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UIS METHODOLOGY FOR ESTIMATION OF MEAN YEARS OF SCHOOLING

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1. Introduction

Mean years of schooling (MYS) have been used by the Human Development Report Office (HDRO) of the United Nations Development Programme (UNDP) since 2010 as one of two education indicators in the calculation of the Human Development Index (HDI) (UNDP, 2010). MYS replaced the adult literacy rate that was used in the calculation of the HDI until 2009 (UNDP, 2009). The second education indicator used in the calculation of the HDI is the school life expectancy, called “expected years of schooling” by HDRO, which replaced the combined gross enrolment ratios in primary, secondary and tertiary education. Both the adult literacy rate and the combined gross enrolment ratios in primary, secondary and tertiary education were provided by the UNESCO Institute for Statistics (UIS). Data on school life expectancy are also provided by the UIS.

Previously MYS estimates were not available from a UN source, therefore HDRO relied on a database by Barro and Lee (2010) for this indicator. In response to comments by the UN Statistical Commission (UN, 2011), HDRO and the UIS initiated a collaboration to create a UIS database on MYS. With the December 2013 data release, the UIS is disseminating MYS estimates for the first time. Users of the data should be aware that the methodology described in this document is still incomplete and will be refined in 2014. The first MYS estimates released by the UIS are therefore subject to revision.

Section 2 of this document summarises the calculation of MYS from UIS data on educational attainment. Section 3 describes some of the challenges encountered by the UIS during this process. Section 4 compares MYS estimates by Barro and Lee and the UIS. Section 5 concludes the document with an overview of future refinements of the methodology planned by the UIS. An annex lists all MYS estimates released by the UIS in December 2013.

2. Calculation of mean years of schooling

2.1 Definition and data sources

MYS indicates the average number of completed years of education of a country's population, excluding years spent repeating individual grades. MYS estimates produced by the UIS cover the population aged 25 years and older, which is the indicator used in the calculation of the HDI.

MYS is derived from data on educational attainment. The UIS database contains attainment data from 1946 onwards. Since 2003, the UIS has carried out an annual survey on educational attainment, which seeks information on the distribution of the population aged 10 years and older by the highest level of education attained. Data are collected by levels of education defined in the International Standard Classification of Education (ISCED). Until 2013, the UIS educational attainment survey referred to ISCED 1997 (UNESCO, 2006) and collected data for the following levels of attainment:

- No schooling
- Some primary education
- Completed primary education (ISCED 1)
- Completed lower secondary education (ISCED 2)
- Completed upper secondary education (ISCED 3)
- Completed post-secondary non-tertiary education (ISCED 4)
- Completed tertiary education (ISCED 5 or 6)

In 2014, the new ISCED 2011 levels of education will be used in UIS data collections (UIS, 2012). The revised UIS questionnaire on educational attainment will collect data on these levels of attainment:[1]

- No schooling (ISCED 01 or 02)
- Some primary education (ISCED 03)
- Completed primary education (ISCED 1)
- Completed lower secondary education (ISCED 2)
- Completed upper secondary education (ISCED 3)
- Completed post-secondary non-tertiary education (ISCED 4)
- Completed short-cycle tertiary education (ISCED 5)
- Completed Bachelor's degree or equivalent (ISCED 6)
- Completed Master's degree or equivalent (ISCED 7)
- Completed doctoral degree or equivalent (ISCED 8)

The current and revised questionnaires also collect data on the proportion of the population with unknown educational attainment. Before 2003, educational attainment data were compiled by the UIS and its precursor, the Division of Statistics of UNESCO, with a template that collected less-detailed information.

[1] According to ISCED 2011 (UIS, 2012), "the educational attainment of an individual is defined as the highest ISCED level completed by the individual. For operational purposes, educational attainment is usually measured with respect to the highest education programme successfully completed, which is typically certified by a recognised qualification. Recognised intermediate qualifications are classified at a lower level than the programme itself." ISCED 2011 also introduced separate codes for the classification of programmes (ISCED-P) and attainment (ISCED-A). ISCED-A codes are used in the revised UIS questionnaire on educational attainment.

For some regions, coverage in the UIS database is limited. For example, in the December 2013 data release, data on educational attainment are missing for 26 out of 45 countries in sub-Saharan Africa. Other countries have large gaps in time series with attainment data. For example, Fiji has only data for 1996 and 2007.

In addition to attainment data, the official duration of individual levels of education in each country is needed for the calculation of MYS. The duration refers to national programmes as classified in accordance with ISCED and varies from country to country. The UIS database mainly contains information on the duration of education levels from 1970 onwards.

For the initial UIS release of MYS estimates, only attainment data from 1996 to 2013 were considered.

2.2 Calculation of mean years of schooling

The method for the calculation of MYS used at the UIS is similar to the approach by Barro and Lee (1993, 2010). The following information, available in the education statistics database of the UIS, is needed for each country to estimate MYS:

- Distribution of the population by age group and highest level of education attained in a given year; and
- Time series with the official duration of each level of education.

For each age group, the proportion that attained a given level of education is multiplied by the official duration of that level. The sum of the resulting values yields the MYS for the population under investigation. For example, assume that 50% of a population completed primary education with a duration of 4 years, and 50% completed lower secondary education with a duration of 4 years, which means they spent 8 years in primary and lower secondary education combined. In this case, MYS is 0.5 × 4 + 0.5 × 8 = 6 years.

Changes in the official duration of education levels over time due to changes in national education systems are considered during the calculation of MYS. Taking into account the actual number of years spent in school by individual cohorts yields more precise estimates of MYS than using the same duration for all age groups.

The following formula shows the calculation of MYS adjusted by the duration of individual levels of education.

$$MYS = \sum_{a} \sum_{l} HS_{al} \times YS_{al}$$

where

- MYS Mean years of schooling
- HS_{al} Proportion of the population in age group *a* for which the level of education *l* is the highest level attained
- YS_{al} Official duration of the level of education *l* for age group *a* at the time when this age group was in school

MYS of the population aged 25 years and older is thus the population-weighted average of MYS for each age group *a.*

If the duration of each level of education remains constant over time, the formula can be simplified as follows. This applies to the majority of the countries in the UIS database.

$$MYS = \sum_{l} HS_l \times YS_l$$

where

MYS	Mean years of schooling
HS_l	Proportion of the population for which the level of education *l* is the highest level attained
YS_l	Official duration of the level of education *l*

As an example, take a country where primary education lasts 4 years, secondary education lasts 8 years, and tertiary education lasts 4 years, and assume that these durations have remained constant over time. Assume further that 10% of the population aged 25 years and older have no schooling, 10% have incomplete primary education, 40% completed primary education, 30% completed secondary education, and 10% completed tertiary education. In this case, the MYS estimate for the population aged 25 years and older can be computed as follows:

$$\begin{aligned} MYS &= 0.1 \times 0 + 0.1 \times 4/2 + 0.4 \times 4 + 0.3 \times (4 + 8) + 0.1 \times (4 + 8 + 4) \\ &= 0 + 0.2 + 1.6 + 3.6 + 1.6 \\ &= 7 \text{ years} \end{aligned}$$

In addition to the completed education levels, incomplete primary education is also considered. Because the exact number of years of incomplete primary education is unknown, one-half of the official duration of primary education is assigned to the proportion of the population with incomplete primary education (2 of 4 years in the example above). Persons with no schooling, that is less than incomplete primary education, are considered to have 0 years of schooling. For tertiary education (ISCED 1997 levels 5 and 6), a duration of 4 years is used for all countries *(see Section 3.1.5).*

2.3 Results

The UIS model was tested with approximately 350 observations (country-year combinations) with sufficient data. The first MYS dataset, disseminated through the UIS Data Centre (http://stats.uis.unesco.org) in December 2013, contains 329 estimates for 103 countries from the period 1996 to 2013. The MYS estimates range from 0.6 years in Burkina Faso in 2007 to 13.8 years in the United Kingdom in 2010 and 2011. Two-thirds of the 329 MYS estimates are for 2007 and later years: 41 are for 2007, 42 for 2008, 36 for 2009, 35 for 2010, 37 for 2011, 26 for 2012, and 1 for 2013. Only five observations are from years before 2000. The complete set of MYS estimates is available in the **Annex**.

3. Challenges during indicator calculation

The challenges encountered during the calculation of MYS can generally be classified into two main categories: i) data-driven challenges; and ii) challenges linked to the structure of national education systems. The former include problems that may arise during data collection and processing, such as missing or incomplete information. In many cases, these problems can be addressed with improved data collection or with imputation and other statistical methods. The latter consist of challenges related to the characteristics of the data used in estimating MYS, for example reclassification of education programmes or changes in the official duration of education levels over time.

3.1 Data-driven challenges

3.1.1 Population with unknown educational attainment

The highest level of education attained is not always known for the entire population aged 25 years and older. If the proportion with unknown attainment is less than 10%, persons in this group are excluded from the calculations under the assumption that the distribution of the population across the other groups (from “no schooling” to “completed tertiary education”) is also representative of persons with unknown attainment. In cases where the proportion of persons with unknown attainment is greater than or equal to 10%, MYS is not calculated. This includes, for example, Burkina Faso 2005 (11.5% unknown), Luxembourg 2001 (11.5% unknown), and Niger 2004 (31.4% unknown).

3.1.2 Combination of education levels in attainment data

Many countries combine levels of education in their response to the UIS educational attainment questionnaire. For example, they report the combined proportion of the population with incomplete or completed primary education. Such observations – including all attainment data in the UIS database for the period 1946 to 1996, with the exception of Fiji 1996, but also many observations from years after 1996 – were excluded from the first UIS release of MYS.

The reason for exclusion of countries that combined levels of education in their reporting to the UIS is that such data inevitably lead to over- or underestimation of MYS. Take the case of a country that includes all persons with no schooling, some primary education and completed primary education in the reported figure for persons with completed lower secondary education.[2] If the proportion of the population with less than completed lower secondary education is relatively large, assigning the duration of lower secondary education to everyone in this group would lead to an overestimate of MYS.

To address this problem, the UIS is investigating methods to decompose data for combined levels of education.

[2] As an example, Austria reported such data for 2012.

3.1.3 Missing data on incomplete levels of education

The MYS estimates are derived mainly from data on completed levels of education. Years of education spent in levels that were not completed are excluded from the calculation as they are unknown, except for years spent in incomplete primary education. As a consequence, the MYS estimates produced by the UIS are likely to be underestimates for countries where dropout before completion of a level is common, a limitation that also applies to MYS estimates produced by Barro and Lee.[3]

To address the underlying gap in the source data, the UIS is reviewing options to impute the percentage of the population that attended but did not complete individual levels of education *(see Section 5).*

3.1.4 Unknown number of years spent in incomplete levels of education

For many countries, the UIS has data on the proportion of the population with incomplete primary education. However, it is not known how many years these persons spent in primary school before they dropped out. As noted in Section 2.2, the UIS assumes for the calculation of MYS that persons with incomplete primary education spent on average one-half of the duration of the primary level of education in school, an approach that has also been adopted by other researchers, including Barro and Lee. For example, if the official duration of primary education (as defined in accordance with ISCED) is 6 years, then persons with incomplete primary education are assumed to have spent 3 years at that level. The UIS methodology for treatment of data on incomplete levels of education will be reviewed in 2014.

3.1.5 Unknown number of years spent in tertiary education

In contrast to programmes at the primary and secondary levels of education, there is far more diversity in the duration of programmes at the tertiary level of education, ranging from short-cycle tertiary programmes (ISCED 2011 level 5) to doctoral programmes (ISCED 2011 level 8). Until 2013, the UIS survey on educational attainment collected data for the proportion of the population with completed tertiary education (ISCED 1997 levels 5 and 6) as one group. Starting in 2014, the UIS survey on attainment will collect data for each ISCED level individually, including the four levels of tertiary education in ISCED 2011 (5, 6, 7 and 8).

During the calculation of MYS, it is therefore necessary to make certain assumptions about the years spent in education by persons who attained tertiary education. The UIS assigns 4 years of education to persons with completed tertiary education, based on the fact that the average duration of programmes classified under ISCED 1997 level 5A (first stage of tertiary education, general programmes) was approximately 3.7 years between 2000 and 2010. Programmes at ISCED 1997 level 6 (second stage of tertiary education), which can only be attended after completion of programmes at ISCED 5, had an average duration of 2.9 years in the same period. For years before 1997, there is limited information on the duration of programmes at the tertiary level of education.

[3] Analysis of the methodology and MYS estimates produced by Barro and Lee (1993, 2010) shows that the population with completed lower secondary education (ISCED 2) is interpreted as the population with incomplete secondary education. The proportion of the population with completed upper secondary education (ISCED 3) is interpreted by Barro and Lee as the proportion with completed secondary education.

3.1.6 Proportion of the population with completed ISCED 4 and 5

Based on ISCED 1997, entry to ISCED 5 programmes requires completion of ISCED 3 or ISCED 4A, and entry to ISCED 4 programmes requires completion of ISCED 3. From UIS data on educational attainment, it is not known which proportion of ISCED 5 or 6 graduates attended or completed any ISCED 4 programmes. To avoid inconsistencies, the UIS therefore assumes during the calculation of MYS that ISCED 5 or 6 graduates have not attended any ISCED 4 programmes, which can lead to an underestimation of MYS because years of schooling that may have been spent in ISCED 4 are not considered.

3.2 Challenges linked to the structure of national education systems

3.2.1 Changes in the duration of education levels

In the simplest scenario, the duration of individual levels of education, as defined in accordance with ISCED, has remained unchanged in a country for all age cohorts aged 25 years and older with data on educational attainment. In this case, the same number of years is assigned to the population with a given level of attainment, regardless of age. This applies to the majority of the observations in the first UIS release on MYS, as there are few countries where the duration of individual levels of education has changed over the years.

The same approach is used in the rare case where countries do not provide data on educational attainment disaggregated by age. In this case, MYS will be computed with the same duration of individual levels of education for all age groups, even though these durations may have changed. In the December 2013 release on MYS, this only applies to Latvia, which provided attainment data for the years 2005 and 2006 only for the age group aged 25 years and older, not disaggregated by age. However, in Latvia the durations have remained constant and therefore the same estimate of MYS would have been obtained with data disaggregated by age.

In practice, the duration of education programmes may change over time. For example, in Argentina the duration of upper secondary education (ISCED 3) changed from 2 years in 1997 to 3 years in 1998 and the following years. To arrive at more precise estimates of MYS, this change in duration must be considered during the calculations. To do so, the UIS first calculates MYS for each age group separately – assigning the official duration of levels of education at the time they were in school – and then aggregates to the complete population of interest. For the population aged 25 years and older, educational attainment data are considered by 5-year age group for persons aged between 25 and 34 years, by 10-year age group for persons aged between 35 and 84 years, and for a single group with persons aged 85 years and older. To arrive at an estimate of the number of years spent in school, persons in each age group are matched with the duration of ISCED levels at the estimated age at which they graduated from their highest level of education. For persons who graduated in a year before the earliest observed data on durations (usually 1970), the earliest available durations from the UIS database are assigned.

3.2.2 Changes in ISCED and in the classification of education programmes

The first ISCED was endorsed by the General Conference of UNESCO in 1976 (UNESCO, 1976). ISCED 1976 was subsequently replaced by ISCED 1997 (UNESCO, 2006) and most recently by ISCED 2011 (UIS, 2012). Each new ISCED is associated with a change in the education data reported to the UIS. For example, until 2013 the UIS collected data in reference to ISCED 1997, and starting in 2014, data will be collected in reference to ISCED 2011. In

addition, previously collected data must be remapped when a new ISCED enters into force, but this remapping is not always straightforward, especially when new ISCED levels are introduced.

As an example, ISCED 1997 introduced a new ISCED level 4 (post-secondary non-tertiary education) for programmes that straddle the boundary between upper secondary and tertiary education. In response, some secondary or tertiary programmes in ISCED 1976 (levels 3 or 5) were reclassified as post-secondary non-tertiary education (level 4) in ISCED 1997. As a consequence, the estimation of MYS may be imprecise for countries that have such programmes, but this is a problem that mostly affects older data for years before 1997 and that can be minimised through a review of attainment data in the UIS database. The December 2013 release by the UIS contains no MYS estimates that could have been affected by this issue.

A misclassification of education programmes can lead to an over- or underestimation of MYS. Countries occasionally correct data that they have previously submitted to the UIS. As an example, in 2013 South Africa submitted revised attainment data for some years between 2002 and 2011. In the same year, Costa Rica also revised some attainment data for the years between 2007 and 2011. Such a reclassification of education programmes can influence the MYS calculations when a proportion of the population is assigned a different number of years of schooling pre- and post-reclassification. Misclassification can be avoided by working closely with countries to ensure that all programmes are classified correctly in accordance with the criteria of ISCED.

3.2.3 Multiple programmes with different durations classified under the same ISCED level

Some countries report multiple programmes with varying durations under a given ISCED level. However, educational attainment data are captured as aggregate values for each level, without information on the included programmes and their durations. In this case, the UIS generally attempts to identify the most common duration of programmes in a given level, excluding ISCED 1997 levels 4, 5 and 6.

ISCED 4 (post-secondary non-tertiary education) covers a variety of programmes leading either to tertiary education or to the labour market. To avoid inconsistencies, the UIS assigns the minimum duration of all ISCED 4 programmes in a country to all graduates from ISCED 4.[4] In countries with ISCED 4 programmes for which the duration is unknown, two years of schooling in ISCED 4 are assigned to the proportion of the population with ISCED 4 as the highest level attained, based on the fact that for countries that reported ISCED 4 durations the average duration is approximately 2 years.

Persons who attained ISCED 1997 levels 5 or 6 are assumed to have spent 4 years in education at those levels, as explained in Section 3.1.5.

[4] This is in line with the conservative approach taken by the UIS, which prefers to underestimate rather than overestimate MYS. Another example for this conservative approach is the treatment of years spent in post-primary levels of education that were not completed *(see Sections 3.1.3 and 3.1.4)*.

4. Differences between MYS estimates by Barro and Lee and the UIS

The UIS approach to the estimation of MYS is similar to the approach by Barro and Lee (1993, 2010), but there are some methodological differences. As a consequence, MYS estimates for individual countries and years by Barro and Lee and the UIS are usually similar but not identical. Where there are larger differences, they can be mainly explained through a combination of the following reasons.

4.1 Estimation of the population with incomplete tertiary education

For tertiary education, only the proportion of the population with completed ISCED 5 or 6 is known from data collected with the UIS educational attainment questionnaire used until 2013. It is not known which proportion of the population attended but did not complete tertiary education. The UIS educational attainment questionnaire used from 2014 will also only collect data on completed tertiary education.

However, when Barro and Lee use UIS data, they assume that a proportion of the population with completed tertiary education only has incomplete tertiary education. In other words, they assume that a part of this population spent fewer years in education than would be needed to complete ISCED 5 or 6. By contrast, the UIS allocates four years of schooling in ISCED 5 or 6 to the entire population that is reported to have attained tertiary education. In these cases, the UIS estimate of MYS is likely to be higher than the estimate by Barro and Lee.

4.2 Illiteracy rates as a proxy for the population with no schooling

To produce a comprehensive MYS dataset, Barro and Lee (1993, 2010) use illiteracy rates (either national data or regional averages) to estimate the proportion of the population with no schooling. In some cases, Barro and Lee replace the proportions with no schooling that were reported by countries as “nil or negligible” or “not applicable” by illiteracy rates from a different source. For example, Germany reported that the proportion of the population with no schooling was “not applicable” in 2005, while Barro and Lee estimate that 4.8% of the population aged 25 years and older had no schooling in the same year. According to UIS standards, data on attainment should not be used as a proxy for the measurement of literacy and vice versa. The UIS uses the proportion of the population with no schooling reported by countries, and if that proportion is “nil or negligible” or “not applicable”, the UIS estimate of MYS for a country is likely to be higher than the estimate by Barro and Lee.

The opposite is true for many countries in Latin America and the Caribbean, where UIS estimates of MYS may be lower than estimates by Barro and Lee. In this region, adult literacy programmes are very common. Since Barro and Lee derive the proportion of the population with no schooling from illiteracy rates, the estimated proportion of persons with no schooling may be lower than the actual number of persons in this group. In this case, estimates of MYS by Barro and Lee are likely to be higher than UIS estimates.

4.3 Attainment data from other sources or years

Estimates of MYS by Barro and Lee and the UIS may also differ because they are based on data from different sources. The UIS only calculates MYS from its own database. Barro and Lee also use data from other sources, for example the UN Demographic Yearbook.

Extrapolation, that is the estimation of MYS in years preceding or following years with observed data, may also lead to differences between estimates by Barro and Lee and the UIS, especially in cases where MYS estimates were extrapolated over a large number of years. By contrast, the first MYS database released by the UIS in December 2013 includes only estimates for years with observed data on educational attainment.

5. Conclusion and next steps

The first release of MYS estimates in December 2013 marks an important step for the UIS in this field of measurement. It will continue this work over the next years to refine the methodology and increase the coverage of the database on educational attainment.

One of the main tasks is the review and expansion of the UIS database on educational attainment. Data for years preceding 1997 must be mapped to ISCED 1997 and ISCED 2011 to be comparable with data for more recent years. In parallel, the UIS will analyse the data from its revised survey on educational attainment, which will provide more detailed information on the proportion of the population with tertiary education. The UIS will also explore data on MYS that are not reported by countries but that can be obtained from population censuses and national household surveys.

In addition, the UIS will further develop, test and document the methodology for estimation of MYS. The most important gaps in the methodology described in this document are: i) imputation for levels of education with missing or partial data; and ii) projection of MYS estimates for years without observed data on educational attainment. As part of this process, the UIS methodology will be reviewed and validated by external experts. The UIS also intends to establish a country review of its data on educational attainment and MYS.

Lastly, the accessibility of attainment and MYS data will be improved by taking full advantage of the new UIS.Stat dissemination environment in the UIS Data Centre (http://stats.uis.unesco.org) that was launched in September 2013.

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Annex. UIS estimates of mean years of schooling released in December 2013

Country or territory	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Arab States																			
Jordan	MF													9.8		9.9			
	M													10.4		10.5			
	F													9.2		9.3			
Kuwait	MF											6.1	6.2	6.4				7.2	
	M											5.9	6.0	6.1				7.1	
	F											6.7	6.7	7.0				7.3	
Lebanon	MF												7.6						
	M												7.9						
	F												7.3						
Oman	MF								6.3					8.0					
	M								6.9					8.5					
	F								5.2					7.0					
Palestine	MF									7.5		7.8	7.9	8.0	8.3	8.4	8.6	8.9	
	M									8.5		8.5		8.7	9.0	9.0	9.1	9.3	
	F									6.6		7.0		7.4	7.7	7.8	8.0	8.4	
Qatar	MF									8.3			9.5	9.6	9.2		8.6	9.1	
	M									8.0			9.3	9.4	8.9		8.3	8.8	
	F									9.1			10.1	10.4	10.6		9.8	10.4	
Saudi Arabia	MF									7.3									9.6
	M									7.8									10.0
	F									6.5									9.0
Syrian Arab Republic	MF												6.5	6.3	6.6				
	M												7.4	7.2	7.4				
	F												5.6	5.4	5.7				
United Arab Emirates	MF										9.0								
	M										8.7								
	F										10.1								
Central and Eastern Europe																			
Albania	MF						8.6							9.0			9.3		
	M						9.2							9.5			9.6		
	F						8.1							8.5			8.9		
Bosnia and Herzegovina	MF															7.1	7.2		
	M															8.1	8.2		
	F															6.1	6.3		
Bulgaria	MF						9.9												
	M						10.1												
	F						9.8												
Croatia	MF						9.8										11.0		
	M						10.7										11.6		
	F						9.1										10.5		
Estonia	MF					12.0													
	M					11.9													
	F					12.1													
Hungary	MF						10.2				10.8								
	M						10.7				11.2								
	F						9.7				10.4								
Latvia	MF										12.3	12.4							
	M										12.1	12.0							
	F										12.5	12.6							
Lithuania	MF										11.7	11.8	11.9	12.1	12.2	12.3	12.4	12.4	
	M										11.9	12.0	12.1	12.3	12.3	12.4	12.5	12.5	
	F										11.5	11.7	11.8	12.0	12.1	12.2	12.3	12.3	
Montenegro	MF								10.3								11.2		
	M								11.3								11.8		
	F								9.5								10.5		
Poland	MF													11.4	11.6	11.7	11.8	11.8	
	M													11.6	11.7	11.8	11.9	11.9	
	F													11.3	11.5	11.6	11.7	11.7	
Republic of Moldova	MF												10.9						
	M												11.0						
	F												10.8						
Romania	MF							9.6					10.4	10.5	10.5	10.6	10.7		
	M							10.3					11.0	11.0	11.0	11.0	11.1		
	F							8.9					9.9	10.1	10.1	10.1	10.3		
Serbia	MF																	8.8	
	M																	9.3	
	F																	8.3	

Country or territory	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Slovakia	MF						10.1												
	M						10.2												
	F						10.1												
Slovenia	MF									11.7	11.4	11.5	11.5	11.6	11.7	11.8	11.9	11.9	
	M									11.9	11.7	11.8	11.6	11.9	12.0	12.0	12.0	12.0	
	F									11.4	11.1	11.3	11.3	11.4	11.5	11.6	11.7	11.8	
Turkey	MF									5.9	6.0	6.1	6.2	6.5	6.6	7.2	7.4	7.6	
	M									6.9	7.1	7.2	7.3	7.4	7.6	8.1	8.4	8.5	
	F									4.9	4.9	5.0	5.1	5.6	5.7	6.2	6.5	6.7	
Central Asia																			
Armenia	MF						10.3												
	M						10.4												
	F						10.2												
Azerbaijan	MF				10.5								10.7	10.7	10.8				
	M				11.1								11.3	11.3	11.2				
	F				10.0								10.2	10.2	10.5				
Georgia	MF							11.9											
	M							12.0											
	F							11.8											
Kazakhstan	MF				9.7								12.0						
	M				9.9								11.9						
	F				9.5								12.2						
Kyrgyzstan	MF				9.8										10.5				
	M				10.0										10.6				
	F				9.6										10.5				
Mongolia	MF					8.8													
	M					8.9													
	F					8.7													
Tajikistan	MF					10.6													
	M					11.1													
	F					10.2													
East Asia and the Pacific																			
Australia	MF									11.9	12.1	12.3	12.3	12.6			13.0	13.2	
	M									12.0	12.2	12.3	12.4	12.5			12.9	13.1	
	F									11.8	12.0	12.2	12.3	12.6			13.1	13.3	
Cambodia	MF												3.7						
	M												4.7						
	F												2.8						
China, Hong Kong SAR	MF											10.9		11.0	11.1	11.2	11.4		
	M											11.4		11.5	11.6	11.7	11.9		
	F											10.4		10.5	10.6	10.7	10.9		
China, Macao SAR	MF											8.7					9.6		
	M											9.1					10.0		
	F											8.4					9.4		
Fiji	MF	7.8											9.5						
	M	8.1											9.5						
	F	7.5											9.4						
Indonesia	MF											7.6	7.0	7.1	7.3		7.5		
	M											7.9	7.7	7.7	7.9		8.0		
	F											7.0	6.4	6.5	6.8		7.0		
Malaysia	MF					8.6					7.6								
	M					9.2					8.2								
	F					8.0					7.1								
Philippines	MF					7.6													
	M					7.5													
	F					7.6													
Republic of Korea	MF										11.4				11.0	11.8			
	M										12.3				12.0	12.6			
	F										10.5				10.1	11.0			
Thailand	MF									6.9		6.5				7.3			
	M									7.2		6.8				7.5			
	F									6.6		6.2				7.1			
Tonga	MF																11.1		
	M																11.1		
	F																11.0		
Latin America and the Caribbean																			
Argentina	MF								9.8										
	M								9.7										
	F								9.9										
Bahamas	MF					10.9													
	M					10.7													
	F					11.1													

Country or territory	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Barbados	MF					9.0													
	M					8.9													
	F					9.1													
Belize	MF															10.5			
	M															10.5			
	F															10.5			
Bolivia	MF						7.3					7.0		7.2	7.5			8.2	
	M						8.2					7.6		8.0	8.3			8.9	
	F						6.4					6.3		6.6	6.8			7.5	
Brazil	MF											6.3	6.5	6.7	6.8		7.0		
	M											6.2	6.4	6.5	6.6		6.8		
	F											6.4	6.6	6.8	6.9		7.1		
Cayman Islands	MF									11.8	12.3	12.1	12.4	12.7					
	M									11.7	12.2	12.0	12.4	12.5					
	F									11.8	12.4	12.1	12.4	12.8					
Chile	MF									9.6			9.4	9.9		9.8			
	M									9.6			9.6	10.1		9.9			
	F									9.5			9.3	9.8		9.7			
Colombia	MF									6.6	6.8	6.7	6.8	7.0	6.9	7.1			
	M									6.6	6.8	6.7	6.8	7.0	6.9	7.0			
	F									6.5	6.8	6.7	6.8	7.0	7.0	7.1			
Costa Rica	MF												8.0	8.2	8.3	8.2	8.3	8.4	
	M												8.0	8.2	8.3	8.2	8.3	8.3	
	F												8.0	8.2	8.3	8.2	8.3	8.4	
Cuba	MF							9.5											
	M							9.6											
	F							9.3											
Dominican Republic	MF												7.2			7.3	7.4	7.5	
	M												7.0			7.1	7.1	7.2	
	F												7.4			7.4	7.6	7.7	
Ecuador	MF														7.2	7.5			
	M														7.4	7.6			
	F														7.1	7.4			
El Salvador	MF											6.2	5.6	6.2	6.3		6.3	6.5	
	M											6.6	6.0	6.6	6.6		6.8	6.9	
	F											5.8	5.3	5.8	6.0		6.0	6.2	
Guatemala	MF							3.8				3.6						5.6	
	M							4.3				4.2						5.7	
	F							3.4				3.1						5.5	
Guyana	MF							6.4											
	M							6.3											
	F							6.5											
Honduras	MF												4.9				5.5	5.5	
	M												4.9				5.5	5.4	
	F												5.0				5.6	5.5	
Mexico	MF					6.7				7.3	7.5	7.9	7.9	8.0	8.1	8.3		8.5	
	M					7.1				7.7	7.8	8.3	8.3	8.3	8.5	8.6		8.8	
	F					6.3				6.9	7.2	7.5	7.5	7.6	7.8	8.1		8.2	
Panama	MF					7.9										9.3			
	M					7.8										9.1			
	F					8.0										9.6			
Paraguay	MF								6.9		7.3	7.0	7.1	7.3					
	M								7.0		7.5	7.2	7.3	7.4					
	F								6.9		7.1	6.8	6.9	7.2					
Peru	MF									8.6			8.1	8.1	8.1	8.8		9.0	
	M									9.0			8.8	8.8	8.8	9.4		9.6	
	F									8.2			7.5	7.5	7.5	8.1		8.5	
Puerto Rico	MF					12.4													
	M					12.3													
	F					12.4													
Suriname	MF									7.7									
	M									8.0									
	F									7.3									
Trinidad and Tobago	MF													10.8	10.8				
	M													10.9	10.9				
	F													10.7	10.7				
Uruguay	MF											8.0		8.3	8.3	8.3	8.4	8.5	
	M											7.8		8.1	8.1	8.1	8.1	8.2	
	F											8.1		8.5	8.5	8.5	8.6	8.7	
Venezuela	MF											7.6	8.1	8.3	8.4				
	M											7.5	7.9	8.0	8.1				
	F											7.8	8.3	8.5	8.7				

Country or territory	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
North America and Western Europe																			
Cyprus	MF												11.0	11.1	11.1	11.3	11.5	11.6	
	M												11.4	11.4	11.4	11.6	11.7	11.8	
	F												10.7	10.8	10.8	11.0	11.2	11.4	
Denmark	MF								12.8					12.7					
	M								12.7					12.7					
	F								12.9					12.8					
France	MF									10.3	10.4		10.7	10.8	10.9	11.0	11.0	11.1	
	M									10.6	10.7		11.0	11.0	11.1	11.2	11.3	11.3	
	F									10.1	10.2		10.5	10.6	10.7	10.8	10.9	11.0	
Germany	MF											13.1	13.1	13.2	13.2	13.3	13.3		
	M											13.5	13.6	13.6	13.7	13.7	13.7		
	F											12.6	12.7	12.8	12.8	12.9	12.9		
Greece	MF										9.8		10.0	10.1		10.2			
	M										10.2		10.4	10.5		10.5			
	F										9.4		9.6	9.7		9.8			
Israel	MF														12.3	12.4	12.5	12.5	
	M														12.3	12.4	12.5	12.6	
	F														12.3	12.3	12.4	12.5	
Italy	MF						8.7												
	M						9.1												
	F						8.3												
Luxembourg	MF												11.7						
	M												12.1						
	F												11.3						
Malta	MF										8.8		8.9			9.4	9.6	9.9	
	M										9.3		9.3			9.8	10.0	10.3	
	F										8.3		8.4			9.0	9.1	9.5	
Netherlands	MF										11.6		11.9	11.8	11.8	11.8	11.8	11.9	
	M										12.0		12.2	12.1	12.1	12.2	12.1	12.2	
	F										11.3		11.6	11.5	11.5	11.5	11.6	11.6	
Norway	MF												12.4						
	M												12.4						
	F												12.4						
Portugal	MF									7.0	7.1	7.3	7.3	7.4		7.8	8.0	8.2	
	M									7.2	7.4	7.5	7.5	7.6		7.9	8.2	8.4	
	F									6.7	6.8	7.0	7.1	7.2		7.7	7.9	8.1	
Spain	MF									8.7	8.9	9.1	9.2	9.3	9.4	9.5	9.5	9.6	
	M									9.0	9.3	9.4	9.5	9.6	9.6	9.8	9.8	9.8	
	F									8.4	8.6	8.8	8.9	9.0	9.1	9.2	9.3	9.4	
Switzerland	MF														13.5				
	M														14.1				
	F														12.9				
United Kingdom	MF														13.6	13.8	13.8		
	M														13.7	13.9	13.9		
	F														13.5	13.7	13.6		
United States	MF									12.8	12.8	12.8		12.9	12.9				
	M									12.8	12.7	12.8		12.9	12.9				
	F									12.7	12.8	12.9		12.9	13.0				
South and West Asia																			
Bangladesh	MF						4.3												
	M						4.9												
	F						3.6												
Bhutan	MF										6.6								
	M										6.6								
	F										6.6								
Maldives	MF											3.6							
	M											3.8							
	F											3.3							
Pakistan	MF													4.3	4.5	4.6	4.7		
	M													5.9	6.0	6.1	6.2		
	F													2.6	2.9	3.0	3.1		
Sri Lanka	MF						10.9												
	M						11.1												
	F						10.7												
Sub-Saharan Africa																			
Burkina Faso	MF											1.3	0.6						
	M											1.9	0.9						
	F											0.9	0.3						
Ethiopia	MF												2.1				2.4		
	M												2.9				3.6		
	F												1.3				1.4		

Country or territory	Sex	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Ghana	MF															6.7			
	M															7.9			
	F															5.6			
Kenya	MF														6.1	5.3			
	M														6.9	5.6			
	F														5.4	5.1			
Lesotho	MF													5.4					
	M													4.8					
	F													6.0					
Malawi	MF			2.7															
	M			3.6															
	F			1.9															
Mali	MF																2.0		
	M																2.7		
	F																1.5		
Mauritius	MF					6.3											8.5		
	M					7.0											9.1		
	F					5.6											8.0		
Namibia	MF						5.8												
	M						5.9												
	F						5.6												
Senegal	MF											1.5					2.4		
	M											2.1					3.2		
	F											1.1					1.8		
South Africa	MF						7.5	8.5	8.8	8.8	8.9	8.9	9.1	9.2	9.5	9.6	9.7	9.9	
	M						7.8	8.8	9.1	9.1	9.2	9.3	9.4	9.5	9.8	9.9	9.9	10.2	
	F						7.3	8.3	8.5	8.6	8.6	8.7	8.8	8.9	9.3	9.4	9.5	9.7	
Uganda	MF							4.2						5.2					
	M							5.3						5.2					
	F							3.2						5.1					
Zimbabwe	MF							6.9											
	M							7.8											
	F							6.0											

Source: UNESCO Institute for Statistics database, December 2013, http://data.uis.unesco.org