The future of work in Latin America and the Caribbean

Education and health: the sectors of the future?

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Yyannú Cruz Aguayo
Senior IDB Social Sector Specialist

Marcos Robles
Senior IDB SocialSector Specialist

Nicolás Fuertes
IDB Social Sector Consultant

Norbert Schady
IDB Social Sector Economic Adviser

Minji Kang
IDB Social Sector Consultant

Daniela Zuluaga
IDB Social Sector Consultant

The authors would like to thank the contributions made by Gabriela Aguerrevere, Mikel A. Alcázar, Agustín Cáceres, Gregory Elacqua, Frederico Guanais, Cecilia Martínez, Cynthia Martínez, Carmen Pagés, Andrea Piñero, Ferdinand Regalia, Laura Ripani and Emiliana Vegas, as well as the editing work of Irene Larraz, the graphic design of Jesús Rivero, the work of the audiovisual team led by Santi Capuz, and the valuable comments provided by Marcelo Cabrol.

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Index

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THE PRESENT AND FUTURE OF EDUCATION AND HEALTH JOBS

1 | Introduction

A substantial and increasing proportion of workers in Latin America and the Caribbean are professionals in the social sectors. Today there are more than 11 million people in the region working as **teachers, doctors and nurses**.[i]

Who are these professionals and where are their jobs headed? In this second installment of the series *The future of labor in Latin America and the Caribbean*, we analyze the evolution of employment in the education and health sectors, and project expected changes for the **future**.

Over the past 40 years, the number of teachers, doctors and nurses in the region has quadrupled. Their incomes have also increased significantly over the past 15 years, both in real terms and in relation to what is observed in other occupations.

Three out of four **education** and **health** professionals in the region are **women**. Of all female professionals in the region, 22% work in the social sector. As is the case in other regions, women earn less than men. However, the gender wage gap among workers with post-secondary education is lower in the social sectors (about 10%), compared to other occupations (28% on average).

In short, jobs in education and health are **high quality jobs**, especially for women. And there will be more of these jobs in the future. Our projections indicate that, based on reasonable assumptions, the region will need 10.3 million teachers, 2.4 million doctors, and 6.2 million nurses in 15 years. In other words, the employment of education and health professionals will almost double.

Why will there be such growth in the number of teachers, doctors and nurses? There are three basic reasons. First, unlike jobs in many other occupations, jobs in the social sector are unlikely to be automated. Many of the tasks performed by teachers, doctors and nurses require a set of interpersonal skills that cannot be easily replaced by artificial intelligence.

Professionals in the social sectors are a significant and growing part of the labor force in Latin America and the Caribbean. The quality of education and health-related jobs is good, especially for women

i. In this report we use the term "professionals" to refer to all workers who have post-secondary education. Furthermore, when we refer to teachers, doctors and nurses, we refer to all workers in these occupations, regardless of their gender.

Second, Latin America and the Caribbean is currently undergoing a very accelerated aging process. For example, in Chile, the fraction of adults over the age of 65 will double over the next 20 years, growing from 10% to 20% of the population. In Germany, this transition took 60 years (between 1950 and 2010). This segment of the population needs more health and care services, resulting in a greater demand for health and care professionals.

Finally, despite progress in educational coverage, there is still room for improvement, particularly with regard to enrollment in preschool and secondary school. Also, as has been the case to date, the number of children per teacher will continue to decline. These two trends– increasing enrollment and the decreasing child/teacher ratio- will result in a greater demand for teachers in the region.[ii]

In sum, there will be significant increases in demand for health and education services. Moreover, a significant proportion of doctors, nurses and teachers in the region today will reach retirement age in the coming years. These changes mean that, in 15 years' time, a third of teachers and almost two thirds of doctors and nurses will be people who have not yet begun working today. More than half of them have not even started their studies. The key is to ensure that these new professionals can acquire the **skills** and training to be the teachers, doctors and nurses of the future.

ii. For example, in Peru, between 2000 and 2015, the number of children between the ages of 3 and 5 dropped slightly (from 181,000 to 179,000), but the net enrollment rate in preschool rose strongly (from 58% to 88%), and the ratio of children per teacher decreased (from 28 to 18). Overall, these changes led to a threefold increase in preschool teachers in Peru (growing from 29,000 in 2000 to 84,000 in 2015). If, as expected, enrollment increases further, as the ratio of children per teacher declines, Peru will need 45,000 additional preschool teachers by 2030.

2 | Why this?

When thinking about education and health, one usually focuses on the services that these sectors provide. What is the **coverage** of education and health systems? Is the quality of these services high, and are they cost-efficient? These are extremely important questions for the development of Latin America and the Caribbean. Nevertheless, education and health systems are also important for another reason: these sectors generate a significant (and growing) number of jobs in the region. In this report, we seek to understand the changes in employment in education and health that have occurred in the past and that will take place in the future.

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AUDIO

WHAT DOES THE FUTURE OF LABOR ENTAIL FOR THE EDUCATION AND HEALTH SECTORS?

Marcelo Cabrol, Social Sector manager, talks with **Ferdinando Regalia**, head of the IDB Social Protection and Health Division, and **Emiliana Vegas**, head of the Education Division.

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WOMEN IN EDUCATION AND HEALTH SECTORS

3 | What's up?

To analyze employment and wage trends in the social sector, we used data from the **population censuses**[1] of six countries (Brazil, Chile, Ecuador, Mexico, Panama, and Paraguay) between 1970 and 2010. **Household surveys**[2] were also used for these same countries, and for three others (Costa Rica, Peru, and Trinidad and Tobago), generally from the year 2000 onwards. On this basis, we were able to study trends in individual countries, and calculate two regional averages: one between 1970 and 2018 for six countries, and another, between 2000 and 2018 for nine countries.

Remarkable growth in the last half century

What do we know about the magnitude of employment in the education and health sectors? How has it developed over time? Our calculations using censuses and household surveys reveal a basic yet little known fact: in Latin America and the Caribbean, employment in the social sectors has grown remarkably in the last 50 years. In the six countries where censuses are available, the social sectors accounted for 3.3% of total employment in 1970, and 7.3% in 2018. In other words, employment in education and health has more than doubled.

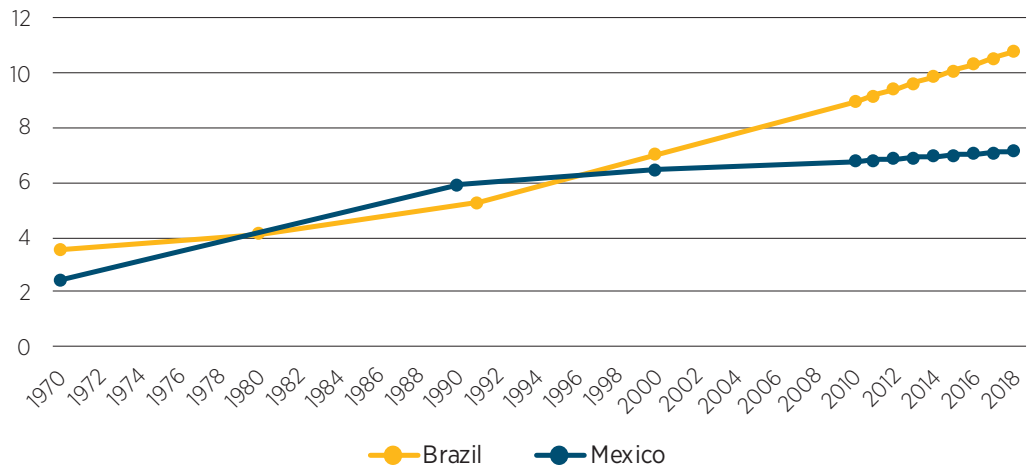
This growth has occurred throughout the region, with some variation among countries and over time. Figure 1 compares the evolution of employment in education and health, as a proportion of total employment, in Brazil and Mexico. As can be seen, employment in the social sectors grew very rapidly in Mexico between 1970 and 1990, increasing from 2.4% to 5.9% of total employment; growth then slowed down between 1990 and 2010, reaching 6.8% of total employment. In Brazil, on the other hand, employment in the social sectors grew less between 1970 and 1990, increasing from 3.5% to 5.3% of total employment; it then accelerated in the following decades, reaching 9% of total employment in 2010.

A more disaggregated analysis of the evolution of employment in the social sectors also provides an interesting perspective. In the case of education, **there are substantial increases in the** number of teachers in all countries with available data. In the six countries with census information, teachers quadrupled as a proportion of total employment, on average. As shown in figure 2, teachers went from representing 0.8% of total employment in 1970, to 2% in 1990, and 3.5% in 2018. These changes are comparable to those that took place in the United States a few decades earlier, when teachers increased from 2% to 3.5% of total employment between 1950 and 1970.[3]

Something similar occurred in the health sector, with large increases in the number of doctors and nurses.[iii] In these two occupations, in the six countries with census data, health professionals have

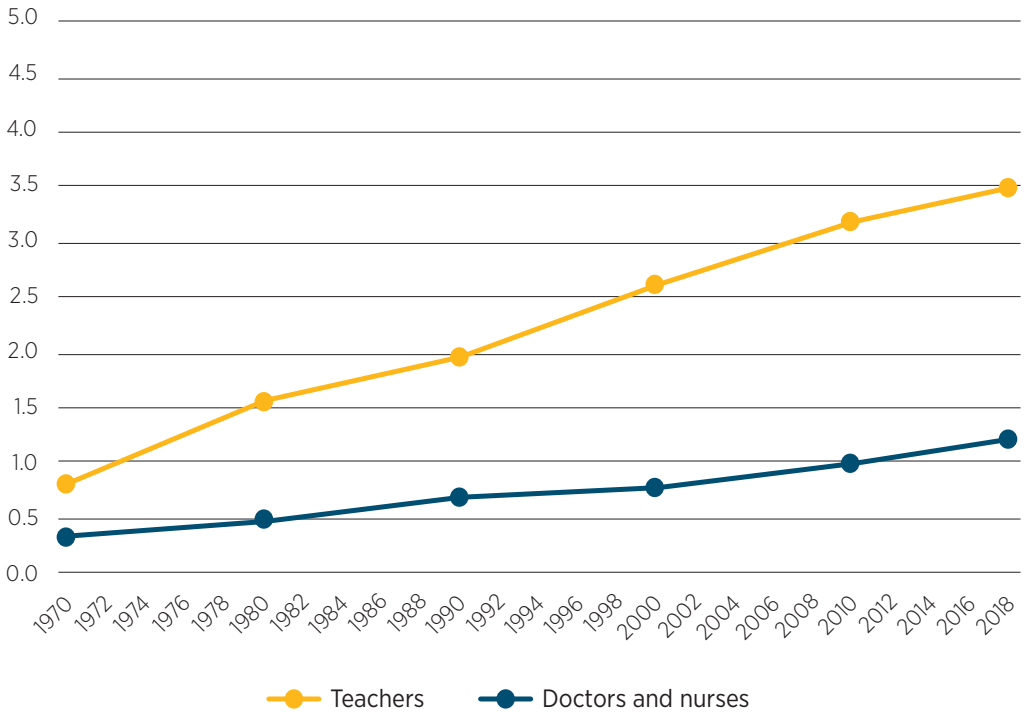
iii. The category of "health professionals" only includes doctors and nurses because information about other workers, such as dentists, technicians and assistants, is either unavailable or inconsistent in the censuses and surveys.

FIGURE 1. PARTICIPATION OF THE SOCIAL SECTOR WITH RESPECT TO TOTAL EMPLOYMENT (%)



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, and on available population and housing censuses at IPUMS-International.

FIGURE 2. PARTICIPATION OF TEACHERS, DOCTORS AND NURSES WITH RESPECTTO TOTAL EMPLOYMENT (%)*



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, and on available population and housing censuses at IPUMS-International.
* Average of 6 countries: Brazil, Chile, Ecuador, Mexico, Panama, and Paraguay.

quadrupled as a proportion of total employment. Figure 2 shows that they increased from 0.3% of total employment in 1970, to 0.7% in 1990, and 1.3% in 2018. In comparison, in the United States, doctors and nurses increased from 1% to 1.5% of total employment between 1950 and 1970.[4]

In Latin America and the Caribbean, employment in the social sectors has grown remarkably in the last 50 years

High quality jobs, especially for women

In light of these increases in education and health employment, a natural question is: **are these high-quality jobs?** To answer this question, we use data from household surveys and analyze the evolution of labor income from 2000 onwards.[iv]

Figure 3 shows the evolution of labor income of teachers, doctors and nurses (adjusted for inflation). On average, in the nine countries with available information, teachers' labor income grew by 31% between 2000 and 2015, doctors' by 29% and nurses' by 46%.[v]

The comparisons in figure 3 show the evolution of labor income in *absolute* terms; in other words, they show whether the actual incomes of teachers, doctors and nurses are higher today than in the year 2000. As seen earlier, this trend has been generally positive. However, a *relative* comparison is also important. In other words, has the increase of labor income among teachers, doctors and nurses been smaller or larger than the increases in labor income of other professionals during the same period?

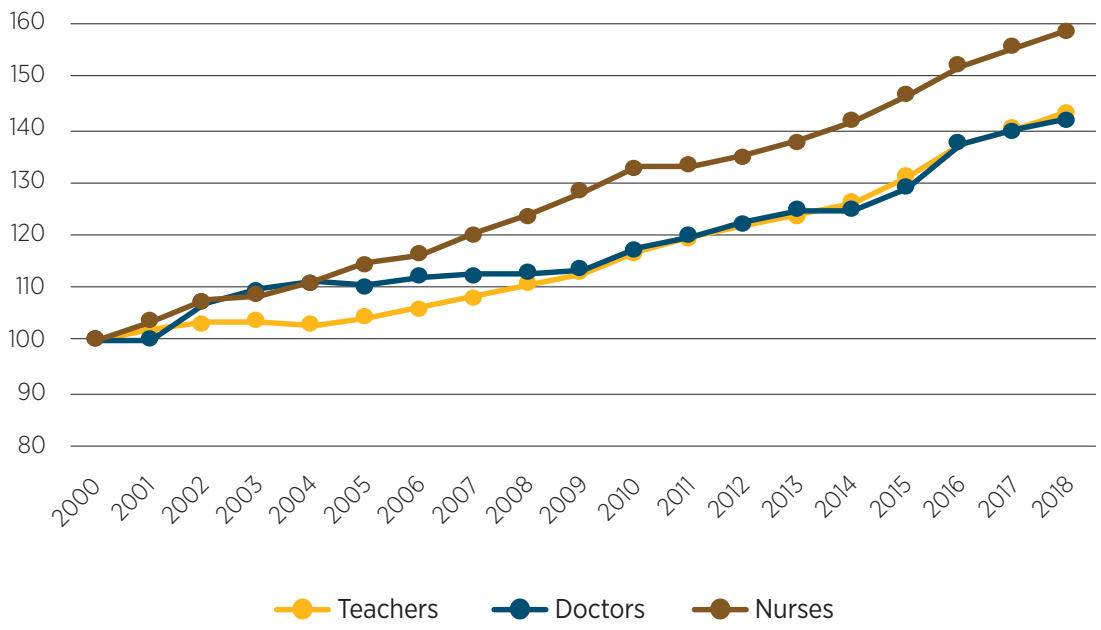
Figure 4 shows that the labor income of teachers was, on average, 33% lower than that in other professions in the year 2000; but in 2015, the **wage gap** shrunk to only 13%. Similarly, in the year 2000, nurses' labor income was, on average, 31% lower than that in other professions, and in 2015 it was equal on average. As for doctors, their labor income had always been higher than other professions, but between 2000 and 2015 the relative gap grew by 66%.

The same overall growth pattern of labor income among education and health professionals can be observed in specific comparisons. In Mexico, in the year 2000, a teacher earned 42% less than an accountant; by 2015, this difference had dropped to 23%. In Ecuador, in 2001, a nurse earned 22% less than an office assistant; in 2015 the former earned 30% more. In Brazil, in 2002, a doctor earned, on average, 3% more than an engineer; in 2014 this difference rose to 30%.

iv. Household surveys have substantially smaller sample sizes than censuses, and therefore the averages for a particular year may not be reliable. To avoid this problem, whenever we present household survey results, these are moving averages with a three-year window.

v. In some countries, growth was much higher than the regional average. In Ecuador, for example, the labor income of teachers doubled, that of doctors rose by 110%, and that of nurses by 161%. In Costa Rica, the labor income of teachers, doctors and nurses grew 77%, 64%, and 95%, respectively.

FIGURE 3. REAL WAGES OF TEACHERS, DOCTORS AND NURSES*



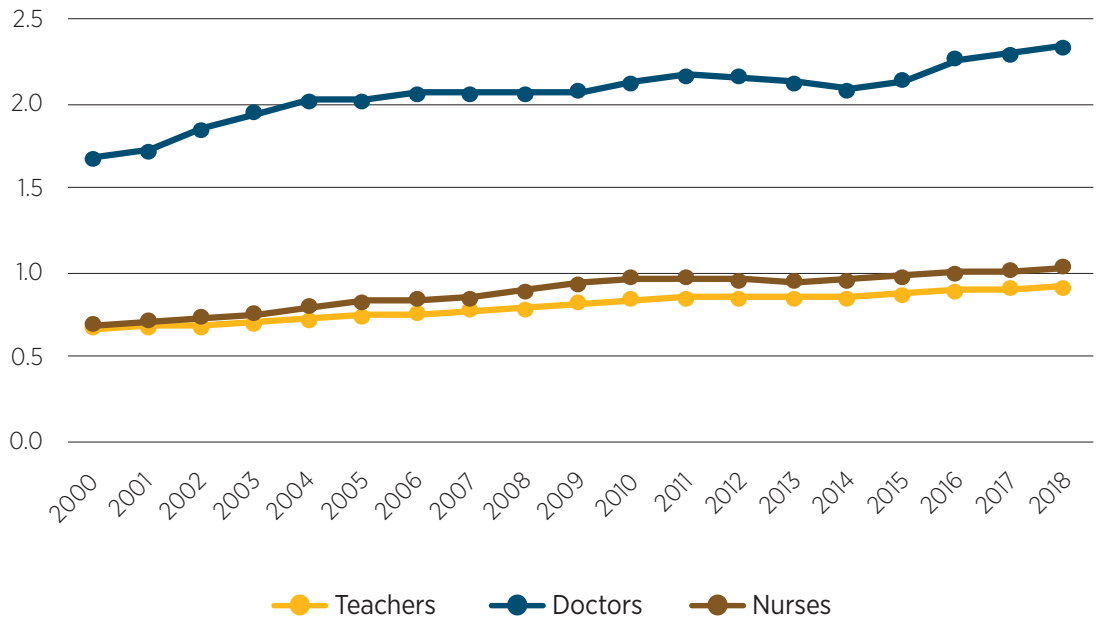
Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, and on available population and housing censuses at IPUMS-International.
* Average of 9 countries: Brazil, Chile, Costa Rica, Ecuador, Mexico, Panama, Paraguay, Peru, and Trinidad and Tobago.

Besides income, education and health jobs have other important advantages. On average, 89% of teachers, 84% of doctors, and 86% of nurses in Latin America and the Caribbean contribute to **social security**; a substantially greater proportion than that observed among professionals in other occupations (68%, on average). This means that teachers, doctors and nurses are more likely to receive a pension in old age than engineers, lawyers, journalists, or accountants, among others. Also, labor income for these professions is annual and includes paid **vacations**. These are much longer for teachers than is the case in other occupations.

Another important dimension is the gender of workers. In Latin America and the Caribbean, most education and health jobs are taken by women. **Three out of four teachers, more than half of the doctors, and nine out of every ten nurses are women.** Put differently, of all the women with post-secondary education who are employed in the region, 22% work in education or health. As a consequence, the increases in labor income of teachers, doctors and nurses in the last 15 years have benefited more women than men.

Furthermore, **the labor income gap between women and men** -women's wage penalty- **is substantially lower in education and health than in other occupations**. This can be seen in Figure 5, which shows the evolution of the ratio of labor income between men and women in different oc-

FIGURE 4. WAGES RELATIVE TO OTHER WORKERS WITH POST-SECONDARY EDUCATION*



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, and on available population and housing censuses at IPUMS-International.
* Average of 9 countries: Brazil, Chile, Costa Rica, Ecuador, Mexico, Panama, Paraguay, Peru, and Trinidad and Tobago.

cupations.[vi] All the lines are below one, indicating that in Latin America and the Caribbean, as in other parts of the world, women earn less than men.[vii] Figure 5 also shows that the gender wage gaps are closing, which is excellent news for the region. However, despite progress, there are still large differences between occupations. Excluding education and health professionals, nowadays, the labor incomes of women with post-secondary education are, on average, 28% lower than those of men. These gender gaps are substantially smaller among doctors (22%), teachers (12%), and nurses (where there is no difference in wages between men and women).[viii]

In sum, **education and health jobs are more attractive today than they were 15 years ago**. The incomes of teachers, doctors and nurses have increased substantially, both in absolute terms and in comparison to the changes that have been

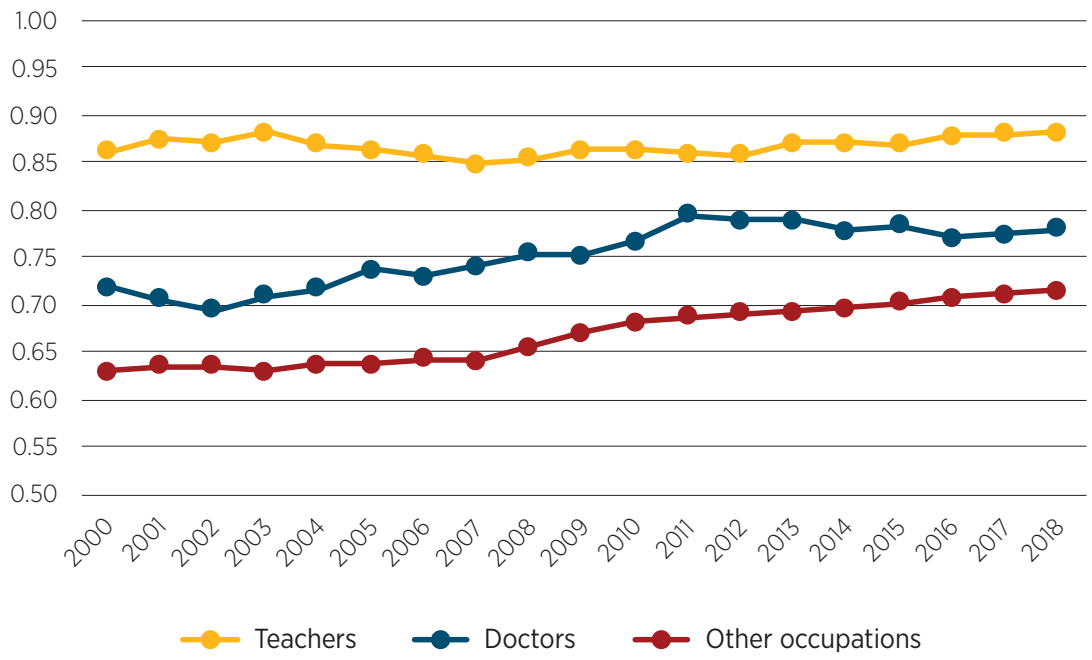
vi. These comparisons, like the previous ones, are limited to workers with some level of education beyond high school and include all those who report they are employed.

vii. We did not include a line for nurses because in many countries, and especially in the 2000s, there were not enough men in the profession to reliably calculate the ratio of labor income between men and women. In recent years, many employment surveys in the region have been substantially larger in scope than before, and the number of men working as nurses has grown. Therefore, the comparison can be made from 2015 onwards, indicating that, on average, there are no differences in the salaries of men and women working as nurses.

viii. The wage gap in education is explained partly because the proportion of women is higher in preschool than in secondary school, and secondary school teachers have higher incomes than preschool teachers, on average. Similarly, the wage gap among doctors is partly explained by the fact that the proportion of women is higher among general practitioners than among specialists, and the average labor income of specialists is higher than that of general practitioners.

observed in other sectors. Moreover, jobs in education and health have other benefits, including a greater likelihood of a pension in old age. The gap in labor income between men and women is also substantially lower among teachers, doctors and nurses than among professionals in other occupations. No matter how you look at it, **education and health jobs are -and will continue to be- good jobs, especially for women**.

FIGURE 5. GENDER WAGE GAP*



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, and on available population and housing censuses at IPUMS-International.
* Average of 9 countries: Brazil, Chile, Costa Rica, Ecuador, Mexico, Panama, Paraguay, Peru, and Trinidad and Tobago.

4 | What's new?

To predict the future –never an easy task– one must first understand the past and the present. In this report we estimate future changes in employment using models based on changes that have been observed in the region during the past decades, as well as in a group of reference countries from the OECD. As shown below, these reference countries previously had similar conditions to those observed in the region today. It is therefore reasonable to assume that the changes in employment that took place in these reference countries provide useful information on what can be expected in Latin America and the Caribbean in the future.

The data we use come from different sources. In addition to our own calculations based on household surveys and censuses, we used data from the Population Division of the United Nations on the proportions of different age groups[5], UNESCO data[6] on the number of teachers and the child-to-teacher ratio, and data from the OECD[7] and the World Health Organization[8] on the number of doctors and nurses.

The number of teachers will increase

We estimate that **the number of teachers in Latin America and the Caribbean will increase substantially in the coming decades**, as can be seen in figure 6. In 2040 the region will need 1.7 million preschool teachers (840,000 more than in 2018), 4.3 million primary teachers (1.6 million more than in 2018) and 6.1 million secondary teachers (2.6 million more than in 2018). How did we arrive at these values? Our estimates are based on projections of the school-age population, school enrollment, and the number of children per teacher.

The number of teachers, doctors and nurses in Latin America and the Caribbean will increase substantially in the coming decades

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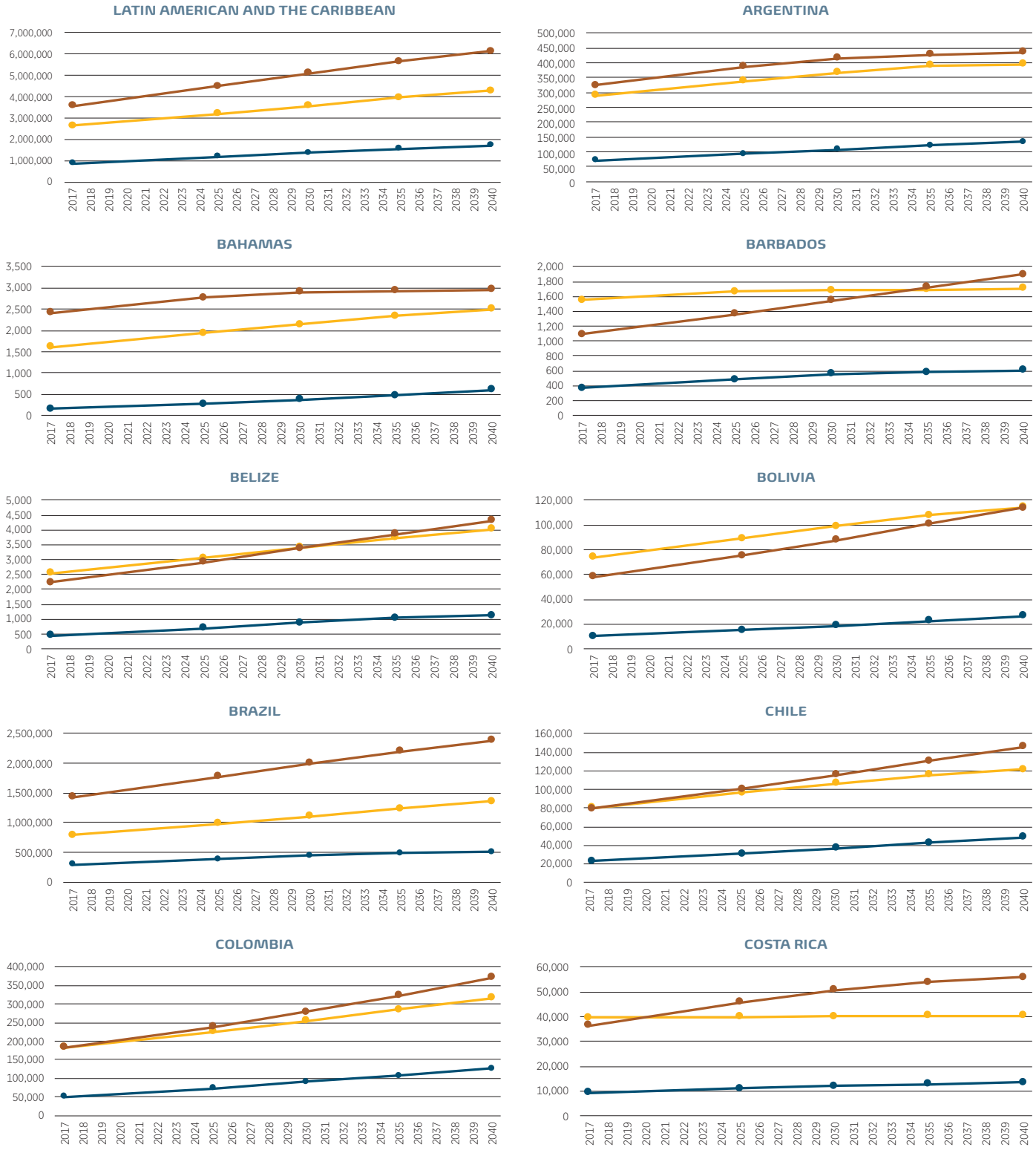
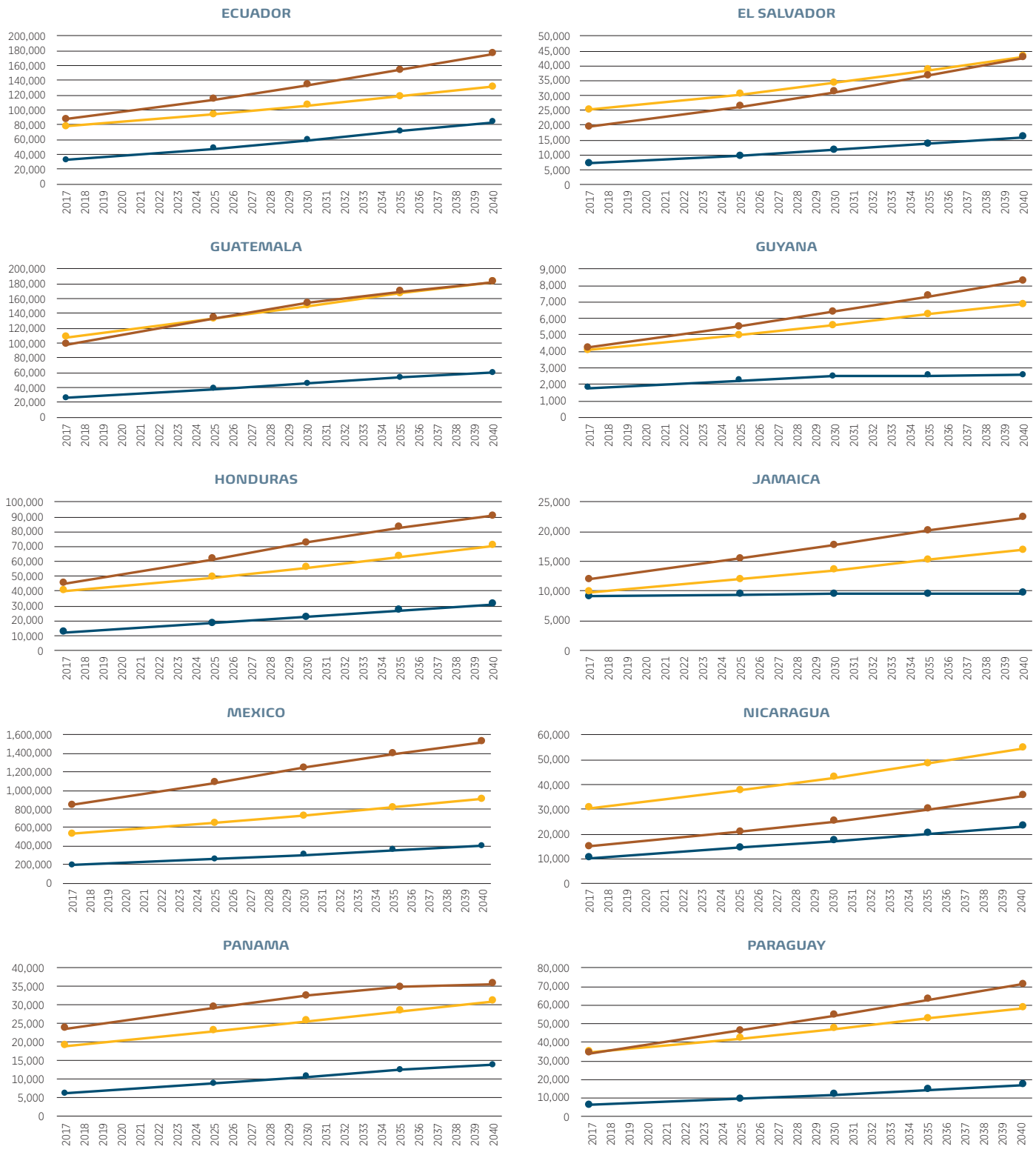
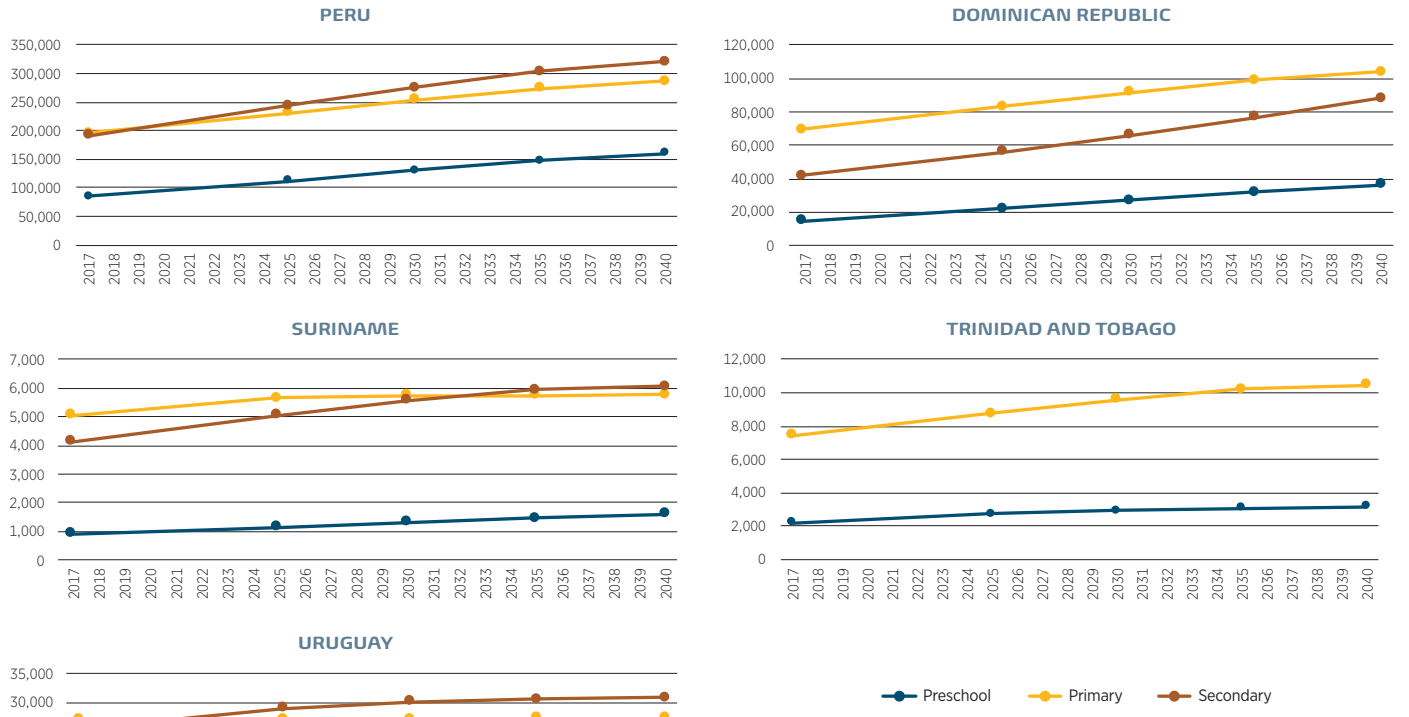
HOW MANY TEACHERS, DOCTORS AND NURSES WILL LATIN AMERICAN AND THE CARIBBEAN NEED?

FIGURE 6. PROJECTIONS OF THE NUMBER O´F TEACHERS, BY EDUCATIONAL LEVEL*




ECUADOR
EL SALVADOR
GUATEMALA
GUYANA
HONDURAS
JAMAICA
MEXICO
NICARAGUA
PANAMA
PARAGUAY
Preschool
Primary
Secondary



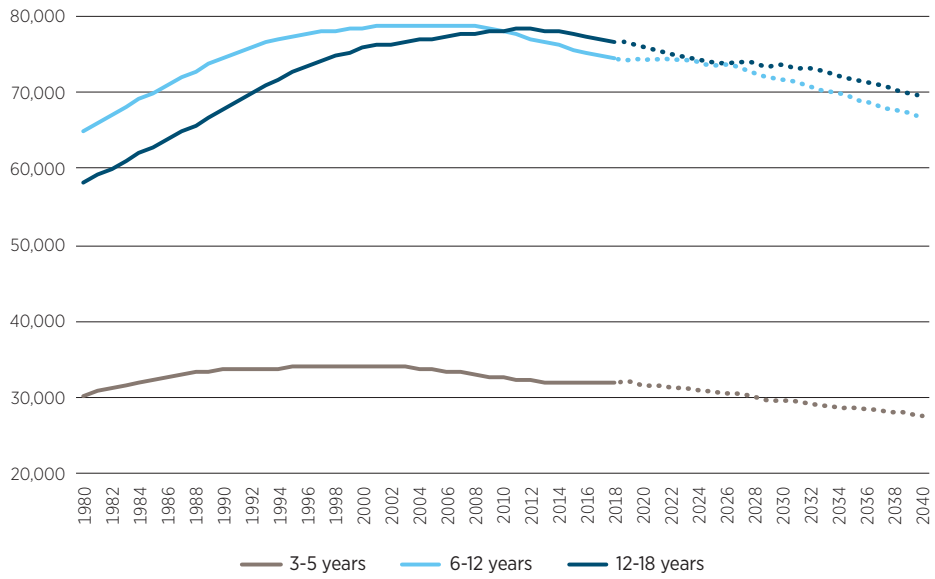
Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.
* Average of 24 countries: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad and Tobago, and Uruguay.

We first present three figures. Figure 7 shows the evolution of the region's population in three age groups: ages 3 to 5 (preschool); ages 6 to 12 (primary school); and ages 13 to 17 (secondary school). The figure shows that between 1980 and 2015, the total number of school-age children increased from 154 million to 185 million. However, the region's demographic transition will cause the number of school-age children to drop by around 20 million between 2015 and 2040.

Next, figure 8 shows the evolution of enrollment rates in the three educational levels. Here too we show historical trends and projections up to 2040. As can be seen, in Latin America and the Caribbean there have been substantial increases in enrollment in all three levels. Yet there is still room for improvement, particularly in preschool and secondary school, where enrollment rates are still low in many countries. Looking towards the future, between 2018 and 2040, enrollment rates will grow from 65% to 87% in preschool, from 92% to 95% in primary school, and from 75% to 88% in high school.

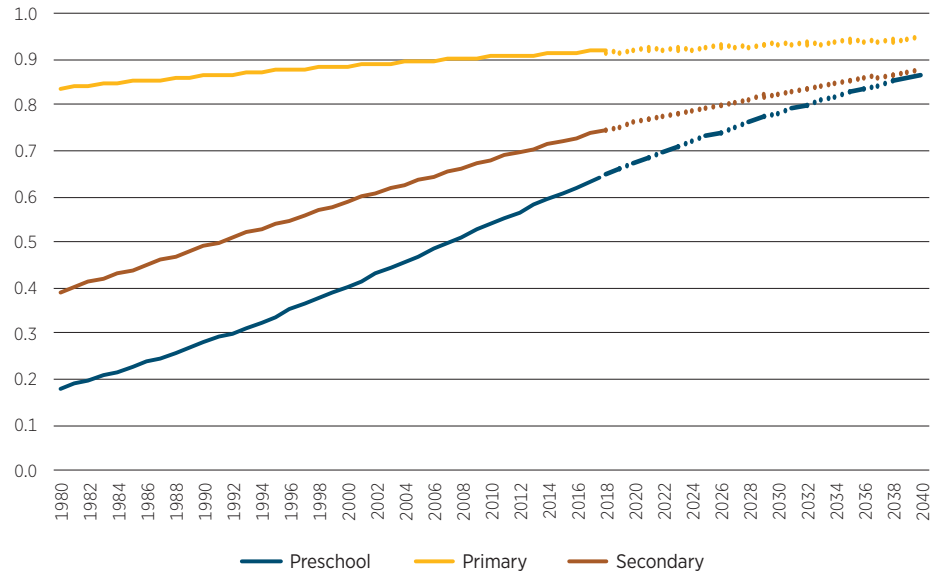
Combining the information in figures 7 and 8, we can estimate the number of children that will be in the education system in the future. This calculation indicates that, in the region, in 2040 there will be 27.7 million children enrolled in preschool (9.8 million more than in 2018), 70.6 million in primary school (9.3 million more than in 2018), and

FIGURE 7. SCHOOL-AGE POPULATION (THOUSANDS)*



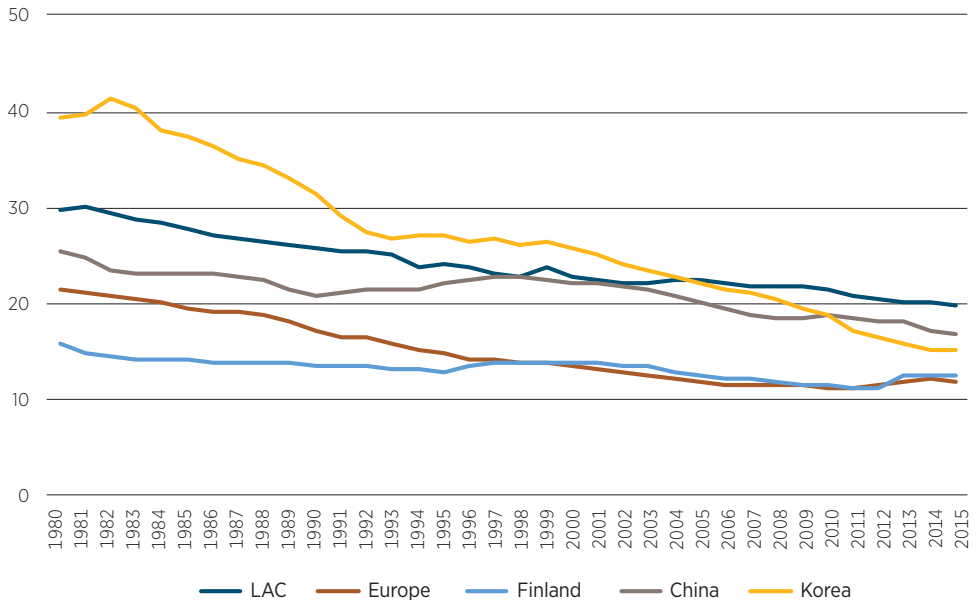
Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.
* Average of 26 countries: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad and Tobago, Uruguay, and Venezuela.

FIGURE 8. EVOLUTION OF ENROLLMENT RATES BY EDUCATIONAL LEVEL*



Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.
* Average of 26 countries: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad and Tobago, Uruguay, and Venezuela.

FIGURE 9. STUDENTS PER TEACHER*



Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.
* Latin America and the Caribbean: Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama, and Peru.Europe: Austria, Spain, Greece, and Portugal.

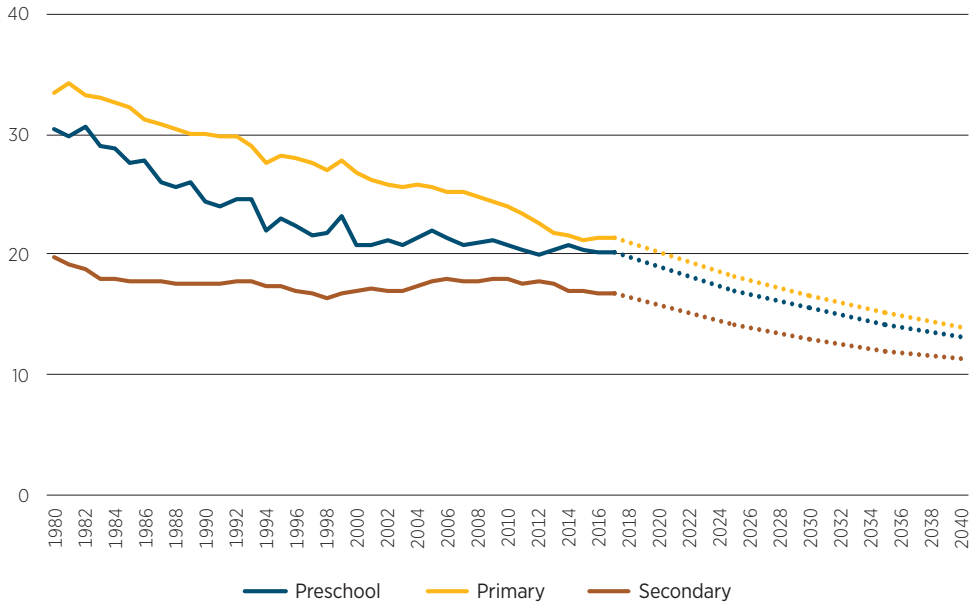
67.1 million in secondary school (15.4 million more than in 2018). In other words, despite the decline in the number of school-age children in the region, **increases in enrollment rates will lead to an increase of 34.5 million children attending school in Latin America and the Caribbean**

Finally, we look at the evolution of the child-to-teacher ratio. Figure 9 shows this evolution for a group of countries in the region with data for all (or almost all) years between 1980 and 2015 (Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama and Peru), for three countries that are high-performing in international learning tests (China, Korea and Finland), and for a group of European countries that also have good data (Austria, Spain, Greece and Portugal). The chart clearly shows that the child-to-teacher ratio has dropped significantly in all countries.

In countries outside the region, the ratio of children per teacher dropped to substantially lower levels than those observed in Latin America and the Caribbean today, making it likely that this ratio will continue to drop in our region in the future. But how much will it drop? It is reasonable to assume that the number of children per teacher in the region will evolve in the same way as it did in Austria, Korea, Spain, Finland, Greece and Portugal.[ix] This is shown in figure 10. According to these projections, **between 2018 and 2040 the region will go from having 20 to 13 children per teacher in preschool; from 21 to 14 in primary school; and from 17 to 11 in secondary school.**

ix. We exclude China from this average because the ratio of children per teacher is similar to that observed in Latin America and the Caribbean. Therefore, what happened in China in the past is not useful to predict what will happen in the region in the future.

FIGURE 10. STUDENTS PER TEACHER*



Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.
* Average of 7 countries: Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama and Peru.

In sum, the increase in enrollment and the probable decrease of the child-to-teacher ratio imply that **in the future many more teachers will be needed in Latin America and the Caribbean** than there are in the region today.

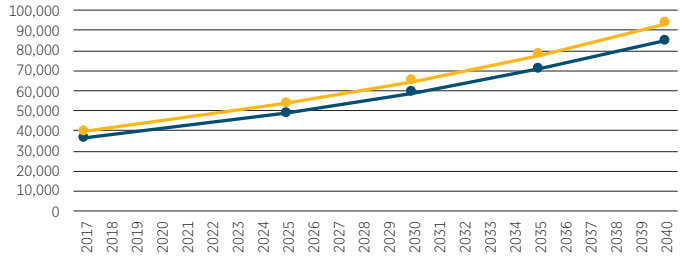
More doctors and nurses in the region

We estimate that in Latin America and the Caribbean there will be a tremendous increase in the number of doctors and nurses in the coming decades. Specifically, as shown in figure 11, **by 2040 the region will need 3.1 million doctors** (1.8 million more than in 2018) **and 8.3 million nurses** (5.1 million more than in 2018). These growth rates are proportionally much larger than those expected for teachers.

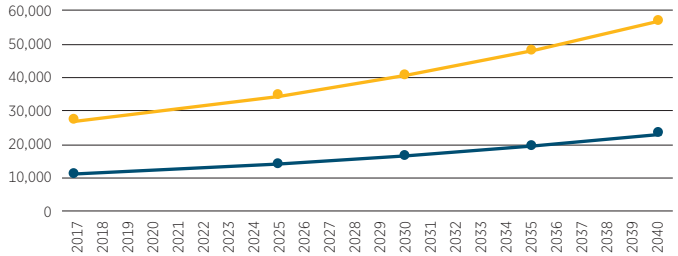
How did we obtain these figures? Much as in our analysis of changes in the number of teachers, these projections are based on several steps. First, we show that **the region is aging rapidly**. This can be seen in figure 12, which shows the proportion of the population aged 65 or older between 1960 and 2015, and the projections until 2040. In the region, on average, 3.8% of the population was 65 or older in 1960; in 2015, this value was 7.2%, and it is expected to increase to 14.4% by 2040. In other words, the proportion elderly will double within the next 25 years. This can be seen in a relatively young country like Honduras, where the elderly population went from 3.2% in 1960 to 4.4% in 2015, and is expected to reach 9.5% in 2040; and also in a country like Chile, with a more advanced demographic transition, where the elderly population went from 4.8% in 1960 to 10.4% in 2015, and is expected to reach 20.7% by 2040.

FIGURE 11. PROJECTIONS OF THE NUMBER OF PHYSICIANS AND NURSES*

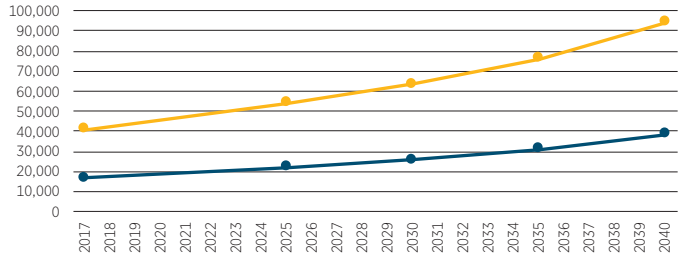
ECUADOR



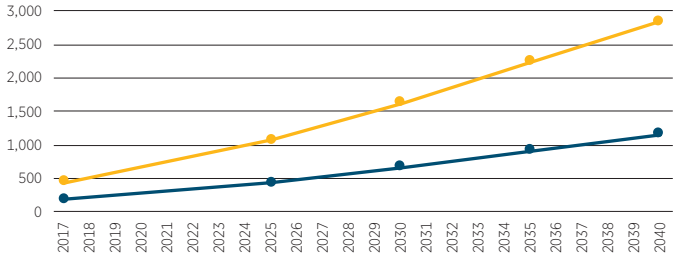
EL SALVADOR



GUATEMALA



GUYANA



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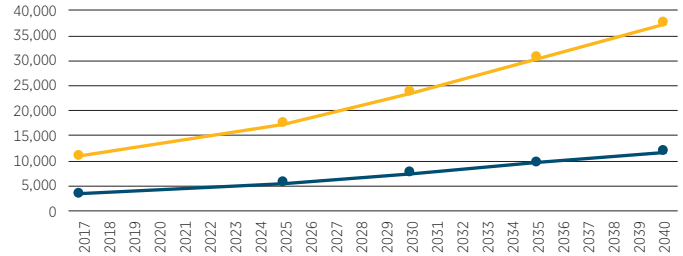

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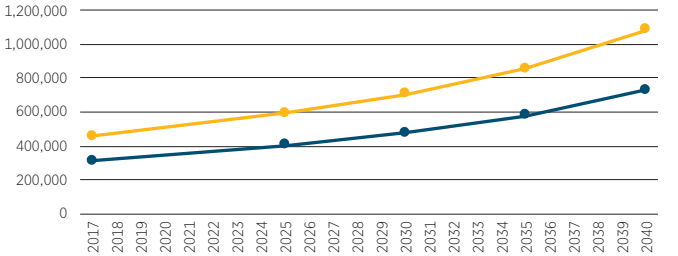
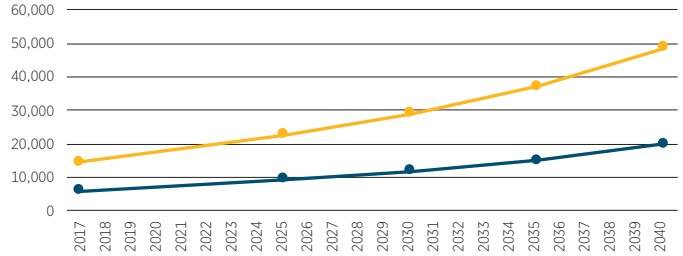
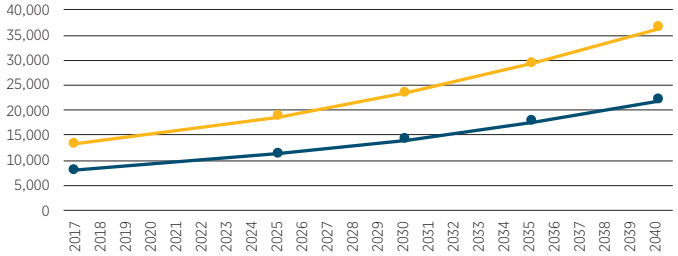


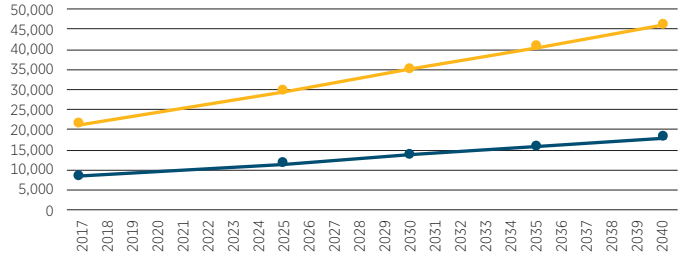
NICARAGUA



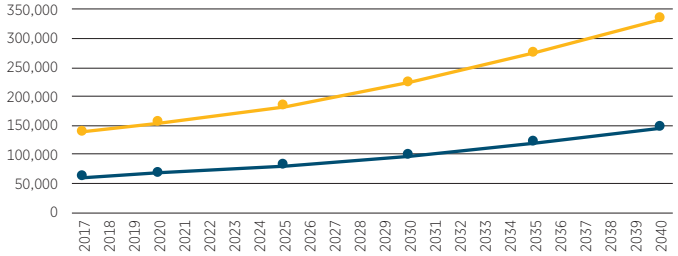
PANAMA



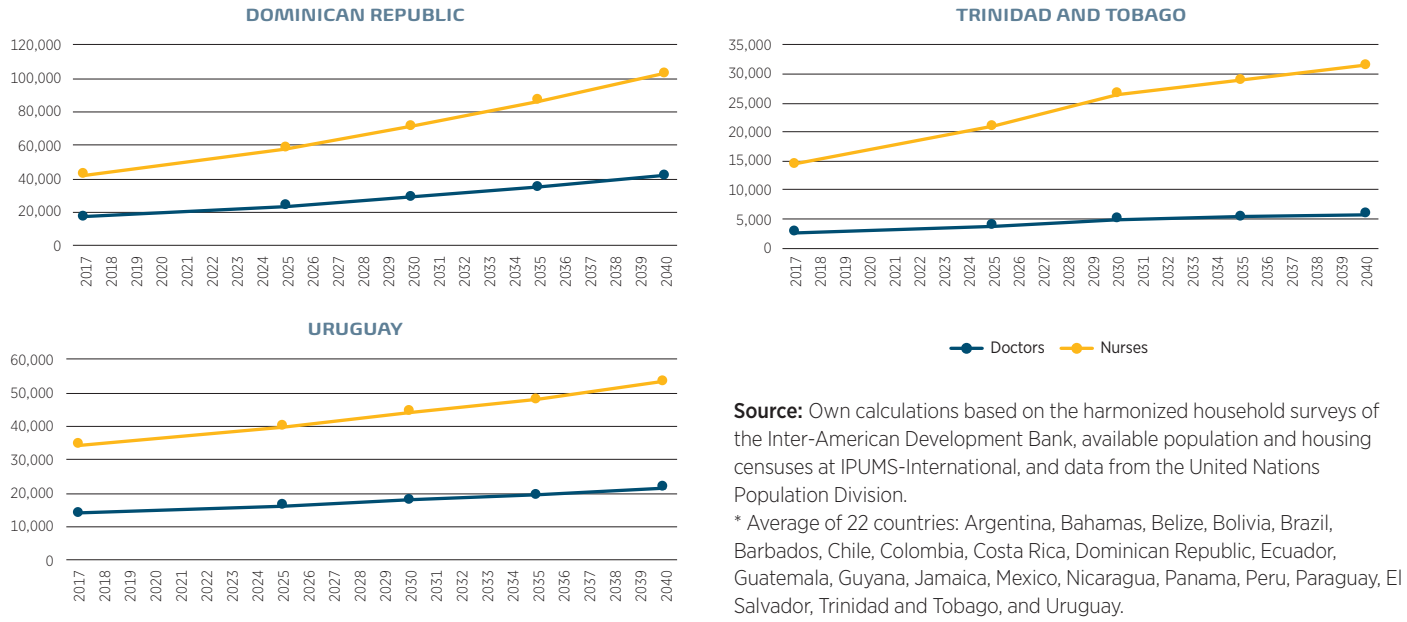
PARAGUAY



PERU



Doctors Nurses



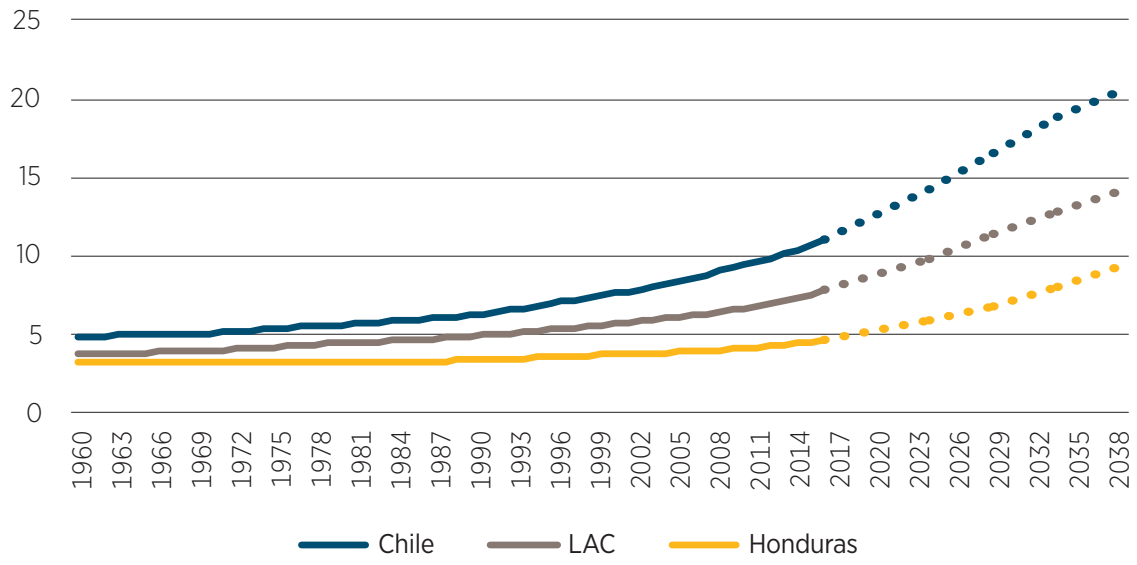
Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, available population and housing censuses at IPUMS-International, and data from the United Nations Population Division.
* Average of 22 countries: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Trinidad and Tobago, and Uruguay.

Next, we look at the ratio of elderly people to doctors. Figure 13 shows this ratio for three countries in the region (Brazil, Mexico and Peru), and three OECD countries (Spain, the United States and Switzerland). The latter are useful because, as they are more advanced in their demographic transition, they have undergone an aging process like that expected in Latin America and the Caribbean in the coming decades. These countries also have high-quality information on the number of doctors from 1960 onwards.

Figure 13 shows that, both in the OECD countries and in Latin America and the Caribbean, an **aging population has been strongly associated with an increase in the number of doctors**. In the six countries under study, each percentage point increase in the proportion of elderly adults (for example, from 10% to 11%), led to an increase of between 0.3 and 0.4 in the number of doctors per 1,000 inhabitants (for example, from 1.7 to 2, or 2.1 doctors per 1,000 inhabitants). Assuming that this relationship between the population of elderly adults and the number of doctors remains the same, we can use the projections of the elderly population to estimate the number of future doctors in each country in Latin America and the Caribbean.

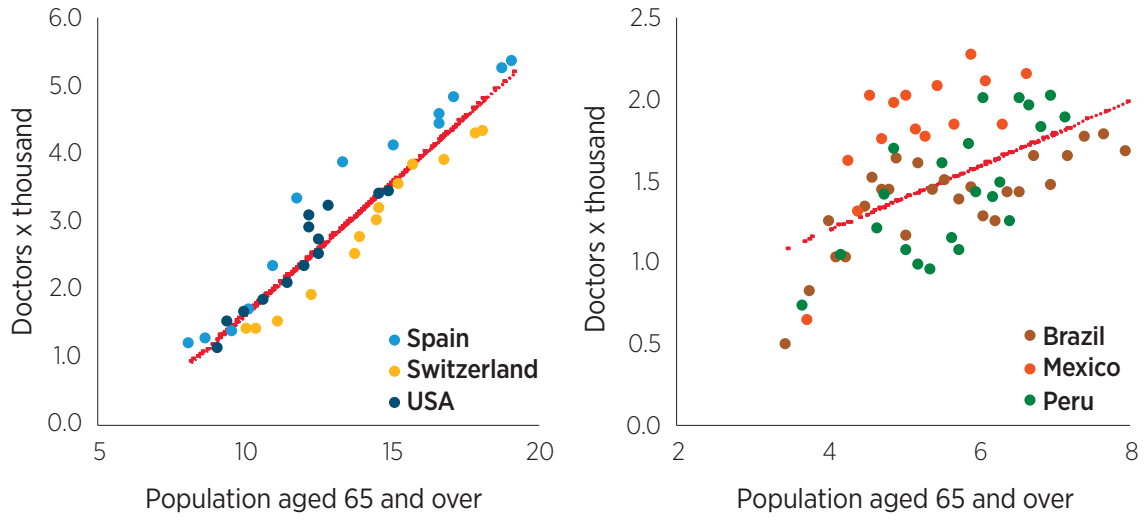
What about the number of nurses? Nursing professionals increased in lockstep with doctors. To see this, we calculate the ratio of nurses per doctor for the same three countries in the region (Brazil, Mexico and Peru) and the three OECD countries (Spain, the United States, and Switzerland). These calculations yielded two important results, both of which can be seen in figure 14. First, there are large differences between countries in the nurse-to-doctor ratio. In Spain, for example, there is one nurse per doctor, in Switzerland, between 3.5 and 4, and in the United States there are approximately 5 nurses for each doctor. A similar variation can be seen in Latin America and the Caribbean: in Mexico there are on average 1.5 nurses per doctor, 2.5 in Peru, and 3.5 in Brazil.

FIGURE 12. PERCENTAGE OF THE POPULATION AGED 65 AND ABOVE



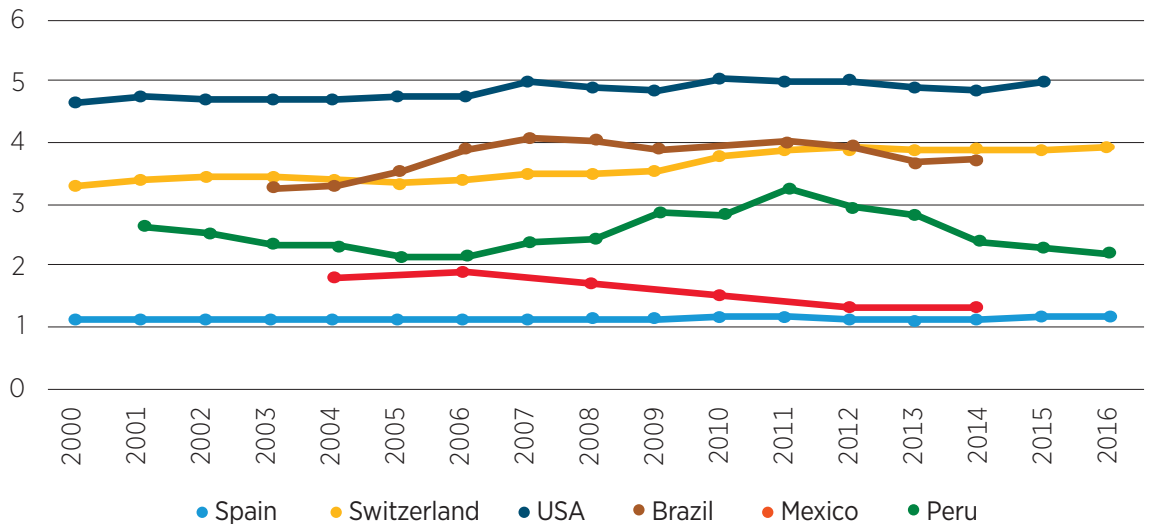
Source: Own calculations based on data from UNESCO and the Population Division of the United Nations.

FIGURE 13. AGING OF THE POPULATION AND CHANGES IN THE RATIO OF DOCTORS PER INHABITANT



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, available population and housing censuses at IPUMS-International, and data from the United Nations Population Division.

FIGURE 14. NURSES PER DOCTOR



Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, available population and housing censuses at IPUMS-International, and data from the United Nations Population Division.

The second key result in the figure is that, within each country, **the ratio of doctors to nurses is stable**; there are no clear upward trends (more nurses per doctor) or downward trends (fewer nurses per doctor) over time. Rather, the graph shows what seem to be "technological" differences in the provision of health services. In the United States and Brazil, this means there are many nurses per doctor, while in other cases, such as Spain and Mexico, there are fewer nurses per doctor. But these differences between countries remain constant over time.

In short, population aging will lead to a growing demand for health services. As in other countries with a more advanced demographic transition, we estimate that this will result in very substantial increases in the number of doctors and nurses in the region in the coming decades.[x]

x. For the projections, we use information from six OECD countries that have long, high-quality series of doctors per 1,000 inhabitants: Canada, Spain, the United States, the Netherlands, Portugal, and Switzerland.

5 | What next?

As seen throughout this document, we foresee important increases in the demands for education and health services in the region. Furthermore, **a significant proportion of our current teachers, doctors and nurses will reach retirement age**. As evidenced in figure 15, the combination of these two trends means that a third of the teachers there will be in Latin America and the Caribbean in 15 years, and almost two thirds of the doctors and nurses, have not yet begun working. More than half of these new teachers, doctors, and nurses have not even begun their studies. This is a tremendous challenge, but also a great opportunity for the region.

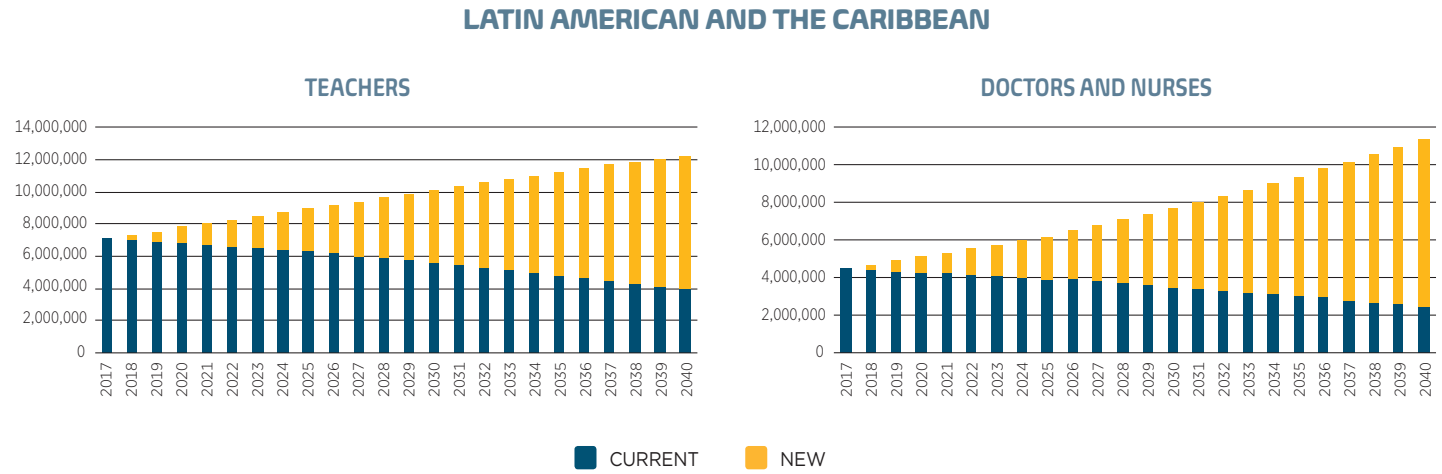
Jobs in education and health are jobs of the future. If current trends continue, these will continue to be high-quality jobs, with rising salaries, a smaller gender wage gap than in other sectors, and a higher social security contribution rate. Furthermore, despite some uncertainty, available studies agree that jobs for teachers, doctors, nurses and caregivers are less likely to be automated[9 y 10].

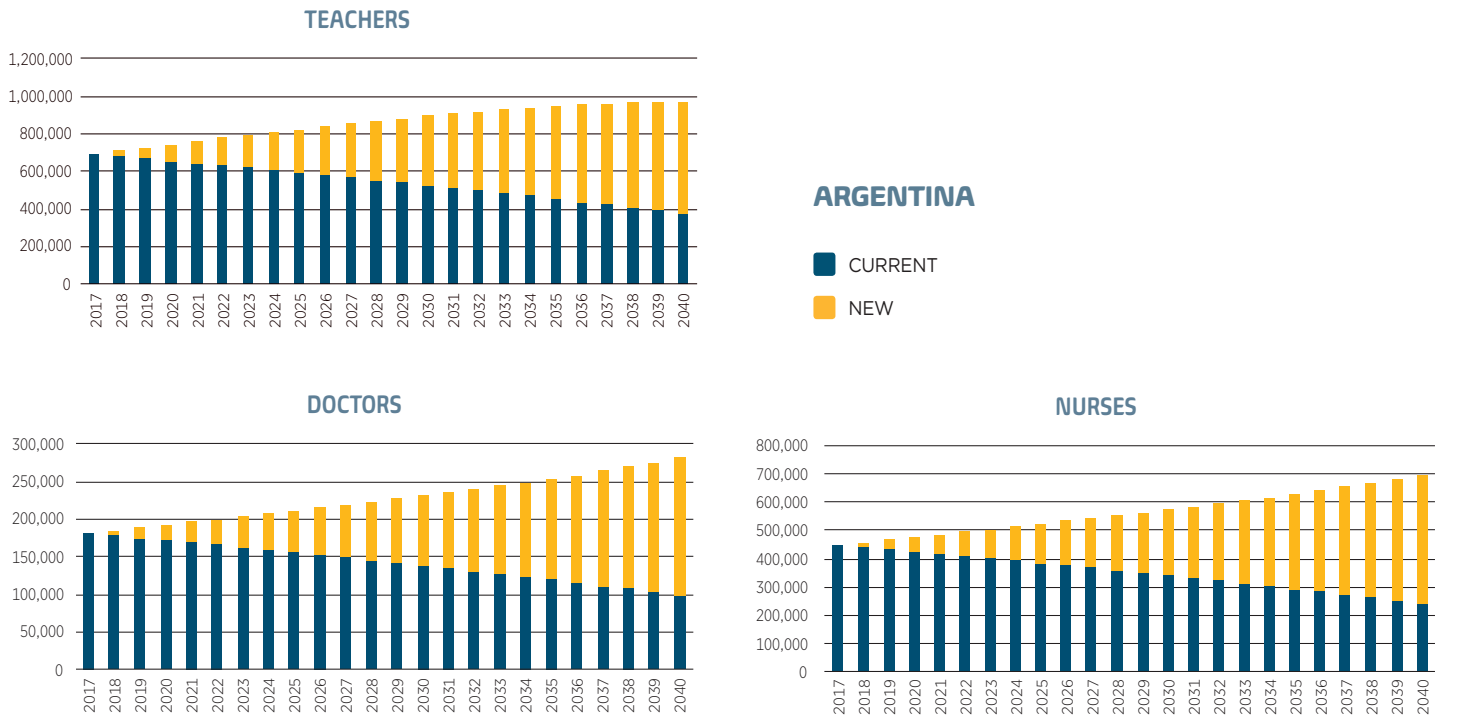
Does this imply that there are no changes in store for what professionals in education and health will do? Certainly not. The technological changes that are already unfolding will deeply change the work of teachers, doctors and nurses. For future education and health professionals to do their jobs well, they will need different skills and training than they currently receive in the region. What skills? **The ability to interact with technology is going to be a critical factor. But** 'soft skills', such as the ability to work with others and build trust, **will be equally important**. In addition to imparting knowledge, tomorrow's teachers will have to be mentors and support students in their educational process. Health care professionals will need interpersonal communication skills to achieve high levels of patient participation in their treatment regimes, and empathy to provide security and comfort when it comes to diseases that are difficult to diagnose or have no cure.

All this will require a different approach and profound reforms in how medicine, nursing, and teaching are taught in university, and in on-the-job training. Achieving this transformation is a topic of great importance for the region, and one that will be discussed later in the series *The future of work in Latin America and the Caribbean*.

A significant proportion of tomorrow's teachers, doctors and nurses in Latin America and the Caribbean are people who have not yet begun their professional careers

FIGURE 15. PROJECTIONS OF PRESENT AND FUTURE DOCTORS, NURSES AND TEACHERS*



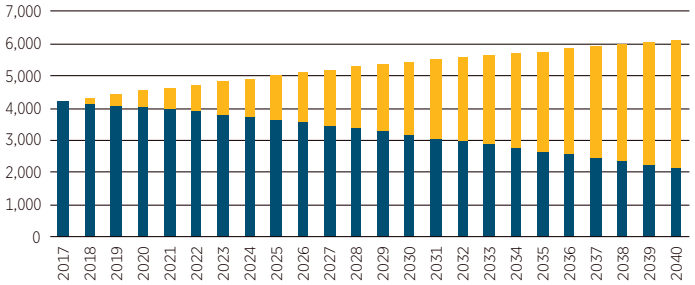


Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, available population and housing censuses at IPUMS-International, and data from UNESCO and the United Nations Population Division.

*Average of 22 countries for calculating the number of physicians and nurses: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Trinidad and Tobago, and Uruguay. Average of 24 countries for calculating the number of teachers: The previous 22, Honduras, and Suriname.

** "Present" are those who in 2040 will be aged between 48 and 65, and "future" those who in 2040 will be aged between 25 and 47.

TEACHERS

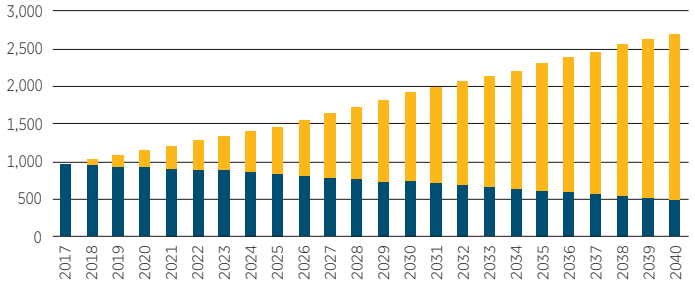


BAHAMAS

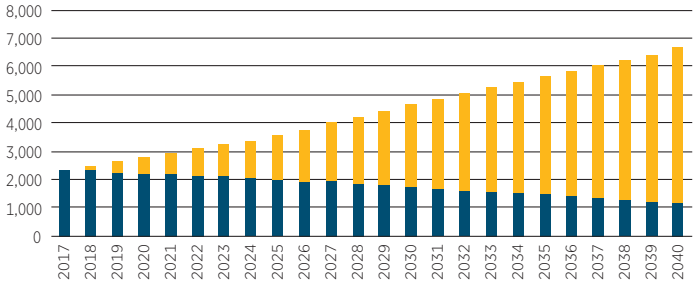
CURRENT

NEW

DOCTORS



NURSES



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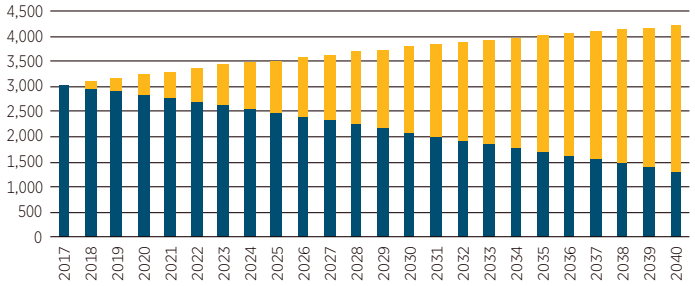
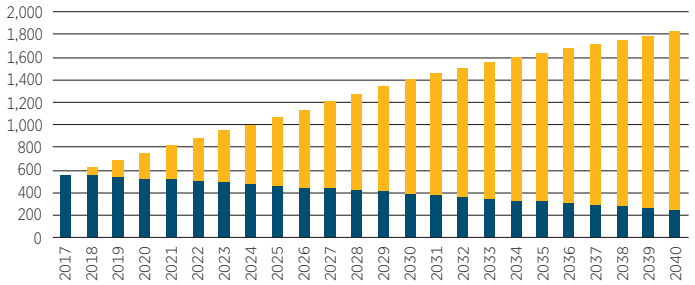


BARBADOS

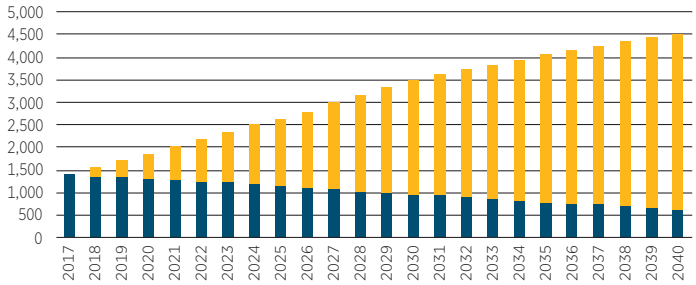
CURRENT

NEW

DOCTORS



NURSES



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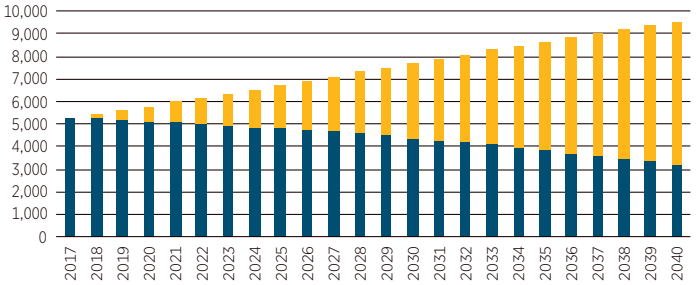
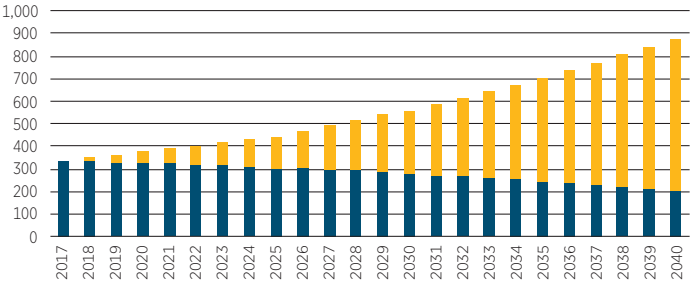


BELIZE

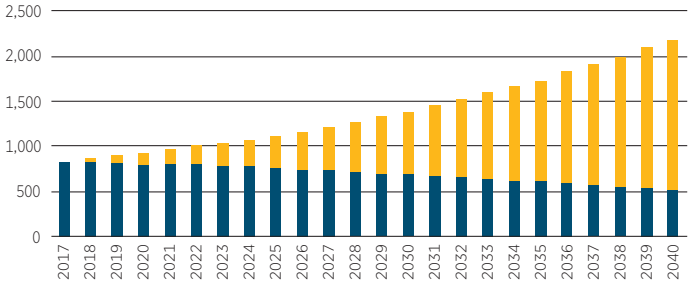
CURRENT

NEW

DOCTORS



NURSES



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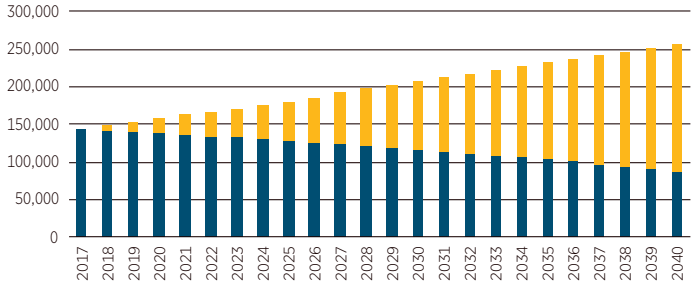
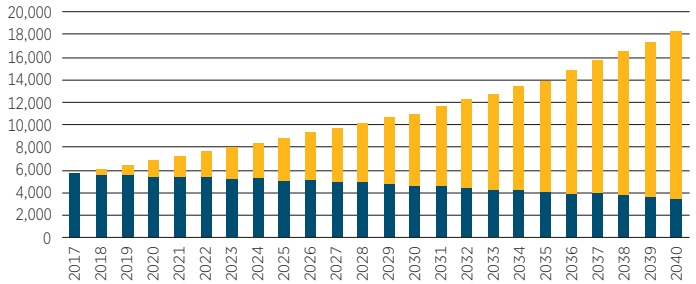


BOLIVIA

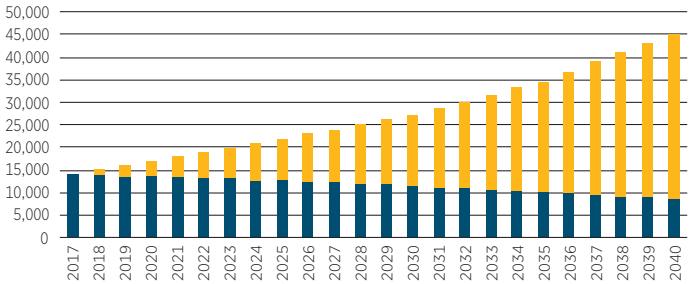
CURRENT

NEW

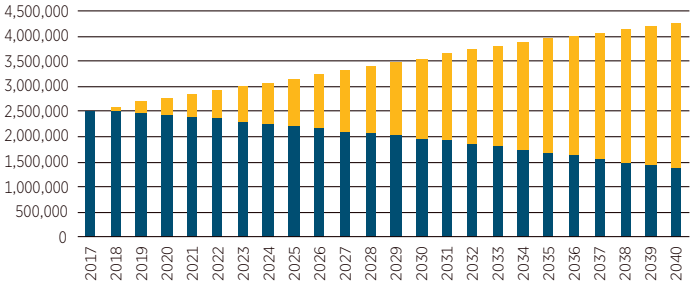
DOCTORS



NURSES



TEACHERS

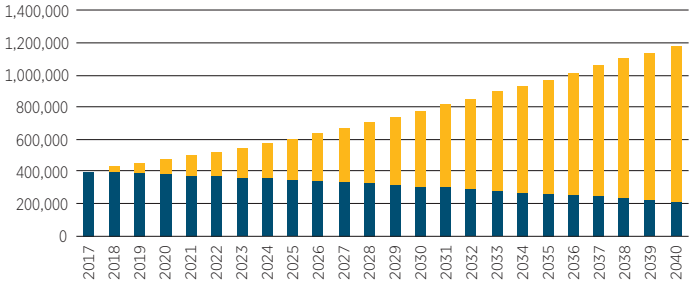


BRAZIL

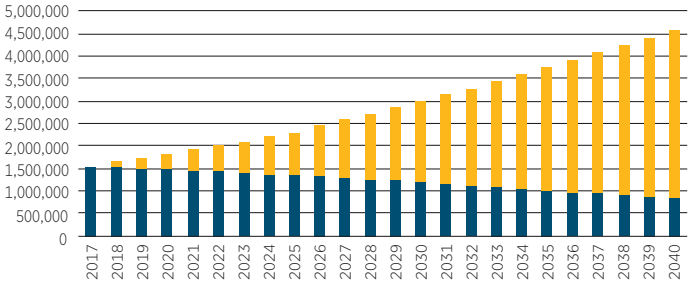
CURRENT

NEW

DOCTORS



NURSES



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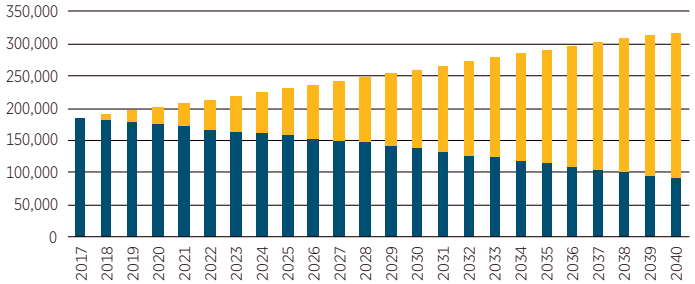
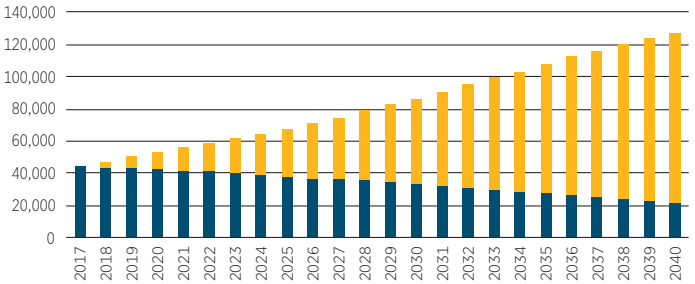


CHILE

CURRENT

NEW

DOCTORS



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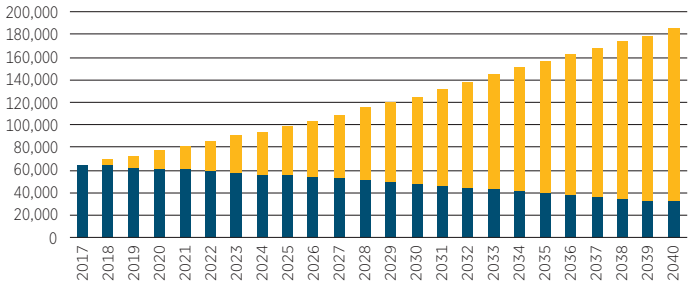

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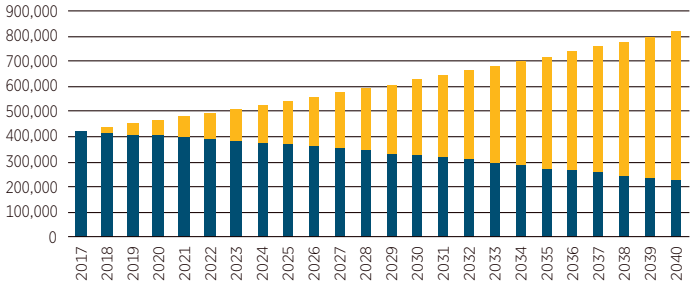
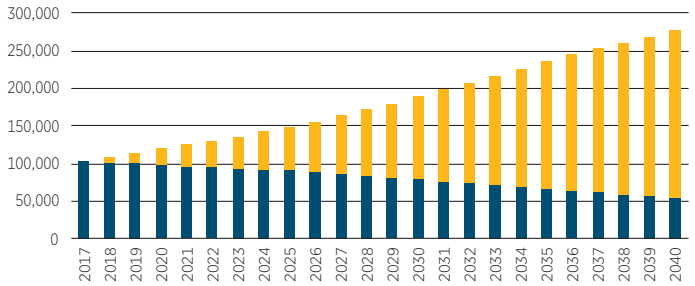


COLOMBIA

CURRENT

NEW

DOCTORS



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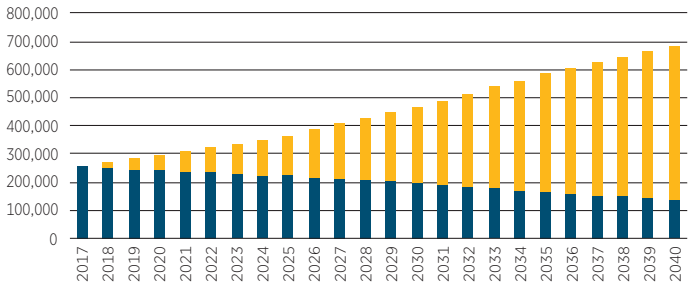

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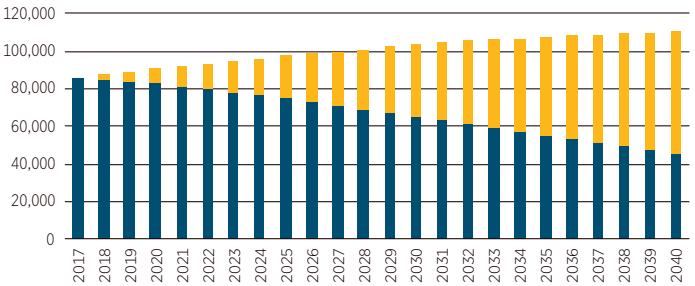
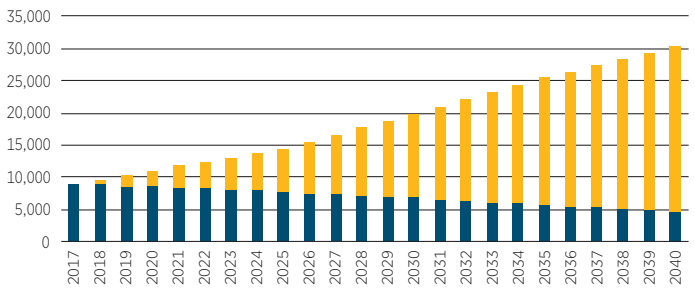


COSTA RICA

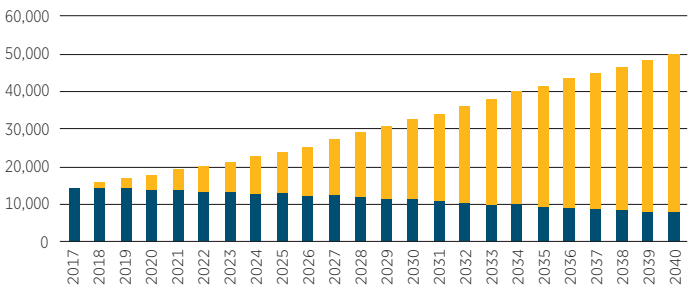
CURRENT

NEW

DOCTORS



NURSES



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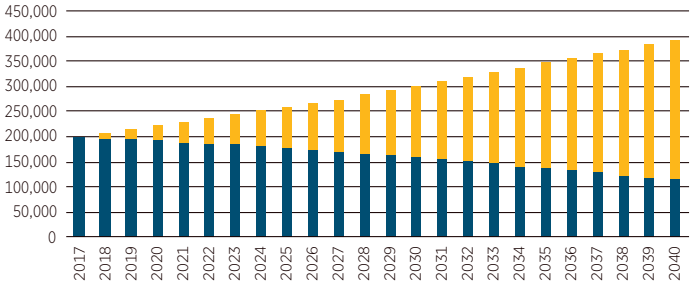
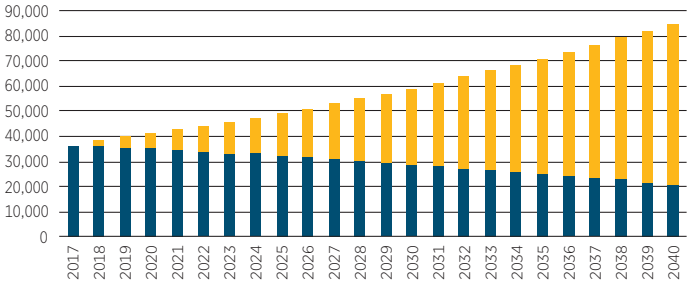


ECUADOR

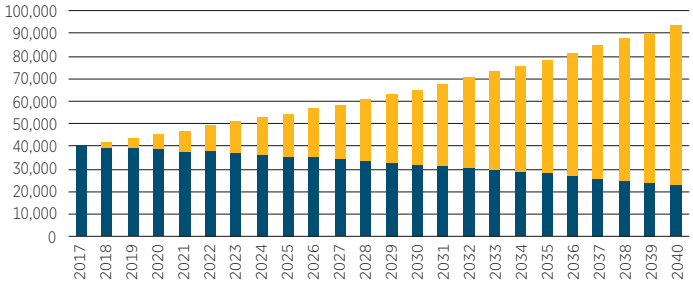
CURRENT

NEW

DOCTORS



NURSES



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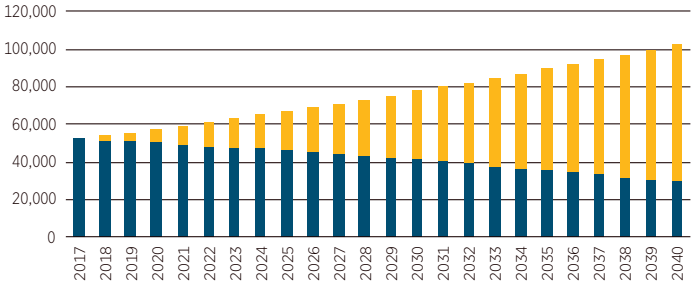
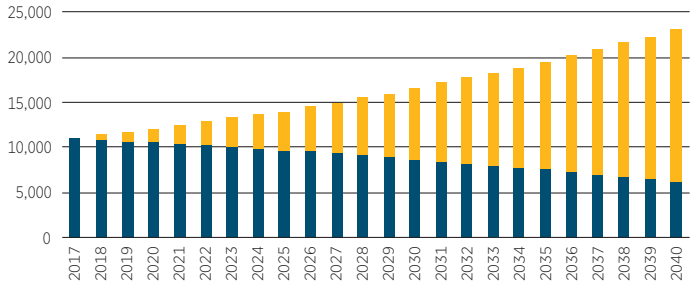


EL SALVADOR

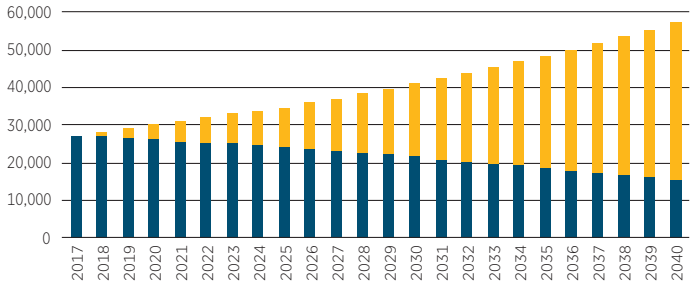
CURRENT

NEW

DOCTORS



NURSES



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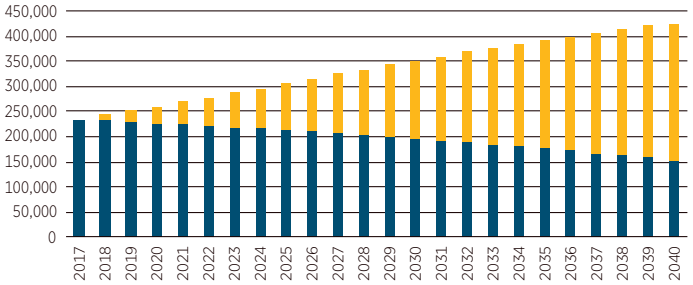
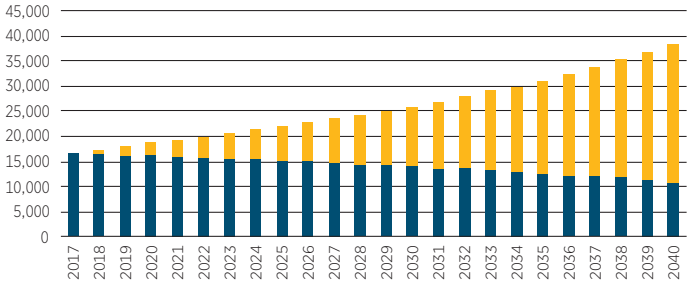


GUATEMALA

CURRENT

NEW

DOCTORS



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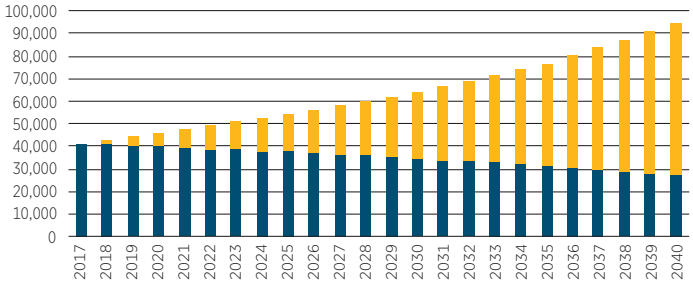

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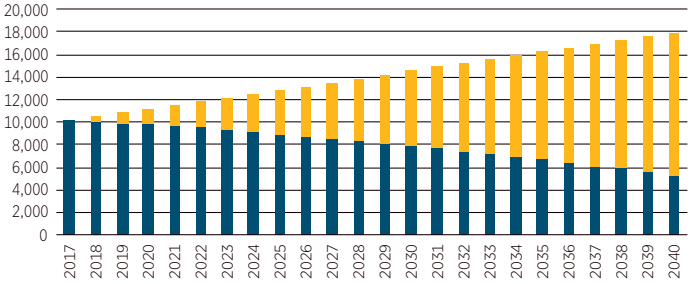
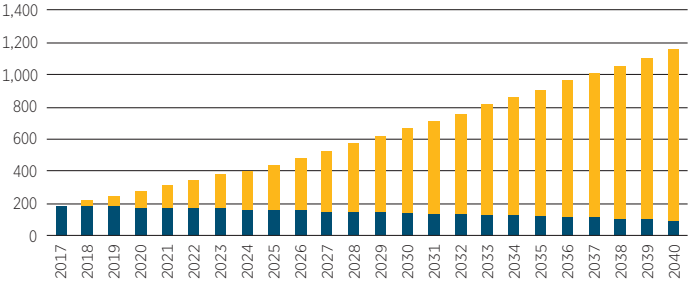


GUYANA

CURRENT

NEW

DOCTORS



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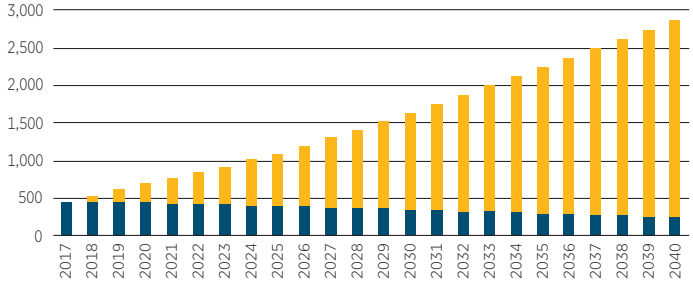

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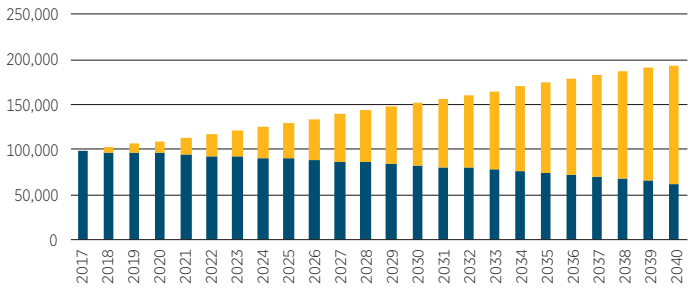


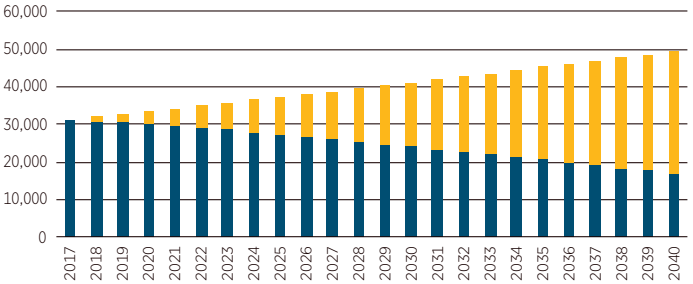
HONDURAS

CURRENT

NEW

Information not available for doctors and nurses

TEACHERS

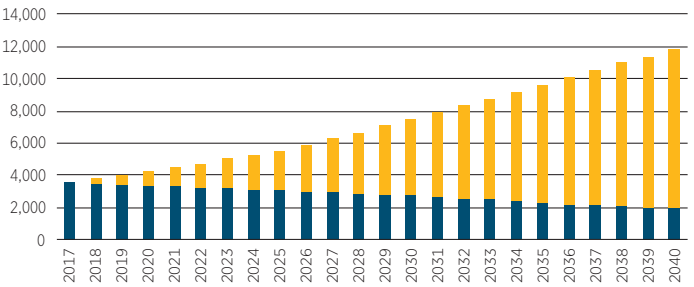


JAMAICA

CURRENT

NEW

DOCTORS



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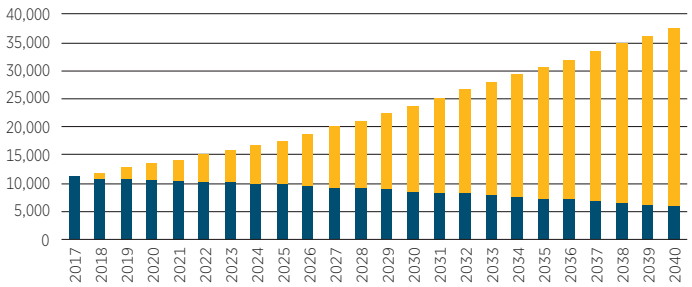

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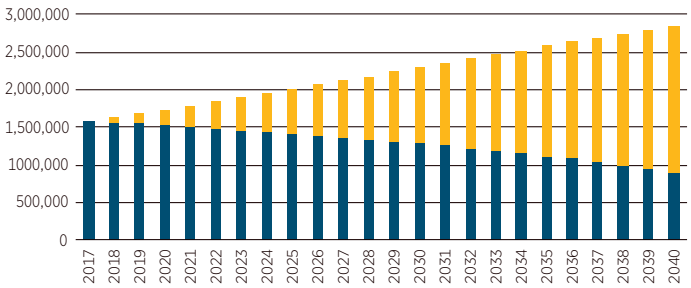
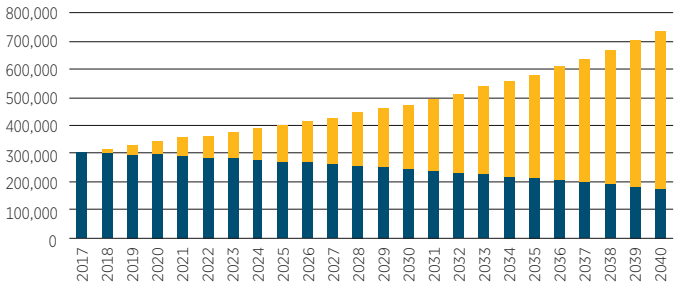


MEXICO

CURRENT

NEW

DOCTORS



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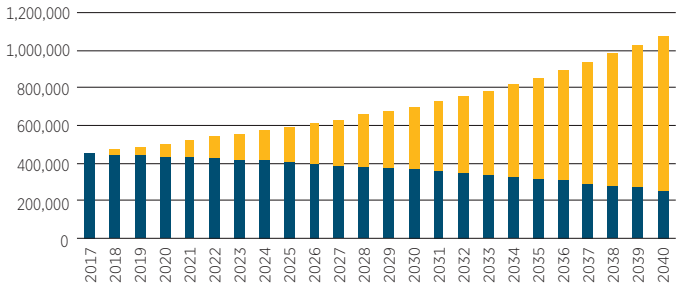

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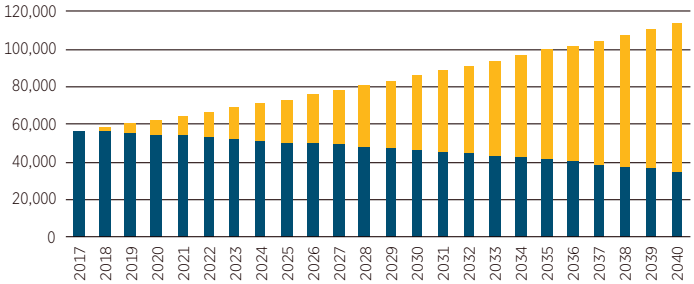
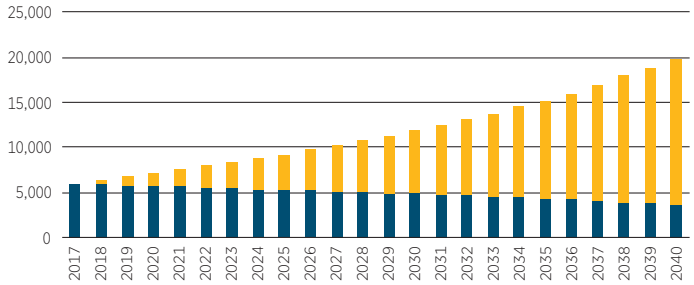


NICARAGUA

CURRENT

NEW

DOCTORS



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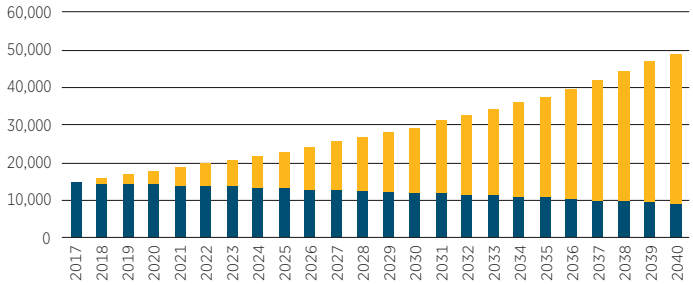

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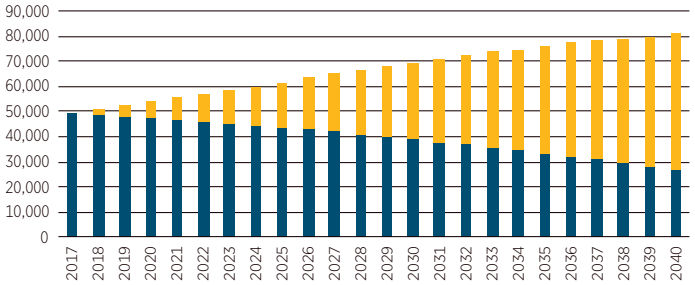
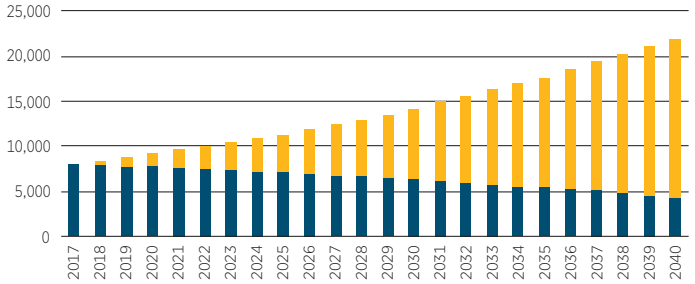


PANAMA

CURRENT

NEW

DOCTORS



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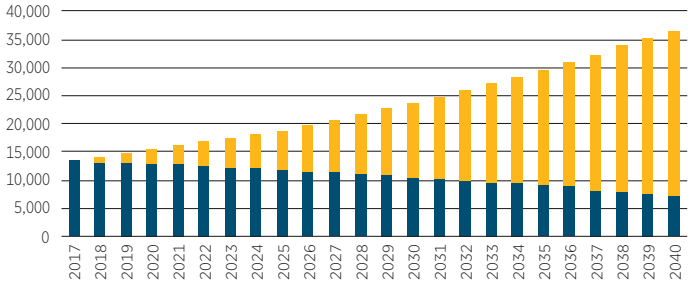

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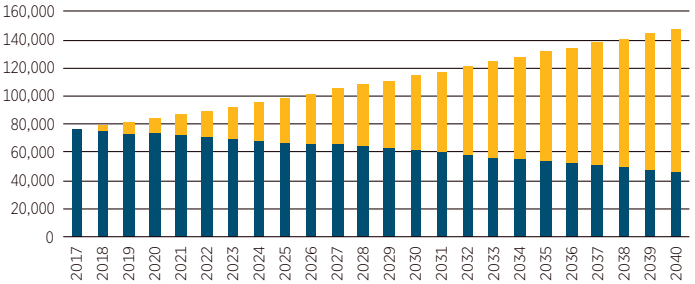
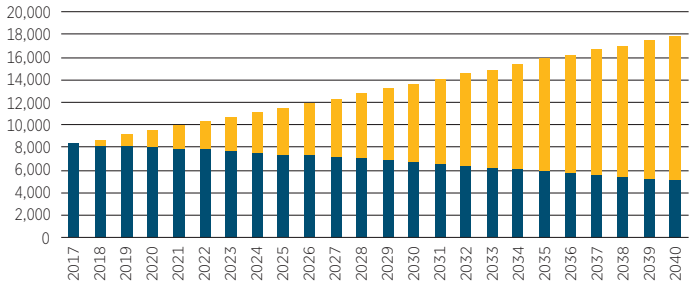


PARAGUAY

CURRENT

NEW

DOCTORS



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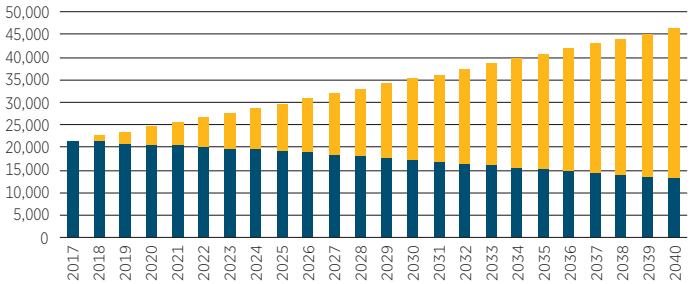

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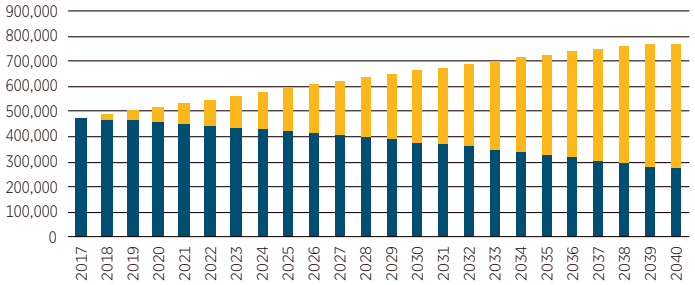
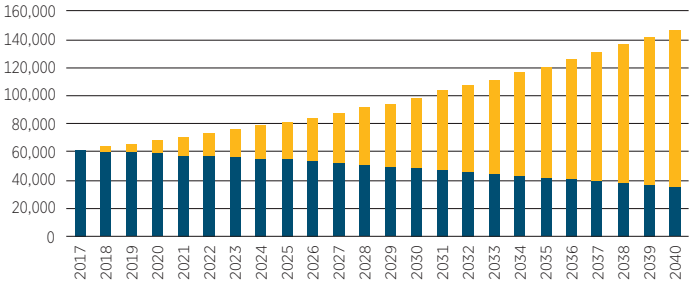


PERU

CURRENT

NEW

DOCTORS



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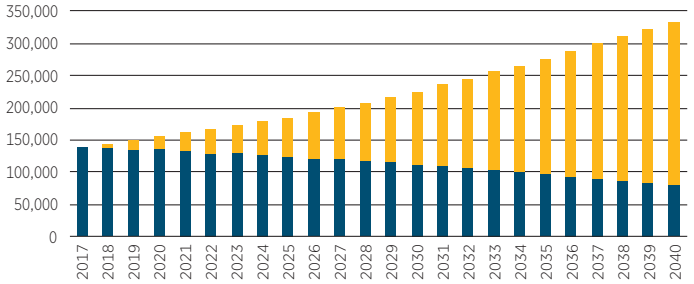

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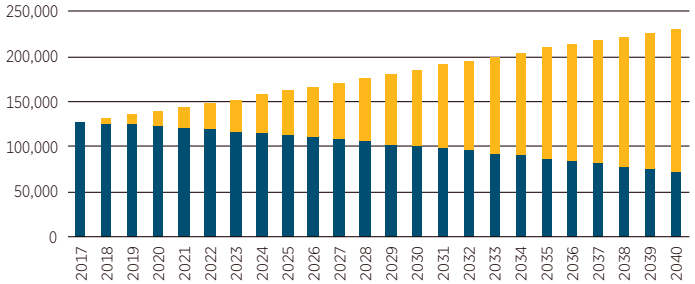
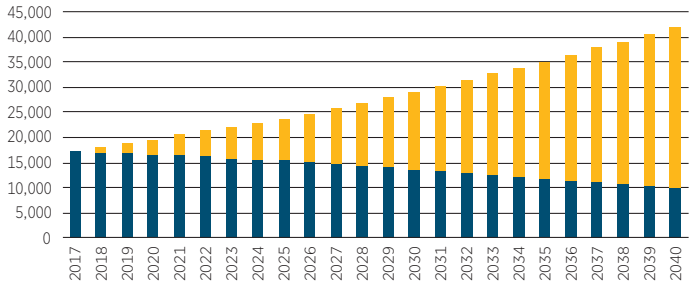


DOMINICAN REPUBLIC

CURRENT

NEW

DOCTORS



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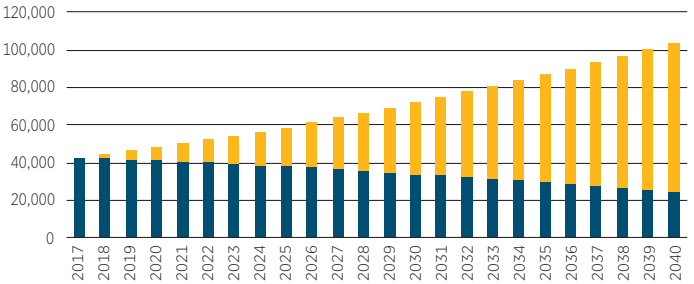

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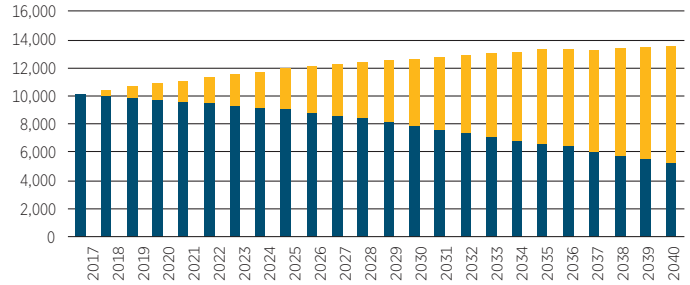


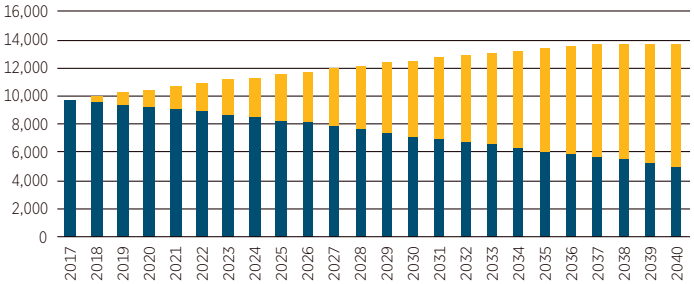
SURINAME

CURRENT

NEW

Information not available for doctors and nurses

TEACHERS

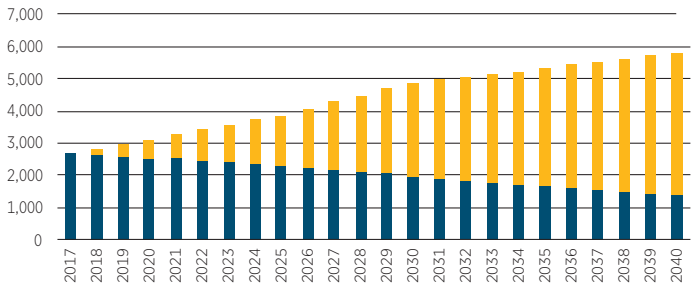


TRINIDAD AND TOBAGO

CURRENT

NEW

DOCTORS



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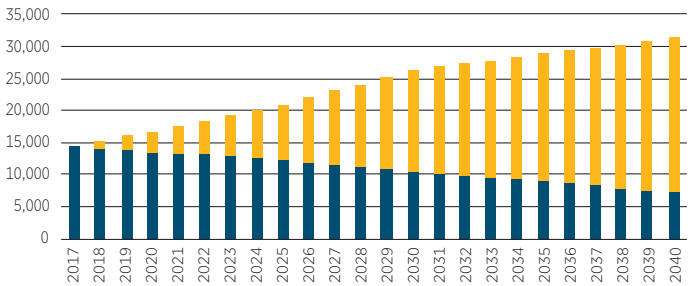

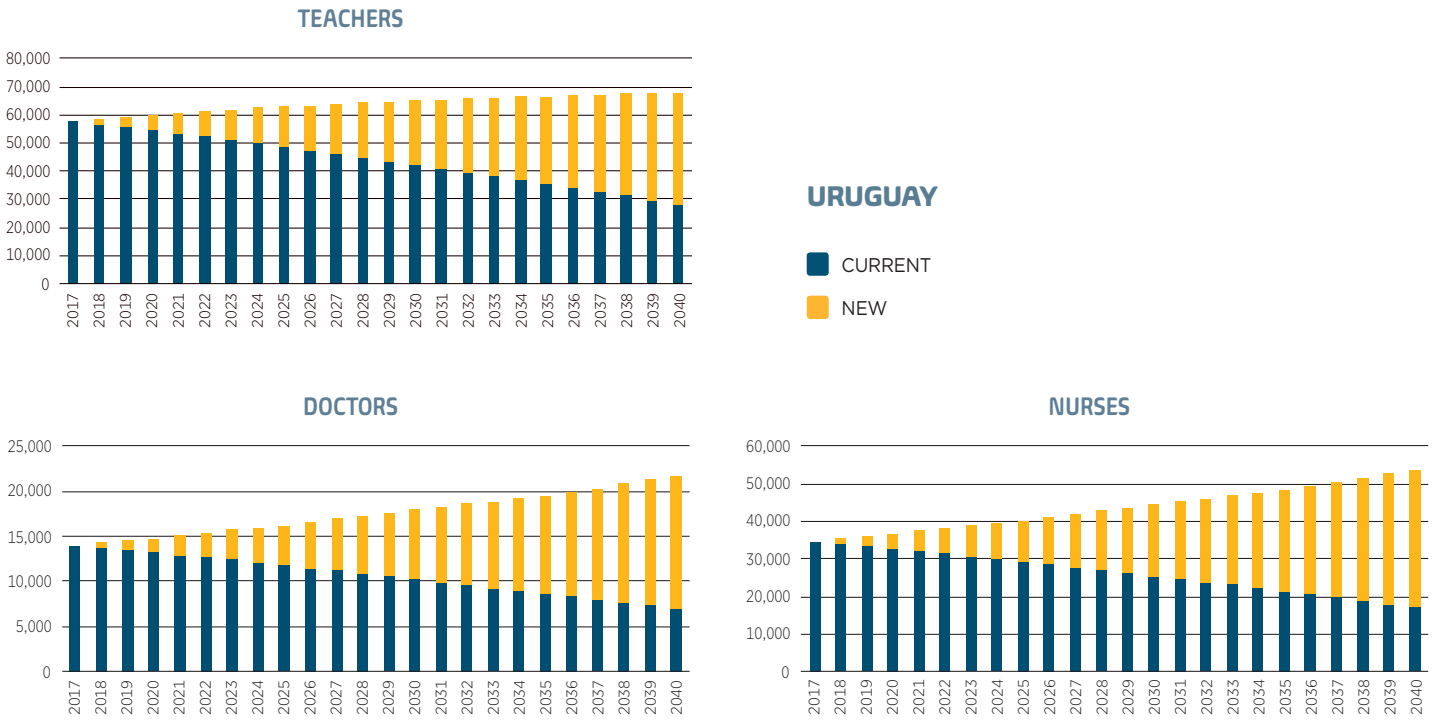

Source: Own calculations based on the harmonized household surveys of the Inter-American Development Bank, available population and housing censuses at IPUMS-International, and data from UNESCO and the United Nations Population Division.

*Average of 22 countries for calculating the number of physicians and nurses: Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Trinidad and Tobago, and Uruguay. Average of 24 countries for calculating the number of teachers: The previous 22, Honduras, and Suriname.

** "Present" are those who in 2040 will be aged between 48 and 65, and "future" those who in 2040 will be aged between 25 and 47.

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