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Institute for Statistics

Calculation of education indicators based on household survey data:

Graphic summary and updates

December 2023

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Statistics division

December 13, 2023



NACIONES UNIDAS

CEPAL

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1 Introduction

This report presents a summary of the indicators calculated using ECLAC's household survey repository (BADEHOG), updated to include data from 2022 and changes in some surveys from previous years. The list of indicators includes:

- Indicators reported at the end of 2022:
 - Attendance rates (Adjusted, Total and Net) by level of education (ISCED 1, 2 and 3).
 - Out-of-school rate by level of education (ISCED 1, 2 and 3).
 - Completion rates (CR) by level of education (ISCED 1, ISCED 2 and ISCED 3).
 - Gross enrolment ratio for tertiary education.
 - Participation rate in organized learning one year before the official primary entry age.

- Indicators added in this version:
 - Percentage of children over-age for grade (4.1.5)
 - Youth/adult educational attainment rates by age group and level of education (4.4.3)
 - Youth/adult literacy rate (4.6.2)
 - Mean years of schooling

This summary presents data at the national level. The accompanying Excel files include the data disaggregated by sex, income quintiles and geographical area, with the corresponding adjusted parity indexes when required.

Data corresponds to the period from 2000 to 2022 and encompasses the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

The appendix contains information regarding educational cycles, availability of information on sampling design, data sources, and the differences between the previous and current results¹.

¹For further details regarding changes in any indicator, please review the Excel files labeled "comparison_13_dec_2023"

2 Generated Indicators

2.1 Adjusted net attendance rate (ANAR)

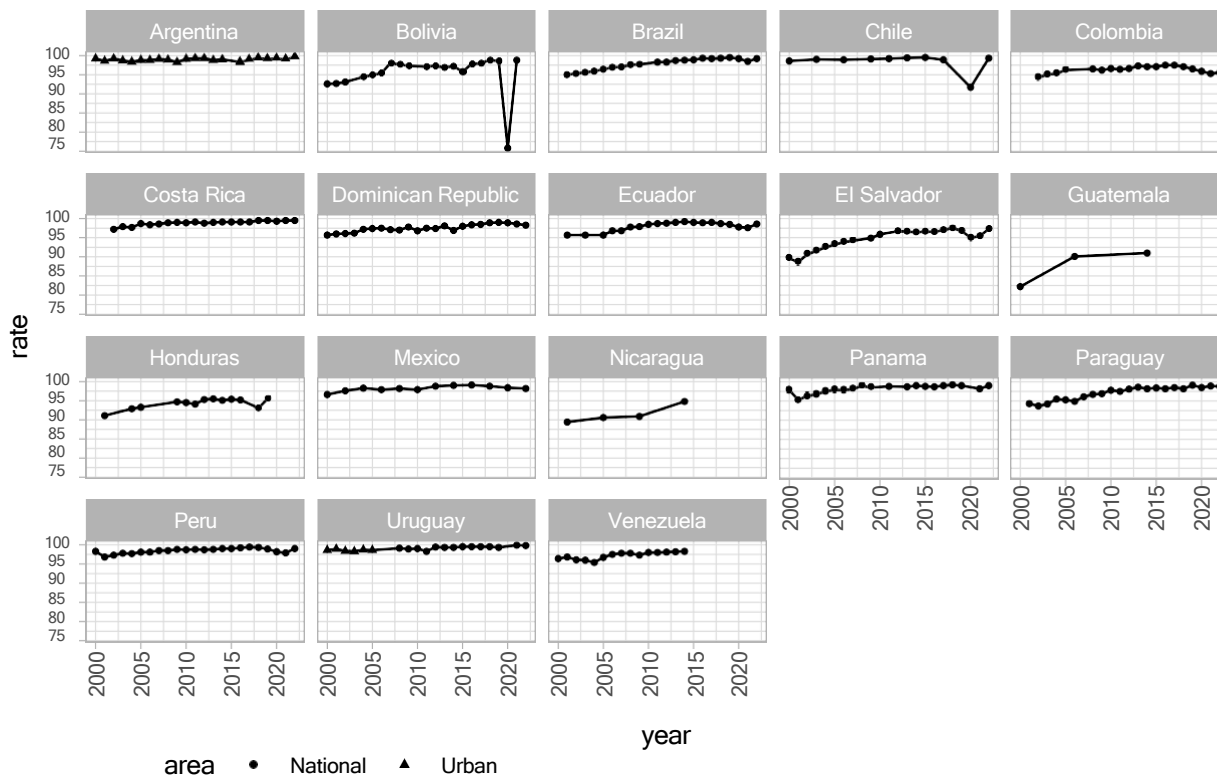
Definition: Total number of students in the theoretical age group for a given level of education attending that level or higher at any time during the reference academic year, expressed as a percentage of the total population in that age group.

$$ANAR_{h+}^t = \frac{A_{h+,a}^t}{P_{h+,a}^t} * 100$$

Where:

- NAR_{h+}^t : Net attendance rate for level of education **h** or higher (**h+**) in school year **t**
- $A_{h+,a}^t$: Number of students of age group **a** attending level of education **h** or higher (**h+**) in school year **t**
- $P_{h+,a}^t$: Population in age group **a** that officially corresponds to level of education **h** or higher (**h+**) in school year **t**

Adjusted net attendance rate by country



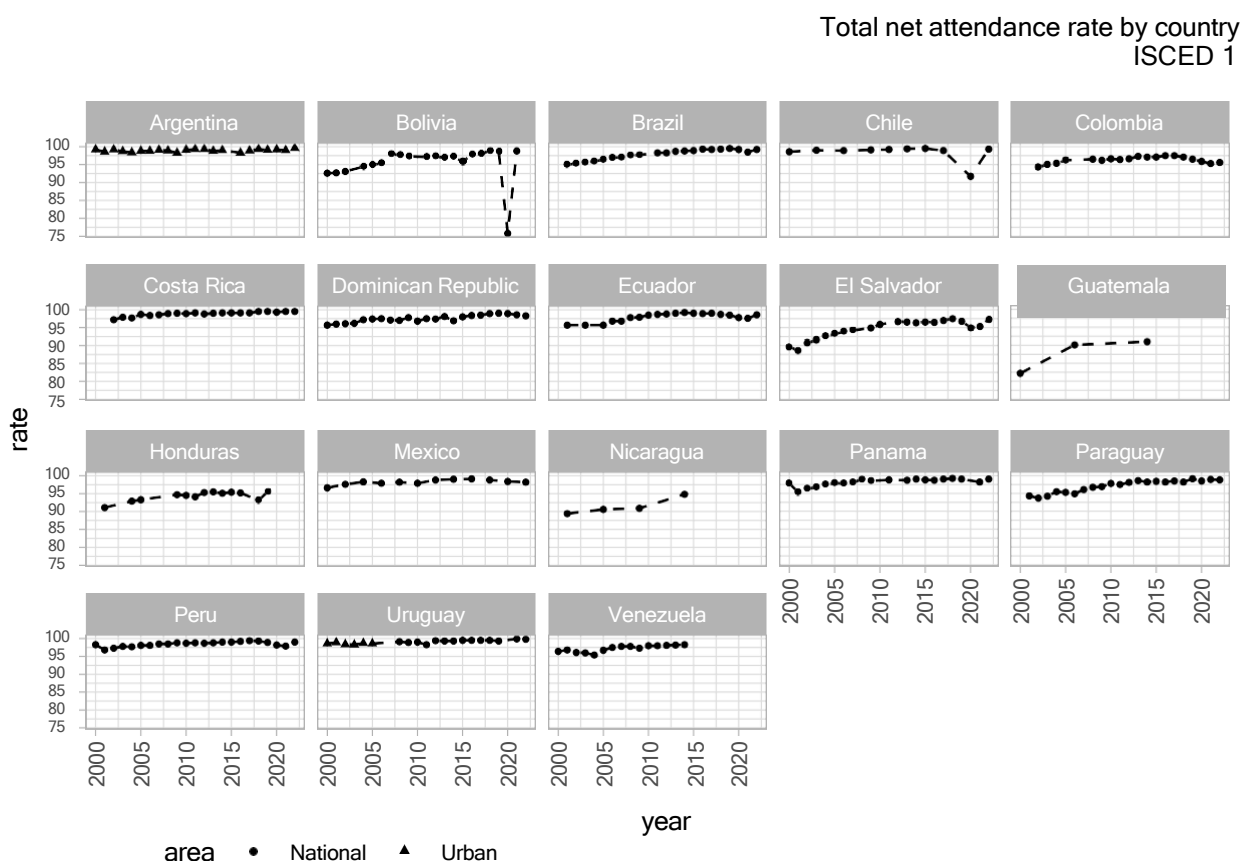
2.2 Total net attendance rate (TNAR)

Definition: Total number of students of the official age group for a given level of education who are attending school at any level of education, expressed as a percentage of the corresponding population.

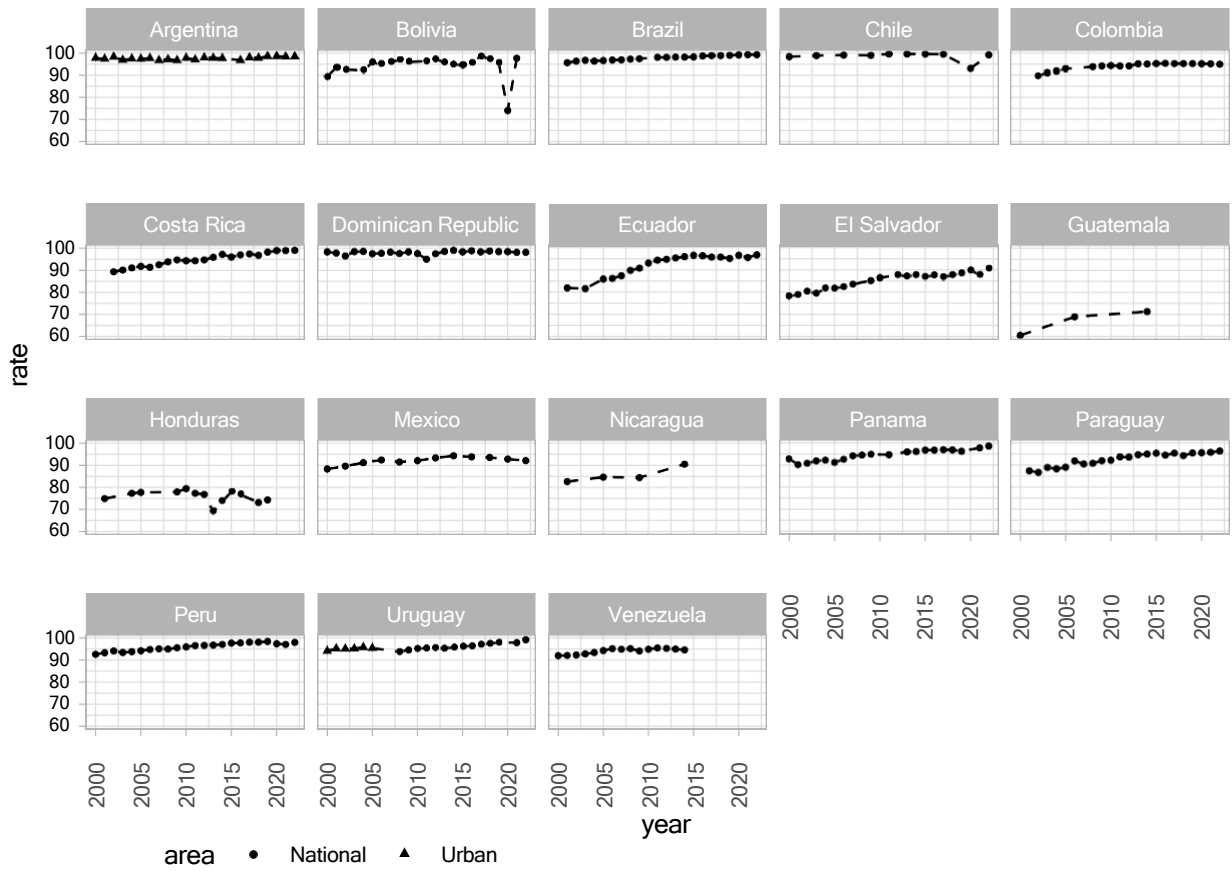
$$TNAR_h^t = \frac{A_a^t}{P_a^t} * 100$$

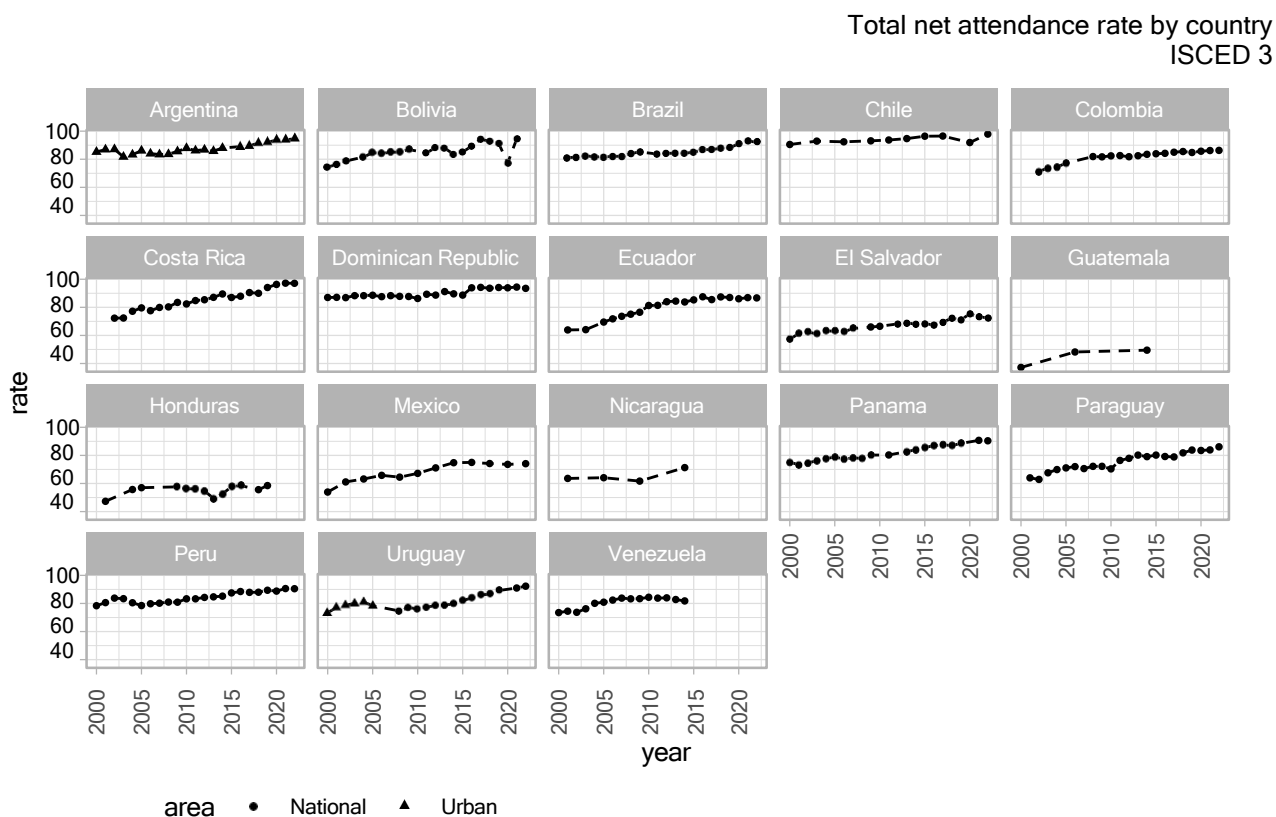
- $TNAR_h^t$: Total net attendance rate for level of education **h** in school year **t**
- A_a^t : Number of students of age group **a** attending at any level of education in school year **t**
- P_a^t : Population in age group **a** in school year **t**

Note: The age group is defined by the ISCED classification.



Total net attendance rate by country
ISCED 2





2.3 Net attendance rate (NAR)

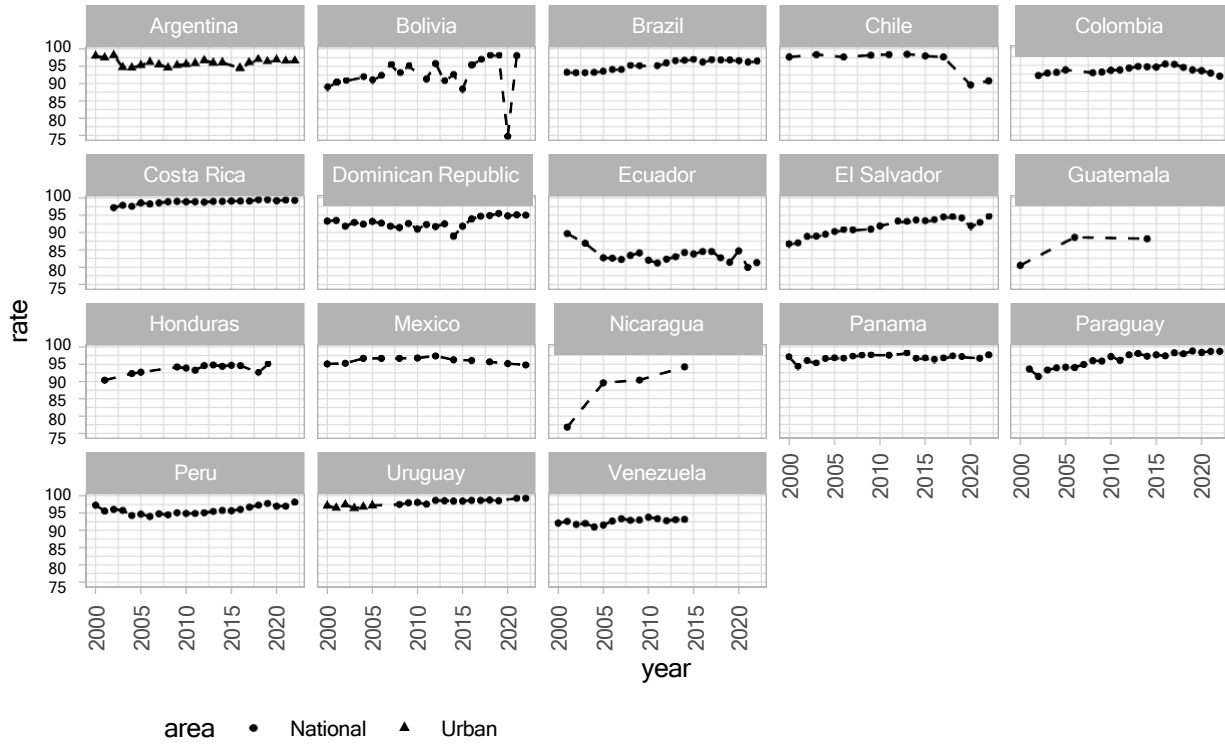
Definition: Total number of students in the theoretical age group for a given level of education attending that level at any time during the reference academic year, expressed as a percentage of the total population in that age group.

$$NAR_h^t = \frac{A_{h,a}^t}{P_{h,a}^t} * 100$$

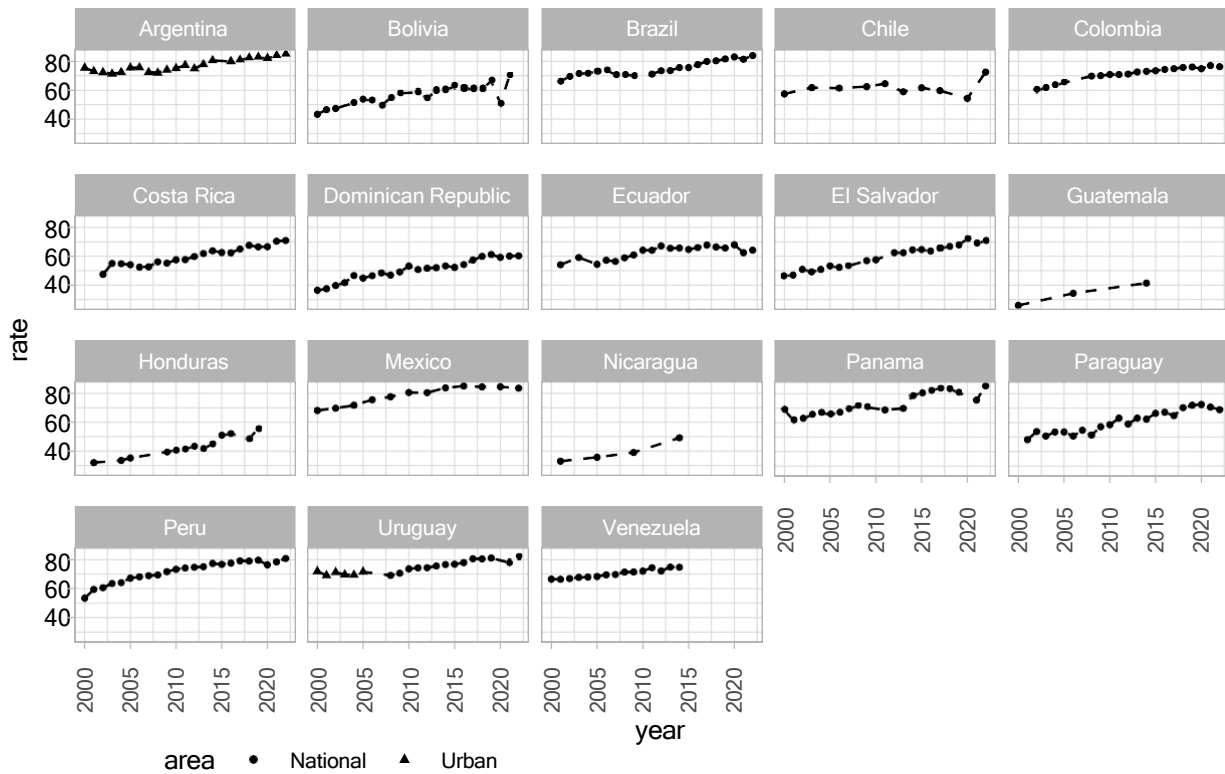
Where:

- NAR_h^t : Net attendance rate for level of education **h** in school year **t**
- $A_{h,a}^t$: Number of students of age group **a** attending level of education **h** in school year **t**
- $P_{h,a}^t$: Population in age group **a** that officially corresponds to level of education **h** in school year **t**

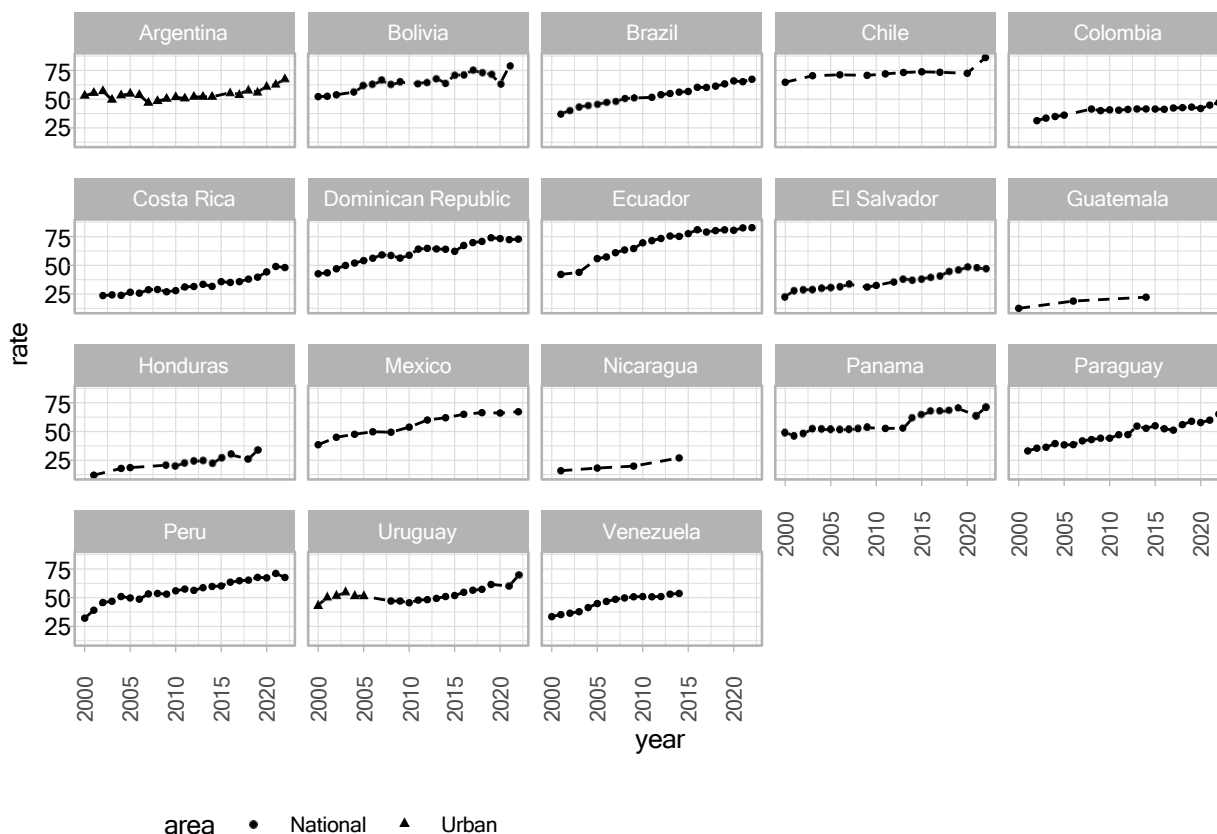
Net attendance rate by country
ISCED 1



Net attendance rate by country
ISCED 2



Net attendance rate by country
ISCED 3



2.4 Out-of-school rate (1 year before primary, primary education, lower secondary education, upper secondary education)

Definition: Proportion of children and young people in the official age range for the given level of education who are not enrolled in pre-primary, primary, secondary or higher levels of education

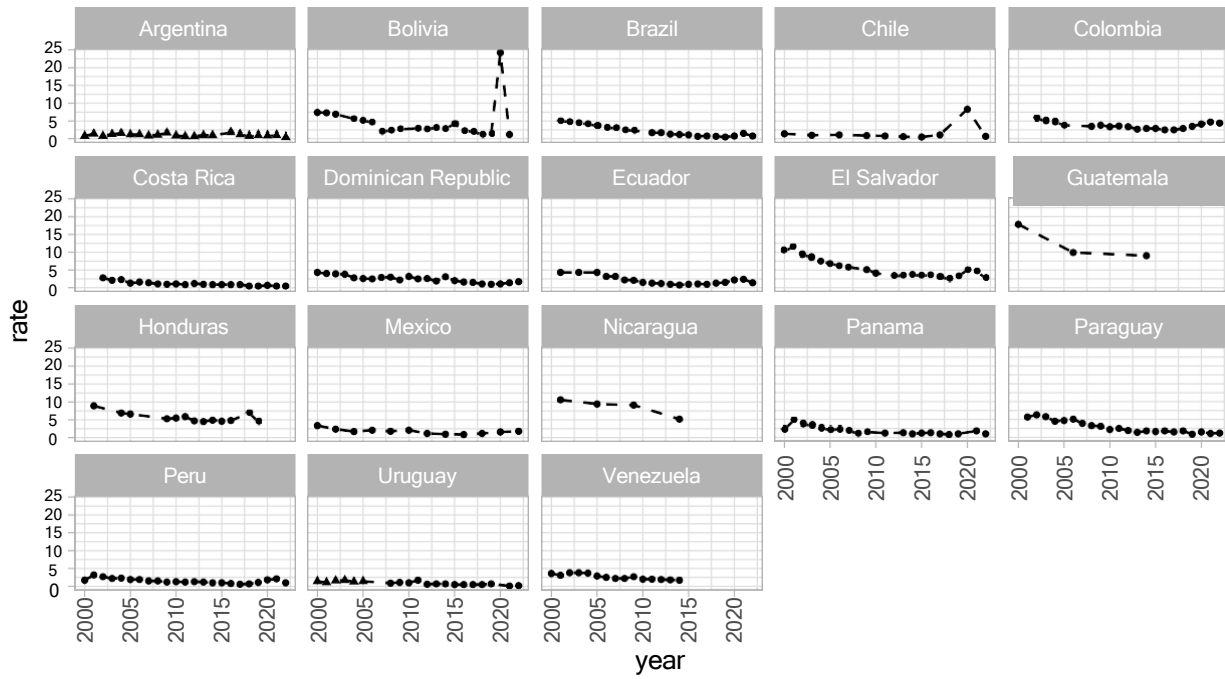
$$OSR_n = \frac{SAP_n - \sum_{i=1}^3 E_{i,AGn}}{SAP_n}$$

Where:

- OSR_n : out-of-school rate for children and young people of the official age for level n of education
- SAP_n : population of the official age for level n of education
- $E_{i,AGn}$: enrolment in ISCED level i of children and young people of the official age for level n of

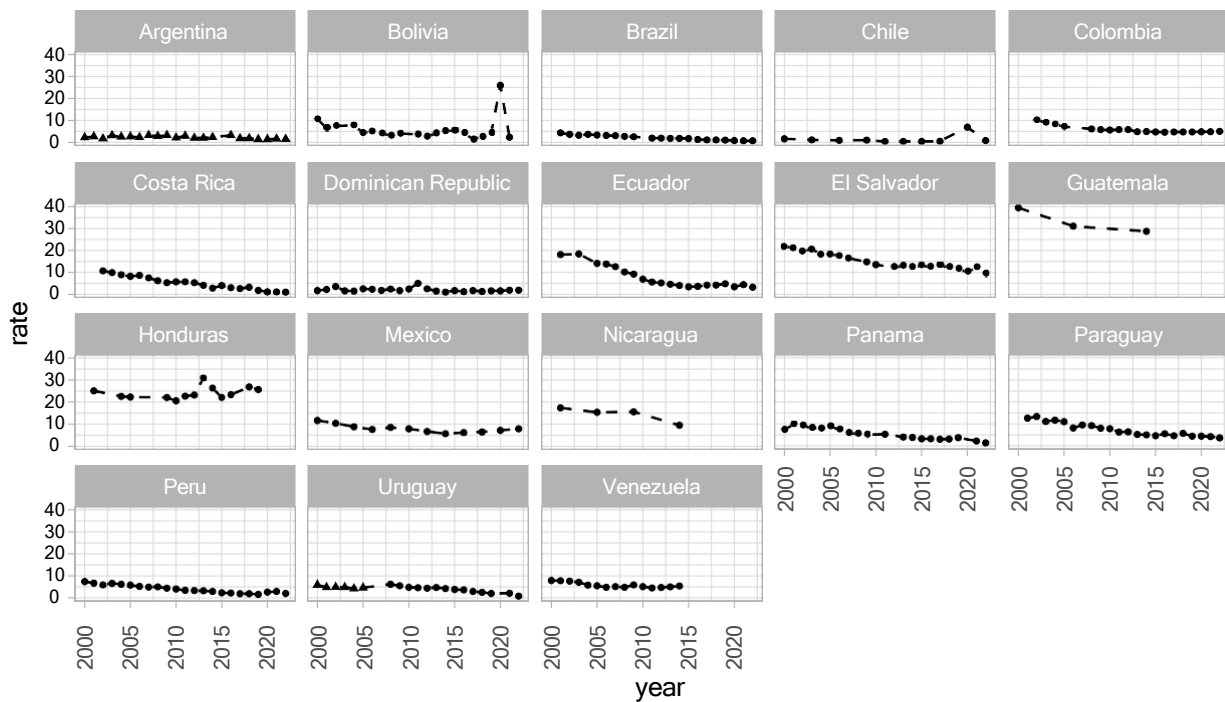
education

Out-of-school rate (OOSR) by country
ISCED 1



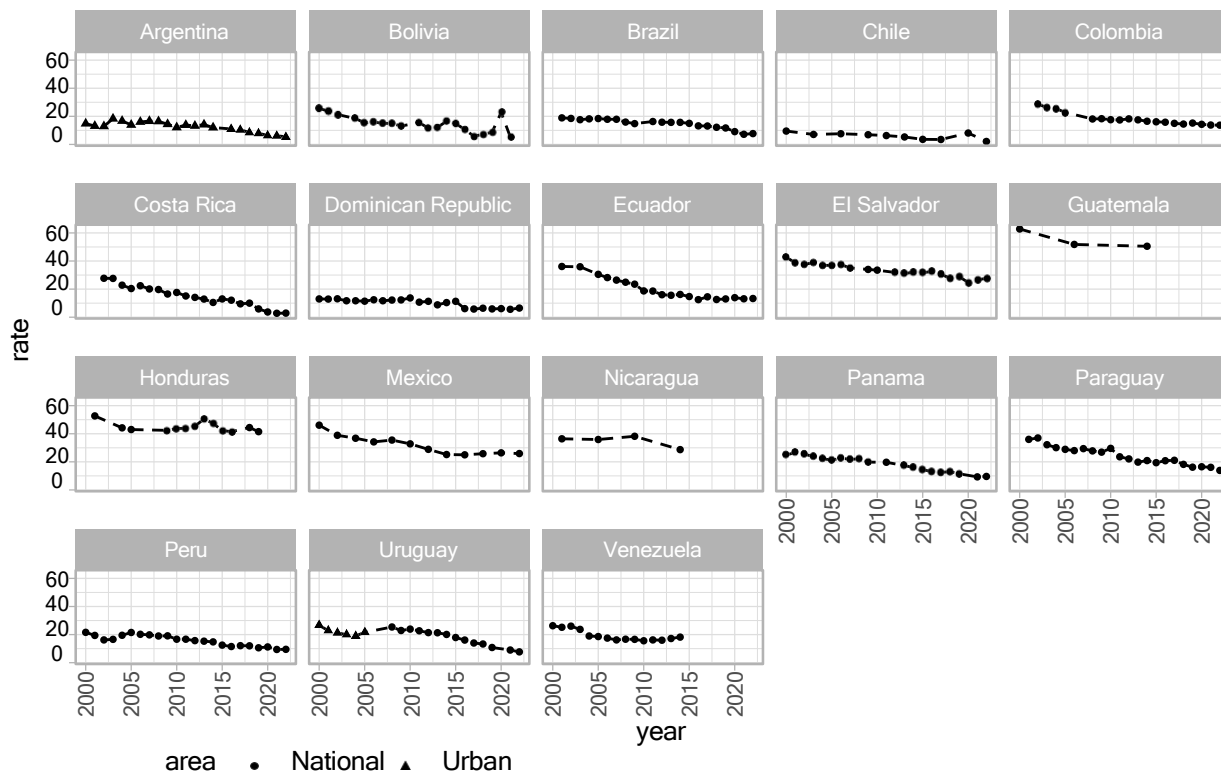
area • National ▲ Urban

Out-of-school rate (OOSR) by country
ISCED 2



area • National ▲ Urban

Out-of-school rate (OOSR) by country
ISCED 3



2.5 Completion rate (primary education, lower secondary education, upper secondary education)

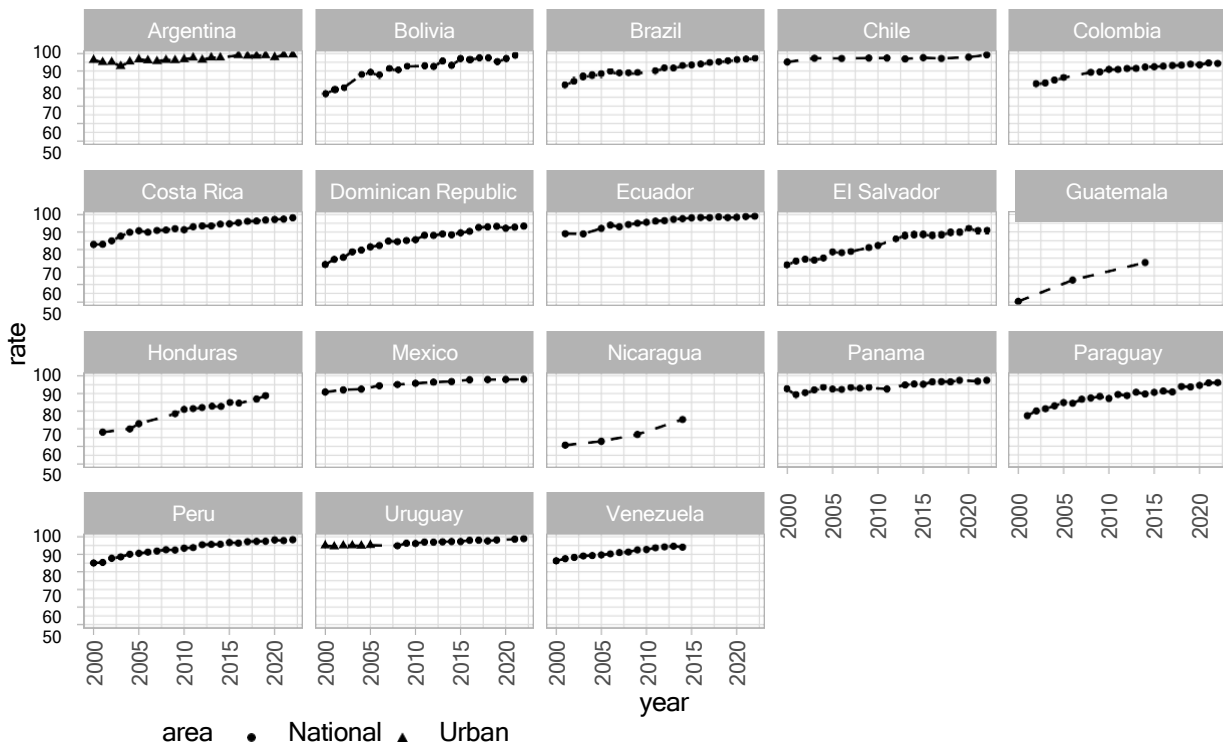
Definition: Percentage of a cohort of children or young people aged 3-5 years above the intended age for the last grade of each level of education who have completed that grade.

$$CR_n = \frac{EAP_{n,AG(a+3t5)}}{PAG_{(a+3t5)}}$$

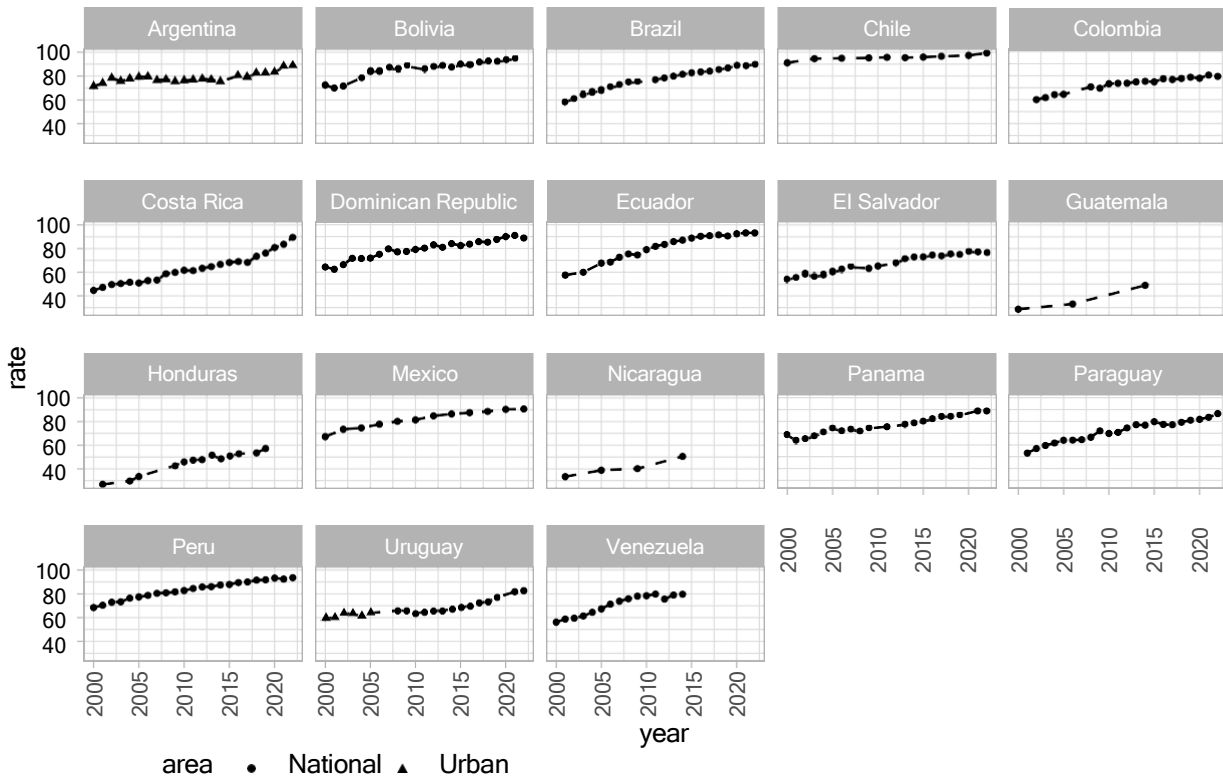
Where:

- CR_n : completion rate for level n
- $EAP_{n,AG(a+3t5)}$: population aged 3 to 5 years above the official entrance age a into the last grade of level n of education who completed level n
- $PAG_{(a+3t5)}$: population aged 3 to 5 years above the official entrance age a into the last grade of level n of education

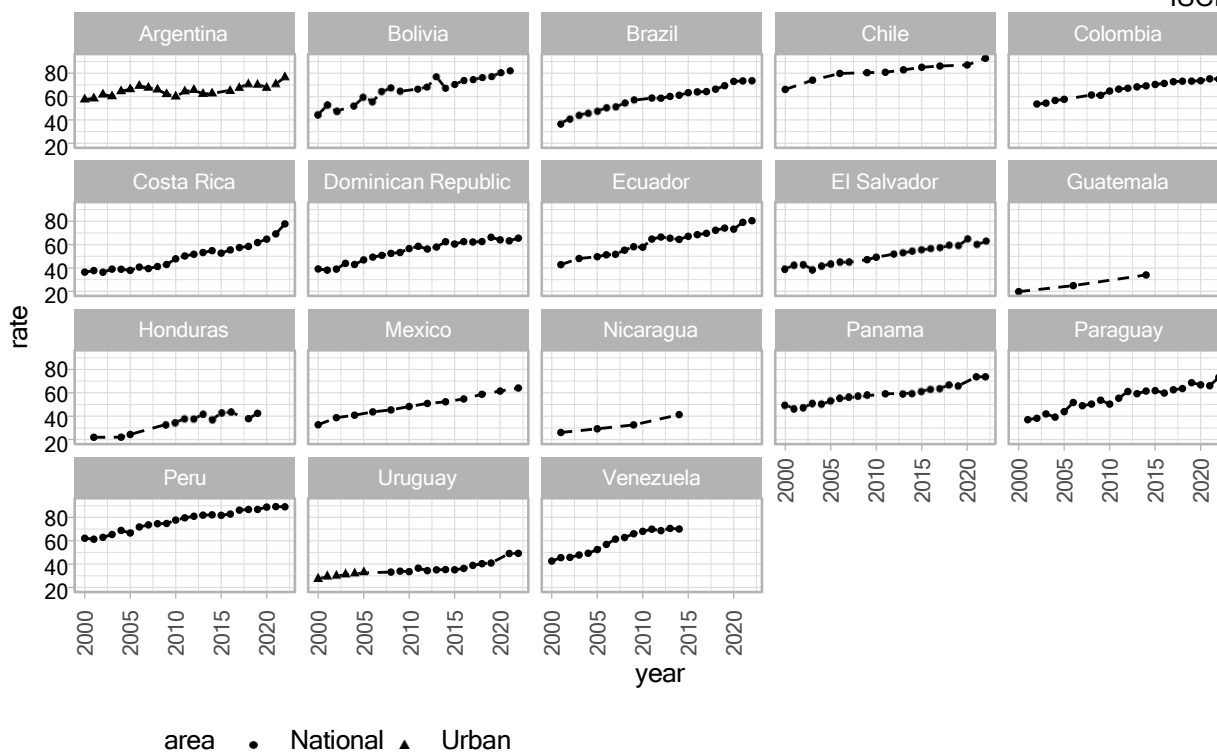
Completion rate by country
ISCED 1



Completion rate by country
ISCED 2



Completion rate by country
ISCED 3



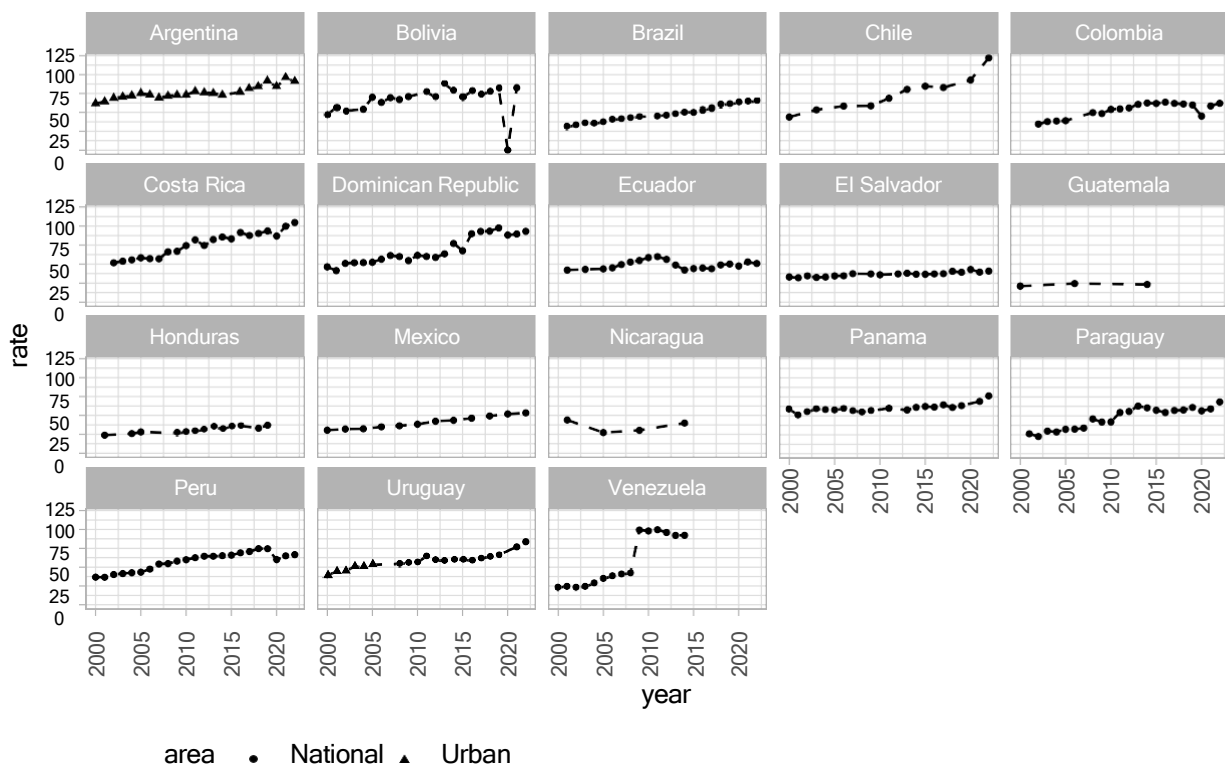
2.6 Gross enrolment ratio for tertiary education

Definition: Total enrolment in tertiary education regardless of age expressed as a percentage of the population in the 5-year age group immediately following upper secondary education.

$$GER_{5t8} = \frac{E_{5t8}}{SAP_{5t8,a}}$$

- GER_{5t8} : gross enrolment ratio in tertiary education (ISCED levels 5, 6, 7 and 8)
- E_{5t8} : enrolment in tertiary education (ISCED levels 5, 6, 7 and 8)
- $SAP_{5t8,a}$: population of the official age group a for tertiary education (ISCED levels 5, 6, 7 and 8).

Gross Enrolment for Tertiary Education by country



2.7 Participation rate in organized learning (one year before the official primary entry age)

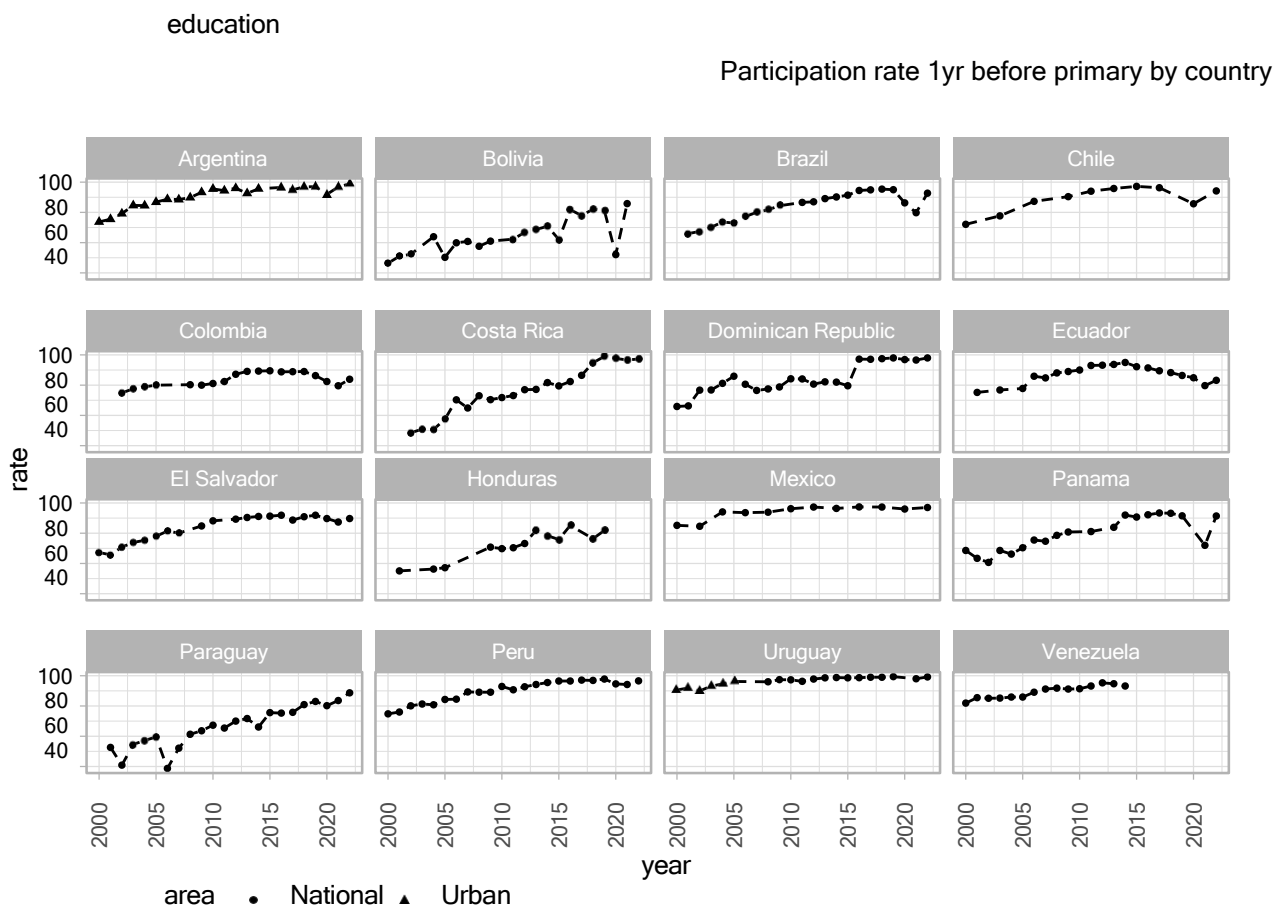
[link to the source](#)

Definition: The participation rate in organized learning (one year before the official primary entry age), by sex is defined as the percentage of children in the given age range who participate in one or more organized learning programme, including programmes which offer a combination of education and care.

$$PROL_{0t1,AG(a-1)} = \frac{E_{0t1,AG(a-1)}}{SAP_{AG(a-1)}}$$

Where:

- $PROL_{0t1,AG(a-1)}$: participation rate in organized learning one year before the official entry age **a** to primary education
- $E_{0t1,AG(a-1)}$: enrolment in early childhood or primary education (ISCED levels 0 and 1) aged one year below the official entry age **a** to primary education
- $SAP_{AG(a-1)}$: school-age population aged one year below the official entry age **a** to primary



2.8 Percentage of children over-age for grade (4.1.5)

Definition: Percentage of pupils in each level of education (primary and lower secondary general education) who are at least 2 years above the intended age for their grade.

First, we define the variable $dif f_{i,c}$, as follows:

$$dif f_{i,c} = age_i - e_c - yearsstudy_i$$

Where:

- $dif f_{i,c}$: over-age of the pupil i in the country c .
- age_i : age of the pupil i .
- $yearsstudy_i$: approved years of study.
- e_c : entrance age at primary education.

Then, the indicators is defined as follows:

$$YO A_{i,c} = \begin{cases} 1 & \text{si } dif f_{i,c} \geq 2 \\ 0 & \text{si } dif f_{i,c} < 2 \end{cases}$$

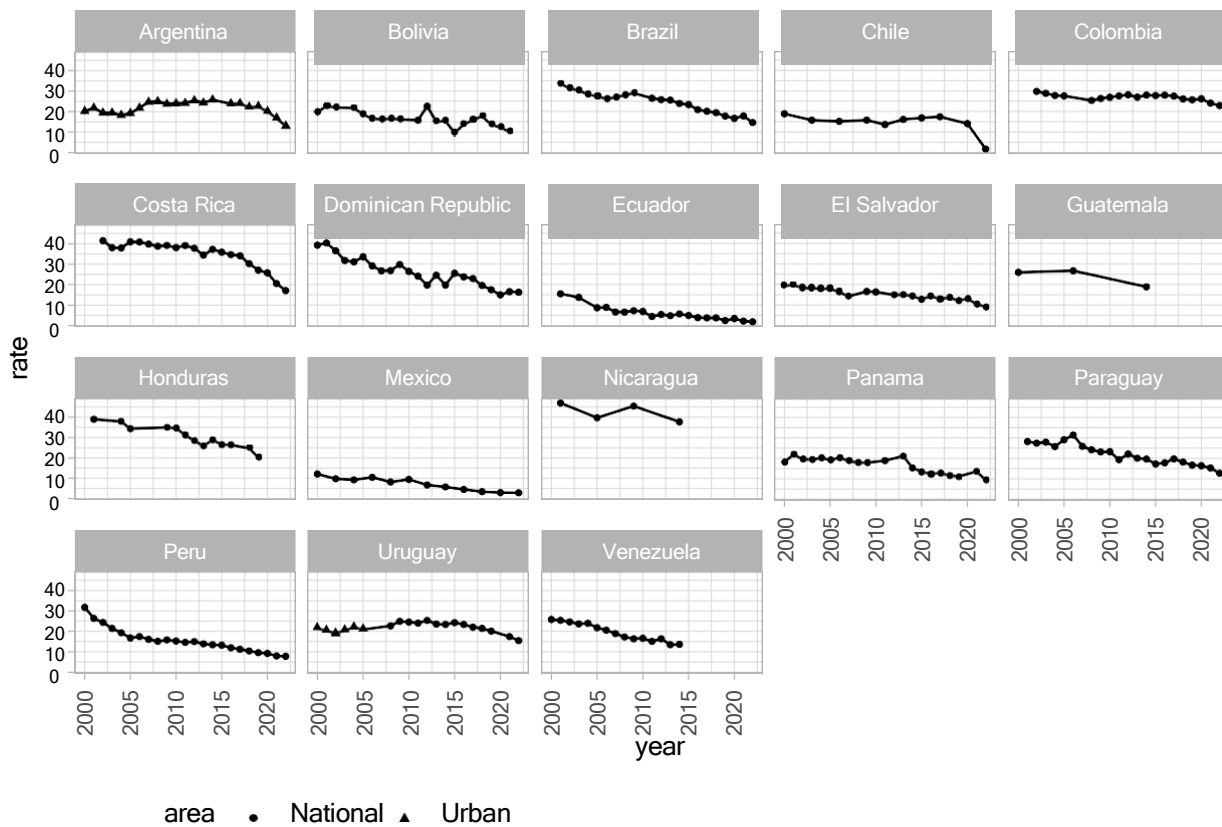
Thus, the person is over-age if her age is at least 2 years above the intended age for their grade. Finally, the indicator POAG is calculated as:

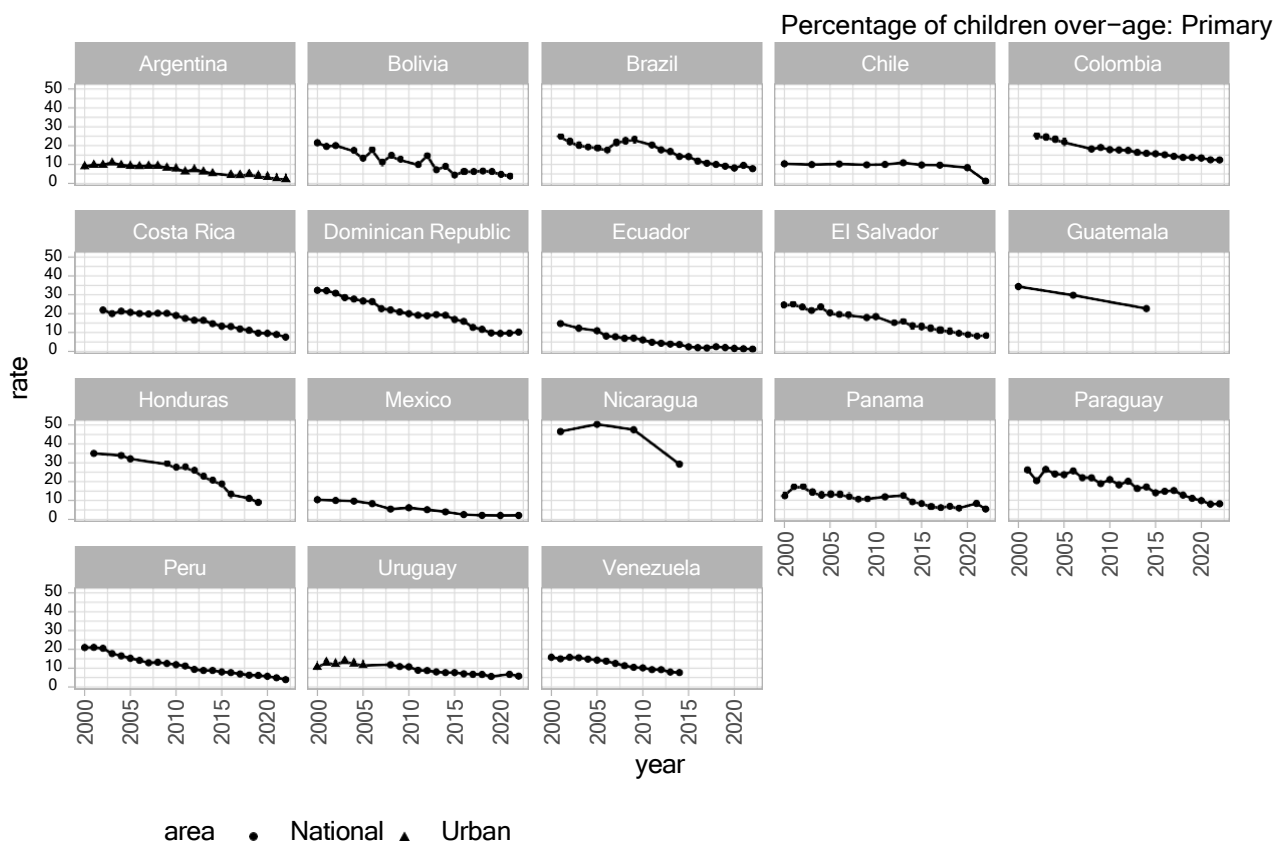
$$POAG_n = \frac{\sum_{g=1}^{d_n} YO A_{i,n}}{E_n}$$

Where:

- $POAG_n$: Percentage of children over-age for grade in level n of education.
- E_n : Total enrollment in level n of education (all grades combined)

Percentage of children over-age: Lower secondary





2.9 Youth/adult educational attainment rates by age group and level of education (4.4.3)

Definition: Distribution of the population aged 25 years and above according to the highest level of education attained or completed. This indicator is usually presented for age groups of at least 25 years and older in order to ensure that the majority of the population has completed their education. Younger age groups are often still enrolled in the education system. The indicator can be calculated for youth (15-24 years) if desired. The indicator measures for each level of education the percentage of the population who completed at least that level of education. Education levels are defined according to the International Standard Classification of Education (ISCED).

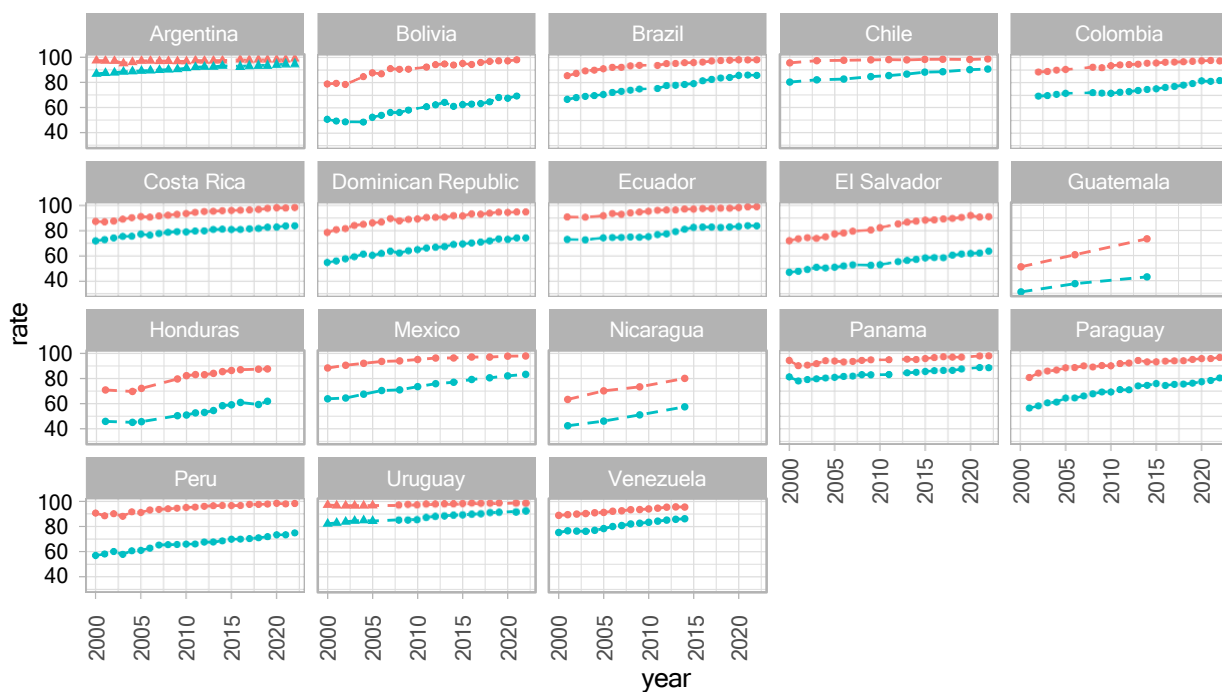
$$EA_{AG_i,n}^t = \frac{EAP_{AG_i,n}^t}{P_{AG_i}^t}$$

Where:

- $EA_{AG_i,n}^t$: Percentage of population in age group i that attained educational level n , in year t .
- $EAP_{AG_i,n}^t$: Population in age group i that attained educational level n , in year t
- $P_{AG_i}^t$: Population in age group i , in year t .

Youth/adult educational attainment rates

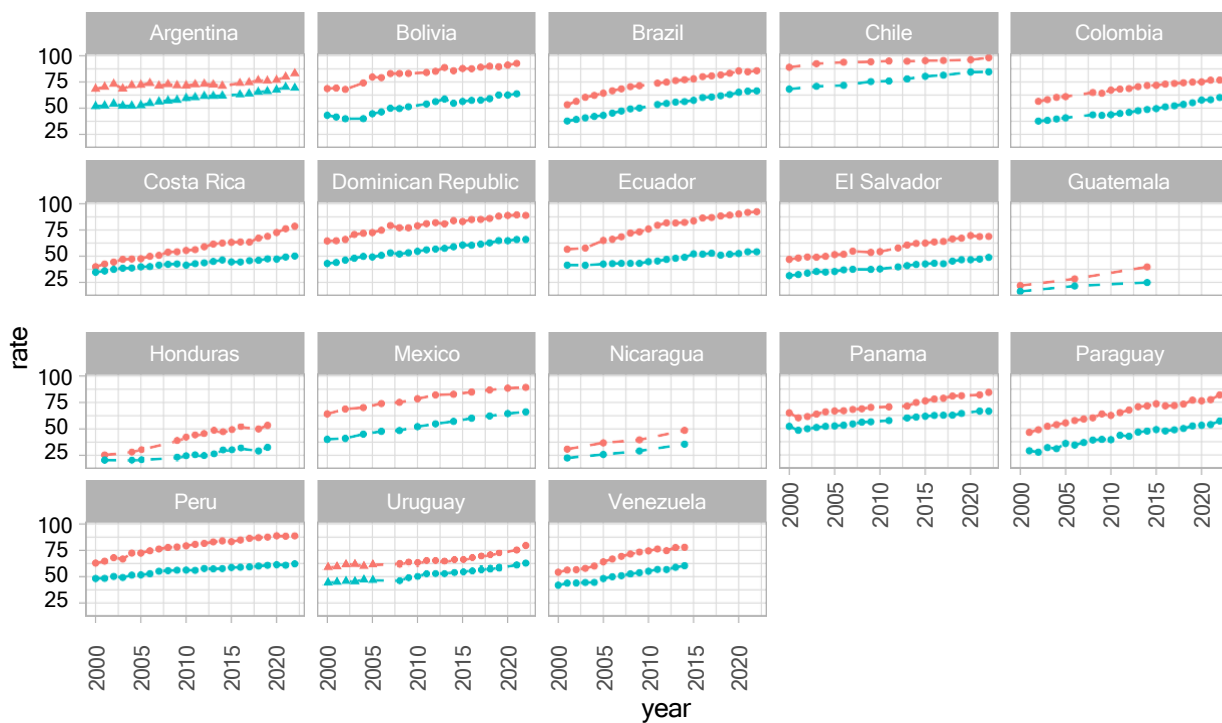
ISCED 1



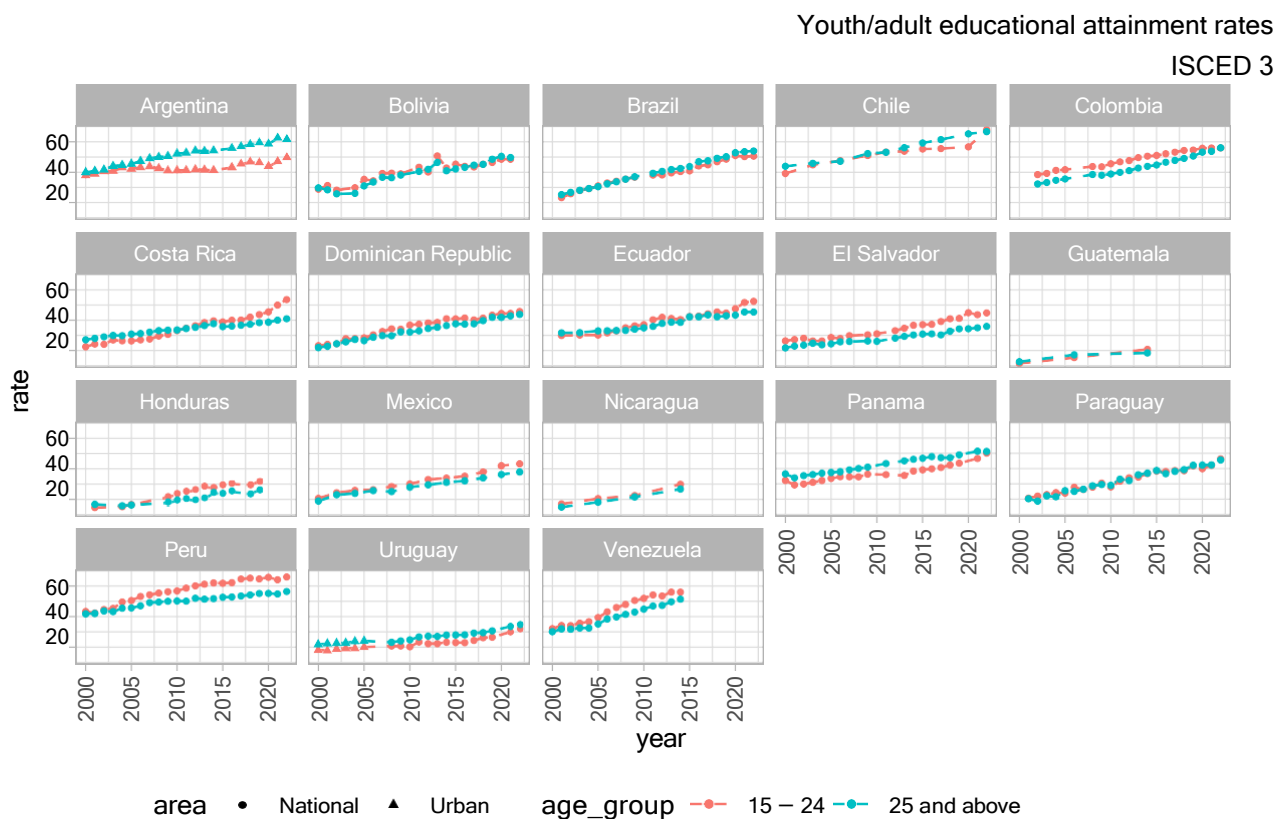
area • National ▲ Urban age_group —●— 15 – 24 —●— 25 and above

Youth/adult educational attainment rates

ISCED 2



area • National ▲ Urban age_group —●— 15 – 24 —●— 25 and above



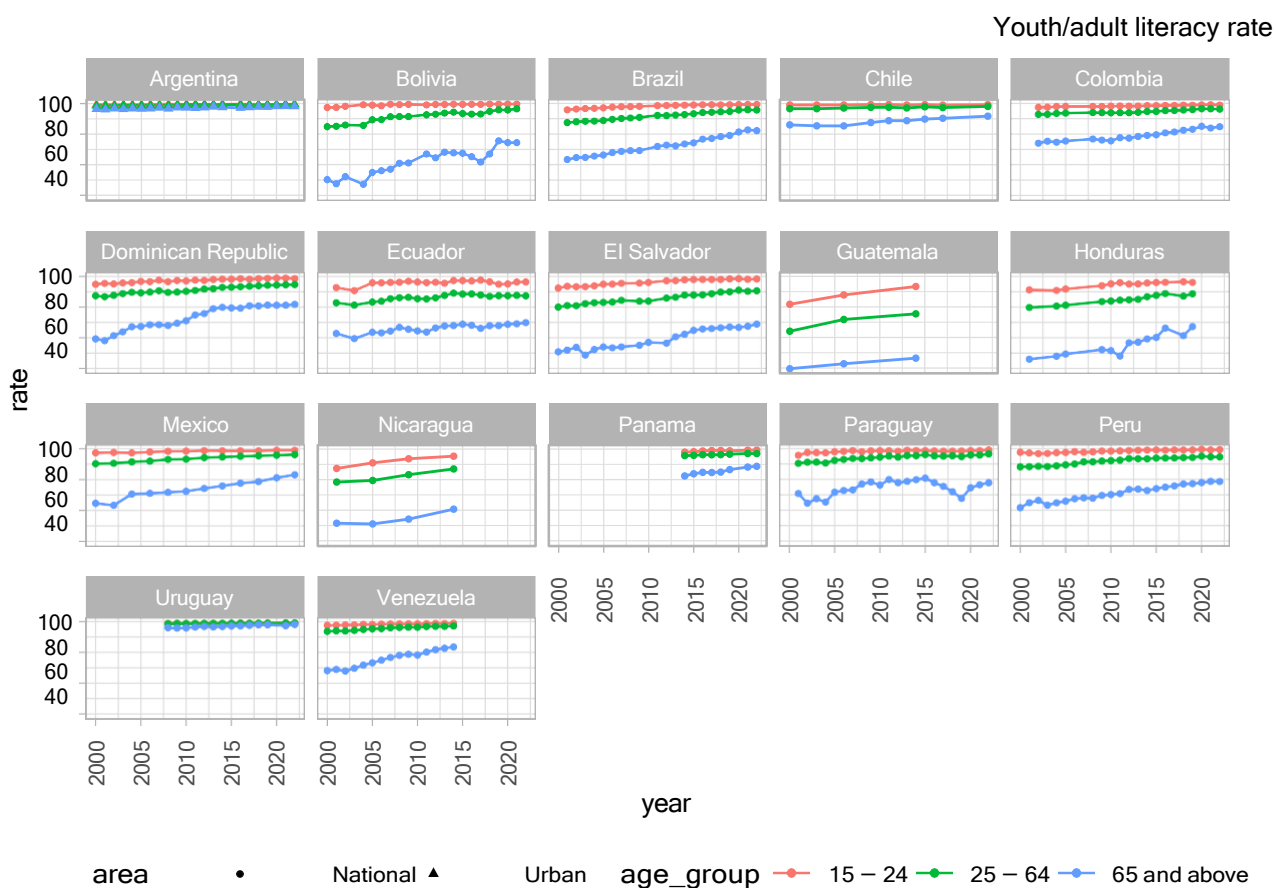
2.10 Youth/adult literacy rate (4.6.2)

Definition: The youth literacy rate is defined by the percentage of the population aged 15 to 24 years that can read and write. It is typically measured according to the ability to comprehend a short simple statement on everyday life. Generally, literacy also encompasses numeracy, and measurement may incorporate a simple assessment of arithmetic ability. The literacy rate and number of literates should be distinguished from functional literacy, a more comprehensive measure of literacy assessed on a continuum in which multiple proficiency levels can be determined. The adult literacy rate is defined by the percentage of the population aged 15 years and over that can read and write.

$$LR_{AG_i} = \frac{LP_{AG_i}}{P_{AG_i}}$$

Where:

- LR_{AG_i} : literacy rate of population in age group i .
- LP_{AG_i} : literate population in age group i .
- P_{AG_i} : population in age group i , excluding persons with unknown literacy status.
- i : 15 to 24 years old (youth), 15 years and older (adults).



2.11 Mean years of schooling

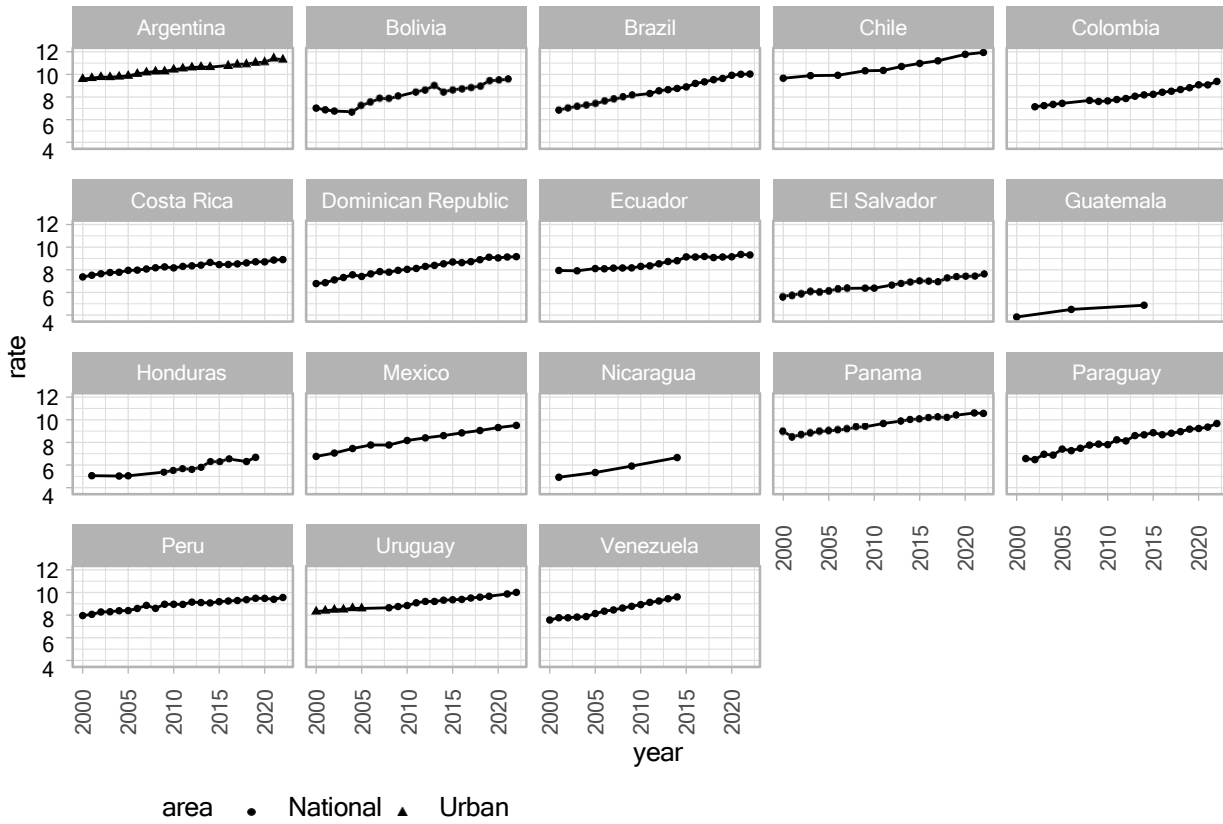
Definition: This indicator is calculated as the average years of study among individuals aged 25 or older.

$$MYS = \frac{\sum_{i=1}^N \text{years_of_study}_i}{N}$$

Where:

- *MYS*: Mean years of schooling.
- *years_of_study_i*: Years of study of the person *i*.
- *N*: Population.

Mean years of schooling



3 Appendix

3.1 Information about educational cycles

Table 1: Information about education cycles by country based on ISCED 2011.

Country	Official entrance age for primary school (e)	Primary cycle duration (db)	Duration of the lower secondary cycle (dbs)	High school Cycle duration (das)	Official entry age for lower secondary school (ebs)	Official entrance age to high school (eas)
Argentina	6	6	3	3	12	15
Bolivia	6	6	2	4	12	14
Brazil	6	5	4	3	11	15
Chile	6	6	2	4	12	14
Colombia	6	5	4	2	11	15
Costa Rica	6	6	3	2	12	15
Ecuador	6	6	3	3	12	15
El Salvador	7	6	3	2	13	16
Guatemala	7	6	3	2	13	16
Honduras	6	6	3	2	12	15
Mexico	6	6	3	3	12	15
Nicaragua	6	6	3	2	12	15
Panama	6	6	3	3	12	15
Paraguay	6	6	3	3	12	15
Peru	6	6	3	2	12	15
Dominican Republic	6	6	2	4	12	14
Uruguay	6	6	3	3	12	15
Venezuela	6	6	3	2	12	15

Table 2: Information about the construction of educational levels and ISCED criteria based on the information from Table 1.

Education level	Description	Criteria	ISCED1	ISCED2	ISCED3
1	Incomplete primary	$ae < db$			
2	Complete primary	$ae = db$	○		
3	Incomplete low secondary	$ae > db \& ae < (db + dbs)$	○		
4	Incomplete upper secondary	$ae \geq (db + dbs) \& (ae < (db + dbs + das))$	○	○	
5	Complete secondary	$ae == (db + dbs + das)$			
6	Incomplete tertiary	$ae > (db + dbs + das) \& ae < (db + dbs + das + 5)$	○	○	○
7	Complete tertiary	$ae \geq (db + dbs + das + 5)$	○	○	○
			○	○	○

3.2 Availability of information on sampling design

Year	ARG	BOL	BRA	CHL	COL	CRI	DOM	ECU	GTM	HND	MEX	NIC	PAN	PER	PRY	SLV	URY	VEN
2000	X	X	...	O	...	X	O	...	X	...	X	...	O	O	...	X	O	X
2001	X	X	O	...	...	X	O	X	...	X	...	X	O	O	X	X	O	X
2002	X	O	X	...	X	X	O	...	...	...	X	...	O	O	X	X	X	X
2003	X	...	X	X	X	X	O	X	...	...	...	...	O	O	X	O	X	X
2004	X	X	X	...	X	X	O	...	...	X	X	...	O	O	X	O	X	X
2005	X	O	X	...	X	X	O	X	...	X	...	X	O	O	X	O	X	X
2006	X	X	X	X	...	X	O	X	X	...	X	...	O	O	X	O	...	X
2007	X	O	X	...	...	X	O	X	...	...	...	...	O	O	X	O	X	X
2008	X	O	X	...	O	X	O	X	...	...	O	...	O	O	X	...	X	X
2009	X	O	X	O	X	X	O	X	...	X	...	O	X	O	X	O	X	X
2010	X	...	...	...	X	X	O	X	...	X	O	...	...	O	X	O	X	X
2011	X	O	X	O	X	X	O	X	...	X	...	...	O	O	X	...	X	X
2012	X	O	X	...	X	X	O	X	...	X	O	...	...	O	X	X	X	X
2013	X	O	X	O	X	X	O	X	...	X	...	...	O	O	X	X	X	X
2014	X	O	O	...	X	X	O	X	X	X	O	X	X	O	X	X	X	X
2015	...	O	O	O	X	O	O	X	...	X	...	...	X	O	X	X	X	...
2016	X	O	O	...	X	O	O	X	...	X	O	...	X	O	X	X	X	...
2017	X	O	O	O	X	O	O	X	...	...	...	...	X	O	X	X	X	...
2018	X	O	O	...	X	O	O	O	...	X	O	...	X	O	X	X	O	...
2019	X	O	O	...	X	O	O	O	...	X	...	...	X	O	X	X	O	...
2020	X	O	O	O	X	O	O	O	...	...	O	...	...	O	X	X	X	...
2021	X	O	O	...	X	O	O	O	...	...	...	...	X	O	X	...	X	...
2022	X	...	O	O	X	O	O	O	...	...	O	...	X	O	X	O	X	...

This table has the information about types of sampling, where:
O: upm and strata are available, X: upm and strata are not available, ... : no data

3.3 Data sources

Table 3: Household survey data by country and year

Country	Survey	Geographic coverage	Years	Survey period
Argentina	Encuesta Permanente de Hogares - EPH	Urban	2000 to 2008	4th quarter
	Encuesta Permanente de Hogares - EPH	Urban	2009 to 2014	3rd and 4th quarter
	Encuesta Permanente de Hogares - EPH	Urban	2016	4th quarter
	Encuesta Permanente de Hogares - EPH	Urban	2017 to 2022	3rd and 4th quarter
Bolivia (Pluri. De)	Encuesta de Hogares	National	2002	Nov. - Dec.
	Encuesta Continua de Hogares - ECH	National	2004 to 2021	November
Brazil	Pesquisa por Amostra de Domicílios - PNAD	National	2001 to 2015	September
	Pesquisa por Amostra de Domicílios Continua - PNAD Continua	National	2016 to 2022	Annual
Chile	Encuesta de Caracterización Socioeconómica Nacional - CASEN	National	2003 to 2022	November to January
Colombia	Encuesta Continua de Hogares	National	2002 to 2008	Annual
	Gran Encuesta Integrada de Hogares	National	2008 to 2022	Annual
Costa Rica	Encuesta de Hogares de Propósitos Múltiples	National	2000 to 2009	July
	Encuesta Nacional de Hogares - ENAHO	National	2010 to 2022	July
Ecuador	Encuesta de Empleo, Subempleo y Desempleo en el Área Urbana y Rural	National	2001 to 2021	December
	Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU)	National	2022	Annual
El Salvador	Encuesta de Hogares de Propósitos Múltiples	National	2001 to 2022	Annual
Guatemala	Encuesta Nacional de Condiciones de Vida - ENCOVI	National	2002, 2006 y 2014	Different periods
Honduras	Encuesta Permanente de Hogares de Propósitos Múltiples	National	2001 to 2019	May or June
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares - ENIGH	National	2002 to 2006	3rd quarter
	Módulo de Condiciones Socioeconómicas de la MCS- ENIGH	National	2008 to 2014	Aug - Nov.
	Encuesta Nacional de Ingresos y Gastos de los Hogares - ENIGH - Nueva serie	National	2016 to 2022	Aug - Nov.
Nicaragua	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida	National	2005, 2009 y 2014	Different periods
Panama	Encuesta de Mercado Laboral	National	2001 to 2013	August
	Encuesta de Propósitos Múltiples	National	2014 to 2019	March
	Encuesta de Mercado Laboral	National	2021 to 2022	October
Paraguay	Encuesta Integrada de Hogares	National	2001 y 2002	Nov-Dec.
	Encuesta Permanente de Hogares	National	2003 to 2016	Oct - Dec.
	Encuesta Permanente de Hogares	National	2017 to 2022	Annual
Peru	Encuesta Nacional de Hogares - Condiciones de Vida y Pobreza	National	2001 to 2003	4th quarter
	Encuesta Nacional de Hogares - Condiciones de Vida y Pobreza	National	2004 to 2022	Annual
Dominican Republic	Encuesta de Fuerza de Trabajo - EFT	National	2001 to 2015	October
	Encuesta Nacional Continua de Fuerza de Trabajo - ENCFT	National	2016 to 2022	Annual
Uruguay	Encuesta Continua de Hogares	Urban	2001 to 2005	Annual
	Encuesta Continua de Hogares	National	2007 to 2022	Annual
Venezuela (Rep. Bol. de)	Encuesta de Hogares por Muestreo	National	2001 to 2014	2nd semester

Source: Economic Commission for Latin America and the Caribbean (ECLAC), based on the Household Survey Data Bank (BADEHOG).

3.4 Updates/Modifications to the databases

Table 4: Updates and modifications to the databases by country and year.

Country	Years	Description
Argentina	2009 to 2021	The reference period has been changed from quarterly to biannually. Due to information availability reasons, this change does not encompass 2016.
Chile	2006 to 2020	The survey weights have been updated following a new calibration based on the national census of 2017.
Colombia	2010 to 2021	The survey weights have been updated based on the national census of 2018.
Dominican Republic	2016 to 2021	The variable 'years of study' was modified to align with a new scheme consisting of 6 years of primary education and 6 years of secondary education.
Paraguay	2005 to 2021	The standardized variable for attendance has been modified to include individuals who have never attended school as "does not attend"; previously, they were classified as NA.
Uruguay	2011 to 2019	The standardized variable for attendance has been modified to include individuals attending technical education, teaching studies or teacher training, and postgraduate studies.

Note: For further details regarding changes in any indicator, please review the Excel files labeled "comparison_13_dec_2023".