The Trans-Generational Impact of Education:
A Quantitative View of 10 Countries

Aimee Verdisco
Germán Rama

This note speaks to the progress made in expanding access of education as well as to the challenges that remain. Drawing on household survey data from ten countries, it presents quantitative information to show that, compared with the recent past, access to education has become more universal and coverage, particularly at the secondary level, has been extended to previously excluded populations. Such progress remains context-bound and relative. Whereas countries with low levels of education (e.g., Honduras and Bolivia) are making progress towards universalizing the primary cycle, countries on the higher end of the scale (e.g., Argentina, Chile, Uruguay) are showing considerable progress towards universalizing the secondary level.

The data also point to the weight of education in promoting trans-generational mobility. Simply put, education creates virtuous cycles: the higher the level of education of the parent, the more likely it is that the child will enter the education system within the officially established age range, steadily progress through the system, and complete the course of study in a timely manner. Such efficiency, in turn, leads to higher levels of overall socioeconomic growth and development.

Normal vs. delayed progression: A comment on method

This note applies a straightforward method. It starts with a cohort of students aged 6-20 and attending school in the formal system (primary and secondary levels).[1] It then assumes that "normal" students are those entering the system within the officially established age group. For purposes of this study, "normal" is based on the following assumptions: eight-year olds have completed first grade; nine-year olds have completed second grade; ten-year olds have completed third grade; etc.[2] The soundness of this definition can be debated, particularly insofar as no estimation of repetition, promotion or dropout has been made or factored into the equation.

---

[1] The tertiary level is not included here. For this reason, data – particularly for youth in the higher age groups – should be interpreted cautiously. In systems known for higher levels of efficiency and access (e.g., Chile, Argentina, Uruguay), the data included in this study are not likely to provide an accurate view: the comparatively low percentages of youth in these age groups likely can be attributed to the fact that many - not accounted for here - are continuing their studies at the tertiary level.

[2] Data for Bolivia, Brazil, and Honduras are for the grade in which the student was enrolled at the time the survey was conducted. Data for the remaining countries are for the highest grade-level completed at the time of the study. These data refer to an age bracket of three years (e.g., for first grade, kids aged 6-8). Data for Bolivia, Brazil, and Honduras, on the other hand, refer to an age bracket of two years (e.g., for the first grade, kids aged 6 and 7).

These are limitations merit recognition up front and caution against anything beyond a loose interpretation of "normal" progression.

In an effort to give a clearer picture of progress through systems, two other ratios have been calculated: the percent of students falling a year behind schedule and the percent of students falling two or more years behind. Consistent with how "normal" is calculated, delays of one year and two or more years are calculated against official age-grade ranges.[3] For example, a delay of one year would be indicated by the percent of nine year-olds in first grade; similarly, a delay of two or more years would be indicated by the percentage of students aged ten and above in first grade. These two figures provide some indication of the extent to which overage puts a drag on systems and limits, if not compromises, enrollment capacity.

The sample used in this note consists of ten countries in South and Central America. Due to data limitations or availability, the Caribbean is not represented. It merits noting, however, that in a region comprised of 503.5 million inhabitants, a great majority - an estimated 79% - reside in the countries included in this note. These countries, as well as the basic survey information (year and coverage), follow.

Country	Year of Survey	Coverage	Sample Size
Argentina	1998, October	28 urban areas	99,174 individuals/26,810 households
Bolivia	1997, November	National	36,752 individuals/8,461 households
Brazil	1997, September	National	346,269 individuals/89,939 households
Chile	1997, 4th Quarter	National	117,660 individuals/30,811 households
Colombia	1998, September	National	138,586 individuals/31,622 households
Costa Rica	1998, July	National	43,944 individuals/10,749 households
Honduras	1998, September	National	32,664 individuals/6,430 households
Mexico	1998, August-November	National	38,110 individuals/10,601 households
Uruguay	1998	Urban areas	56,854 individuals/17,656 households
Venezuela	1998, 2nd Semester	National	80,311 individuals/16,750 households

Several additional caveats should be kept in mind. First and foremost, household surveys are not instruments specifically designed to analyze the efficiency of education systems or student performance. Rather, they are designed to shed light on particular characteristics - e.g., income or employment status - of households. Yet it is this regard that they are appropriate for our purposes. Household surveys permit a simple analysis of education to be structured from the point of view of households. The surveys are the only mechanism that account for socioeconomic characteristics - such as gender and level of education of heads of household - and allow them to be considered in conjunction with basic information on school attendance. This is extremely relevant in that socioeconomic status remains a solid indicator for explaining variation in educational attainment.

The limits inherent in surveys also need to be taken into account. As the basic survey information presented above indicates, the surveys were taken at different points in time - during

---

[3] No data for delays of one year are included here per se. Yet, given that entry into the system is determined by date of birth, the data included in this study capture some of this delay.

different years, different months, and extended over a different periods in time. Such differences can impact results, particularly those related to education (e.g., responses regarding school attendance are likely to vary by survey date, increasing if the survey was conducted at the beginning of the school year and decreasing as the year advances). In much the same vein, any interpretation of data needs to be tempered by coverage. It is instructive to note, for example, that samples for Argentina and Uruguay are for urban areas only. And sample size varies considerably. For example, Costa Rica, a country with a population of 3.8 million people, benefits from a sample of 43,944. On the other hand, the sample size for Mexico, a country with 95.8 million inhabitants, reaches a mere 38,110. Finally, as in all surveys, reliability merits mention. In many instances, particularly when surveys are conducted face-to-face, the interviewee may find it preferable to lie or embellish rather than give information that may be perceived as bad or undesirable.

What the data say: the good news

The data point to significant advances in coverage. More than 90% of all kids falling aged 7-12 attend school (see Table I). Insofar as these kids fall within those age groups officially corresponding to the primary level, the data provide an indication that access to the primary grade has been all but universalized. Moreover, as can be seen in Table I, the percentage of kids attending school remains high (above 80%) through age 14 and above 58% through age 18, suggesting that access to the secondary level, at least the first cycle, is becoming increasingly universal. Although the decline in these figures from age 14 on is clear, youth that do remain in school through age 18 tend to show promising results, being on target in terms of grade level and timely progression through the system (discussed ahead).

Universalization implies the incorporation of previously excluded populations into the formal system, such as those of lower socioeconomic status or of racial and linguistic minorities. For example, assuming that heads of households with limited education (those who reported having reached only the primary level in the respective surveys) are representative of lower socioeconomic strata, it merits note that approximately 70% of 15 year-olds in these households are attending school. Similarly, assuming that racial and linguistic minorities also fall into lower socioeconomic strata, it is interesting to note that more than three-quarters of 15 year-olds of Afro-Brazilian and mestizo descent are attending school in Brazil (compared to an estimated 83% of "whites" in the same age group). Figures for linguistic minorities (i.e., those reporting to speak a native language only) in Bolivia's formal system remain low: whereas 80% of 11 year-olds attend school, merely 22% of 15 year-olds do (compared to 97% and 79%, respectively, for Spanish speakers).[4] It should be noted that the sample size of speakers of native languages is small. These results thus should be interpreted cautiously.

As alluded to above, progress remains context-bound and relative, factors that assume considerable importance in explaining differences between countries. For example, in Honduras and Bolivia, countries where the respective household surveys place average levels of education (population aged 25 and above) around 5.3% and 6.5%, respectively, the fact that the

---

[4] It should be noted that some of these are bi-lingual, reporting that both a native language and Spanish are habitually used.

overwhelming majority of 12 year-olds attend school is encouraging. However, if attendance plummeted for 14 or 16 year-olds in Argentina, Chile or Uruguay, where average levels of education reach 9.5%, 8.6% and 8.8%, respectively, there would be cause for alarm. Given the evolution of these countries' systems, attendance should be sustained through the secondary level. Indeed, the data point in this direction.

The role of deliberate policies to increase access also merit mention. In the case of Chile, for example, the effects of policies initiated by the Frei administration during the 1960s to massify primary education seem to be manifesting themselves at the secondary level, where attendance by youth aged 12-18 is comparatively high. Similarly, a simple comparison of data for urban areas (e.g., Argentina and Uruguay) with those for predominately rural countries (e.g., Honduras) point to lingering and unresolved issues of access in the latter. Whereas attendance drops sharply between the ages of 10 and 16 in Honduras, drops of similar magnitude occur later in Argentina (from age 16 on) and Uruguay (from age 14 on). It thus appears that the greater availability and accessibility of schools in urban areas goes some distance in explaining differences in attendance. This point gains further force if (as illustrated in Table II, and discussed ahead) the fact that attendance at the secondary level is low and plagued by overage even in those households (Honduras) where the head has some level of tertiary education; neither overage nor low attendance appear as issues in Argentina and Uruguay. In this regard, policies to increase access in rural areas (e.g., the Centros de Educación Básica in Honduras) appear to be well placed.

…..the worrisome news

Table II presents data for the first, third, fifth, seventh, ninth, and eleventh grades. Assuming "normality", these are the grades that would correspond to the age groups presented in Table 1.[5] These data tell a worrisome story. Despite the fact that coverage has increased, and in some cases (primary and the early years of secondary) become close to universal, the data in Table II point to lags and inefficiencies in the respective systems.

"Normality" (i.e., where age and grade attending or completed correspond that what would be expected if the child were to enter the system and progress through it without repeating a grade or dropping out) tends to decrease as age and grade level increase. To some extent, this is to be expected, particularly if repetition and dropout were to be taken into consideration. Yet, as the data in Table II clearly illustrate, the magnitude of decrease in "normality" for households where the head has limited education, is stark. In some cases, especially those where the head of household is female, "normality" falls by more than 50%. Kids from these households appear to enter the system late and often fail to enter – let alone complete – the secondary level. Their situation compares unfavorably to kids in households where the head, male or female, possesses some level of tertiary (and, to a lesser extent, some level of secondary) education. These kids enter the system on time and progress through it in a timely manner. In other words, they benefit from a "trans-generational advantage" from the start. And, as indicated by comparatively high and stable rates of "normality," this advantage accompanies them throughout, smoothing their progression from the primary through the secondary level.

---

[5] Caveats presented in footnote 2, above, apply.

"Normality" lags for racial and linguistic minorities. To illustrate the point, Table III takes the counterview of Table II. It (Table III) presents data for two-plus years of delay. The percentage of kids attending school in each of the age groups used in Table I also is presented. Taken together, these data paint a grim picture. In Brazil, attendance for Afro-Brazilians and mestizos parallels that for "whites," a considerable advance by any account. Yet the picture changes drastically if delays (i.e., measured by years of "overage" in each respective grade) are taken into account: rates for Afro-Brazilians and mestizos far exceed those for "white." Indigenous peoples far even worse, falling behind in terms of attendance and incidence of delay.[6] As in other countries (e.g., the United States), kids of Asian ancestry fare exceptionally well: they both attend school at rates higher than and progress through the system more smoothly than all other ethnic groups.

In Bolivia, an opposite, albeit equally worrisome, trend appears. Attendance rates for native-only speakers pale in comparison to those for Spanish speakers.[7] Yet, those kids and youth that do attend school, appear to progress quite smoothly through the system. Although the incidence of delays of two or more years for student who speak no Spanish (native-only speakers) exceed those who do, the gap between the two does not seem to be significant.

Concluding remarks

Several inter-related conclusions can be drawn from the data. Education continues be stratified along socioeconomic, racial and linguistic lines. Simply stated, kids in households characterized by higher levels of education (head) attend school on a regular basis and progress smoothly from the primary to the secondary level. With few exceptions, kids from lower socioeconomic strata or from households characterized as ethnic or linguistic minorities do not. That said, however, there seems be a clear formula for improving results: more education. The data are telling in this regard. The impact of "gender" – female head of household, a characteristic widely attributed to comparatively lower economic status and educational achievement – becomes neutralized if a woman head of household obtains some level of tertiary education. Education thus can be seen as a great equalizer, as a factor with heavy potential to increase mobility and equalize results from one generation to the next. As seen in the data presented here, education brings advantages to younger generations that start from the time they enter the primary level and, for the most part, do not subside until the progression through the secondary level has been completed.

---

[6] Figures for "indigenous" should be interpreted cautiously, given the small size of the sample.
[7] Again, these figures (native-only speakers) should be interpreted cautiously due to the small sample size.

TABLE I										
% AGE GROUP ATTENDING SCHOOL										
COUNTRY	**LEVEL OF EDUCATION OF HEAD OF HOUSEHOLD**	**MALE HEAD OF HOUSEHOLD**					**FEMALE HEAD OF HOUSEHOLD**			
	Age of Child ->	**8**	**10**	**12**	**14**	**16**	**8**	**10**	**12**	**14**	**16**
Argentina										
	Primary	98.2	98.7	97.9	87.0	64.8	96.7	94.0	93.8	83.2	54.6
	Secondary	99.4	99.1	98.8	93.4	82.1	97.7	99.6	99.2	91.9	73.0
	Higher	100.0	100.0	100.0	98.2	95.9	100.0	100.0	98.2	100.0	95.5
Bolivia										
	Primary	95.4	95.5	92.0	79.4	66.5	96.7	96.4	97.0	84.3	75.5
	Secondary	98.4	98.2	96.5	93.5	88.7	50.0	100.0	94.3	85.2	94.4
	Higher	100.0	100.0	97.6	97.6	88.5	100.0	100.0	100.0	90.9	100.0
Brazil										
	Primary	94.9	96.3	94.5	86.7	70.8	94.8	95.2	93.4	82.0	67.2
	Secondary	98.4	98.5	98.3	94.7	85.2	96.8	97.3	95.8	93.3	83.7
	Higher	100.0	99.5	99.2	98.7	91.0	100.0	100.0	100.0	98.2	91.8
Chile										
	Primary	97.2	98.1	98.1	90.3	72.8	98.7	96.5	95.4	88.1	71.7
	Secondary	98.2	99.3	97.4	95.9	90.7	98.9	98.3	98.1	95.5	90.2
	Higher	98.0	98.9	99.2	100.0	99.0	94.1	96.4	100.0	90.3	92.3
Colombia										
	Primary	91.4	92.4	88.9	77.5	64.0	90.7	91.7	87.5	77.7	64.1
	Secondary	96.5	97.8	97.4	93.9	82.5	96.2	94.4	97.9	95.7	83.8
	Higher	98.2	98.1	98.7	96.4	91.2	100.0	97.1	94.7	76.3	79.0
Costa Rica										
	Primary	98.2	96.4	87.9	61.3	37.1	96.0	97.9	93.0	57.0	33.9
	Secondary	99.2	97.7	94.7	86.6	63.8	100.0	100.0	97.6	92.9	43.6
	Higher	100.0	97.7	100.0	94.4	91.8	100.0	100.0	100.0	100.0	80.0
Honduras										
	Primary	87.9	94.6	83.0	54.8	30.9	93.2	95.7	87.2	56.9	39.7
	Secondary	98.2	99.1	99.0	83.3	67.1	97.4	100.0	100.0	69.0	74.3
	Higher	95.7	100.0	97.4	92.3	63.6	100.0	100.0	100.0	100.0	70.0
Mexico										
	Primary	97.2	95.5	91.7	68.9	No data	96.7	94.9	97.7	71.1	No data
	Secondary	100.0	99.0	97.3	90.2		93.3	96.0	96.2	95.0	
	Higher	99.4	99.4	99.4	92.3		100.0	100.0	100.0	91.7	
Uruguay										
	Primary	97.6	96.3	53.9	56.4	41.5	97.3	100.0	93.8	61.7	38.6
	Secondary	99.0	99.0	93.9	78.4	64.2	97.8	97.0	91.7	89.7	57.8
	Higher	100.0	99.6	97.9	93.0	83.8	98.3	100.0	100.0	94.6	54.6
Venezuela										
	Primary	89.0	96.6	94.9	84.8	63.6	86.8	97.6	95.6	83.8	60.0
	Secondary	94.3	98.9	97.0	91.2	77.4	96.2	97.0	95.1	89.1	76.3
	Higher	99.2	98.3	99.1	97.2	83.0	97.1	97.1	100.0	100.0	92.6

TABLE 2												
% "NORMAL"												
COUNTRY	LEVEL OF EDUCATION OF HEAD OF HOUSEHOLD	MALE HEAD OF HOUSEHOLD						FEMALE HEAD OF HOUSEHOLD					
	Grade Level	1	3	5	7	9	11	1	3	5	7	9	11
Argentina													
	Primary	78.6	73.1	69.7	58.4	64.2	74.7	74.0	67.1	76.3	62.8	56.3	69.2
	Secondary	92.7	89.0	88.7	70.4	70.7	78.2	89.6	83.1	82.2	62.7	65.8	74.3
	Higher	97.5	98.8	97.7	90.6	92.5	91.2	100.0	97.8	98.2	79.0	91.2	94.4
Bolivia													
	Primary	78.0	56.6	55.9	57.9	63.4	68.3	80.3	75.4	57.1	65.2	54.6	61.8
	Secondary	92.9	78.9	79.9	75.5	76.2	73.1	91.3	81.5	80.0	75.0	75.9	72.4
	Higher	96.1	96.3	95.5	89.3	90.6	89.5	66.7	77.8	100.0	91.7	100.0	88.9
Brazil													
	Primary	48.1	36.5	25.9	26.6	28.2	34.7	41.4	29.6	19.5	16.2	19.5	27.8
	Secondary	69.2	60.3	46.2	45.1	41.5	47.4	56.8	47.1	33.3	30.7	34.1	35.3
	Higher	79.6	77.9	71.3	64.2	59.2	59.7	70.3	68.5	56.1	53.2	46.2	51.2
Chile													
	Primary	86.6	81.1	75.7	74.6	76.9	81.9	82.3	82.7	77.3	76.1	72.5	86.1
	Secondary	94.2	91.5	88.9	87.4	84.4	85.3	93.3	86.7	90.8	77.0	71.3	78.6
	Higher	95.2	98.0	98.4	94.3	91.0	93.1	88.5	87.1	93.6	86.8	81.5	92.3
Colombia													
	Primary	68.9	61.2	53.1	55.8	55.4	50.3	71.2	66.2	47.9	57.9	50.2	52.2
	Secondary	89.5	84.6	71.2	73.7	68.5	59.8	87.2	79.9	67.5	60.9	55.2	51.9
	Higher	95.0	92.8	74.6	79.4	77.6	64.7	95.7	78.8	81.6	82.0	70.6	74.6
Costa Rica													
	Primary	71.6	64.6	64.5	63.8	53.1	58.3	56.4	52.7	58.0	43.4	43.2	47.6
	Secondary	91.8	79.6	76.5	60.8	75.3	65.7	81.4	60.0	57.5	66.7	46.4	63.2
	Higher	98.9	97.4	92.7	66.7	79.4	66.7	79.0	100.0	95.8	70.4	78.6	36.4
Honduras													
	Primary	20.6	16.6	13.9	12.4	12.3	23.3	14.4	17.0	17.3	18.8	19.4	34.8
	Secondary	30.8	33.6	33.0	23.5	32.6	43.2	25.8	30.8	25.8	21.2	47.4	40.0
	Higher	59.0	48.2	53.6	47.1	31.8	36.4	75.0	60.0	25.0	37.5	25.0	50.0
Mexico													
	Primary	89.4	84.2	80.4	85.6			82.6	83.1	82.5	80.7		
	Secondary	94.9	95.2	93.6	86.6			100.0	91.7	95.2	78.3		
	Higher	99.4	96.0	95.8	93.9			100.0	93.8	100.0	100.0		
Uruguay													
	Primary	84.3	81.9	74.8	76.4	85.7	69.1	84.3	76.7	83.5	73.2	65.0	75.0
	Secondary	92.9	87.6	91.0	80.4	91.3	75.5	85.4	84.6	81.0	65.6	100.0	70.6
	Higher	97.7	96.6	95.8	87.2	95.5	80.4	90.4	98.3	93.2	80.3	71.4	66.7
Venezuela													
	Primary	83.7	74.4	74.0	66.0	68.6	62.7	86.8	74.2	71.8	60.2	62.3	67.1
	Secondary	91.5	89.1	88.7	78.1	73.8	71.1	92.3	84.5	81.7	68.1	58.0	61.1
	Higher	96.6	97.4	91.7	88.3	83.5	73.2	90.0	93.2	90.6	83.9	76.5	72.7

TABLE III

ETHNIC AND LINGUISTIC FACTORS: % TWO-PLUS YEARS DELAYED

Country		Age of Child/ % Attending School (Formal System) Age of Child ->					% 2-Plus Years Delay in Current Grade Level Current Grade Level ->					
		8	10	12	14	16	1	3	5	7	9	11
Bolivia	**Language spoken**											
	Native Language Only	71.4	72.4	42.1	40.9	12.0	10.0	19.2	27.3	42.9	0.0	0.0
	Spanish Speaker	97.0	97.4	93.8	85.2	74.2	6.5	17.7	17.5	15.0	10.4	11.8
Brazil	**Skin color**											
	Indigenous	91.7	78.6	81.3	66.7	21.4	57.7	66.7	53.3	100.0	0.0	50.0
	White	96.7	97.2	96.3	90.2	76.8	21.5	26.7	37.7	37.5	35.6	27.5
	Black (Afro-Brazilian)	92.2	92.4	92.7	82.6	65.8	40.0	55.6	68.1	58.2	55.6	40.3
	Brown (Mestizo)	91.5	94.1	92.7	83.8	67.9	43.8	52.9	60.7	57.9	54.3	41.5
	Yellow (Asian)	100.0	100.0	93.8	94.7	81.3	27.8	40.0	20.0	18.2	7.7	35.3