

Measuring Educational Characteristics in a Census

Select Topics in International Censuses¹

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INTRODUCTION

Education is a key dimension of human development. High levels of literacy, school enrollment, and educational attainment are associated with well-being, productivity, empowerment, and a range of other desirable development outcomes. Educational statistics in combination with demographic data are valuable to governments, the private sector, and nongovernmental organizations. Governments use them to assess the need for public services and to measure the development and implementation of educational or workforce policies, which ultimately leads to the allocation of resources for establishing educational institutions at the lowest levels of administrative geography. In the private sector, educational statistics are used for the planning of investment and for market segmentation. Nongovernmental organizations rely on these data for running and evaluating programs to address the educational or literacy needs of the communities in which they work. Therefore, it is important for countries to produce quality educational statistics in order to set and track progress on national goals.

While educational characteristics are best measured through surveys, many national statistical offices (NSOs) ask questions on education in their population and housing censuses (PHC). This usually happens in countries that lack the resources to conduct specialized household surveys on a regular basis. For this reason, the United Nations (UN) has produced guidance on how to collect

¹ This technical note is part of a series on Select Topics in International Censuses (STIC) that explores matters of interest to the international statistical community. The U.S. Census Bureau helps countries improve their national statistical systems by engaging in capacity building to enhance statistical competencies in sustainable ways.

educational data in a census. The UN's *Principles and Recommendations for Population and Housing Censuses, Revision 3* (2017) considers literacy, school attendance, and educational attainment as core educational topics; field of education and educational qualifications are considered additional, but noncore topics.

This Select Topics in International Censuses (STIC) technical note provides NSOs with information on internationally recognized standards on the collection and dissemination of educational characteristics in a census.

COMPARABILITY ACROSS TIME

Data editing based on the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) International Standard Classification of Education (ISCED) mappings is usually done during post-census processing. Census data are edited in such way for international comparability purposes, but this does not solve all comparability issues. When educational data are collected in the field, respondents' answers may correspond to an outdated educational system. That is, a respondent may have completed a grade or received educational credentials that do not exist anymore in the country—at least not with the same name. To compare educational data across time, NSOs often use equivalency tables to aid respondents in answering questions on education.

Figure 1 represents an education equivalency table used in the 2017 PHC of Mozambique. This table displays the educational equivalencies of three systems and periods of time: (1) the system current during the 2017 PHC, (2) the old system in place from 1976 to 1982, and (3) the colonial system in place before 1976.

Figure 1.

Equivalency Table for Education Questions: 2017 Mozambique Population and Housing Census

Quadro de Equivalências para Perguntas P23 e P24 (Nível de Ensino que frequenta ou que frequentou e nível mais elevado que completou)

Recenseamento de 2017	Antigo Sistema - em 1976-1982	Sistema Colonial - Antes da Independência
1. Pré-escolar		
2. Alfabetização	Alfabetização	
3. Ensino Primário do 1º Grau (1ª / 5ª Classe)	Ensino Primário (Pré / 4ª Classe)	Ensino Primário (Pré / 4ª Classe)
4. Ensino Primário do 2º Grau (6ª / 7ª Classe)	Ensino Secundário / Ciclo Prep. (5ª / 6ª Classe)	Liceu 1º Ciclo / Ciclo Preparatório - 1º / 2º Ano
5. Ensino Sec. Geral do 1º Ciclo (8ª / 10ª Classe)	Ensino Secundário (7ª / 9ª Classe)	Liceu 2º Ciclo - 3º / 4º / 5º Ano
6. Ensino Sec. Geral do 2º Ciclo (11ª / 12ª Classe)	Ensino Pré-Universitário (10ª/11ª Classe)	Liceu 3º Ciclo - 6º / 7º Ano
7. Ensino Técnico Elementar	Ensino Técnico Elementar	Ensino Técnico Elementar (Artes / Ofícios)
8. Ensino Técnico Básico	Ensino Técnico Básico	Ensino Comercial / Industrial
9. Ensino Técnico Médio	Ensino Técnico Médio	Instituto Comercial / Industrial
10. Curso de Formação de Professores Primários	Curso de Formação de Professores Primários	Curso de Formação de Professores Primários
11. Bacharelato	Bacharelato	Bacharelato
12. Licenciatura	Licenciatura	Licenciatura
13. Mestrado	Mestrado	Mestrado
14. Doutoramento / PhD	Doutoramento / PhD	Doutoramento / PhD

Source: Instituto Nacional de Estatística, Census 2017.

These tables can be appended to paper questionnaires or linked to computer-assisted personal interview (CAPI) or computer-assisted web interview (CAWI) instruments.

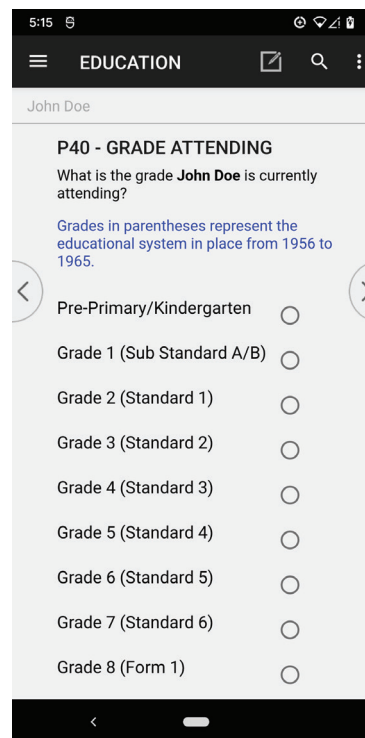
If changes in the educational system were minor, NSOs can include equivalencies next to answer options, as shown in Figure 2. This screenshot represents a sample education question for a CAPI instrument in a fictional census. The grades in brackets represent the country’s educational system in place from 1956 to 1965, while the grades with no brackets represent the current educational system at the time of the census.

CORE EDUCATIONAL CHARACTERISTICS

According to the UN’s *Principles and Recommendations for Population and Housing Censuses Revision 3* (2017), there are three core topics when measuring education. These topics are literacy, school attendance, and educational attainment. The UN recommends that these topics be collected and tabulated separately and independently of each other without any assumption of linkages. For example, interviewers should ask the literacy status of all members of a household irrespective of school attendance or degrees completed. Table 1 presents the ISCED classifications used for school attendance (ISCED-P) and for educational attainment (ISCED-A).

Figure 2.

Sample Education Question and Answer Options



Note: This is a fictional country.
Source: U.S. Census Bureau, 2022.

Table 1.

International Standard Classification of Education (ISCED 2011) Levels

Level	ISCED-P (ISCED-Programs)	ISCED-A (ISCED-Attainment)
0	Early childhood education	Less than primary education
1	Primary education	Primary education
2	Lower-secondary education	Lower-secondary education
3	Upper-secondary education	Upper-secondary education
4	Postsecondary nontertiary education	Postsecondary nontertiary education
5	Short-cycle tertiary education	Short-cycle tertiary education
6	Bachelor's or equivalent level	Bachelor's or equivalent level
7	Master's or equivalent level	Master's or equivalent level
8	Doctoral or equivalent level	Doctoral or equivalent level

Note: ISCED is the United Nations Educational, Scientific and Cultural Organization's International Standard Classification of Education (UNESCO).
Source: UNESCO Institute for Statistics, 2012.

The UN provides recommendations for the collection and tabulation of educational data based on the UNESCO's ISCED 2011. Basic definitions and guidance for the collection and tabulation of core educational characteristics are presented in Table 2.

ADDITIONAL EDUCATIONAL CHARACTERISTICS

Field of education and training along with educational qualifications are two important topics to consider when collecting data on education. These data are important when examining the supply and demand for qualified workers or when developing or evaluating workforce development or educational programs or any work- or education-related policies, especially at the lower levels of geography.

The UN (2017) states that data on field of education and training should be collected for people aged 15 years and over who attended at least one grade in secondary

education or who attended other organized education and training programs at equivalent levels. The UN recommends that the ISCED framework is used when collecting these data.

The ISCED Fields of Education and Training 2013 (ISCED-F 2013) is a framework to classify fields of education and training for international comparability purposes developed by the UNESCO (2014). This framework distinguishes between broad fields (two-digit codes), narrow fields (three-digit codes) and detailed fields (four-digit codes) of education and training. The list of broad, two-digit codes is presented in Table 3. The second, noncore educational topic is educational qualification. Educational qualifications are official confirmations, usually in the form of a document, certifying the successful completion of an education program or a particular stage of it. Qualifications are obtained through completion of an educational program, completion of a stage of an educational program (intermediate qualifications), or by

Table 2.

United Nations Principles and Recommendations for Population and Housing Censuses: Educational Characteristics (Core Topics)

Topic	Definition	Collected for	Tabulation	Sample question
Literacy	The ability to both read and write, distinguishing between "literate" and "illiterate" people. A literate person is one who can read and write a short, simple (yet comprehensive) statement on his or her everyday life. An illiterate person is one who cannot.	Preferably people aged 10 and over.	All people aged 15 and over.	Can this person read AND write?
School attendance	Regular attendance at any accredited educational institution or program, public or private, for organized learning at any level of education.	People of all ages. In particular, the population of official school age (typically aged 5 to 25). Range can be lower than 5 years if preprimary is included.	Use ISCED-program levels.	At any time IN THE LAST 3 MONTHS, has this person attended school or college?
Educational attainment	The highest ISCED level successfully completed by an individual. Educational attainment is usually measured with respect to the highest education program successfully completed (typically certified by a recognized qualification).	Preferably people aged 5 and over.	Use ISCED-attainment levels.	What is the highest degree or level of school this person has COMPLETED?

Note: ISCED is the United Nations Educational, Scientific and Cultural Organization's International Standard Classification of Education.
Source: United Nations, 2017.

Table 3.

International Standard Classification of Education Fields of Education and Training: 2013 (ISCED-F 2013)

Code	Label
00	Generic programs and qualifications
01	Education
02	Arts and humanities
03	Social sciences, journalism, and information
04	Business, administration, and law
05	Natural sciences, mathematics, and statistics
06	Information and communication technologies
07	Engineering, manufacturing, and construction
08	Agriculture, forestry, fisheries, and veterinary
09	Health and welfare
10	Services
99	Unknown

Note: ISCED is the United Nations Educational, Scientific and Cultural Organization's International Standard Classification of Education.

Source: United Nations Educational, Scientific and Cultural Organization, 2014.

Box 1.

Comparability Across Space: International Standard Classification of Education

One of the main challenges encountered when working with educational statistics is that educational systems can change depending on place and time. Changes in educational systems over time result in difficulties benchmarking progress towards national goals by comparing a country's educational statistics from two or more points in time. Moreover, ensuring international comparability is difficult because national educational systems vary in terms of structure and degrees awarded.

To facilitate comparability of educational statistics, the United Nations Educational, Scientific and Cultural Organization (UNESCO) developed the International Standard Classification of Education (ISCED) framework in the 1970s. The third and latest version of the ISCED was adopted by UNESCO member nations in 2011. This ISCED version—often referred to as the ISCED 2011—serves as an instrument to compile and disseminate cross-nationally comparable education statistics.¹ Mappings for most countries in the world are produced and maintained by the UNESCO Institute for Statistics and can be accessed at <<http://uis.unesco.org/en/isced-mappings>>.

¹ UNESCO ISCED Mappings, <<http://uis.unesco.org/en/isced-mappings>>, accessed July 25, 2022

Source: United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics, International Standard Classification of Education (ISCED 2011), Montreal, 2012.

validation of acquired knowledge, skills, and competencies (independent of participation in an education program). Collection and tabulation of this additional, noncore topic should be conducted according to a country's data needs. Information on educational qualifications is usually collected from people who have reached a certain age or attained a certain level of education, depending on the country's data needs.

Box 1 provides a brief explanation of how issues of comparability across countries can be solved by using the ISCED.

CONCLUSIONS

Collecting quality educational data is fundamental for the development of a country. Ultimately, data needs and circumstances in a country will dictate whether these data are collected in a survey or in a census. Regardless of method, one of the main challenges when collecting and disseminating data on education is doing so in a way that final data products are comparable across time and across countries. Temporal and international comparability can be achieved by following the recommendations presented above. This technical note summarizes the recommendations from the international community on measuring education in a census.

REFERENCES

- United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics, International Standard Classification of Education (ISCED 2011), Montreal, 2012.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) ISCED Fields of Education and Training 2013 (ISCED-F 2013), Montreal, 2014.
- United Nations Statistics Division, *Principles and Recommendations for Population and Housing Censuses, Revision 3*, United Nations Publications, New York, 2017.

Appendix Table 1.

Namibia International Standard Classification of Education 2011 Mapping

(School year reference: 2014)

Identifier	Name of the education program (English)	Minimum entrance requirements (English)	Main diplomas, qualifications, or certificates awarded at end of program (English)	Theoretical entrance age (in years)	Theoretical duration (in years)	ISCED 2011 level	ISCED 2011 type (E/CE/PE/PP/N) or orientation (G/V/U) ¹	ISCED 2011 completion (F/P/N) and position in national degree structure ²	ISCED 2011 access (Yes/No) ³	ISCED 2011 program code (ISCED-P: 3-digit)	ISCED 2011 attainment code (ISCED-A: 3-digit)
1	Preprimary program	5 years old	X	5	2	0	Preprimary	X	X	020	020
2	Primary education	7 years old	National grade 7 examination	7	7	1	X	X	X	100	100
3	Junior secondary education	National grade 7 examination	Junior secondary education certificate	14	3	2	General	Full completion	Yes, to ISCED 3	244	244
4	Senior secondary education	Junior secondary education certificate	National senior secondary certificate (NSSC)	17	2	3	General	Full completion	Yes, to ISCED 4, 5, 6, and 7 (tertiary)	344	344
5	Vocational education and training	Junior secondary education certificate	Trade diploma	17	3	3	Vocational	Full completion	No	353	353
6	Vocational education and training (advanced)	NSSC	Trade diploma (advanced)	19	3	4	Vocational	Full completion	No	453	453
7	Certificate in polytechnics	NSSC	Certificate in polytechnics	19	1	4	Vocational	Full completion	Yes, to ISCED 5, 6, and 7 (tertiary)	454	454
8	Higher certificate in polytechnics	Certificate in polytechnics	Higher certificate in polytechnics	20	1	5	Vocational	Insufficient for completion	No	551	454
9	National diploma in polytechnics	Higher certificate in polytechnics	Diploma	21	1	5	Vocational	Full completion	No	554	550
10	National/Agricultural diploma	NSSC	National diploma	19	3	5	Vocational	Full completion	No	554	550

Footnotes available on next page.

Appendix Table 1.

Namibia International Standard Classification of Education 2011 Mapping—Con.

(School year reference: 2014)

Identifier	Name of the education program (English)	Minimum entrance requirements (English)	Main diplomas, qualifications, or certificates awarded at end of program (English)	Theoretical entrance age (in years)	Theoretical duration (in years)	ISCED 2011 level	ISCED 2011 type (ECED/preprimary) or orientation (G/V/U) ¹	ISCED 2011 completion (F/P/N) and position in national degree structure ²	ISCED 2011 access (Yes/No) ³	ISCED 2011 program code (ISCED-P: 3-digit)	ISCED 2011 attainment code (ISCED-A: 3-digit)
11	Bachelor	NSSC	Bachelor's/ Bachelor's of Honors	19	4	Bachelor's or equivalent level	6 Unspecified	Full completion, first degree (3–4 years)	No	665	660
12	Bachelor Juris	NSSC	Bachelor Juris	19	3	Bachelor's or equivalent level	6 Unspecified	Full completion, first degree (3–4 years)	No	665	660
13	Post-graduate diploma (PGD)	Bachelor's/ Bachelor's of Honors	Postgraduate diploma (PGD)	23	1	Bachelor's or equivalent level	6 Unspecified	Full completion, second or further degree (after bachelor's)	No	667	660
14	Honors degree	Bachelor's/ Postgraduate diploma (PGD)	Honors degree	23 or older	1	Bachelor's or equivalent level	6 Unspecified	Full completion, second or further degree (after bachelor's)	No	667	660
15	Bachelor of Laws (LL.B)	Bachelor Juris	Bachelor of Laws (LL.B)	22	2	Bachelor's or equivalent level	6 Unspecified	Full completion, second or further degree (after bachelor's)	No	667	660
16	Master's	Bachelor's/ Postgraduate diploma/ Honors degree	Master's	23 or older	2	Master's or equivalent level	7 Unspecified	Full completion, second or further degree (after bachelor's)	No	767	760
17	Master of Laws (LL.M)	Bachelor of Laws (LL.B)	Master of Laws (LL.M)	24	2	Master's or equivalent level	7 Unspecified	Full completion, second or further degree (after bachelor's)	No	767	760
18	Doctorate	Master's	Doctorate	25 or older	3	Doctoral or equivalent level	8 Unspecified	Full completion	No	864	860

X Not applicable.

¹ ISCED 2011 orientations: ECED is early childhood educational development; “G” is general, “V” is vocational, and “U” is unspecified orientation.

² “F” is full completion of level, “P” is partial completion of level, and “N” is no completion of level.

³ “Yes” means the program provides direct access to a higher ISCED level, “No” means the program does not provide direct access to a higher ISCED level.

Note: International Standard Classification of Education is ISCED. For more information about ISCED 2011 level definitions, cross-classification variables, and other terminologies, refer to <www.uis.unesco.org/Education/Documents/isced-2011-en.pdf>.

Source: United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics, “ISCED Mappings: Namibia (School Year Reference 2014),” 2014, accessed on July 25, 2022, <<http://uis.unesco.org/en/isced-mappings>>.



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