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The Emerging Global Health Crisis
Noncommunicable Diseases in Low- and Middle-Income Countries

Annex to the Task Force Report
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GBD Study and Its Methodology .............................................................................................................. 1

IHME Global Health Financing Study and Methodology .......................................................................... 7

Projection and Decomposition Methodology ............................................................................................ 8

Divergence Analysis Methodology ........................................................................................................... 9

World Bank 2013 Income Classifications ............................................................................................... 10

World Bank 2013 Regions ......................................................................................................................... 12

Priority Country Case Studies .................................................................................................................. 15
GBD Study and Its Methodology

The GBD Approach

The Institute for Health Metrics and Evaluation’s (IHME) Global Burden of Disease (GBD) study is a systematic, scientific, and ongoing effort by a worldwide research collaborative to quantify the comparative magnitude of health loss to diseases, injuries, and risk factors by age, sex, and geography over time. It is the most comprehensive effort to date to measure epidemiological levels and trends around the world, and its most recent iteration measures the impact of hundreds of diseases, injuries, and risk factors in 187 countries. IMHE is based at the University of Washington and is the coordinating center for this effort.

The principle guiding the GBD approach is that the best estimates can only be generated by analyzing all available sources of information in an area and correcting for problems with the data. The results are presented in terms of disability-adjusted life years (DALYs), a time-based measure that combines years of life lost due to premature mortality (YLLs) and years lived with a disability (YLDs), metrics that were developed specifically to assess the burden of disease.

Who GBD Helps

The GBD study is creating a global public good that decision-makers will use to design better health systems and improve public health policy. More than a research study, the GBD approach is a platform for comparative assessment that provides a set of measurement tools countries can use to track changes in population health, identify successes, and address health challenges.

GBD aims to bring new attention to a broader range of illnesses and conditions that are having an effect on health worldwide and to help guide new target-setting exercises for health improvement. It also provides a framework and knowledge that can advance efforts to develop and implement truly effective health interventions.

More information about IHME’s partnerships with research institutions, country governments, nongovernmental organizations (NGOs), and donors can be found at http://www.healthdata.org/about/collaborators.

The Future of GBD

IHME intends to grow the GBD collaborative by reaching out to researchers who are advancing the field of health metrics in countries around the world. Similarly, IHME and its collaborators hope to expand the list of diseases, injuries, and risk factors included in GBD and routinely update the GBD estimates. Continual updates will ensure that individual countries and the international community can have access to high-quality estimates in the timeliest fashion.

Through sound measurement, GBD can continue to provide the foundational evidence that will lead to improved population health.
Methods

The Analytical Strategy of GBD

The GBD approach contains eighteen distinct components, as outlined in Figure A1. The components of GBD are interconnected. For example, when new data is incorporated into the age-specific mortality rates analysis (component 2), other dependent components must also be updated, such as rescaling deaths for each cause (5), healthy life expectancy, or HALE (12), YLLs (13), and estimation of YLLs attributable to each risk factor (18). The inner workings of the vital components are briefly described in this Annex, and more detailed descriptions of each component are included in the published articles.

Estimating Age- and Sex-Specific Mortality

Researchers identified sources of under-five and adult mortality data from vital and sample registration systems as well as from surveys that ask mothers about live births and deaths of their children and ask people about siblings and their survival. Researchers processed that data to address biases and estimated the probability of death between ages zero and five and ages fifteen and sixty using statistical models. Finally, researchers used these probability estimates as well as a model life table system to estimate age-specific mortality rates by sex between 1970 and 2010.

Figure A1: The Eighteen Components of GBD and Their Interrelations


Estimating Years Lost Due to Premature Death

Researchers compiled all available data on causes of death from 187 countries. Information about causes of death was derived from vital registration systems, mortality surveillance systems, censuses, surveys, hospital records, police records, mortuaries, and verbal autopsies. Verbal autopsies are surveys
that collect information from individuals familiar with the deceased about the signs and symptoms that the person had prior to death. GBD 2010 researchers closely examined the completeness of the data. For those countries whose cause-of-death data was incomplete, researchers used statistical techniques to compensate for the inherent biases. They also standardized causes of death across data sources by mapping different versions of the International Classification of Diseases coding system to the GBD cause list.

Next, researchers examined the accuracy of the data, scouring rows and rows for “garbage codes,” or misclassifications of death. Researchers identified thousands of these codes. Some garbage codes are instances in which the cause listed cannot possibly lead to death. Examples found in records include “abdominal rigidity,” “senility,” and “yellow nail syndrome.” To correct these, researchers drew on evidence from medical literature, expert judgment, and statistical techniques to reassign each of these to more probable causes of death.

After addressing data-quality issues, researchers used a variety of statistical models to determine the number of deaths from each cause. This approach, termed “cause of death ensemble modeling” or CODEm, was designed based on statistical techniques called “ensemble modeling.” Ensemble modeling was made famous by the recipients of the 2009 Netflix Prize, BellKor’s Pragmatic Chaos, who engineered the best algorithm to predict how much a person would like a film by taking into account their movie preferences.

To ensure that the number of deaths from each cause did not exceed the total number of deaths estimated in a separate GBD demographic analysis, researchers applied a correction technique called CoDCorrect, which makes certain that estimates of the number of deaths from each cause do not add up to more than 100 percent of deaths in a given year.

After estimating the number of deaths from each of the 235 fatal outcomes included in the GBD cause list, researchers then calculated YLLs. For every death from a particular cause, researchers estimated the number of years lost based on the highest life expectancy in the deceased’s age group. For example, if a twenty-year-old male died in a car accident in South Africa in 2010, he has sixty-six years of life lost—that is, the highest remaining life expectancy for twenty-year-olds (currently held by Japanese females).
As shown in Figure A2, YLLs place more weight on the causes of death that occur in younger age groups than do rankings of the leading causes of death. For example, malaria represents a greater percentage of total YLLs than total deaths because it is a leading killer of children under five. Ischemic heart disease, by contrast, accounts for a smaller percentage of total YLLs than total deaths because it primarily kills older people.

**Estimating Years Lived with Disability**
Researchers estimated the prevalence of each sequela using different sources of data, including government reports of cases of infectious diseases; data from population-based disease registries for conditions such as cancers and chronic kidney diseases; antenatal clinic data; hospital discharge data; data from outpatient facilities; interview questions; and direct measurements of hearing, vision, and lung function testing from surveys and other sources.

Confronted with the challenge of data gaps in many regions and for numerous types of sequelae, the researchers developed a statistical modeling tool called DisMod-MR (for disease modeling–metaregression) to estimate prevalence using available data on incidence, prevalence, remission, duration, and extra risk of mortality due to the disease.

Researchers estimated disability weights using data collected from almost fourteen thousand respondents via household surveys in Bangladesh, Indonesia, Peru, Tanzania, and the United States. Disability weights measure the severity of different sequelae that result from disease and injury. Data were also used from an Internet survey of more than sixteen thousand people. GBD researchers presented different lay definitions of sequelae grouped into 220 unique health states to survey respondents, who were then asked to rate the severity of the different health states. The results were
similar across all surveys, despite cultural and socioeconomic differences. Respondents consistently placed health states such as mild hearing loss and long-term treated fractures at the low end of the severity scale, and they ranked acute schizophrenia and severe multiple sclerosis as very severe.

Finally, years lived with disability, or YLDs, are calculated as prevalence of a sequela multiplied by the disability weight for that sequela. The number of years lived with disability for a specific disease or injury are calculated as the sum of the YLDs from each sequela arising from that cause.

**Estimating Disability-Adjusted Life Years**
DALYs are a powerful tool for setting priorities because they measure disease burden from both nonfatal and fatal conditions. DALYs also give more weight to death at younger ages, as illustrated by the case of neonatal encephalopathy. In contrast, stroke causes a larger percentage of total deaths than DALYs because it primarily affects older people.

**Estimating DALYs Attributable to Risk Factors**
To estimate the number of healthy years lost, or DALYs, attributable to potentially avoidable risk factors, researchers collected detailed data on exposure to different risk factors. The study used data from sources such as satellite data on air pollution, breastfeeding data from population surveys, and blood- and bone-lead levels from medical examination surveys and epidemiological surveys.
Then, through systematic reviews of epidemiological studies, researchers collected data on the effects of risk factors on disease outcomes.

All risk factors analyzed met common criteria in four areas:

- the likely importance of a risk factor for policymaking or disease burden
- availability of sufficient data to estimate exposure to a particular risk factor
- rigorous scientific evidence that specific risk factors cause certain diseases and injuries
- scientific findings about the effects of different risk factors that are relevant for the general population

To calculate the number of DALYs attributable to different risk factors, researchers compared the disease burden in a group exposed to a risk factor to the disease burden in a group that had zero exposure to that risk factor. When subjects with zero exposure were impossible to find—for example, in the case of high blood pressure—researchers established a level of minimum exposure that leads to the best health outcomes.
IHME Global Health Financing Study and Methodology

Development assistance for health (DAH) is defined as all financial and in-kind contributions from global health channels that aim to improve health in low- and middle-income countries. Funds for water and sanitation, as well as humanitarian aid, are not included in IHME’s analysis. Financial contributions include all disbursements of funds as health grants and loans. IHME uses a framework that identifies the entities involved in different steps of the transfer of DAH from source to recipient countries. In the simplest cases, DAH originates from a source, such as a national treasury; is transferred to an intermediary channel, such as a bilateral aid agency; and finally is moved to an implementing agency, such as a national ministry of health. IHME tracks DAH by focusing on the intermediary channels. Data sources include the Organization for Economic Cooperation and Development’s Development Assistance Committee (OECD-DAC) database, the Creditor Reporting System (CRS), government documents, annual reports, audited financial statements, datasets from public and private organizations, the U.S. Agency for International Development (USAID) Report of Voluntary Agencies (VolAg), tax forms, and personal correspondence with organizations that provided DAH from 1990 to 2013. To identify the amount of DAH allocated to different health focus areas, IHME uses project codes, titles, and descriptions reported by channels of funding, among other sources. For many channels, reporting time lags for the most recent years cause IHME to use predicted values for DAH, and due to the lack of more detailed disaggregated data, estimates are provided only by channel. U.S. bilateral DAH includes funds from USAID, the Department of Agriculture, Department of Defense, Department of Health and Human Services, Inter-American Development Foundation, Department of Labor, Millennium Challenge Cooperation, Peace Corps, Department of State, and Trade and Development Agency. IHME’s estimates generally account for transfers between channels to avoid double counting; however; to give a more complete picture of U.S. spending, the U.S. data provided includes transfers from U.S. bilateral agencies to NGOs and U.S. foundations.
Projection and Decomposition Methodology

The age-sex specific mortality rate was calculated for each cause for 1990 and 2013. The annualized percentage change in this rate over time was calculated for each age-sex-cause category. The mortality projections then were based on this constant rate of change and the estimated mortality rate each year from 2014 through 2025. To calculate the estimated number of deaths, these estimated mortality rates were multiplied by the age-sex population estimates for each country and year based on the United Nations’ age-sex population projections for those countries. This exercise was done at both the individual cause-of-death level and for aggregated cause-of-death categories such as “all NCDs” or “communicable diseases.”

The counterfactual was estimated assuming that in 2014, each priority country adopts the annualized percentage change estimated for high-income countries. This forces a reduction in mortality on each of the countries and leads to a counterfactual that estimates the gains that could be achieved if the forty-four priority countries were able to make progress in reducing the mortality rates at the same rate that the high-income countries have been between 2000 and 2013.

The change in the number of premature deaths between 2025 and 2013 was decomposed into three underlying determinants, estimated at the country-year level. The three underlying determinants are: population growth, population aging (change in population age structure), and epidemiological change (change in mortality rates). The observed change in deaths is the sum of these three determinants. Epidemiological change was measured as the number of deaths gained (or lost) due to changing mortality rates. The combined effect of population growth and population aging was measured as the difference between estimated total change and change due to shifting epidemiology.
Divergence Analysis Methodology

For this exercise, only low- and lower-middle-income countries were used, because they have mortality rates comparable to the historical high-income-country reference rates being assessed. Prevalence and mortality estimates were taken from the Global Burden of Disease 2013 study, and gross domestic product (GDP) per capita data was obtained from IHME (Spencer L. James et al, Developing a comprehensive time series of GDP per capita for 210 countries from 1950 to 2015 Population Health Metrics 2012, 10:12).

Three independent nonlinear models were estimated relating income (GDP per capita) to child mortality (estimated as the probability of dying before the age of 5 conditional on a live birth, or 5q0), adult male mortality, and adult female mortality (estimated as the probability of dying between the ages of 15 and 60, or 45q15) for each cross section of data. These estimates were done for each year of available data, at five-year intervals, from 1950 to 2010. For the years after 1985, the mortality rates controlled for HIV prevalence. A locally weighted scatterplot smoothing (LOWESS) regression was used to find the association between GDP per capita and adjusted mortality rates, using locally weighted smoothing and a tri-cubic weight function.

For each regression (run across all low- and middle-income countries for a specific mortality rate and specific year), the income associated with a fixed reference mortality rate was identified. The reference mortality rates are the median mortality rates among high-income countries in 1950. Thus, this estimate is the critical income necessary to achieve each reference rate at that specific moment in time. The reference child and adult male/adult female mortality rates are 93 per 1,000 births and 242/203 per 1,000 fifteen-year-olds, respectively.
World Bank 2013 Income Classifications

### Low-income countries

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China  Malaysia  Tunisia
Colombia  Maldives  Turkey
Costa Rica  Marshall Islands  Turkmenistan
Cuba  Mauritius  Tuvalu
Dominica  Mexico  Venezuela
Dominican Republic  Montenegro
Ecuador  Namibia

**High-income countries**

Andorra  Germany  Oman
Antigua and Barbuda  Greece  Poland
Aruba  Greenland  Portugal
Australia  Guam  Puerto Rico
Austria  Hong Kong  Qatar
The Bahamas  Iceland  Russia
Bahrain  Ireland  Saint Kitts and Nevis
Barbados  Isle of Man  Saint Martin
Belgium  Israel  San Marino
Bermuda  Italy  Saudi Arabia
Brunei  Japan  Singapore
Canada  Kuwait  Slovak
Cayman Islands  Latvia  Slovenia
Channel Islands  Liechtenstein  South Korea
Chile  Lithuania  Spain
Croatia  Luxembourg  Sweden
Cyprus  Macao  Switzerland
Czech Republic  Malta  Trinidad and Tobago
Denmark  Monaco  Turks and Caicos Islands
Equatorial Guinea  Netherlands  United Arab Emirates
Estonia  Netherlands Antilles  United Kingdom
Faroe Islands  New Caledonia  United States
Finland  New Zealand  Uruguay
France  Northern Mariana Islands  U.S. Virgin Islands
French Polynesia  Norway
### World Bank 2013 Regions

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**Latin America and Caribbean**

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Priority Country Case Studies

The countries assessed in the following case studies are the twenty-nine designated as priorities under the U.S. Global Health Initiative (GHI), as well as twenty other countries that received more than $5 million in U.S. health aid in fiscal year (FY) 2013. All the countries that GHI designated as priorities also received more than $5 million in U.S. global health assistance except for Georgia, which received $3.6 million. South Sudan received more than $5 million in U.S. health aid, but it is not included among the country case studies because IHME did not have country-level burden-of-disease data for South Sudan at time of publication.

The data sources for the country case studies are as follows. The income group data reflects the 2013 World Bank classification. The 2013 total population estimates and the population proportion between ages fifteen and fifty-nine are reported from the United Nations Population Division World Population Prospects, 2012 revision. The percentage of the total population living in urban areas is based on the 2013 World Bank urban population indicator. U.S. global health aid in FY 2013 is reported from the U.S. Foreign Assistance Dashboard and uses its classification of health expenditures, which consist of investments in HIV, tuberculosis, malaria, maternal and child health, family planning and reproductive health, nutrition, and water.

U.S. aid for NCDs from 2000 to 2011 is an estimate of development assistance for health (DAH) allocated to NCDs, obtained from the Financing Global Health 2013: Transition in an Age of Austerity DAH database. DAH is defined as financial and in-kind contributions primarily intended for the health sector. The main data source for bilateral U.S. DAH is the OECD Creditor Reporting System. DAH for NCDs is identified using sector codes, purpose codes, and keyword searches on all descriptive fields of the project-level data. Total NCD DAH is the sum of DAH allocated for NCDs from 2000 to 2011 that was channeled through the United States to each recipient country (in constant 2011 U.S. dollars) and includes DAH from the U.S. government that was channeled directly to recipient countries and DAH from the U.S. government that was channeled to recipient countries via NGOs.
Forty-Nine Priority Countries

Data Source: Institute for Health Metrics and Evaluation
Afghanistan

Total population: 30,552,000
Income group: Low
U.S. global health aid FY 2013: $180,377,000

Percentage of population living in urban areas: 24.2%
Population proportion between ages 15 and 59: 49.5%
U.S. aid for NCDs from 2000 to 2011: $113,722

Data Source: Institute for Health Metrics and Evaluation
Angola

Total population: 21,472,000
Income group: Upper-middle
U.S. global health aid FY 2013: $45,557,000

Percentage of population living in urban areas: 60.7%
Population proportion between ages 15 and 59: 48.6%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Bangladesh

Total population: 156,595,000
Income group: Low
U.S. global health aid FY 2013: $74,483,000*

Percentage of population living in urban areas: 29.4%
Population proportion between ages 15 and 59: 63.0%
U.S. aid for NCDs from 2000 to 2011: $10,789

*Designated as a U.S. Global Health Initiative (GHI) priority country

Data Source: Institute for Health Metrics and Evaluation
Benin

Total population: 10,323,000
Income group: Low
U.S. global health aid FY 2013: $23,466,000*

Percentage of population living in urban areas: 46.2%
Population proportion between ages 15 and 59: 52.7%
U.S. aid for NCDs from 2000 to 2011: $54,725

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Botswana

Total population: 2,021,000
Income group: Upper-middle
U.S. global health aid FY 2013: $54,269,000*

Percentage of population living in urban areas: 62.9%
Population proportion between ages 15 and 59: 60.6%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Burkina Faso

Total population: 16,935,000
Income group: Low
U.S. global health aid FY 2013: $9,421,000

Percentage of population living in urban areas: 28.2%
Population proportion between ages 15 and 59: 50.6%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Burundi

Total population: 10,163,000  
Income group: Low  
U.S. global health aid FY 2013: $33,100,000*

Percentage of population living in urban areas: 11.5%  
Population proportion between ages 15 and 59: 51.5%  
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country  
Data Source: Institute for Health Metrics and Evaluation
Cambodia

Total population: 15,135,000
Income group: Low
U.S. global health aid FY 2013: $37,914,000*

Percentage of population living in urban areas: 20.4%
Population proportion between ages 15 and 59: 61.0%
U.S. aid for NCDs from 2000 to 2011: $1,982,699

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Cameroon

Total population: 22,254,000
Income group: Lower-middle
U.S. global health aid FY 2013: $25,325,000

Percentage of population living in urban areas: 53.2%
Population proportion between ages 15 and 59: 52.2%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Côte d’Ivoire

Total population: 20,316,000
Income group: Lower-middle
U.S. global health aid FY 2013: $134,769,000

Percentage of population living in urban areas: 52.7%
Population proportion between ages 15 and 59: 53.6%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Democratic Republic of the Congo

Total population: 67,514,000
Income group: Low
U.S. global health aid FY 2013: $155,639,000*

Percentage of population living in urban areas: 35.4%
Population proportion between ages 15 and 59: 50.5%
U.S. aid for NCDs from 2000 to 2011: $500,652

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Dominican Republic

Total population: 10,404,000
Income group: Upper-middle
U.S. global health aid FY 2013: $13,824,000*

Percentage of population living in urban areas: 70.8%
Population proportion between ages 15 and 59: 60.6%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Ethiopia

Total population: 94,101,000
Income group: Low
U.S. global health aid FY 2013: $298,848,000*

Percentage of population living in urban areas: 17.5%
Population proportion between ages 15 and 59: 52.1%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Georgia

Total population: 4,341,000
Income group: Lower-middle
U.S. global health aid FY 2013: $3,664,000*

Percentage of population living in urban areas: 53.1%
Population proportion between ages 15 and 59: 62.4%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Ghana

Total population: 25,905,000
Income group: Lower-middle
U.S. global health aid FY 2013: $73,014,000

Percentage of population living in urban areas: 53.2%
Population proportion between ages 15 and 59: 56.2%
U.S. aid for NCDs from 2000 to 2011: $333,385

Data Source: Institute for Health Metrics and Evaluation
Guatemala

Total population: 15,468,000
Income group: Lower-middle
U.S. global health aid FY 2013: $16,796,000*

Percentage of population living in urban areas: 50.7%
Population proportion between ages 15 and 59: 53.0%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Guinea

Total population: 11,745,000
Income group: Low
U.S. global health aid FY 2013: $17,880,000

Percentage of population living in urban areas: 36.4%
Population proportion between ages 15 and 59: 52.6%
U.S. aid for NCDs from 2000 to 2011: $129,538

Data Source: Institute for Health Metrics and Evaluation
Guyana

Total population: 800,000
Income group: Lower-middle
U.S. global health aid FY 2013: $8,866,000

Percentage of population living in urban areas: 28.6%
Population proportion between ages 15 and 59: 58.5%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Haiti

Total population: 10,317,000
Income group: Low
U.S. global health aid FY 2013: $154,882,000

Percentage of population living in urban areas: 56.0%
Population proportion between ages 15 and 59: 58.2%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
India

Total population: 1,252,140,000
Income group: Lower-middle
U.S. global health aid FY 2013: $58,317,000

Percentage of population living in urban areas: 32.0%
Population proportion between ages 15 and 59: 62.6%
U.S. aid for NCDs from 2000 to 2011: $2,609,628

Data Source: Institute for Health Metrics and Evaluation
Indonesia

Total population: 249,866,000
Income group: Lower-middle
U.S. global health aid FY 2013: $48,924,000*

Percentage of population living in urban areas: 52.2%
Population proportion between ages 15 and 59: 63.0%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Jordan

Total population: 7,274,000
Income group: Upper-middle
U.S. global health aid FY 2013: $49,000,000

Percentage of population living in urban areas: 83.2%
Population proportion between ages 15 and 59: 60.6%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Kenya

Total population: 44,354,000
Income group: Low
U.S. global health aid FY 2013: $356,031,000*

Percentage of population living in urban areas: 24.8%
Population proportion between ages 15 and 59: 53.5%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Lebanon

Total population: 4,822,000
Income group: Upper-middle
U.S. global health aid FY 2013: $11,993,000

Percentage of population living in urban areas: 87.5%
Population proportion between ages 15 and 59: 67.0%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Lesotho

Total population: 2,074,000
Income group: Lower-middle
U.S. global health aid FY 2013: $33,165,000*

Percentage of population living in urban areas: 29.0%
Population proportion between ages 15 and 59:  57.3%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Liberia

Total population: 4,294,000
Income group: Low
U.S. global health aid FY 2013: $46,932,000*

Percentage of population living in urban areas: 48.9%
Population proportion between ages 15 and 59: 52.3%
U.S. aid for NCDs from 2000 to 2011: $12,134

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Madagascar

Total population: 22,925,000
Income group: Low
U.S. global health aid FY 2013: $48,640,000

Percentage of population living in urban areas: 33.8%
Population proportion between ages 15 and 59: 53.1%
U.S. aid for NCDs from 2000 to 2011: $51,768

**Data Source:** Institute for Health Metrics and Evaluation
Malawi

Total population: 16,363,000
Income group: Low
U.S. global health aid FY 2013: $129,417,000*

Percentage of population living in urban areas: 16.0%
Population proportion between ages 15 and 59: 49.8%
U.S. aid for NCDs from 2000 to 2011: $160,649

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Mali

Total population: 15,302,000
Income group: Low
U.S. global health aid FY 2013: $64,241,000*

Percentage of population living in urban areas: 36.2%
Population proportion between ages 15 and 59: 48.4%
U.S. aid for NCDs from 2000 to 2011: $726,430

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Mozambique

Total population: 25,834,000
Income group: Low
U.S. global health aid FY 2013: $323,692,000*

Percentage of population living in urban areas: 31.7%
Population proportion between ages 15 and 59: 49.6%
U.S. aid for NCDs from 2000 to 2011: $4,293,955

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Myanmar

Total population: 53,259,000
Income group: Low
U.S. global health aid FY 2013: $20,848,000

Percentage of population living in urban areas: 33.8%
Population proportion between ages 15 and 59: 66.7%
U.S. aid for NCDs from 2000 to 2011: $41,415

Data Source: Institute for Health Metrics and Evaluation
Namibia

Total population: 2,303,000
Income group: Upper-middle
U.S. global health aid FY 2013: $32,126,000*

Percentage of population living in urban areas: 39.5%
Population proportion between ages 15 and 59: 58.5%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Nepal

Total population: 27,797,000
Income group: Low
U.S. global health aid FY 2013: $40,489,000*

Percentage of population living in urban areas: 17.7%
Population proportion between ages 15 and 59: 57.5%
U.S. aid for NCDs from 2000 to 2011: $1,569,986

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Nigeria

Total population: 173,615,000
Income group: Lower-middle
U.S. global health aid FY 2013: $625,974,000*

Percentage of population living in urban areas: 50.8%
Population proportion between ages 15 and 59: 51.2%
U.S. aid for NCDs from 2000 to 2011: $9,700,838

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Pakistan

Total population: 182,143,000
Income group: Lower-middle
U.S. global health aid FY 2013: $33,655,000

Percentage of population living in urban areas: 36.9%
Population proportion between ages 15 and 59: 59.7%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Changes from 2000 to 2010

Total population: 98,394,000
Income group: Lower-middle
U.S. global health aid FY 2013: $36,632,000*

Percentage of population living in urban areas: 49.4%
Population proportion between ages 15 and 59: 59.4%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Republic of Yemen

Total population: 24,407,000
Income group: Lower-middle
U.S. global health aid FY 2013: $11,689,000

Percentage of population living in urban areas: 33.5%
Population proportion between ages 15 and 59: 55.2%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Rwanda

Total population: 11,777,000
Income group: Low
U.S. global health aid FY 2013: $136,694,000*

Percentage of population living in urban areas: 19.7%
Population proportion between ages 15 and 59: 53.0%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Senegal

Total population: 14,133,000
Income group: Lower-middle
U.S. global health aid FY 2013: $64,416,000*

Percentage of population living in urban areas: 43.2%
Population proportion between ages 15 and 59: 51.9%
U.S. aid for NCDs from 2000 to 2011: $104,398

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Sierra Leone

Total population: 6,092,000  
Income group: Low  
U.S. global health aid FY 2013: $9,973,000*

Percentage of population living in urban areas: 40.0%  
Population proportion between ages 15 and 59: 54.0%  
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
South Africa

Total population: 52,776,000
Income group: Upper-middle
U.S. global health aid FY 2013: $489,576,000*

Percentage of population living in urban areas: 62.9%
Population proportion between ages 15 and 59: 61.9%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Swaziland

Total population: 1,250,000
Income group: Lower-middle
U.S. global health aid FY 2013: $26,054,000*

Percentage of population living in urban areas: 21.2%
Population proportion between ages 15 and 59: 56.8%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Tajikistan

Total population: 8,208,000
Income group: Low
U.S. global health aid FY 2013: $7,500,000

Percentage of population living in urban areas: 26.7%
Population proportion between ages 15 and 59: 59.3%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation
Uganda

Total population: 37,579,000
Income group: Low
U.S. global health aid FY 2013: $405,394,000

Percentage of population living in urban areas: 16.4%
Population proportion between ages 15 and 59: 47.9%
U.S. aid for NCDs from 2000 to 2011: $695,937

Data Source: Institute for Health Metrics and Evaluation
Ukraine

Total population: 45,239,000
Income group: Lower-middle
U.S. global health aid FY 2013: $19,587,000*

Percentage of population living in urban areas: 69.3%
Population proportion between ages 15 and 59: 64.3%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
United Republic of Tanzania

Total population: 49,253,000
Income group: Low
U.S. global health aid FY 2013: $443,442,000*

Percentage of population living in urban areas: 27.7%
Population proportion between ages 15 and 59: 50.3%
U.S. aid for NCDs from 2000 to 2011: $0

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Viet Nam

Total population: 91,680,000
Income group: Lower-middle
U.S. global health aid FY 2013: $65,676,000*

Percentage of population living in urban areas: 32.3%
Population proportion between ages 15 and 59: 67.7%
U.S. aid for NCDs from 2000 to 2011: $192,710

*Designated as a U.S. GHI priority country

Data Source: Institute for Health Metrics and Evaluation
Zambia

Total population: 14,539,000
Income group: Lower-middle
U.S. global health aid FY 2013: $362,971,000

Percentage of population living in urban areas: 40.0%
Population proportion between ages 15 and 59: 49.5%
U.S. aid for NCDs from 2000 to 2011: $0

Changes from 2000 to 2010

**Data Source:** Institute for Health Metrics and Evaluation
Zimbabwe

Total population: 14,150,000
Income group: Low
U.S. global health aid FY 2013: $114,405,000

Percentage of population living in urban areas: 39.6%
Population proportion between ages 15 and 59: 54.9%
U.S. aid for NCDs from 2000 to 2011: $0

Data Source: Institute for Health Metrics and Evaluation