

**FEASIBILITY ANALYSIS FOR THE CONSTRUCTION OF NEW INDICATORS
(Preliminary version)**

**United Nations Economic Commission for
Latin America and the Caribbean (ECLAC)¹**

TCG 9 Joint Working Group
on EMIS and Household Surveys

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UNITED NATIONS ECONOMIC COMMISSION FOR
LATIN AMERICA AND THE CARIBBEAN (ECLAC)

STATISTICS DIVISION

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1 Introduction

ECLAC Statistics Division regularly estimates regionally comparable education indicators based on its household survey databank (BADEHOG). These include *completion rates*, *Net attendance rates*, *Out-of-school rates* and others. This report analyses the feasibility of producing additional indicators, based on the same group of surveys. The indicators are:

- Percentage of children over-age for grade (primary education, lower secondary education) (4.1.5)
- Educational attainment rates by age group and level of education (4.4.3)
- Youth/adult literacy rate (4.6.2)
- Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months (4.3.1)

The process employed is the following:

1. Review of the indicator metadata and required inputs.
2. Review of the variables necessary to estimate the indicator.
 - (a) Assess whether the harmonized variables already available in BADEHOG adjust to what is required.
 - (b) If not, detailed review of survey questionnaires to find new variables to harmonize.
3. For those indicators that are possible to estimate, the corresponding processing codes were developed and the results obtained are presented:
 - (a) Point estimation by country, year and different disaggregations.
 - (b) Measures of precision of the point estimate (Standard error, confidence interval and coefficient of variation), taking into consideration the survey sampling design (when available).

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

2.1 Indicator Definition

UNESCO 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.

2.1.1 Feasibility analysis

This indicator requires three variables, *age*, *years of study* and *entrance age*. The first two are available in the surveys and the third is based on ISCED 2011 for each country (see 3).

2.2 Calculation method

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

$$diff_{i,c} = age_i - e_c - yearsstudy_i \quad (1)$$

Where:

- $diff_{i,c}$: 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:

$$YOA_{i,c} = \begin{cases} 1 & si \quad diff_{i,c} \geq 2 \\ 0 & si \quad diff_{i,c} < 2 \end{cases} \quad (2)$$

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:

$$POAG_n = \frac{\sum_{g=1}^{d_n} YOA_{i,n}}{E_n} \quad (3)$$

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)

2.3 Graphical results

This section presents preliminary results by country, year and level (primary education and lower secondary education).

Primary education

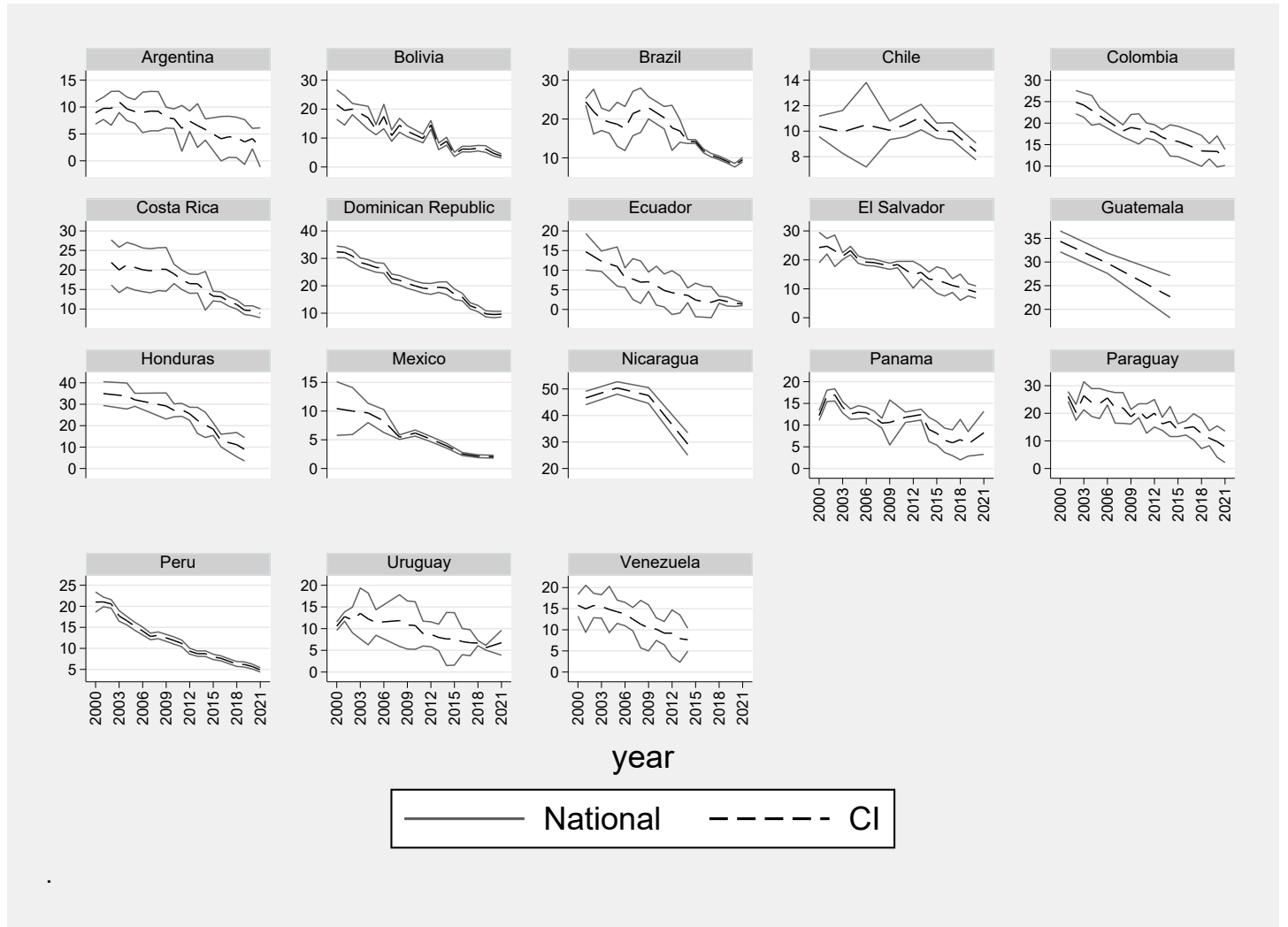


Figure 1: National results for indicator 4.1.5, primary education, with the corresponding confidence interval.

Lower secondary education

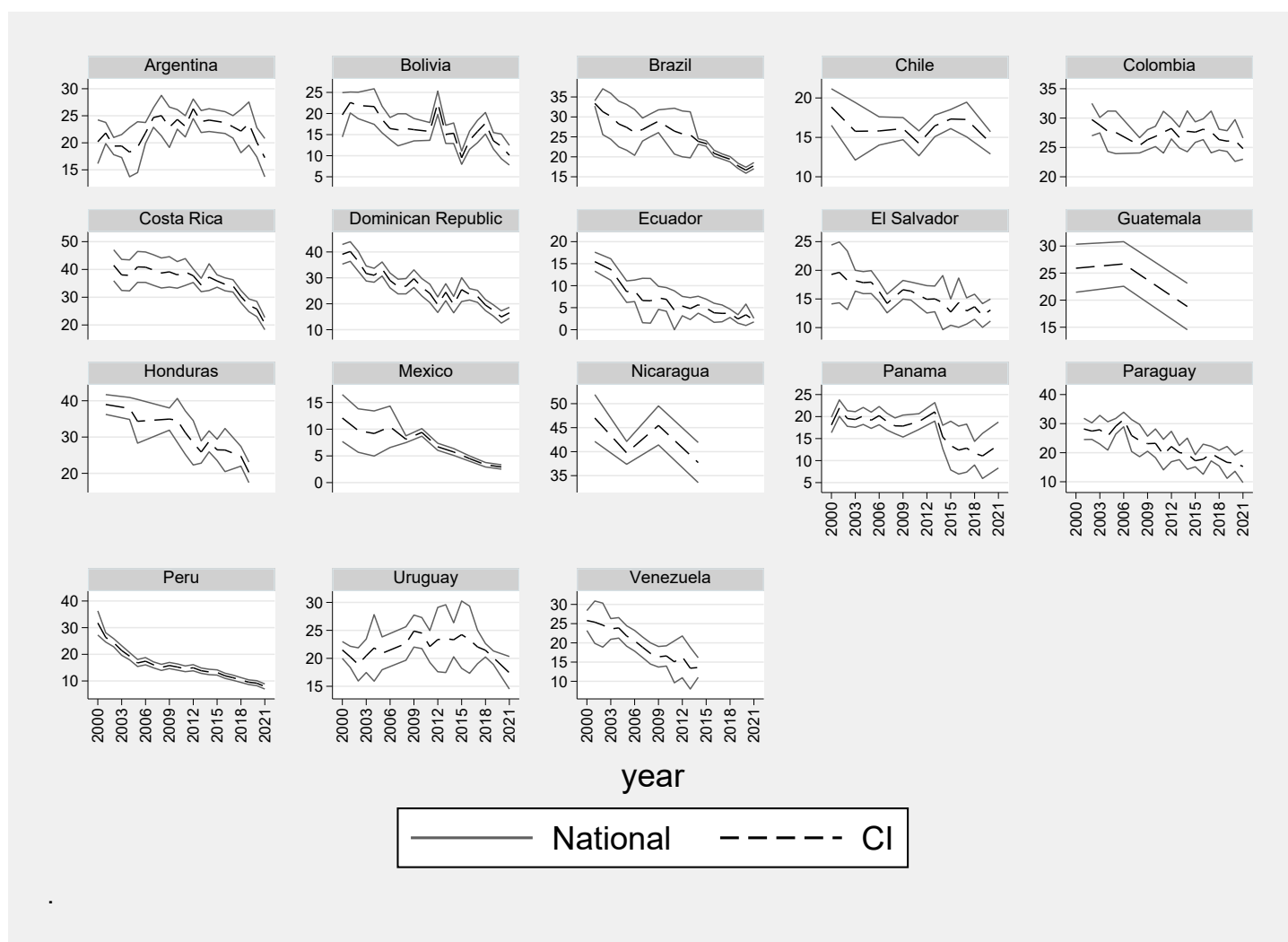


Figure 2: National results for indicator 4.1.5, lower secondary education, with the corresponding confidence interval.

3 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months (4.3.1)

3.1 Indicator Definition

UNESCO DEFINITION:Percentage of youth and adults in a given age range (e.g. 15-24 years, 25-64 years, etc.) participating in formal or non-formal education or training in a given time period (e.g. last 12 months).

3.1.1 Feasibility analysis

The harmonized variable on attendance available in BADEHOG refers only to the formal education of children and young people. Therefore, a detailed review of the survey questionnaires was carried out, to identify if additional information on attendance to non-formal education or training was available.

Table 1 shows a summary of results, by country and year, including the contents of the traditional attendance variable, other variables related to education attendance and comments regarding its usefulness for the index.

Country	Attendance Variable	Additional Variable Available.	Comments
Argentina, Brazil (2000 - 2015), Bolivia, Chile (2011, 2020), Colombia (2000 - 2007), Nicaragua, El Salvador, Honduras (2004 - 2019), Mexico (2000 - 2006), Panama and Uruguay	Only attendance at formal education	...	It is not feasible to generate the indicator
Brazil (2016 - 2021)	Attendance at formal education and training of at least 360 hours	...	The duration is high compared to the duration of some training or courses. It is feasible, but with limited information
Chile (2000 - 2009, 2015 - 2017) Guatemala	Only attendance at formal education	Training during the last 12 months, only for employees.	Information is for salaried workers only. It is feasible, but with limited information
Colombia (2008 - 2021) and Dominican Republic	Only attendance at formal education	Only reported as a reason for absence from work during the last week.	The information consists of a very limited time window and only for employed persons. It is not feasible to generate the indicator
Costa Rica	It includes all types of education, both formal and non-formal.		It is feasible to generate the indicator
Ecuador (2000, 2013, 2015, 2017)	Only attendance at formal education	Asks if the person is currently receiving training, only for salaried employees, and attendance to training in the last 12 months (not only employed).	It does not specify what type of training and due to the frequency in the data it does not seem to include all types of education. It is feasible, but with limited information
Ecuador(2003 - 2012, 2014, 2016, 2018 - 2021)	Only attendance at formal education	Receive training currently, only for salaried employees.	Does not include training within a previous time period. It is feasible, but with limited information
Honduras (2001)	Only attendance at formal education	Attendance at teaching or training in the last month.	It does not specify what type of training and its duration. It is feasible, but with limited information
Mexico (2008 - 2020)	Only attendance at formal education	Only reported as a reason for absence from work during the last month.	The information consists of a very limited time window and only for employed persons. It is feasible, but with limited information
Paraguay (2001)	Only attendance at formal education	It includes training information, but does not include the duration, only the year it was undertaken.	It does not include the duration or type of training. It is possible to process the previous year only. It is feasible, but with limited information
Paraguay (2002 - 2005)	Attendance at formal education and specializations for people under 50 years of age.		It is feasible to generate the indicator
Paraguay (2006 - 2020)	Attendance at formal education, special programs, teacher professionalization and literacy programs.		Does not include all types of specialization. It is feasible, but with limited information
Peru (2000 - 2020)	Only attendance at formal education	Attendance at a study center or program whose duration is less than 3 years in the last 12 months.	It is feasible to generate the indicator
Venezuela (2000 - 2014)	Only attendance at formal education	Attendance to training center	It is feasible to generate the indicator

Table 1: Information compiled from the household database questionnaires for the feasibility analysis of the attendance variable currently used and others in order to

Table 2: Feasibility Summary

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

This table shows a summary of the feasibility for the generation of the indicator as explained in the 1 table., where:
✓: feasible, X: not feasible, ~ : feasible with limited information, ... : no data

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

4.1 Indicator Definition

UNESCO 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).

4.1.1 Feasibility analysis

This indicators required three variables, years of study, age and entrance age (with years of study and entrance age we generate the variable ISCED (table 4)).

4.2 Calculation method

Divide the number of persons in age group and above with respect to the highest level of education attained by the total population of the same age group and multiply the result by 100.

$$EA_{AG_i,n}^t = \frac{EAP_{AG_i,n}^t}{P_{AG_i}^t} \quad (4)$$

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 .

4.3 Graphical results

This section shows a brief of the results as a preliminary version by ISCED levels and age range.

Age range: 15 - 24

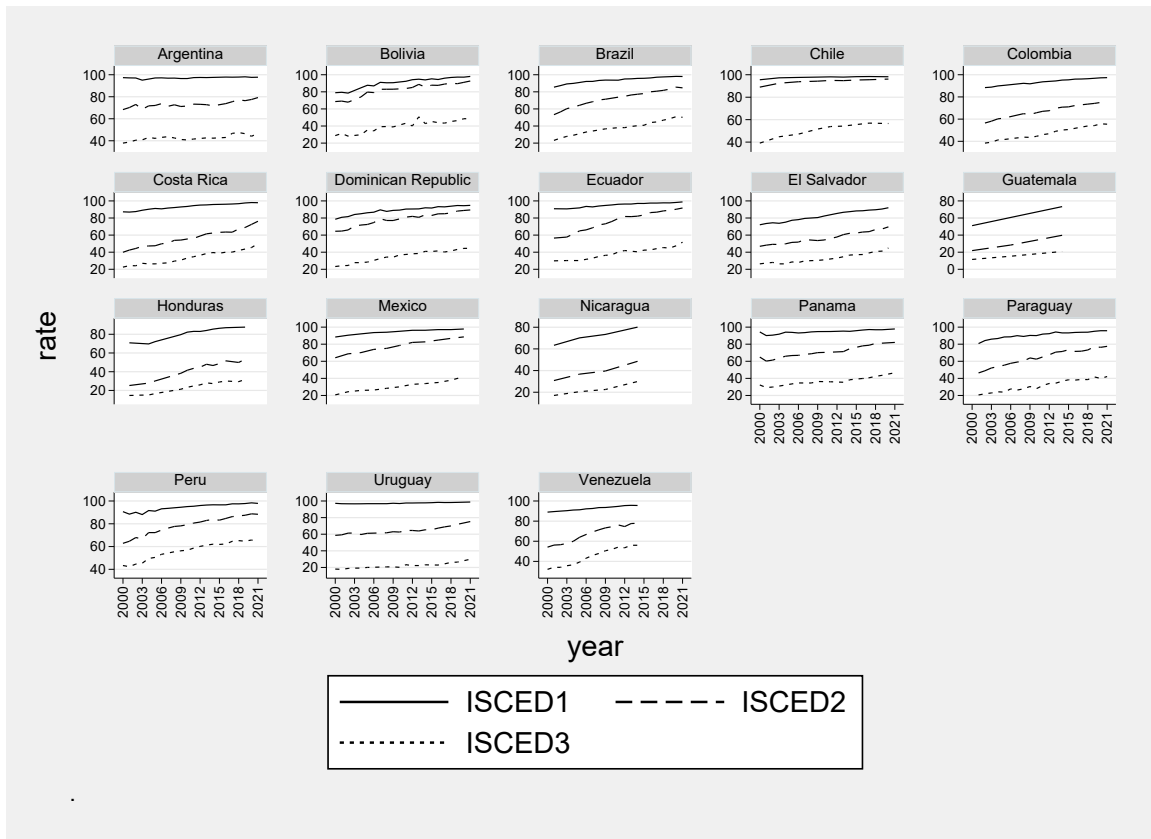


Figure 3: National results for indicator 4.4.3, age range 15 - 24, by ISCED.

Age range: 25 and above

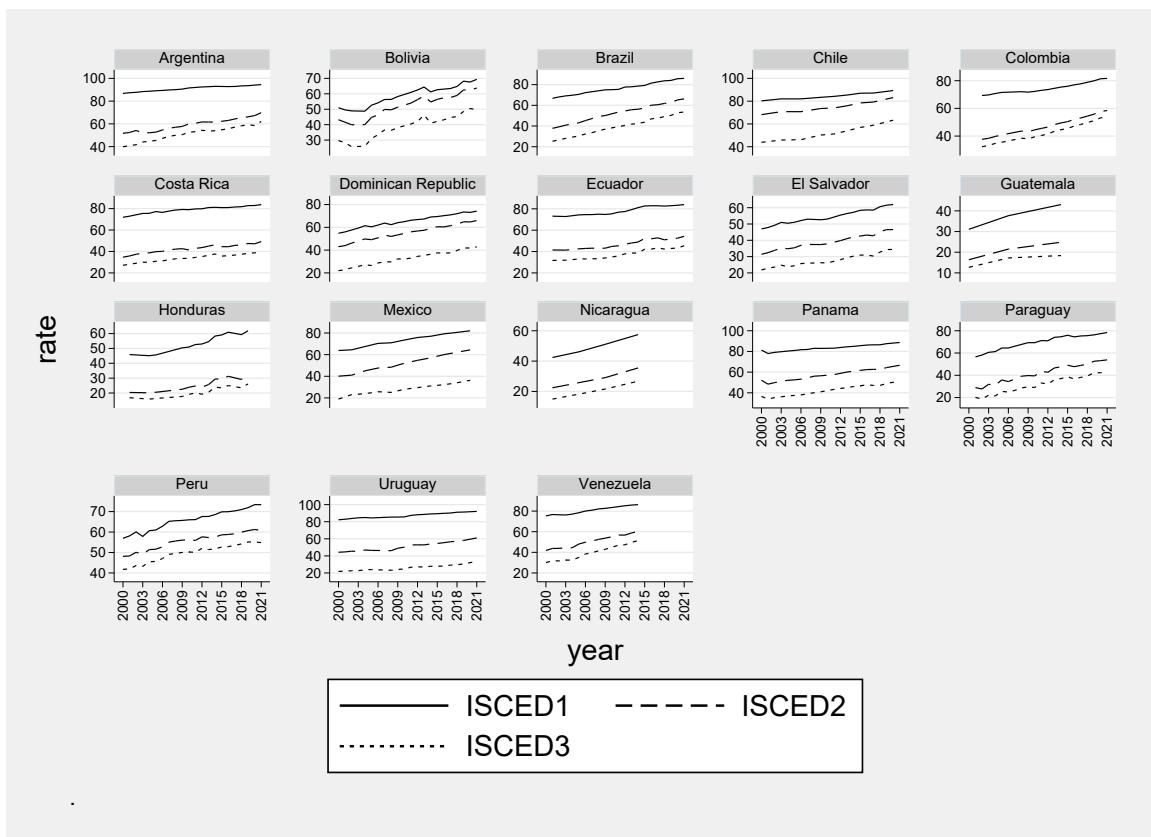


Figure 4: National results for indicator 4.4.3, age range 25 and above, by ISCED.

5 Youth/adult literacy rate (4.6.2)

5.1 Indicator Definition

UNESCO 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.

5.1.1 Feasibility analysis

We generate a standardized variable, this variable represents the literacy, giving information about the capacity of read and write about the person.

5.2 Calculation Method

Percentage of the number of literate persons out of the total number of persons in the same age group, excluding persons with unknown literacy status.

$$LR_{AG_i} = \frac{LP_{AG_i}}{P_{AG_i}} \quad (5)$$

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).

5.3 Graphical results

This section shows a brief of the results as a preliminary version by age range.

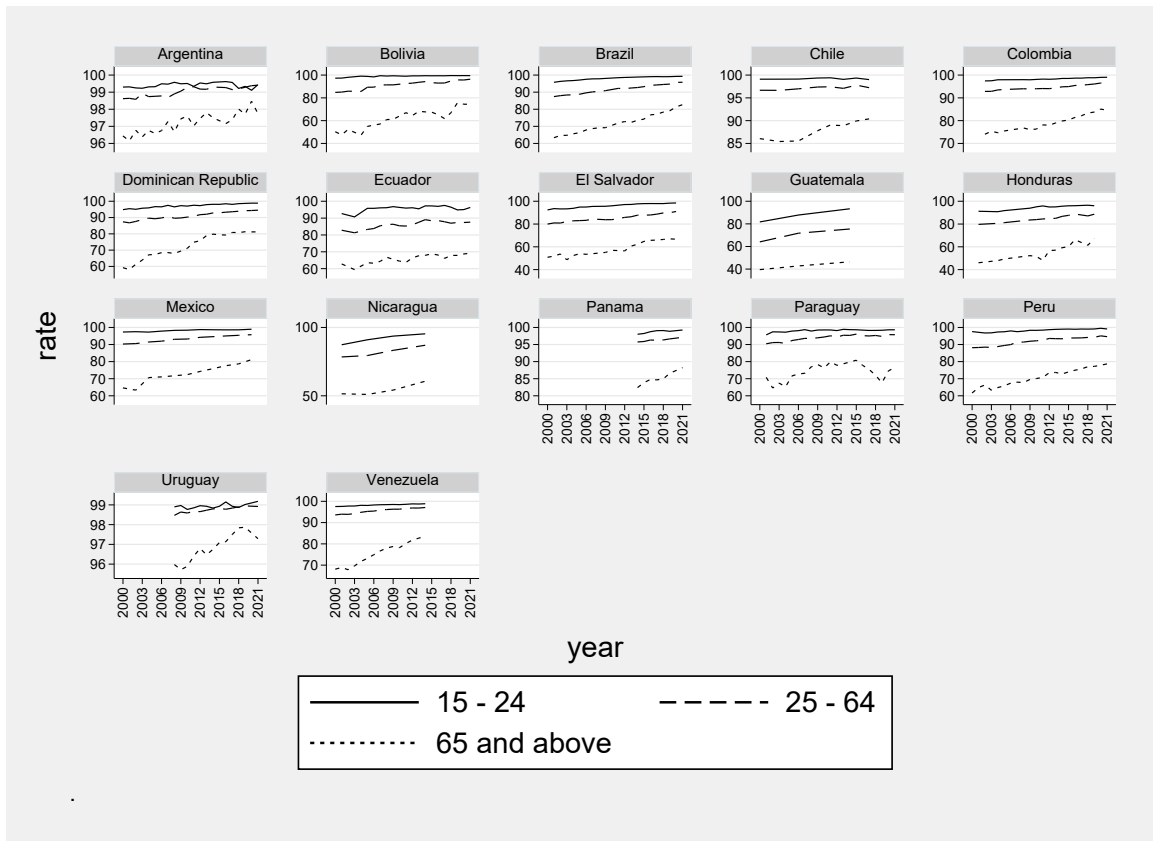


Figure 5: National results for indicator 4.6.2, by age range.

Part I

Appendix

A Information about educational cycles

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

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

Table 4: Information about the construction of educational levels and ISCED criteria based on the information from Table 3.

B Availability of information on sampling design

The estimation of confidence intervals, standard errors y coefficient of variation requires information on the primary sampling unit and strata to which each observation belongs. This information is not always available in the surveys, as shown in table 5. In its absence, random sampling has been assumed to estimate the precision of the indicators (thus understating the true variance).

Table 5: types of sampling

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

This table has the information about types of sampling, where:

✓: upm and strata are available, X: upm and strata are not available, ... : no data

C Data sources

Table 6: Household survey data by country and year

Country	Survey	Geographic coverage	Years	Survey period
Argentina	Encuesta Permanente de Hogares - EPH	Urban	2000-2021	4th trim.
Bolivia (Est. Pluri. De)	Encuesta de Hogares	National	2002	Nov. - Dec.
	Encuesta Continua de Hogares - ECH	National	2004 a 2021	November
Brazil	Pesquisa por Amostra de Domicilios - PNAD	National	2001 a 2015	September
	Pesquisa por Amostra de Domicilios Continua - PNAD Continua	National	2016 a 2021	Annual
Chile	Encuesta de Caracterización Socioeconómica Nacional - CASEN	National	2003 a 2020	November to January
Colombia	Encuesta Continua de Hogares	National	2002 a 2008	Annual
	Gran Encuesta Integrada de Hogares	National	2008 a 2021	Annual
Costa Rica	Encuesta de Hogares de Propósitos Múltiples	National	2000 a 2009	July
Ecuador	Encuesta Nacional de Hogares - ENAHO	National	2010 a 2021	July
	Encuesta de Empleo, Subempleo y Desempleo en el Area Urbana y Rural	National	2001 a 2021	December
El Salvador	Encuesta de Hogares de Propósitos Múltiples	National	2001 a 2020	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 a 2019	May or June
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares - ENIGH	National	2002 a 2006	3rd trim.
	Módulo de Condiciones Socioeconómicas de la MCS-ENIGH	National	2008 a 2014	Aug - Nov.
	Encuesta Nacional de Ingresos y Gastos de los Hogares - ENIGH - Nueva serie	National	2016 a 2020	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 a 2013	August
	Encuesta de Propósitos Múltiples	National	2014 a 2019	March
	Encuesta de Mercado Laboral	National	2021	October
Paraguay	Encuesta Integrada de Hogares	National	2001 y 2002	Nov-Dec.
	Encuesta Permanente de Hogares	National	2003 a 2016	Oct - Dec.
	Encuesta Permanente de Hogares	National	2017 a 2021	Annual
Peru	Encuesta Nacional de Hogares - Condiciones de Vida y Pobreza	National	2001 a 2003	4th trim.
	Encuesta Nacional de Hogares - Condiciones de Vida y Pobreza	National	2004 a 2021	Annual
Dominican Republic	Encuesta de Fuerza de Trabajo - EFT	National	2001 a 2015	October
	Encuesta Nacional Continua de Fuerza de Trabajo - ENCFT	National	2016 a 2021	Annual
Uruguay	Encuesta Continua de Hogares	Urban	2001 a 2005	Annual
	Encuesta Continua de Hogares	National	2007 a 2021	Annual
Venezuela (Rep. Bol. de)	Encuesta de Hogares por Muestreo	National	2001 a 2014	2nd semester

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

D Graphs by indicator

This section shows the results by indicator in more detail to graphically summarize the products delivered.

D.1 Percentage of children over-age for grade (4.1.5)

D.1.1 by geographic disaggregation

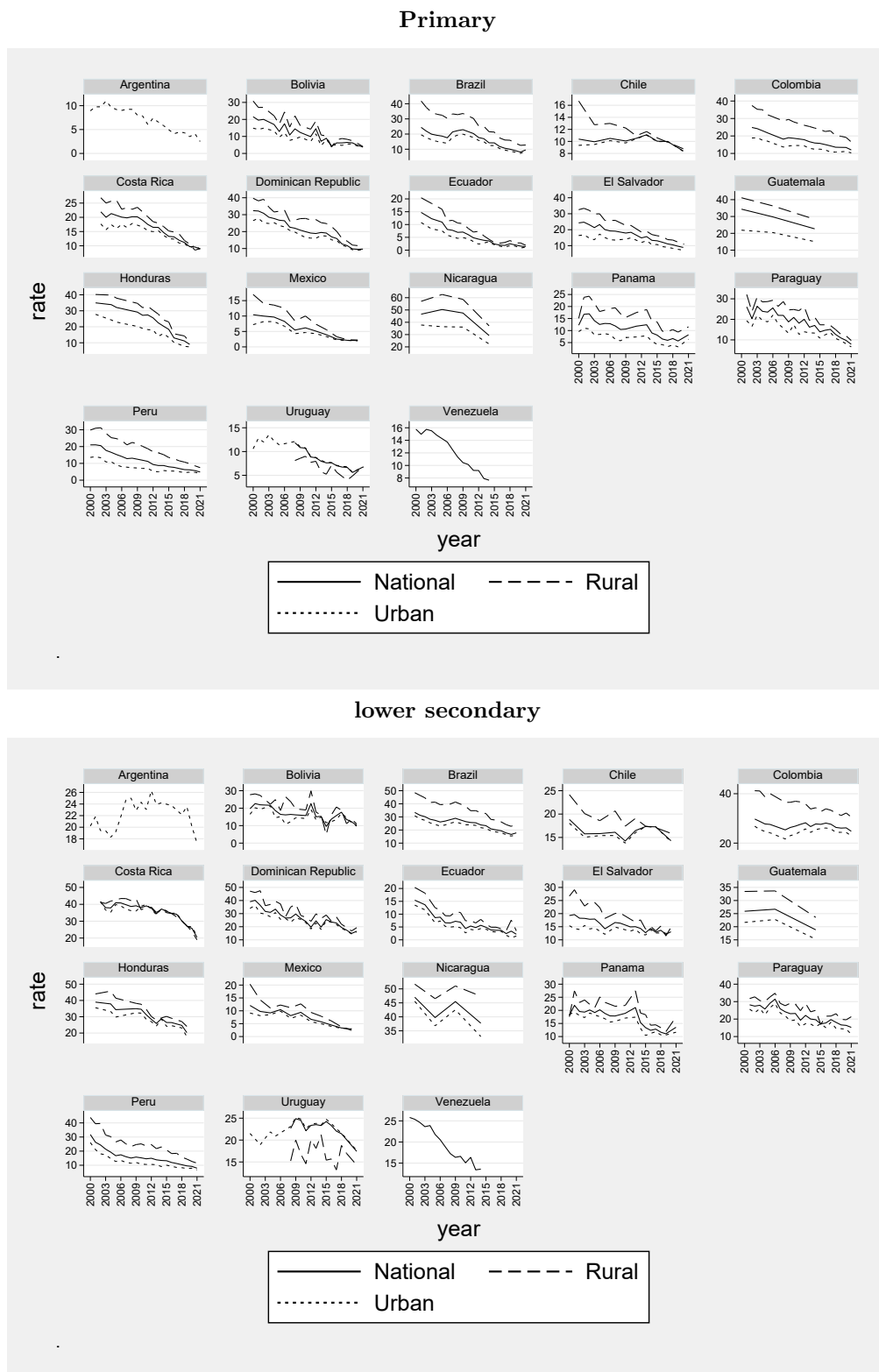


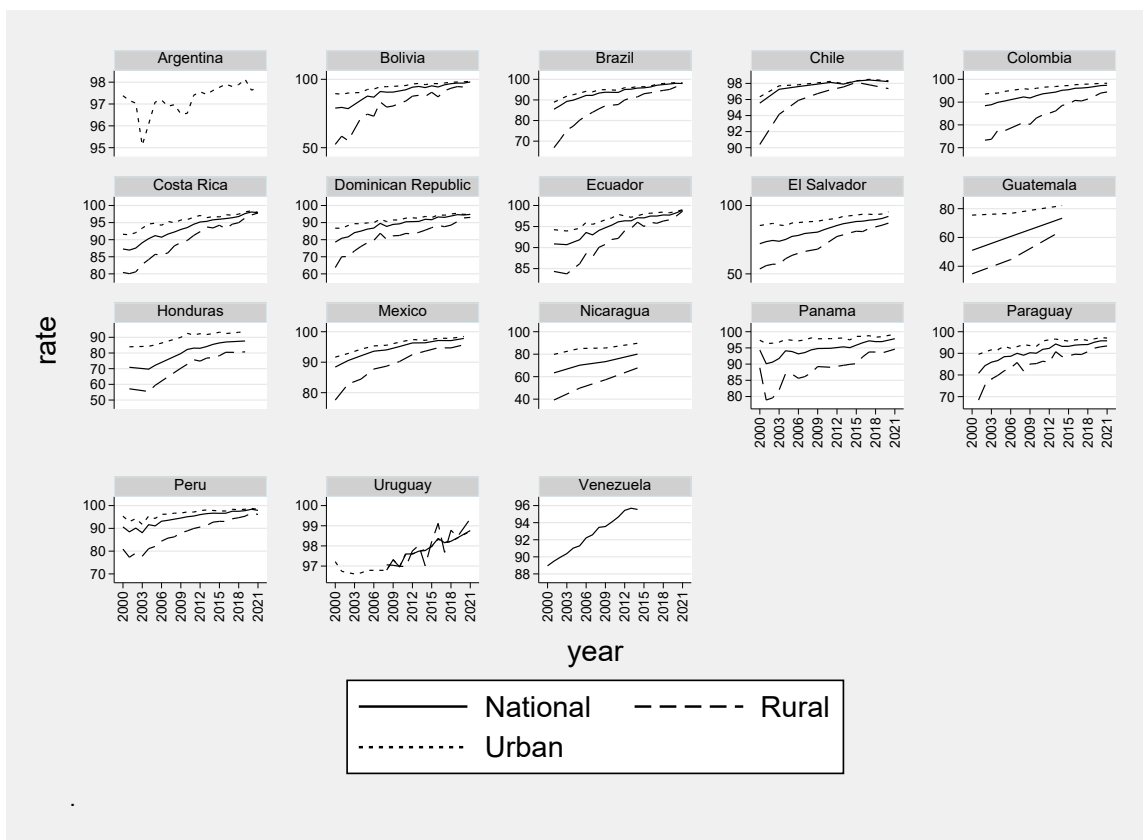
Figure 6

D.1.2 by geographic disaggregation

D.2 Percentage of children over-age for grade (4.4.3)

D.2.1 by geographic disaggregation - ISCED1

Age range: 15 - 24



Age range: 25 and above

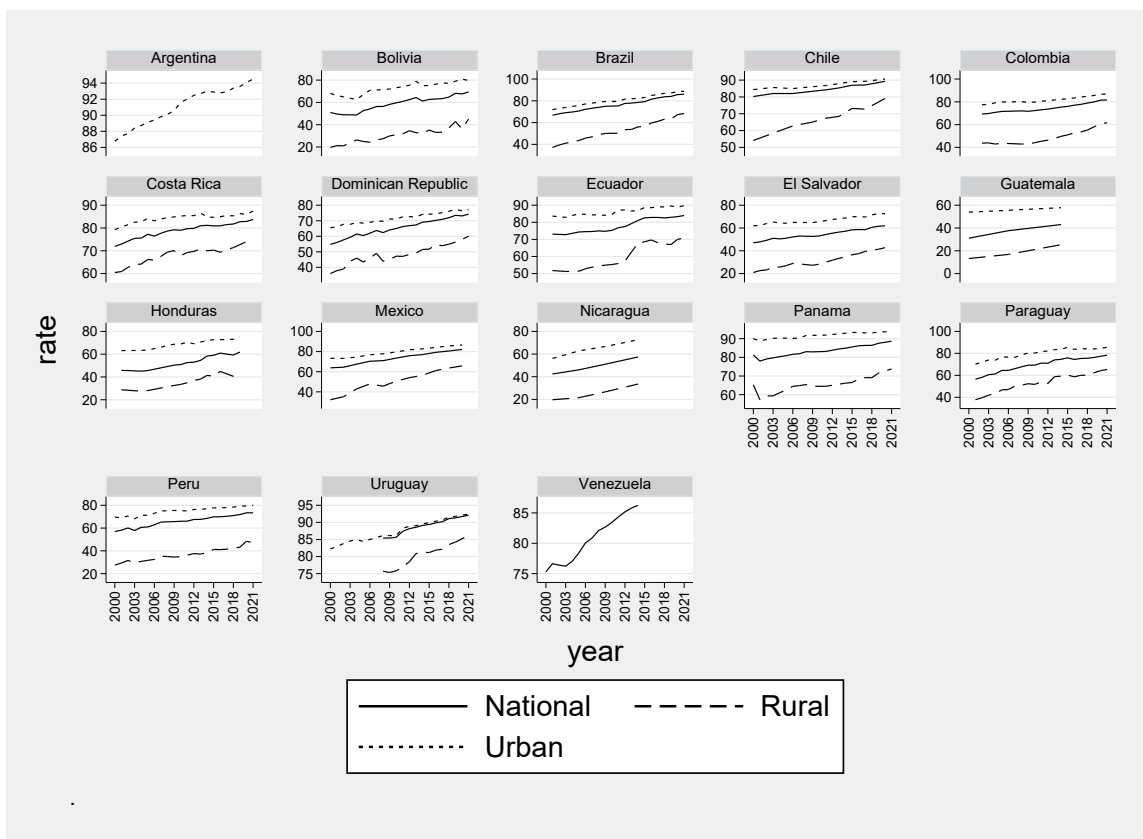
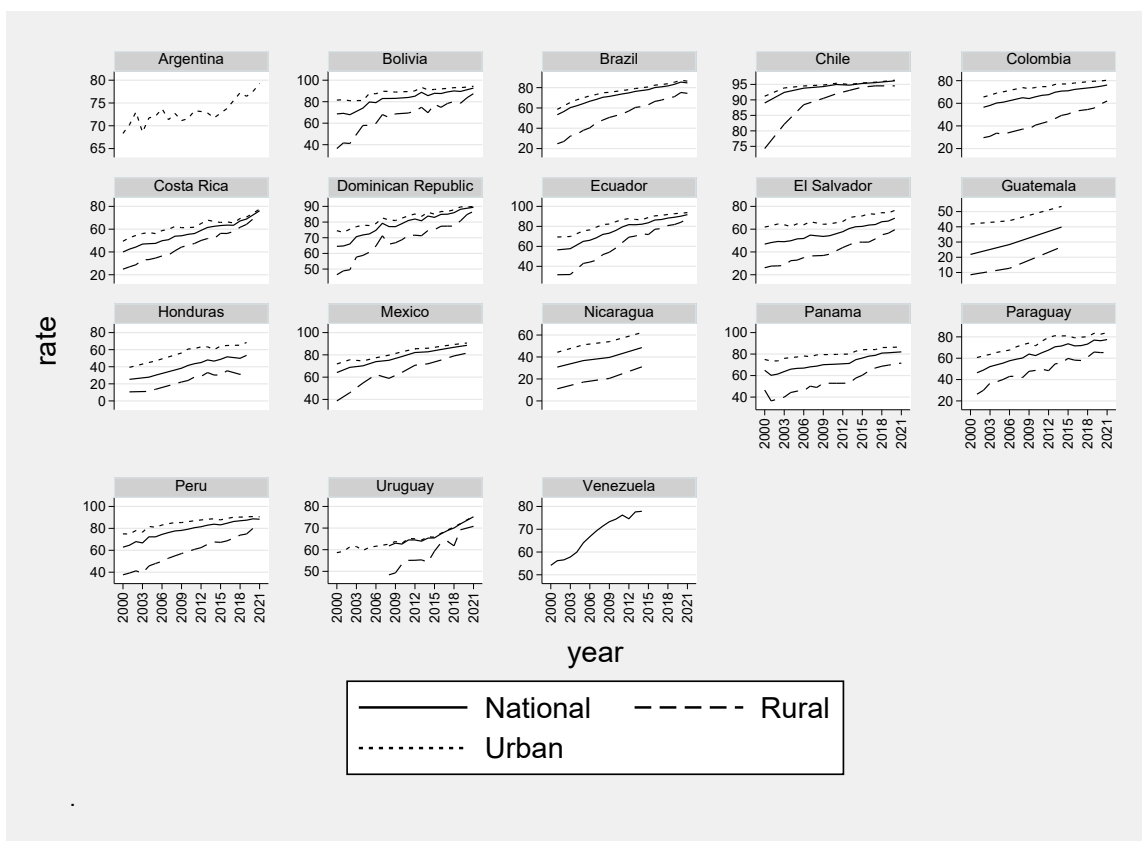


Figure 7

D.2.2 by geographic disaggregation - ISCED2

Age range: 15 - 24



Age range: 25 and above

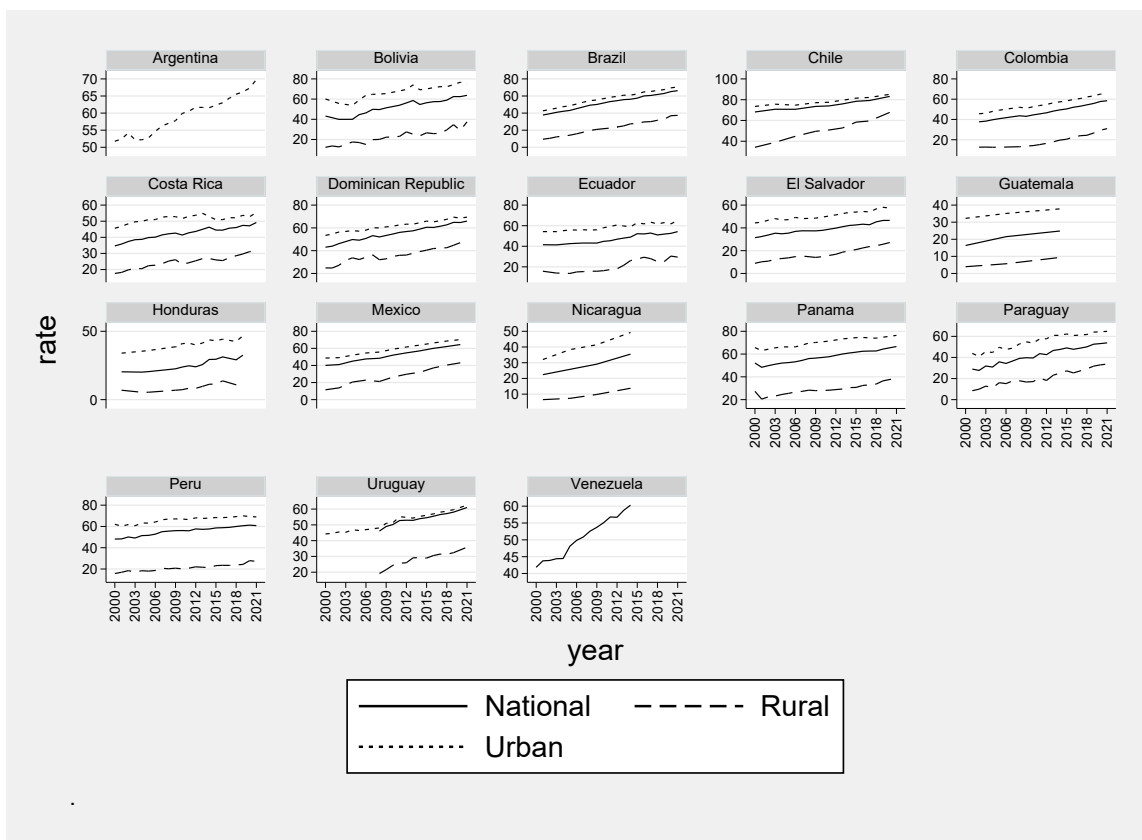
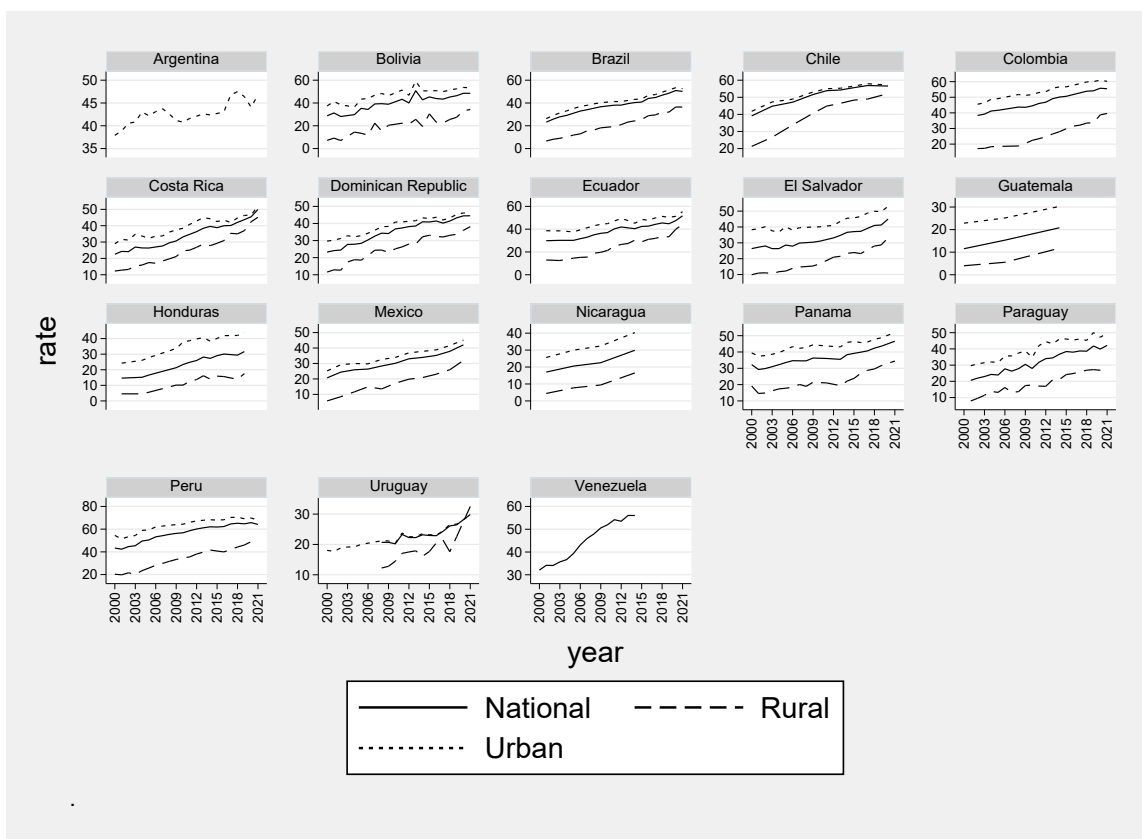


Figure 8

D.2.3 by geographic disaggregation - ISCED3

Age range: 15 - 24



Age range: 25 and above

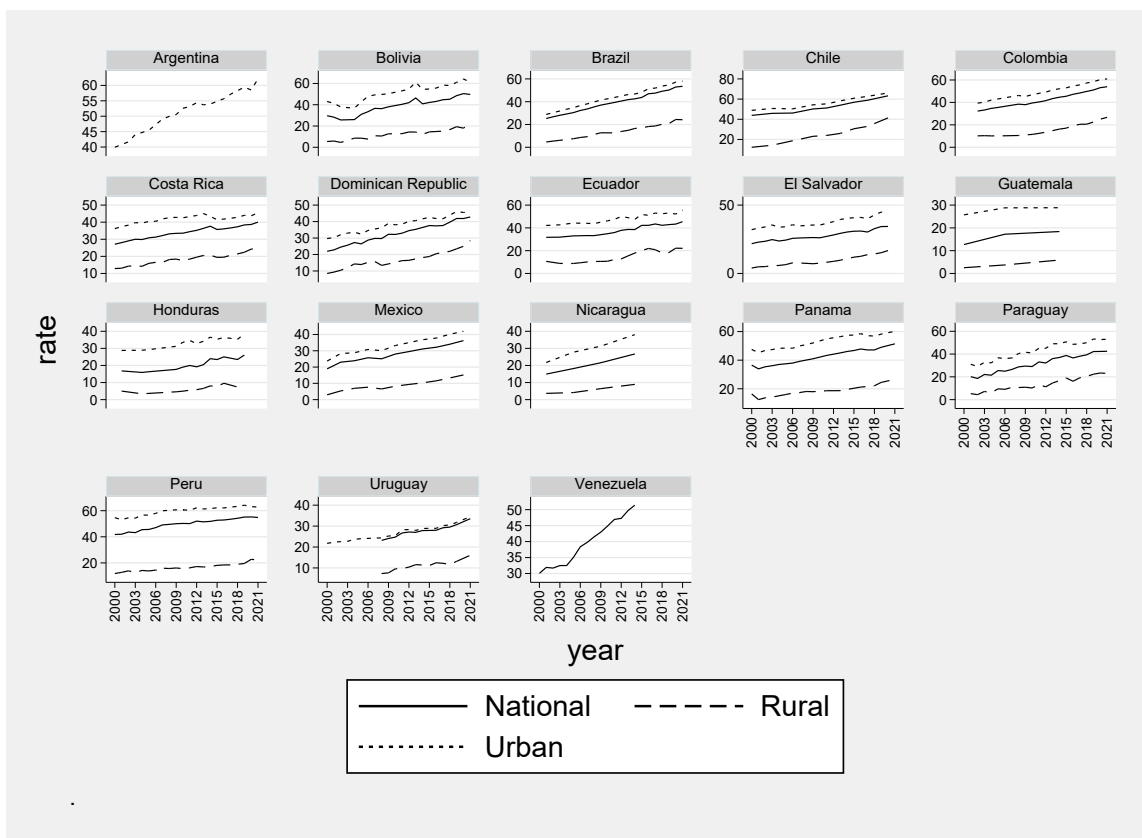
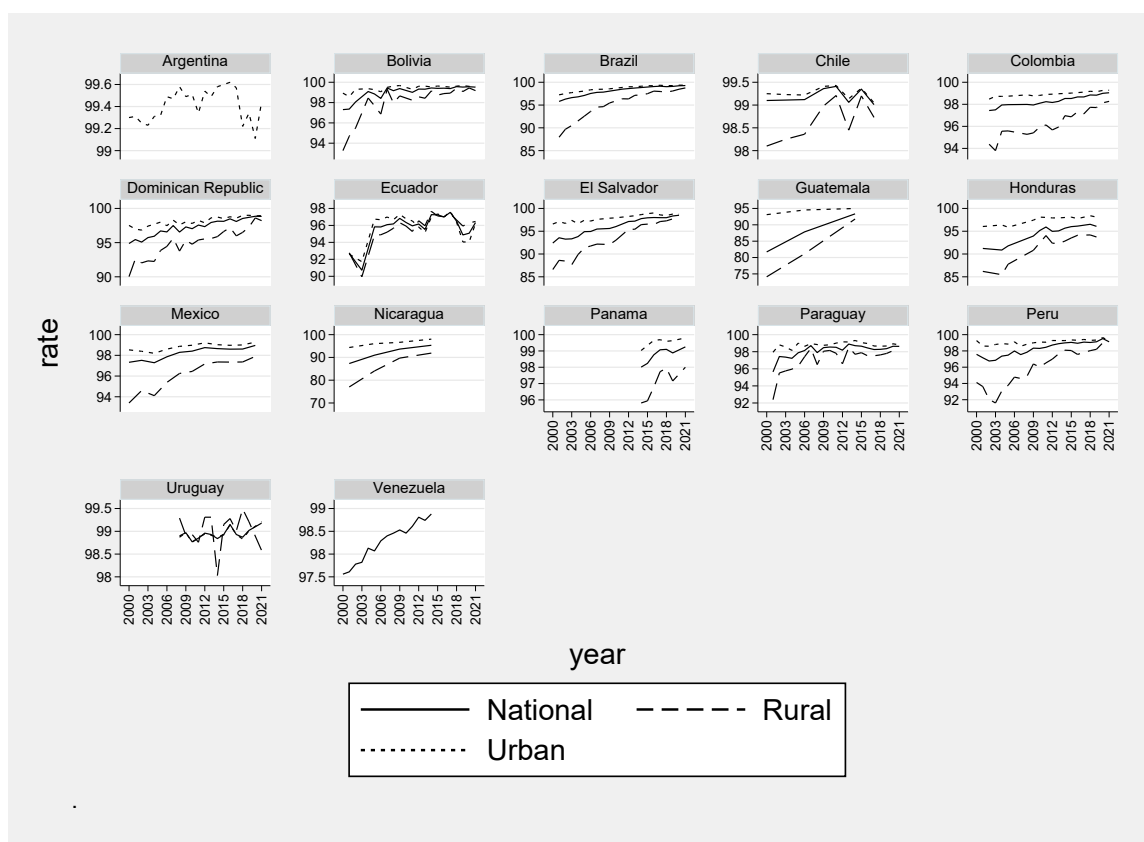


Figure 9

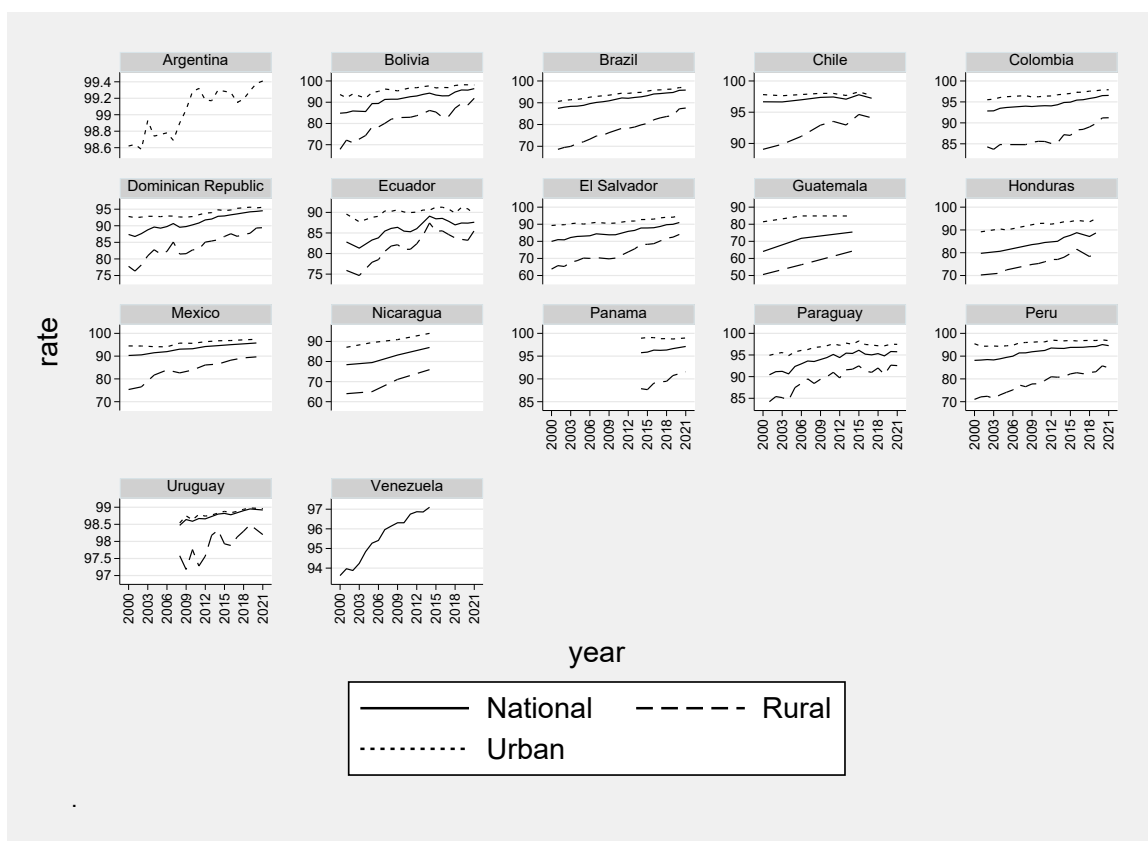
D.3 Youth/adult literacy rate (4.6.2)

D.3.1 by geographic disaggregation

Age range: 15 - 24



Age range: 25 - 64



Age range: 15 - 24

