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Summary of Data, Assumptions and Methods for New Wittgenstein Centre for Demography and Global Human Capital (WIC) Population Projections by Age, Sex and Level of Education for 195 Countries to 2100

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Abstract

This paper describes the base-line data and summarizes the methodology that underlies the projections presented for 195 countries of the world by age, sex, and educational attainment, based on detailed data on education for 171 countries. These multi-dimensional cohort-component projections require a large amount of empirical information, ranging from base-year data on populations disaggregated by levels of educational attainment by age and sex, to data on educational differentials of fertility and mortality. The paper also summarizes the procedures by which the assumed trajectories for future fertility, mortality and migration were derived by combining structured expert judgments with statistical models. It also describes in detail the procedures by which assumptions on aggregate fertility, mortality and migration trends were translated into education-specific trajectories in order to then calculate the implications of alternative education scenarios.

Acknowledgments

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Summary of Data, Assumptions and Methods for New Wittgenstein Centre for Demography and Global Human Capital (WIC) Population Projections by Age, Sex and Level of Education for 195 Countries to 2100

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1 Introduction

In this report we provide a summary of several of the innovative features of this new and most comprehensive set of international population projections by age, sex and level of education. This new set of expert argument-based projections by age, sex and educational attainment presents an important new step at the forefront of international population projections which in terms of its multi-dimensionality and its substantive justification of the assumptions made presents a logical next step in the tradition of international population projections by the World Population Program of IIASA (International Institute for Applied Systems Analysis). This effort also goes beyond what the United Nations and other agencies have been doing in two important ways: It provides the most comprehensive and systematic summary of expert knowledge on future fertility, mortality and migration to date – including the input of hundreds of demographers from around the world – and it translates this into the most comprehensive set of human capital projections for 195 countries. For 171 of these countries the projections are based on national level in formation by level of education. For the remaining 24 countries only the age and sex structures were given empirically and assumptions had to be made with respect to the education structures. The projections cover all countries in the world with more than 100,000 inhabitants.

In this effort the study builds on and significantly expands earlier IIASA reconstructions and projections of the population by age, sex, and educational attainment for 120 countries of the world , published in 2007 and 2010 (Lutz et al. 2007; KC et al. 2010). These data have already been used by researchers and planners, for example, to analyse the age-dimension of the relationship between human capital and economic growth (Lutz et al. 2008; Chappuis & Walmsley 2011; Eberstadt 2012), to understand the impacts of natural disasters (Cavallo & Noy 2010) and vulnerability to natural disasters (Striessnig et al. 2013; Pichler & Striessnig 2013), to study demographic and health related issues (KC & Lentzner 2010; Prettner et al. 2012), to predict armed conflict (Hegre et al. 2009), and to include education as an important dimension of population projections for measuring demographic heterogeneity as shown in (see also Lutz & KC 2010; Lutz & KC 2011).

Compared to these earlier population projections, three important changes were implemented regarding data structure and coverage in the current projections: the projection base-year data were updated to the year 2010 instead of 2000, the number of education categories was increased from four to six to encompass a broader range and more variability

in levels of attainment, and more countries were added – from 120 to 195[1] to cover virtually the entire world population. The result is a global picture of educational attainment levels today and alternative scenarios for their evolution over the rest of the century. In addition to the assumptions regarding the future of fertility, mortality, migration, and educational attainment that are described in (Fuchs & Goujon 2013; Basten et al. 2013; Garbero & Pamuk 2013; Caselli et al. 2013; Sander et al. 2013; Barakat & Durham 2013), education differentials in fertility, mortality, and migration are also based on our estimations that rely on census (IPUMS) and survey data, and on the available literature. Various methods of dealing with schooling variability have been fine-tuned and some additional complexities were introduced (e.g. allowing child mortality to depend on the education of the mother).

This report is structured in three parts: The first details the procedure used to arrive at a consistent 2010 base-year population by age, sex, and education. The second summarizes the assumptions developed for the projections. The third part walks the reader through the projection methodology.

2 The Base Year Population

2.1 Introduction

Internationally comparable data on levels of educational attainment of the adult population consistent across time and space cannot be found in a nationally aggregated form by age and sex. This is a serious data deficiency because level of educational attainment of the working-age population is the main indicator of human capital used in many models relating to economics, information technology, and health. A comprehensive dataset including detailed and accurate data on educational attainment comparable across countries is also crucial for the human capital projections presented in this paper. It does not make sense to keep the data as close as possible to directly available datasets because most of the existing collections of education data suffer from severe flaws and tend to take the collected data at face value. In particular, constructing an appropriate dataset for the starting year for projections can be highly problematic, requiring much harmonizing and mapping of levels of education within and across sources.

In general, data on human capital stocks are much more difficult to obtain than data on education flows such as school attendance, completion, and drop-out rates. These data on schooling are typically collected by the school authorities themselves and suffer in many countries from over-reporting of enrolment e.g. in India (see Kingdon 2007). An alternative source of information is censuses and surveys. Information from these sources is available for the population of school age or those who were enrolled in education or training at the time of the census or survey. Most censuses and surveys also provide information on the educational composition (i.e. highest level attained) of the adult population by age and sex. But this theoretical availability of attainment data stands in stark contrast to the actual availability of useful internationally comparable date based on common definitions. This is surprising, given the efforts of UNESCO in this field and given that evidence on human capital stocks by educational attainment contains valuable information about social change that is relevant for

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[1] Based on empirical data for the education structure for 171 countries and approximation for the remaining 24 countries as explained in section 4.10.

human capital research and policy formulation, particularly in an internationally comparative perspective

Toward our original goal of collecting data on shares of the population by age, sex, and educational attainment for 195 countries with a population of at least 100,000, we managed to collect and harmonise data for 171 countries (88 percent of all countries), covering 97.4 percent of the world population in 2010. This makes the Centre's dataset the most comprehensive in comparison to other widely used datasets, such as Barro and Lee (2013), which covers 146 countries. Another advantage of the WIC dataset is application of clear procedures in cross-national harmonisation of educational data across the globe based on ISCED 1997 classification.

2.2 Data Sources

Collecting and harmonising data by education undertaken under the current round of WIC global human capital projections is not the first such effort. Major international institutions (UNESCO, EUROSTAT) publish data obtained from the national statistical offices, which they tend to accept at face value. These collections are flawed due to different categorisation approaches that lead to inconsistencies and affect data quality. Collections of data from various data sources (Education Policy and Data Center http://www.epdc.org/) (Barro & Lee 2013), build on the datasets already compiled by international bodies and thus suffer from the same problems. Finally, survey data (DHS or MICS for example) can raise sampling issues and, because they can be designed for national context surveys, are not always immediately comparable across countries.

To collect the most reliable and up-to-date data on population shares by age, sex, and educational attainment, we sought data sources for populations 15 years and older by five-year age groups that contain detailed information on the highest level attained and highest grade attended. This approach allows disentangling the latent ambiguity between completed and incomplete levels of educational attainment. In general, first we looked for register or census data, which usually comply with all requirements. Because appropriate register data are only rarely available, data collection efforts primarily focused on the census data. Accordingly we collected census data from several sources (IPUMS, EUROSTAT, CELADE, National Statistical Agencies, etc.).

Whenever census data were of poor quality, not available, or outdated, we turned to surveys (Figure 1). To keep the quality of the whole dataset high, we excluded countries with poor data (see Table 1).

WIC Data Sources - Educational Attainment
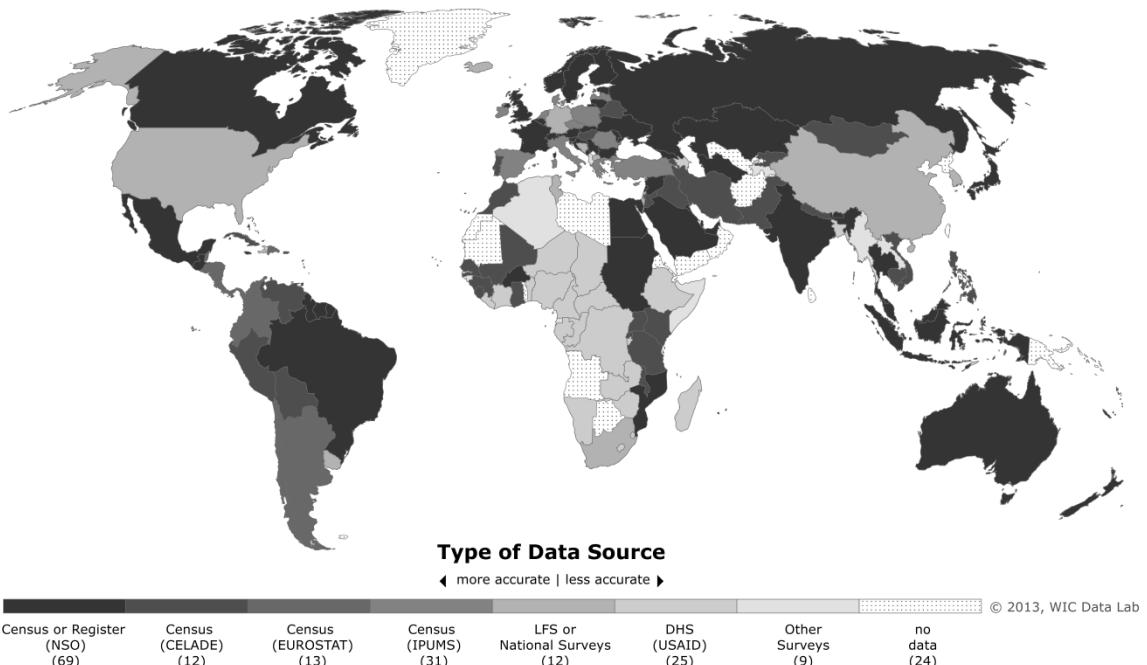
Figure 1. Data sources on educational attainment (effective December, 2012).

Table 1. Country coverage of the Wittgenstein Centre dataset by UN region

UN region	All countries	Countries covered	Countries covered (%)	Population covered (%)	Missing countries
Europe	39	39	100	100	
Asia	50	43	86.0	96.9	Afghanistan, Brunei, North Korea, Oman, Sri Lanka, Uzbekistan, Yemen
Africa	55	46	83.6	95.7	Angola, Botswana, Djibouti, Eritrea, Libya, Mauritania, Mayotte, Togo, Western Sahara
Northern America	2	2	100	100	
Latin America	37	34	91.9	98.9	Barbados, Grenada, Virgin Islands

UN region	All countries	Countries covered	Countries covered (%)	Population covered (%)	Missing countries
Oceania	12	7	58.3	75.8	Fiji, Papua New Guinea, Solomon Islands, Micronesia, Guam
World	*195*	*171*	*87.7*	*97.4*	

Note: Data collection focused on 195 countries with populations of at least 100 000 in 2010.

2.3 Data Harmonisation

A thorough harmonisation of data on educational attainment is necessary to ensure high quality of the dataset. Due to the variety of nationally distinct educational systems, UNESCO designed the International Standard Classification of Education (ISCED) to make education statistics comparable across countries. We base our six educational categories on ISCED 1997 (UNESCO 2006), which is also in line with the new ISCED 2011 (UNESCO 2012) that becomes effective in 2014.

For the allocation of country-specific educational categorisations into ISCED 1997, we developed standardized procedures to differentiate between completed and incomplete level and to allocate categories as precisely as possible. Table 2 summarizes the definitions of the six categories, their correspondence to ISCED 1997, and the main allocation rules. More detailed information about our data harmonisation methodology can be found in (Bauer et al. 2012).

Table 2. Categories of educational attainment and allocation rules

Categories	ISCED 1997 level	Allocation rules
No education	No level or ISCED 0 Grade 1 of ISCED 1 not completed	Illiterates and persons who have never attended school; persons who were attending 1st grade of primary education at time of survey; persons attending adult literacy courses at time of survey; khalwa (first level of traditional Koranic schools)
Incomplete primary	Incomplete ISCED 1	persons attending last grade of ISCED 1 at time of survey; persons who indicated an unknown number of grades/years at ISCED 1 level; traditional Koranic schools above khalwa level
Primary	Completed ISCED 1 Incomplete ISCED 2	completed last grade of ISCED 1 level or grades below the last grade of ISCED 2 level; persons attending last grade of ISCED 2 at time of survey; persons who indicated an unknown number of grades at ISCED 2 level
Lower secondary	Completed ISCED 2 Incomplete ISCED 3	completed last grade of ISCED 2 level or grades below the last grade of ISCED 3 level; persons attending last grade of ISCED 3 at time of survey; persons who indicated an unknown number of grades at ISCED 3 level

Categories	ISCED 1997 level	Allocation rules
Upper secondary	Completed ISCED 3 Incomplete ISCED 4 or 5B	completed last grade of ISCED 3 level; completed number grades or years below the standard duration at ISCED 4 or ISCED 5B level; persons who indicated an unknown number of grades at ISCED 4 or 5 level
Post-secondary	ISCED 4 & 5B {first diploma, shorter post-secondary courses} ISCED 5A & 6 {longer post-secondary courses, post-graduate level}	Persons who have completed number of years or grades corresponding to standard duration of ISCED 4 or ISCED 5B programmes; persons holding degrees corresponding to ISCED 4, ISCED 5B, ISCED 5A and ISCED 6 levels

Note: The post-secondary level encompasses non-tertiary and tertiary. The category is broad because some data sources (e.g. DHS) lacked the level of detail necessary to differentiate between tertiary and non-tertiary higher education.

We have developed standardised procedures to deal with certain obstacles during the process of allocating educational categories. Discrepancies between the surveyed categories and ISCED 1997 definitions are numerous, and determining how to treat these discrepancies was not always clear cut. Accurate allocation of such fuzzy categories was often possible only with particular knowledge of the type of programme concerned, using codebooks from national statistical institutes, or relying on the knowledge of local experts. Distinguishing between completed and incomplete post-secondary education was problematic, in particular for postsecondary education in DHS. To solve the problem, we used ISCED mappings and assumed that persons who indicated fewer years studied at the post-secondary level than the duration of shortest postsecondary programme existing in the country could not have completed higher education

Allocation of categories of religious education was especially challenging when religious schooling exists alongside a public school system. It was difficult to allocate Koranic or Buddhist schools and educational programs. Religious education may provide education at all kinds of ISCED levels, from pre-primary to post-secondary education. At Koranic schools, which are common in many Arabic, Maghreb, and sub-Saharan countries as well as in Southern Asia, contents and standards of educational programs vary from memorizing the Koran in traditional schools to curricula similar to public schools in modern Koranic schools called madrasa (Demonsant & Andre 2012; Easton et al. 1997; UNESCO/UNICEF Co-operative Programme 1985). When recoding problematic cases, we used studies evaluating the quality of religious schools in a particular country, following the advice given by experts with country-specific knowledge.

Yet another challenge emerged due to changes in education systems over time. Some countries change their education systems fairly frequently, some do not. Since 1970, for example, Cambodia has had four different systems, while Mozambique and the Ukraine reformed their educational systems three times, resulting in modified durations of schooling at primary and secondary levels. Such changes in national education systems are often poorly documented and difficult to identify. We benefited from a compendium of documented

changes compiled by UNESCO[2] and whenever possible adjusted the educational attainment of corresponding cohorts to the system in which they were most likely actually enrolled. Sensitivity analyses showed that adjusting the data makes a great deal of difference, as shown for Cambodia in Bauer et al. (2012). The example demonstrates that educational attainment is much lower for persons who were actually enrolled in an older system with shorter primary education if the current education classification is applied. Including information on changing duration of schooling is a step forward in estimating the actual educational attainment of older cohorts who did not study under the updated educational system that was used for measurement at time of survey.

As a result, the estimates presented in the dataset may deviate from data published by UNESCO, National Statistical Agencies, other datasets or publications on educational attainment. However, our dataset has the advantage of better comparability across the countries.

2.4 Data Validation

We have placed considerable emphasis on validation of this new dataset on global educational attainment. From the beginning, we have collected data on educational attainment from a wide variety of sources and validated them against each other to determine which was the most reliable. If only one source met the criteria, we validated aggregated information against a different data source such as from UNESCO or from the UN Statistical Division.

An example of the benefits of this method can be seen in comparisons of DHS (Demographic and Health Surveys) and census data for selected African and Asian countries. The comparisons revealed that uneducated populations tend to be less represented in DHS as compared to censuses, with proportions of those showing incomplete or completed primary education being higher than in censuses. But the educational attainment information collected in censuses is also not without problems, in particular when the information is provided by census enumerators or heads of big households without direct inquiry from the individuals themselves. This implies caution in comparisons, as populations of DHS countries may appear better educated than what the census data might indicate.

To get a comprehensive overview of the harmonised data on global educational attainment, we examined the new dataset first by the simple, but effective method of map comparisons. Comparing educational compositions of the population 25 years and older of different countries, we detected eye-catching discrepancies by: looking at the share of the lower educated population (with ISCED 1 and lower), which is especially relevant when comparing countries with lower human development index (HDI); and looking at the share of the post-secondary educated population, which is relevant when comparing countries with higher HDI.

In a second step we applied principal component analysis (PCA) to classify and compare countries by two dimensions (components): the level of education, and the variation between the six educational categories. Both exercises enabled us to identify outliers with suspiciously high concentrations in one or another educational category. Such concentrations were often country-specific particularities in national education systems (e.g. related to

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[2] UNESCO institute for Statistics (UIS) collects evidence on past educational systems since 1970. This information can be found online at:
http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=143&IF_Language=eng [last visited April 2012].

different length of compulsory education), or inherent in UNESCO`s ISCED mappings of national educational categories. Overall, validation leads to more accurate description of educational composition of many countries and increased accuracy of the dataset.

2.5 Data Adjustments

Various sources used to build the dataset differed by accuracy and level of detail. Therefore, adjustments were inevitable in order to estimate missing educational categories (see Bauer et al. 2012 for a full list of adjustments). Predominately in more developed countries, where the share of lower educated population is generally small but still significant in older cohorts, there was a lack of detail in the lower education levels (below ISCED 2 or ISCED 1 level). Less detailed information about lower education categories made it difficult to capture the educational attainment of (often less educated) immigrants from developing countries. In a few cases we estimated ISCED 2 and ISCED 3 levels from information on secondary education. We used either additional information from other sources or data on populations with similar educational compositions and education systems to split these broader categories or distinguish between fuzzy original categories. To maintain the high quality of the dataset, we refrained from any "guesstimation" beyond solid evidence. As a consequence, the dataset includes a few countries with less than the intended six categories of educational attainment.

Interpolations were used to estimate five-year age groups when original data were organised into broader or uneven age groups, and extrapolations were applied to extend the oldest age group to 100 years and older for all countries. In doing so, we followed the procedure described in Section 4.4 of Lutz et al. (2007).

2.6 From Education Shares to the 2010 Base Year Population

The dataset on the educational composition of the population of 171 countries extends through the 12 year period from 1998 to 2010, with only a few countries outside this range (1995-1997: Central African Republic, Comoros, Guinea, Iraq, and Turkmenistan). For each country with available data from a year not ending with 0 or 5, a simple rounding was done such that the shares from years 1 and 2 were assigned to 0 and from years 3 and 4 were assigned to 5 (for details see the methodology section). As the projection base year is 2010, population distribution by age, sex, and education for countries with data source years other than 2010 were first projected (for details see the methodology section) to 2010 by applying UN's estimates of fertility, mortality, and migration in order to provide the absolute population by age, sex, and education.

3 Summary of Projection Assumptions

3.1 Introduction

The assumptions about future trends in fertility, mortality and migration that underlie our projections are a combination of the application of statistical models, the scientific input of hundreds of source experts who responded to the online questionnaire and assessed the validity of alternative arguments that impact on these trends, and the intensive discussions at five meta-Expert meetings on five continents in which the available knowledge was systematically assessed. Here we will provide a concise summary of how the assumptions were derived and what was actually assumed in numerical terms.

Since no international empirical time series exist on education-specific fertility, mortality and migration trends over the past decades and the expert knowledge on education-specific trends is very limited, the process of defining assumptions initially focused on defining the numerical values for overall fertility, mortality and migration levels, i.e. for the aggregate population across all educational attainment levels. Once these values were assessed, in a second step education-specific fertility and mortality assumptions over time were derived by assuming certain relative differentials between the vital rates of the different education groups and by assuming that the medium GET (Global Education Trend) scenario describes the future educational attainment trend that underlies the assumed aggregate level trends in vital rates.

As mentioned above, this procedure is an improvement over an earlier projection by level of education for 120 countries (KC et al. 2010). This earlier projection was done by four levels of educational attainment: never been to school, some primary education, secondary school, and tertiary education. The baseline data were for 2000. We now describe the new improved procedures in comparison to the earlier procedures describe in KC et al. (2010).

3.2 Fertility Assumptions

Basten et al. (2013) and Fuchs and Goujon (2013) describe in detail the process that led to the assumptions of specific trajectories. Because the drivers of future fertility are very different between countries that are still in the process of fertility transition and those that are already toward the end of this global transition, two separate exercises dealt with these two sets of countries. The primary criterion for placing a country in the high or low fertility group was the level of TFR as estimated for the period 2005-10 by the United Nations (United Nations 2011), with 2.5 as the cut-off point. As a secondary criterion we used the UNDP Human Development Index (HDI) for 2010 to rank the countries by their levels of development. Since period fertility levels can show some peculiarities, an additional selection criterion based on human development was necessary in order to differentiate between the more developed set of countries and all others, in formulating suitable sets of arguments to underlie likely future fertility trends.

For the definition of fertility assumptions for the medium scenario, formulated in terms of TFRs for 5-year periods for all countries, three different sources of information were merged. The results of a statistical model were blended with the assessments of the source experts who had replied to the on-line questionnaire and with the outcome of two separate meta-expert meetings held in Dhulikhel (Nepal) and Vienna (Austria). For fertility (as well as for mortality, as described in the following section) the procedures were inspired by the view discussed in Lutz and Skirbekk (2013) that the best way of making assumptions about the future is by combining statistical models with structured expert judgement.

The procedures chosen to derive the fertility trajectories differed somewhat between the high- and low-fertility groups. For the high fertility countries, the assumption-making process merged three different sources of information. First a statistical model was defined to predict, a country's future decrease in fertility. This was calculated by comparing its current level of fertility to countries that have experienced a similar level of fertility (+/- 10 percent) at any 5-year period between 1970 and 2005. Historical time-series for this exercise were taken from United Nations (2011). In addition, only countries that experienced comparable decreases in fertility (+/- 5 percentage points) relative to the previous period were considered in the calculation of the expected fertility decline. The mean fertility decline for all countries fulfilling these two constraints was then taken to predict the expected fertility decline for the

following 5-year period for every country. This model is quite similar to what the United Nations assumed until 2010. It is described in detail in Fuchs and Goujon (2013)

The second source of information is the results of the on-line questionnaire. From the 140 responses to the high-fertility module of the questionnaire, the aggregate impact scores of all the different arguments that were assessed by the experts were related to their respective numerical values of likely future fertility levels via a regression analysis. This general relationship was then used to convert for every country the argument scores given by the experts into numerical point estimates for 2030 and 2050. A third source of information was the numerical point estimates of fertility in 2030 and 2050 for 14 big developing countries that were assumed to be representative for their regions, provided by meta-experts at the meeting in Nepal.

Model results, meta-expert assumptions and source expert score-based values were then weighted in the ratio 1:1:0.2 (where the sum of all source experts could not get a weight of more than 1 even when they were more than 5). For countries that by this procedure reached a TFR of 1.6 or lower in any period before 2100, the procedure chosen by the low fertility group was enacted, implying a slow convergence towards a TFR of 1.75.

For the low fertility countries, point estimates of the period TFR in 2030 and 2050 (medium scenario) were derived in several steps. Following the source experts' judgements gathered in the online survey and the agreements reached during the discussions of the meta-Expert meeting in Vienna, TFR scenarios for a number the key countries were derived. Based on these, the point estimates for all remaining low-fertility countries were derived by analogy. This process and the reasoning behind it are described in detail in Basten et al. (2013).

For the near term, a special effort was made to account for the effect of the on-going economic recession. This was done by combining most recent information about annual fertility trends with the assumption that fertility rates were likely to fall somewhat in the most affected countries and that no country would see a fertility increase in the period 2010-15.

For the long range assumptions for the second half of the century, it was assumed that period TFR levels in low-fertility countries would slowly converge to an average value of 1.75, with the convergence point in the year 2200. The reasoning behind this choice is described in Basten et al. (2013).

Table 3. Medium assumptions for aggregate TFR for 2010-2100

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Afghanistan	6,6	6,2	5,8	5,3	4,9	4,5	4,0	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8
Albania	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6
Algeria	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Angola	5,8	5,3	4,7	4,2	3,7	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7
Argentina	2,3	2,1	2,1	2,0	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Armenia	1,6	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Aruba	1,7	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Australia	1,9	1,9	1,9	1,9	1,9	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Austria	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Azerbaijan	1,9	2,4	2,2	2,0	1,8	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Bahamas	1,9	1,8	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Bahrain	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Bangladesh	2,4	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Barbados	1,5	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Belarus	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Belgium	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Belize	2,9	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Benin	5,5	4,9	4,4	3,9	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7
Bhutan	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Bolivia	3,5	3,1	2,8	2,7	2,5	2,3	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,7	1,7
Bosnia and Herzegovina	1,8	1,3	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6
Botswana	2,9	2,6	2,4	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Brazil	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Brunei Darussalam	2,1	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Bulgaria	1,5	1,4	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Burkina Faso	5,9	5,5	5,1	4,7	4,2	3,8	3,5	3,1	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8
Burundi	4,7	4,1	3,6	3,2	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7
Cambodia	2,8	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6

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Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Cameroon	4,7	4,1	3,6	3,2	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Canada	1,7	1,6	1,6	1,7	1,7	1,7	1,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Cape Verde	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Central African Republic	4,8	4,3	3,7	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6
Chad	6,2	5,7	5,3	4,8	4,3	3,8	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8
Channel Islands	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Chile	1,9	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
China	1,5	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
China, Hong Kong SAR	1,1	1,3	1,2	1,2	1,2	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
China, Macao SAR	1,1	1,1	1,1	1,2	1,2	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Colombia	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Comoros	5,1	4,5	4,0	3,4	3,0	2,8	2,5	2,4	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6
Congo	4,6	4,1	3,6	3,1	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Costa Rica	1,9	1,8	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Cote d'Ivoire	4,6	4,1	3,6	3,1	2,9	2,6	2,4	2,3	2,2	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6
Croatia	1,5	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Cuba	1,5	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Cyprus	1,5	1,3	1,4	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Czech Republic	1,5	1,5	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Dem. People's Rep. of Korea	2,0	1,9	1,8	1,6	1,5	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Dem. Republic of the Congo	6,1	5,6	5,1	4,6	4,1	3,6	3,1	2,8	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8
Denmark	1,9	1,7	1,8	1,9	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9
Djibouti	4,0	3,4	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
Dominican Republic	2,7	2,4	2,3	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Ecuador	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Egypt	2,9	2,7	2,5	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
El Salvador	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Equatorial Guinea	5,4	4,8	4,2	3,7	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7
Eritrea	4,7	4,1	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Estonia	1,6	1,5	1,6	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Ethiopia	4,6	4,1	3,7	3,4	3,0	2,8	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Fiji	2,8	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Finland	1,9	1,8	1,9	1,9	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9
France	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
French Guiana	3,3	2,8	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6
French Polynesia	2,1	2,1	2,1	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Gabon	3,4	2,9	2,6	2,4	2,2	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
Gambia	5,1	4,5	4,0	3,5	3,1	2,8	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,8	1,8	1,7	1,7
Georgia	1,9	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Germany	1,4	1,4	1,4	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Ghana	4,3	4,0	3,7	3,4	3,1	2,9	2,7	2,5	2,4	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,7	1,7	1,7
Greece	1,5	1,4	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Grenada	2,3	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Guadeloupe	2,2	2,2	2,1	2,1	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Guam	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Guatemala	4,2	3,6	3,1	2,8	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6
Guinea	5,5	4,9	4,3	3,8	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Guinea-Bissau	5,3	4,7	4,2	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Guyana	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Haiti	3,5	3,1	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Honduras	3,3	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
Hungary	1,3	1,2	1,3	1,4	1,4	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Iceland	2,2	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9
India	2,7	2,5	2,4	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Indonesia	2,2	2,0	1,9	1,8	1,8	1,7	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6
Iran (Islamic Republic of)	1,8	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6
Iraq	4,9	4,3	3,7	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7
Ireland	2,1	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9

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Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Israel	3,0	3,0	2,9	2,8	2,7	2,7	2,6	2,6	2,5	2,5	2,5	2,4	2,4	2,4	2,4	2,3	2,3	2,3	2,3
Italy	1,4	1,4	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Jamaica	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Japan	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Jordan	3,3	2,9	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
Kazakhstan	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Kenya	4,8	4,3	3,9	3,5	3,2	2,9	2,7	2,5	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7
Kuwait	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Kyrgyzstan	2,7	2,4	2,3	2,2	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Lao People's Dem. Republic	3,0	2,7	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6
Latvia	1,2	1,3	1,3	1,4	1,4	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Lebanon	1,9	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Lesotho	3,4	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6
Liberia	5,4	4,9	4,3	3,8	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7
Libyan Arab Jamahiriya	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Lithuania	1,6	1,6	1,6	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Luxembourg	1,6	1,5	1,6	1,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Madagascar	4,8	4,2	3,7	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Malawi	6,0	5,6	5,2	4,9	4,5	4,1	3,8	3,4	3,1	2,8	2,6	2,4	2,3	2,1	2,1	2,0	1,9	1,9	1,9
Malaysia	2,7	2,5	2,4	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Maldives	1,9	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Mali	6,5	6,0	5,4	4,9	4,3	3,8	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8
Malta	1,4	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Martinique	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Mauritania	4,7	4,1	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6
Mauritius	1,5	1,5	1,5	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Mayotte	4,3	3,7	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7
Mexico	2,4	2,3	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Micronesia (Fed. States of)	3,6	3,1	2,8	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6

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Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Mongolia	2,5	2,4	2,3	2,2	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Montenegro	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Morocco	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Mozambique	5,1	4,5	4,0	3,5	3,1	2,8	2,6	2,4	2,2	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7
Myanmar	2,1	1,9	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Namibia	3,4	2,9	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Nepal	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Netherlands	1,8	1,7	1,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Netherlands Antilles	2,0	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,6	1,6
New Caledonia	2,2	2,2	2,1	2,0	1,9	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
New Zealand	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Nicaragua	2,8	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Niger	7,2	6,8	6,4	5,9	5,5	5,2	4,8	4,5	4,1	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9
Nigeria	5,6	5,3	5,0	4,7	4,4	4,2	3,9	3,7	3,5	3,1	2,8	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,9
Norway	2,0	1,9	1,9	1,9	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9
Occupied Palestinian Territory	4,6	4,1	3,6	3,1	2,9	2,6	2,4	2,3	2,2	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6
Oman	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Pakistan	3,7	3,3	3,1	2,8	2,7	2,5	2,4	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,8	1,8	1,7	1,7	1,6
Panama	2,6	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Papua New Guinea	4,1	3,5	3,1	2,8	2,6	2,4	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6
Paraguay	3,1	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6
Peru	2,6	2,4	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Philippines	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6
Poland	1,4	1,3	1,4	1,5	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Portugal	1,4	1,3	1,3	1,4	1,5	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Puerto Rico	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Qatar	2,4	2,2	2,1	2,0	2,0	1,9	1,8	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Republic of Korea	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Republic of Moldova	1,2	1,3	1,3	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Reunion	2,3	2,3	2,2	2,1	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Romania	1,3	1,3	1,3	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6
Russian Federation	1,5	1,6	1,6	1,5	1,5	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Rwanda	5,4	5,0	4,5	4,1	3,7	3,4	3,1	2,8	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7
Saint Lucia	2,0	1,9	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Saint Vincent and the Grenadines	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Samoa	4,0	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6
Sao Tome and Principe	3,9	3,3	2,9	2,6	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6
Saudi Arabia	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6
Senegal	5,0	4,5	4,1	3,6	3,3	3,0	2,7	2,6	2,4	2,2	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7
Serbia	1,4	1,4	1,4	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Sierra Leone	5,2	4,6	4,1	3,6	3,2	2,9	2,6	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Singapore	1,2	1,3	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5
Slovakia	1,4	1,4	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Slovenia	1,6	1,6	1,6	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Solomon Islands	4,4	3,8	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7
Somalia	6,4	6,0	5,5	4,9	4,4	3,9	3,4	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7
South Africa	2,6	2,4	2,3	2,1	2,0	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Spain	1,4	1,3	1,4	1,4	1,5	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7	1,7
Sri Lanka	2,4	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Sudan	4,6	4,1	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7
Suriname	2,4	2,3	2,2	2,1	2,0	2,0	1,9	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6
Swaziland	3,6	3,1	2,8	2,5	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6
Sweden	2,0	1,9	1,9	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9
Switzerland	1,5	1,5	1,6	1,6	1,7	1,7	1,7	1,7	1,7	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Syrian Arab Republic	3,1	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,6
TFYR Macedonia	1,6	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Tajikistan	3,5	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,6	1,6
Thailand	1,6	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6

Country	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030	2030 - 2035	2035 - 2040	2040 - 2045	2045 - 2050	2050 - 2055	2055 - 2060	2060 - 2065	2065 - 2070	2070 - 2075	2075 - 2080	2080 - 2085	2085 - 2090	2090 - 2095	2095 - 2100
Timor-Leste	6,5	6,1	5,6	5,1	4,7	4,1	3,6	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,8
Togo	4,3	3,8	3,3	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,7	1,7
Tonga	4,0	3,5	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6
Trinidad and Tobago	1,6	1,5	1,5	1,5	1,5	1,5	1,4	1,4	1,4	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Tunisia	2,0	1,9	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Turkey	2,2	2,0	2,0	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Turkmenistan	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Uganda	6,4	5,9	5,5	5,0	4,6	4,2	3,9	3,5	3,2	2,9	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8
Ukraine	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
United Arab Emirates	1,9	1,7	1,7	1,7	1,6	1,6	1,6	1,5	1,5	1,5	1,5	1,5	1,5	1,6	1,6	1,6	1,6	1,6	1,6
United Kingdom	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
United Republic of Tanzania	5,6	5,1	4,6	4,1	3,7	3,3	3,0	2,7	2,5	2,4	2,2	2,1	2,0	1,9	1,9	1,9	1,9	1,8	1,8
United States Virgin Islands	2,1	1,9	1,8	1,7	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
United States of America	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9	1,9
Uruguay	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Uzbekistan	2,5	2,3	2,1	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6
Vanuatu	4,0	3,5	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6
Venezuela	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6
Viet Nam	1,9	1,8	1,7	1,7	1,6	1,6	1,5	1,5	1,4	1,4	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Western Sahara	2,7	2,4	2,3	2,2	2,1	2,0	1,9	1,9	1,9	1,8	1,8	1,7	1,7	1,7	1,6	1,6	1,6	1,6	1,6
Yemen	5,5	4,9	4,4	3,9	3,5	3,2	2,9	2,7	2,5	2,4	2,2	2,1	2,0	1,9	1,9	1,8	1,8	1,7	1,7
Zambia	6,2	5,7	5,3	4,8	4,4	3,9	3,5	3,1	2,8	2,6	2,4	2,3	2,1	2,0	2,0	1,9	1,9	1,8	1,8
Zimbabwe	3,5	3,0	2,7	2,5	2,3	2,2	2,1	2,0	1,9	1,8	1,8	1,8	1,8	1,7	1,7	1,6	1,6	1,6	1,6

For deriving the age-specific fertility rates (ASFR) corresponding to these assumed fertility trajectories, the period-specific age schedules as used in the UN-medium variant were chosen. The UN- generated ASFR schedules by linearly interpolating between the current fertility pattern and model patterns to be reached by a certain time that varies by region.. For a detailed description of their methodology, see United Nations (2006).

Country-specific differentials in fertility by level of education for the base year were obtained from the literature and from census and survey data. Table 4 lists these differentials and a detailed description of the data sources is given in KC and Potančoková (2013). Over time the education differentials are assumed to converge to ratios of TFRs of 1.42, 1.42, 1.42, 1.35, 1.14, and 1, for the different education levels relative to post-secondary education. These values are assumed to be reached by the time TFR reaches 1.8 children per woman. For countries where the maximum differential is below 1.42 in the base-year, the relative ratios are kept constant at those lower levels.

Table 4. Fertility differentials by education in the base period

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Afghanistan	2,59	2,36	1,94	1,39	1,00	0,87
Albania	1,47	1,47	1,47	1,39	1,00	0,80
Algeria	1,57	1,57	1,57	1,18	1,00	0,89
Angola	2,67	2,66	2,11	1,51	1,00	0,71
Azerbaijan	1,12	1,12	1,12	1,14	1,00	0,79
Argentina	1,54	1,54	1,54	1,19	1,00	0,90
Australia	1,23	1,23	1,23	1,23	1,00	0,87
Austria	1,27	1,27	1,27	1,27	1,00	1,04
Bahamas	1,63	1,63	1,63	1,20	1,00	0,79
Bahrain	3,08	1,70	1,53	0,86	1,00	1,09
Bangladesh	1,41	1,39	1,26	1,15	1,00	1,05
Armenia	1,12	1,12	1,12	1,14	1,00	0,79
Barbados	1,63	1,63	1,63	1,20	1,00	0,79
Belgium	1,04	1,04	1,04	1,04	1,00	1,06
Bhutan	1,66	1,39	1,28	1,11	1,00	0,95
Bolivia	2,33	2,15	1,75	1,35	1,00	0,73
Bosnia and Herzegovina	1,47	1,47	1,47	1,39	1,00	0,80
Botswana	2,09	1,84	1,55	1,26	1,00	0,87
Brazil	1,97	1,97	1,97	1,23	1,00	0,83
Belize	2,09	1,83	1,54	1,00	1,00	1,06
Solomon Islands	2,23	1,95	1,64	1,27	1,00	0,87
Brunei Darussalam	1,57	1,57	1,57	1,18	1,00	0,89
Bulgaria	1,47	1,47	1,47	1,39	1,00	0,80
Myanmar	2,06	1,94	1,61	1,28	1,00	0,72
Burundi	2,56	2,30	1,89	1,33	1,00	0,87
Belarus	1,13	1,13	1,13	1,35	1,00	0,84

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Cambodia	1,26	1,24	1,20	1,03	1,00	0,82
Cameroon	2,54	2,48	1,86	1,19	1,00	0,99
Canada	1,26	1,26	1,26	1,26	1,00	1,04
Cape Verde	2,09	1,84	1,55	1,26	1,00	0,87
Central African Republic	2,33	2,35	2,12	1,22	1,00	0,86
Sri Lanka	1,66	1,39	1,28	1,11	1,00	0,95
Chad	2,15	2,25	1,95	1,39	1,00	0,86
Chile	1,63	1,63	1,63	1,20	1,00	0,79
China	1,21	1,21	1,21	1,21	1,00	0,89
Colombia	2,21	1,89	1,48	1,23	1,00	0,74
Comoros	4,10	3,16	3,68	2,69	1,00	0,86
Mayotte	1,95	1,65	1,41	1,18	1,00	0,87
Congo	2,56	2,30	1,89	1,33	1,00	0,87
Democratic Republic of the Congo	1,96	1,94	1,94	1,47	1,00	0,90
Costa Rica	1,63	1,63	1,63	1,20	1,00	0,79
Croatia	1,22	1,22	1,22	1,22	1,00	0,86
Cuba	1,63	1,63	1,63	1,20	1,00	0,79
Cyprus	1,24	1,24	1,24	1,11	1,00	0,91
Czech Republic	1,13	1,13	1,13	1,13	1,00	0,88
Benin	1,96	1,61	1,26	0,99	1,00	0,86
Denmark	1,02	1,02	1,02	1,02	1,00	0,98
Dominican Republic	1,90	1,37	1,37	1,09	1,00	0,74
Ecuador	2,01	1,81	1,54	1,23	1,00	0,82
El Salvador	1,84	1,69	1,42	1,19	1,00	0,87
Equatorial Guinea	2,56	2,30	1,89	1,33	1,00	0,87
Ethiopia	4,67	4,02	2,72	1,96	1,00	0,86
Eritrea	2,56	2,30	1,89	1,33	1,00	0,87
Estonia	1,14	1,14	1,14	1,14	1,00	0,77

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Fiji	1,95	1,65	1,41	1,19	1,00	0,87
Finland	0,96	0,96	0,96	0,96	1,00	0,97
France	1,29	1,29	1,29	1,29	1,00	1,00
French Guiana	2,39	1,97	1,53	1,16	1,00	0,78
French Polynesia	1,86	1,54	1,33	1,15	1,00	0,88
Djibouti	2,56	2,30	1,89	1,33	1,00	0,87
Gabon	1,90	2,06	1,60	1,13	1,00	1,14
Georgia	1,12	1,12	1,12	1,14	1,00	0,79
Gambia	2,56	2,30	1,89	1,33	1,00	0,87
Occupied Palestinian Territory	1,30	1,42	1,34	1,16	1,00	0,87
Germany	1,10	1,10	1,10	1,10	1,00	0,89
Ghana	2,78	2,17	1,94	1,48	1,00	0,66
Greece	1,21	1,21	1,21	1,09	1,00	0,92
Grenada	1,88	1,57	1,35	1,16	1,00	0,88
Guadeloupe	1,85	1,54	1,33	1,15	1,00	0,88
Guam	1,92	1,61	1,38	1,17	1,00	0,87
Guatemala	2,67	2,20	1,60	1,25	1,00	0,58
Guinea	1,53	1,29	1,10	0,96	1,00	0,58
Guyana	2,60	1,88	1,43	1,41	1,00	0,66
Haiti	2,83	2,15	1,43	1,10	1,00	1,12
Honduras	2,23	2,01	1,44	1,01	1,00	0,84
China, Hong Kong SAR	1,21	1,21	1,21	1,21	1,00	0,89
Hungary	1,22	1,22	1,22	1,22	1,00	0,95
Iceland	1,01	1,01	1,01	1,01	1,00	0,98
India	2,18	1,50	1,54	1,37	1,00	1,25
Indonesia	1,06	1,15	1,18	1,12	1,00	1,14
Iran (Islamic Republic of)	1,80	1,80	1,80	1,24	1,00	0,83
Iraq	1,58	1,52	1,45	1,20	1,00	0,84

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Ireland	1,15	1,15	1,15	1,15	1,00	0,96
Israel	1,49	1,49	1,49	1,13	1,00	0,94
Italy	1,27	1,27	1,27	1,13	1,00	0,89
Côte d'Ivoire	3,44	2,86	2,04	1,24	1,00	0,86
Jamaica	1,16	1,16	1,16	1,16	1,00	0,57
Japan	0,99	0,99	0,99	0,99	1,00	0,87
Kazakhstan	1,11	1,11	1,11	1,09	1,00	0,81
Jordan	1,09	1,25	1,12	1,15	1,00	0,95
Kenya	2,24	2,01	1,66	1,57	1,00	0,80
Democratic People's Republic of Korea	1,21	1,21	1,21	1,21	1,00	0,89
Republic of Korea	1,21	1,21	1,21	1,21	1,00	0,89
Kuwait	1,57	1,57	1,57	1,18	1,00	0,89
Kyrgyzstan	0,92	0,92	0,92	1,01	1,00	0,71
Lao People's Democratic Republic	1,86	1,80	1,73	1,36	1,00	1,00
Lebanon	1,57	1,57	1,57	1,18	1,00	0,89
Lesotho	1,76	1,61	1,36	1,10	1,00	0,56
Latvia	1,22	1,22	1,22	1,22	1,00	0,85
Liberia	3,18	2,90	2,39	1,66	1,00	0,86
Libyan Arab Jamahiriya	2,12	1,69	1,45	1,26	1,00	1,03
Lithuania	1,22	1,22	1,22	1,22	1,00	0,85
Luxembourg	1,15	1,15	1,15	1,15	1,00	0,96
China, Macao SAR	1,21	1,21	1,21	1,21	1,00	0,89
Madagascar	2,87	2,47	1,63	1,30	1,00	0,91
Malawi	2,52	2,30	2,01	1,67	1,00	0,77
Malaysia	1,26	1,24	1,20	1,03	1,00	0,82
Maldives	1,66	1,39	1,28	1,11	1,00	0,95
Mali	2,26	2,08	1,67	1,10	1,00	0,86

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Malta	1,24	1,24	1,24	1,11	1,00	0,91
Martinique	1,82	1,49	1,29	1,14	1,00	0,88
Mauritania	2,28	2,01	1,68	1,29	1,00	0,87
Mauritius	1,23	1,23	1,23	1,23	1,00	0,87
Mexico	1,86	1,86	1,86	1,25	1,00	0,85
Mongolia	1,91	1,60	1,38	1,17	1,00	0,88
Republic of Moldova	1,47	1,47	1,47	1,39	1,00	0,80
Montenegro	1,47	1,47	1,47	1,39	1,00	0,80
Morocco	2,12	1,69	1,45	1,26	1,00	1,03
Mozambique	2,61	2,36	1,87	1,38	1,00	0,86
Oman	1,92	1,61	1,38	1,17	1,00	0,87
Namibia	2,36	1,73	1,41	1,17	1,00	0,81
Nepal	2,06	1,74	1,39	0,99	1,00	0,96
Netherlands	1,08	1,08	1,08	1,08	1,00	0,88
Netherlands Antilles	1,63	1,63	1,63	1,20	1,00	0,79
Aruba	1,79	1,46	1,27	1,13	1,00	0,88
New Caledonia	1,23	1,23	1,23	1,23	1,00	0,87
Vanuatu	2,16	1,88	1,58	1,25	1,00	0,87
New Zealand	1,23	1,23	1,23	1,23	1,00	0,87
Nicaragua	2,27	1,71	1,29	0,99	1,00	0,71
Niger	2,29	2,28	1,68	1,40	1,00	0,86
Nigeria	1,74	1,59	1,46	1,24	1,00	0,74
Norway	1,05	1,05	1,05	1,05	1,00	0,97
Micronesia (Federated States of)	2,10	1,81	1,53	1,23	1,00	0,87
Pakistan	1,51	1,36	1,15	1,03	1,00	0,70
Panama	1,95	1,80	1,45	1,18	1,00	0,76
Papua New Guinea	2,18	1,90	1,60	1,26	1,00	0,87
Paraguay	1,82	2,00	1,54	1,28	1,00	1,09

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Peru	2,32	1,97	1,55	1,16	1,00	0,79
Philippines	1,40	1,38	1,31	1,09	1,00	0,71
Poland	1,39	1,39	1,39	1,39	1,00	0,79
Portugal	1,24	1,24	1,24	1,11	1,00	0,91
Guinea-Bissau	2,56	2,30	1,89	1,33	1,00	0,87
East Timor	1,28	1,30	1,38	1,13	1,00	0,66
Puerto Rico	1,63	1,63	1,63	1,20	1,00	0,79
Qatar	1,43	1,43	1,43	1,18	1,00	0,90
Réunion	1,90	1,58	1,36	1,17	1,00	0,88
Romania	1,81	1,81	1,81	1,42	1,00	0,77
Russian Federation	1,47	1,47	1,47	1,39	1,00	0,80
Rwanda	2,18	2,06	1,71	1,33	1,00	0,83
Saint Lucia	2,39	1,97	1,53	1,16	1,00	0,78
Saint Vincent and the Grenadines	2,39	1,97	1,53	1,16	1,00	0,78
Sao Tome and Principe	1,71	1,82	1,57	1,09	1,00	1,00
Saudi Arabia	2,00	1,70	1,45	1,20	1,00	0,87
Senegal	3,06	2,49	1,91	1,93	1,00	0,86
Serbia	1,47	1,47	1,47	1,39	1,00	0,80
Sierra Leone	2,74	2,47	2,04	1,39	1,00	1,35
Singapore	1,21	1,21	1,21	1,21	1,00	0,89
Slovakia	1,25	1,25	1,25	1,25	1,00	0,81
Viet Nam	1,45	1,04	1,14	0,96	1,00	0,89
Slovenia	1,14	1,14	1,14	1,14	1,00	0,87
Somalia	2,56	2,30	1,89	1,33	1,00	0,87
South Africa	2,08	1,72	1,53	1,19	1,00	0,88
Zimbabwe	1,25	1,45	1,29	1,14	1,00	0,70
Spain	1,24	1,24	1,24	1,11	1,00	0,91
Western Sahara	1,95	1,64	1,40	1,18	1,00	0,87

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Sudan	1,39	1,30	1,32	1,24	1,00	0,79
Suriname	2,39	1,97	1,53	1,16	1,00	0,78
Swaziland	1,78	1,61	1,45	1,23	1,00	0,77
Sweden	1,01	1,01	1,01	1,01	1,00	0,98
Switzerland	1,11	1,11	1,11	1,11	1,00	0,86
Syrian Arab Republic	2,01	1,71	1,46	1,20	1,00	0,87
Tajikistan	1,11	1,11	1,11	1,09	1,00	0,81
Thailand	1,21	1,21	1,21	1,21	1,00	0,89
Togo	2,56	2,30	1,89	1,33	1,00	0,87
Tonga	2,16	1,89	1,59	1,25	1,00	0,87
Trinidad and Tobago	1,63	1,63	1,63	1,20	1,00	0,79
United Arab Emirates	1,57	1,57	1,57	1,18	1,00	0,89
Tunisia	1,57	1,57	1,57	1,18	1,00	0,89
Turkey	2,55	1,70	1,50	1,02	1,00	0,76
Turkmenistan	1,11	1,11	1,11	1,09	1,00	0,81
Uganda	2,81	2,60	2,05	1,45	1,00	1,33
Ukraine	1,47	1,47	1,47	1,39	1,00	0,80
TFYR Macedonia	1,47	1,47	1,47	1,39	1,00	0,80
Egypt	1,05	1,02	0,90	0,86	1,00	0,80
United Kingdom	1,15	1,15	1,15	1,15	1,00	0,96
Channel Islands	1,15	1,15	1,15	1,15	1,00	0,96
United Republic of Tanzania	2,69	2,34	2,02	1,07	1,00	0,86
United States of America	1,42	1,42	1,42	1,42	1,00	0,90
United States Virgin Islands	1,84	1,52	1,31	1,15	1,00	0,88
Burkina Faso	2,21	1,68	1,33	0,70	1,00	0,86
Uruguay	1,63	1,63	1,63	1,20	1,00	0,79
Uzbekistan	1,11	1,11	1,11	1,09	1,00	0,81
Venezuela	2,07	1,86	1,51	1,23	1,00	0,77

Country	No Education	Incomplete Primary	Completed Primary	Low Secondary	Upper Secondary	Post Secondary
Samoa	2,16	1,88	1,58	1,25	1,00	0,87
Yemen	2,40	2,15	1,78	1,33	1,00	0,87
Zambia	3,07	2,84	2,32	1,72	1,00	1,04

3.3 Mortality Assumptions

As with fertility, the mortality assumptions are based on a combination of a statistical model and country-specific expert assessments. Accordingly, the results of model-based forecast were blended with the assessments of individual experts and the results of the meta-expert meetings, following the principle that the best way of defining forecasting assumptions is to combine a statistical model with structured expert judgment (Lutz & Skirbekk 2013). Accordingly, our model specifies the assumptions for female life expectancy at birth for the entire female population across all education groups. Male life expectancy as well as education-specific trajectories of life expectancy are derived from this model, as described below.

The mortality model is described in detail in Garbero and Sanderson (Garbero & Sanderson 2012). Here we provide a brief summary of the method. As discussed in ref. (2013) and (2013), the model is based on the general assumption of convergence. This was a decision made at the meta-expert meeting in Costa Rica. Although the idea of a global mortality convergence is widely acknowledged(Wilson 2001), there have been relatively few attempts to deal with convergence explicitly (Wilson 2001; Heuveline 1999; Oeppen 2006). On the other hand, the concept of convergence has been widely employed in the economics literature, particularly in the empirical literature on economic growth (Barro & Sala-i-Martin 1995; Landau et al. 1996). There are two main concepts of convergence in this literature; the first, beta-convergence, occurs when the growth rate of the variable of interest (normally the growth rate in GDP) depends negatively on its prior value. Controlling for the influence of other factors, this produces conditional convergence, where the level of convergence depends on those other factors. The second concept is sigma-convergence, which occurs when the dispersion of the indicator decreases. This is merely a description, without any assumption about the functional relationship, in contrast to beta-convergence. There are different sub-concepts of sigma convergence in the literature (Anand & Ravallion 1993; Bidani & Ravallion 1997). Using the concept of sigma-convergence in absolute terms, this model produces female life expectancy forecasts for all countries covered by this study. Exceptions were made for HIV-AIDS affected countries (due to specific requirement of treating mortality-related HIV-AIDS) where UN assumptions (Medium Variant, WPP2010) were assumed until 2050, after which the models and the rules of convergence were applied.

Our model also takes into account country-specific heterogeneity in the historical trajectories of life expectancy, as well as between-countries heterogeneity with respect to gains in life expectancy. This reflects the view that national mortality trends should be viewed in a larger international context rather than being analysed and projected individually (Lee 2003).The model also follows the argument given by Torri and Vaupel (2012), that life expectancy in different countries tends to be positively correlated, such that life expectancies of particular countries can be forecast by forecasting the best-practice level and then the gap between the national performance and the best-practice level.

This convergence procedure was implemented in five steps. Firstly, Japan was identified as the current global forerunner in female life expectancy. Under the medium scenario the life expectancy at birth of Japanese females is assumed to grow by two years per decade from 86.1 years in 2005-2010 to 104.2 in 2095-2100. Regional forerunners (22 regions) were identified, wherein female life expectancies were projected so that the change in life expectancies converges to the assumed change in Japan, that is, by 2 years per decade. This was implemented by applying the following dynamic panel data model, autoregressive of

order 1 with fixed effects, which was estimated with 2-step GMM over the period 1980-2005. This specification was estimated:

$$\Delta e0c_{t,t-1=} \; \gamma\Delta e0_{i,t,t-1} \; + \beta(e0_{i,t-1} - e0_{c,t-1}) + \varepsilon_{c,t} + \epsilon_c$$

Where $e0_{i,t}$ is the female life expectancy at birth for the forerunner i at time t

$e0_{c,t}$ is the female life expectancy at birth for the country c at time t

$\Delta e0c_{t,t-1}$ is the change in female life expectancy at birth for the country c between t and $t\text{-}1$

$\Delta e0i_{t,t-1}$ is the change in female life expectancy at birth for the forerunner i between t and $t\text{-}1$

$\varepsilon_{c,t}$ is the time-varying error component

ϵ_c are country-specific fixed effects.

The equilibrium is reached when:

$$(e0_{i,t-1} - e0_{c,t-1}) = \frac{(\gamma-1)\Delta e0_{it,t-1} + \epsilon_c}{\beta}$$

Once the life expectancies for regional forerunners were projected, a similar model was applied for countries within each region that were assumed to follow their regional forerunners. This convergence model has the advantage that it is based on empirical data. In addition, it takes into account the heterogeneous country-specific historical experiences as well as differences in gains between forerunners and laggards over time and across regions. Thus, it takes into account structural as well as stochastic components that contribute to life expectancy trends over time, and it is able to generate unbiased parameters upon which the new forecasts are based

In the third step, for HIV-affected countries and two high mortality countries (Haiti and Afghanistan) the UN Medium-Variant life expectancies (WPP2010) were assumed until the period 2045-2050. Because we did not aspire to independently develop a specific AIDS forecasting model of the kind that underlies the UN mortality projections, we decided to refer to this well referenced model up to 2050 by which time the AIDs-specific effects are assumed to have become insignificant. After 2050 life expectancies to the end of the century were projected using the model with Namibia as the forerunner country for this group of countries. A comparison with the UN assumptions for this period showed very close results.

In the fourth step, the model results were blended with the country-specific expert assessments. This was done by a weighting procedure that used country-specific assessments of individual source experts until the period 2045-2050 (as extensively described in Caselli et al. (2013) and Garbero and Pamuk (2013)). The gains in life expectancies at birth thus were calculated as a weighted average of three different sources of information on this gain, assigning the results of the statistical model the weight of 1.0, the average of the meta-experts the weight 1.0 and the specification of each individual source expert who made a statement on a given country the weight 0.2.

In the final step, the model net gains for the period 2050-2100 were re-estimated and modified using the new parameters obtained from the weighted net gains during 2010-2050.

Similar steps were repeated for the high and low mortality scenarios. There it was assumed that life expectancy would increase by one year per decade faster or slower than in the "medium" case. For countries, mostly in sub-Saharan Africa, with a high prevalence of

HIV/AIDS, larger uncertainty intervals were assumed for the nearer-term future. In the first decade of the projections, life expectancy is assumed for those countries to be five years lower or higher than in the medium. After 2020, the "high" mortality scenario for those countries assumes a one year lower decadal gain than in the medium scenario. The "low" mortality scenario assumes an additional two years gain per decade on top of the gain from the medium scenario until 2050, and one year additional gain thereafter. This procedure for deriving mortality assumptions is described in detail in (Garbero & Sanderson 2012).
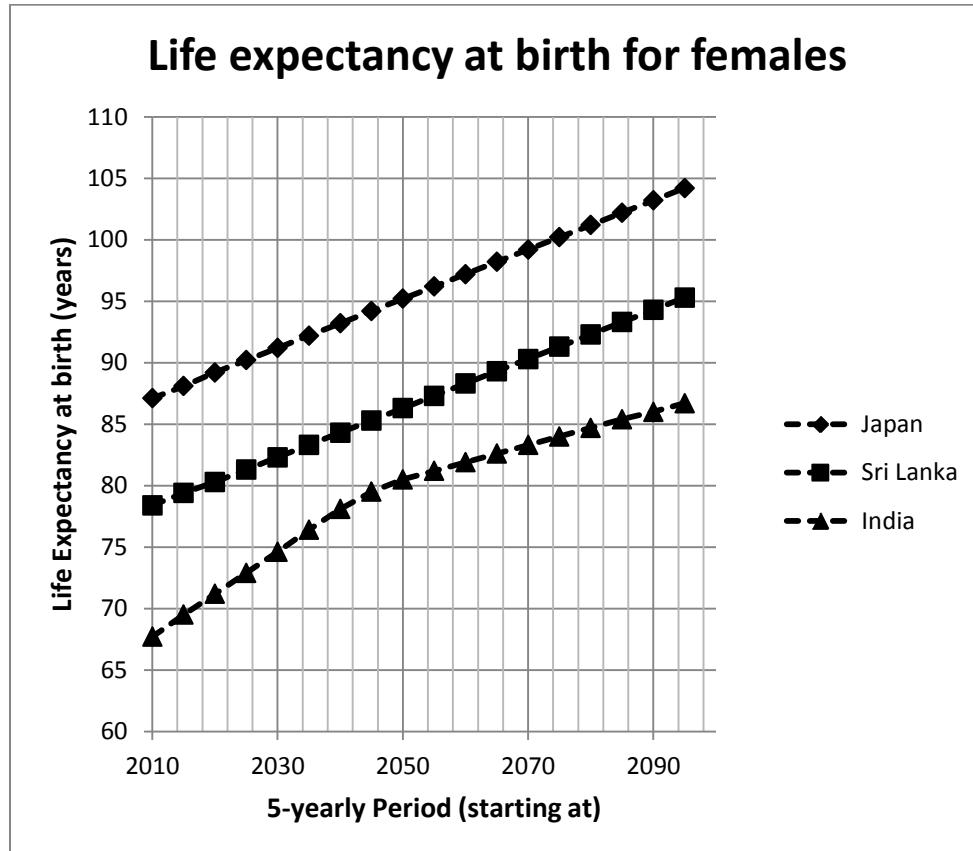
Figure 2. Medium sceneario for life expectancy at birth for females

To illustrate the resulting mortality assumptions for a specific example, Figure 2 above gives the assumed trends in overall female life expectancy (across all education groups) at birth for global forerunner Japan, the South Asian regional forerunner Sri Lanka, and India as a arbitrarily chosen big country in the South Asia region. While Sri Lanka quickly converges to the two years decadal increase assumed for Japan and hence draws parallel to Japan, India at first shows more rapid increases drawing closer to Sri Lanka, but the rate of improvement is visibly slowed during the second half of the century as a consequence of rather pessimistic expert assessments about the longer term rate of mortality improvement. Despite a few such cases of country-specific assumptions resulting in less convergence, the overall pattern is that of slow but steady convergence in overall levels of life expectancy.

Relatedly, Figure 3 shows the trend in standard deviation of the assumed levels of female life expectancy at birth across all countries. This standard deviation declines from around 10.5 years today to 8.5 years by the end of the century. This illustrates the results of the chosen model of convergence in terms of assumed national mortality trends for the rest of the century.
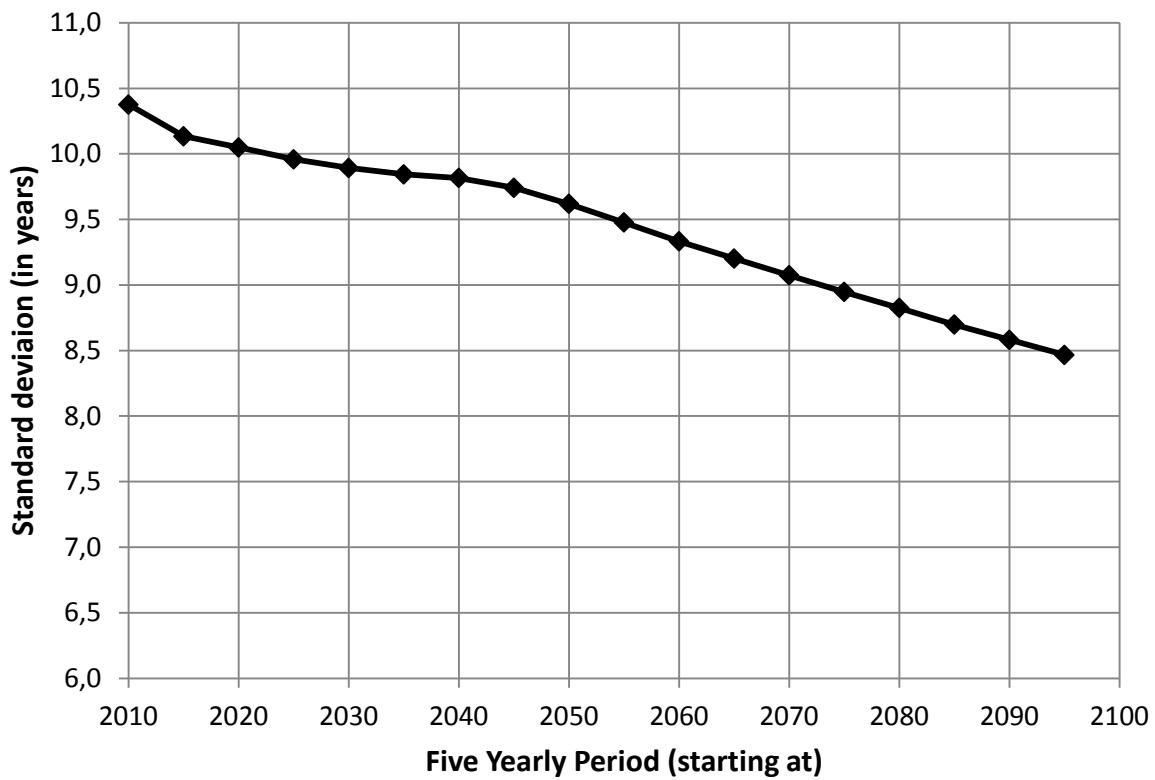
Figure 3. Standard deviation of the assumed medium levels of female life expectancy at birth across all countries 2010-2100

Once life expectancies at birth for five-year periods during 2010-2100 were modelled for females in 196 countries, life expectancies for males were derived by applying the difference between the female and overall life expectancy in the UN medium variant (United Nations 2011). For a given sex-specific e_0, life-tables were derived by interpolating and extrapolating (when the values were higher than the highest in the UN Medium variant) using country-specific life tables used in the UN-medium variant.

Table 5. Life Expectancy at birth for Women, medium assumptions

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Afghanistan	47,5	49,5	51,4	53,3	55,4	57,4	59,4	61,5	63,4	65,2	67,0	68,5	69,9	71,2	72,4	73,5	74,5	75,5	76,4
Albania	79,7	80,7	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8
Algeria	73,7	75,2	76,5	77,7	78,8	79,9	80,9	81,9	82,9	83,9	84,9	85,9	86,9	88,0	89,0	90,0	91,0	92,0	93,0
Angola	51,0	53,2	55,2	56,6	57,9	59,2	60,4	61,5	62,8	64,2	65,6	67,1	68,5	69,9	71,3	72,7	74,2	75,6	77,0
Argentina	79,1	80,1	81,1	82,1	83,0	83,9	84,8	85,6	86,6	87,6	88,7	89,8	91,0	92,1	93,2	94,3	95,4	96,5	97,7
Armenia	76,7	77,4	78,2	79,1	80,0	81,0	82,0	82,9	83,9	84,9	85,9	86,9	87,9	88,9	89,9	90,9	91,9	92,9	93,9
Aruba	77,1	78,7	80,1	81,3	82,4	83,5	84,5	85,5	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6
Australia	83,8	85,0	86,1	87,2	88,3	89,3	90,3	91,3	92,3	93,3	94,3	95,3	96,3	97,3	98,3	99,3	100,3	101,3	102,3
Austria	82,9	84,1	85,2	86,3	87,4	88,6	89,8	91,0	92,1	93,1	94,0	94,9	95,8	96,7	97,6	98,5	99,4	100,3	101,3
Azerbaijan	73,1	73,9	74,8	75,7	76,7	77,7	78,6	79,6	80,6	81,6	82,6	83,6	84,6	85,6	86,6	87,6	88,6	89,6	90,6
Bahamas	77,8	78,8	79,8	80,7	81,7	82,7	83,7	84,6	85,6	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6
Bahrain	75,4	76,9	78,3	79,5	80,6	81,7	82,7	83,7	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8
Bangladesh	68,3	70,4	72,1	73,6	75,0	76,3	77,5	78,6	79,8	80,9	82,0	83,1	84,2	85,2	86,3	87,4	88,5	89,6	90,7
Barbados	79,5	81,1	82,4	83,6	84,7	85,7	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8
Belarus	75,5	76,9	78,1	79,2	80,3	81,4	82,4	83,4	84,4	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5
Belgium	82,5	83,8	84,9	86,0	87,1	88,1	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2	101,2
Belize	76,8	78,2	79,4	80,6	81,7	82,8	83,8	84,9	85,9	86,9	87,9	88,9	89,9	90,9	91,9	92,9	93,9	94,9	95,9
Benin	56,5	58,7	60,7	62,1	63,4	64,6	65,8	66,8	67,9	69,1	70,4	71,6	72,9	74,1	75,3	76,6	77,8	79,1	80,3
Bhutan	67,8	69,9	71,9	73,7	75,3	76,9	78,3	79,7	80,9	82,2	83,4	84,5	85,7	86,8	87,9	88,9	90,0	91,0	92,1
Bolivia	67,7	68,7	69,8	70,9	71,9	72,9	74,0	75,0	76,0	77,0	78,0	79,0	80,0	81,0	82,0	83,0	84,0	85,0	86,0
Bosnia and Herzegovina	77,7	78,9	80,1	81,1	82,2	83,2	84,3	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3	93,3	94,3	95,3	96,3
Botswana	52,5	51,3	52,0	53,3	54,6	55,9	57,1	58,4	59,8	61,4	63,0	64,7	66,3	67,8	69,4	71,0	72,6	74,1	75,7
Brazil	75,9	77,3	78,6	80,0	81,3	82,6	83,9	85,2	86,3	87,3	88,2	89,0	90,0	90,9	91,8	92,7	93,6	94,5	95,4
Brunei Darussalam	80,0	81,5	82,8	84,0	85,1	86,1	87,2	88,2	89,2	90,2	91,2	92,2	93,2	94,3	95,3	96,3	97,3	98,3	99,3
Bulgaria	76,3	77,3	78,3	79,3	80,4	81,4	82,4	83,5	84,5	85,6	86,6	87,7	88,8	89,9	90,9	92,0	93,1	94,2	95,2
Burkina Faso	54,8	57,0	59,1	60,5	62,0	63,4	64,7	66,0	67,2	68,5	69,7	71,0	72,2	73,5	74,7	76,0	77,2	78,4	79,7
Burundi	50,0	52,6	54,8	55,9	57,0	58,1	59,1	60,0	61,2	62,6	64,1	65,6	67,1	68,6	70,1	71,6	73,1	74,5	76,0
Cambodia	62,6	65,6	67,9	69,7	71,2	72,6	73,8	74,9	76,0	77,1	78,1	79,2	80,2	81,2	82,2	83,2	84,2	85,2	86,2

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Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Cameroon	50,9	53,6	55,7	57,0	58,2	59,4	60,5	61,6	62,9	64,2	65,6	67,0	68,4	69,8	71,2	72,6	74,0	75,3	76,7
Canada	82,8	83,7	84,6	85,7	86,7	87,7	88,8	89,9	90,9	92,0	93,1	94,2	95,3	96,4	97,5	98,5	99,6	100,7	101,8
Cape Verde	77,4	78,1	79,0	79,9	80,9	81,9	82,9	83,9	84,9	85,9	86,9	87,9	89,0	90,0	91,1	92,1	93,2	94,2	95,3
Central African Republic	47,3	51,3	54,4	55,8	57,1	58,2	59,3	60,3	61,5	62,9	64,4	65,9	67,4	68,9	70,4	71,9	73,4	74,9	76,3
Chad	49,9	51,6	53,3	54,7	56,1	57,4	58,6	59,9	61,2	62,7	64,2	65,7	67,2	68,7	70,1	71,6	73,1	74,6	76,1
Channel Islands	81,6	82,8	84,0	85,1	86,1	87,1	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2
Chile	81,7	82,9	84,2	85,3	86,4	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5	96,5	97,5	98,5	99,6	100,6
China	74,4	75,7	76,9	78,0	79,1	80,1	81,1	82,1	83,2	84,2	85,2	86,2	87,2	88,2	89,2	90,2	91,2	92,2	93,2
China, Hong Kong SAR	84,3	85,6	86,7	87,8	88,9	89,9	90,9	92,0	93,0	94,0	95,0	96,0	97,0	98,0	99,0	100,0	101,0	102,0	103,0
China, Macao SAR	82,6	83,8	85,0	86,1	87,1	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2	101,2
Colombia	76,7	78,0	79,3	80,5	81,6	82,7	83,7	84,7	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8
Comoros	61,0	62,0	62,9	63,8	64,7	65,6	66,5	67,3	68,2	69,3	70,4	71,5	72,6	73,8	74,9	76,0	77,1	78,2	79,3
Congo	57,2	59,3	61,2	62,3	63,4	64,5	65,5	66,4	67,4	68,6	69,8	71,1	72,3	73,6	74,8	76,0	77,3	78,5	79,8
Costa Rica	81,4	82,2	83,1	84,0	84,9	85,7	86,5	87,3	88,2	89,3	90,3	91,4	92,5	93,5	94,6	95,7	96,7	97,8	98,8
Croatia	79,5	80,7	81,8	82,9	83,9	85,0	86,0	87,0	88,0	89,0	90,0	91,0	92,0	93,0	94,0	95,0	96,0	97,0	98,0
Cuba	80,5	81,7	82,9	83,9	84,9	86,0	87,1	88,2	89,2	90,2	91,2	92,1	93,1	94,1	95,0	96,0	96,9	97,9	98,9
Cyprus	81,1	82,4	83,7	84,8	85,9	86,9	87,9	89,0	90,0	91,0	92,0	93,0	94,0	95,0	96,0	97,0	98,0	99,0	100,0
Czech Republic	80,2	81,4	82,6	83,8	85,0	86,2	87,4	88,6	89,7	90,6	91,5	92,4	93,3	94,2	95,1	96,0	96,9	97,8	98,7
Côte d'Ivoire	54,0	57,7	60,6	61,9	63,2	64,3	65,3	66,2	67,2	68,4	69,6	70,9	72,1	73,4	74,6	75,9	77,1	78,4	79,6
Dem. People's Republic of Korea	71,8	73,6	75,2	76,5	77,7	78,9	79,9	81,0	82,0	83,0	84,0	85,0	86,1	87,1	88,1	89,1	90,1	91,1	92,1
Democratic Republic of the Congo	48,9	50,6	52,2	53,5	54,8	56,0	57,3	58,5	59,9	61,4	62,9	64,4	66,0	67,5	69,0	70,5	72,0	73,5	75,0
Denmark	80,5	81,7	82,8	83,8	84,9	85,9	86,9	87,9	88,9	89,9	90,9	91,9	92,9	93,9	94,9	95,9	96,9	97,9	98,9
Djibouti	58,0	60,0	62,3	63,5	64,6	65,7	66,8	67,8	68,9	70,0	71,2	72,5	73,7	74,9	76,1	77,4	78,6	79,8	81,0
Dominican Republic	75,4	76,8	77,9	79,0	80,0	81,1	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Ecuador	78,1	79,2	80,4	81,5	82,5	83,6	84,6	85,6	86,6	87,6	88,6	89,7	90,7	91,7	92,7	93,7	94,7	95,7	96,7
Egypt	74,3	75,1	76,0	76,9	77,9	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8
El Salvador	76,1	77,4	78,6	79,8	80,9	82,0	83,0	84,0	85,0	86,0	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1
Equatorial Guinea	51,5	52,9	54,4	55,7	57,0	58,3	59,5	60,7	62,0	63,4	64,9	66,4	67,8	69,3	70,7	72,2	73,6	75,1	76,5
Eritrea	62,2	64,4	66,3	67,3	68,4	69,3	70,2	70,9	71,8	72,8	73,9	75,0	76,1	77,2	78,3	79,4	80,6	81,7	82,8
Estonia	79,2	79,9	80,7	81,7	82,6	83,6	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5	96,5
Ethiopia	58,7	61,6	63,6	64,8	66,1	67,2	68,2	69,2	70,2	71,3	72,4	73,6	74,7	75,9	77,1	78,2	79,4	80,5	81,7
Fiji	71,9	73,2	74,3	75,4	76,4	77,5	78,5	79,5	80,5	81,5	82,5	83,5	84,5	85,5	86,5	87,5	88,5	89,5	90,5
Finland	82,8	83,9	85,1	86,1	87,2	88,2	89,2	90,3	91,3	92,3	93,3	94,3	95,3	96,3	97,3	98,3	99,3	100,3	101,3
France	84,3	85,6	86,7	87,8	88,9	89,9	90,9	91,9	93,0	94,0	95,0	96,0	97,0	98,0	99,0	100,0	101,0	102,0	103,0
French Guiana	79,9	81,1	82,3	83,4	84,5	85,5	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6	97,6	98,6
French Polynesia	77,1	77,8	78,8	79,8	80,7	81,7	82,7	83,7	84,7	85,7	86,7	87,7	88,7	89,7	90,7	91,7	92,7	93,7	94,7
Gabon	62,3	64,3	66,0	67,0	68,0	68,9	69,8	70,6	71,5	72,5	73,7	74,8	75,9	77,1	78,2	79,3	80,5	81,6	82,7
Gambia	58,5	60,3	61,9	63,1	64,2	65,3	66,3	67,3	68,3	69,5	70,7	71,9	73,1	74,4	75,6	76,8	78,1	79,3	80,5
Georgia	76,5	77,7	78,9	80,0	81,0	82,0	83,0	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1
Germany	82,4	83,4	84,5	85,5	86,6	87,6	88,6	89,7	90,7	91,7	92,7	93,8	94,8	95,8	96,9	97,9	98,9	100,0	101,0
Ghana	63,6	65,8	67,4	68,3	69,2	70,0	70,8	71,5	72,4	73,4	74,5	75,7	76,8	77,9	79,0	80,2	81,3	82,4	83,5
Greece	82,0	83,5	84,8	86,0	87,1	88,2	89,2	90,2	91,2	92,3	93,3	94,3	95,3	96,3	97,3	98,3	99,3	100,3	101,3
Grenada	76,8	77,8	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8
Guadeloupe	82,9	84,1	85,2	86,3	87,3	88,3	89,4	90,4	91,4	92,4	93,4	94,4	95,4	96,4	97,4	98,4	99,4	100,4	101,4
Guam	77,9	79,3	80,4	81,4	82,4	83,4	84,4	85,4	86,4	87,4	88,4	89,4	90,4	91,4	92,4	93,4	94,4	95,4	96,4
Guatemala	73,8	74,6	75,5	76,5	77,5	78,5	79,5	80,5	81,5	82,5	83,5	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5
Guinea	54,0	56,4	58,5	59,9	61,3	62,6	63,9	65,0	66,3	67,5	68,8	70,1	71,4	72,7	74,0	75,3	76,6	77,9	79,2
Guinea-Bissau	48,2	50,4	52,4	53,8	55,1	56,5	57,8	59,0	60,4	61,9	63,5	65,0	66,5	68,0	69,5	71,0	72,5	74,0	75,5
Guyana	71,9	72,5	73,3	74,2	75,1	76,1	77,1	78,0	79,0	80,0	81,0	82,0	83,0	84,0	85,0	86,0	87,0	88,0	89,0
Haiti	62,0	63,9	65,4	66,9	68,4	69,9	71,3	72,4	73,5	74,6	75,6	76,5	77,4	78,2	79,0	79,8	80,5	81,3	82,0
Honduras	74,5	75,8	77,0	78,2	79,3	80,4	81,4	82,4	83,4	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5
Hungary	77,6	78,7	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8
Iceland	83,1	84,3	85,5	86,6	87,6	88,7	89,7	90,7	91,7	92,7	93,7	94,7	95,7	96,7	97,7	98,7	99,7	100,7	101,7

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
India	65,7	67,7	69,5	71,2	72,9	74,6	76,4	78,1	79,5	80,5	81,2	81,9	82,6	83,3	84,0	84,7	85,4	86,0	86,7
Indonesia	69,4	70,8	72,2	73,5	74,7	76,0	77,4	78,7	79,8	80,9	81,8	82,7	83,6	84,5	85,4	86,3	87,2	88,1	89,0
Iran (Islamic Republic of)	73,9	75,8	77,5	79,0	80,6	82,0	83,3	84,6	85,8	87,0	88,2	89,4	90,5	91,7	92,8	94,0	95,1	96,3	97,4
Iraq	71,7	74,1	75,9	77,5	78,8	80,0	81,1	82,2	83,2	84,2	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3	93,3
Ireland	82,0	83,0	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1	96,1	97,1	98,1	99,1	100,1
Israel	82,9	84,0	85,1	86,2	87,2	88,2	89,2	90,2	91,2	92,2	93,1	94,1	95,0	96,0	96,9	97,9	98,9	99,8	100,8
Italy	84,0	85,1	86,2	87,3	88,3	89,4	90,4	91,4	92,4	93,4	94,4	95,4	96,4	97,5	98,5	99,5	100,5	101,5	102,6
Jamaica	75,0	76,5	77,7	78,9	80,0	81,0	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1
Japan	86,1	87,1	88,1	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2	101,2	102,2	103,2	104,2
Jordan	74,3	75,8	77,1	78,3	79,4	80,5	81,5	82,6	83,6	84,6	85,6	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6
Kazakhstan	71,5	73,8	75,2	76,3	77,4	78,4	79,4	80,4	81,4	82,4	83,4	84,4	85,4	86,4	87,4	88,4	89,4	90,4	91,4
Kenya	55,9	59,2	61,0	62,2	63,3	64,3	65,2	66,0	67,0	68,1	69,3	70,6	71,8	73,1	74,3	75,5	76,8	78,0	79,2
Kuwait	75,2	76,8	78,1	79,3	80,4	81,5	82,5	83,6	84,6	85,6	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6
Kyrgyzstan	71,0	72,3	73,7	74,9	76,0	77,1	78,2	79,2	80,3	81,3	82,3	83,3	84,3	85,3	86,3	87,3	88,3	89,3	90,3
Lao People's Democratic Republic	67,3	68,1	69,0	69,8	70,7	71,6	72,6	73,6	74,5	75,5	76,5	77,5	78,5	79,5	80,5	81,5	82,5	83,5	84,5
Latvia	77,4	78,6	79,8	80,9	81,9	82,9	84,0	85,0	86,0	87,0	88,0	89,0	90,0	91,0	92,0	93,0	94,0	95,0	96,0
Lebanon	74,2	75,5	76,6	77,7	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8
Lesotho	45,2	48,1	49,3	50,7	52,1	53,5	54,7	56,0	57,3	58,8	60,2	61,7	63,1	64,5	65,9	67,3	68,8	70,2	71,6
Liberia	55,3	58,6	61,1	62,4	63,7	64,8	65,9	66,9	68,0	69,1	70,3	71,5	72,7	73,9	75,2	76,4	77,6	78,8	80,0
Libyan Arab Jamahiriya	76,9	78,5	79,9	81,1	82,3	83,4	84,4	85,4	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5	96,5
Lithuania	77,2	78,7	80,0	81,1	82,2	83,3	84,3	85,4	86,4	87,4	88,4	89,4	90,4	91,4	92,4	93,4	94,4	95,4	96,4
Luxembourg	82,0	83,2	84,4	85,5	86,5	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6	97,6	98,6	99,6	100,6
Madagascar	67,3	70,4	72,4	73,2	74,0	74,7	75,5	76,3	77,2	78,3	79,3	80,4	81,4	82,5	83,5	84,6	85,6	86,7	87,7
Malawi	51,5	55,2	57,0	58,6	60,2	61,7	63,0	64,3	65,6	66,9	68,2	69,4	70,7	72,0	73,3	74,6	75,8	77,1	78,4
Malaysia	75,7	77,3	78,6	79,8	80,9	81,9	83,0	84,0	85,0	86,0	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1
Maldives	76,5	79,1	81,4	83,4	85,3	87,0	88,6	90,0	91,4	92,7	94,0	95,2	96,4	97,5	98,6	99,7	100,8	101,9	102,9
Mali	51,0	53,1	55,1	56,7	58,2	59,6	61,0	62,4	63,8	65,2	66,6	67,9	69,3	70,7	72,0	73,4	74,7	76,1	77,4

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Malta	81,2	82,4	83,6	84,7	85,7	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8	99,8
Martinique	83,2	83,7	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5	96,5	97,5	98,5	99,5	100,5
Mauritania	59,2	59,8	60,7	61,8	62,9	63,9	64,8	65,7	66,9	68,5	70,3	72,1	73,8	75,5	77,2	78,9	80,6	82,3	84,0
Mauritius	76,2	77,6	78,8	79,9	81,0	82,1	83,1	84,1	85,2	86,2	87,2	88,2	89,2	90,2	91,3	92,3	93,3	94,3	95,3
Mayotte	81,1	82,4	83,6	84,7	85,8	86,8	87,9	88,9	89,9	90,9	91,9	92,9	93,9	94,9	95,9	96,9	97,9	98,9	99,9
Mexico	78,6	79,8	81,0	82,0	83,1	84,1	85,0	85,9	86,9	87,9	88,9	90,0	91,0	92,1	93,1	94,2	95,2	96,2	97,3
Micronesia (Fed. States of)	69,1	70,3	71,5	72,6	73,7	74,7	75,8	76,8	77,8	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8
Mongolia	71,5	71,8	72,3	73,1	73,9	74,8	75,8	76,7	77,7	78,7	79,7	80,7	81,7	82,7	83,7	84,7	85,7	86,7	87,7
Montenegro	76,5	78,6	80,2	81,6	82,9	84,0	85,1	86,2	87,2	88,2	89,2	90,3	91,3	92,3	93,3	94,3	95,3	96,3	97,3
Morocco	73,4	74,8	76,0	77,1	78,1	79,2	80,2	81,2	82,2	83,2	84,2	85,2	86,2	87,2	88,2	89,2	90,2	91,2	92,2
Mozambique	49,9	51,8	54,1	55,5	57,0	58,3	59,6	60,8	62,1	63,4	64,9	66,3	67,7	69,1	70,5	71,9	73,3	74,7	76,0
Myanmar	65,0	66,3	67,4	68,4	69,5	70,5	71,5	72,5	73,5	74,5	75,5	76,5	77,5	78,5	79,5	80,5	81,5	82,5	83,5
Namibia	61,6	63,0	62,6	63,6	64,7	65,6	66,5	67,3	68,2	69,3	70,5	71,7	72,8	73,9	75,0	76,1	77,2	78,4	79,5
Nepal	68,0	71,4	74,0	75,8	77,6	79,3	80,8	82,3	83,6	84,6	85,4	86,2	87,0	87,8	88,6	89,4	90,1	90,9	91,7
Netherlands	82,2	83,1	84,0	85,0	86,0	87,0	88,0	89,0	90,1	91,1	92,2	93,3	94,4	95,5	96,6	97,7	98,8	99,9	101,0
Netherlands Antilles	79,4	81,0	82,3	83,5	84,6	85,7	86,7	87,7	88,7	89,7	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8
New Caledonia	78,7	79,3	80,2	81,1	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1	96,1
New Zealand	82,2	83,3	84,4	85,5	86,5	87,5	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6	97,6	98,6	99,6	100,6
Nicaragua	76,1	76,7	77,6	78,5	79,4	80,4	81,4	82,3	83,3	84,3	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3	93,3
Niger	53,5	56,2	58,0	59,1	60,1	61,2	62,1	63,1	64,1	65,3	66,6	67,9	69,1	70,4	71,7	72,9	74,2	75,5	76,7
Nigeria	51,0	53,4	55,6	56,9	58,2	59,3	60,3	61,2	62,4	63,7	65,2	66,7	68,2	69,6	71,1	72,5	74,0	75,4	76,9
Norway	82,7	83,6	84,6	85,7	86,7	87,7	88,8	89,8	90,8	91,8	92,9	94,0	95,0	96,1	97,1	98,2	99,2	100,3	101,3
Occupied Palestinian Territory	73,8	74,8	76,0	77,2	78,5	79,8	81,1	82,5	83,7	84,8	85,7	86,7	87,6	88,5	89,4	90,4	91,3	92,2	93,1
Oman	74,8	76,9	78,5	79,9	81,1	82,3	83,4	84,4	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5
Other non-specified areas	81,5	82,5	83,5	84,6	85,6	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6	97,6	98,6	99,6
Pakistan	65,4	66,5	67,6	68,7	69,9	71,0	72,1	73,1	74,2	75,3	76,4	77,5	78,7	79,8	80,9	82,0	83,1	84,2	85,4

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Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Panama	78,2	79,5	80,8	82,0	83,1	84,2	85,2	86,2	87,2	88,2	89,3	90,3	91,3	92,3	93,3	94,3	95,3	96,3	97,3
Papua New Guinea	63,7	65,0	66,2	67,4	68,4	69,5	70,5	71,5	72,5	73,5	74,5	75,5	76,5	77,5	78,5	79,5	80,5	81,5	82,5
Paraguay	73,9	75,0	76,1	77,1	78,2	79,2	80,2	81,2	82,3	83,3	84,3	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3
Peru	75,9	76,8	77,8	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8
Philippines	71,3	72,2	73,2	74,3	75,3	76,3	77,3	78,4	79,4	80,5	81,6	82,6	83,7	84,8	85,9	87,0	88,0	89,1	90,2
Poland	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8
Portugal	81,8	83,1	84,2	85,3	86,4	87,5	88,5	89,5	90,5	91,5	92,5	93,5	94,5	95,5	96,5	97,5	98,5	99,5	100,5
Puerto Rico	82,7	83,9	85,0	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1	96,1	97,1	98,1	99,1	100,1	101,1
Qatar	77,3	78,7	79,9	81,1	82,1	83,2	84,2	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3	93,3	94,3	95,3	96,3
Republic of Korea	83,3	84,1	85,0	85,9	86,9	87,9	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8	99,8	100,8
Republic of Moldova	72,1	73,5	74,7	75,9	76,9	78,0	79,0	80,1	81,1	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1
Romania	76,8	78,3	79,6	80,7	81,9	83,0	84,1	85,2	86,2	87,1	88,0	88,9	89,9	90,8	91,7	92,6	93,5	94,4	95,3
Russian Federation	74,0	75,0	76,0	77,0	78,1	79,0	80,0	80,9	81,9	82,9	84,0	85,1	86,2	87,3	88,3	89,4	90,5	91,6	92,7
Rwanda	55,1	57,1	58,7	59,9	61,1	62,2	63,3	64,2	65,3	66,6	67,9	69,3	70,6	72,0	73,3	74,6	76,0	77,3	78,7
Réunion	81,1	82,1	83,2	84,2	85,2	86,2	87,2	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2
Saint Lucia	76,6	77,9	79,0	80,0	81,1	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1	91,1	92,1	93,1	94,1	95,1
Saint Vincent and the Grenadines	73,8	75,6	77,1	78,3	79,5	80,6	81,6	82,6	83,7	84,7	85,7	86,7	87,7	88,7	89,7	90,7	91,7	92,7	93,7
Samoa	74,9	76,1	77,2	78,3	79,3	80,3	81,4	82,4	83,4	84,4	85,4	86,4	87,4	88,4	89,4	90,4	91,4	92,4	93,4
Sao Tome and Principe	65,1	66,1	66,9	67,8	68,6	69,4	70,3	71,1	72,0	73,1	74,2	75,3	76,4	77,5	78,6	79,7	80,8	81,9	83,0
Saudi Arabia	74,4	76,0	77,3	78,5	79,6	80,7	81,7	82,8	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8
Senegal	59,1	60,6	61,9	63,1	64,3	65,4	66,4	67,3	68,5	70,0	71,6	73,2	74,7	76,3	77,9	79,4	81,0	82,5	84,1
Serbia	76,3	77,3	78,3	79,3	80,4	81,4	82,4	83,5	84,5	85,5	86,6	87,7	88,7	89,8	90,8	91,9	93,0	94,0	95,1
Sierra Leone	46,9	48,9	50,8	52,3	53,8	55,3	56,8	58,3	59,8	61,3	62,8	64,3	65,8	67,2	68,7	70,2	71,6	73,1	74,6
Singapore	82,7	83,5	84,4	85,4	86,4	87,4	88,4	89,4	90,4	91,4	92,4	93,4	94,4	95,4	96,4	97,4	98,4	99,4	100,4
Slovakia	78,7	79,8	81,0	82,0	83,1	84,1	85,1	86,2	87,2	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
Slovenia	82,0	82,9	83,8	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8	99,8
Solomon Islands	67,8	68,0	68,5	69,1	69,9	70,8	71,7	72,7	73,6	74,6	75,6	76,6	77,6	78,6	79,6	80,6	81,6	82,6	83,6
Somalia	51,8	53,3	54,6	55,8	57,0	58,1	59,0	59,9	61,1	62,6	64,2	65,9	67,5	69,0	70,6	72,2	73,8	75,3	76,9
South Africa	52,1	54,1	55,8	57,2	58,5	59,8	61,0	62,3	63,6	65,0	66,4	67,8	69,1	70,5	71,9	73,2	74,6	75,9	77,3
Spain	83,8	84,7	85,7	86,8	87,8	88,9	89,9	90,9	91,9	93,0	94,1	95,2	96,2	97,3	98,4	99,5	100,6	101,7	102,7
Sri Lanka	77,4	78,4	79,4	80,3	81,3	82,3	83,3	84,3	85,3	86,3	87,3	88,3	89,3	90,3	91,3	92,3	93,3	94,3	95,3
Sudan	62,0	63,9	65,2	65,9	66,6	67,3	68,1	68,8	69,7	70,6	71,6	72,6	73,6	74,6	75,6	76,6	77,6	78,6	79,6
Suriname	73,1	74,5	75,7	76,9	78,0	79,1	80,2	81,2	82,2	83,2	84,2	85,2	86,2	87,2	88,2	89,2	90,2	91,2	92,2
Swaziland	47,0	48,5	47,7	49,4	51,2	52,8	54,3	55,7	57,2	58,9	60,7	62,4	64,1	65,7	67,4	69,0	70,7	72,4	74,0
Sweden	82,9	83,7	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,6	92,6	93,7	94,8	95,9	97,0	98,1	99,2	100,3	101,4
Switzerland	84,1	85,4	86,5	87,6	88,7	89,7	90,7	91,8	92,8	93,8	94,8	95,8	96,8	97,8	98,8	99,8	100,8	101,8	102,8
Syrian Arab Republic	76,8	78,2	79,4	80,5	81,6	82,6	83,7	84,7	85,7	86,7	87,7	88,7	89,7	90,7	91,7	92,7	93,7	94,7	95,7
TFYR Macedonia	76,3	77,2	78,3	79,4	80,6	81,8	83,0	84,2	85,3	86,3	87,3	88,3	89,2	90,2	91,2	92,1	93,1	94,0	95,0
Tajikistan	69,9	70,7	71,7	72,7	73,8	74,8	75,8	76,8	77,8	78,8	79,8	80,8	81,8	82,8	83,8	84,8	85,8	86,8	87,8
Thailand	77,1	77,6	78,1	78,8	79,5	80,1	80,7	81,3	81,9	82,6	83,4	84,1	84,8	85,6	86,3	87,1	87,8	88,5	89,3
Timor-Leste	61,7	63,1	64,3	65,4	66,5	67,5	68,5	69,6	70,6	71,6	72,6	73,6	74,6	75,6	76,6	77,6	78,6	79,6	80,6
Togo	57,1	59,4	61,7	63,0	64,2	65,3	66,4	67,3	68,4	69,6	70,8	72,1	73,3	74,5	75,8	77,0	78,3	79,5	80,8
Tonga	74,7	76,0	77,2	78,3	79,4	80,4	81,4	82,5	83,5	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5	93,5
Trinidad and Tobago	72,9	74,8	76,3	77,6	78,8	79,9	80,9	82,0	83,0	84,0	85,0	86,0	87,0	88,0	89,0	90,0	91,0	92,0	93,0
Tunisia	76,0	76,7	77,6	78,6	79,6	80,6	81,6	82,6	83,6	84,6	85,6	86,6	87,6	88,6	89,6	90,6	91,6	92,6	93,6
Turkey	75,3	76,0	76,8	77,7	78,7	79,6	80,6	81,6	82,6	83,6	84,5	85,5	86,5	87,5	88,5	89,5	90,5	91,5	92,5
Turkmenistan	68,9	70,0	71,2	72,4	73,5	74,5	75,6	76,6	77,6	78,6	79,6	80,6	81,6	82,6	83,6	84,6	85,6	86,6	87,6
Uganda	52,7	55,4	57,0	58,3	59,6	60,8	62,0	63,1	64,3	65,6	66,9	68,3	69,6	70,9	72,2	73,5	74,9	76,2	77,5
Ukraine	73,5	74,1	74,9	75,9	77,0	78,0	78,9	79,9	80,9	82,0	83,2	84,3	85,5	86,6	87,8	88,9	90,0	91,2	92,3
United Arab Emirates	77,0	78,4	79,6	80,7	81,8	82,8	83,9	84,9	85,9	86,9	87,9	88,9	89,9	90,9	91,9	92,9	93,9	94,9	95,9
United Kingdom	81,7	82,9	84,0	85,1	86,2	87,2	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2

Country	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100
United Republic of Tanzania	56,2	60,3	63,3	64,5	65,8	66,9	67,9	68,8	69,8	70,9	72,0	73,1	74,3	75,4	76,6	77,7	78,8	80,0	81,1
United States Virgin Islands	82,0	83,6	84,8	86,0	87,1	88,2	89,2	90,2	91,2	92,2	93,2	94,2	95,2	96,2	97,2	98,2	99,2	100,2	101,2
United States of America	80,5	81,2	81,9	82,8	83,6	84,5	85,4	86,3	87,3	88,4	89,5	90,7	91,8	93,0	94,1	95,3	96,4	97,6	98,7
Uruguay	79,8	81,1	82,2	83,4	84,4	85,5	86,5	87,5	88,5	89,6	90,6	91,6	92,6	93,6	94,6	95,6	96,6	97,6	98,6
Uzbekistan	70,7	72,0	73,3	74,5	75,7	76,8	77,8	78,9	79,9	80,9	81,9	82,9	83,9	84,9	85,9	86,9	87,9	88,9	89,9
Vanuatu	72,1	73,1	74,1	75,1	76,1	77,1	78,1	79,1	80,1	81,1	82,1	83,1	84,1	85,1	86,1	87,1	88,1	89,1	90,1
Venezuela	76,8	78,1	79,3	80,5	81,6	82,7	83,7	84,8	85,8	86,8	87,8	88,8	89,8	90,8	91,8	92,8	93,8	94,8	95,8
Viet Nam	76,2	77,9	79,2	80,3	81,4	82,5	83,5	84,4	85,4	86,5	87,6	88,7	89,7	90,8	91,9	93,0	94,1	95,1	96,2
Yemen	65,4	66,3	67,3	68,3	69,3	70,3	71,3	72,3	73,2	74,2	75,2	76,2	77,2	78,2	79,2	80,2	81,2	82,2	83,2
Zambia	47,3	50,0	51,3	52,7	54,0	55,3	56,4	57,6	58,9	60,5	62,1	63,8	65,5	67,1	68,7	70,3	72,0	73,6	75,2
Zimbabwe	45,4	52,7	56,9	58,1	59,2	60,3	61,4	62,4	63,6	65,0	66,5	68,0	69,4	70,9	72,4	73,8	75,3	76,8	78,2

We introduce gender-specific education differentials in mortality as differences in life expectancy at age 15. In doing so, we follow the literature. The difference in life expectancy at age 15 between the "no education" category and the tertiary-educated population is assumed to be of six years for men and four years for women. Between these extreme points, among males we assume two years difference between "completed primary" and "completed lower secondary", and one year for the remaining levels of attainment. Likewise, for females, we proportionally adjust to the lower assumption of a four years differential overall.

Finally, for children up to age 15 the differential mortality is introduced through the mother's education. We assume that the differentials in terms of relative ratio of mortality rates with respect to the completed upper secondary category are 1.8, 1.7, 1.6, 1.4, 1.0 and 0.8, in ascending order of educational attainment. These values are based on the averages of under-five mortality rates in the DHS countries (ref DHS website).

3.4 Migration Assumptions

The migration component of the projections represents a significant innovation in the way migration is handled in global population projections. The limitation of the conventional approach of using net-migration models were overcome by drawing on a first-of-a-kind set of bilateral migration flow estimates (see Sander et al. 2013) and, for a detailed discussion of the estimation method, Abel (2013). These estimates of country-to-country migration flows for five-year periods allow us to use a bi-regional cohort-component projection model where flows rather than net numbers are projected. As described in Sander et al. (2013), we assume the age profile of migration flows to follow a modified Rogers-Castro standard age schedule.

Migration assumptions were developed by the team working on global migration flows and, as required by the bi-regional model, were formulated as probabilities of immigration and emigration (see Sander et al. 2013) for a discussion of the bi-regional model). Since the risk populations for emigration rates are the national populations, whereas for immigration rates they are the global populations and both populations can develop differently, the level of net migration is not constant even under constant immigration and emigration rates as is assumed in the medium scenariosfor the coming half century. The assumption of a continuation of current trends until the year 2060 marks the most important outcome of the meta-experts meeting on migration (see Sander et al. 2013). After 2060, immigration and emigration flows gradually converge to their average. As a result, net migration for each country is zero in the last period of the projection, 2095-2100.

For the human capital projections, an additional state is added to the bi-regional framework to project age, sex, and education-specific immigration and emigration flows. In the absence of a harmonised dataset on the education composition of global bilateral migration flows, we assume that the education composition of migration flows is equal to that in the origin country.

Table 6. Current level of in-migration and out migration (2005-2010) number (all ages)

Country	Emigration		Immigration		Net Migration	
	Female	Male	Female	Male	Female	Male
Afghanistan	197	195	6	8	-191	-187
Albania	49	30	16	15	-34	-14
Algeria	85	111	24	32	-61	-79
Angola	0	1	37	46	37	46
Argentina	142	136	38	41	-104	-95
Armenia	49	50	23	1	-26	-49
Aruba	0	0	2	2	2	2
Australia	17	23	561	604	544	581
Austria	21	32	103	110	81	78
Azerbaijan	11	3	26	42	15	38
Bahamas	0	0	3	4	3	3
Bahrain	0	0	120	328	120	328
Bangladesh	788	2173	1	62	-787	-2111
Barbados	2	1	2	1	0	0
Belarus	57	52	31	28	-26	-24
Belgium	7	11	109	108	103	97
Belize	4	4	4	3	0	-1
Benin	19	10	34	45	15	36
Bhutan	1	1	4	15	3	14
Bolivia	104	90	13	16	-91	-74
Bosnia and Herzegovina	16	14	11	10	-5	-5
Botswana	9	10	17	21	8	11
Brazil	251	257	2	3	-248	-254
Brunei Darussalam	23	24	25	26	2	2
Bulgaria	41	43	16	18	-26	-24
Burkina Faso	172	215	129	134	-43	-81
Burundi	0	0	183	187	183	187
Cambodia	105	150	0	0	-105	-149
Cameroon	31	23	17	18	-13	-4
Canada	172	127	718	680	546	553
Cape Verde	13	8	2	2	-12	-6
Central African Republic	18	16	20	20	2	4
Chad	71	78	31	44	-40	-34
Channel Islands	2	1	4	4	2	2
Chile	40	31	54	47	14	16
China	1003	1012	73	53	-930	-959
Colombia	63	77	9	11	-54	-66
Comoros	5	5	0	0	-5	-5
Congo	0	0	24	26	24	26
Costa Rica	20	23	55	65	34	42
Côte d'Ivoire	277	289	92	116	-185	-173
Croatia	14	14	18	20	4	6
Cuba	101	89	0	0	-101	-89
Cyprus	1	1	18	28	16	28

	Emigration		Immigration		Net Migration	
Country	Female	Male	Female	Male	Female	Male
Czech Republic	0	0	96	145	96	145
Democratic People's Republic of Korea	14	9	10	10	-4	1
Democratic Republic of the Congo	56	44	27	50	-29	7
Denmark	8	12	55	55	47	43
Djibouti	2	1	1	1	0	0
Dominican Republic	103	102	29	37	-74	-65
Ecuador	129	130	67	72	-62	-58
Egypt	147	249	24	29	-123	-220
El Salvador	134	161	2	2	-133	-159
Equatorial Guinea	0	0	8	12	8	12
Eritrea	0	0	28	28	28	28
Estonia	4	1	4	1	0	0
Ethiopia	166	131	0	0	-166	-131
Fiji	18	13	1	1	-17	-12
Finland	0	0	33	40	33	40
France	120	133	363	391	243	258
French Guiana	1	2	4	5	3	3
French Polynesia	1	0	0	1	-1	0
Gabon	15	15	16	20	1	4
Gambia	13	24	8	16	-5	-8
Georgia	70	82	1	1	-69	-81
Germany	319	471	671	670	351	199
Ghana	142	169	118	144	-24	-25
Greece	36	23	106	106	71	84
Grenada	3	3	1	0	-3	-2
Guadeloupe	2	3	1	1	-1	-2
Guam	3	3	3	3	0	0
Guatemala	81	125	3	3	-78	-122
Guinea	154	149	2	2	-151	-148
Guinea-Bissau	9	9	4	5	-5	-5
Guyana	22	22	2	2	-20	-20
Haiti	110	131	1	1	-109	-130
Honduras	56	44	0	1	-56	-43
Hong Kong Special Administrative Region of China	69	79	196	129	126	50
Hungary	5	4	42	42	37	38
Iceland	1	2	6	7	5	5
India	1750	1954	283	510	-1466	-1444
Indonesia	381	895	1	0	-381	-895
Iran (Islamic Republic of)	235	241	142	151	-93	-90
Iraq	75	74	0	0	-75	-73

Country	Emigration		Immigration		Net Migration	
	Female	Male	Female	Male	Female	Male
Ireland	35	33	83	84	49	52
Israel	48	42	194	170	146	127
Italy	13	1	879	1135	865	1134
Jamaica	52	51	1	1	-50	-50
Japan	97	74	229	211	131	138
Jordan	72	105	178	203	106	98
Kazakhstan	193	141	165	176	-28	35
Kenya	133	136	47	34	-86	-102
Kuwait	35	85	129	268	95	183
Kyrgyzstan	64	69	0	0	-63	-68
Lao People's Democratic Republic	39	37	0	0	-38	-36
Latvia	6	5	0	0	-6	-4
Lebanon	45	54	39	47	-6	-7
Lesotho	11	10	1	1	-10	-10
Liberia	10	12	159	163	150	151
Libyan Arab Jamahiriya	14	42	16	20	3	-23
Lithuania	20	17	0	0	-19	-16
Luxembourg	0	0	21	22	20	22
Macao Special Administrative Region of China	0	4	28	28	28	23
Madagascar	5	4	2	1	-3	-3
Malawi	24	14	12	7	-12	-8
Malaysia	253	383	291	431	38	48
Maldives	0	0	0	0	0	0
Mali	52	64	7	9	-45	-55
Malta	0	0	2	3	2	3
Martinique	2	2	1	1	-1	-1
Mauritania	4	7	8	13	4	6
Mauritius	5	4	5	4	0	0
Mayotte	2	2	2	1	0	-1
Mexico	850	1076	58	65	-792	-1011
Micronesia (Federated States of)	5	4	0	0	-5	-4
Mongolia	10	6	0	1	-10	-5
Montenegro	12	9	11	7	-1	-2
Morocco	254	423	1	1	-253	-421
Mozambique	70	65	60	55	-9	-10
Myanmar	181	321	4	0	-177	-321
Namibia	11	10	10	10	-1	-1
Nepal	77	120	98	1	21	-119
Netherlands	115	132	139	158	24	26
Netherlands Antilles	1	2	6	5	5	3

Country	Emigration		Immigration		Net Migration	
	Female	Male	Female	Male	Female	Male
New Caledonia	0	0	4	3	4	3
New Zealand	90	92	124	123	34	31
Nicaragua	91	109	1	0	-91	-109
Niger	24	35	17	15	-7	-20
Nigeria	217	219	75	77	-143	-142
Norway	4	0	76	100	72	99
Occupied Palestinian Territory	45	45	0	0	-45	-45
Oman	45	16	0	214	-45	198
Pakistan	788	1245	14	30	-774	-1215
Panama	12	6	15	14	3	8
Papua New Guinea	3	3	2	5	-1	2
Paraguay	21	25	5	2	-17	-23
Peru	370	354	0	0	-370	-354
Philippines	584	679	15	17	-569	-662
Poland	6	31	44	48	38	18
Portugal	91	74	161	155	69	81
Puerto Rico	83	64	1	1	-82	-63
Qatar	7	2	124	742	118	739
Republic of Korea	59	51	46	35	-14	-16
Republic of Moldova	88	95	1	10	-86	-86
Réunion	2	2	2	2	0	0
Romania	72	70	20	23	-52	-48
Russian Federation	148	119	706	696	558	577
Rwanda	29	17	35	27	5	10
Saint Lucia	1	1	1	1	0	-1
Saint Vincent and the Grenadines	3	3	0	0	-3	-2
Samoa	8	9	1	1	-7	-8
Sao Tome and Principe	4	4	1	0	-3	-3
Saudi Arabia	26	224	514	794	487	569
Senegal	58	92	8	10	-50	-82
Serbia	91	84	90	85	-1	1
Sierra Leone	8	7	38	37	30	30
Singapore	0	0	351	371	351	371
Slovakia	4	0	15	25	11	25
Slovenia	1	2	11	14	9	13
Solomon Islands	0	1	0	1	0	0
Somalia	154	146	0	0	-154	-146
South Africa	54	43	344	454	290	411
Spain	71	87	1143	1265	1072	1178
Sri Lanka	132	131	13	0	-118	-131
Sudan	34	30	86	114	52	85
Suriname	4	3	1	0	-3	-2

Country	Emigration		Immigration		Net Migration	
	Female	Male	Female	Male	Female	Male
Swaziland	7	10	6	6	-2	-4
Sweden	26	27	153	166	127	139
Switzerland	56	67	142	163	87	96
Syrian Arab Republic	193	254	212	179	19	-74
Tajikistan	125	171	0	0	-125	-171
Thailand	26	0	224	295	198	295
The former Yugoslav Republic of Macedonia	9	7	10	8	1	1
Timor-Leste	24	26	0	0	-24	-26
Togo	10	7	7	6	-3	-2
Tonga	4	4	0	0	-4	-4
Trinidad and Tobago	9	12	1	0	-9	-11
Tunisia	15	14	4	5	-11	-9
Turkey	82	79	52	59	-29	-20
Turkmenistan	29	28	1	1	-28	-27
Uganda	82	65	6	8	-76	-57
Ukraine	227	196	204	178	-23	-17
United Arab Emirates	0	0	815	2262	815	2261
United Kingdom of Great Britain and Northern Ireland	429	289	911	827	482	539
United Republic of Tanzania	192	175	31	36	-161	-138
United States of America	663	779	3219	3181	2557	2401
United States Virgin Islands	2	2	0	0	-2	-2
Uruguay	25	28	2	2	-23	-27
Uzbekistan	266	260	4	4	-262	-256
Vanuatu	0	0	0	0	0	0
Venezuela	37	35	50	62	13	28
Viet Nam	272	178	5	15	-267	-163
Western Sahara	0	0	21	26	21	26
Yemen	91	120	34	44	-57	-76
Zambia	65	62	21	22	-44	-41
Zimbabwe	384	516	0	0	-384	-516

3.5 Education Assumptions

For education, we used the Global Education Trend (GET) scenario as our Medium scenario. As explained in Barakat and Durham (2013), this is based on a Bayesian model that estimates the most likely future trajectory in education-specific progression rates to higher levels from the cumulative experience of all countries over the past 40 years. The GET scenario was combined with the medium demographic scenarios summarized above to project the population by age, sex, and educational attainment to 2100.

The proportional distribution by six levels of educational attainment in the age group 30-34 was first extracted (see Table 7) from the Bayesian model as a median trajectory of thousands of iterations. It represents the final education distribution of a particular cohort that will remain unchanged – apart from changes due to education differentials in mortality and migration – over the cohort's remaining lifetime. In order to calculate the education distribution under the age of 30, the education-specific proportions in the age-group 30-34 were back-casted to 15-19, 20-24 and 25-29, such that attainment in younger age-groups follows country-specific experience in the past. We imposed convergence in cases where attainment progressions in certain education groups were occurring in late ages. For example, we expect that the completion of primary education - typically four years duration - will eventually occur by age 15. These sets of education distributions were prepared for each sex separately and for all periods from 2010 to 2100. As will be described in the methods section below, these proportions for four age-groups were directly implemented in distributing the population by education once the population has been projected forward in five-year steps.

Table 7. Proportion distribution by education among age group 30-34 in 2010, 2030, and 2060 under the GET scenario

Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Albania	0,00	0,00	0,02	0,33	0,53	0,10	0,00	0,00	0,01	0,18	0,67	0,13	0,00	0,00	0,01	0,06	0,73	0,21
Algeria	0,08	0,03	0,09	0,33	0,32	0,15	0,01	0,00	0,05	0,19	0,49	0,25	0,00	0,00	0,01	0,04	0,52	0,43
Argentina	0,01	0,05	0,23	0,16	0,36	0,19	0,00	0,01	0,16	0,11	0,44	0,28	0,00	0,00	0,06	0,04	0,47	0,42
Armenia	0,00	0,00	0,01	0,04	0,71	0,25	0,00	0,00	0,00	0,01	0,70	0,29	0,00	0,00	0,00	0,00	0,62	0,38
Aruba	0,03	0,03	0,20	0,30	0,12	0,32	0,01	0,01	0,12	0,23	0,18	0,46	0,00	0,00	0,05	0,09	0,22	0,63
Australia	0,00	0,00	0,03	0,09	0,45	0,43	0,00	0,00	0,01	0,04	0,42	0,53	0,00	0,00	0,00	0,01	0,33	0,66
Austria	0,00	0,00	0,02	0,13	0,50	0,35	0,00	0,00	0,01	0,06	0,45	0,49	0,00	0,00	0,00	0,01	0,33	0,66
Azerbaijan	0,00	0,00	0,04	0,07	0,69	0,19	0,00	0,00	0,01	0,02	0,76	0,20	0,00	0,00	0,00	0,00	0,74	0,25
Bahamas	0,00	0,01	0,10	0,62	0,12	0,14	0,00	0,00	0,09	0,54	0,19	0,18	0,00	0,00	0,06	0,35	0,33	0,26
Bahrain	0,05	0,07	0,09	0,20	0,37	0,22	0,00	0,01	0,07	0,15	0,44	0,34	0,00	0,00	0,03	0,06	0,42	0,49
Bangladesh	0,24	0,24	0,19	0,16	0,07	0,10	0,10	0,10	0,27	0,23	0,14	0,17	0,03	0,03	0,20	0,17	0,26	0,31
Belarus	0,00	0,00	0,00	0,01	0,76	0,23	0,00	0,00	0,00	0,00	0,69	0,31	0,00	0,00	0,00	0,00	0,56	0,44
Belgium	0,01	0,00	0,02	0,11	0,37	0,49	0,00	0,00	0,00	0,03	0,33	0,63	0,00	0,00	0,00	0,00	0,24	0,76
Belize	0,04	0,31	0,31	0,16	0,04	0,13	0,03	0,20	0,33	0,17	0,09	0,19	0,01	0,05	0,28	0,14	0,21	0,31
Benin	0,53	0,24	0,09	0,08	0,04	0,02	0,30	0,13	0,23	0,20	0,10	0,03	0,12	0,05	0,27	0,23	0,26	0,07
Bhutan	0,45	0,23	0,02	0,18	0,04	0,08	0,17	0,09	0,04	0,44	0,13	0,14	0,02	0,01	0,03	0,38	0,32	0,24
Bolivia	0,06	0,16	0,17	0,20	0,23	0,18	0,01	0,03	0,13	0,18	0,40	0,26	0,00	0,00	0,05	0,07	0,48	0,40
Bosnia and Herzegovina	0,01	0,01	0,06	0,19	0,61	0,12	0,00	0,00	0,01	0,03	0,78	0,18	0,00	0,00	0,00	0,00	0,73	0,27
Brazil	0,05	0,11	0,20	0,17	0,33	0,13	0,02	0,03	0,12	0,16	0,48	0,19	0,00	0,00	0,05	0,06	0,57	0,31
Bulgaria	0,00	0,00	0,03	0,09	0,61	0,27	0,00	0,00	0,01	0,03	0,61	0,35	0,00	0,00	0,00	0,00	0,52	0,48
Burkina Faso	0,67	0,13	0,07	0,06	0,04	0,02	0,52	0,10	0,13	0,12	0,10	0,03	0,23	0,04	0,21	0,19	0,26	0,06
Burundi	0,35	0,27	0,30	0,04	0,03	0,03	0,21	0,17	0,37	0,13	0,07	0,05	0,06	0,05	0,45	0,16	0,18	0,10
Cambodia	0,25	0,18	0,28	0,20	0,08	0,02	0,08	0,13	0,37	0,22	0,16	0,05	0,02	0,02	0,33	0,19	0,33	0,11

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Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Cameroon	0,13	0,17	0,38	0,14	0,12	0,05	0,03	0,05	0,43	0,15	0,26	0,08	0,00	0,00	0,25	0,09	0,51	0,14
Canada	0,00	0,00	0,01	0,03	0,30	0,66	0,00	0,00	0,00	0,01	0,24	0,75	0,00	0,00	0,00	0,00	0,17	0,83
Cape Verde	0,03	0,47	0,19	0,20	0,06	0,04	0,01	0,17	0,30	0,32	0,14	0,05	0,00	0,04	0,27	0,29	0,32	0,09
Central African Republic	0,23	0,25	0,34	0,11	0,05	0,02	0,09	0,09	0,49	0,15	0,14	0,03	0,01	0,01	0,41	0,13	0,36	0,08
Chad	0,58	0,22	0,10	0,05	0,03	0,02	0,47	0,17	0,16	0,09	0,09	0,03	0,27	0,09	0,20	0,11	0,27	0,06
Chile	0,01	0,03	0,13	0,17	0,46	0,21	0,00	0,01	0,07	0,09	0,52	0,31	0,00	0,00	0,02	0,02	0,48	0,47
China	0,02	0,00	0,11	0,58	0,17	0,12	0,00	0,00	0,08	0,43	0,27	0,22	0,00	0,00	0,04	0,19	0,36	0,41
China, Hong Kong SAR	0,00	0,01	0,04	0,16	0,38	0,41	0,00	0,00	0,01	0,04	0,35	0,59	0,00	0,00	0,00	0,00	0,23	0,77
China, Macao SAR	0,00	0,02	0,09	0,26	0,28	0,35	0,00	0,00	0,05	0,14	0,28	0,53	0,00	0,00	0,01	0,03	0,22	0,73
Colombia	0,04	0,11	0,22	0,09	0,31	0,22	0,01	0,03	0,14	0,06	0,41	0,34	0,00	0,00	0,04	0,02	0,41	0,52
Comoros	0,19	0,15	0,36	0,14	0,06	0,09	0,05	0,04	0,44	0,18	0,14	0,16	0,00	0,00	0,28	0,12	0,32	0,28
Congo	0,02	0,10	0,48	0,22	0,11	0,06	0,00	0,01	0,46	0,21	0,22	0,10	0,00	0,00	0,27	0,12	0,43	0,17
Costa Rica	0,01	0,07	0,41	0,13	0,19	0,19	0,00	0,01	0,33	0,10	0,29	0,27	0,00	0,00	0,15	0,05	0,39	0,41
Côte d'Ivoire	0,38	0,22	0,15	0,12	0,04	0,08	0,19	0,11	0,25	0,19	0,13	0,12	0,03	0,02	0,23	0,18	0,32	0,22
Croatia	0,00	0,00	0,01	0,10	0,70	0,19	0,00	0,00	0,00	0,03	0,72	0,25	0,00	0,00	0,00	0,00	0,64	0,36
Cuba	0,00	0,01	0,07	0,26	0,52	0,14	0,00	0,00	0,03	0,13	0,62	0,21	0,00	0,00	0,01	0,03	0,61	0,35
Cyprus	0,00	0,00	0,03	0,06	0,43	0,49	0,00	0,00	0,01	0,01	0,34	0,64	0,00	0,00	0,00	0,00	0,23	0,77
Czech Republic	0,00	0,00	0,00	0,04	0,77	0,19	0,00	0,00	0,00	0,01	0,74	0,24	0,00	0,00	0,00	0,00	0,64	0,36
Democratic Republic of the Congo	0,11	0,19	0,15	0,30	0,19	0,05	0,04	0,06	0,17	0,33	0,33	0,08	0,00	0,00	0,10	0,20	0,57	0,13
Denmark	0,00	0,00	0,00	0,16	0,51	0,32	0,00	0,00	0,00	0,08	0,50	0,42	0,00	0,00	0,00	0,02	0,42	0,55
Dominican	0,01	0,12	0,10	0,33	0,25	0,20	0,00	0,03	0,07	0,24	0,34	0,31	0,00	0,00	0,03	0,10	0,38	0,49

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Country	2010 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2030 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Republic																		
Ecuador	0,03	0,09	0,27	0,14	0,21	0,26	0,01	0,02	0,18	0,09	0,28	0,42	0,00	0,00	0,06	0,03	0,30	0,62
Egypt	0,26	0,05	0,04	0,05	0,42	0,18	0,07	0,01	0,03	0,04	0,57	0,28	0,01	0,00	0,01	0,01	0,53	0,45
El Salvador	0,10	0,21	0,13	0,21	0,21	0,14	0,04	0,09	0,12	0,19	0,32	0,23	0,01	0,01	0,06	0,10	0,43	0,40
Equatorial Guinea	0,06	0,07	0,17	0,38	0,24	0,08	0,02	0,03	0,15	0,31	0,35	0,14	0,00	0,00	0,09	0,17	0,48	0,25
Estonia	0,00	0,00	0,00	0,03	0,56	0,40	0,00	0,00	0,00	0,00	0,50	0,49	0,00	0,00	0,00	0,00	0,40	0,60
Ethiopia	0,55	0,22	0,11	0,03	0,05	0,03	0,24	0,21	0,26	0,11	0,11	0,08	0,06	0,05	0,32	0,14	0,28	0,14
Finland	0,00	0,00	0,00	0,16	0,33	0,50	0,00	0,00	0,00	0,12	0,33	0,55	0,00	0,00	0,00	0,05	0,33	0,62
France	0,01	0,00	0,07	0,08	0,42	0,42	0,00	0,00	0,02	0,03	0,37	0,57	0,00	0,00	0,00	0,00	0,26	0,73
French Guiana	0,14	0,00	0,28	0,13	0,26	0,18	0,08	0,00	0,20	0,15	0,35	0,23	0,02	0,00	0,11	0,09	0,45	0,33
French Polynesia	0,02	0,01	0,06	0,23	0,45	0,24	0,00	0,00	0,03	0,11	0,52	0,34	0,00	0,00	0,01	0,03	0,48	0,48
Gabon	0,03	0,09	0,44	0,24	0,13	0,07	0,00	0,01	0,41	0,22	0,26	0,10	0,00	0,00	0,23	0,12	0,47	0,17
Gambia	0,38	0,10	0,12	0,22	0,10	0,07	0,18	0,04	0,17	0,30	0,18	0,12	0,04	0,01	0,15	0,25	0,34	0,21
Georgia	0,00	0,00	0,01	0,03	0,35	0,60	0,00	0,00	0,00	0,01	0,30	0,68	0,00	0,00	0,00	0,00	0,23	0,77
Germany	0,01	0,00	0,02	0,10	0,45	0,41	0,00	0,00	0,01	0,08	0,39	0,53	0,00	0,00	0,00	0,03	0,31	0,66
Ghana	0,34	0,04	0,09	0,31	0,17	0,06	0,17	0,02	0,11	0,38	0,25	0,07	0,03	0,00	0,09	0,32	0,44	0,12
Greece	0,00	0,00	0,08	0,10	0,50	0,31	0,00	0,00	0,03	0,03	0,48	0,47	0,00	0,00	0,00	0,00	0,35	0,64
Guadeloupe	0,01	0,02	0,14	0,12	0,45	0,25	0,00	0,00	0,04	0,06	0,53	0,35	0,00	0,00	0,01	0,01	0,47	0,51
Guatemala	0,19	0,27	0,22	0,12	0,13	0,07	0,11	0,16	0,26	0,14	0,23	0,11	0,03	0,04	0,21	0,12	0,42	0,20
Guinea	0,64	0,04	0,11	0,12	0,04	0,04	0,43	0,02	0,14	0,24	0,10	0,07	0,13	0,01	0,19	0,30	0,24	0,13
Guinea-Bissau	0,45	0,12	0,15	0,15	0,12	0,02	0,28	0,07	0,18	0,18	0,28	0,03	0,08	0,02	0,15	0,15	0,54	0,06
Guyana	0,02	0,02	0,11	0,30	0,43	0,13	0,00	0,00	0,08	0,19	0,56	0,16	0,00	0,00	0,03	0,08	0,66	0,23
Haiti	0,10	0,30	0,17	0,21	0,14	0,07	0,04	0,11	0,17	0,21	0,35	0,11	0,00	0,01	0,08	0,09	0,60	0,22

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Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Honduras	0,11	0,20	0,38	0,09	0,15	0,08	0,04	0,07	0,42	0,10	0,24	0,13	0,01	0,01	0,29	0,07	0,40	0,23
Hungary	0,00	0,00	0,01	0,12	0,70	0,17	0,00	0,00	0,00	0,03	0,73	0,23	0,00	0,00	0,00	0,00	0,65	0,35
Iceland	0,00	0,00	0,24	0,00	0,33	0,43	0,00	0,00	0,15	0,00	0,29	0,56	0,00	0,00	0,07	0,00	0,25	0,68
India	0,29	0,07	0,15	0,14	0,24	0,12	0,14	0,03	0,15	0,14	0,36	0,18	0,03	0,01	0,09	0,08	0,50	0,30
Indonesia	0,03	0,04	0,33	0,21	0,29	0,10	0,00	0,01	0,17	0,15	0,49	0,18	0,00	0,00	0,04	0,04	0,56	0,35
Iran (Islamic Republic of)	0,08	0,05	0,18	0,23	0,29	0,17	0,01	0,01	0,12	0,15	0,42	0,31	0,00	0,00	0,03	0,03	0,41	0,53
Iraq	0,09	0,06	0,30	0,10	0,19	0,25	0,02	0,01	0,22	0,07	0,28	0,39	0,00	0,00	0,07	0,02	0,31	0,59
Ireland	0,00	0,00	0,03	0,13	0,23	0,61	0,00	0,00	0,01	0,04	0,21	0,74	0,00	0,00	0,00	0,00	0,16	0,84
Israel	0,01	0,02	0,12	0,21	0,35	0,30	0,00	0,00	0,09	0,15	0,44	0,31	0,00	0,00	0,04	0,07	0,51	0,38
Italy	0,00	0,00	0,03	0,29	0,51	0,18	0,00	0,00	0,01	0,13	0,60	0,26	0,00	0,00	0,00	0,03	0,55	0,42
Jamaica	0,00	0,01	0,08	0,60	0,12	0,19	0,00	0,00	0,07	0,48	0,19	0,27	0,00	0,00	0,04	0,27	0,29	0,40
Japan	0,00	0,00	0,01	0,04	0,38	0,57	0,00	0,00	0,00	0,01	0,25	0,74	0,00	0,00	0,00	0,00	0,16	0,84
Jordan	0,06	0,03	0,11	0,21	0,27	0,33	0,01	0,00	0,06	0,12	0,32	0,50	0,00	0,00	0,02	0,03	0,28	0,66
Kazakhstan	0,00	0,00	0,01	0,09	0,63	0,28	0,00	0,00	0,00	0,02	0,56	0,41	0,00	0,00	0,00	0,00	0,45	0,54
Kenya	0,05	0,09	0,15	0,27	0,37	0,06	0,01	0,01	0,09	0,16	0,63	0,10	0,00	0,00	0,02	0,03	0,76	0,19
Kuwait	0,13	0,29	0,03	0,17	0,19	0,19	0,01	0,02	0,06	0,34	0,30	0,28	0,00	0,00	0,04	0,19	0,35	0,42
Kyrgyzstan	0,00	0,00	0,00	0,04	0,80	0,15	0,00	0,00	0,00	0,01	0,81	0,18	0,00	0,00	0,00	0,00	0,73	0,27
Lao People's Democratic Republic	0,17	0,19	0,26	0,22	0,10	0,06	0,07	0,08	0,30	0,25	0,24	0,07	0,01	0,02	0,23	0,19	0,44	0,11
Latvia	0,00	0,00	0,00	0,04	0,56	0,39	0,00	0,00	0,00	0,01	0,50	0,49	0,00	0,00	0,00	0,00	0,37	0,62
Lebanon	0,02	0,01	0,19	0,32	0,21	0,25	0,00	0,00	0,10	0,16	0,30	0,44	0,00	0,00	0,03	0,04	0,28	0,65
Lesotho	0,10	0,27	0,35	0,10	0,11	0,07	0,03	0,10	0,38	0,15	0,24	0,11	0,00	0,01	0,24	0,10	0,46	0,19
Liberia	0,73	0,09	0,05	0,07	0,04	0,02	0,55	0,07	0,11	0,16	0,09	0,02	0,21	0,03	0,19	0,28	0,24	0,05

Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Lithuania	0,00	0,00	0,00	0,02	0,43	0,55	0,00	0,00	0,00	0,00	0,34	0,65	0,00	0,00	0,00	0,00	0,24	0,75
Luxembourg	0,05	0,00	0,07	0,20	0,36	0,33	0,01	0,00	0,05	0,13	0,38	0,43	0,00	0,00	0,02	0,05	0,35	0,58
Madagascar	0,22	0,45	0,22	0,07	0,03	0,02	0,15	0,33	0,32	0,13	0,04	0,04	0,06	0,13	0,45	0,18	0,12	0,06
Malawi	0,24	0,24	0,15	0,22	0,13	0,02	0,11	0,15	0,17	0,28	0,26	0,03	0,03	0,04	0,14	0,23	0,50	0,06
Malaysia	0,02	0,02	0,06	0,21	0,45	0,24	0,00	0,00	0,02	0,07	0,50	0,40	0,00	0,00	0,00	0,01	0,37	0,62
Maldives	0,03	0,18	0,25	0,43	0,03	0,08	0,00	0,02	0,27	0,46	0,10	0,14	0,00	0,00	0,17	0,28	0,29	0,26
Mali	0,76	0,07	0,07	0,05	0,04	0,01	0,60	0,06	0,12	0,10	0,11	0,02	0,29	0,03	0,19	0,15	0,31	0,04
Malta	0,00	0,00	0,01	0,56	0,11	0,31	0,00	0,00	0,01	0,35	0,16	0,48	0,00	0,00	0,00	0,13	0,19	0,67
Martinique	0,00	0,02	0,10	0,11	0,47	0,30	0,00	0,00	0,03	0,05	0,51	0,41	0,00	0,00	0,00	0,01	0,42	0,57
Mauritius	0,01	0,22	0,41	0,18	0,14	0,04	0,00	0,06	0,41	0,18	0,29	0,06	0,00	0,01	0,25	0,11	0,52	0,11
Mexico	0,03	0,09	0,21	0,34	0,16	0,17	0,01	0,02	0,13	0,30	0,27	0,27	0,00	0,00	0,05	0,13	0,37	0,45
Mongolia	0,00	0,01	0,06	0,19	0,62	0,12	0,00	0,00	0,04	0,10	0,71	0,15	0,00	0,00	0,02	0,04	0,71	0,24
Montenegro	0,01	0,00	0,01	0,12	0,68	0,18	0,00	0,00	0,00	0,04	0,72	0,24	0,00	0,00	0,00	0,00	0,64	0,35
Morocco	0,31	0,13	0,18	0,19	0,10	0,09	0,12	0,05	0,20	0,23	0,23	0,17	0,01	0,01	0,11	0,13	0,41	0,34
Mozambique	0,61	0,19	0,04	0,11	0,05	0,01	0,44	0,13	0,08	0,23	0,10	0,02	0,17	0,05	0,12	0,37	0,24	0,05
Myanmar	0,04	0,05	0,42	0,23	0,13	0,14	0,01	0,01	0,36	0,20	0,17	0,25	0,00	0,00	0,23	0,13	0,22	0,42
Namibia	0,06	0,15	0,12	0,33	0,24	0,09	0,02	0,04	0,10	0,29	0,41	0,14	0,00	0,00	0,04	0,13	0,59	0,23
Nepal	0,38	0,06	0,12	0,09	0,28	0,06	0,14	0,02	0,13	0,10	0,49	0,11	0,01	0,00	0,05	0,04	0,67	0,22
Netherlands	0,02	0,00	0,03	0,14	0,46	0,34	0,01	0,00	0,02	0,07	0,46	0,44	0,00	0,00	0,01	0,02	0,39	0,58
Netherlands Antilles	0,00	0,03	0,32	0,33	0,23	0,09	0,00	0,01	0,26	0,26	0,34	0,12	0,00	0,00	0,15	0,15	0,50	0,20
New Caledonia	0,02	0,01	0,04	0,20	0,42	0,32	0,00	0,00	0,01	0,08	0,45	0,46	0,00	0,00	0,00	0,01	0,36	0,63
New Zealand	0,00	0,00	0,03	0,10	0,47	0,40	0,00	0,00	0,01	0,04	0,45	0,49	0,00	0,00	0,00	0,01	0,36	0,63
Nicaragua	0,15	0,23	0,24	0,11	0,16	0,11	0,07	0,11	0,25	0,11	0,28	0,19	0,01	0,02	0,16	0,07	0,41	0,33
Niger	0,73	0,13	0,07	0,04	0,01	0,01	0,58	0,10	0,16	0,09	0,04	0,02	0,28	0,05	0,30	0,16	0,16	0,05

Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Nigeria	0,29	0,05	0,19	0,07	0,24	0,15	0,11	0,02	0,11	0,10	0,39	0,27	0,01	0,00	0,03	0,03	0,44	0,49
Norway	0,00	0,00	0,00	0,18	0,37	0,45	0,00	0,00	0,00	0,12	0,31	0,57	0,00	0,00	0,00	0,04	0,25	0,70
Occupied Palestinian Territory	0,03	0,06	0,17	0,28	0,21	0,25	0,00	0,00	0,09	0,15	0,32	0,43	0,00	0,00	0,02	0,03	0,30	0,66
Pakistan	0,50	0,05	0,11	0,11	0,18	0,07	0,30	0,03	0,13	0,13	0,30	0,11	0,08	0,01	0,10	0,10	0,51	0,19
Panama	0,04	0,06	0,24	0,13	0,29	0,25	0,01	0,02	0,14	0,12	0,35	0,37	0,00	0,00	0,05	0,04	0,36	0,55
Paraguay	0,02	0,16	0,32	0,16	0,19	0,16	0,01	0,05	0,28	0,14	0,28	0,24	0,00	0,00	0,15	0,07	0,38	0,39
Peru	0,03	0,09	0,12	0,08	0,39	0,30	0,01	0,02	0,07	0,05	0,44	0,40	0,00	0,00	0,02	0,01	0,41	0,56
Philippines	0,01	0,07	0,19	0,05	0,33	0,34	0,00	0,02	0,10	0,02	0,38	0,48	0,00	0,00	0,02	0,01	0,32	0,64
Poland	0,00	0,00	0,00	0,05	0,67	0,28	0,00	0,00	0,00	0,01	0,63	0,36	0,00	0,00	0,00	0,00	0,52	0,48
Portugal	0,01	0,01	0,07	0,43	0,28	0,20	0,00	0,01	0,12	0,19	0,38	0,29	0,00	0,00	0,05	0,07	0,43	0,44
Puerto Rico	0,01	0,00	0,04	0,06	0,46	0,43	0,00	0,00	0,01	0,02	0,40	0,57	0,00	0,00	0,00	0,00	0,28	0,72
Qatar	0,03	0,24	0,22	0,12	0,23	0,16	0,01	0,10	0,18	0,13	0,29	0,28	0,00	0,02	0,13	0,08	0,33	0,44
Republic of Korea	0,00	0,00	0,00	0,01	0,33	0,65	0,00	0,00	0,00	0,00	0,18	0,82	0,00	0,00	0,00	0,00	0,12	0,88
Republic of Moldova	0,00	0,00	0,02	0,23	0,58	0,17	0,00	0,00	0,01	0,10	0,69	0,20	0,00	0,00	0,00	0,02	0,69	0,28
Réunion	0,01	0,03	0,17	0,16	0,40	0,24	0,00	0,00	0,05	0,09	0,51	0,34	0,00	0,00	0,01	0,01	0,47	0,50
Romania	0,01	0,00	0,03	0,12	0,68	0,17	0,00	0,00	0,01	0,03	0,76	0,20	0,00	0,00	0,00	0,00	0,72	0,28
Russian Federation	0,00	0,00	0,00	0,02	0,74	0,24	0,00	0,00	0,00	0,00	0,71	0,29	0,00	0,00	0,00	0,00	0,61	0,39
Rwanda	0,21	0,35	0,30	0,06	0,07	0,01	0,11	0,19	0,44	0,08	0,16	0,02	0,03	0,04	0,41	0,08	0,38	0,06
Saint Lucia	0,01	0,01	0,32	0,21	0,27	0,19	0,00	0,00	0,21	0,13	0,39	0,26	0,00	0,00	0,08	0,05	0,47	0,40
Saint Vincent and the	0,01	0,02	0,42	0,17	0,24	0,14	0,00	0,00	0,31	0,12	0,37	0,20	0,00	0,00	0,15	0,05	0,49	0,31

Country	2010 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2030 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Grenadines																		
Samoa	0,00	0,00	0,29	0,40	0,13	0,17	0,00	0,00	0,23	0,31	0,22	0,23	0,00	0,00	0,13	0,17	0,35	0,35
Sao Tome and Principe	0,04	0,51	0,29	0,11	0,04	0,01	0,02	0,20	0,43	0,22	0,11	0,03	0,00	0,02	0,46	0,23	0,21	0,07
Saudi Arabia	0,05	0,03	0,10	0,21	0,23	0,38	0,00	0,00	0,04	0,08	0,29	0,59	0,00	0,00	0,00	0,01	0,22	0,77
Senegal	0,55	0,08	0,20	0,08	0,06	0,04	0,34	0,05	0,32	0,12	0,11	0,06	0,10	0,01	0,37	0,14	0,25	0,13
Serbia	0,00	0,00	0,02	0,13	0,68	0,17	0,00	0,00	0,01	0,04	0,73	0,22	0,00	0,00	0,00	0,01	0,66	0,33
Sierra Leone	0,55	0,13	0,09	0,11	0,08	0,04	0,39	0,09	0,15	0,17	0,13	0,06	0,14	0,03	0,20	0,23	0,27	0,13
Singapore	0,00	0,01	0,02	0,04	0,13	0,80	0,00	0,00	0,00	0,00	0,11	0,88	0,00	0,00	0,00	0,00	0,10	0,90
Slovakia	0,00	0,00	0,00	0,05	0,79	0,17	0,00	0,00	0,00	0,01	0,77	0,22	0,00	0,00	0,00	0,00	0,66	0,34
Slovenia	0,00	0,00	0,00	0,09	0,66	0,24	0,00	0,00	0,00	0,04	0,64	0,32	0,00	0,00	0,00	0,01	0,55	0,44
Somalia	0,49	0,05	0,24	0,04	0,15	0,03	0,26	0,03	0,34	0,06	0,26	0,06	0,05	0,00	0,32	0,06	0,44	0,13
South Africa	0,02	0,08	0,09	0,37	0,38	0,05	0,00	0,02	0,07	0,29	0,55	0,07	0,00	0,00	0,03	0,12	0,72	0,13
Spain	0,00	0,01	0,08	0,32	0,28	0,31	0,00	0,00	0,04	0,16	0,34	0,47	0,00	0,00	0,01	0,04	0,31	0,64
Sudan	0,61	0,08	0,07	0,06	0,11	0,08	0,33	0,08	0,17	0,03	0,25	0,14	0,08	0,02	0,15	0,03	0,46	0,26
Suriname	0,00	0,04	0,22	0,45	0,22	0,08	0,00	0,01	0,18	0,37	0,34	0,10	0,00	0,00	0,10	0,21	0,52	0,17
Swaziland	0,05	0,15	0,24	0,15	0,28	0,14	0,01	0,04	0,15	0,10	0,48	0,22	0,00	0,00	0,04	0,02	0,56	0,38
Sweden	0,00	0,00	0,02	0,08	0,41	0,48	0,00	0,00	0,00	0,04	0,37	0,59	0,00	0,00	0,00	0,01	0,28	0,72
Switzerland	0,00	0,00	0,01	0,13	0,55	0,31	0,00	0,00	0,01	0,06	0,52	0,41	0,00	0,00	0,00	0,02	0,42	0,56
Syrian Arab Republic	0,10	0,32	0,24	0,10	0,11	0,13	0,04	0,14	0,28	0,11	0,19	0,23	0,01	0,02	0,19	0,08	0,30	0,40
Tajikistan	0,03	0,00	0,02	0,15	0,67	0,14	0,01	0,00	0,01	0,05	0,75	0,18	0,00	0,00	0,00	0,01	0,73	0,26
TFYR Macedonia	0,01	0,04	0,03	0,31	0,49	0,12	0,00	0,00	0,02	0,11	0,66	0,20	0,00	0,00	0,00	0,02	0,69	0,28
Thailand	0,02	0,04	0,31	0,24	0,20	0,19	0,00	0,00	0,20	0,15	0,31	0,34	0,00	0,00	0,06	0,04	0,35	0,55

Country	2010						2030						2060					
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Timor-Leste	0,26	0,14	0,17	0,10	0,25	0,08	0,04	0,03	0,11	0,16	0,51	0,15	0,00	0,00	0,02	0,04	0,66	0,28
Tonga	0,01	0,00	0,08	0,57	0,18	0,16	0,00	0,00	0,06	0,42	0,29	0,23	0,00	0,00	0,03	0,20	0,41	0,36
Trinidad and Tobago	0,01	0,01	0,14	0,49	0,28	0,07	0,00	0,00	0,10	0,37	0,43	0,10	0,00	0,00	0,05	0,17	0,61	0,17
Tunisia	0,10	0,00	0,39	0,19	0,16	0,17	0,01	0,00	0,02	0,34	0,26	0,37	0,00	0,00	0,01	0,08	0,31	0,60
Turkey	0,03	0,01	0,44	0,11	0,28	0,13	0,00	0,00	0,29	0,07	0,43	0,20	0,00	0,00	0,09	0,02	0,54	0,35
Turkmenistan	0,00	0,00	0,00	0,02	0,84	0,15	0,00	0,00	0,00	0,00	0,83	0,17	0,00	0,00	0,00	0,00	0,75	0,25
Uganda	0,17	0,35	0,30	0,11	0,03	0,04	0,10	0,20	0,42	0,14	0,08	0,06	0,02	0,05	0,43	0,15	0,23	0,12
Ukraine	0,00	0,00	0,00	0,04	0,75	0,21	0,00	0,00	0,00	0,01	0,73	0,26	0,00	0,00	0,00	0,00	0,63	0,37
United Arab Emirates	0,08	0,12	0,12	0,18	0,32	0,18	0,01	0,01	0,12	0,18	0,40	0,29	0,00	0,00	0,07	0,10	0,40	0,43
United Kingdom	0,00	0,00	0,10	0,39	0,14	0,37	0,00	0,00	0,07	0,28	0,18	0,47	0,00	0,00	0,03	0,12	0,23	0,61
United Republic of Tanzania	0,07	0,04	0,76	0,08	0,02	0,02	0,01	0,00	0,80	0,09	0,07	0,03	0,00	0,00	0,63	0,07	0,22	0,08
United States of America	0,00	0,00	0,02	0,07	0,48	0,42	0,00	0,00	0,01	0,05	0,44	0,50	0,00	0,00	0,00	0,01	0,37	0,61
Uruguay	0,00	0,03	0,32	0,33	0,15	0,16	0,00	0,00	0,28	0,28	0,20	0,23	0,00	0,00	0,17	0,17	0,30	0,35
Vanuatu	0,12	0,20	0,34	0,18	0,13	0,04	0,04	0,08	0,34	0,24	0,24	0,06	0,00	0,01	0,25	0,18	0,46	0,10
Venezuela	0,02	0,07	0,26	0,15	0,23	0,26	0,01	0,02	0,20	0,11	0,28	0,38	0,00	0,00	0,09	0,05	0,32	0,54
Viet Nam	0,05	0,13	0,35	0,29	0,09	0,10	0,01	0,03	0,23	0,34	0,24	0,14	0,00	0,01	0,16	0,23	0,39	0,22
Zambia	0,05	0,15	0,33	0,25	0,15	0,07	0,01	0,03	0,35	0,26	0,25	0,10	0,00	0,00	0,23	0,17	0,43	0,16
Zimbabwe	0,01	0,06	0,17	0,14	0,55	0,07	0,00	0,00	0,06	0,05	0,77	0,11	0,00	0,00	0,01	0,00	0,78	0,21

In addition to the medium GET scenario, three alternative scenarios were defined. These scenarios are used to explore the sensitivity of the population projections to our education assumption. The results suggest that altering education can result in differences in the projected population by almost one billion by 2060. The three scenarios are defined as follows:

Fast Benchmark or Fast Track (FT). In this scenario, the most rapid country-specific expansion parameters are applied to all countries throughout the projection period. In other words, all countries follow the educational development paths taken in the past by the frontrunners in East and South-East Asia.

Constant Enrolment Rates (CER). For this scenario, the attainment shares at age 30-34 of future cohorts are fixed at the levels observed in the base year (but adjusted where necessary if younger age groups in the base year already exhibit higher than predicted attainment).

Constant Enrolment Numbers (CEN). This scenario differs from CER, as country-specific attainment by age (under 35) and sex is kept constant at the absolute levels observed in the base year. While CER is a pessimistic low scenario, CEN could be either lower than CER for countries with larger size of younger cohorts, or higher than CER in countries with a smaller size of younger cohorts. This scenario is of particular interest in regard to the question of what happens when no further capacities are generated in schools and universities in the future.

3.6 Other Scenarios

The medium demographic scenario, incorporating the GET scenario for education, is considered as the most likely scenario of global population development. This means that the future population is equally likely to be either higher or lower than the medium scenario. In addition to this medium scenario, some further scenarios are also of interest. These scenarios combine alternative assumptions for fertility, mortality, migration, and education. The three alternative education scenarios were described earlier in this paper; here we define two alternative scenarios each for fertility, mortality, and migration.

The "high" and "low" fertility scenarios are defined as gradual increases to a point of 20 percent higher and lower, respectively, than the "medium" by 2030, and 25 percent different by 2050 and thereafter. These numbers are based on averages of the inputs given by the experts in the web-survey, when they were asked to provide a number covering an 80 percent range of uncertainty in 2030 and 2050, respectively. Refer to Basten et al. (2013) for details.

For the "high" and "low" mortality scenarios we assume that life expectancy would increase by one year per decade faster or slower than in the "medium" case.

For countries – most in sub-Saharan Africa – with a high prevalence of HIV/AIDS, larger uncertainty intervals are assumed for the nearer-term future. In the first decade of the projections, life expectancy is assumed to be five years lower or higher than in the medium. This takes into account serious developmental and food insecurity problems, high vulnerability to climate change, and possible feed-backs from very high population growth.

After 2020, the "high" mortality scenario for those countries assumes a one year lower decadal gain than in the medium scenario. The "low" mortality scenario, assumes an additional two years gain per decade on top of the gain from the medium scenario until 2050, and one year additional gain thereafter.

The alternative migration scenarios are simple modifications of the medium scenario. The "high" scenario assumes a 50 percent higher, and the "low" migration scenario a 50 percent lower net migration than in the medium scenario. A gradual decline in the first three of the five-year time steps is assumed. In addition, two alternative migration scenarios were developed based on expert views (see Sander et al. 2013 for details) by the team working on global migration flows. The "rise of the East" assumes economic stagnation in Europe and North America and restrictive migration policies, resulting in lower levels of global migration flows. South and south-east Asia become increasingly attractive destinations, resulting in a shift in global migration patterns. The "steady global growth" scenario assumes dynamic economic growth and social development, resulting in growing competition of (skilled) labor and liberal immigration policies in the more developed world. Economic growth in the developing world also contributes towards rising levels of global mobility.

4 Summary of Methods Used and Steps in Computation

4.1 Introduction

As described earlier in this report, since the first publication of projections by age, sex, and educational attainment for 120 countries (KC et al. 2010) a number of steps have been taken to improve the accuracy of the underlying base-year distributions (Section 1), the assumptions (Section 2), and the methodology of the computations. Here we deal with the most significant of those changes and provide a brief summary of the methodological challenges in introducing education as an additional dimension in the evolution of population distributions.

Most notably, various methods of dealing with the education differentials in fertility, mortality, and migration have been fine-tuned and some additional complexities introduced (e.g. allowing child mortality to depend on the education of the mother). Also, the education projections were improved by going beyond global trends and allowing country and regional trends to influence future attainment.

4.2 Projecting Populations by Age and Sex

Using the standard cohort component method, as a first step the population distribution by sex and five-year age groups is projected to the next five year period, applying age-specific fertility rates, sex-specific life tables, and age-sex specific immigration and emigration rates corresponding to the medium assumptions regarding fertility (see Basten et al. 2013 and Fuchs & Goujon 2013), mortality (see Caselli et al. 2013 and Garbero & Pamuk 2013), and total number of immigrants and emigrants see Sander et al. (2013), as well as Abel, (2013).

Age- and sex-specific survival ratios are applied to the population distribution at the beginning of each five year interval. In parallel, age- and sex-specific migration flows are calculated by applying the assumed period-specific rates (kept constant until 2060 in the medium scenario and converging to zero net migration by the end of 2100) to the same initial population distribution. Emigration rates are applied to the population of origin, and the immigration rates are applied to the population in the rest of the world. Due to changes in the population structure, the overall age- and sex-specific net flows are different from zero at the global level. To ensure zero net migration at the global level, age-sex specific adjustment factors were applied. These sets of global level adjustment factors were applied to adjust the flows in all countries.

At that point, we have for every country a population consisting of those aged five years and above who survived and who did not emigrate in the past five years, plus those who immigrated in the past five years and are still alive. We calculate the number of births, applying age-specific fertility rates on the mid-period population (calculated as an average of the population at the beginning and the end of the period) of females aged 15-49 in the respective age group. The total number of births is then divided into males and females using the sex ratios at birth assumed in the UN's medium variant and sex-specific survival ratios. These steps are repeated until the end of the century.

4.3 Adding Educational Attainment to Age and Sex

As a second step, the level of educational attainment is added to the base year population distribution by age and sex. On this basis the age- and sex-specific proportions implied by the above described GET (Global Education Trends) scenario are projected in five-year steps along cohort lines, applying the education-specific mortality differentials described below. This procedure then results in the medium projections of the populations by age, sex and level of education for all countries, as resulting from the GET education scenario and the above described assumptions about overall fertility, mortality and migration trends.

This procedure of starting with a two-dimensional projection by age and sex alone and then converting it into a three-dimensional projection by level of education is a consequences of the fact that there is no basis (either in terms of past time-series or of specific expert knowledge) for directly defining assumptions for education-specific fertility, mortality and migration trends. Instead these education-specific trends that are implicit in overall projections following the GET scenario are made explicit only in a second stage through the iterative procedures described below, applied in one 5-year step after another. Once the full set of education-specific rates has been derived, they can be freely altered and combined in different ways to form other scenarios that differ in their assumptions from the above described medium case.

4.4 Education-specific ASFRs

The methodology underlying the fertility section of the model has changed very little and technical details are explained in KC et al. (2010). The major novelty consists of assuming convergence in the relative ratios (RR) of TFRs for different education sub-categories that were previously assumed to remain constant. Using those education-specific RR derived from censuses (IPUMS), surveys (e.g. DHS), and the existing literature (see Lutz & Skirbekk 2013 and Basten et al. 2013), as well as the future overall TFRs suggested by the experts, we derive education-specific ASFRs by applying Brass's relational logit model involving a Gompertz transformation of the standard fertility schedule (UN estimate of global ASFR pattern for the period 1995-2000).

The idea is the following: Applying an empirically determined transformation of the age-axis, the cumulative schedule of the standard fertility schedule can be described by a Gompertz function. Based on that reference ASFR distribution, we specify a new set of ASFRs corresponding to the expert-given TFR. Booth (1984) has shown that there is a linear relationship between the reference distribution and the new set of ASFRs, with the intercept (alpha) describing the age of first birth and the slope parameter (beta) corresponding to the spread or the kurtosis of the ASFR distribution.

Our goal is to express the education-specific ASFRs in terms of a particular country's overall relationship to the global ASFR pattern. KC et al. (2010) found a significant relationship between beta and the TFR; however the general relationship with alpha was not clear. We know that education has a postponing effect on fertility comparable to the postponement that is observable during the demographic transition. But it is not possible to simply predict new sets of ASFRs corresponding to different levels of educational attainment exploiting the information that is available for countries at different stages of the demographic transition. Instead, we apply whatever alpha we found to relate overall TFR and ASFRs within a certain country, anchor this country-wide alpha within one specific education category, and assume certain differentials in alphas by education.

As a next step, we apply an iterative procedure varying the education-specific levels of fertility while enforcing the RR. Setting the difference in the known number of births from the projection by age and sex as a target, we run this procedure until the predicted number of births by age, sex, and education sums up to the same value. The education-specific alphas implied by this distribution of fertility over education categories and (transformed) age describe a country's (transformed) fertility pattern at different levels of TFR in the most accurate possible way.

Finally, we reverse the above transformations to get six series of education-specific ASFRs corresponding to the global reference distribution in ASFR, the given overall TFR, as well as the RR. Residual births following from unavoidable estimation error are distributed proportionally across education groups. This procedure is repeated for every country in every period.
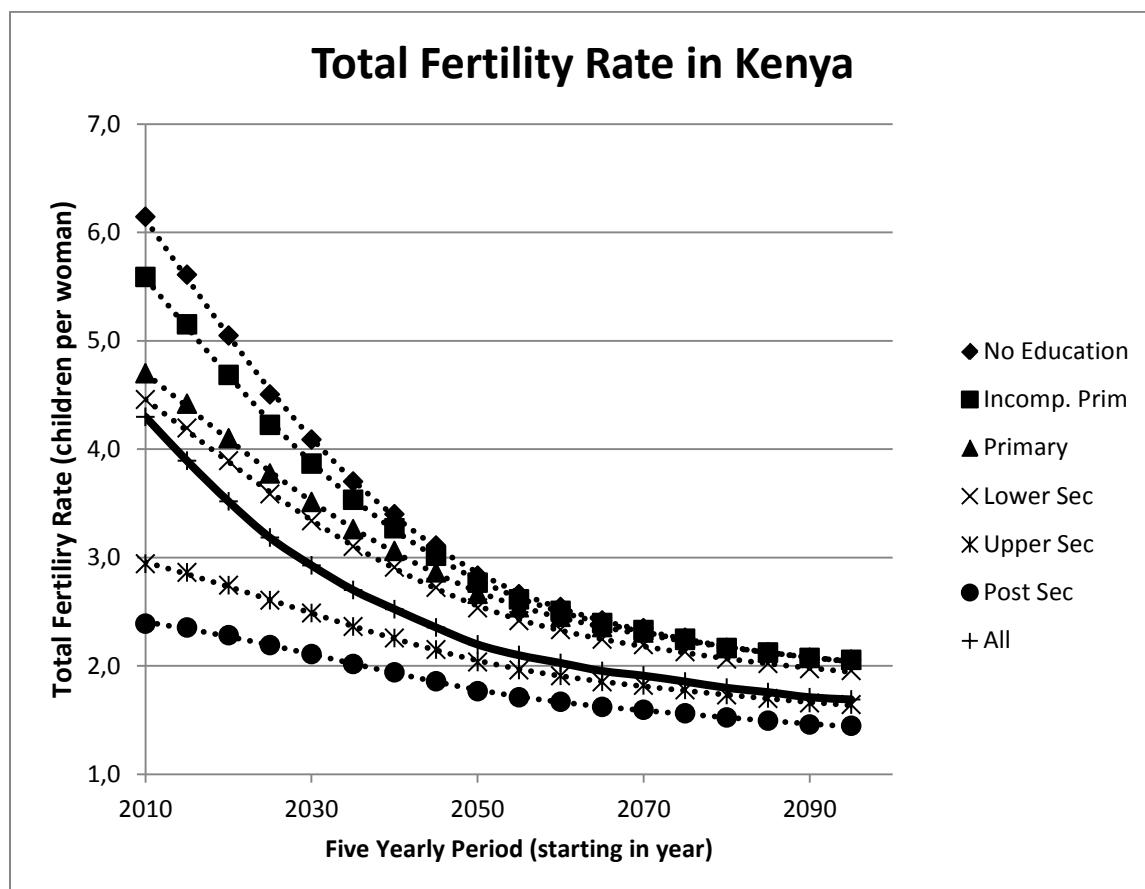

Figure 4. An example of education specific TFRs predicted from above mentioned procedure (country: Kenya)

Table 8. Overall and education -specific TFR for the period 2010-2015 and 2055-2060 for 171 countries

| Country | 2010 - 2015 | | | | | | | 2055 - 2060 | | | | | | |
	No Education	Incomp. Prim	Prima ry	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Prima ry	Lower Sec	Upper Sec	Post Sec	All
Albania	1.79	1.79	1.79	1.69	1.25	1.01	1.41	1.86	1.86	1.86	1.77	1.49	1.31	1.51
Algeria	2.80	2.80	2.80	2.27	1.91	1.70	2.20	2.22	2.22	2.22	2.12	1.78	1.57	1.72
Azerbaijan	2.67	2.67	2.67	2.69	2.33	1.88	2.38	2.12	2.12	2.12	2.02	1.69	1.49	1.70
Argentina	2.73	2.73	2.73	2.22	1.87	1.68	2.14	2.12	2.12	2.12	2.02	1.69	1.49	1.72
Australia	2.38	2.38	2.38	2.38	1.94	1.69	1.88	2.36	2.36	2.36	2.36	1.93	1.70	1.80
Austria	1.68	1.68	1.68	1.68	1.36	1.39	1.43	1.89	1.89	1.89	1.89	1.67	1.55	1.61
Bahamas	2.43	2.43	2.43	1.84	1.54	1.23	1.80	1.94	1.94	1.94	1.85	1.56	1.37	1.68
Bahrain	5.13	3.31	3.08	2.15	2.18	2.19	2.37	2.23	2.24	2.24	2.13	1.79	1.57	1.74
Bangladesh	2.49	2.46	2.27	2.10	1.82	1.85	2.23	1.82	1.82	1.82	1.75	1.51	1.35	1.60
Armenia	1.76	1.76	1.76	1.77	1.54	1.24	1.50	2.19	2.19	2.19	2.09	1.75	1.55	1.70
Belgium	1.82	1.82	1.82	1.82	1.76	1.85	1.81	1.88	1.88	1.88	1.88	1.82	1.79	1.80
Bhutan	2.71	2.40	2.27	2.04	1.79	1.65	2.36	2.02	2.02	2.02	1.92	1.61	1.42	1.74
Bolivia	4.76	4.44	3.72	2.99	2.28	1.73	3.09	2.47	2.44	2.39	2.23	1.86	1.62	1.91
Bosnia and Herzegovina	1.80	1.80	1.80	1.71	1.26	1.02	1.32	1.93	1.93	1.93	1.84	1.55	1.36	1.51
Brazil	2.67	2.67	2.67	1.76	1.44	1.20	1.83	1.88	1.88	1.88	1.80	1.51	1.33	1.59
Belize	3.44	3.12	2.76	2.04	1.92	1.91	2.63	2.06	2.05	2.05	1.94	1.63	1.44	1.81
Bulgaria	1.96	1.96	1.96	1.85	1.36	1.11	1.40	2.08	2.08	2.08	1.98	1.67	1.47	1.61
Myanmar	2.79	2.66	2.24	1.81	1.43	1.06	1.89	1.92	1.93	1.93	1.84	1.55	1.37	1.61
Burundi	4.57	4.15	3.52	2.62	2.01	1.75	4.10	2.17	2.14	2.10	1.95	1.63	1.43	1.98
Belarus	1.75	1.75	1.75	2.02	1.52	1.28	1.52	2.09	2.09	2.09	1.98	1.67	1.47	1.61
Cambodia	2.64	2.61	2.56	2.26	2.10	1.77	2.53	1.96	1.96	1.96	1.86	1.57	1.38	1.75
Cameroon	5.21	5.10	4.02	2.79	2.35	2.27	4.11	2.32	2.31	2.25	2.09	1.75	1.55	1.98
Canada	1.93	1.93	1.93	1.93	1.57	1.60	1.61	2.13	2.13	2.13	2.13	1.90	1.77	1.80
Cape Verde	2.97	2.69	2.38	2.03	1.64	1.43	2.33	1.96	1.96	1.96	1.86	1.57	1.38	1.76

| Country | 2010 - 2015 | | | | | | | 2055 - 2060 | | | | | | |
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Central African Republic	4.49	4.53	4.14	2.62	2.15	1.87	4.24	2.18	2.18	2.15	1.97	1.66	1.46	1.99
Chad	5.87	6.13	5.37	3.91	2.86	2.48	5.73	2.56	2.59	2.52	2.29	1.89	1.66	2.34
Chile	2.58	2.58	2.58	1.96	1.64	1.31	1.79	1.94	1.94	1.94	1.85	1.56	1.37	1.54
China	1.53	1.53	1.53	1.53	1.26	1.12	1.42	1.69	1.69	1.69	1.69	1.40	1.24	1.41
Colombia	3.83	3.36	2.78	2.38	1.95	1.51	2.26	2.18	2.18	2.18	2.08	1.75	1.54	1.75
Comoros	5.46	4.30	4.94	3.69	1.54	1.34	4.51	2.35	2.26	2.31	2.12	1.66	1.46	2.00
Congo Democratic Republic of the	5.49	4.99	4.24	3.15	2.43	2.11	4.08	2.30	2.27	2.23	2.07	1.73	1.52	1.99
Congo	6.45	6.37	6.39	4.94	3.45	3.10	5.57	2.66	2.65	2.65	2.45	2.01	1.77	2.25
Costa Rica	2.22	2.22	2.22	1.68	1.41	1.12	1.81	1.99	1.99	1.99	1.90	1.60	1.41	1.68
Croatia	1.70	1.70	1.70	1.70	1.40	1.21	1.40	1.96	1.96	1.96	1.96	1.61	1.41	1.56
Cuba	2.07	2.07	2.07	1.57	1.31	1.05	1.42	1.73	1.73	1.73	1.65	1.39	1.22	1.42
Cyprus	1.75	1.75	1.75	1.58	1.41	1.28	1.35	2.12	2.12	2.12	2.03	1.74	1.55	1.61
Czech Republic	1.68	1.68	1.68	1.68	1.47	1.30	1.45	2.05	2.05	2.05	2.05	1.75	1.59	1.70
Benin	5.72	4.82	3.93	3.18	3.11	2.70	4.91	2.34	2.29	2.24	2.11	1.79	1.58	2.08
Denmark	1.78	1.78	1.78	1.78	1.74	1.71	1.73	2.07	2.07	2.07	2.07	2.00	1.97	1.99
Dominican Republic	3.84	2.99	3.00	2.51	2.24	1.75	2.42	2.15	2.15	2.15	2.04	1.72	1.51	1.76
Ecuador	3.51	3.24	2.85	2.38	1.95	1.63	2.37	2.12	2.12	2.12	2.02	1.70	1.50	1.73
El Salvador	2.82	2.66	2.35	2.06	1.73	1.51	2.16	1.99	1.99	1.99	1.90	1.59	1.40	1.69
Equatorial Guinea	7.20	6.53	5.51	4.06	3.11	2.70	4.75	2.62	2.58	2.52	2.33	1.94	1.70	2.07
Ethiopia	5.04	4.38	3.05	2.25	1.23	1.07	4.14	2.56	2.47	2.30	2.10	1.68	1.48	2.04
Estonia	1.89	1.89	1.89	1.89	1.64	1.29	1.52	2.21	2.21	2.21	2.21	1.81	1.59	1.70

Country	2010 - 2015							2055 - 2060						
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Finland	1.82	1.82	1.82	1.82	1.87	1.81	1.83	2.07	2.07	2.07	2.07	2.00	1.97	1.99
France	2.45	2.45	2.45	2.45	1.93	1.90	2.00	2.35	2.35	2.35	2.35	2.01	1.82	1.89
French Guiana	4.54	3.88	3.18	2.57	2.20	1.78	2.85	2.22	2.21	2.19	2.08	1.75	1.54	1.83
French Polynesia	3.57	3.05	2.70	2.39	2.06	1.80	2.09	2.77	2.61	2.50	2.32	1.97	1.73	1.89
Gabon	3.36	3.56	2.99	2.37	2.05	2.13	2.87	2.04	2.05	2.03	1.92	1.62	1.43	1.85
Georgia	2.06	2.06	2.06	2.08	1.81	1.45	1.65	2.30	2.30	2.30	2.19	1.84	1.62	1.70
Gambia	5.64	5.12	4.32	3.18	2.44	2.12	4.53	2.46	2.43	2.38	2.20	1.83	1.61	2.05
Occupied Palestinian Territory	4.62	4.94	4.73	4.19	3.59	3.13	4.09	2.53	2.55	2.54	2.40	2.02	1.78	1.98
Germany	1.54	1.54	1.54	1.54	1.39	1.25	1.36	1.91	1.91	1.91	1.91	1.67	1.54	1.61
Ghana	5.69	4.51	4.06	3.15	2.18	1.49	3.98	2.83	2.64	2.57	2.33	1.88	1.59	2.12
Greece	1.72	1.72	1.72	1.57	1.43	1.31	1.42	2.02	2.02	2.02	1.94	1.69	1.54	1.61
Guadeloupe	3.64	3.10	2.73	2.41	2.08	1.82	2.17	2.46	2.46	2.47	2.35	1.98	1.74	1.89
Guatemala	5.11	4.30	3.27	2.64	2.13	1.36	3.60	2.35	2.28	2.20	2.06	1.72	1.48	1.92
Guinea	5.25	4.52	3.94	3.48	3.52	2.17	4.87	2.30	2.26	2.22	2.10	1.80	1.53	2.08
Guyana	4.18	3.21	2.60	2.54	1.89	1.36	2.15	2.06	2.08	2.08	1.98	1.67	1.47	1.69
Haiti	4.44	3.60	2.69	2.24	1.98	2.05	3.04	2.11	2.10	2.09	1.99	1.67	1.48	1.79
Honduras	4.01	3.70	2.87	2.21	2.07	1.77	2.89	2.11	2.10	2.07	1.95	1.65	1.45	1.85
China, Hong Kong SAR	1.51	1.51	1.51	1.51	1.24	1.11	1.25	1.85	1.85	1.85	1.85	1.53	1.36	1.42
Hungary	1.47	1.47	1.47	1.47	1.21	1.14	1.23	1.88	1.88	1.88	1.88	1.60	1.45	1.56
Iceland	2.08	2.08	2.08	2.08	2.05	2.00	2.04	2.07	2.07	2.07	2.07	2.00	1.97	1.99
India	3.43	2.59	2.64	2.39	1.82	2.06	2.53	2.16	2.16	2.16	2.05	1.72	1.52	1.75
Indonesia	1.98	2.12	2.16	2.07	1.88	2.08	2.05	1.57	1.57	1.57	1.55	1.52	1.49	1.53

Country	2010 - 2015							2055 - 2060						
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Iran (Islamic Republic of)	2.62	2.62	2.62	1.89	1.53	1.28	1.87	1.94	1.94	1.94	1.86	1.56	1.37	1.51
Iraq	5.16	4.99	4.81	4.09	3.42	2.90	4.27	2.53	2.52	2.52	2.37	1.99	1.75	2.01
Ireland	2.28	2.28	2.28	2.28	2.00	1.90	1.98	2.23	2.23	2.23	2.23	1.99	1.86	1.89
Israel	4.11	4.11	4.11	3.25	2.85	2.66	3.00	3.13	3.13	3.13	2.99	2.51	2.21	2.46
Italy	1.74	1.74	1.74	1.56	1.37	1.22	1.39	2.08	2.08	2.08	1.99	1.67	1.47	1.61
Côte d'Ivoire	5.06	4.29	3.20	2.10	1.71	1.49	4.09	2.37	2.31	2.22	2.04	1.71	1.50	1.98
Jamaica	2.51	2.51	2.51	2.51	2.13	1.37	2.21	2.05	2.05	2.05	2.05	1.68	1.48	1.76
Japan	1.48	1.48	1.48	1.48	1.47	1.29	1.37	1.61	1.61	1.61	1.61	1.47	1.40	1.42
Kazakhstan	2.73	2.73	2.73	2.67	2.42	1.99	2.32	2.19	2.19	2.19	2.09	1.78	1.59	1.70
Jordan	3.03	3.38	3.08	3.12	2.72	2.56	2.86	2.27	2.26	2.27	2.18	1.90	1.72	1.84
Kenya	6.12	5.57	4.70	4.46	2.96	2.41	4.30	2.68	2.63	2.55	2.43	1.97	1.72	2.10
Republic of Korea	1.65	1.65	1.65	1.65	1.36	1.21	1.30	1.86	1.86	1.86	1.86	1.54	1.37	1.41
Kuwait	2.74	2.74	2.74	2.23	1.88	1.67	2.15	2.12	2.12	2.12	2.02	1.70	1.49	1.71
Kyrgyzstan	2.50	2.50	2.50	2.61	2.47	1.87	2.45	2.17	2.17	2.17	2.06	1.73	1.53	1.72
Lao People's Democratic Republic	3.02	2.94	2.85	2.38	1.83	1.75	2.66	2.08	2.08	2.08	1.97	1.65	1.46	1.82
Lebanon	2.37	2.37	2.37	1.85	1.56	1.39	1.74	2.06	2.06	2.06	1.96	1.65	1.45	1.58
Lesotho	3.76	3.49	3.05	2.55	2.28	1.44	2.93	2.09	2.08	2.08	1.97	1.66	1.45	1.81
Latvia	1.63	1.63	1.63	1.63	1.34	1.14	1.30	2.02	2.02	2.02	2.02	1.66	1.46	1.56
Liberia	5.17	4.75	3.97	2.87	1.81	1.57	4.85	2.33	2.30	2.23	2.04	1.66	1.46	2.08
Lithuania	2.04	2.04	2.04	2.04	1.68	1.43	1.60	2.24	2.24	2.24	2.24	1.83	1.61	1.70
Luxembourg	1.70	1.70	1.70	1.70	1.49	1.42	1.52	2.07	2.07	2.07	2.07	1.85	1.72	1.80
China, Macao	1.29	1.29	1.29	1.29	1.06	0.94	1.11	1.80	1.80	1.80	1.80	1.49	1.33	1.41

Country	2010 - 2015							2055 - 2060						
	No Education	Incomp. Prim	Prima ry	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Prima ry	Lower Sec	Upper Sec	Post Sec	All
SAR														
Madagascar	5.35	4.69	3.31	2.74	2.15	1.95	4.24	2.20	2.16	2.08	1.96	1.63	1.44	2.00
Malawi	6.96	6.39	5.62	4.69	2.89	2.27	5.59	3.42	3.32	3.17	2.90	2.24	1.92	2.63
Malaysia	3.17	3.14	3.07	2.69	2.53	2.12	2.52	2.34	2.35	2.35	2.23	1.88	1.65	1.75
Maldives	2.32	2.00	1.87	1.65	1.46	1.37	1.78	1.83	1.83	1.83	1.75	1.47	1.29	1.59
Mali	6.36	5.88	4.80	3.29	2.96	2.57	5.97	2.55	2.52	2.44	2.23	1.89	1.66	2.28
Malta	1.73	1.73	1.73	1.57	1.40	1.26	1.45	2.03	2.03	2.03	1.94	1.66	1.48	1.61
Martinique	3.35	2.83	2.51	2.24	1.95	1.71	2.00	2.45	2.46	2.46	2.35	1.97	1.73	1.89
Mauritius	1.56	1.56	1.56	1.56	1.27	1.11	1.50	1.90	1.90	1.90	1.90	1.55	1.37	1.70
Mexico	3.13	3.13	3.13	2.23	1.80	1.55	2.29	2.13	2.13	2.13	2.02	1.70	1.50	1.74
Mongolia Republic of	4.04	3.47	3.06	2.67	2.27	1.99	2.37	2.29	2.27	2.26	2.14	1.80	1.58	1.80
Moldova	1.68	1.68	1.68	1.59	1.17	0.95	1.27	1.89	1.89	1.89	1.80	1.52	1.34	1.51
Montenegro	2.30	2.30	2.30	2.17	1.60	1.30	1.65	2.06	2.06	2.06	1.96	1.65	1.46	1.61
Morocco	2.78	2.29	2.01	1.78	1.43	1.43	2.20	2.03	2.03	2.04	1.94	1.63	1.43	1.70
Mozambique	5.00	4.57	3.74	2.88	2.14	1.85	4.53	2.33	2.30	2.24	2.08	1.73	1.52	2.05
Namibia	4.69	3.70	3.19	2.75	2.35	1.95	2.91	2.17	2.16	2.16	2.05	1.72	1.52	1.80
Nepal	3.72	3.24	2.71	2.08	2.00	1.88	2.71	2.19	2.18	2.18	2.07	1.74	1.53	1.80
Netherlands	1.92	1.92	1.92	1.92	1.76	1.57	1.72	2.11	2.11	2.11	2.11	1.86	1.73	1.80
Netherlands Antilles	2.31	2.31	2.31	1.75	1.46	1.17	1.84	2.00	2.00	2.00	1.91	1.60	1.41	1.71
Aruba	2.51	2.11	1.88	1.69	1.48	1.30	1.61	1.83	1.84	1.84	1.75	1.47	1.30	1.47
New Caledonia	2.60	2.60	2.60	2.60	2.11	1.85	2.15	2.32	2.32	2.32	2.32	1.91	1.68	1.79
Vanuatu	4.43	3.96	3.47	2.88	2.33	2.04	3.44	2.09	2.08	2.07	1.96	1.65	1.45	1.85
New Zealand	2.57	2.57	2.57	2.57	2.09	1.83	2.05	2.35	2.35	2.35	2.35	1.93	1.69	1.80
Nicaragua	3.87	3.07	2.47	2.02	1.94	1.47	2.48	2.02	2.02	2.03	1.93	1.62	1.43	1.73

Country	2010 - 2015							2055 - 2060						
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Niger	7.05	7.04	5.28	4.41	3.19	2.76	6.81	3.66	3.66	3.26	2.97	2.38	2.08	3.20
Nigeria	6.67	6.14	5.67	4.84	3.92	2.95	5.27	3.98	3.85	3.74	3.42	2.84	2.38	2.79
Norway	1.99	1.99	1.99	1.99	1.89	1.84	1.88	2.12	2.12	2.12	2.12	2.02	1.96	1.99
Pakistan	3.80	3.48	3.01	2.74	2.59	1.90	3.32	2.44	2.40	2.35	2.22	1.90	1.63	1.99
Panama	3.56	3.34	2.86	2.44	2.06	1.64	2.33	2.13	2.13	2.13	2.03	1.71	1.50	1.71
Paraguay	3.34	3.58	2.98	2.59	2.07	2.11	2.71	2.11	2.11	2.11	2.01	1.69	1.48	1.76
Peru	4.17	3.66	3.04	2.42	2.07	1.69	2.37	2.20	2.20	2.21	2.10	1.77	1.56	1.71
Philippines	4.05	4.00	3.85	3.29	2.96	2.21	2.96	2.46	2.46	2.45	2.32	1.96	1.71	1.87
Poland	1.85	1.85	1.85	1.85	1.35	1.08	1.30	2.19	2.19	2.19	2.19	1.80	1.58	1.70
Portugal	1.48	1.48	1.48	1.34	1.20	1.08	1.26	2.12	2.12	2.12	2.03	1.73	1.55	1.70
Guinea-Bissau	5.43	4.92	4.15	3.05	2.34	2.03	4.70	2.45	2.42	2.36	2.18	1.82	1.60	2.08
Timor-Leste	6.61	6.67	7.05	5.87	5.16	3.50	6.11	3.06	3.06	3.09	2.87	2.43	2.05	2.46
Puerto Rico	2.76	2.76	2.76	2.10	1.76	1.41	1.72	1.98	1.98	1.98	1.89	1.59	1.40	1.54
Qatar	2.75	2.75	2.75	2.37	2.01	1.79	2.22	2.09	2.09	2.09	1.99	1.67	1.47	1.70
Réunion	3.64	3.14	2.79	2.45	2.09	1.83	2.26	2.62	2.53	2.46	2.31	1.94	1.71	1.89
Romania	2.02	2.02	2.02	1.62	1.17	0.91	1.25	1.90	1.90	1.90	1.81	1.53	1.35	1.51
Russian Federation	2.28	2.28	2.28	2.15	1.58	1.29	1.58	2.19	2.19	2.19	2.09	1.76	1.55	1.70
Rwanda	5.75	5.45	4.60	3.66	2.79	2.33	4.97	2.67	2.64	2.54	2.34	1.93	1.68	2.28
Saint Lucia	3.67	3.08	2.45	1.92	1.65	1.31	1.88	1.96	1.97	1.98	1.89	1.59	1.40	1.59
Saint Vincent and the Grenadines	3.75	3.15	2.51	1.97	1.69	1.34	1.97	2.02	2.02	2.03	1.94	1.63	1.44	1.68
Sao Tome and Principe	3.45	3.61	3.25	2.49	2.22	2.13	3.30	2.04	2.04	2.03	1.91	1.61	1.42	1.88
Saudi Arabia	4.14	3.65	3.25	2.80	2.34	2.05	2.68	2.41	2.40	2.39	2.27	1.91	1.68	1.81

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Country	2010 - 2015							2055 - 2060						
	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Senegal	5.41	4.47	3.52	3.54	1.96	1.70	4.53	2.53	2.43	2.32	2.23	1.76	1.55	2.12
Serbia	1.89	1.89	1.89	1.79	1.31	1.07	1.35	2.05	2.05	2.05	1.95	1.65	1.45	1.61
Sierra Leone	5.21	4.78	4.07	2.99	2.24	2.72	4.64	2.33	2.31	2.27	2.11	1.76	1.59	2.07
Singapore	1.66	1.66	1.66	1.66	1.37	1.22	1.28	1.89	1.89	1.89	1.89	1.57	1.39	1.42
Slovakia	1.82	1.82	1.82	1.82	1.46	1.20	1.45	2.15	2.15	2.15	2.15	1.76	1.55	1.70
Viet Nam	2.38	1.82	1.95	1.69	1.68	1.49	1.78	1.71	1.71	1.71	1.63	1.37	1.20	1.45
Slovenia	1.83	1.83	1.83	1.83	1.59	1.40	1.56	2.09	2.09	2.09	2.09	1.77	1.59	1.70
Somalia	6.96	6.27	5.23	3.77	2.86	2.48	5.96	2.85	2.79	2.69	2.45	2.03	1.79	2.34
South Africa	3.78	3.23	2.95	2.40	2.02	1.77	2.38	2.06	2.06	2.06	1.97	1.65	1.45	1.71
Zimbabwe	3.29	3.68	3.37	3.05	2.64	1.97	2.98	2.25	2.25	2.25	2.14	1.80	1.58	1.81
Spain	1.60	1.60	1.60	1.45	1.29	1.17	1.32	2.19	2.19	2.19	2.10	1.79	1.60	1.70
Sudan	4.31	4.08	4.13	3.89	3.16	2.55	4.08	2.33	2.32	2.32	2.21	1.85	1.62	1.98
Suriname	4.10	3.47	2.81	2.25	1.92	1.54	2.27	2.30	2.25	2.20	2.06	1.74	1.52	1.84
Swaziland	3.97	3.67	3.38	2.96	2.43	1.95	3.09	2.28	2.27	2.26	2.14	1.80	1.58	1.86
Sweden	1.96	1.96	1.96	1.96	1.93	1.89	1.91	2.07	2.07	2.07	2.07	2.01	1.97	1.99
Switzerland	1.73	1.73	1.73	1.73	1.54	1.33	1.52	2.14	2.14	2.14	2.14	1.82	1.65	1.75
Syrian Arab Republic	3.52	3.11	2.77	2.39	1.99	1.74	2.72	2.10	2.10	2.10	1.99	1.68	1.47	1.77
Tajikistan	3.24	3.24	3.24	3.16	2.86	2.36	2.97	2.29	2.29	2.29	2.19	1.87	1.67	1.87
Thailand	1.73	1.73	1.73	1.73	1.43	1.27	1.56	1.89	1.89	1.89	1.89	1.56	1.39	1.53
Tonga	5.55	4.98	4.36	3.62	2.93	2.56	3.47	2.40	2.38	2.36	2.23	1.87	1.64	1.91
Trinidad and Tobago	2.11	2.11	2.11	1.60	1.34	1.07	1.54	1.74	1.74	1.74	1.66	1.40	1.23	1.45
United Arab Emirates	2.42	2.42	2.42	1.89	1.60	1.42	1.73	1.91	1.91	1.91	1.82	1.53	1.35	1.53
Tunisia	2.31	2.31	2.31	1.80	1.52	1.35	1.86	2.06	2.06	2.06	1.97	1.65	1.45	1.59

	2010 - 2015							2055 - 2060						
Country	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All	No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	All
Turkey	3.83	2.66	2.38	1.69	1.62	1.26	2.02	1.99	2.01	2.01	1.92	1.61	1.42	1.61
Turkmenistan	2.62	2.62	2.62	2.56	2.32	1.91	2.31	2.10	2.10	2.10	2.01	1.71	1.53	1.69
Uganda	7.26	6.77	5.45	4.00	2.83	3.57	5.93	3.19	3.13	2.97	2.68	2.19	2.06	2.67
Ukraine	2.09	2.09	2.09	1.98	1.45	1.18	1.46	2.07	2.07	2.07	1.97	1.66	1.46	1.61
TFYR Macedonia	1.91	1.91	1.91	1.81	1.33	1.08	1.46	2.04	2.04	2.04	1.94	1.64	1.44	1.61
Egypt	2.92	2.84	2.57	2.47	2.72	2.23	2.67	2.23	2.23	2.24	2.15	1.87	1.71	1.85
United Kingdom	2.13	2.13	2.13	2.13	1.86	1.77	1.96	2.14	2.14	2.14	2.14	1.91	1.78	1.89
United Republic of Tanzania	6.57	5.78	5.06	2.88	2.66	2.30	5.06	2.49	2.42	2.36	2.08	1.77	1.55	2.19
United States of America	2.41	2.41	2.41	2.41	1.89	1.67	1.88	2.57	2.57	2.57	2.57	2.00	1.77	1.89
Burkina Faso	6.10	4.75	3.84	2.21	2.91	2.52	5.47	2.81	2.65	2.54	2.24	2.01	1.76	2.44
Uruguay	2.53	2.53	2.53	1.92	1.61	1.28	1.96	1.86	1.86	1.86	1.78	1.50	1.32	1.60
Venezuela	3.92	3.57	2.96	2.47	2.02	1.59	2.32	2.03	2.03	2.04	1.95	1.64	1.44	1.67
Samoa	5.28	4.73	4.14	3.44	2.79	2.44	3.45	2.33	2.31	2.29	2.16	1.81	1.59	1.90
Zambia	7.99	7.43	6.13	4.67	2.82	2.87	5.74	3.07	3.01	2.88	2.62	2.09	1.88	2.43

4.5 Education-specific Life Tables

Education differentials in mortality are important in the reconstruction and projection of population by age, sex, and educational attainment. The main idea has not changed much from what was done in earlier projections (KC et al. 2010). However, we have made an effort to improve the mortality part of our model, especially the optimization procedure explained below.

In line with the previous set of projections, we derive education-specific survival ratios for six education categories. We use 15 as the cut-off age, assuming that education attained later in life does not affect mortality at lower ages. Instead, mother's education matters for the survival of those under age 15. Education-specific survival ratios are then derived from the total population's survival ratios and the education-differentials (d^i) in life expectancy at age 15, which are based on the literature. Taking into account the gender difference in life expectancy, the difference in life expectancy between women from the highest and the lowest education category is now six years, whereas for men it is only four years.

1. We begin by initializing education-specific life expectancy at age 15 (e_{15}), subject to the constraint given by the empirical differentials in education-specific mortality d^i_{15}.

$$e^i_{15} = e_{15} + d^i_{15}$$

2. At the same time, e_{15} can be described as the population-weighted mean of e^i_{15}, where i refers to education categories E1, E2, … , E6

$$e_{15} = \sum p^i_{15} e^i_{15}$$

3. From the life table corresponding to overall e_{15}, we get a standard mortality schedule for a given country in a given year.
4. Using the two relations described in (1) and (2), we apply the Gompertz relational model in accordance with the methodology applied in estimating education-differentials in fertility.
5. Using an iterative procedure, we minimize the difference between the total number of age-sex-specific deaths and the sum of deaths by age and sex from the individual education categories.
6. The death rates minimizing that difference correspond to a mortality schedule for each education subgroup.
7. This procedure is repeated for every country in every period, assuming that the survival ratio during a five-year period depends on the education status at the beginning of the interval.

Table 9. Education-specific five yearly survival ratio for population aged 60-64 for period 2010-2015 and 2055-2060 for 171 countries

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Albania	0.87	0.88	0.89	0.91	0.92	0.93	0.94	0.95	0.95	0.97	0.97	0.98
Algeria	0.88	0.89	0.90	0.92	0.93	0.94	0.92	0.93	0.94	0.95	0.96	0.97
Azerbaijan	0.80	0.82	0.83	0.85	0.87	0.88	0.87	0.89	0.90	0.92	0.93	0.94
Argentina	0.86	0.87	0.88	0.90	0.91	0.92	0.92	0.93	0.94	0.95	0.95	0.96
Australia	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99	0.99
Austria	0.90	0.91	0.92	0.93	0.94	0.95	0.97	0.97	0.97	0.98	0.98	0.99
Bahamas	0.87	0.88	0.89	0.91	0.92	0.93	0.92	0.93	0.94	0.95	0.96	0.97
Bahrain	0.88	0.89	0.90	0.92	0.93	0.94	0.94	0.95	0.96	0.97	0.97	0.98
Bangladesh	0.87	0.88	0.89	0.91	0.92	0.93	0.91	0.92	0.93	0.95	0.95	0.96
Armenia	0.81	0.83	0.84	0.86	0.87	0.89	0.89	0.90	0.91	0.93	0.94	0.95
Belgium	0.90	0.91	0.92	0.94	0.94	0.95	0.96	0.96	0.97	0.98	0.98	0.98
Bhutan	0.88	0.89	0.90	0.91	0.92	0.93	0.93	0.94	0.94	0.96	0.96	0.97
Bolivia	0.85	0.86	0.87	0.89	0.90	0.90	0.89	0.90	0.91	0.92	0.93	0.94
Bosnia and Herzegovina	0.86	0.87	0.88	0.90	0.91	0.92	0.94	0.94	0.95	0.96	0.97	0.97
Brazil	0.88	0.89	0.89	0.91	0.91	0.92	0.93	0.94	0.95	0.95	0.96	0.96
Belize	0.91	0.92	0.93	0.94	0.95	0.95	0.96	0.96	0.97	0.98	0.98	0.98
Bulgaria	0.81	0.82	0.83	0.86	0.87	0.88	0.90	0.91	0.92	0.94	0.95	0.95
Myanmar	0.82	0.83	0.84	0.86	0.87	0.88	0.84	0.85	0.86	0.89	0.90	0.91
Burundi	0.83	0.84	0.84	0.86	0.87	0.87	0.87	0.87	0.88	0.89	0.90	0.91
Belarus	0.76	0.77	0.78	0.80	0.81	0.82	0.87	0.88	0.90	0.91	0.92	0.93
Cambodia	0.83	0.84	0.85	0.87	0.88	0.89	0.87	0.88	0.89	0.92	0.93	0.93
Cameroon	0.83	0.84	0.85	0.86	0.87	0.87	0.86	0.86	0.87	0.88	0.89	0.90
Canada	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.98	0.98	0.98

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Cape Verde	0.87	0.88	0.89	0.91	0.92	0.93	0.93	0.94	0.95	0.96	0.97	0.97
Central African Republic	0.82	0.83	0.84	0.85	0.86	0.86	0.85	0.86	0.86	0.88	0.89	0.89
Chad	0.82	0.83	0.84	0.86	0.86	0.87	0.85	0.86	0.87	0.89	0.89	0.90
Chile	0.90	0.90	0.91	0.93	0.94	0.94	0.95	0.95	0.96	0.97	0.97	0.98
China	0.86	0.87	0.89	0.91	0.92	0.92	0.92	0.93	0.94	0.95	0.96	0.96
Colombia	0.89	0.90	0.91	0.92	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97
Comoros	0.82	0.83	0.84	0.86	0.87	0.88	0.83	0.84	0.85	0.87	0.88	0.89
Congo	0.85	0.85	0.86	0.87	0.88	0.89	0.86	0.87	0.88	0.89	0.90	0.91
Democratic Republic of the Congo	0.81	0.81	0.82	0.84	0.84	0.85	0.84	0.85	0.85	0.87	0.88	0.88
Costa Rica	0.91	0.92	0.93	0.94	0.95	0.95	0.95	0.95	0.96	0.97	0.97	0.98
Croatia	0.84	0.85	0.86	0.88	0.90	0.91	0.93	0.94	0.95	0.96	0.97	0.97
Cuba	0.90	0.91	0.92	0.93	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.98
Cyprus	0.90	0.91	0.92	0.94	0.94	0.95	0.96	0.96	0.97	0.98	0.98	0.98
Czech Republic	0.85	0.86	0.87	0.89	0.90	0.91	0.94	0.95	0.96	0.97	0.97	0.98
Benin	0.84	0.85	0.86	0.87	0.88	0.89	0.87	0.88	0.89	0.90	0.91	0.92
Denmark	0.88	0.89	0.90	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98
Dominican Republic	0.89	0.89	0.90	0.91	0.92	0.92	0.93	0.93	0.94	0.95	0.95	0.96
Ecuador	0.91	0.92	0.92	0.94	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.97
El Salvador	0.89	0.89	0.90	0.91	0.91	0.92	0.93	0.93	0.94	0.95	0.95	0.95
Equatorial	0.82	0.83	0.83	0.85	0.85	0.86	0.85	0.86	0.86	0.88	0.88	0.89

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Guinea												
Ethiopia	0.86	0.87	0.87	0.89	0.90	0.90	0.88	0.89	0.89	0.91	0.92	0.93
Estonia	0.81	0.82	0.83	0.85	0.86	0.87	0.90	0.91	0.92	0.94	0.94	0.95
Finland	0.89	0.90	0.91	0.93	0.93	0.94	0.96	0.96	0.97	0.97	0.98	0.98
France	0.92	0.92	0.93	0.94	0.95	0.96	0.97	0.97	0.97	0.98	0.98	0.99
French Guiana	0.87	0.88	0.89	0.91	0.92	0.93	0.95	0.95	0.96	0.97	0.98	0.98
French Polynesia	0.84	0.86	0.87	0.89	0.90	0.91	0.91	0.92	0.93	0.95	0.95	0.96
Gabon	0.87	0.88	0.88	0.90	0.90	0.91	0.88	0.89	0.90	0.91	0.92	0.93
Georgia	0.83	0.84	0.85	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96
Gambia	0.79	0.80	0.81	0.84	0.85	0.86	0.83	0.84	0.85	0.87	0.88	0.89
Occupied Palestinian Territory	0.86	0.87	0.88	0.90	0.91	0.92	0.92	0.93	0.94	0.95	0.96	0.97
Germany	0.89	0.90	0.91	0.93	0.94	0.94	0.96	0.97	0.97	0.98	0.98	0.98
Ghana	0.87	0.87	0.88	0.90	0.90	0.91	0.88	0.89	0.90	0.91	0.92	0.93
Greece	0.92	0.92	0.93	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98
Guadeloupe	0.90	0.91	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97	0.97	0.98
Guatemala	0.90	0.90	0.91	0.92	0.93	0.93	0.93	0.94	0.94	0.95	0.96	0.96
Guinea	0.84	0.85	0.85	0.87	0.88	0.88	0.87	0.88	0.88	0.90	0.91	0.91
Guyana	0.83	0.84	0.85	0.87	0.88	0.89	0.87	0.88	0.89	0.91	0.92	0.93
Haiti	0.84	0.85	0.86	0.88	0.89	0.90	0.88	0.89	0.90	0.91	0.92	0.93
Honduras	0.90	0.91	0.91	0.93	0.94	0.94	0.94	0.94	0.95	0.96	0.96	0.97
China, Hong Kong SAR	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.96	0.97	0.98	0.98	0.98

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Hungary	0.81	0.82	0.84	0.86	0.87	0.88	0.91	0.91	0.92	0.94	0.95	0.95
Iceland	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99	0.99
India	0.82	0.83	0.84	0.86	0.88	0.89	0.89	0.90	0.91	0.93	0.94	0.94
Indonesia	0.84	0.85	0.86	0.88	0.89	0.90	0.91	0.92	0.92	0.94	0.94	0.95
Iran (Islamic Republic of)	0.90	0.90	0.91	0.93	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98
Iraq	0.87	0.88	0.89	0.91	0.92	0.93	0.92	0.93	0.94	0.95	0.96	0.97
Ireland	0.91	0.92	0.92	0.94	0.95	0.95	0.96	0.96	0.97	0.98	0.98	0.98
Israel	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98
Italy	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98	0.99
Côte d'Ivoire	0.85	0.86	0.86	0.88	0.88	0.89	0.87	0.88	0.89	0.90	0.91	0.91
Jamaica	0.89	0.90	0.90	0.92	0.92	0.93	0.93	0.94	0.95	0.96	0.96	0.97
Japan	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98
Kazakhstan	0.76	0.77	0.78	0.80	0.81	0.82	0.85	0.86	0.88	0.90	0.91	0.92
Jordan	0.88	0.89	0.90	0.91	0.92	0.93	0.93	0.93	0.94	0.95	0.96	0.97
Kenya	0.85	0.86	0.86	0.87	0.88	0.89	0.86	0.87	0.87	0.89	0.89	0.90
Republic of Korea	0.90	0.91	0.92	0.93	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.98
Kuwait	0.88	0.89	0.90	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98
Kyrgyzstan	0.78	0.79	0.80	0.82	0.83	0.84	0.87	0.88	0.89	0.91	0.92	0.93
Lao People's Democratic Republic	0.83	0.84	0.86	0.88	0.89	0.90	0.85	0.87	0.88	0.90	0.91	0.92
Lebanon	0.86	0.87	0.88	0.90	0.91	0.92	0.91	0.92	0.93	0.95	0.95	0.96
Lesotho	0.83	0.84	0.84	0.85	0.86	0.86	0.83	0.84	0.84	0.85	0.86	0.87

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Latvia	0.80	0.81	0.82	0.84	0.85	0.86	0.90	0.91	0.92	0.94	0.94	0.95
Liberia	0.82	0.83	0.84	0.86	0.87	0.88	0.85	0.86	0.87	0.89	0.90	0.91
Lithuania	0.80	0.81	0.82	0.84	0.85	0.86	0.90	0.91	0.92	0.93	0.94	0.95
Luxembourg	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.97	0.98	0.98	0.98
China, Macao SAR	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.97	0.98	0.98	0.99
Madagascar	0.88	0.89	0.90	0.91	0.92	0.93	0.92	0.92	0.93	0.94	0.95	0.96
Malawi	0.85	0.86	0.87	0.88	0.89	0.89	0.88	0.89	0.89	0.91	0.91	0.92
Malaysia	0.87	0.88	0.89	0.91	0.92	0.93	0.93	0.94	0.95	0.96	0.97	0.97
Maldives	0.91	0.92	0.93	0.95	0.95	0.96	0.98	0.98	0.98	0.99	0.99	0.99
Mali	0.80	0.81	0.82	0.84	0.85	0.86	0.85	0.86	0.86	0.88	0.89	0.90
Malta	0.90	0.91	0.92	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.98	0.98
Martinique	0.92	0.92	0.93	0.94	0.95	0.96	0.96	0.96	0.97	0.97	0.98	0.98
Mauritius	0.85	0.86	0.87	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.96
Mexico	0.91	0.91	0.92	0.94	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.97
Mongolia	0.81	0.82	0.83	0.84	0.85	0.86	0.84	0.86	0.87	0.89	0.90	0.91
Republic of Moldova	0.77	0.78	0.79	0.82	0.83	0.84	0.87	0.88	0.89	0.91	0.92	0.93
Montenegro	0.84	0.85	0.86	0.88	0.89	0.91	0.93	0.94	0.95	0.96	0.97	0.97
Morocco	0.88	0.89	0.90	0.92	0.93	0.94	0.92	0.93	0.94	0.95	0.96	0.97
Mozambique	0.85	0.85	0.86	0.87	0.87	0.88	0.87	0.87	0.88	0.89	0.90	0.90
Namibia	0.85	0.86	0.87	0.88	0.89	0.89	0.87	0.87	0.88	0.89	0.90	0.91
Nepal	0.86	0.87	0.88	0.91	0.92	0.93	0.93	0.94	0.95	0.96	0.97	0.97
Netherlands	0.90	0.91	0.92	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.98	0.98
Netherlands	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Antilles												
Aruba	0.87	0.88	0.89	0.91	0.92	0.93	0.94	0.95	0.95	0.97	0.97	0.98
New Caledonia	0.84	0.86	0.87	0.89	0.90	0.90	0.91	0.92	0.93	0.94	0.95	0.95
Vanuatu	0.85	0.86	0.87	0.90	0.91	0.92	0.90	0.91	0.92	0.94	0.95	0.96
New Zealand	0.91	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98	0.98	0.98
Nicaragua	0.89	0.90	0.91	0.92	0.93	0.93	0.93	0.94	0.94	0.95	0.96	0.96
Niger	0.82	0.83	0.84	0.86	0.87	0.88	0.85	0.86	0.87	0.89	0.90	0.91
Nigeria	0.83	0.84	0.84	0.86	0.86	0.87	0.85	0.85	0.86	0.87	0.88	0.89
Norway	0.90	0.91	0.92	0.94	0.94	0.95	0.96	0.97	0.97	0.98	0.98	0.98
Pakistan	0.86	0.87	0.88	0.90	0.91	0.92	0.88	0.89	0.90	0.92	0.93	0.94
Panama	0.91	0.91	0.92	0.94	0.94	0.95	0.95	0.95	0.96	0.97	0.97	0.98
Paraguay	0.89	0.90	0.90	0.92	0.93	0.93	0.93	0.93	0.94	0.95	0.96	0.96
Peru	0.88	0.89	0.89	0.91	0.92	0.93	0.92	0.93	0.93	0.94	0.95	0.96
Philippines	0.81	0.82	0.83	0.85	0.86	0.87	0.89	0.90	0.91	0.92	0.93	0.94
Poland	0.83	0.84	0.85	0.87	0.88	0.89	0.92	0.93	0.94	0.95	0.96	0.96
Portugal	0.92	0.93	0.94	0.95	0.96	0.96	0.96	0.97	0.97	0.98	0.98	0.98
Guinea-Bissau	0.82	0.82	0.83	0.84	0.85	0.86	0.85	0.85	0.86	0.88	0.88	0.89
Timor-Leste	0.83	0.84	0.85	0.87	0.88	0.89	0.82	0.83	0.84	0.87	0.88	0.89
Puerto Rico	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.97
Qatar	0.91	0.92	0.93	0.95	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.99
Réunion	0.89	0.90	0.90	0.92	0.92	0.93	0.94	0.94	0.95	0.95	0.96	0.96
Romania	0.83	0.84	0.85	0.87	0.88	0.89	0.92	0.93	0.93	0.95	0.96	0.96
Russian	0.77	0.78	0.79	0.81	0.81	0.82	0.85	0.87	0.88	0.90	0.91	0.92

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Federation												
Rwanda	0.85	0.85	0.86	0.87	0.88	0.89	0.87	0.88	0.88	0.90	0.90	0.91
Saint Lucia	0.86	0.87	0.88	0.90	0.91	0.92	0.92	0.93	0.94	0.95	0.95	0.96
Saint Vincent and the Grenadines	0.86	0.87	0.88	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97
Sao Tome and Principe	0.86	0.87	0.88	0.90	0.91	0.91	0.88	0.89	0.90	0.92	0.92	0.93
Saudi Arabia	0.88	0.89	0.90	0.92	0.93	0.94	0.93	0.94	0.94	0.96	0.96	0.97
Senegal	0.79	0.80	0.82	0.84	0.85	0.87	0.84	0.85	0.87	0.89	0.90	0.91
Serbia	0.82	0.84	0.85	0.87	0.88	0.90	0.92	0.92	0.93	0.95	0.95	0.96
Sierra Leone	0.71	0.72	0.73	0.76	0.77	0.78	0.80	0.81	0.82	0.84	0.85	0.86
Singapore	0.89	0.90	0.91	0.93	0.94	0.95	0.94	0.95	0.96	0.97	0.97	0.97
Slovakia	0.82	0.83	0.84	0.87	0.88	0.89	0.92	0.93	0.94	0.95	0.96	0.96
Viet Nam	0.90	0.91	0.91	0.93	0.94	0.94	0.95	0.96	0.96	0.97	0.97	0.98
Slovenia	0.87	0.88	0.89	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.97	0.98
Somalia	0.82	0.83	0.83	0.85	0.86	0.87	0.85	0.85	0.86	0.88	0.89	0.89
South Africa	0.77	0.77	0.78	0.79	0.80	0.81	0.81	0.81	0.82	0.84	0.85	0.85
Zimbabwe	0.86	0.86	0.87	0.88	0.88	0.89	0.87	0.88	0.88	0.89	0.90	0.90
Spain	0.92	0.93	0.93	0.95	0.95	0.96	0.97	0.97	0.97	0.98	0.98	0.99
Sudan	0.86	0.87	0.88	0.90	0.90	0.91	0.87	0.88	0.88	0.90	0.91	0.92
Suriname	0.84	0.85	0.86	0.88	0.89	0.89	0.91	0.92	0.93	0.94	0.95	0.95
Swaziland	0.83	0.83	0.84	0.85	0.85	0.86	0.80	0.81	0.82	0.83	0.83	0.84
Sweden	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98
Switzerland	0.91	0.92	0.93	0.95	0.95	0.96	0.97	0.97	0.98	0.98	0.99	0.99

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Syrian Arab Republic	0.90	0.91	0.92	0.94	0.95	0.95	0.95	0.96	0.96	0.97	0.98	0.98
Tajikistan	0.78	0.80	0.81	0.83	0.84	0.86	0.85	0.86	0.88	0.90	0.91	0.92
Thailand	0.89	0.90	0.91	0.92	0.93	0.93	0.91	0.92	0.92	0.94	0.94	0.95
Tonga	0.81	0.83	0.84	0.86	0.88	0.89	0.90	0.91	0.92	0.94	0.94	0.95
Trinidad and Tobago	0.83	0.84	0.85	0.87	0.88	0.89	0.91	0.91	0.92	0.94	0.94	0.95
United Arab Emirates	0.87	0.89	0.90	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97	0.98
Tunisia	0.89	0.90	0.91	0.93	0.94	0.94	0.92	0.93	0.94	0.96	0.96	0.97
Turkey	0.85	0.87	0.88	0.90	0.91	0.92	0.91	0.92	0.93	0.95	0.95	0.96
Turkmenistan	0.78	0.79	0.80	0.82	0.83	0.84	0.85	0.86	0.87	0.89	0.90	0.91
Uganda	0.85	0.85	0.86	0.87	0.88	0.88	0.87	0.87	0.88	0.89	0.90	0.91
Ukraine	0.76	0.77	0.78	0.79	0.80	0.81	0.85	0.86	0.87	0.89	0.90	0.91
TFYR Macedonia	0.84	0.86	0.87	0.89	0.91	0.92	0.93	0.94	0.94	0.96	0.96	0.97
Egypt	0.86	0.87	0.88	0.91	0.92	0.93	0.90	0.91	0.92	0.94	0.95	0.96
United Kingdom	0.91	0.92	0.93	0.94	0.95	0.96	0.96	0.97	0.97	0.98	0.98	0.98
United Republic of Tanzania	0.86	0.87	0.88	0.89	0.89	0.90	0.89	0.89	0.90	0.91	0.92	0.93
United States of America	0.89	0.89	0.90	0.92	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97
Burkina Faso	0.83	0.84	0.85	0.87	0.88	0.89	0.86	0.87	0.88	0.90	0.91	0.92
Uruguay	0.87	0.88	0.89	0.91	0.92	0.93	0.94	0.95	0.95	0.96	0.97	0.97

Country	2010 - 2015 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec	2055 - 2060 No Education	Incomp. Prim	Primary	Lower Sec	Upper Sec	Post Sec
Venezuela	0.89	0.89	0.90	0.92	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97
Samoa	0.81	0.83	0.84	0.87	0.88	0.89	0.90	0.91	0.92	0.94	0.94	0.95
Zambia	0.83	0.84	0.84	0.85	0.86	0.87	0.85	0.85	0.86	0.87	0.88	0.88

4.6 Mortality of Children under 15

We add an additional layer of sophistication to the mortality section by deriving the mortality of children (under 15) by their mothers' education. The education-differentials are taken from a review of the literature and from our own estimates based on surveys. Holding the differentials constant, we minimize the difference between overall age-specific deaths under 15, and the sum of age-sex-specific deaths by education category. This marks a further methodological improvement compared to the 2010 version of the projections, where children under the age of 15 were assumed to be exposed to the same risk of dying, irrespective of their mothers' education.

4.7 Education Scenarios

Once the population is projected to the end of a five-year period applying the described education-specific survival ratios, education transitions are implemented to match a pre-defined set of education profiles corresponding to the medium population scenario for the 15-34 age-group (see Barakat & Durham 2013). We assume there are no education transitions between the six education states after age 34. Once a certain level of educational attainment has been reached, there is no way of falling below this level, that is, transitions go only in one direction. The problem is that the ages at transitions from E1 to E6 vary greatly between countries. While the timing of the transitions to E4 will only require some assumptions about the age group 15-19, the transitions to tertiary education clearly require more consideration as they can take place over a wider range of age groups depending on particular features of national school systems, such as the official age of entry, the number of grades in primary and lower secondary school, and so on. A detailed description of how education transitions are dealt with in different scenarios can be found in Barakat and Durham (2013).

4.8 Education-specific Migration Flows

In the absence of data on the education composition of global bilateral migration flows, we make the commonly used assumption that the education structure of emigration flows is proportional to the origin country's education structure. However, this assumption is not valid in the case of immigration flows, which are rarely proportional to the education structure of the destination country. Hence, we calculate net numbers of migrants in each projected period based on the results of the age-sex projection and then assume that the education distribution of net-migrants is proportional to a country's education distribution.

4.9 Alternative Scenarios

As noted earlier, we developed several alternative scenarios in addition to the medium scenario. For all of the alternatives, 2010 is defined as the base year for all countries, and the distribution of population by age, sex, and educational attainment in that year is taken as given. For the future levels of fertility, mortality, migration and education, alternative trajectories are then defined. Scenarios in the first set of three alternative scenarios differ only with respect to the education future, while education-specific

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fertility, mortality, and migration rates are the same as in the medium scenario. Rather than recalculating the education-specific rates for alternative scenarios, we directly apply those rates derived from the medium scenario and apply the new education scenario at the end of each step. The population composition will change due to the changes in education composition, enabling us to analyze the sensitivity of our model to changes in the education assumption.

So far we have only discussed the results of education assumptions following the GET scenario. Now we turn to the CER, or Constant Enrolment Rates scenario, and the FT, or Fast Track scenario. The CER is a useful benchmark scenario which allows us to understand how much of the expected future increase in human capital is a consequence of the momentum already embedded in today's cross-cohort improvements in education. When assuming constant future enrollment rates we essentially freeze the transitions from lower to higher levels of education at their current levels, which results in a constant distribution of the members of younger cohorts over the educational attainment categories. But since older cohorts still have different (and typically lower) levels of education, the process of demographic metabolism in which the less educated older cohorts are successively replaced by the better educated younger ones means that even under this CER scenario, the average educational attainment of the entire adult population will continue to improve for decades. This is the momentum of educational improvement that can be quantified with reference to this CER scenario.

The FT (Fast Track) scenario depicts the fastest possible expansion scenario and makes explicit reference to a specific country that, at a certain given level of education, has been the best performing of all countries. Hence, although for any given country in, for example Africa, it may be unlikely that over the coming five years the school enrollment rates will expand at a rate similar to the unprecedented expansion in South Korea in the 1960s, it is at least theoretically possible because it has actually occurred in the historical experience of at least one country. The "Fast Track" name of this scenario is derived from the Fast Track Initiative of the World Bank, launched in 2002, which has recently made major investments in educational expansion at the fastest possible rate for a small number of least-developed countries.

4.10 Expanding Education Projection to 24 Countries with No Education Data

The population projection by age and sex is done for 195 countries of the world. The population projection by age, sex, and educational attainment is done for 171 countries, or 97 percent of the world's population, for which the distribution of population by education was available (explained in Part A). For 24 countries out of the 195 countries with populations larger than 100,000 in the year 2010, no data on education distribution are available. Therefore, we present the population projection by education for the 171 countries with education distribution in the base period(s).

It was necessary, however, to also provide the projection at the regional and global levels, for which some estimation of the distribution of education in the base year for the remaining 24 countries is required. For the sake of simplicity, we assumed the distribution of education to be same as the overall distribution in the sub-regions these countries belong to. With the assumed baseline distribution by education, the population projection was derived for these 24 countries separately in a manner similar to the process used for the 171 countries for which data were available. While doing so, the

education scenario for the future is derived from region-specific distributions obtained from the projection of 171 countries. Final results of these projections are used in presenting the results at the regional and global levels.

5 Conclusion

Despite the importance of education as a key indicator for appraising the level of socio-economic development of a country's population and for modelling interactions with other parameters strongly correlated with education, educational attainment has always suffered from measurement problems. The many attempts to standardize levels of educational attainment have not been successful in removing all important discrepancies across countries, not to mention, across age and time. The efforts undertaken in the course of this exercise address the main issues and incorporate clear and systematic measures to overcome the earlier deficiencies. The resulting base-year dataset is the most comprehensive collection of harmonised data on educational attainment by age and sex for as many as 171 countries. The strength of our approach lies also in the exhaustive documentation (see also Bauer et al. 2012) that will facilitate replication and enhancement. Hence, we are one step closer to the harmonisation of levels of educational attainment of the global population. What remains to be done by national and international organisations is to enhance the data collection and classification efforts.

In addition to the base-year distribution, the traditional cohort-component model of population projection requires particular assumptions about the future levels of fertility, mortality, and migration. Here we summarized the approach and the procedures that were applied to combine statistical models with expert judgment about the validity of alternative arguments that matter for future trends and with the synthesizing assessments of meta-Expert meetings. The outcome of this process in terms of overall TFR, life expectancy at birth, and narratives for future migration assumptions were used in the cohort component model to project the future.

As a final step, education was introduced in the model by including education differentials in fertility and mortality, along with specific education scenarios for the future. Using the multi-dimensional population projection model, population by age, sex, and educational attainment for 171 countries for the period 2010-2100 are generated for several scenarios. At the same time, we have introduced a new empirically based way of calculating mean years of education. In introducing the education dimension in population projections, we confronted two main challenges. First, the empirical data on current education differentials in fertility, mortality, and migration are not available in many countries. While we successfully estimated the differentials in fertility for most countries, in the case of mortality, data on differentials by education was not available and we could only rely on generalisations about the differentials reported in the literature for some countries. Migration is the most difficult among the three in this regard. Although we are developing methods for estimating differential migration by education level, we were not able to apply such a differential in this round of projections.

Secondly, the methodology developed earlier to deal with education in population projections (KC et al. 2010), was modified and improved in this round. Some shortcomings in the earlier versions are fixed and additional modules are added,

the most important being the mortality differentials among children according to their mothers' education. Summing up, the main modelling challenge has been to generate the education-specific mortality, fertility, and migration rates. Given the data constraints, specifically in terms of age and sex, several optimization procedures were developed that can be considered the methodological core of the current projection model.

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