12.0-25.0)
30	1.6	59.7	3.4 (1.0-7.1)	**51**	0.9	85.7	12.0 (6.5-18.9)
31	1.4	61.1	2.0 (0.2-5.7)	**52**	0.9	86.6	19.8 (12.9-27.7)
32	1.3	62.4	10.4 (5.2-17.1)	**53**	0.8	87.4	16.8 (10.0-25.0)
33	1.4	63.8	11.8 (4.2-22.5)	**54**	0.8	88.2	29.5 (20.7-39.1)
34	1.7	65.5	8.6 (1.9-19.6)	**55**	0.8	89	20.2 (13.2-28.2)
35	1.9	67.4	7.6 (3.6-12.8)	**56**	0.8	89.8	23.8 (15.1-33.7)
36	2.2	69.6	6.9 (2.6-13.1)	**57**	0.8	90.6	21.7 (13.9-30.7)
37	2.2	71.8	11.4 (5.9-18.5)	**58**	0.8	91.4	19.3 (11.6-28.4)
38	2.0	73.8	6.7 (2.9-11.8)	**59**	0.7	92.1	23.0 (14.4-32.8)
39	1.6	75.4	8.2 (3.7-14.2)	**60**	0.6	92.7	22.4 (14.9-31.1)
40	1.2	76.6	7.1 (3.4-11.9)	**61**	0.6	93.3	24.8 (15.2-36.0)
41	0.8	77.4	10.2 (5.1-16.7)	**62**	0.5	93.8	32.3 (22.1-43.6)
42	0.5	77.9	13.2 (8.1-19.3)	**63**	0.5	94.3	31.5 (19.3-45.0)
43	0.5	78.4	13.5 (8.0-20.2)	**64**	0.5	94.8	28.0 (17.0-40.6)
44	0.7	79.1	15.8 (10-22.6)				
45	0.8	79.9	14.2 (8.6-20.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
China							
15	1.1	18.9	2.4 (0.0-9.4)	**60**	1.2	83.6	39.3 (32.6-46.1)
16	1.1	20.0	0.0	**61**	1.1	84.7	43.5 (36.0-51.1)
17	1.1	21.1	0.0	**62**	1.0	85.7	44.6 (37.6-51.8)
18	1.1	22.2	2.0 (0-7.9)	**63**	1.0	86.7	44.4 (36.8-52.1)
19	1.2	23.4	0.0	**64**	1.1	87.8	43.0 (36.1-50.1)
20	1.2	24.6	4.1 (0.8-9.7)	**65**	1.1	88.9	48.8 (39.9-57.8)
21	1.2	25.8	9.3 (3.3-18.0)	**66**	1.1	90.0	47.5 (39.2-55.8)
22	1.2	27.0	7.1 (2.9-13.1)	**67**	1.1	91.1	54.5 (44.9-64.0)
23	1.2	28.2	2.2 (0.2-6.1)	**68**	1.0	92.1	50.7 (42.5-58.9)
24	1.2	29.4	3.9 (0.7-9.8)	**69**	0.9	93.0	53.5 (43.4-63.5)
25	1.3	30.7	8.0 (2.4-16.5)	**70**	0.8	93.8	57.6 (47.3-67.6)
26	1.3	32.0	7.0 (2.7-13.1)	**71**	0.7	94.5	57.7 (47.2-67.9)
27	1.3	33.3	7.9 (2.8-15.2)	**72**	0.6	95.1	56.2 (47.1-65.0)
28	1.4	34.7	5.3 (2.0-10.0)	**73**	0.5	95.6	60.9 (50.0-71.4)
29	1.6	36.3	6.7 (2.1-13.6)	**74**	0.5	96.1	52.7 (44.2-61.1)
30	1.7	38.0	3.9 (1.0-8.6)	**75**	0.5	96.6	56.2 (43.8-68.3)
31	1.8	39.8	10.0 (5.4-15.9)	**76**	0.4	97.0	56.4 (45.7-66.7)
32	1.9	41.7	13.1 (7.1-20.5)	**77**	0.4	97.4	55.4 (42.6-67.8)
33	1.8	43.5	6.5 (1.7-14.2)	**78**	0.3	97.7	58.5 (46.7-69.7)
34	1.7	45.2	11.1 (6.4-17.0)	**79**	0.3	98.0	58.3 (44.6-71.4)
35	1.6	46.8	12.2 (7.2-18.3)	**80**	0.3	98.3	66.7 (53.3-78.8)
36	1.4	48.2	13.0 (8.0-18.9)	**81**	0.3	98.6	68.2 (53.1-81.5)
37	1.3	49.5	7.6 (4.3-11.9)	**82**	0.2	98.8	58.5 (44.3-72.1)
38	1.3	50.8	12.9 (8.8-17.7)	**83**	0.2	99.0	60.0 (40.3-78.2)
39	1.3	52.1	15.2 (10.3-20.8)	**84**	0.2	99.2	46.2 (26.7-66.3)
40	1.3	53.4	15.0 (10.2-20.4)	**85**	0.1	99.3	44.4 (20.4-69.9)
41	1.3	54.7	17.4 (12.1-23.4)	**86**	0.1	99.4	57.9 (32.2-81.5)
42	1.3	56.0	15.8 (10.8-21.7)	**87**	0.1	99.5	76.9 (50.6-95.1)
43	1.4	57.4	24.2 (18.1-30.8)	**88**	0.1	99.6	44.4 (11.5-80.6)
44	1.4	58.8	19.5 (14.9-24.6)	**89**	0.1	99.7	60.0 (6.9-99.6)
45	1.5	60.3	22.7 (7.4-43.3)	**90**	0.1	99.8	75.0 (6.2-92.8)
46	1.6	61.9	26.7 (12.0-44.7)	**91**	<0.05	99.8	66.7 (8.0-65.6)
47	1.7	63.6	47.4 (30.6-64.5)	**92**	<0.05	99.8	100

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
48	1.7	65.3	20.0 (0.8-55.2)	**93**	<0.05	99.8	0.0
49	1.7	67.0	30.0 (4.8-65.0)	**94**	<0.05	99.8	0.0
50	1.8	68.8	34.3 (27.9-41.0)	**95**	<0.05	99.8	100
51	1.8	70.6	31.4 (25.4-37.7)	**96**	<0.05	99.8	0
52	1.7	72.3	31.4 (25.5-37.5)	**98**	<0.05	99.8	0
53	1.7	74.0	33.2 (27.3-39.4)	**99**	<0.05	99.8	100
54	1.6	75.6	30.2 (24.5-36.3)				
55	1.5	77.1	28.9 (22.8-35.5)				
56	1.4	78.5	37.2 (31.6-43.1)				
57	1.4	79.9	33.3 (26.6-40.4)				
58	1.3	81.2	37.7 (31.4-44.1)				
59	1.2	82.4	39.6 (32.5-46.9)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Mongolia							
15	1.4	32.4	8.4 (2.6-17.1)	**46**	1.3	79.3	48.1 (38.8-57.5)
16	1.3	33.7	3.7 (0.5-9.8)	**47**	1.2	80.5	46.8 (36.7-57.0)
17	1.3	35.0	8.4 (2.6-17.1)	**48**	1.2	81.7	55.0 (46.1-63.8)
18	1.3	36.3	4.7 (0.3-13.8)	**49**	1.2	82.9	66.3 (54.9-76.9)
19	1.3	37.6	9.8 (2.0-22.5)	**50**	1.1	84.0	54.9 (42.7-66.7)
20	1.3	38.9	6.7 (2.3-13.2)	**51**	1.1	85.1	59.5 (44.0-74.1)
21	1.3	40.2	9.5 (3.8-17.5)	**52**	1.0	86.1	51.1 (38.0-64.1)
22	1.4	41.6	10.1 (4.0-18.6)	**53**	1.0	87.1	66.3 (53.2-78.2)
23	1.4	43.0	26.7 (14.3-41.3)	**54**	1.0	88.1	56.1 (43.1-68.7)
24	1.5	44.5	15.8 (7.9-25.9)	**55**	0.9	89.0	50.4 (35.6-65.2)
25	1.5	46.0	10.1 (5.4-16.0)	**56**	0.9	89.9	62.5 (49.2-74.8)
26	1.6	47.6	17.1 (6.8-30.8)	**57**	0.9	90.8	66.1 (53.3-77.8)
27	1.6	49.2	17.2 (9.8-26.2)	**58**	0.9	91.7	68.0 (47.9-85.1)
28	1.7	50.9	17.0 (10.5-24.8)	**59**	0.8	92.5	65.4 (49.5-79.8)
29	1.8	52.7	18.9 (11.9-27.2)	**60**	0.7	93.2	49.3 (24.1-74.6)
30	1.9	54.6	26.4 (17.5-36.3)	**61**	0.6	93.8	72.1 (56.5-85.3)
31	1.9	56.5	23.3 (16.4-31.0)	**62**	0.6	94.4	68.2 (50.3-83.6)
32	2.0	58.5	29.0 (19.8-39.3)	**63**	0.5	94.9	80.3 (62.6-93.3)
33	1.9	60.4	25.1 (16.3-35.1)	**64**	0.5	95.4	60.8 (43.1-77.2)
34	1.8	62.2	23.3 (14.6-33.4)	**65**	0.5	95.9	66.7 (84.2-0.5)
35	1.7	63.9	19.7 (13.4-27.0)				
36	1.6	65.5	28.4 (18.0-40.1)				
37	1.5	67.0	33.6 (24.7-43.1)				
38	1.5	68.5	22.5 (14.6-31.6)				
39	1.5	70.0	30.8 (22.1-40.2)				
40	1.4	71.4	43.6 (34.4-52.9)				
41	1.4	72.8	29.1 (19.8-39.4)				
42	1.3	74.1	29.5 (20.5-39.5)				
43	1.3	75.4	45.3 (35.9-54.8)				
44	1.3	76.7	44.3 (33.8-55.2)				
45	1.3	78.0	34.4 (25.0-44.5)				

Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)	Age (years)	% of population	Cumulative percentage of population	Hypertension prevalence at age, % (95% CI)
Vanuatu							
25	1.6	58.9	12.4 (8.0-17.6)	46	1.0	85.6	35.6 (25.8-46.1)
26	1.6	60.5	11.4 (6.0-18.2)	47	1.0	86.6	28.1 (19.4-37.8)
27	1.6	62.1	12.6 (7.4-18.9)	48	1.0	87.6	30.3 (21.8-39.4)
28	1.6	63.7	16.1 (10.3-23.0)	49	0.7	88.3	40.4 (28.7-52.7)
29	1.6	65.3	22.2 (14.6-30.7)	50	0.7	89.0	46.9 (36.5-57.4)
30	1.6	66.9	18.5 (11.1-27.4)	51	0.7	89.7	39.3 (26.8-52.5)
31	1.6	68.5	14.3 (8.3-21.6)	52	0.7	90.4	42.4 (32.5-52.6)
32	1.6	70.1	15.0 (9.0-22.2)	53	0.7	91.1	40.7 (29.1-52.9)
33	1.3	71.4	15.6 (8.7-24.1)	54	0.7	91.8	54.0 (40.5-67.2)
34	1.3	72.7	22.8 (15.2-31.5)	55	0.7	92.5	47.5 (32.4-62.7)
35	1.3	74.0	23.9 (16.8-31.8)	56	0.7	93.2	46.2 (31.4-61.5)
36	1.3	75.3	20.9 (14.9-27.6)	57	0.7	93.9	52.4 (36.8-67.8)
37	1.3	76.6	20.8 (14.1-28.4)	58	0.7	94.6	48.4 (35.1-61.9)
38	1.0	77.6	25.0 (17.9-32.9)	59	0.7	95.3	62.8 (49.5-75.2)
39	1.0	78.6	26.4 (19.6-33.9)	60	0.7	96.0	56.0 (42.0-69.4)
40	1.0	79.6	30.1 (22.2-38.6)	61	0.3	96.3	53.1 (35.1-70.8)
41	1.0	80.6	18.8 (12.1-26.7)	62	0.3	96.6	64.6 (49.1-78.6)
42	1.0	81.6	38.0 (30.0-46.4)	63	0.3	96.9	61.8 (47.1-75.5)
43	1.0	82.6	37.8 (28.5-47.5)	64	0.3	97.2	59.4 (48.4-70.0)
44	1.0	83.6	30.3 (18.5-43.6)				
45	1.0	84.6	35.6 (26.2-45.7)				

Figure S1. Flowchart for inclusion of STEPS surveys.

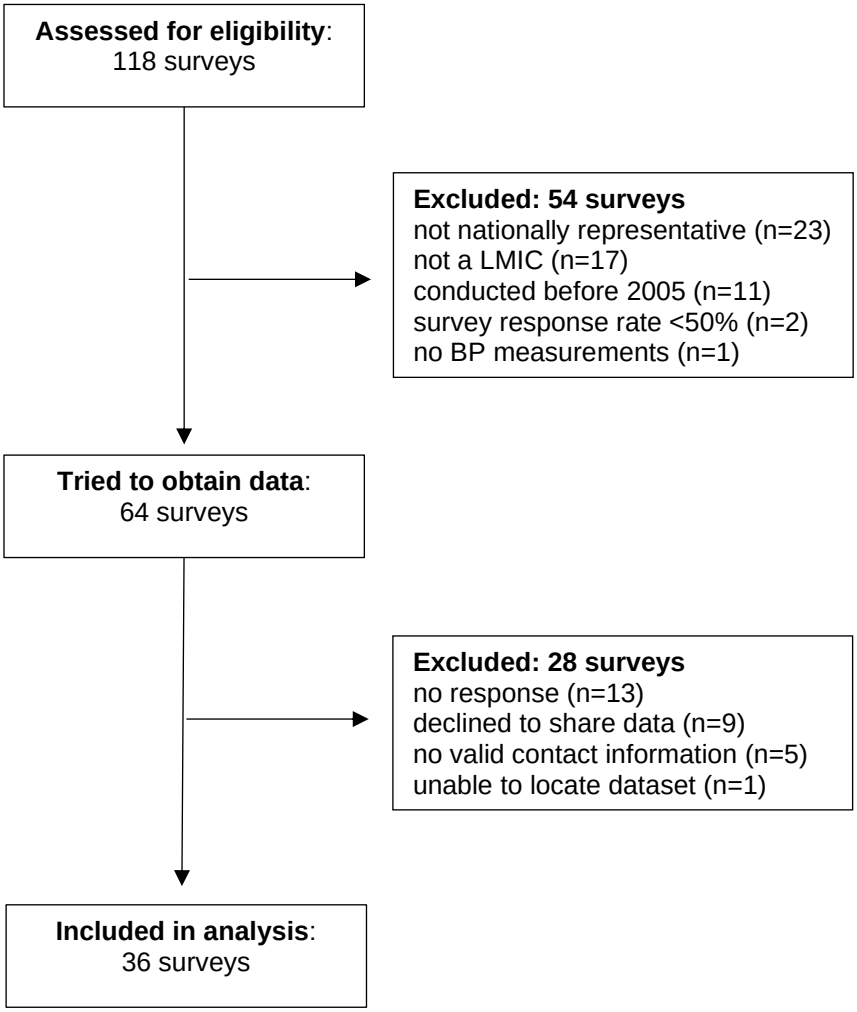


Figure S2. Flowchart for inclusion of non-STEPS surveys

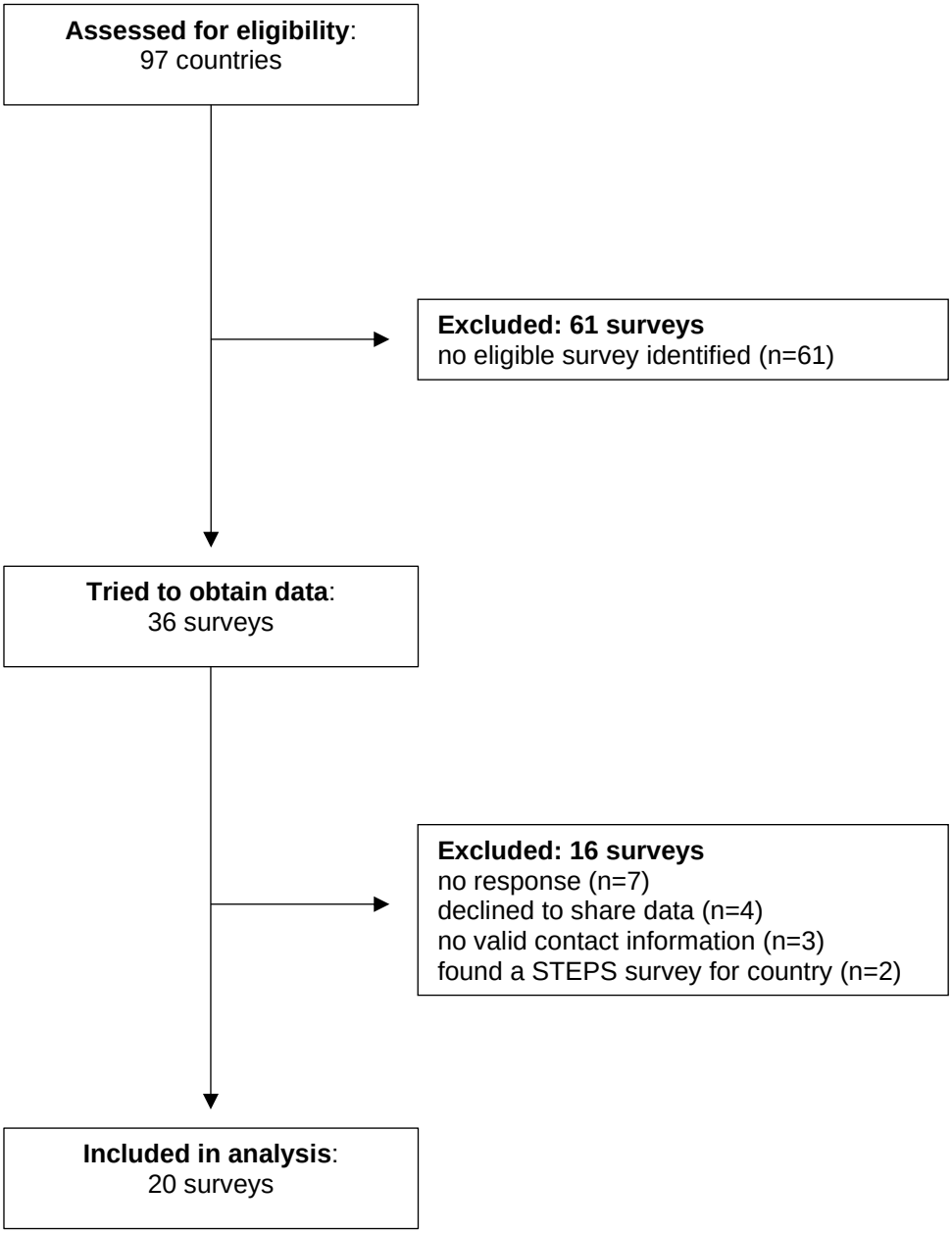
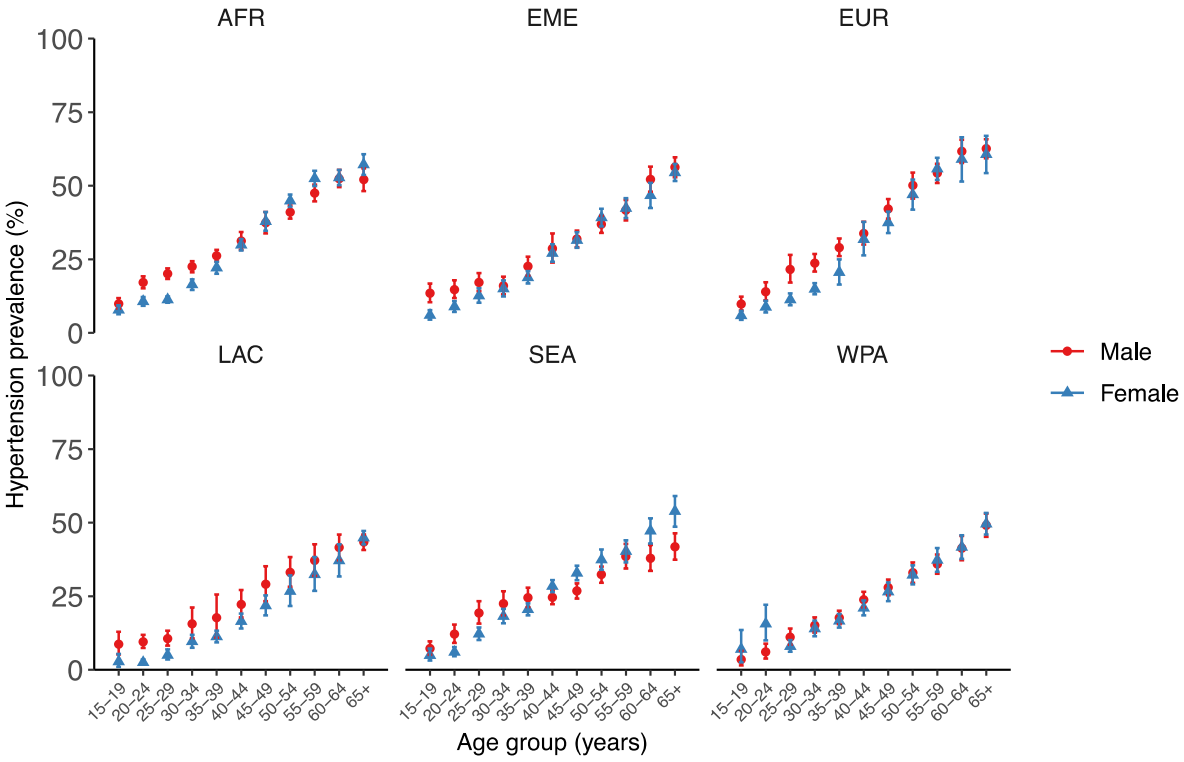


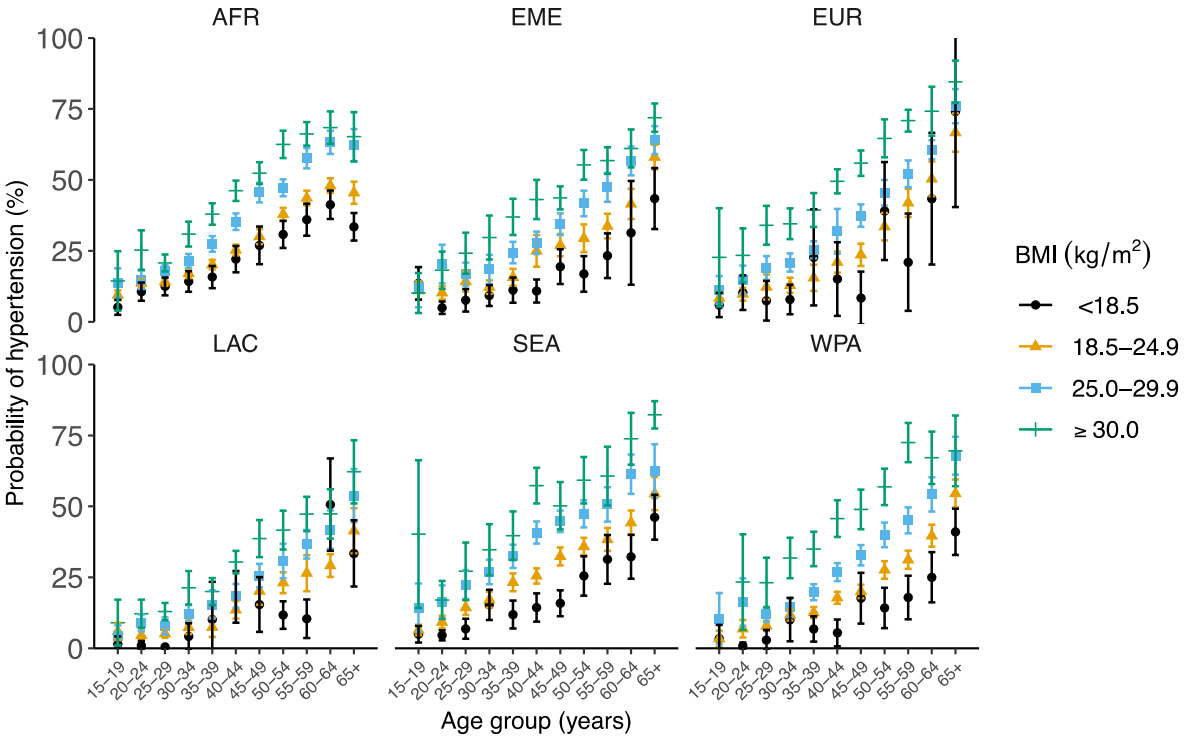
Figure S3. Hypertension prevalence, defined by systolic BP ≥ 140mmHg, or diastolic BP ≥ 90 mmHg, by five-year age group, sex, and world regions *



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* All countries were weighted equally for this analysis.

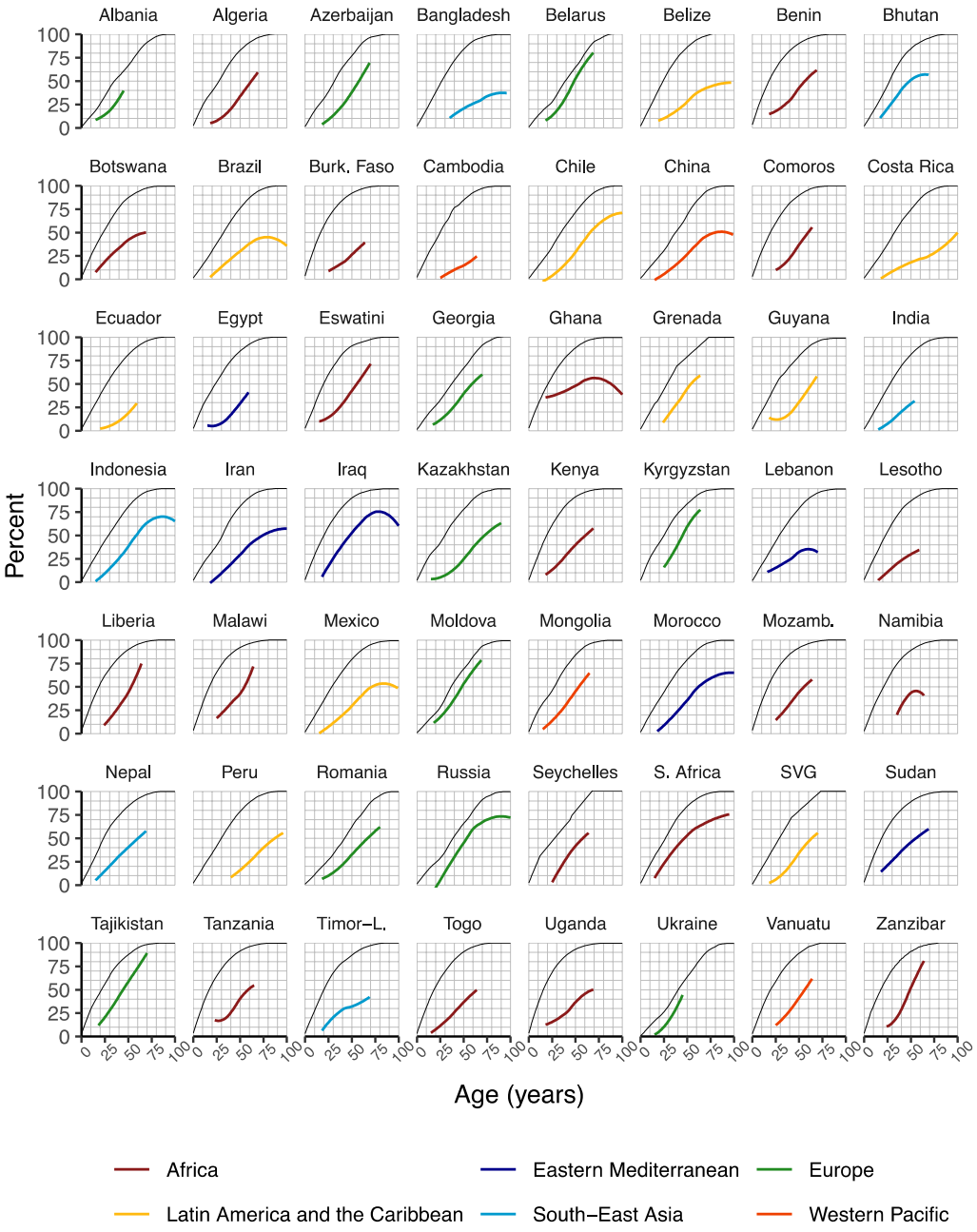
Figure S4. Average adjusted predictions of hypertension, defined by systolic BP ≥140 mmHg, or diastolic BP ≥90 mmHg, by five-year age group, BMI group, and world regions *,†,‡,§



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* Confidence intervals were computed using the delta method.
† All countries contributed equally to the analysis.
‡ These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI group as independent variables.
§ For WPA, in the age group 15-19 years and BMI group ≥ 30.0 kg/m^2, there is no participant with hypertension according to the definition of systolic BP ≥140 mmHg, or diastolic BP ≥90 mmHg.

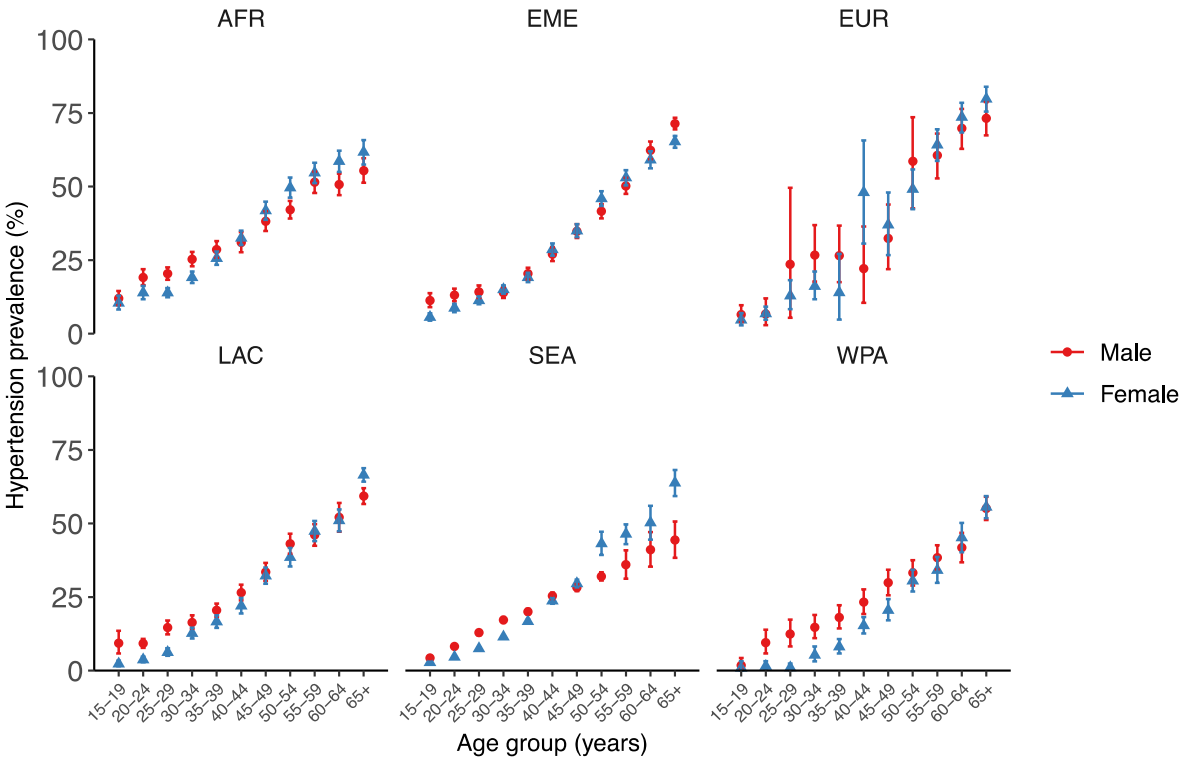
Figure S5. Smoothed age-specific prevalence of hypertension, defined by systolic BP ≥140 mmHg, or diastolic BP ≥90 mmHg, by country *,†



Abbreviation: Burk. Faso=Burkina Faso; Mozamb.=Mozambique; S. Africa=South Africa; SVG=St. Vincent and the Grenadines; Timor-L.=Timor-Leste

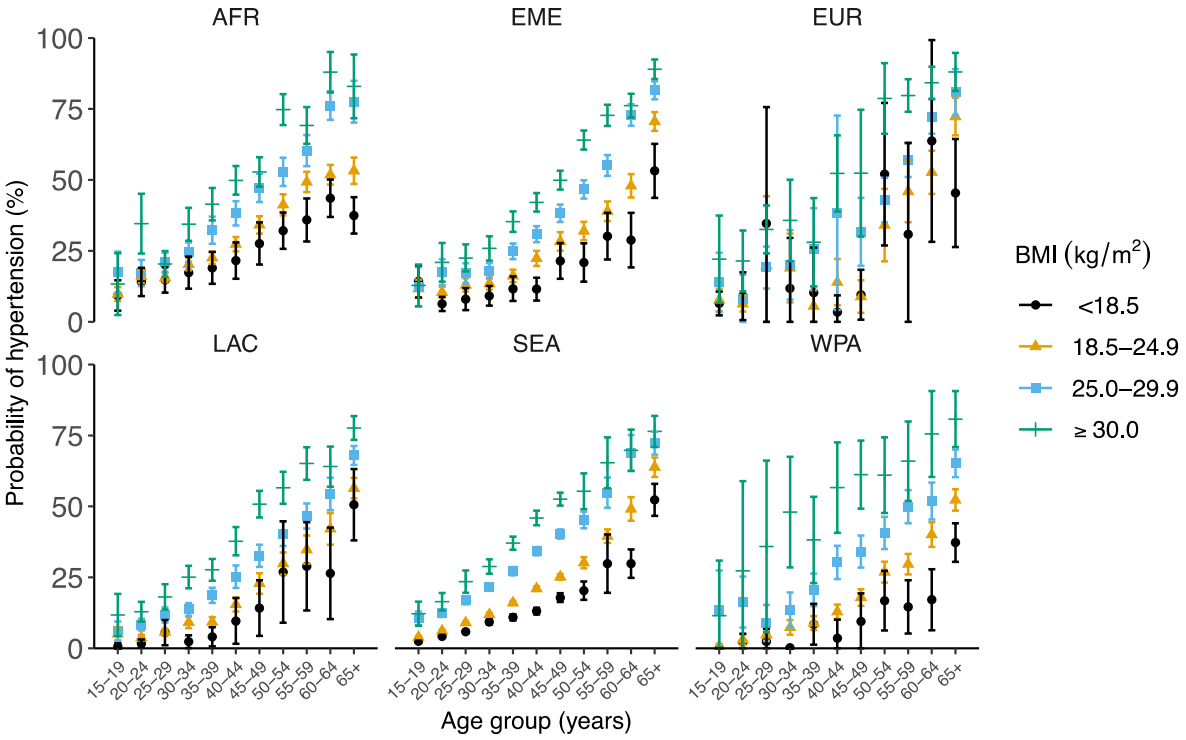
* The grey curve represents the percentage of a country's population that is under the given age.
† The curve for hypertension was plotted using LOESS regression with a span of 1.0.

Figure S6. Hypertension prevalence by five-year age group, sex, and world regions with countries weighted proportionate to their population size



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

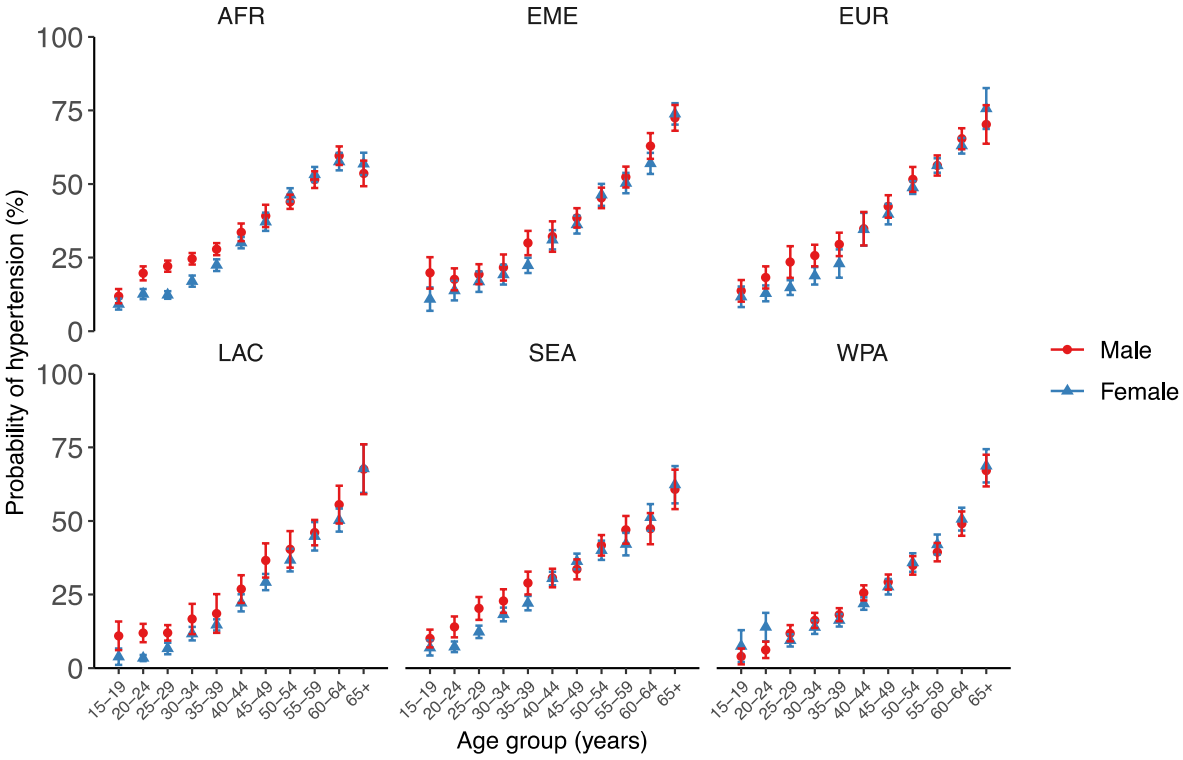
Figure S7. Average adjusted predictions of hypertension by five-year age group, BMI group, and world regions, with countries weighted proportionate to their population size *,†



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* Confidence intervals were computed using the delta method.
† These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI group as independent variables.

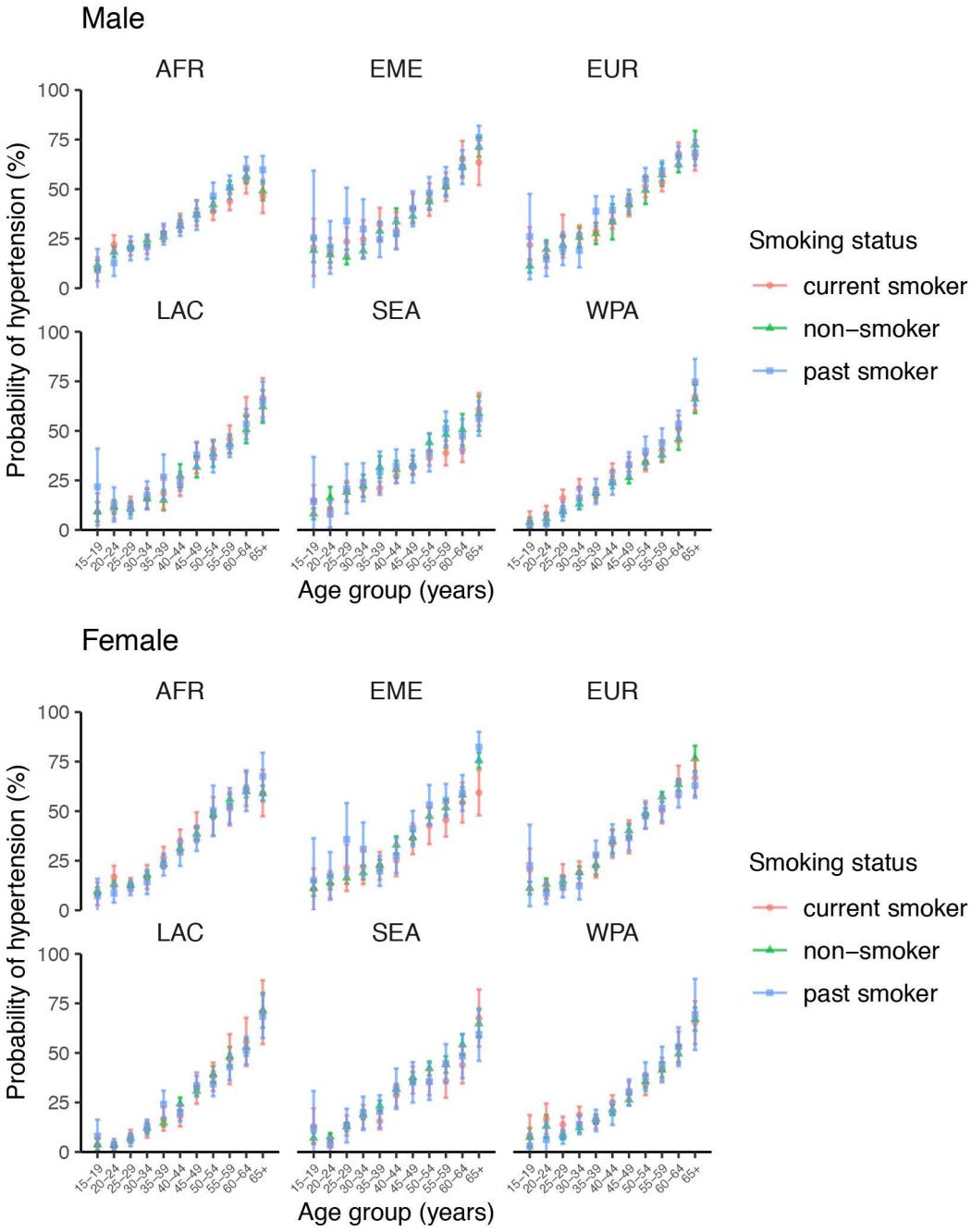
Figure S8. Average adjusted predictions of hypertension by five-year age group, sex, and world regions *,†, ‡



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* Confidence intervals were computed using the delta method.
† All countries were weighted equally for this analysis.
‡ These average adjusted predictions were obtained from Poisson regressions that included age group, sex, BMI group, smoking status, a binary variable for each country, and an interaction term between age group and sex as independent variables.

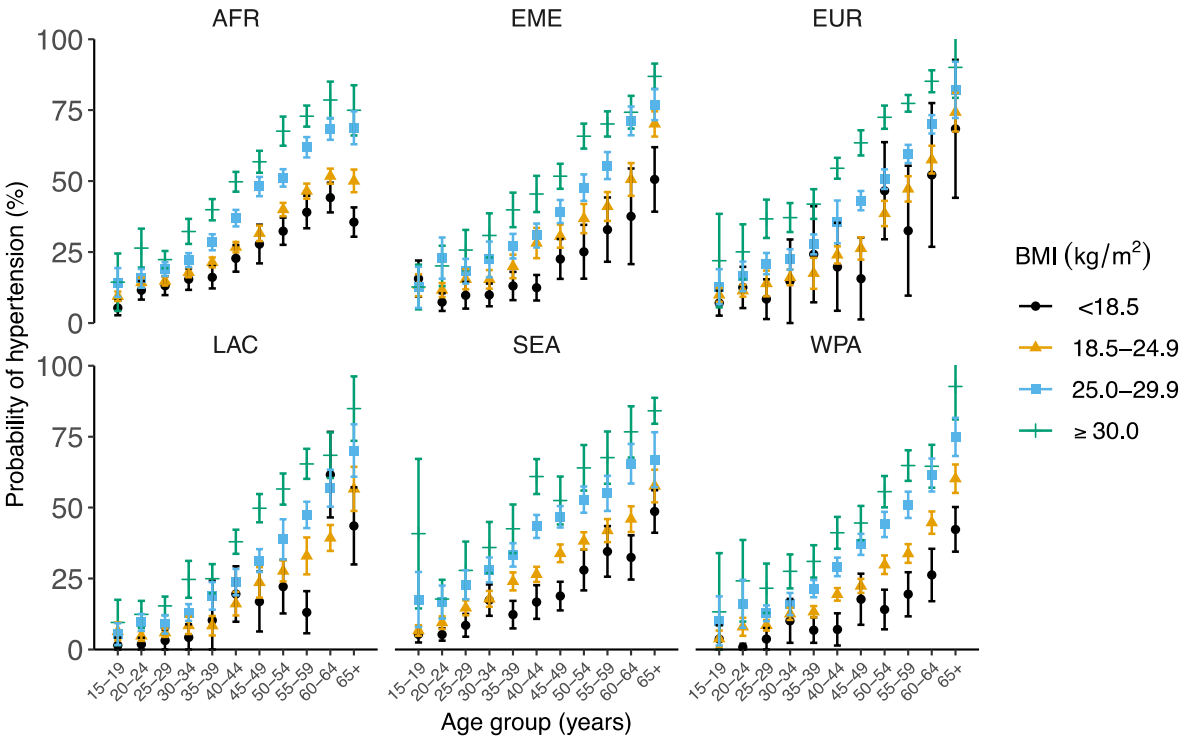
Figure S9. Average adjusted predictions of hypertension by five-year age group, sex, world regions, and smoking status *,†, ‡, §



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* Confidence intervals were computed using the delta method.
† We calculated predicted probabilities using marginal effects for each of the age groups in each of the regions for each of the smoking categories.
‡ All countries were weighted equally for this analysis.
§ These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and smoking status as independent variables.

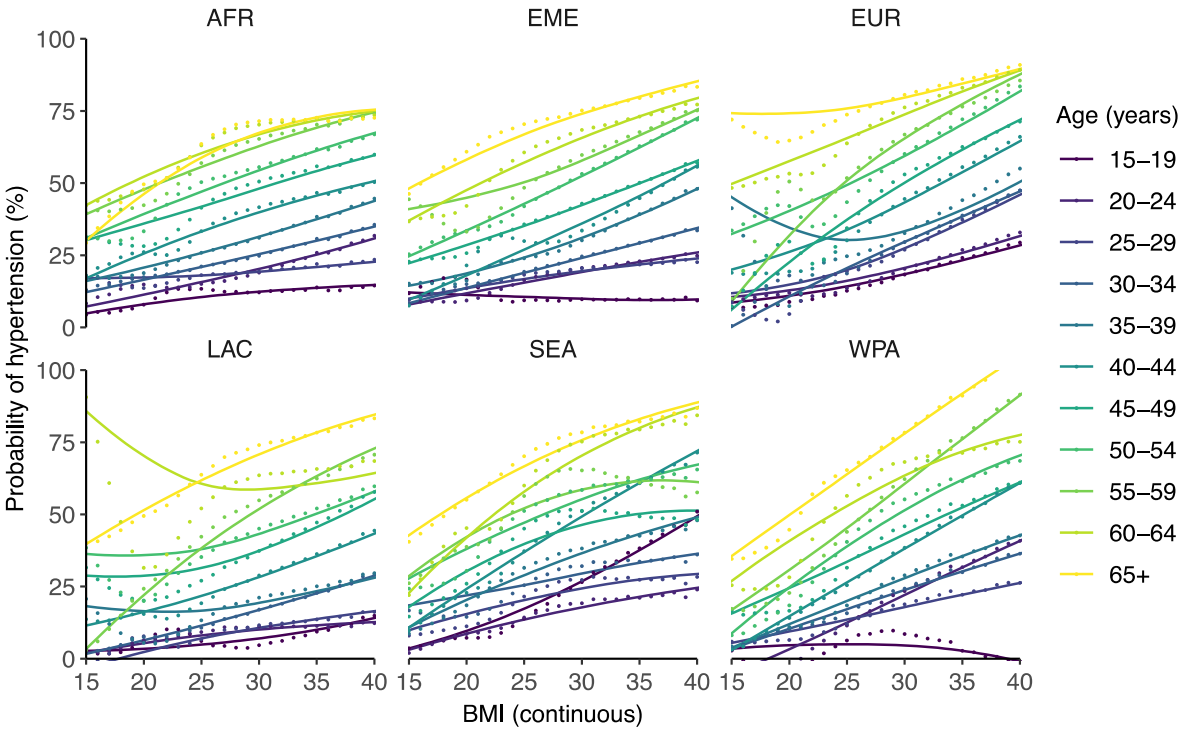
Figure S10. Average adjusted predictions of hypertension by five-year age group, BMI group, and world regions *,†, ‡



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* Confidence intervals were computed using the delta method.
† All countries were weighted equally for this analysis.
‡ These average adjusted predictions were obtained from Poisson regressions that included age group, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI group as independent variables.

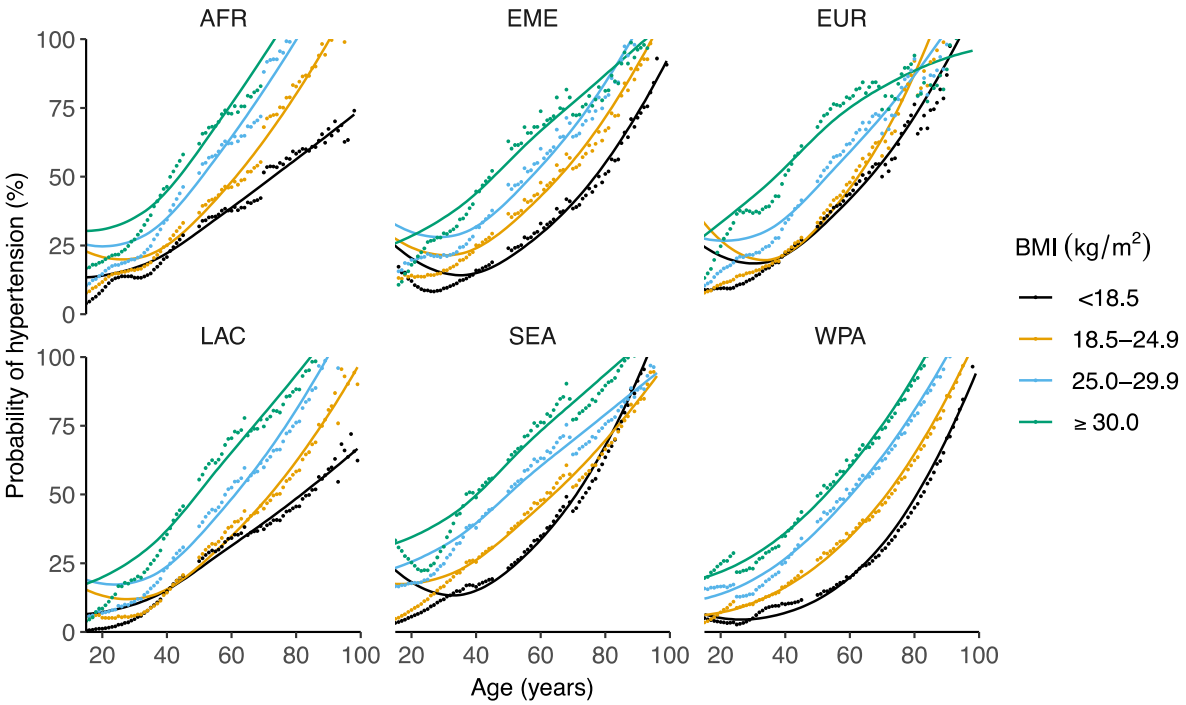
Figure S11. Average adjusted predictions of hypertension by five-year age group, continuous BMI, and world regions *,†, ‡



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* All countries contributed equally to the analysis.
† The curve for hypertension was plotted using LOESS regression with a span of 1.0.
‡ These average adjusted predictions were obtained from Poisson regressions that included age group, BMI, sex, smoking status, a binary variable for each country, and an interaction term between age group and BMI as independent variables.

Figure S12. Average adjusted predictions of hypertension by BMI group, continuous age, and world regions *,†, ‡



Abbreviations: AFR=Africa; EME=Eastern Mediterranean; EUR=Europe; LAC=Latin America and the Caribbean; SEA=South-East Asia; WPA=Western Pacific

* All countries contributed equally to the analysis.
† The curve for hypertension was plotted using LOESS regression with a span of 1.4.
‡ These average adjusted predictions were obtained from Poisson regressions that included age, BMI group, sex, smoking status, a binary variable for each country, and an interaction term between age and BMI group as independent variables.