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Potancokova, M., K.C., S. and Goujon, A.

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International Institute for
Applied Systems Analysis
Schlossplatz 1
A-2361 Laxenburg, Austria

Tel: +43 2236 807 342
Fax: +43 2236 71313
E-mail: publications@iiasa.ac.at
Web: www.iiasa.ac.at

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Michaela Potančoková (potancok@iiasa.ac.at)
Samir K.C. (kc@iiasa.ac.at)
Anne Goujon (goujon@iiasa.ac.at)

Approved by

Wolfgang Lutz
Program Director, World Population Program

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Abstract

The indicator of mean years of schooling (MYS) has the advantage of expressing the distribution of educational attainment in a single number. It is often used for cross-country comparisons and in economic and environmental models as the unique indicator of educational attainment and human capital stock. The computation of MYS from a given educational attainment distribution is complex for two main reasons. First, the standard duration of different levels of schooling varies from country to country, and within countries each school level can have different lengths depending on the type of studies, for example, studies of general secondary as opposed to vocational secondary. Secondly, the calculation is biased by the presence of pupils/students who do not complete the full course at any level, which can amount to a substantial share in some countries. To overcome these difficulties, the methodology used and detailed in this paper computes MYS as the weighted mean of six educational levels based on ISCED 1997 classification - no formal education, incomplete primary, completed primary, completed lower secondary, upper secondary and post-secondary education – and the procedure takes into account country-specific educational systems as well as changes in these systems over time. To adjust for the proportion with incomplete educational levels, we developed regional sets of regression models to improve estimates of MYS for the incomplete primary category and a set of correction factors to adjust higher levels. The models are built using detailed data on duration of schooling by grades completed within primary level for 54 countries. We apply the method to estimate MYS for 171 countries in the Wittgenstein Centre (WIC) dataset on educational attainment, which served as the base for the population projections by levels of education until 2100. Detailed data are available online at www.wittgensteincentre.org/dataexplorer. In the paper we compare our method and results for 2010 to the widely used Barro & Lee data and to that of UNESCO, the main provider of global data on education statistics, and explain the differences.

About the Authors

Michaela Potančoková is a Research Scientist at the Vienna Institute of Demography (VID) of the Austrian Academy of Sciences and Research Scholar in the World Population Program at the International Institute for Applied Systems Analysis (IIASA), Wittgenstein Centre for Demography and Global Human Capital (IIASA, VID/ÖAW, WU).

Samir KC is Project Leader of "Modelling Human Capital Formation" at the Wittgenstein Centre (IIASA, VID/ÖAW, WU), International Institute for Applied Systems Analysis.

Anne Goujon is leader of the research group “Human Capital and Data Laboratory” at the Vienna Institute of Demography (VID) of the Austrian Academy of Sciences and Senior Research Scholar in the World Population Program at the International Institute for Applied Systems Analysis (IIASA), Wittgenstein Centre for Demography and Global Human Capital (IIASA, VID/ÖAW, WU).

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1 Introduction

The frequently used indicator of mean years of schooling (MYS) has the advantage of expressing the distribution of educational attainment in a single number. It is therefore often used for cross-country comparisons as well as in economic and environmental models as the unique indicator of educational attainment and human capital stock[1]. The importance of the indicator has recently been highlighted in the updated methodology of the Human Development Index (HDI) (UNDP 2010). MYS of population 25+ replaced the adult literacy rate (UNDP 2009) in the calculation of HDI since 2010.

The computation of mean years of schooling from a given educational attainment distribution is complex for two main reasons. First, the standard duration of different levels of schooling varies from country to country, and within countries each school level can have different lengths depending on the type of studies, for example, studies of general secondary as opposed to vocational secondary. Secondly, the calculation is biased by the presence of pupils/students who do not complete the full course at any level, which can amount to a substantial share in some countries. To overcome these difficulties, the methodology used and detailed in this report computes MYS as the weighted mean of six educational levels and the procedure takes into account country-specific educational systems as well as changes in these systems over time. We developed regional sets of regression models to improve estimates of MYS for the incomplete primary category and a set of correction factors to adjust higher levels. The models are built using detailed data on duration of schooling by grades completed within primary level for 54 countries, using micro-data from the Integrated Public Use Microdata Series[2] (IPUMS) and from Demographic and Health Surveys[3] (DHS). Mean years of schooling for primary, lower and upper secondary are adjusted to account for the fraction of those with incomplete higher level of education applying correction factors estimated from the same set of microdata for 54 countries.

We apply the method to estimate MYS for 171 countries in the WIC dataset on educational attainment as well as to the new set of the Wittgenstein Centre human capital projections (Lutz et al. 2014). The new set of projections draws a global picture of

[1] There are many problems with the use MYS (often computed for ages 25+) as an indicator of educational attainment because it cannot possibly encompass in a single number the structural differences existing across age groups. To illustrate, a country with 10 MYS can be a country where every age group has exactly 10 years of schooling in case of no changes over time, or a country where the population over age 50 had on average 4 years of schooling while the younger cohorts went through went through 16 years of schooling. However this point is beyond the scope of this paper (see Lutz et al. 2010 for more discussion).
[2] https://international.ipums.org/international/ [last visited 7.02.2014]
[3] http://www.measuredhs.com/Data/ [last visited 7.02.2014]

educational attainment levels today and alternative scenarios for their evolution over the rest of the century. Compared to previous work (KC et al. 2010; Lutz et al. 2007), 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 the sample of countries was enlarged – from 120 to 171 to cover over 97% of world's population in 2010. The harmonised dataset on educational attainment by age and sex is the most comprehensive comparative dataset on educational attainment available (Bauer et al. 2012).

We also compare our approach and results to the widely used Barro & Lee data[4] (Barro & Lee 2013) and to the UNESCO Institute for Statistics (UIS) new estimates of MYS[5] (UIS 2013) and explain the differences that arise mostly due to differences in a/ the baseline data, b/ in the methods used to estimate up to date educational attainment as well as c/ in the assumptions on duration of schooling at various (completed and incomplete) educational levels. The estimation methodology of MYS was also applied to the projected population (2015-2100) (Lutz et al. 2014) and the reconstructed historical shares of the population by levels of educational attainment. In this paper, we specifically focus on the base year estimates (2010), as well in the comparison with the two aforementioned datasets.

2 Estimation Procedures of Mean Years of Schooling

Mean (or average) years of schooling (MYS) of adults indicate the number of completed years of formal schooling[6] received on average by country's population. All methodologies (Barro & Lee 2013; UIS 2013) use completed years of schooling and exclude years spent repeating individual grades and we conform to this approach. The indicator is designed to express countries' educational attainment in a single number and is not meant to express average duration spent in education.

The WIC methodology used computes mean years of schooling as the weighted mean of six educational levels based on ISCED 1997 classification:

- no formal education
- incomplete primary (ISCED 1 not completed)
- completed primary (ISCED 1)
- completed lower secondary (ISCED 2)
- completed upper secondary (ISCED 3)
- post-secondary education (ISCED 4, 5 or 6)

Definitions of the categories, data sources and treatment of the missing or incomplete data are explained in detail in Bauer et. al (2012). Unlike other datasets (Barro & Lee 2013; Cohen & Soto 2007; UIS 2013) we rely on our own estimates of educational attainment distributions by age and sex and we harmonise the data into ISCED 1997 levels using available ISCED mappings in order to achieve better comparability and avoid flaws in the primary data (de la Fuente & Doménech 2000). In the future, UIS intends to improve the

[4] As of April 2013, based on increased number of sources. Downloaded from http://www.barrolee.com/data/full1.htm, last visited in January 2014.
[5] http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx [last visited 7.02.2014]
[6] Excluding pre-primary education.

quality of the UNESCO database on educational attainment using similar approach to ours and include data from censuses or surveys provided directly by the national statistical offices (UIS 2013).

The population distributions by education, age and sex are estimated for 2010 (baseline year for the projections) using censuses and surveys for 171 countries (see the appendix in Bauer et. al 2012 for the listing of the source data by country). MYS are computed for the adult population aged 25 years and older. At this age, the majority of younger adults have completed their schooling and reached potentially at least first post-secondary degree and, therefore, any subsequent transitions to higher tertiary degrees that can occur at later age do not affect the educational distribution. Mean years of schooling for individual age groups are computed as

$$y_a = \sum_j s_a^j * dur_a^j$$

where s_a^j is a fraction of age group a having attained educational level j and dur_a^j is the corresponding duration of schooling in years (at a given educational level and for a given age group).

MYS for population aged 25+ are calculated as weighted average of 5-year age groups:

$$MYS = \sum_{a=1}^{A} p_a * y_a \quad (1)$$

Where a = 1 is age group 25-29 and so on until a=A which is normally age 100+ in our dataset and p is proportion of the age group of the total population 25+.

The duration of schooling is the typical duration of completed primary, lower secondary and upper secondary education (for ISCED A levels). Information on duration of schooling of completed ISCED levels is taken from the UIS database[7]. For the calculation of MYS for the base year, we take into account country-specific educational systems as well as changes in these systems over time. We assume that the change in the duration of schooling applied to new entrants at the given level in the year indicated by the UIS. This means that if, for example, change in duration happened at primary level those with the age equal to the minimum age of entering primary and younger were affected in our calculation and so on for the subsequent levels. For the cohorts that were enrolled prior to 1970, which is the last year for which UIS provides information, we use the same durations as in the last year of observation. UIS applies the same assumption in their estimates. For the calculation of MYS for the projected periods, we used durations as of 2010.

For post-secondary education we apply 4 years of schooling to balance the wide range of durations of programmes within this category. This educational category is broad and very diverse and the duration of schooling varies between the three ISCED categories within post-secondary education. In addition, multiple programmes with different durations are included within the same ISCED category, therefore it is necessary to identify the most common duration for each of the ISCED levels within the post-secondary education. Ideally, the typical duration would be computed as weighted average of the typical duration for the three corresponding levels; however, such level of detail is available only for a minority of countries. The typical duration ranges from 2 years for post-secondary non-tertiary education

[7] Available here: http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=136&IF_Language=eng&BR_Topic=0, last visited 14.6. 2013

(ISCED 4)[8], to 3-5 years of schooling for completed ISCED 5 level depending on enrolment within short or long programmes[9]. UIS estimates the average duration of 5A level programmes at 3.9 years (UIS 2013). Furthermore, a small fraction of population that completed doctoral studies (ISCED 6) studied at least additional 4 years upon completion of ISCED 5 level, adding up to more than 20 years of schooling (the share is small but increasing for young cohorts in developed countries).

Information on duration of postsecondary programmes is available for recent years only and typical duration of post-secondary studies for older cohorts is unclear. Similar to other approaches (Barro & Lee 2013; UIS 2013), we assume same duration of post-secondary education for all age groups and time periods. A thorough estimate of the average duration of all ISCED postsecondary categories requires information on specific degrees and types of programmes completed. Such level of detail is not available for educational attainment data and typical durations may depend on country-specific traditions. For example, the distinction between bachelor and master studies has been introduced in post-socialist countries only since the late 1990s and until this date most university graduates typically needed 5 years to obtain their degree.

One of the main challenges, when MYS are computed from aggregate education categories and not from microdata with details on grades, is the estimation of the years studied by the population with incomplete levels. Within our six categories, this means that we needed to approximate the years of schooling for those with incomplete primary, and for the subsequent three categories of completed primary, lower secondary and upper secondary. Although the majority of persons with completed primary, lower secondary or upper secondary level of attainment did not study any further, each of these categories includes a fraction of individuals who studied some years longer at the next higher level but did not complete it (see allocation rules described in detail in (Bauer et al. 2012)). Researchers have dealt with this problem in different ways. Some have adopted the assumption that all persons at a given level have completed exactly as many years of schooling as correspond to the typical level duration (de la Fuente & Doménech 2006) while others have opted for more deterministic solutions attributing half the duration of the corresponding level to the persons who studied but did not complete the level (UIS 2013; Cohen & Soto 2007).

In the IIASA education projections (KC et al. 2010; Lutz et al. 2007) preceding the WIC ones, the average duration of each four education categories was determined using the typical duration of schooling weighted by the educational distribution above and below each category. An average was obtained from the middle fifty percent of this range. The value was estimated based on the proportion between the category above and below as explained in the following example. In Mexico, the duration of primary completion is six years, while that of lower secondary is three years. Someone in the second category (primary school completed) in Mexico might have spent anywhere from six to nine years less one day in school. It was assumed that the average years of schooling for those in the primary education category would be within the inner 50% range of the 6-9 years range, i.e. between 6.75 and 8.25 years. The following algorithm was used to then arrive at a single country-specific average which is sensitive to the overall distribution: If there were no people with incomplete primary education (i.e. everyone who gets enrolled completes the level), then the average duration of schooling for primary was taken to be 8.25 years; if there were no people with at least

[8] UIS reports average duration of 2 years for ISCED 4 level programmes (UIS 2013).
[9] Although some specific programmes, such as degrees in medicine or architecture, sum up to typical duration of 6 years in many countries.

secondary (upper secondary and higher), the average was taken to be 6.75 years. Similarly, for the estimate of average years at incomplete primary, proportions with no education and completed primary were used; for average years at lower secondary level, we looked at completed primary and upper secondary shares etc. For postsecondary level, the minimum duration needed to enter the postsecondary category was used. These average years of schooling for each education category were then used to calculate the aggregate MYS across all categories.

This method, though intuitive, was found to overestimate average years of schooling as it tended to allocate too many years of schooling to those who did not complete the level if the proportion of the population at next completed level was large. This was particularly the case for the duration of incomplete lower secondary education, which turned out to be quite high in the estimates and close to the duration of the completed upper secondary education level particularly in well-educated societies. Comparison to observed data proved that the students/pupils tend to drop out earlier than the procedure estimated. Therefore, we have developed a different approach with the overall objective of obtaining more accurate estimates of the MYS, closer to the observed values. The next sections explain in detail our methodology to estimate MYS for the 171 dataset countries which relies on observed detailed data on completed grades for a limited number of countries (N=54).

2.1 MYS Estimation Model for the Incomplete Primary Level

We estimate duration of schooling at the incomplete primary level by using a set of models which are built upon detailed individual data on duration of schooling by grades completed within the primary level for 54 countries (using micro-data from the IPUMS and DHS). The detailed data allow for the computation of empirical mean years of schooling by age and sex. The data were distributed in five broad regions – Latin America, South-East Asia, South Asia, Sub-Saharan Africa and Arab countries – since levels of development, and socio-economic as well and cultural contexts prevalent across regions appear to induce distinct differences in the slopes of the regression function[10]. Data were not available for Europe, North America, Australia, Oceania and the ex-soviet countries in central Asia[11]. Developed countries tend to collect only information on the highest level attained and the fraction of the population with low educational attainment (lower than completed lower secondary level) is in general very small.

Finding a sufficient number of countries with detailed data on education by both the level and grade completed was challenging for some regions because data are mostly collected for the highest completed level and not for information on completed grades. While the coverage was rather good for Latin America, Asia and Sub-Saharan Africa, finding data for Arab countries was much more complicated.

[10] Alternatively, country groupings could have followed similarities in education systems (for example all countries with French system-based, British system-based or systems typical for ex-soviet countries etc. education system). However, differences across the countries with similar education systems were greater compared to regional groupings.

[11] Early introduction of universal lower secondary education translated into high completion of this level and a negligible proportion of persons with lower educational attainment, which makes these countries distinctly different from other countries in the region. We have attempted to build a model using DHS data for Kazakhstan, Azerbaijan and Ukraine; however, recorded years/grades of education did not correspond to the education mapping of UIS and other sources.

Our initial hypothesis was that there should be a positive relationship between the number of years completed at primary level and the overall level of educational attainment since pupils would be more likely to drop out earlier in countries with low educational attainment and attendance than in societies with high educational attainment, where dropouts are rather exceptional and would occur at higher grades since children are supported to stay in education longer. Besides, level of compulsory education may play a role as it tends to be higher in more developed countries (lower secondary compared to primary) and, additionally, more developed countries may better enforce the rules and offer alternative educational or training trajectories for weaker pupils.

The analysis we performed confirmed that the hypothesis also holds across countries and cohorts within individual countries as the duration of schooling within the incomplete primary level is shorter for older (less educated) cohorts. Therefore, for countries and cohorts with nearly universal primary education, we find higher duration of incomplete primary among the fraction that has dropped out of primary. This relationship holds for both genders. We found that MYS at incomplete primary level is about 40-65% of the duration of primary education in most countries and for most age-groups. Thus, a general rule of attributing half the duration of the length of completed primary education applied in some other datasets (UIS 2013; Cohen & Soto 2007) should provide reasonable, although less precise, results.

In the next step we have tested the relationship between the duration of incomplete primary education expressed as fraction of the typical duration of primary for a given country and age group and a/ simple proportions of incomplete primary, b/ cumulative proportions of incomplete primary, and c/ ratios between those with no formal schooling and completed primary education. We tested different types of models (exponential, linear) and chose the one with the highest explanatory power. Below is the specification of the simple regression models for five regions (Figures 1-5).

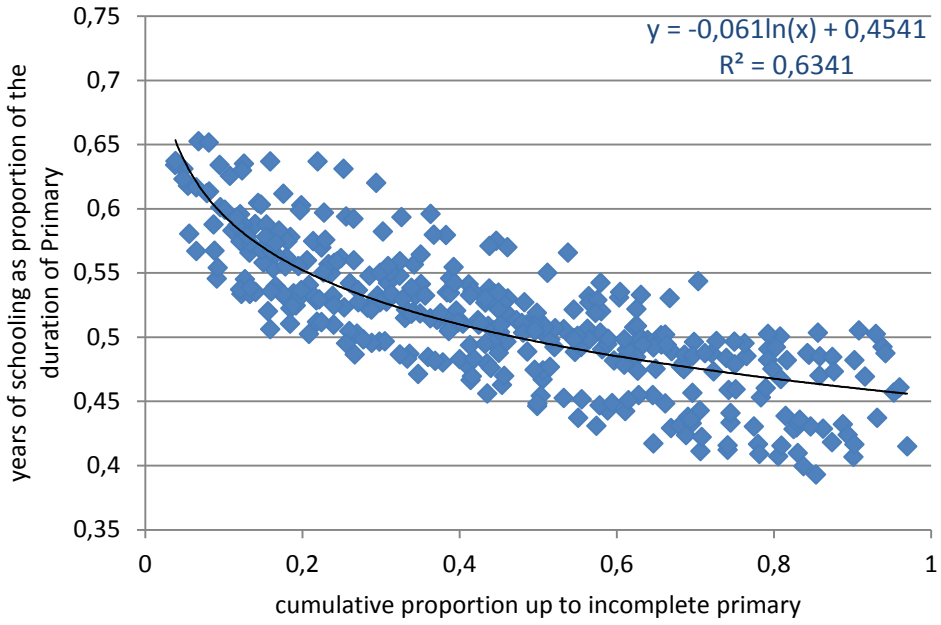
The model using the cumulative proportion up to incomplete primary level had the highest explanatory power in three regions. The fit of the model is best for Latin America and Asia and lesser for Sub-Saharan Africa because of higher than expected MYS of incomplete primary education in the least educated countries (for example Mali) and among the higher age groups. Dispersion may also be related to the data quality especially in DHS for persons above age 50. We excluded from the model for Sub-Saharan Africa those countries with an HDI below 0.3 in 2010 i.e. Niger and Chad because the small fraction of children who start attending primary education is more likely to attain more grades.

Further sensitivity analysis showed that building separate models for the least educated African countries (which had HDI below 0.4 in 2010 (UNDP 2011)) and those above the HDI threshold would improve the predictive power of the model for the more developed Sub-Saharan Africa (R^2 would increase to 0.49 if only those with HDI above 0.4 are taken). This means that the relationship between the duration of incomplete primary schooling and proportion of population with at most incomplete primary education holds for countries which have started the education transition, i.e. younger cohorts are getting increasingly enrolled in educational system and progress towards higher educational attainment. However, it does not hold in least developed countries in the Sahel belt in which 85-95% of all age groups have either no education or only a few years of primary education, and when improvement across age groups has been limited.

In South Asia, the model using simple proportions with incomplete primary rather than cumulative proportions was chosen because of its better explanatory power.

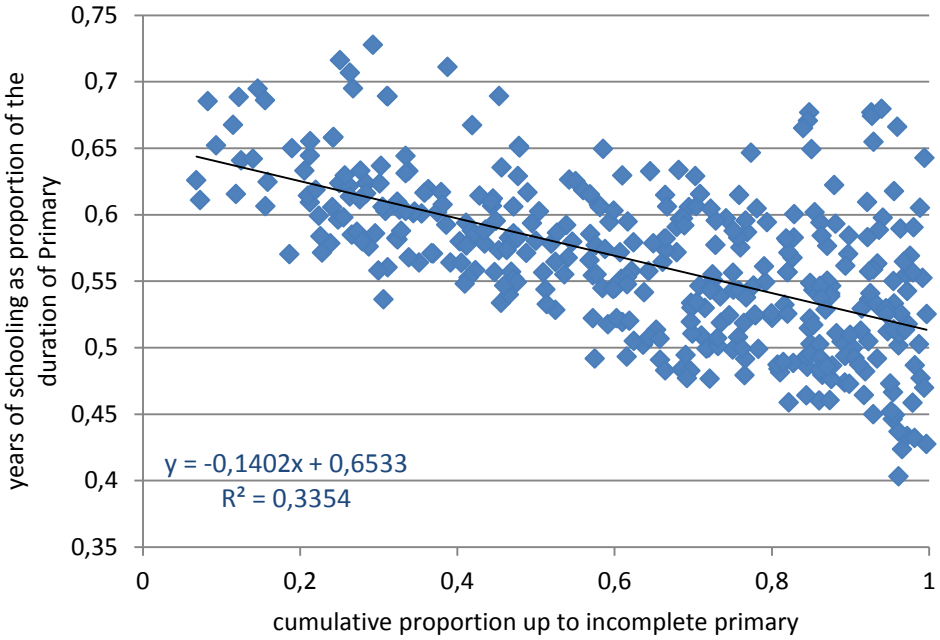
We tested separate models for men and women. Women tend to drop out from primary education more frequently than men as is evident from the comparisons of the proportions of men and women with incomplete primary education. However, the regression slopes were rather similar and we decided to apply a single model for both sexes.

Figure 1. Relationship between Duration of Incomplete Primary Education (ISCED 1) and Cumulative Proportion of Up to Incomplete Primary by Cohorts Aged 25-80+ in Latin America



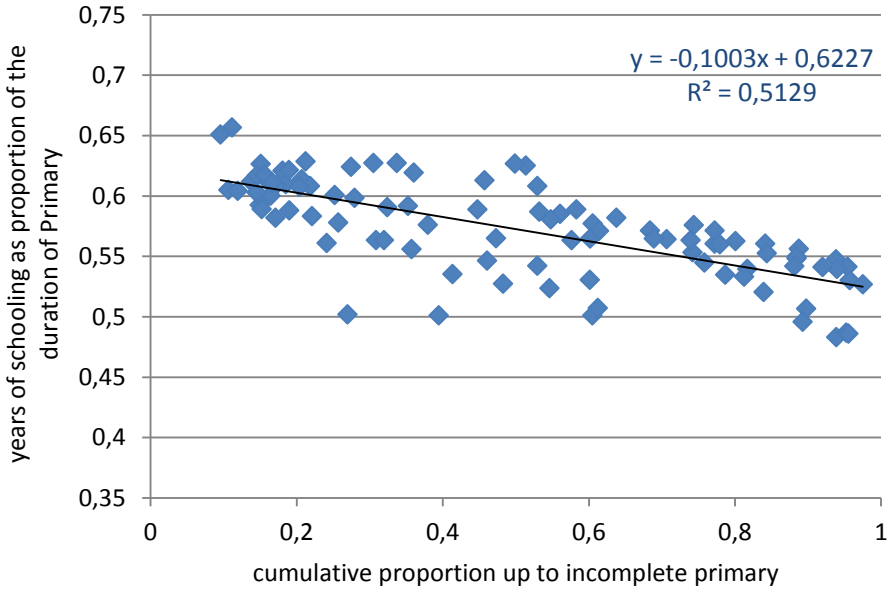
Note: 16 countries are represented (Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Haiti, Honduras, Mexico, Nicaragua, Panama, Peru, Uruguay, Venezuela) [most recent censuses or DHS]

Figure 2. Relationship between Duration of Incomplete Primary Education (ISCED 1) and Cumulative Proportion of Up to Incomplete Primary by Cohorts Aged 25-70+ in sub-Saharan Africa



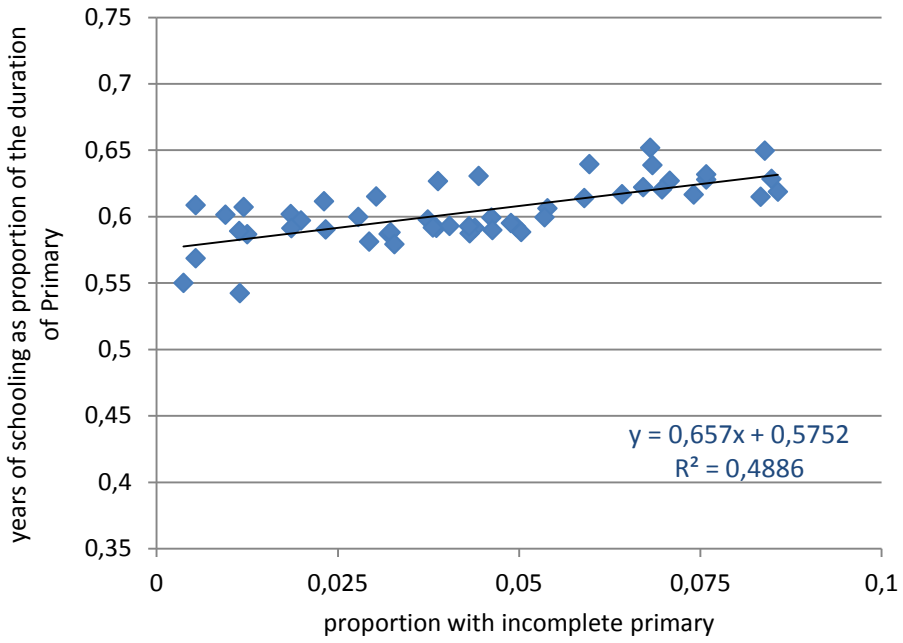
Note: 24 countries are represented (Benin, Burkina Faso, Congo, Democratic republic of the Congo, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Liberia, Malawi, Mali, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Uganda, Tanzania, Zambia, Zimbabwe) [most recent censuses or DHS]

Figure 3. Relationship between Duration of Incomplete Primary Education (ISCED 1) and Cumulative Proportion of Up to Incomplete Primary by Cohorts Aged 25-80+ in South-East Asia



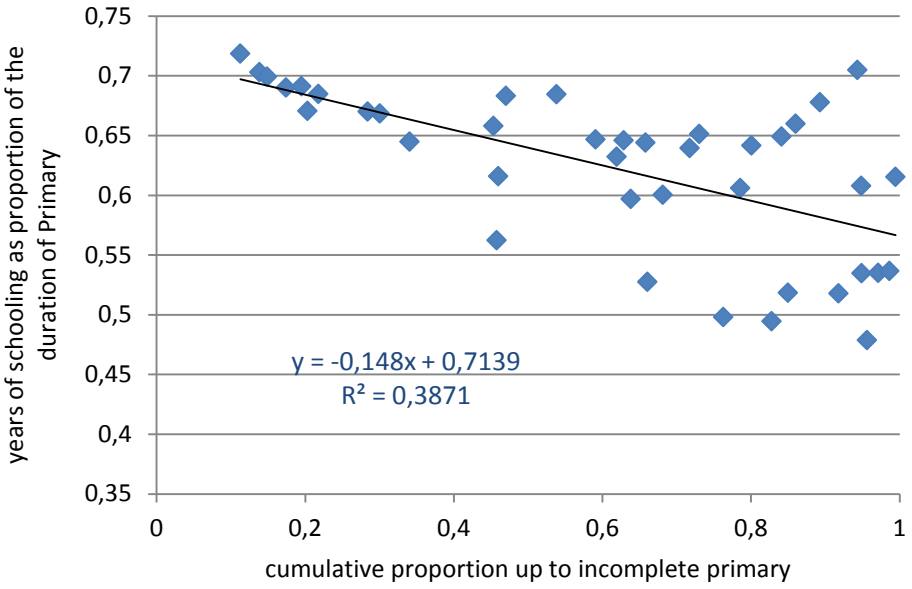
Note: 3 countries are represented (Cambodia, Thailand, Philippines, Vietnam) [most recent censuses]

Figure 4. Relationship between Duration of Incomplete Primary Education (ISCED 1) and Cumulative Proportion of Up to Incomplete Primary by Cohorts Aged 25-80+ in South Asia



Note: 3 countries are represented (India, Nepal and Pakistan) [most recent census or DHS]; Bangladesh was an outlier and was excluded due to its higher years of schooling than the other countries which was affecting the slope of the function.

Figure 5. Relationship between Duration of Incomplete Primary Education (ISCED 1) and Cumulative Proportion of up to Incomplete Primary by Cohorts Aged 25-80+ in Arab Countries



Note: 3 countries are represented (Egypt, Palestine and Morocco) [most recent census]

For Europe, North America, Australia, Oceania and the ex-soviet countries in central Asia we assume the same relationship as in Latin America, i.e. rather high duration of schooling for those with incomplete primary since these regions benefit from high levels of educational attainment. The fraction of the incomplete primary education category in these regions is negligible overall, even for older cohorts and the effect on the final value of MYS is therefore tiny.

In the projection, duration of schooling for incomplete primary was calculated using the above relationships. We assume the same typical duration of primary education as in 2010 for all projected periods. UNESCO publishes information on typical durations of schooling annually but we refrain from any changes in educational systems beyond 2010.

2.2 Estimation of MYS Correction Factors for Primary and Secondary Education

For primary, lower and upper secondary levels, we have estimated correction factors to inflate average duration of schooling, to take into account the fraction of persons who enrolled into the next higher level – e.g. in upper secondary education for those who have completed lower secondary education – but did not complete it. Therefore, the mean years of schooling at these levels should be a little higher than the typical duration of study at the given educational level because some pupils studied at the next higher level but did not complete it. How much higher the duration of schooling is would depend on the fraction of pupils who did not complete their studies and how early or late they dropped out. For example, if typical duration of primary education is 6 years and pupils typically need 3 additional years to complete lower secondary level we can expect that the observed duration of schooling would be higher than 6 years because those who studied in grade 1 or 2 in lower secondary but did not complete grade 3 are counted together with those with completed primary education.

We have tested the relationships between the duration of schooling and simple or cumulative proportions by educational level using the same dataset of 54 countries utilized in section 2.1. However, we could not find any plausible relationship which would allow us to estimate MYS using the information on educational composition in a similar way as we did for the incomplete primary level. This is probably caused by varying fraction of those with incomplete higher level of education across countries and cohorts. As a solution, we decided to estimate correction factors based on average values of observed durations of schooling at the three levels computed from microdata for 54 countries.

The correction factors were estimated for three broad regions – Latin America, Asia and Africa[12] – observing changes across different age groups. Differences between the regions are relatively small and therefore we estimated the correction factors for only three broader regions.

For primary level, the positive trend across age groups (from older to younger age groups – see Figure 6) was used to adjust the average duration of primary education by age groups. For example, if standard duration of schooling for age group 25-29 is six years we apply the correction factor of 1.15 (Table 1) to adjust for the fraction of population with incomplete lower secondary education in African countries. The correction factor declines with the increasing age (Figure 6). This means that older men and women spent shorter time

[12] Comparison of the results for 3 broad regions and 5 more detailed regional country-groupings used in the models described in the previous section showed very similar values for South-East and South Asia. Comparisons showed no distinct pattern for Arabic countries either and since their values were in line with the averages for the corresponding broader regions we did not create a separate region for these countries.

in lower secondary education before dropping out compared to younger cohorts. This pattern is in line with the expected positive effect on the duration of schooling during the expansion of education. The correction factors are expressed in relative terms because typical duration of primary education varies between 3 to 6 years in most countries[13].

For lower and upper secondary education, the average values are quite stable across ages. We could not identify any trend by age (see Table 2) and therefore use a single value for all age groups: 1.05 for Latin America, 1.04 for Africa and 1.00 for Asia[14], calculated as the average across age groups. For Europe, North America, ex-soviet countries, and Australia and Oceania we apply the values found for Latin America.

In the projections, these correction factors were applied to respective cohorts, such that at each step, the youngest cohort has the same correction factor as that of the youngest cohort in the baseline.

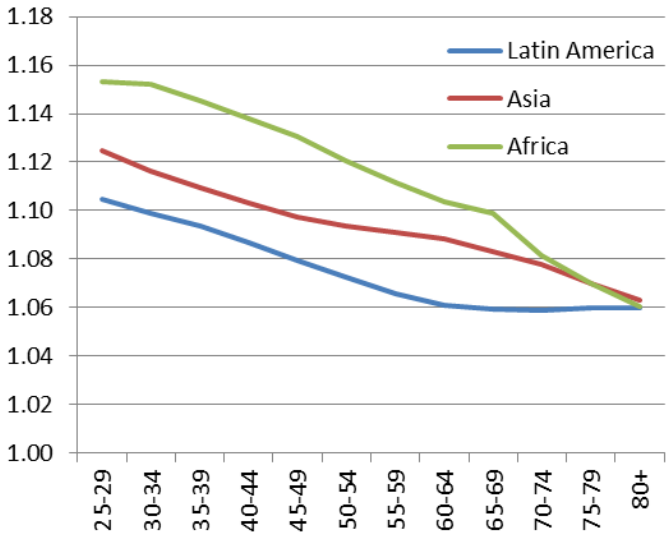
Final results including the country rankings of MYS for population 25+ for the 171 countries are presented in the appendix tables. The whole dataset is available online at this address: www.wittgensteincentre.org/dataexplorer

[13] According to UIS ISCED mappings, ex-soviet countries in Central Asia have the shortest duration of primary: 3 years. In other countries the duration varies between 4 and 6 years.

[14] The value is close to 1 in Asia because most students in countries like India or Nepal, which have educational systems based on the British system, complete 10th grade (ISCED 3C) and only a small fraction completes 12th grade (ISCED 3A). Durations of A levels are reported as typical durations in all countries by the UIS and no such information is at hand for B and C levels.

Figure 6. Correction Factors for the Average Duration of Completed Primary for Three Broad Regions

	Latin America	Asia	Africa
25-29	1.10	1.12	1.15
30-34	1.10	1.12	1.15
35-39	1.09	1.11	1.15
40-44	1.09	1.10	1.14
45-49	1.08	1.10	1.13
50-54	1.07	1.09	1.12
55-59	1.07	1.09	1.11
60-64	1.06	1.09	1.10
65-69	1.06	1.08	1.10
70-74	1.06	1.08	1.08
75-79	1.06	1.07	1.07
80+	1.06	1.06	1.06



Note: Smoothed using 5-year moving average

Table 1. Correction Factors for the Average Duration of Completed Lower and Upper Secondary Education for Three Broad Regions

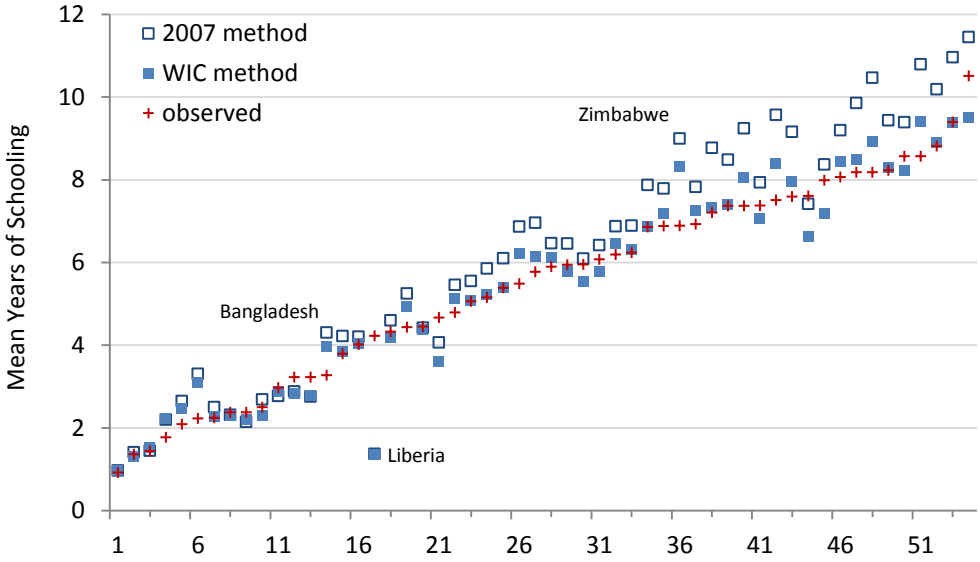
	Lower secondary			Upper Secondary		
	LAM	Asia	Africa	LAM	Asia	Africa
25-29	1.09	1.02	1.08	1.05	0.99	1.03
30-34	1.09	1.02	1.09	1.05	0.98	1.03
35-39	1.09	1.05	1.10	1.05	0.98	1.03
40-44	1.08	1.06	1.10	1.05	0.99	1.04
45-49	1.09	1.03	1.10	1.05	0.99	1.03
50-54	1.09	1.03	1.09	1.05	0.99	1.04
55-59	1.08	1.03	1.08	1.05	0.99	1.04
60-64	1.08	1.03	1.08	1.05	0.99	1.05
65-69	1.08	1.03	1.08	1.04	0.99	1.05
70-74	1.10	1.04	1.09	1.05	0.99	1.05
75-79	1.08	1.04	1.08	1.05	0.98	1.06
80+	1.10	1.04	1.12	1.04	0.99	1.07
AVG	**1.09**	**1.03**	**1.09**	**1.05**	**0.99**	**1.04**

3 Comparisons with Other MYS Estimates

3.1 Comparison with the 2007 Dataset

This section compares and evaluates the MYS obtained by the earlier method developed for the previous round of education projections (Lutz et al. 2007, KC et al. 2010) with the present procedure. The 2007 method is explained in section 2. We applied this method to the WIC dataset. This method was found to overestimate mean years of schooling (in particular for countries with on average high educational attainment) when compared with the mean years of schooling computed directly from the census micro-data and from surveys (Figure 7).

Figure 7. Comparison of MYS Obtained from the 2007, the New Procedure for Population 25+ and Observed MYS (Computed from IPUMS or DHS) for 54 Countries



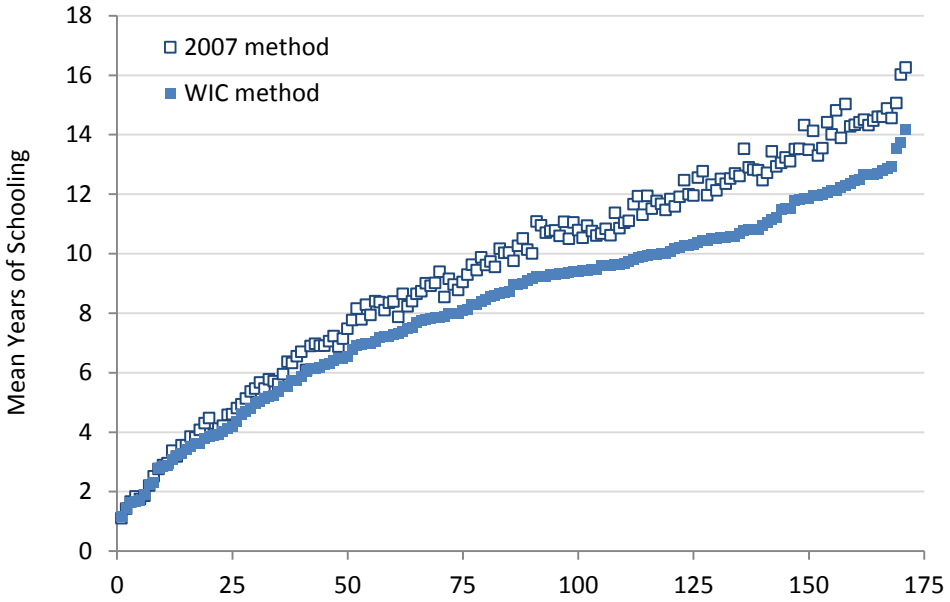
Source of the observed data 2000-2010 census rounds; IPUMS.

The present procedure resulted in better correspondence to the observed data for most countries (results for 29 out of 54 countries are within 5% difference from the observed MYS, while the IIASA 2010 was similarly accurate in only 8 countries) and in smaller deviations from the observed data (40 out of 54 countries within 10% difference compared to 22 previously). The previous procedure, referred to as 2007 method in this section, based on weighting resulted in overestimated MYS by more than 10% in 33 out of 54 countries and underestimated by more than 10% in 5 countries. De la Fuente and Doménech (Fuente & Doménech 2013)also found in their analysis of the datasets on MYS that this method resulted in too high MYS.

The new model-based procedure resulted in underestimated values by more than 10% in 6 countries and in overestimated values in 8 countries. Greatest deviations from the observed MYS are found in absolute terms in African countries (Liberia and Zimbabwe being clear outliers). In relative terms, Liberia and Bangladesh show greatest deviation from the observed values (Bangladesh was an outlier from the regional pattern). However, the new procedure reduced the deviation from observed values for these countries as well.

Figure 8 depicts differences in the MYS computed using the improved model-based procedure and the older approach developed for the IIASA 2010 projections for a larger set of 171 countries with information on educational attainment. The figure shows that the new procedure leads to consistently lower estimates of MYS. The new model-based procedure returned higher MYS compared to the previous method in only 5 countries: Niger, Chad, Ethiopia, Burundi and Bhutan. The differences were, however, very small and after rounding to 1 decimal place they were no longer evident.

Figure 8. Comparison of the MYS Computed for 171 Countries Using the New WIC and Older 2007 Method, 2010



3.2 Comparison to Other Datasets

Comparisons between several other datasets on MYS and educational attainment (Barro & Lee 2013; Cohen & Soto 2007; de la Fuente & Doménech 2000; UIS 2013) revealed limited correspondence of the results because of a/ differences in the types of source data, b/ flaws in the UNESCO data that are widely used for such estimates, c/ variations in the number and definition of educational categories, and d/ assumptions about number of years of schooling for incomplete levels and post-secondary education.

We compare the new WIC 2012 estimates for 2010 to the 2010 value in the most recent version of the Barro & Lee dataset[15] (Barro & Lee 2013) and to the estimates of UIS published in December 2013 (UIS 2013). Other existing datasets i.e. (de la Fuente & Doménech 2000) were not publicly available at the time of this report anymore or the published results did not span beyond 2000, i.e. (Cohen & Soto 2007). Until 2013, UNESCO used directly the Barro & Lee estimates of MYS. Presently, UIS follows the Barro & Lee approach to compute their own estimates; however, it uses only the educational attainment data reported to UNESCO by the questionnaire sent every year to national agencies. Flaws in these data lead to heaping in MYS in some countries as if the UIS was not checking the accuracy of the classification into the ISCED categories and consistency across different

[15] As of April 2013, based on increased number of sources. Downloaded from http://www.barrolee.com/data/full1.htm, last visited in January 2014.

datasets. The latest Barro & Lee dataset supplements UNESCO data collection with data from Demographic Yearbooks as well as data from censuses and surveys, some of them collected from national statistical agencies[16]. The WIC dataset, in contrast, relies on thoroughly harmonised data from censuses and surveys to guarantee better comparability across countries.

Both Cohen and Soto (2006) and de la Fuente and Doménech (2000 and 2006) find that MYS available from Barro & Lee dataset (Barro & Lee 2001) tend to be lower than when OECD data are used for the corresponding countries or when alternative estimates are made using different approaches (not filling in the missing data points using enrolment rates, for example). Underestimated MYS for the OECD countries remain a problem of the recent, updated Barro & Lee dataset as we show later in this section. UIS arrives at slightly different results than Barro & Lee using a procedure based on Barro & Lee approach (2013) but UIS refrains from further adjusting input data by splitting them into more detailed education categories if they are reported for a broad category comprising several ISCED levels. This means that some of the differences between the three datasets can be clearly attributed to the categorisation of input data and the methods Barro & Lee use to estimate incomplete levels.

Table 2. The Main Differences and Similarities in the Three Datasets on Mean Years of Schooling

	WIC 2012	**UIS 2013**	**Barro & Lee**
N countries (2010)	171	35	142
Education categories (ISCED 1997)	no education incomplete ISCED 1 ISCED 1 ISCED 2 ISCED 3 ISCED 4+5+6	no education incomplete ISCED 1 ISCED 1 ISCED 2 ISCED 3 ISCED 4 ISCED 5+6	no education incomplete ISCED 1 ISCED 1 ISCED 2 ISCED 3+4 ISCED 5+6
Number of years at each level	UNESCO database	UNESCO database	UNESCO database
N years for incomplete ISCED 1	model-based	1/2 of ISCED 1 duration	1/2 of ISCED 1 duration
N years for incomplete ISCED 2 and 3	correction factors	not considered	not stated
N years at post-secondary level	ISCED 4+5+6 - 4 years	ISCED 4 - 2 years ISCED 5+6 - 4 years	incomplete 2 years completed 4 years

Documentation of all estimations methods and assumptions used in generating the educational composition can help users understand differences in accuracy of the data for different countries (for the WIC dataset, see Appendix of Bauer et al. 2012 about all data adjustments). The comparison between the datasets is not straightforward because of a slightly different definition of educational categories although both are based on ISCED 1997. We have tried to summarize the main differences between the three datasets in Table 3.

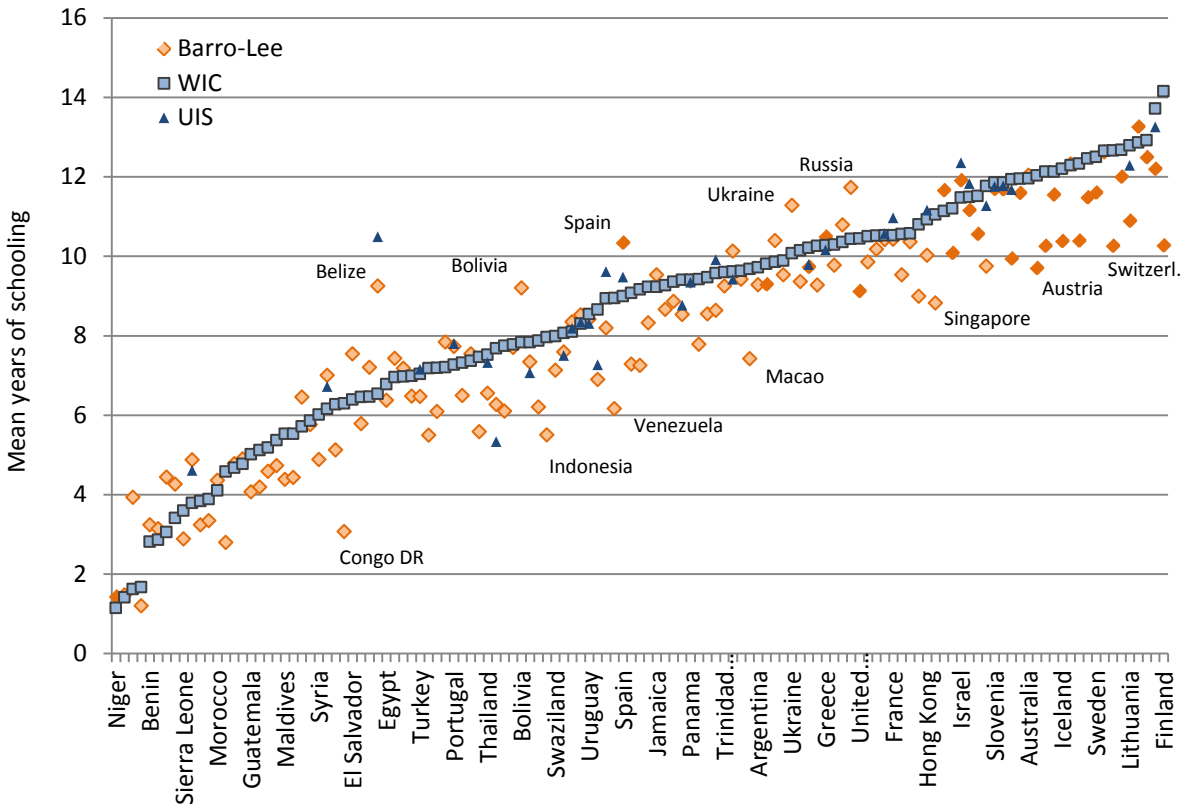
[16] Barro & Lee do not specify their source data in more detail but they do not seem to include DHS. WIC dataset makes use of DHS data if censuses were not available for the country.

A significant advantage of the WIC dataset is a greater level of detail when it comes to age and a thorough harmonisation based on ISCED 1997 (see section 3.1 about the latter point). We have collected the data in 5-year age groups for vast majority of the countries and for a small fraction we had data aggregated into broader age groups; for these we have used interpolation techniques to estimate the education shares by 5-year ages. Barro & Lee use mostly data compiled by UNESCO which often lack detail and are presented in 10 year or even broader age groups. Barro & Lee do not make any adjustments, i.e. two subsequent 5-year age groups are assigned the same values. This does not affect the resulting MYS, but it is a limitation for some users because the MYS are identical for 5-year age groups with average shares presented for the corresponding 10 year age group in the input data. So far, UIS published estimates for population 25+ only.

To compare the MYS for total population 25+ we show the results for 125 countries found in WIC and Barro & Lee datasets for the year 2010 (Figure 9). UIS estimates were available for 32 countries only because UIS published MYS only for the years with available data and refrained from estimates beyond the data points reported to them. As expected, MYS are lower in the Barro & Lee dataset compared to the WIC's in particular for the better educated countries (OECD countries, highlighted in dark orange) while the difference is smaller for the least educated. The difference in MYS between Barro & Lee and WIC estimates is more than 1 year of schooling for 34% of the countries (N=43) and the maximum difference is 3.9 years in Finland[17]. For the 125 countries, the WIC average is 0.55 years higher than the Barro & Lee average (8.55 vs. 8.0 years).

Figure 9. Mean Years of Schooling in 2010 in Barro & Lee, WIC and UIS Datasets, 125 Countries (OECD Countries Highlighted in Dark Orange)

[17] We used data provided and categorised into ISCED 97 by the Finnish NSO. However, 4 lowest education categories were grouped together into one broad category. To split into individual subcategories we used analogy to other Northern European countries.



UIS estimates are added to illustrate the range of estimates for a country. In many cases the differences between all 3 estimates are small; in some cases UIS MYS are closer to WIC and in other cases UIS estimates are closer to Barro & Lee MYS. The similarity between Barro & Lee and UIS data can be expected as the UIS follows the Barro & Lee approach and for many countries both rely on the same source data. Still, UIS estimates for developed countries tend to be higher compared to Barro & Lee and more in line with the WIC estimates.

While UIS always builds on observed educational distributions, Barro & Lee further adjust the data by estimating incomplete levels using completion rates. For example, they assume that some fraction of those who report completed tertiary education have in fact not competed the level. This approach leads to underestimation of MYS in some countries (see Figure 9 and Table 4). Adjustments in the WIC dataset are limited to splitting of broad education categories into corresponding ISCED levels for a small subset of countries. All such adjustments are carefully documented in (Bauer et al. 2012).

Differences between individual countries are reflected in different country rankings. Table 3 (next page) depicts these differences by showing the top 20 and bottom 15 countries using a set of 125 countries included in both datasets. UIS results are added for the countries with available MYS for 2010 or a value for 3 years before or after the reference years (to increase the number of observations)[18]. Complete ranking of all 171 countries in the WIC dataset are displayed in the Appendix.

[18] Educational composition and the resulting MYS are fairly stable and would not change significantly within 3 years from the reference year.

Table 3. Mean Years of Schooling in 2010 in Barro & Lee, WIC and UIS datasets

Rank	By Barro & Lee	BL	WIC	UIS	By WIC	BL	WIC	UIS
1	United States	13.3	12.9	12.9*	Finland	10.3	14.2	-
2	Norway	12.6	12.6	12.7*	Germany	12.2	13.7	13.3
3	New Zealand	12.5	12.9	-	New Zealand	12.5	12.9	-
4	Czech Republic	12.3	12.3	-	United States	13.3	12.9	12.9*
5	Germany	12.2	13.7	13.3	Lithuania	10.9	12.8	12.3
6	Australia	12.0	12.0	13.0+	Estonia	12.0	12.7	-
7	Estonia	12.0	12.7	-	Switzerland	10.3	12.7	13.5*
8	Israel	11.9	11.5	12.4	Norway	12.6	12.6	12.7*
9	Russia	11.7	10.4	-	Sweden	11.6	12.5	-
10	Slovenia	11.7	11.8	11.8	Japan	11.5	12.5	-
11	South Korea	11.7	11.9	11.8	Latvia	10.4	12.3	-
12	Hungary	11.7	11.1	-	Czech Republic	12.3	12.3	-
13	Sweden	11.6	12.5	-	Iceland	10.4	12.2	-
14	Ireland	11.6	12.0	-	Slovakia	11.6	12.1	-
15	Slovakia	11.6	12.1	-	Denmark	10.3	12.1	12.7*
16	Japan	11.5	12.5	-	Austria	9.7	12.0	-
17	Ukraine	11.3	10.1	-	Australia	12.0	12.0	13.0 +
18	Netherlands	11.2	11.5	11.8	Ireland	11.6	12.0	-
19	Lithuania	10.9	12.8	12.3	Poland	10.0	11.9	11.7
20	Armenia	10.8	10.4	-	South Korea	11.7	11.9	11.8
111	Morocco	4.4	4.1	-	Bangladesh	4.8	4.7	-
112	Côte d'Ivoire	4.3	3.4	-	Gambia	2.8	4.6	-
113	Malawi	4.2	5.1	-	Morocco	4.4	4.1	-
114	Guatemala	4.1	5.0	5.6+	Rwanda	3.3	3.9	-
115	Liberia	3.9	1.6	-	Nepal	3.2	3.8	-
116	Rwanda	3.3	3.9	-	Pakistan	4.9	3.8	4.6
117	Nepal	3.2	3.8	-	Sierra Leone	2.9	3.6	-
118	Benin	3.2	2.8	-	Côte d'Ivoire	4.3	3.4	-
119	Sudan	3.1	2.9	-	Senegal	4.4	3.1	2.4+
120	Congo DR	3.1	6.3	-	Sudan	3.1	2.9	-
121	Sierra Leone	2.9	3.6	-	Benin	3.2	2.8	-
122	Gambia	2.8	4.6	-	Mozambique	1.2	1.7	-
123	Mali	1.5	1.4	2.0+	Liberia	3.9	1.6	-
124	Niger	1.4	1.1	-	Mali	1.5	1.4	2.0+
125	Mozambique	1.2	1.7	-	Niger	1.4	1.1	-

Notes: * corresponds to 2007, 2008 or 2009; + corresponds to 2011 or 2012.

3.2.1 Differences Arising from Categorisation and Different Data Sources

The indicator of MYS is sensitive to differences in categorisation because different duration of schooling is attributed to the population share with a given (differently allocated) educational level. In the three datasets, the main difference lays in the treatment of the ISCED 4 category: it constitutes a separate category only in the UIS dataset, while in the WIC dataset it is part of the highest education category (i.e. post-secondary education) and in Barro & Lee it is included in secondary (Table 3). While the latter assumption holds for a few countries, in most countries ISCED 4 graduates have to study on average about 2 years longer than the pupils in upper-secondary. We can expect that in countries with non-negligible share of ISCED 4 graduates e.g. Latvia, Barro & Lee estimates would be lower than UIS or WIC[19].

We can also expect the MYS from WIC dataset to be higher than the other two because the years studied at incomplete levels are taken into account using the correction factors. As shown later, we really find that WIC estimates tend to be above the Barro & Lee results for the same countries and different treatment of incomplete levels contributes to this. To give an example, in the Barro & Lee dataset a person with some secondary education (i.e. those who have not completed ISCED 3 level) are attributed the duration of schooling of the completed lower secondary education. Furthermore, compared to the other two datasets, our approach in estimating the duration of incomplete primary education can lead to a lower mean duration of overall schooling for less educated countries and a longer duration of schooling for better educated countries.

Handling of the unknown education group can impact the results if the share is non-negligible. We assume random distribution and do not attribute unknowns to any single category; UIS claims to follow the same procedure with the exception that it excludes datasets where the share of unknown is above 10%. Barro & Lee rely on the data classified by other institutions and do not explicitly state how they treat the unknown. With data provided by other institutions it is difficult to guarantee that the same procedure is applied uniformly across all countries. For example, the Barro & Lee estimate of 10.3 years of education for Switzerland in 2010 seems low for an advanced country; in fact it would mean that average schooling was at the level of completed lower secondary schooling. Further inspection of their input data revealed that the proportion of persons with no education is about 3-times higher than data published by the Swiss statistical Office or EUROSTAT (about 9% of uneducated compared to about 3% for adult population aged 25-64). Low MYS are clearly an artefact of allocating the proportion with unknown education to the no education category.

The surveyed educational categories found in censuses or surveys are often not based on ISCED categories and translation to ISCED is problematic due to ambiguous categories which comprise several ISCED levels. These can be translated to ISCED in more than one way, depending on the rules and assumptions made. The advantage of the WIC dataset is a thorough harmonisation and uniform application of the same set of rules to allocate ambiguous categories. In contrast, other authors have pointed out flaws in the UNESCO time series on educational attainment, including sharp breaks in series due to changes in classification criteria. Validation of the WIC dataset with UNESCO data (Bauer et al. 2012) is nearly impossible due to the many categorical incongruities between the two datasets. These problems in the initial data are translated into resulting MYS and affect comparability.

[19] In Latvia, 30% of population 25+ had ISCED 4 level according to census 2001 data. MYS for Latvia in 2010 are 10.4 in Barro & Lee and 12.3 years in WIC dataset; UIS estimates the value at 12.4 in 2006.

Differences in the treatment of ambiguous categories also influence deviations in MYS in the two datasets. Often there is no single "correct" solution to allocate such ambiguous categories. The advantage of the WIC data is that we apply the same allocation rules to allocate ambiguous categories the same way in all countries.

A good example is the case of Bulgaria depicted in Table 4. The difference in MYS of X years between the Barro & Lee dataset and WIC dataset is caused by different allocation rules for the primary education category which in Bulgaria consists of 2 cycles – the 1st Cycle (Grades 1 to 4) corresponds to primary and the 2nd cycle (grades 5-8) corresponds to lower secondary. However, original education categories surveyed in census do not differentiate between the completed and incomplete levels. Therefore it is up to the researcher to either consider Primary 1st cycle as completed or incomplete ISCED 1 and Primary 2nd cycle as completed ISCED 1 or ISCED 2 because both levels are mixed. In the WIC dataset we treat these categories as completed primary and completed lower secondary education because of the assumed high completion rates in compulsory education in all ex-soviet and post-socialist countries. For the sake of comparability we follow the same rule in all post-socialist countries. Any of the two solutions is "correct" and the differences in MYS illustrate the sensitivity of the indicator to such allocation decisions.

Table 4. Differences in Educational Composition for Bulgaria in Barro & Lee Dataset (BL) and WIC Dataset, Census 2001

		None	Inc. primary	Primary	Lower sec.	Upper sec.	Secondary	Tertiary	**MYS**
30–34	BL	0.9	3.0	15.3	25.5	26.8	52.3	28.5	**10.8**
35–39	BL	0.8	3.0	15.7	28.6	26.5	55.1	25.4	**10.6**
40–44	BL	0.8	3.3	16.6	27.0	25.0	51.9	27.3	**10.7**
45–49	BL	0.8	3.7	21.3	23.9	23.5	47.4	26.8	**10.5**
50–54	BL	1.0	4.5	26.7	23.8	23.6	47.4	20.5	**10.1**
		None	Inc. primary	Primary	Lower sec.	Upper sec.		Tertiary	**MYS**
30–34	WIC	1.1	0.7	3.0	15.1	51.9	67.0	28.3	**11.3**
35–39	WIC	1.0	0.6	2.9	15.6	54.6	70.2	25.2	**11.2**
40–44	WIC	1.1	0.7	3.3	16.4	51.5	67.9	27.1	**11.2**
45–49	WIC	1.0	0.7	3.7	21.1	46.9	68.1	26.5	**11.0**
50–54	WIC	1.4	0.8	4.5	26.4	46.8	73.2	20.2	**10.5**

Note: WIC data are based on census results published by the Bulgarian NSO in detailed education categories and allocated based on ISCED 1997 mapping using rules described in Bauer et. al 2012. Small differences in the share may arise from computation on the census sample (IPUMS, WIC) versus full census results or from different handling of unknown education category.

Another illustration of the difficulty in category allocation can be found in ex-Soviet countries, including the Russian Federation where depending on the programme studied and its duration, the students of secondary vocational schools achieve either ISCED 3A or 5B levels. However, data are available only for the entire category. Moreover, the cumulative duration of schooling in these programmes is 11-12 years and more than half of the population has followed this type of schooling. Barro & Lee include them in the tertiary category and the MYS are computed using 14 years of education for this category instead of 12(. In the WIC dataset we treat vocational schools in all ex-soviet countries as completed upper secondary education. In the input data used by Barro & Lee this category is treated

differently in Russia and Ukraine (allocated to tertiary) compared to other countries in the region (allocated to secondary). As a result, Ukraine and Russia have higher MYS according to Barro & Lee as shown in Figure 9 than in the WIC dataset but also compared to some other ex-Soviet countries in the Barro & Lee dataset. For example, while MYS 25+ of Russia are 11,7 years and for Ukraine 11,3 years, the value is much lower for countries like Latvia (10,4 years) or Lithuania (10,9). However, if the educational categories are constructed following the same rules, Latvia and Lithuania rank above Russia and Ukraine (see Table 3 for comparison).

Table 5. Illustration of Translation of Categories of Higher Education into ISCED 1997 and into Broader Categories in the Barro & Lee and WIC Datasets, Russia, Census 2002

	Barro & Lee		**Census 2002**				**WIC**
Women	Tertiary	Completed Tertiary ISCED 5+6	Incomplete highest ISCED 3	Secondary vocational ISCED 3 or 5B	University ISCED 5+6	ALL	Post-sec. ISCED 5+6
	1+2+3	3	1	2	3	1+2+3	3
25–29	63.8	24.3	4.5	34.9	24.1	63.5	24.1
30–34	68.5	24.4	3.2	40.9	24.1	68.2	24.1
35–39	68.4	24.4	2.3	41.7	24.2	68.2	24.2
40–44	65.8	23.0	1.8	41.0	22.7	65.5	22.7
45–49	62.6	21.4	1.4	39.7	21.2	62.3	21.2
50–54	59.7	20.2	1.3	38.2	20.0	59.4	20.0
55–59	55.8	22.1	1.4	32.3	21.9	55.7	21.9
60–64	40.6	14.5	0.9	25.1	14.5	40.5	14.5
65–69	33.5	12.1	0.7	20.6	12.1	33.5	12.1

These two examples illustrate the sensitivity of MYS to the assumptions that necessarily have to be made when estimating initial educational distributions. The three datasets we are comparing differ in the underlying allocation assumptions and therefore the difference in MYS should be understood as a range within which the "true" value lies. More detailed education data with no ambiguous education categories would help in improving the accuracy of the estimates.

3.2.2 Differences Arising from Duration Assumptions

In order to find out how much of the variation in the three datasets is caused by different assumptions on durations, i.e. different computational procedures, we have compared MYS in the 15 countries with matching initial compositions[20] in the three datasets understudy. These matching distributions are split into different number of categories in the 3 datasets. Consequently, the results shown in table 4 represent a kind of sensitivity analysis of the range of results one can get for the same dataset depending on the number of categories, their definition and their durations. Table 5 shows that the relative difference between Barro & Lee and WIC is within 5% in 10 of these countries and within 10% in all but Macao. The huge difference for Macao is an artefact of Barro & Lee further splitting tertiary education into incomplete and completed subcategories using completion ratios (2 years for the incomplete

[20] Educational compositions for these 15 countries are very similar, but not identical between datasets.

and 4 years for completed level) while both WIC and UIS consider that levels reported as highest attained are indeed completed.

Limited number of countries with matching educational distributions means that the variation in MYS arises largely due to differences in classification or flaws in the source data.

Table 6. Differences in the Mean Years of Schooling for Total Adult Population Aged 25+ in the Barro & Lee and WIC Datasets, 8 Countries with Corresponding Educational Distributions

	Mean years of schooling			% difference in MYS	
	BL	WIC	UIS	WIC to BL	WIC to UIS
Argentina 2001	8.56	8.89		4	
Armenia 2001	10.8	9.9		-8	
Greece 2001	8.57	9.19		7	
Hungary 2001	11.24	10.35		-8	
Italy 2001	8.58	8.91	8.68	4	3
Macao 2006	7.12	9	8.74	26	3
Malaysia 2000	8.16	8.38		3	
United Arab Emirates 2005	8.78	9.03		3	
Bulgaria 2001		9.99	9.92		1
Burkina Faso 2006		1.32	1.32		0
Cuba 2002		9.85	9.45		4
Georgia 2002		12.16	11.89		2
Guatemala 2002	3.79	4.15	3.82	9	9
Panama 2010	9.38	9.41	9.35	0	1
South Korea 2010	11.69	11.85	11.77	1	1

3.2.3 Comparison of the MYS Computed from Detailed Individual Data

Only a limited number of countries collect information on both highest level and grades attained, as explained earlier in this paper. Therefore, it is possible to compute MYS from detailed data for only about 50 countries. In comparing MYS from both Barro & Lee and WIC datasets, we are further limited by the number of countries with the same data source (N=40 countries). At last we are left with only 7 countries for which we can compute MYS from the detailed same source data. Table 6 shows that for countries with same source data and identical or very similar education distributions in both datasets, the resulting MYS are similar and close to the observed values (Argentina, Uruguay). For some countries, the Barro & Lee results seem to be closer to the observed values: Chile, Educador, Peru, Philippines, Thailand, and Uganda. For others, WIC seems to be closer: Bolivia, Colombia, El Salvador, Mexico.

Table 7. Comparison of the Mean Years of Schooling for Population 25+ in Barro & Lee, WIC and UIS Datasets to Observed Values Computed Directly from Microdata (IPUMS)

country	Barro & Lee	UIS	***IPUMS***	WIC
Argentina 2001	9.3		***9.4***	9.7
Bolivia 2001	9.2	7.3	***7.4***	7.8
Chile 2002	9.7		***8.8***	10.2
Colombia 2005	6.7	6.8	***7.2***	7.3
Ecuador 2001	7.6		***6.9***	8.1
El Salvador 2007	6.7	5.6	***5.9***	5.8
Mexico 2010	8.5	8.3	***8.2***	8.3
Peru 2007	8.2	8.1	***8.2***	8.9
Philippines 2000	8.0	7.6	***8.2***	8.5
Thailand 2000	6.6		***6.2***	7.5
Uganda 2002	4.7	4.2	***4.5***	5.4
Uruguay 2006	8.4	8.0	***8.6***	8.5

4 Conclusions

We have presented here a new approach to estimate mean years of schooling and compared the resulting datasets to two other datasets: Barro & Lee (2013) and UIS. We have shown that variations in the MYS in the three datasets arise mainly due to a/ different types of source data (censuses, labour force surveys, household surveys etc.), b/ different definition of the educational categories, c/ flaws in the input data resulting in erratic allocation into ISCED categories, d/ different procedures employed in estimation of the educational shares, and e/ differences in the estimation of durations of schooling for incomplete levels. The Barro & Lee dataset results in low-bound estimates for most of the countries, and especially for OECD countries, compared to the estimates in the WIC and UIS datasets, which are more analogous.

Due to thorough harmonisation, the WIC dataset is a step forward to comparable education categories and reliable distributions. Estimates rely on assumptions and rules, and the consistency of these over countries is important. The WIC methodology attempts to improve the estimates of MYS by turning to the original data (as opposed to data compiled by other institutions, like UIS or EUROSTAT) and creating a thoroughly harmonised dataset that results in better comparability across countries. Comparable initial education distributions guarantee better comparability of MYS. Another advantage of the WIC dataset is that the data are available in detailed 5-year age groups and includes a large set of countries – altogether 171.

We are planning regular updates that would include the latest census or survey data. Although it was not discussed in great length in this paper, the MYS are calculated for the past (back to 1970) and for the future (up to 2100) according to different scenarios of education and demographic development. The data is available here: www.wittgensteincentre.org/dataexplorer.

More detailed data on educational attainment would greatly help improve MYS estimates. This means that surveyed educational categories should correspond to ISCED levels and highest degree earned. Finally, types of diplomas should be surveyed rather than types of schools attended as these sometimes offer degrees corresponding to very different ISCED levels.

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6 Appendix

Table A. Mean Years of Schooling (MYS) and Shares of Population 25+ by Highest Attained Education by Sex as of 2010

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
EUROPE								
Albania	Total	9.85	*3.4*	*0.5*	*8.5*	*38.5*	*39.6*	*9.5*
	M	10.20	*2.0*	*0.5*	*7.4*	*38.0*	*41.2*	*10.9*
	F	9.51	*4.8*	*0.6*	*9.5*	*39.0*	*38.1*	*8.1*
Austria	Total	12.03	*0.0*	*0.0*	*2.9*	*23.5*	*49.9*	*23.7*
	M	12.52	*0.0*	*0.0*	*2.3*	*15.6*	*55.6*	*26.5*
	F	11.58	*0.0*	*0.0*	*3.5*	*30.7*	*44.7*	*21.1*
Belarus	Total	10.77	*0.1*	*0.3*	*7.7*	*6.8*	*65.9*	*19.2*
	M	10.91	*0.1*	*0.1*	*4.9*	*6.8*	*69.6*	*18.5*
	F	10.65	*0.2*	*0.4*	*10.0*	*6.8*	*62.9*	*19.8*
Belgium	Total	11.51	*3.5*	*0.0*	*12.9*	*22.3*	*28.8*	*32.6*
	M	11.62	*3.2*	*0.0*	*11.1*	*22.7*	*30.8*	*32.2*
	F	11.42	*3.8*	*0.0*	*14.5*	*21.8*	*26.9*	*32.9*
Bosnia & Herzegovina	Total	9.31	*9.2*	*4.2*	*11.7*	*16.3*	*49.2*	*9.4*
	M	10.50	*3.5*	*2.6*	*9.0*	*13.6*	*60.7*	*10.5*
	F	8.27	*14.2*	*5.5*	*14.1*	*18.7*	*39.1*	*8.4*
Bulgaria	Total	10.67	*1.1*	*0.8*	*5.5*	*22.6*	*48.7*	*21.4*
	M	10.67	*0.7*	*0.6*	*4.1*	*23.3*	*53.0*	*18.3*
	F	10.67	*1.4*	*0.9*	*6.7*	*22.0*	*44.8*	*24.1*
Croatia	Total	10.79	*1.8*	*3.1*	*8.4*	*17.1*	*53.8*	*15.9*
	M	11.36	*0.7*	*1.8*	*5.6*	*14.5*	*61.9*	*15.6*
	F	10.29	*2.7*	*4.3*	*10.9*	*19.5*	*46.5*	*16.1*
Czech Republic	Total	12.29	*0.3*	*0.0*	*0.2*	*13.6*	*70.1*	*15.8*
	M	12.54	*0.3*	*0.0*	*0.2*	*8.2*	*74.8*	*16.5*
	F	12.06	*0.4*	*0.0*	*0.2*	*18.6*	*65.7*	*15.1*
Denmark	Total	12.13	*0.0*	*0.0*	*0.3*	*29.3*	*45.1*	*25.2*
	M	12.15	*0.0*	*0.0*	*0.3*	*26.6*	*49.4*	*23.7*
	F	12.11	*0.0*	*0.0*	*0.4*	*31.9*	*41.0*	*26.7*
Estonia	Total	12.67	*0.2*	*0.2*	*5.1*	*13.3*	*46.4*	*34.8*
	M	12.42	*0.2*	*0.2*	*4.1*	*15.0*	*52.1*	*28.4*
	F	12.87	*0.2*	*0.3*	*5.8*	*12.0*	*41.8*	*39.9*
Finland	Total	14.15	*0.0*	*0.0*	*0.2*	*18.7*	*35.7*	*45.3*
	M	14.04	*0.0*	*0.0*	*0.2*	*18.1*	*38.5*	*43.1*
	F	14.26	*0.0*	*0.0*	*0.2*	*19.3*	*33.0*	*47.4*
France	Total	10.53	*2.2*	*0.0*	*25.3*	*9.3*	*38.8*	*24.4*
	M	10.77	*2.3*	*0.0*	*21.8*	*8.5*	*43.4*	*24.1*
	F	10.31	*2.2*	*0.0*	*28.4*	*10.0*	*34.7*	*24.6*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Germany	Total	13.71	*0.9*	*0.0*	*2.7*	*15.6*	*50.7*	*30.1*
	M	14.18	*0.8*	*0.0*	*2.3*	*9.5*	*52.3*	*35.2*
	F	13.28	*0.9*	*0.0*	*3.0*	*21.4*	*49.3*	*25.4*
Greece	Total	10.28	*2.6*	*5.0*	*27.6*	*9.1*	*35.8*	*19.9*
	M	10.62	*1.5*	*3.5*	*26.1*	*10.4*	*37.7*	*20.7*
	F	9.95	*3.7*	*6.3*	*28.9*	*7.9*	*34.0*	*19.2*
Hungary	Total	11.13	*0.6*	*0.4*	*5.5*	*26.9*	*52.1*	*14.5*
	M	11.43	*0.5*	*0.4*	*3.3*	*23.4*	*58.4*	*14.1*
	F	10.88	*0.6*	*0.5*	*7.4*	*29.9*	*46.7*	*14.8*
Iceland	Total	12.20	*0.0*	*0.0*	*31.1*	*0.6*	*34.4*	*33.9*
	M	12.44	*0.0*	*0.0*	*27.1*	*0.7*	*38.7*	*33.6*
	F	11.96	*0.0*	*0.0*	*35.1*	*0.6*	*30.1*	*34.2*
Ireland	Total	11.95	*0.5*	*0.0*	*15.3*	*20.2*	*21.3*	*42.7*
	M	11.90	*0.5*	*0.0*	*15.9*	*21.3*	*19.4*	*42.9*
	F	12.00	*0.4*	*0.0*	*14.8*	*19.1*	*23.1*	*42.6*
Italy	Total	9.81	*1.1*	*3.6*	*20.1*	*30.7*	*33.0*	*11.6*
	M	10.03	*0.8*	*2.3*	*16.7*	*34.6*	*34.4*	*11.2*
	F	9.60	*1.3*	*4.8*	*23.2*	*27.0*	*31.7*	*11.9*
Latvia	Total	12.33	*0.5*	*0.2*	*4.0*	*19.3*	*44.2*	*31.8*
	M	12.23	*0.4*	*0.1*	*3.1*	*20.7*	*47.5*	*28.2*
	F	12.41	*0.6*	*0.2*	*4.7*	*18.2*	*41.6*	*34.7*
Lithuania	Total	12.79	*0.2*	*1.4*	*7.2*	*9.4*	*37.2*	*44.5*
	M	12.69	*0.2*	*0.7*	*5.1*	*10.7*	*46.1*	*37.2*
	F	12.87	*0.2*	*1.9*	*8.9*	*8.4*	*30.1*	*50.4*
Luxembourg	Total	11.20	*6.4*	*0.0*	*18.8*	*19.2*	*30.8*	*24.9*
	M	11.69	*5.6*	*0.0*	*16.1*	*17.5*	*32.0*	*28.8*
	F	10.72	*7.1*	*0.0*	*21.3*	*20.8*	*29.8*	*21.1*
Malta	Total	9.61	*0.7*	*4.8*	*24.9*	*44.3*	*6.1*	*19.2*
	M	10.15	*0.7*	*2.2*	*22.6*	*45.4*	*6.3*	*22.8*
	F	9.10	*0.6*	*7.3*	*27.1*	*43.3*	*6.0*	*15.7*
Montenegro	Total	10.80	*3.2*	*1.2*	*8.1*	*18.4*	*52.8*	*16.3*
	M	11.52	*1.2*	*0.5*	*4.9*	*16.0*	*58.8*	*18.5*
	F	10.14	*4.9*	*1.9*	*11.0*	*20.7*	*47.3*	*14.3*
Netherlands	Total	11.49	*3.2*	*0.0*	*10.0*	*21.7*	*38.2*	*26.8*
	M	11.80	*2.9*	*0.0*	*8.4*	*19.0*	*40.3*	*29.4*
	F	11.19	*3.5*	*0.0*	*11.6*	*24.3*	*36.2*	*24.3*
Norway	Total	12.65	*0.0*	*0.0*	*0.3*	*24.0*	*44.1*	*31.6*
	M	12.59	*0.0*	*0.0*	*0.3*	*22.9*	*47.4*	*29.5*
	F	12.71	*0.0*	*0.0*	*0.4*	*25.1*	*40.9*	*33.6*
Poland	Total	11.93	*1.0*	*0.4*	*0.3*	*17.3*	*61.1*	*20.0*
	M	11.93	*0.5*	*0.3*	*0.4*	*14.9*	*67.4*	*16.5*
	F	11.93	*1.4*	*0.4*	*0.2*	*19.4*	*55.5*	*23.1*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Portugal	Total	7.27	*6.4*	*33.7*	*10.7*	*21.2*	*15.4*	*12.6*
	M	7.40	*4.5*	*32.6*	*11.8*	*24.4*	*15.9*	*10.8*
	F	7.15	*8.2*	*34.7*	*9.8*	*18.2*	*14.9*	*14.3*
Republic of Moldova	Total	10.29	*0.2*	*1.8*	*9.1*	*26.5*	*48.2*	*14.2*
	M	10.42	*0.1*	*1.1*	*7.0*	*29.3*	*49.1*	*13.3*
	F	10.18	*0.3*	*2.4*	*10.9*	*24.1*	*47.4*	*14.9*
Romania	Total	10.52	*2.5*	*1.1*	*9.5*	*22.9*	*49.6*	*14.3*
	M	11.03	*1.5*	*0.8*	*6.6*	*19.9*	*56.3*	*14.8*
	F	10.06	*3.4*	*1.4*	*12.1*	*25.7*	*43.6*	*13.8*
Russian Federation	Total	10.44	*0.2*	*0.1*	*3.8*	*7.5*	*67.2*	*21.2*
	M	10.46	*0.2*	*0.1*	*2.8*	*7.1*	*70.1*	*19.7*
	F	10.42	*0.3*	*0.2*	*4.5*	*7.8*	*64.9*	*22.3*
Serbia	Total	10.55	*1.9*	*2.1*	*10.8*	*19.5*	*51.1*	*14.6*
	M	11.09	*0.5*	*0.8*	*7.6*	*19.3*	*57.2*	*14.6*
	F	10.04	*3.2*	*3.3*	*13.8*	*19.7*	*45.4*	*14.6*
Slovakia	Total	12.13	*0.2*	*0.0*	*0.2*	*16.5*	*68.7*	*14.3*
	M	12.37	*0.2*	*0.0*	*0.3*	*11.2*	*73.1*	*15.1*
	F	11.91	*0.3*	*0.0*	*0.2*	*21.2*	*64.7*	*13.6*
Slovenia	Total	11.85	*0.5*	*1.0*	*2.1*	*19.4*	*58.8*	*18.2*
	M	11.90	*0.3*	*0.8*	*3.1*	*14.0*	*65.8*	*16.0*
	F	11.80	*0.6*	*1.1*	*1.1*	*24.4*	*52.4*	*20.3*
Spain	Total	8.99	*1.7*	*9.3*	*19.7*	*31.6*	*18.1*	*19.6*
	M	9.11	*1.0*	*8.0*	*19.1*	*33.8*	*19.6*	*18.4*
	F	8.88	*2.3*	*10.5*	*20.3*	*29.6*	*16.6*	*20.7*
Sweden	Total	12.50	*0.0*	*0.0*	*10.9*	*9.8*	*44.2*	*35.0*
	M	12.33	*0.0*	*0.0*	*11.1*	*11.0*	*45.9*	*32.0*
	F	12.66	*0.0*	*0.0*	*10.8*	*8.7*	*42.7*	*37.9*
Switzerland	Total	12.66	*0.0*	*0.0*	*2.7*	*21.7*	*52.0*	*23.6*
	M	13.13	*0.0*	*0.0*	*2.4*	*16.2*	*50.1*	*31.3*
	F	12.22	*0.0*	*0.0*	*3.1*	*26.8*	*53.8*	*16.3*
TFYR Macedonia	Total	9.22	*4.1*	*12.6*	*9.3*	*21.1*	*40.4*	*12.5*
	M	10.12	*1.6*	*8.1*	*8.5*	*20.2*	*47.9*	*13.8*
	F	8.35	*6.5*	*17.0*	*10.1*	*22.0*	*33.1*	*11.2*
Ukraine	Total	10.07	*0.2*	*0.8*	*5.3*	*9.1*	*66.1*	*18.4*
	M	10.15	*0.1*	*0.4*	*4.4*	*8.4*	*68.8*	*17.9*
	F	10.00	*0.2*	*1.2*	*6.1*	*9.8*	*64.0*	*18.8*
United Kingdom	Total	10.44	*0.9*	*0.0*	*28.3*	*35.9*	*8.3*	*26.5*
	M	10.58	*1.0*	*0.0*	*26.7*	*36.0*	*8.6*	*27.8*
	F	10.31	*0.9*	*0.0*	*29.8*	*35.8*	*8.1*	*25.3*
NORTHERN AMERICA								
Canada	Total	13.54	*0.9*	*0.5*	*5.4*	*6.8*	*31.6*	*54.8*
	M	13.59	*0.8*	*0.5*	*5.3*	*7.0*	*31.0*	*55.5*
	F	13.50	*1.0*	*0.5*	*5.6*	*6.6*	*32.2*	*54.1*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
United States of America	Total	12.86	*0.7*	*0.7*	*3.9*	*7.1*	*51.6*	*36.0*
	M	12.85	*0.7*	*0.8*	*4.1*	*7.2*	*51.2*	*36.1*
	F	12.87	*0.7*	*0.7*	*3.8*	*7.0*	*51.9*	*35.9*
LATIN AMERICA								
Argentina	Total	9.72	*3.0*	*11.8*	*29.7*	*13.2*	*28.3*	*13.9*
	M	9.57	*2.8*	*11.5*	*30.9*	*14.8*	*29.1*	*10.8*
	F	9.85	*3.2*	*12.1*	*28.7*	*11.7*	*27.6*	*16.7*
Aruba	Total	8.59	*8.4*	*7.7*	*22.8*	*29.0*	*8.8*	*23.4*
	M	8.75	*7.5*	*7.2*	*21.8*	*31.4*	*7.7*	*24.4*
	F	8.46	*9.1*	*8.1*	*23.7*	*26.9*	*9.6*	*22.5*
Bahamas	Total	9.46	*1.2*	*6.4*	*16.8*	*53.3*	*9.4*	*12.9*
	M	9.28	*1.3*	*6.3*	*18.4*	*54.9*	*7.4*	*11.7*
	F	9.62	*1.1*	*6.4*	*15.3*	*51.9*	*11.2*	*14.0*
Belize	Total	6.53	*7.7*	*31.9*	*33.4*	*13.1*	*2.7*	*11.3*
	M	6.55	*7.7*	*31.3*	*34.4*	*12.7*	*2.3*	*11.6*
	F	6.51	*7.7*	*32.4*	*32.5*	*13.4*	*3.1*	*10.9*
Bolivia	Total	7.83	*11.4*	*21.7*	*16.7*	*17.0*	*18.4*	*14.8*
	M	8.84	*5.9*	*18.5*	*17.5*	*19.3*	*20.2*	*18.6*
	F	6.88	*16.6*	*24.7*	*15.9*	*14.9*	*16.7*	*11.2*
Brazil	Total	6.97	*10.9*	*17.3*	*20.9*	*15.0*	*24.7*	*11.3*
	M	6.79	*11.0*	*18.0*	*21.6*	*15.3*	*24.2*	*10.0*
	F	7.14	*10.8*	*16.6*	*20.3*	*14.7*	*25.1*	*12.5*
Colombia	Total	7.83	*8.2*	*18.1*	*27.9*	*6.7*	*21.5*	*17.7*
	M	7.75	*8.4*	*18.3*	*28.1*	*6.7*	*21.4*	*17.1*
	F	7.91	*8.0*	*17.8*	*27.7*	*6.7*	*21.5*	*18.3*
Costa Rica	Total	8.10	*4.3*	*15.7*	*38.6*	*10.2*	*14.3*	*16.8*
	M	8.08	*4.4*	*15.2*	*39.7*	*10.2*	*13.8*	*16.8*
	F	8.12	*4.2*	*16.2*	*37.6*	*10.2*	*14.9*	*16.9*
Cuba	Total	10.51	*2.3*	*6.4*	*13.8*	*29.1*	*37.6*	*10.9*
	M	10.58	*2.1*	*5.4*	*12.7*	*32.4*	*37.3*	*10.2*
	F	10.44	*2.4*	*7.4*	*14.9*	*25.9*	*37.9*	*11.5*
Dominican Republic	Total	8.65	*1.3*	*25.0*	*11.1*	*27.5*	*19.2*	*16.0*
	M	8.44	*1.3*	*25.4*	*11.7*	*29.3*	*18.2*	*14.1*
	F	8.87	*1.3*	*24.5*	*10.5*	*25.7*	*20.1*	*17.9*
Ecuador	Total	8.07	*8.8*	*16.5*	*27.9*	*11.9*	*15.2*	*19.8*
	M	8.15	*7.4*	*15.9*	*29.8*	*12.4*	*15.0*	*19.5*
	F	7.98	*10.1*	*17.0*	*26.0*	*11.4*	*15.4*	*20.1*
El Salvador	Total	6.39	*21.2*	*24.4*	*14.7*	*14.9*	*14.2*	*10.6*
	M	6.76	*18.3*	*23.3*	*15.4*	*17.0*	*14.7*	*11.3*
	F	6.10	*23.4*	*25.2*	*14.2*	*13.3*	*13.9*	*10.0*
French Guiana	Total	8.38	*15.9*	*0.0*	*28.7*	*12.8*	*26.6*	*16.0*
	M	8.58	*14.8*	*0.0*	*28.1*	*12.6*	*28.3*	*16.2*
	F	8.19	*17.1*	*0.0*	*29.4*	*12.9*	*24.9*	*15.7*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Guadeloupe	Total	9.27	*2.0*	*10.7*	*25.2*	*13.6*	*32.2*	*16.2*
	M	9.18	*2.3*	*10.6*	*26.0*	*13.1*	*32.7*	*15.2*
	F	9.35	*1.7*	*10.9*	*24.6*	*13.9*	*31.8*	*17.0*
Guatemala	Total	5.01	*28.9*	*27.7*	*18.7*	*8.7*	*10.1*	*5.8*
	M	5.52	*22.7*	*29.0*	*21.4*	*9.8*	*10.3*	*6.8*
	F	4.57	*34.3*	*26.6*	*16.5*	*7.8*	*10.0*	*4.9*
Guyana	Total	9.46	*2.3*	*5.3*	*16.3*	*29.2*	*36.6*	*10.3*
	M	9.24	*2.4*	*5.8*	*18.8*	*30.8*	*32.9*	*9.3*
	F	9.68	*2.1*	*4.8*	*13.8*	*27.8*	*40.2*	*11.3*
Haiti	Total	4.77	*33.2*	*26.5*	*13.1*	*14.5*	*9.0*	*3.8*
	M	5.45	*26.5*	*27.8*	*13.5*	*16.3*	*11.1*	*4.8*
	F	4.13	*39.5*	*25.2*	*12.7*	*12.8*	*6.9*	*2.8*
Honduras	Total	5.71	*19.8*	*25.6*	*29.8*	*7.2*	*11.3*	*6.4*
	M	5.66	*19.6*	*25.9*	*31.0*	*7.2*	*9.6*	*6.7*
	F	5.76	*19.9*	*25.2*	*28.7*	*7.2*	*12.8*	*6.1*
Chile	Total	10.21	*3.3*	*10.7*	*17.7*	*17.1*	*36.5*	*14.8*
	M	10.36	*3.0*	*9.9*	*17.6*	*16.9*	*37.0*	*15.6*
	F	10.06	*3.6*	*11.4*	*17.7*	*17.2*	*36.0*	*14.1*
Jamaica	Total	9.23	*0.8*	*7.5*	*16.8*	*50.3*	*8.9*	*15.7*
	M	8.88	*0.9*	*7.7*	*18.9*	*53.2*	*7.4*	*12.0*
	F	9.55	*0.7*	*7.3*	*15.0*	*47.6*	*10.3*	*19.1*
Martinique	Total	9.43	*1.0*	*11.3*	*24.2*	*13.9*	*31.9*	*17.6*
	M	9.33	*1.2*	*11.1*	*25.4*	*13.6*	*32.5*	*16.2*
	F	9.51	*1.0*	*11.5*	*23.3*	*14.1*	*31.4*	*18.8*
Mexico	Total	8.29	*9.3*	*15.9*	*21.7*	*26.4*	*12.7*	*14.1*
	M	8.60	*7.8*	*15.5*	*21.3*	*26.2*	*13.6*	*15.5*
	F	8.01	*10.7*	*16.3*	*22.0*	*26.5*	*11.8*	*12.8*
Netherlands Antilles	Total	8.46	*0.6*	*8.4*	*28.7*	*35.8*	*16.8*	*9.7*
	M	8.54	*0.4*	*8.1*	*28.3*	*36.1*	*16.4*	*10.7*
	F	8.39	*0.6*	*8.6*	*29.1*	*35.5*	*17.2*	*9.0*
Nicaragua	Total	5.86	*23.2*	*25.0*	*21.4*	*8.2*	*12.5*	*9.7*
	M	5.81	*22.8*	*25.8*	*21.7*	*8.4*	*11.6*	*9.7*
	F	5.89	*23.6*	*24.2*	*21.0*	*8.1*	*13.3*	*9.7*
Panama	Total	9.41	*6.9*	*9.9*	*26.0*	*12.0*	*24.9*	*20.2*
	M	9.21	*6.2*	*10.3*	*28.1*	*12.8*	*25.2*	*17.4*
	F	9.60	*7.6*	*9.4*	*24.0*	*11.2*	*24.7*	*23.1*
Paraguay	Total	7.77	*4.2*	*26.3*	*31.0*	*11.7*	*14.1*	*12.6*
	M	7.77	*3.4*	*25.8*	*32.1*	*12.7*	*14.6*	*11.4*
	F	7.77	*4.9*	*26.9*	*29.9*	*10.7*	*13.7*	*13.9*
Peru	Total	9.40	*7.5*	*17.8*	*10.5*	*6.8*	*32.8*	*24.6*
	M	9.91	*3.8*	*16.5*	*10.5*	*7.5*	*37.0*	*24.7*
	F	8.90	*11.2*	*19.0*	*10.4*	*6.1*	*28.7*	*24.6*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Puerto Rico	Total	11.81	*3.0*	*3.7*	*10.8*	*9.2*	*42.2*	*31.1*
	M	11.64	*2.9*	*3.5*	*11.2*	*10.2*	*45.2*	*27.0*
	F	11.96	*3.1*	*3.8*	*10.4*	*8.4*	*39.7*	*34.7*
Saint Lucia	Total	9.60	*2.9*	*3.1*	*46.7*	*14.0*	*17.6*	*15.7*
	M	9.38	*3.1*	*3.4*	*50.2*	*13.1*	*15.7*	*14.5*
	F	9.79	*2.8*	*2.8*	*43.5*	*14.7*	*19.3*	*16.8*
Saint Vincent and the Grenadines	Total	9.97	*0.7*	*4.6*	*52.7*	*12.8*	*16.6*	*12.6*
	M	9.63	*0.8*	*5.2*	*57.4*	*11.5*	*13.8*	*11.2*
	F	10.32	*0.7*	*4.0*	*47.9*	*14.0*	*19.4*	*14.1*
Suriname	Total	9.30	*0.4*	*8.3*	*29.5*	*39.1*	*16.1*	*6.4*
	M	9.46	*0.3*	*5.7*	*30.7*	*41.4*	*15.5*	*6.5*
	F	9.16	*0.6*	*10.9*	*28.4*	*37.0*	*16.7*	*6.4*
Trinidad and Tobago	Total	9.60	*1.8*	*6.6*	*26.7*	*39.5*	*19.0*	*6.4*
	M	9.62	*1.5*	*6.4*	*26.7*	*41.4*	*17.9*	*6.2*
	F	9.58	*2.1*	*6.7*	*26.8*	*37.9*	*19.9*	*6.6*
Uruguay	Total	8.54	*1.4*	*11.6*	*36.2*	*25.8*	*12.1*	*12.9*
	M	8.38	*1.2*	*11.6*	*37.0*	*28.5*	*10.9*	*10.7*
	F	8.68	*1.5*	*11.6*	*35.4*	*23.5*	*13.1*	*14.9*
Venezuela (Bolivarian Republic of)	Total	8.94	*6.4*	*11.9*	*28.6*	*13.2*	*18.8*	*21.0*
	M	8.67	*6.2*	*12.7*	*30.4*	*13.6*	*18.8*	*18.2*
	F	9.20	*6.6*	*11.0*	*26.9*	*12.8*	*18.9*	*23.8*
ASIA								
Armenia	Total	10.35	*1.0*	*0.6*	*3.5*	*7.7*	*64.9*	*22.3*
	M	10.41	*0.7*	*0.4*	*3.3*	*8.4*	*64.9*	*22.4*
	F	10.31	*1.2*	*0.7*	*3.6*	*7.2*	*64.9*	*22.3*
Azerbaijan	Total	9.94	*1.8*	*1.3*	*5.4*	*12.0*	*65.2*	*14.2*
	M	10.41	*0.9*	*0.7*	*3.7*	*10.0*	*66.8*	*18.0*
	F	9.52	*2.7*	*1.8*	*7.0*	*13.8*	*63.8*	*10.9*
Bahrain	Total	9.63	*9.0*	*9.2*	*10.5*	*18.6*	*32.7*	*20.0*
	M	9.51	*8.0*	*9.3*	*11.7*	*21.5*	*32.1*	*17.4*
	F	9.87	*11.0*	*9.1*	*8.0*	*12.6*	*33.9*	*25.4*
Bangladesh	Total	4.67	*39.5*	*17.2*	*16.9*	*12.2*	*6.1*	*8.0*
	M	5.35	*34.6*	*16.3*	*17.4*	*13.4*	*7.4*	*10.9*
	F	3.98	*44.6*	*18.2*	*16.4*	*11.1*	*4.7*	*5.0*
Bhutan	Total	3.22	*59.7*	*17.5*	*1.2*	*12.8*	*3.0*	*5.9*
	M	4.12	*48.5*	*22.8*	*1.5*	*15.6*	*3.5*	*8.0*
	F	2.10	*73.5*	*10.9*	*0.7*	*9.3*	*2.4*	*3.2*
Cambodia	Total	4.18	*28.5*	*27.0*	*24.0*	*12.9*	*5.8*	*1.9*
	M	5.16	*18.4*	*26.0*	*28.0*	*16.1*	*8.6*	*3.0*
	F	3.32	*37.3*	*27.9*	*20.6*	*10.1*	*3.3*	*0.9*
Cyprus	Total	11.77	*1.0*	*3.8*	*16.5*	*8.1*	*36.7*	*34.0*
	M	12.03	*0.5*	*2.1*	*15.2*	*8.7*	*39.7*	*33.9*
	F	11.50	*1.5*	*5.4*	*17.8*	*7.6*	*33.6*	*34.1*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Georgia	Total	12.66	*0.2*	*0.5*	*4.1*	*6.1*	*36.1*	*53.0*
	M	12.67	*0.1*	*0.3*	*3.4*	*6.0*	*38.6*	*51.5*
	F	12.65	*0.2*	*0.7*	*4.7*	*6.1*	*34.1*	*54.1*
China	Total	7.36	*10.1*	*0.0*	*27.9*	*41.6*	*13.1*	*7.4*
	M	7.94	*5.0*	*0.0*	*25.6*	*45.9*	*15.1*	*8.5*
	F	6.76	*15.3*	*0.0*	*30.2*	*37.2*	*11.0*	*6.3*
China, Hong Kong SAR	Total	10.93	*6.4*	*8.3*	*16.4*	*15.5*	*29.9*	*23.4*
	M	11.39	*3.6*	*7.6*	*17.1*	*17.0*	*28.8*	*25.8*
	F	10.53	*8.8*	*8.9*	*15.9*	*14.2*	*30.8*	*21.4*
China, Macao SAR	Total	9.67	*4.0*	*8.9*	*20.2*	*25.8*	*22.8*	*18.4*
	M	9.90	*2.2*	*8.4*	*20.8*	*26.2*	*23.7*	*18.8*
	F	9.47	*5.6*	*9.3*	*19.6*	*25.4*	*22.0*	*18.1*
India	Total	5.53	*39.3*	*8.1*	*14.3*	*11.0*	*18.2*	*9.2*
	M	6.77	*27.7*	*8.9*	*15.5*	*13.2*	*22.7*	*12.0*
	F	4.22	*51.4*	*7.3*	*13.0*	*8.6*	*13.4*	*6.3*
Indonesia	Total	7.96	*10.1*	*8.6*	*36.5*	*15.7*	*21.3*	*7.8*
	M	8.45	*7.1*	*7.6*	*35.4*	*16.8*	*24.8*	*8.3*
	F	7.49	*12.9*	*9.6*	*37.5*	*14.7*	*18.0*	*7.3*
Iran (Islamic Republic of)	Total	7.20	*23.0*	*7.9*	*20.4*	*15.7*	*20.9*	*12.1*
	M	7.91	*16.9*	*6.4*	*22.0*	*18.5*	*22.6*	*13.6*
	F	6.48	*29.1*	*9.4*	*18.7*	*12.8*	*19.2*	*10.6*
Iraq	Total	7.46	*21.2*	*8.5*	*26.9*	*10.4*	*14.2*	*18.8*
	M	8.57	*12.7*	*6.4*	*28.6*	*12.3*	*17.1*	*23.0*
	F	6.43	*29.1*	*10.5*	*25.4*	*8.7*	*11.5*	*14.8*
Israel	Total	11.47	*2.9*	*5.2*	*16.1*	*18.3*	*24.1*	*33.4*
	M	11.31	*1.6*	*5.2*	*18.2*	*21.0*	*23.2*	*30.8*
	F	11.62	*4.1*	*5.3*	*14.1*	*15.8*	*24.9*	*35.8*
Japan	Total	12.46	*0.1*	*1.3*	*11.2*	*6.5*	*45.8*	*35.0*
	M	12.73	*0.1*	*0.7*	*9.0*	*7.8*	*44.4*	*38.1*
	F	12.21	*0.1*	*1.9*	*13.2*	*5.2*	*47.2*	*32.2*
Jordan	Total	9.57	*14.9*	*5.5*	*14.4*	*14.8*	*22.8*	*27.6*
	M	9.96	*11.1*	*5.6*	*15.2*	*16.5*	*23.6*	*28.0*
	F	9.17	*19.0*	*5.4*	*13.5*	*13.1*	*22.0*	*27.1*
Kazakhstan	Total	10.57	*0.3*	*1.5*	*2.9*	*10.3*	*61.1*	*23.8*
	M	10.62	*0.2*	*1.0*	*2.0*	*10.6*	*63.7*	*22.3*
	F	10.53	*0.4*	*1.8*	*3.7*	*10.1*	*58.9*	*25.1*
Kuwait	Total	7.74	*14.2*	*26.5*	*4.1*	*16.5*	*19.8*	*18.9*
	M	7.51	*13.8*	*28.3*	*4.3*	*17.1*	*19.8*	*16.8*
	F	8.16	*14.9*	*23.2*	*3.8*	*15.5*	*19.7*	*22.9*
Kyrgyzstan	Total	10.26	*0.6*	*0.6*	*3.2*	*9.1*	*71.8*	*14.6*
	M	10.28	*0.3*	*0.4*	*2.6*	*9.7*	*73.9*	*13.1*
	F	10.23	*0.9*	*0.9*	*3.9*	*8.5*	*69.9*	*16.0*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Lao People's Democratic Republic	Total	5.18	*26.8*	*21.1*	*21.9*	*14.2*	*9.8*	*6.1*
	M	6.34	*16.3*	*20.9*	*24.0*	*17.2*	*12.6*	*9.0*
	F	4.09	*36.8*	*21.3*	*20.0*	*11.4*	*7.2*	*3.3*
Lebanon	Total	8.69	*10.3*	*5.0*	*22.3*	*28.5*	*16.8*	*17.2*
	M	8.97	*7.0*	*5.4*	*24.7*	*27.5*	*16.9*	*18.5*
	F	8.44	*13.3*	*4.6*	*20.1*	*29.4*	*16.6*	*16.0*
Malaysia	Total	9.89	*8.9*	*7.4*	*13.4*	*20.9*	*34.9*	*14.5*
	M	10.23	*6.2*	*6.8*	*13.5*	*22.8*	*35.6*	*15.1*
	F	9.54	*11.6*	*8.1*	*13.4*	*19.0*	*34.2*	*13.8*
Maldives	Total	5.52	*20.8*	*24.5*	*27.0*	*20.9*	*1.7*	*5.0*
	M	5.56	*21.3*	*22.6*	*28.5*	*19.7*	*2.0*	*5.9*
	F	5.49	*20.4*	*26.4*	*25.6*	*22.1*	*1.4*	*4.1*
Mongolia	Total	9.22	*0.8*	*2.1*	*10.5*	*23.8*	*50.3*	*12.3*
	M	9.08	*0.6*	*1.8*	*11.0*	*29.0*	*46.3*	*11.3*
	F	9.36	*1.1*	*2.4*	*10.1*	*19.0*	*54.1*	*13.3*
Myanmar	Total	6.88	*10.5*	*8.2*	*40.9*	*19.6*	*11.3*	*9.6*
	M	7.05	*11.4*	*5.9*	*37.6*	*23.2*	*13.3*	*8.6*
	F	6.73	*9.6*	*10.3*	*44.0*	*16.1*	*9.5*	*10.4*
Nepal	Total	3.84	*54.4*	*5.5*	*9.7*	*6.8*	*19.1*	*4.5*
	M	5.19	*39.9*	*6.7*	*11.7*	*8.6*	*25.7*	*7.4*
	F	2.61	*67.4*	*4.4*	*7.8*	*5.3*	*13.2*	*1.8*
Occupied Palestinian Territory	Total	8.26	*13.8*	*10.4*	*19.8*	*20.8*	*17.2*	*18.0*
	M	9.17	*6.9*	*10.8*	*20.4*	*21.3*	*18.5*	*22.2*
	F	7.35	*20.7*	*10.0*	*19.3*	*20.3*	*15.9*	*13.8*
Pakistan	Total	3.78	*57.3*	*5.0*	*9.9*	*9.1*	*13.7*	*5.0*
	M	4.90	*45.4*	*6.0*	*11.8*	*12.5*	*17.6*	*6.7*
	F	2.64	*69.6*	*4.0*	*7.9*	*5.5*	*9.7*	*3.3*
Philippines	Total	9.27	*2.3*	*12.5*	*24.5*	*3.8*	*27.6*	*29.2*
	M	9.20	*2.1*	*13.5*	*24.1*	*4.0*	*28.2*	*28.1*
	F	9.33	*2.6*	*11.6*	*25.0*	*3.7*	*27.0*	*30.2*
Qatar	Total	9.07	*4.2*	*24.5*	*21.0*	*11.0*	*21.2*	*18.1*
	M	8.76	*3.8*	*25.7*	*23.3*	*11.3*	*21.1*	*14.9*
	F	10.36	*6.1*	*19.6*	*11.3*	*9.8*	*21.6*	*31.6*
Republic of Korea	Total	11.85	*4.7*	*1.0*	*11.4*	*10.2*	*37.2*	*35.6*
	M	12.63	*1.8*	*0.6*	*8.4*	*9.5*	*38.6*	*41.1*
	F	11.11	*7.4*	*1.4*	*14.2*	*10.9*	*35.9*	*30.4*
Saudi Arabia	Total	9.42	*16.4*	*5.9*	*14.9*	*16.3*	*19.2*	*27.4*
	M	10.30	*8.5*	*4.8*	*17.0*	*19.3*	*21.5*	*28.9*
	F	8.11	*28.1*	*7.4*	*11.8*	*11.8*	*15.8*	*25.1*
Singapore	Total	11.04	*7.0*	*9.0*	*7.4*	*10.6*	*19.1*	*47.0*
	M	11.65	*3.9*	*8.4*	*7.1*	*10.9*	*17.7*	*51.9*
	F	10.44	*9.9*	*9.5*	*7.6*	*10.3*	*20.4*	*42.2*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Syrian Arab Republic	Total	6.01	*22.0*	*31.1*	*17.3*	*9.9*	*8.4*	*11.3*
	M	6.74	*13.5*	*32.9*	*19.6*	*11.2*	*9.8*	*13.1*
	F	5.30	*30.3*	*29.3*	*15.2*	*8.6*	*7.0*	*9.6*
Tajikistan	Total	10.50	*3.1*	*0.5*	*5.4*	*15.0*	*63.0*	*13.0*
	M	11.17	*1.9*	*0.0*	*2.8*	*11.4*	*64.2*	*19.7*
	F	9.90	*4.1*	*0.8*	*7.7*	*18.2*	*62.0*	*7.2*
Thailand	Total	7.51	*5.7*	*36.8*	*20.1*	*13.1*	*11.1*	*13.1*
	M	7.78	*3.9*	*34.4*	*23.3*	*12.8*	*12.7*	*12.9*
	F	7.27	*7.4*	*39.0*	*17.2*	*13.4*	*9.6*	*13.4*
Timor-Leste	Total	4.36	*47.7*	*14.4*	*10.8*	*7.2*	*15.8*	*4.0*
	M	5.19	*39.0*	*17.4*	*11.0*	*7.2*	*19.8*	*5.6*
	F	3.51	*56.7*	*11.4*	*10.6*	*7.2*	*11.7*	*2.3*
Turkey	Total	7.04	*10.7*	*4.3*	*46.7*	*9.5*	*18.7*	*10.0*
	M	7.95	*3.8*	*3.1*	*45.8*	*12.5*	*22.6*	*12.2*
	F	6.16	*17.4*	*5.5*	*47.6*	*6.5*	*15.0*	*7.9*
Turkmenistan	Total	10.79	*0.4*	*0.5*	*2.0*	*7.2*	*76.3*	*13.7*
	M	10.97	*0.2*	*0.3*	*1.3*	*6.4*	*75.9*	*16.0*
	F	10.63	*0.6*	*0.7*	*2.6*	*8.0*	*76.7*	*11.5*
United Arab Emirates	Total	9.36	*9.2*	*12.8*	*11.7*	*16.6*	*31.8*	*17.9*
	M	8.98	*9.9*	*14.1*	*12.9*	*18.2*	*30.0*	*14.9*
	F	10.57	*7.0*	*8.6*	*7.8*	*11.6*	*37.4*	*27.5*
Viet Nam	Total	7.18	*6.2*	*17.4*	*29.4*	*29.8*	*9.8*	*7.3*
	M	7.65	*4.0*	*14.2*	*30.3*	*32.1*	*11.2*	*8.2*
	F	6.74	*8.3*	*20.4*	*28.6*	*27.7*	*8.6*	*6.3*
AUSTRALIA & OCEANIA								
Australia	Total	11.96	*0.8*	*1.1*	*11.9*	*15.0*	*38.3*	*33.0*
	M	12.12	*0.7*	*0.8*	*9.7*	*12.6*	*45.6*	*30.7*
	F	11.81	*0.9*	*1.4*	*14.0*	*17.3*	*31.3*	*35.2*
French Polynesia	Total	9.97	*4.4*	*4.9*	*16.2*	*20.3*	*35.2*	*19.1*
	M	9.81	*4.5*	*5.1*	*17.6*	*20.1*	*34.5*	*18.1*
	F	10.14	*4.2*	*4.6*	*14.6*	*20.5*	*35.9*	*20.2*
New Caledonia	Total	10.01	*6.5*	*5.5*	*14.0*	*18.7*	*30.5*	*24.9*
	M	10.11	*5.8*	*5.2*	*13.7*	*19.1*	*31.7*	*24.5*
	F	9.91	*7.2*	*5.7*	*14.3*	*18.3*	*29.3*	*25.2*
New Zealand	Total	12.92	*0.6*	*0.8*	*8.6*	*13.9*	*41.7*	*34.4*
	M	12.98	*0.6*	*0.7*	*8.6*	*14.3*	*38.8*	*36.9*
	F	12.86	*0.6*	*0.8*	*8.7*	*13.6*	*44.3*	*32.1*
Samoa	Total	9.98	*0.6*	*1.4*	*41.1*	*34.0*	*8.2*	*14.7*
	M	9.89	*0.6*	*1.6*	*43.1*	*32.3*	*6.9*	*15.4*
	F	10.08	*0.5*	*1.3*	*39.1*	*35.7*	*9.5*	*13.9*
Tonga	Total	10.14	*1.2*	*1.1*	*22.7*	*48.7*	*13.0*	*13.3*
	M	10.25	*1.1*	*1.1*	*21.7*	*48.9*	*12.8*	*14.5*
	F	10.04	*1.2*	*1.1*	*23.7*	*48.6*	*13.2*	*12.2*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Vanuatu	Total	6.12	*19.7*	*22.2*	*29.8*	*14.2*	*10.3*	*3.8*
	M	6.56	*16.7*	*21.7*	*29.7*	*15.0*	*12.1*	*4.7*
	F	5.68	*22.7*	*22.6*	*29.9*	*13.4*	*8.5*	*2.9*
AFRICA								
Algeria	Total	7.97	*25.2*	*4.5*	*12.0*	*25.6*	*23.0*	*9.6*
	M	8.98	*15.5*	*4.6*	*13.2*	*31.1*	*25.9*	*9.7*
	F	6.97	*34.9*	*4.4*	*10.8*	*20.1*	*20.2*	*9.5*
Benin	Total	2.81	*58.5*	*18.1*	*10.9*	*7.3*	*3.2*	*1.9*
	M	3.97	*44.3*	*22.5*	*14.4*	*10.7*	*4.8*	*3.2*
	F	1.75	*71.6*	*14.0*	*7.7*	*4.2*	*1.7*	*0.7*
Burkina Faso	Total	1.68	*78.7*	*7.3*	*4.5*	*5.3*	*2.8*	*1.5*
	M	2.31	*71.7*	*9.0*	*6.1*	*6.9*	*4.1*	*2.3*
	F	1.11	*85.0*	*5.7*	*3.2*	*3.8*	*1.5*	*0.7*
Burundi	Total	2.77	*54.7*	*21.5*	*17.3*	*3.0*	*1.8*	*1.7*
	M	3.51	*44.4*	*25.3*	*21.5*	*3.8*	*2.5*	*2.6*
	F	2.10	*64.1*	*18.0*	*13.4*	*2.2*	*1.3*	*1.0*
Cameroon	Total	5.71	*26.0*	*18.2*	*32.8*	*10.4*	*8.5*	*4.2*
	M	6.72	*17.8*	*17.1*	*35.4*	*12.3*	*11.5*	*5.9*
	F	4.73	*33.9*	*19.3*	*30.2*	*8.5*	*5.5*	*2.5*
Cape Verde	Total	5.21	*16.7*	*43.0*	*15.8*	*16.0*	*4.6*	*3.9*
	M	5.81	*9.3*	*45.6*	*17.5*	*17.1*	*5.7*	*4.8*
	F	4.66	*23.6*	*40.5*	*14.2*	*15.0*	*3.7*	*3.0*
Central African Republic	Total	3.91	*38.0*	*27.6*	*21.4*	*8.2*	*3.3*	*1.5*
	M	5.05	*22.8*	*32.7*	*25.9*	*11.7*	*4.9*	*2.0*
	F	2.84	*52.2*	*22.8*	*17.2*	*4.9*	*1.9*	*0.9*
Comoros	Total	4.94	*38.4*	*13.4*	*25.9*	*12.8*	*4.0*	*5.5*
	M	5.81	*30.0*	*14.4*	*28.7*	*13.4*	*5.2*	*8.2*
	F	4.08	*46.7*	*12.3*	*23.2*	*12.2*	*2.7*	*2.9*
Congo	Total	7.19	*12.9*	*16.1*	*37.8*	*18.8*	*8.2*	*6.2*
	M	8.38	*5.7*	*14.6*	*36.3*	*22.3*	*11.2*	*9.9*
	F	6.02	*20.0*	*17.7*	*39.2*	*15.3*	*5.3*	*2.6*
Cote d'Ivoire	Total	3.41	*53.2*	*18.7*	*12.4*	*8.2*	*2.5*	*5.0*
	M	4.25	*45.5*	*19.2*	*14.0*	*10.6*	*3.9*	*6.7*
	F	2.49	*61.6*	*18.1*	*10.6*	*5.6*	*1.0*	*3.0*
Democratic Republic of the Congo	Total	6.29	*19.3*	*22.4*	*13.5*	*25.4*	*14.7*	*4.6*
	M	7.82	*8.3*	*18.6*	*13.9*	*30.9*	*20.9*	*7.4*
	F	4.82	*29.8*	*26.0*	*13.2*	*20.3*	*8.7*	*2.0*
Egypt	Total	6.77	*39.6*	*6.9*	*3.6*	*4.2*	*31.1*	*14.5*
	M	7.89	*29.7*	*8.5*	*4.2*	*5.0*	*35.4*	*17.3*
	F	5.68	*49.3*	*5.4*	*3.0*	*3.5*	*27.0*	*11.8*
Equatorial Guinea	Total	7.81	*9.1*	*10.7*	*24.1*	*31.2*	*19.2*	*5.7*
	M	9.09	*3.9*	*6.9*	*18.5*	*36.5*	*25.2*	*9.0*
	F	6.38	*14.8*	*14.9*	*30.4*	*25.2*	*12.6*	*2.1*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Ethiopia	Total	2.23	*64.7*	*18.0*	*9.0*	*2.4*	*3.1*	*2.8*
	M	3.16	*50.6*	*24.6*	*13.2*	*3.4*	*4.1*	*4.1*
	F	1.33	*78.3*	*11.6*	*5.0*	*1.4*	*2.2*	*1.5*
Gabon	Total	6.96	*14.1*	*18.7*	*34.4*	*18.1*	*8.8*	*5.9*
	M	7.67	*11.5*	*16.3*	*31.5*	*21.0*	*11.4*	*8.2*
	F	6.25	*16.7*	*21.0*	*37.3*	*15.1*	*6.2*	*3.7*
Gambia	Total	4.57	*47.2*	*14.4*	*9.1*	*16.4*	*7.7*	*5.2*
	M	5.83	*35.6*	*16.6*	*9.7*	*20.1*	*10.2*	*7.8*
	F	3.40	*58.0*	*12.3*	*8.5*	*13.0*	*5.4*	*2.8*
Ghana	Total	6.16	*41.5*	*4.1*	*9.8*	*24.9*	*13.7*	*6.0*
	M	7.10	*34.2*	*3.7*	*9.9*	*27.8*	*17.1*	*7.3*
	F	5.20	*48.9*	*4.5*	*9.7*	*22.0*	*10.3*	*4.7*
Guinea	Total	2.31	*73.4*	*4.6*	*8.0*	*7.6*	*2.9*	*3.6*
	M	3.31	*63.1*	*5.8*	*10.3*	*10.8*	*4.5*	*5.6*
	F	1.31	*83.6*	*3.5*	*5.6*	*4.4*	*1.2*	*1.6*
Guinea-Bissau	Total	3.27	*58.2*	*9.4*	*12.7*	*10.3*	*7.9*	*1.6*
	M	4.66	*41.7*	*11.8*	*17.9*	*14.2*	*12.0*	*2.3*
	F	1.95	*73.9*	*7.0*	*7.7*	*6.5*	*4.0*	*0.9*
Chad	Total	1.89	*69.2*	*16.4*	*7.3*	*3.7*	*2.1*	*1.3*
	M	2.83	*57.6*	*19.8*	*11.1*	*5.8*	*3.5*	*2.2*
	F	1.00	*80.4*	*13.2*	*3.7*	*1.6*	*0.7*	*0.4*
Kenya	Total	7.68	*15.8*	*14.2*	*16.9*	*22.3*	*26.5*	*4.3*
	M	8.55	*10.0*	*13.3*	*16.8*	*23.4*	*30.7*	*5.8*
	F	6.83	*21.5*	*15.2*	*17.0*	*21.3*	*22.3*	*2.7*
Lesotho	Total	6.45	*13.2*	*36.7*	*28.4*	*8.7*	*7.3*	*5.6*
	M	5.72	*22.2*	*35.9*	*21.6*	*7.4*	*7.4*	*5.6*
	F	7.10	*5.2*	*37.4*	*34.5*	*10.0*	*7.3*	*5.7*
Liberia	Total	1.61	*77.8*	*8.6*	*4.6*	*4.6*	*3.0*	*1.4*
	M	2.18	*71.6*	*9.9*	*5.6*	*6.3*	*4.4*	*2.2*
	F	1.06	*83.8*	*7.3*	*3.6*	*3.1*	*1.7*	*0.6*
Madagascar	Total	4.02	*24.6*	*42.1*	*19.5*	*8.3*	*3.1*	*2.4*
	M	4.36	*20.9*	*43.0*	*20.0*	*9.5*	*3.7*	*3.0*
	F	3.68	*28.3*	*41.2*	*19.0*	*7.0*	*2.6*	*1.9*
Malawi	Total	5.11	*32.3*	*24.1*	*13.2*	*20.2*	*8.8*	*1.4*
	M	6.35	*21.1*	*23.9*	*14.5*	*25.9*	*12.7*	*1.9*
	F	3.91	*43.1*	*24.3*	*11.9*	*14.7*	*5.1*	*0.9*
Mali	Total	1.40	*80.5*	*6.9*	*5.3*	*3.2*	*3.3*	*0.9*
	M	1.89	*74.4*	*8.6*	*6.9*	*4.2*	*4.5*	*1.4*
	F	0.96	*86.1*	*5.3*	*3.8*	*2.2*	*2.2*	*0.4*
Mauritius	Total	6.46	*7.2*	*32.6*	*33.8*	*14.7*	*8.5*	*3.2*
	M	6.88	*3.8*	*31.6*	*35.9*	*15.8*	*8.7*	*4.2*
	F	6.07	*10.4*	*33.6*	*31.9*	*13.6*	*8.2*	*2.3*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Morocco	Total	4.10	*52.0*	*8.0*	*15.7*	*10.8*	*7.2*	*6.2*
	M	5.02	*40.7*	*9.8*	*20.4*	*12.8*	*8.8*	*7.6*
	F	3.26	*62.3*	*6.5*	*11.4*	*9.1*	*5.9*	*4.9*
Mozambique	Total	1.67	*69.4*	*14.4*	*3.9*	*7.9*	*3.7*	*0.7*
	M	2.33	*58.1*	*19.0*	*5.5*	*11.1*	*5.3*	*1.0*
	F	1.10	*79.0*	*10.4*	*2.5*	*5.2*	*2.4*	*0.4*
Namibia	Total	7.87	*13.9*	*22.6*	*13.0*	*24.7*	*17.9*	*8.0*
	M	7.91	*14.3*	*22.4*	*11.8*	*23.8*	*19.2*	*8.5*
	F	7.83	*13.4*	*22.8*	*14.1*	*25.5*	*16.6*	*7.6*
Niger	Total	1.15	*81.3*	*9.5*	*5.1*	*2.2*	*0.8*	*1.0*
	M	1.52	*76.4*	*11.1*	*6.6*	*3.0*	*1.2*	*1.6*
	F	0.77	*86.2*	*7.9*	*3.6*	*1.3*	*0.5*	*0.4*
Nigeria	Total	6.13	*39.5*	*5.5*	*19.3*	*5.5*	*18.5*	*11.6*
	M	7.45	*29.6*	*4.7*	*20.6*	*6.3*	*23.8*	*15.0*
	F	4.82	*49.4*	*6.4*	*17.9*	*4.7*	*13.2*	*8.3*
Reunion	Total	8.70	*6.3*	*9.8*	*28.6*	*13.0*	*27.0*	*15.3*
	M	8.87	*6.3*	*8.9*	*27.7*	*12.3*	*29.3*	*15.5*
	F	8.55	*6.3*	*10.7*	*29.4*	*13.6*	*24.8*	*15.2*
Rwanda	Total	3.88	*32.9*	*32.5*	*24.8*	*4.3*	*4.5*	*0.9*
	M	4.24	*28.4*	*34.1*	*25.6*	*5.0*	*5.5*	*1.4*
	F	3.54	*37.1*	*31.1*	*24.1*	*3.7*	*3.5*	*0.5*
Sao Tome and Principe	Total	3.59	*13.2*	*49.3*	*23.4*	*8.5*	*4.3*	*1.3*
	M	4.22	*6.2*	*48.5*	*26.6*	*10.4*	*6.5*	*1.8*
	F	3.02	*19.6*	*50.0*	*20.5*	*6.7*	*2.3*	*0.9*
Senegal	Total	3.05	*63.6*	*6.3*	*16.0*	*6.4*	*4.3*	*3.5*
	M	3.71	*57.7*	*6.5*	*17.4*	*7.8*	*5.9*	*4.7*
	F	2.45	*69.1*	*6.1*	*14.6*	*5.1*	*2.8*	*2.3*
Sierra Leone	Total	3.59	*63.8*	*9.5*	*7.8*	*8.6*	*6.7*	*3.5*
	M	4.79	*53.9*	*10.3*	*9.9*	*11.6*	*9.3*	*5.2*
	F	2.48	*72.9*	*8.8*	*6.0*	*5.9*	*4.4*	*2.0*
Somalia	Total	3.49	*59.4*	*4.2*	*13.6*	*7.7*	*11.9*	*3.3*
	M	5.07	*44.2*	*4.4*	*16.5*	*10.1*	*19.1*	*5.7*
	F	1.99	*73.9*	*3.9*	*10.8*	*5.3*	*5.1*	*1.0*
South Africa	Total	8.94	*8.7*	*15.4*	*12.8*	*28.7*	*29.1*	*5.4*
	M	9.17	*7.0*	*15.4*	*12.5*	*29.0*	*30.3*	*5.7*
	F	8.72	*10.3*	*15.4*	*13.0*	*28.4*	*27.9*	*5.0*
Sudan	Total	2.86	*68.3*	*7.7*	*5.1*	*4.5*	*8.7*	*5.8*
	M	3.53	*60.9*	*9.3*	*6.2*	*5.7*	*10.7*	*7.2*
	F	2.19	*75.5*	*6.2*	*4.0*	*3.3*	*6.6*	*4.4*
Swaziland	Total	7.98	*14.9*	*20.0*	*22.0*	*13.1*	*19.0*	*10.9*
	M	8.34	*13.8*	*19.4*	*19.8*	*12.4*	*22.2*	*12.4*
	F	7.66	*16.0*	*20.5*	*24.1*	*13.8*	*16.1*	*9.6*

REGION / Country	Sex	MYS 25+	*Educational attainment, %*					
			none	*inc_ prim*	*prim*	*low_sec*	*up_sec*	*post_ sec*
Tunisia	Total	6.98	*29.2*	*1.2*	*30.7*	*18.1*	*10.3*	*10.5*
	M	8.12	*17.4*	*2.2*	*33.9*	*22.4*	*12.5*	*11.6*
	F	5.88	*40.6*	*0.3*	*27.7*	*13.9*	*8.1*	*9.5*
Uganda	Total	5.36	*24.1*	*35.8*	*24.6*	*9.7*	*2.5*	*3.3*
	M	6.28	*15.6*	*35.9*	*28.3*	*12.2*	*3.7*	*4.3*
	F	4.46	*32.4*	*35.7*	*21.0*	*7.2*	*1.4*	*2.3*
United Republic of Tanzania	Total	6.27	*21.1*	*12.1*	*57.5*	*6.3*	*1.7*	*1.3*
	M	6.88	*13.9*	*13.2*	*61.8*	*7.4*	*2.1*	*1.5*
	F	5.67	*28.0*	*11.0*	*53.3*	*5.2*	*1.4*	*1.1*
Zambia	Total	7.32	*11.7*	*23.7*	*27.7*	*20.1*	*10.8*	*5.9*
	M	8.34	*6.4*	*19.2*	*27.6*	*23.0*	*16.0*	*7.9*
	F	6.29	*17.0*	*28.3*	*27.8*	*17.3*	*5.7*	*3.9*
Zimbabwe	Total	9.16	*8.6*	*16.9*	*18.7*	*13.2*	*37.0*	*5.6*
	M	10.13	*4.7*	*13.3*	*17.8*	*13.1*	*43.6*	*7.6*
	F	8.26	*12.3*	*20.4*	*19.6*	*13.2*	*30.7*	*3.8*

Note: none = no education; inc_prim = incomplete ISCED 1, prim = ISCED 1; low_sec = ISCED 2; up_sec = ISCED 3, post_sec = ISCED 4, 5 and 6.

Table B. Country Rankings by MYS 25+, 2010

Rank	MYS 25+, total 2010		Rank	MYS 25+, women 2010	
1	Finland	14.15	1	Finland	14.26
2	Germany	13.71	2	Canada	13.50
3	Canada	13.54	3	Germany	13.28
4	New Zealand	12.92	4	United States of America	12.87
5	United States of America	12.86	5	Lithuania	12.87
6	Lithuania	12.79	6	Estonia	12.87
7	Estonia	12.67	7	New Zealand	12.86
8	Switzerland	12.66	8	Norway	12.71
9	Georgia	12.66	9	Sweden	12.66
10	Norway	12.65	10	Georgia	12.65
11	Sweden	12.50	11	Latvia	12.41
12	Japan	12.46	12	Switzerland	12.22
13	Latvia	12.33	13	Japan	12.21
14	Czech Republic	12.29	14	Denmark	12.11
15	Iceland	12.20	15	Czech Republic	12.06
16	Slovakia	12.13	16	Ireland	12.00
17	Denmark	12.13	17	Puerto Rico	11.96
18	Austria	12.03	18	Iceland	11.96
19	Australia	11.96	19	Poland	11.93
20	Ireland	11.95	20	Slovakia	11.91
21	Poland	11.93	21	Australia	11.81
22	Republic of Korea	11.85	22	Slovenia	11.80
23	Slovenia	11.85	23	Israel	11.62
24	Puerto Rico	11.81	24	Austria	11.58
25	Cyprus	11.77	25	Cyprus	11.50
26	Belgium	11.51	26	Belgium	11.42
27	Netherlands	11.49	27	Netherlands	11.19
28	Israel	11.47	28	Republic of Korea	11.11
29	Luxembourg	11.20	29	Hungary	10.88
30	Hungary	11.13	30	Luxembourg	10.72
31	Singapore	11.04	31	Bulgaria	10.67
32	Hong Kong SAR	10.93	32	Belarus	10.65
33	Montenegro	10.80	33	Turkmenistan	10.63
34	Croatia	10.79	34	United Arab Emirates	10.57
35	Turkmenistan	10.79	35	Hong Kong SAR	10.53
36	Belarus	10.77	36	Kazakhstan	10.53
37	Bulgaria	10.67	37	Singapore	10.44
38	Kazakhstan	10.57	38	Cuba	10.44
39	Serbia	10.55	39	Russian Federation	10.42
40	France	10.53	40	Qatar	10.36
41	Romania	10.52	41	Saint Vincent & Grenadines	10.32
42	Cuba	10.51	42	Armenia	10.31
43	Tajikistan	10.50	43	United Kingdom	10.31
44	United Kingdom	10.44	44	France	10.31

Rank	MYS 25+, total 2010		Rank	MYS 25+, women 2010	
45	Russian Federation	10.44	45	Croatia	10.29
46	Armenia	10.35	46	Kyrgyzstan	10.23
47	Republic of Moldova	10.29	47	Republic of Moldova	10.18
48	Greece	10.28	48	French Polynesia	10.14
49	Kyrgyzstan	10.26	49	Montenegro	10.14
50	Chile	10.21	50	Samoa	10.08
51	Tonga	10.14	51	Chile	10.06
52	Ukraine	10.07	52	Romania	10.06
53	New Caledonia	10.01	53	Serbia	10.04
54	Samoa	9.98	54	Tonga	10.04
55	Saint Vincent Grenadines	9.97	55	Ukraine	10.00
56	French Polynesia	9.97	56	Greece	9.95
57	Azerbaijan	9.94	57	New Caledonia	9.91
58	Malaysia	9.89	58	Tajikistan	9.90
59	Albania	9.85	59	Bahrain	9.87
60	Italy	9.81	60	Argentina	9.85
61	Argentina	9.72	61	Saint Lucia	9.79
62	Macao SAR	9.67	62	Guyana	9.68
63	Bahrain	9.63	63	Bahamas	9.62
64	Malta	9.61	64	Panama	9.60
65	Trinidad & Tobago	9.60	65	Italy	9.60
66	Saint Lucia	9.60	66	Trinidad &Tobago	9.58
67	Jordan	9.57	67	Jamaica	9.55
68	Guyana	9.46	68	Malaysia	9.54
69	Bahamas	9.46	69	Azerbaijan	9.52
70	Martinique	9.43	70	Martinique	9.51
71	Saudi Arabia	9.42	71	Albania	9.51
72	Panama	9.41	72	Macao SAR	9.47
73	Peru	9.40	73	Mongolia	9.36
74	United Arab Emirates	9.36	74	Guadeloupe	9.35
75	Bosnia and Herzegovina	9.31	75	Philippines	9.33
76	Suriname	9.30	76	Venezuela	9.20
77	Guadeloupe	9.27	77	Jordan	9.17
78	Philippines	9.27	78	Suriname	9.16
79	Jamaica	9.23	79	Malta	9.10
80	TFYR Macedonia	9.22	80	Peru	8.90
81	Mongolia	9.22	81	Spain	8.88
82	Zimbabwe	9.16	82	Dominican Republic	8.87
83	Qatar	9.07	83	South Africa	8.72
84	Spain	8.99	84	Uruguay	8.68
85	Venezuela	8.94	85	Reunion	8.55
86	South Africa	8.94	86	Aruba	8.46
87	Reunion	8.70	87	Lebanon	8.44
88	Lebanon	8.69	88	Netherlands Antilles	8.39
89	Dominican Republic	8.65	89	TFYR Macedonia	8.35
90	Aruba	8.59	90	Bosnia and Herzegovina	8.27

Rank	MYS 25+, total 2010		Rank	MYS 25+, women 2010	
91	Uruguay	8.54	91	Zimbabwe	8.26
92	Netherlands Antilles	8.46	92	French Guiana	8.19
93	French Guiana	8.38	93	Kuwait	8.16
94	Mexico	8.29	94	Costa Rica	8.12
95	Occupied Palestinian Territory	8.26	95	Saudi Arabia	8.11
96	Costa Rica	8.10	96	Mexico	8.01
97	Ecuador	8.07	97	Ecuador	7.98
98	Swaziland	7.98	98	Colombia	7.91
99	Algeria	7.97	99	Namibia	7.83
100	Indonesia	7.96	100	Paraguay	7.77
101	Namibia	7.87	101	Swaziland	7.66
102	Colombia	7.83	102	Indonesia	7.49
103	Bolivia	7.83	103	Occupied Palestinian Territory	7.35
104	Equatorial Guinea	7.81	104	Thailand	7.27
105	Paraguay	7.77	105	Portugal	7.15
106	Kuwait	7.74	106	Brazil	7.14
107	Kenya	7.68	107	Lesotho	7.10
108	Thailand	7.51	108	Algeria	6.97
109	Iraq	7.46	109	Bolivia	6.88
110	China	7.36	110	Kenya	6.83
111	Zambia	7.32	111	China	6.76
112	Portugal	7.27	112	Viet Nam	6.74
113	Iran	7.20	113	Myanmar	6.73
114	Congo	7.19	114	Belize	6.51
115	Viet Nam	7.18	115	Iran	6.48
116	Turkey	7.04	116	Iraq	6.43
117	Tunisia	6.98	117	Equatorial Guinea	6.38
118	Brazil	6.97	118	Zambia	6.29
119	Gabon	6.96	119	Gabon	6.25
120	Myanmar	6.88	120	Turkey	6.16
121	Egypt	6.77	121	El Salvador	6.10
122	Belize	6.53	122	Mauritius	6.07
123	Mauritius	6.46	123	Congo	6.02
124	Lesotho	6.45	124	Nicaragua	5.89
125	El Salvador	6.39	125	Tunisia	5.88
126	Congo DR	6.29	126	Honduras	5.76
127	United Republic of Tanzania	6.27	127	Egypt	5.68
128	Ghana	6.16	128	Vanuatu	5.68
129	Nigeria	6.13	129	United Republic of Tanzania	5.67
130	Vanuatu	6.12	130	Maldives	5.49
131	Syrian Arab Republic	6.01	131	Syrian Arab Republic	5.30
132	Nicaragua	5.86	132	Ghana	5.20
133	Honduras	5.71	133	Congo DR	4.82
134	Cameroon	5.71	134	Nigeria	4.82
135	India	5.53	135	Cameroon	4.73

Rank	MYS 25+, total 2010		Rank	MYS 25+, women 2010	
136	Maldives	5.52	136	Cape Verde	4.66
137	Uganda	5.36	137	Guatemala	4.57
138	Cape Verde	5.21	138	Uganda	4.46
139	Lao People's Dem. Republic	5.18	139	India	4.22
140	Malawi	5.11	140	Haiti	4.13
141	Guatemala	5.01	141	Lao People's Dem. Republic	4.09
142	Comoros	4.94	142	Comoros	4.08
143	Haiti	4.77	143	Bangladesh	3.98
144	Bangladesh	4.67	144	Malawi	3.91
145	Gambia	4.57	145	Madagascar	3.68
146	Timor-Leste	4.36	146	Rwanda	3.54
147	Cambodia	4.18	147	Timor-Leste	3.51
148	Morocco	4.10	148	Gambia	3.40
149	Madagascar	4.02	149	Cambodia	3.32
150	Central African Republic	3.91	150	Morocco	3.26
151	Rwanda	3.88	151	Sao Tome & Principe	3.02
152	Nepal	3.84	152	Central African Republic	2.84
153	Pakistan	3.78	153	Pakistan	2.64
154	Sao Tome & Principe	3.59	154	Nepal	2.61
155	Sierra Leone	3.59	155	Cote d'Ivoire	2.49
156	Somalia	3.49	156	Sierra Leone	2.48
157	Cote d'Ivoire	3.41	157	Senegal	2.45
158	Guinea-Bissau	3.27	158	Sudan	2.19
159	Bhutan	3.22	159	Bhutan	2.10
160	Senegal	3.05	160	Burundi	2.10
161	Sudan	2.86	161	Somalia	1.99
162	Benin	2.81	162	Guinea-Bissau	1.95
163	Burundi	2.77	163	Benin	1.75
164	Guinea	2.31	164	Ethiopia	1.33
165	Ethiopia	2.23	165	Guinea	1.31
166	Chad	1.89	166	Burkina Faso	1.11
167	Burkina Faso	1.68	167	Mozambique	1.10
168	Mozambique	1.67	168	Liberia	1.06
169	Liberia	1.61	169	Chad	1.00
170	Mali	1.40	170	Mali	0.96
171	Niger	1.15	171	Niger	0.77