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The **future** **of work**

in Latin America
and the Caribbean



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Index

| | | |
|----------|---------------------|----|
| 1 | Introduction | 7 |
| 2 | Why this? | 9 |
| 3 | What's up? | 11 |
| 4 | What's new? | 23 |
| 5 | What next? | 41 |
| | References | 45 |



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1 | Introduction

Self-driving cars, machines that process thousands of files in minutes, robots capable of extremely complex surgical operations, algorithms that write as a journalist would do about weather and stock exchange issues—it has been almost 200 years since a woman, [Ada Lovelace](#), devised the first algorithm to be processed by a machine. What we could only imagine 100 years ago has jumped from science fiction movies and novels into our real life. The future has already arrived. Robots and artificial intelligence have broken into our lives and become virtually ubiquitous. At work, telephonists, drivers, messengers, assistants, waiters, journalists and even doctors have been or could be replaced by machines. But **do these machines have gender? Are women more likely than men to lose their jobs to a robot? Will technology help close the labor market's gender gap?**

The labor market's persistent gender gap has been documented in most countries around the world, and Latin America and the Caribbean re-

Is the digital transformation an opportunity or a challenge in reaching gender equality in the labor market?

gion is no exception. Compared to men, more women work in lower-paid occupations, spend more time in unpaid child- and elderly-care jobs and participate less in STEM fields (that is, those related to science, technology, engineering and mathematics). Given technology's accelerated pace and this gap, **is digital transformation an opportunity or a challenge in reaching gender equality in the labor market?**

In this fourth issue of the '[The Future of Work in Latin America and the Caribbean](#)' series, we aim to understand what the new labor market will look like for women. First, the study presents new data on the impact that automation technologies (e.g., robotization and artificial intelligence) will have on workers in four of the region's countries. We then discuss the impact of intermediation technologies (or the gig economy) that, together with robotization, constitute a major disruption of technology in the labor market. The study presents new data while exploring the opportunities and challenges that these technologies will present for the region's women.

To understand automation's effects on women's employment, we must account for an important feature in the region: the significant educational



and labor segregation between genders helps clearly differentiate the tasks and skills that women and men use in the labor market. For instance, women choose fewer STEM-related careers, so they use fewer skills pertinent to these areas.

Intermediation technologies, or the gig economyⁱ, often replicate the traditional labor market's gender gaps, such as the gaps in participation and occupation. Available data for six of the region's countries showed that **women tend to have more limited use of digital devices and the Internet, including participation in the gig economy**. This gap in digital skills imposes a barrier to benefiting from this technology. Meanwhile, a pattern of occupational segregation is observed in the region's digital labor market, both in the type of companies (single-member firms led by women have greater prominence in areas of care, commerce and services while those led by men have greater prominence in communication, data processing and finance) and in the type of tasks (women

participate more in cleaning and in the purchase/delivery of household goods and services while men participate more in taxi services).

To successfully make the required transitions toward the labor force of the future, women must acquire adequate technological skills and competencies. It is relevant that they have more influence on the creation and use of technology to ensure a more egalitarian future and to address the gender bias inherent in new technologies (for example, in the design of artificial intelligence algorithms).

To successfully make the necessary transitions toward the labor force of the future, women must acquire adequate technological skills and competencies

i. We understand *gig economy* as the exchange of services for a monetary compensation. Besides the "economy on demand" component that has the objective of buying, selling, renting or hiring a service, a [platform economy](#) also includes also a collaborative economy component that has the objective of providing, donating, exchanging or sharing without, necessarily, a monetary compensation between users. Uber is an example of a platform belonging to the economy on demand or gig, while Couchsurfing is an example of a platform belonging to the collaborative economy.

2 | Why this?

Do you want to leave artificial intelligence speechless? Let's perform the following experiment. Take your mobile phone and ask, "Siri, are you a man or a woman?" Siri will answer that she does not have a gender. Then ask, "Why do you have the voice of a woman?" Siri will proceed to provide evasive answers and insist, over and over, on the first answer. By the way, "Siri" in Norwegian means "beautiful woman who guides you to victory." The same pattern is present in other virtual assistants like Alexa, Cortana and more; they all have female names and voices.

Let's do another experiment: Think of a smart robot. Is your mental image of this robot male or female? Your mental image will likely look male. This is partly because if you perform a quick Google search with these terms, you will find few examples of smart robots with a female appearance. Artificial intelligence has been a part of our world for almost ten years, and we already have virtual assistants with female voices and smart robots with male appearances.

As previously highlighted, gender gaps in the labor market are persistent in most countries around the world, and our region is no exception. We also know that technological changes can reduce or amplify those gaps in the future.

Promoting gender equality in the labor market is both the right thing and the smart thing for gov-

ernments and firms to do. Women's participation in the labor market [generates greater growth rates](#) and [reduces poverty](#). Estimates for the region project growth of up to [6% of the GDP per capita](#) resulting from modest policies that promote female labor participation, such as expanding quality care services. This growth is in addition to the [multiple positive benefits for families](#) and communities, including better nutrition and education for children. Furthermore, the companies with the most diverse labor forces in leadership positions achieve [greater financial returns](#) (between 21% and 33% more) than companies in the same field with less diversity.ⁱⁱ

Therefore, the key questions are: **Will digitization widen the existing gender gaps? Can it be used to close them? What actions and policies can help close these gaps in this new technological scenario?**

With this challenge in mind, we aim to open a dialogue to help the region's countries shape an employment sector in service of the people, rooted in gender equality and availing of technologies to achieve these goals. This report does not predict the future. As explained in the first issue of this series, the future of work is not a still picture but a scenario in progress. The spaces that women occupy in the future will depend on how we—women, men, companies and government—act.

ii. The study considered publicly available data from 1,007 companies in 12 countries worldwide. The term *diversity* refers to a higher proportion of women and ethnically or culturally diverse people in companies' leadership positions.



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VIDEO

WHAT IS THE REALITY OF WOMEN IN THE LABOR MARKET?

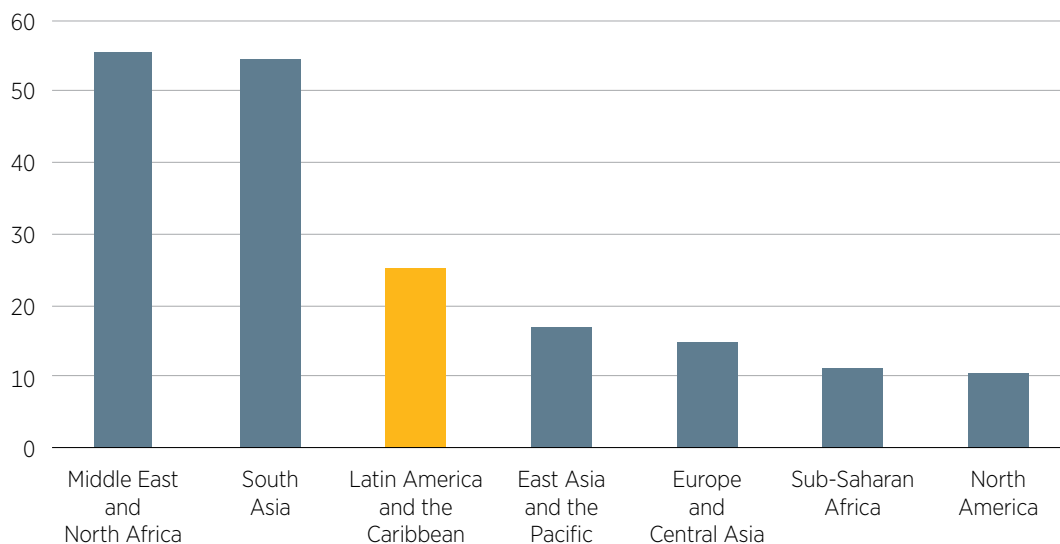
3 | What's up?

An enormous gap in labor force participation

The gender gap in labor participation in Latin America and the Caribbean is one of the largest in the world. Despite the progress in women's share of the workforce over the last 50 years (in which 58% of women attained labor participation), it is still far below male participation, which is around 82%. This reveals a gap of almost 25 points for the region. Even among women, the outlook is far from homogeneous, and we still find significant differ-

ences between countries. For instance, Guatemala and El Salvador are among the countries with the lowest female participation rates, 39% and 48%, respectively, while Uruguay and Peru exhibit rates close to 70%ⁱⁱⁱ. This means that the gaps themselves are very uneven. For example, Guatemala and El Salvador's gender participation gaps are 49 and 31 points, respectively, but in Uruguay and Peru they are 15 points (graph 1, panels A and B).¹

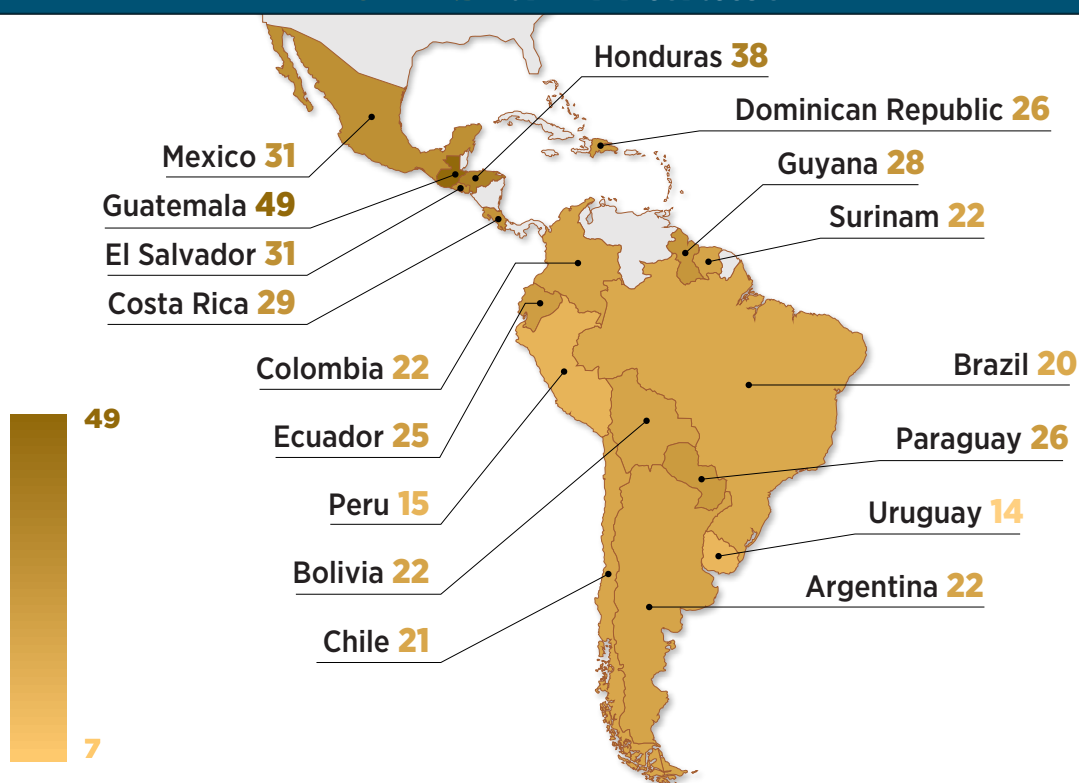
GRAPH 1.A LATIN AMERICA AND THE CARIBBEAN COMPARED TO OTHER REGIONS



Labor force participation gap between people aged 15 to 64. Based on data from World Development Indicators.

iii. The female labor force participation rates in Uruguay and Peru are similar to those in countries of the European Union or the United States of America (World Development Indicators, 2017).

GRAPH 1.B A VERY HETEROGENOUS GAP



Labor force participation gap between people aged 15 to 64. All data is from 2017 except for Mexico, where the most recent data is from 2016 (SIMS, IDB).

Women provide care – do men?

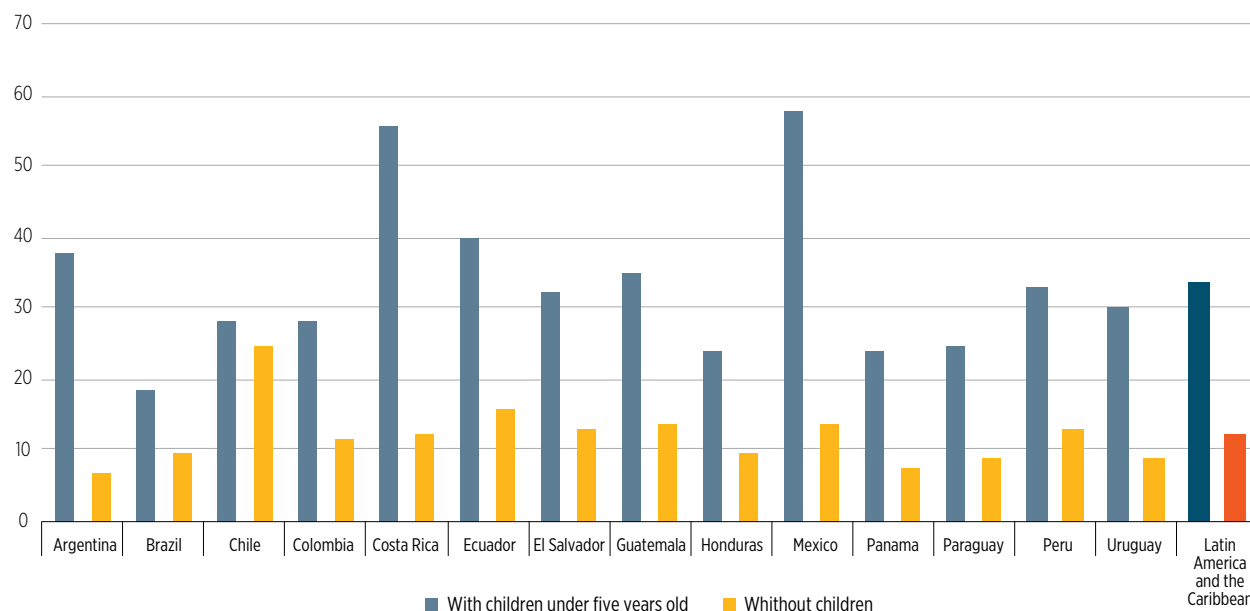
Motherhood penalizes women^{iv}. The labor market's participation gap skyrockets to 40 percentage points between men and women with children under five years old. In contrast, the gap is lower (24 percentage points) between men and women whose children are over 18 years old. This aligns with the fact that **one main challenge still facing women in the labor market is the cultural expectation of their role as principal care givers.** Women in the region dedicate more than twice the amount of hours of unpaid domestic and care responsibilities than male partners: 38

compared to 16 hours a week, respectively. This gap intensifies in homes with children under five years old, with the difference between men and women reaching 33 weekly hours of unpaid work (graph 2).

The gender gap in labor force participation is high throughout the region and very uneven between countries

iv. See [Blau and Winkler \(2017\)](#) and [Kleven et al. \(2019\)](#) for a review of the evidence in developed countries.

GRAPH 2. WOMEN PROVIDE CARE—DO MEN?



Note: The graph shows the gap in the number of unpaid hours of work per week, depending on the presence of minors at home. The gap was estimated by calculating the average weekly hours of unpaid work for women minus the respective average for men. Estimates prepared by the [Economic Commission for Latin America and the Caribbean \(ECLAC\)](#) are based on time-use surveys for the most recent year available (2009–2014, depending on the country). Source: Our own preparation based on ECLAC data.

Occupational segregation: Women provide care and men build

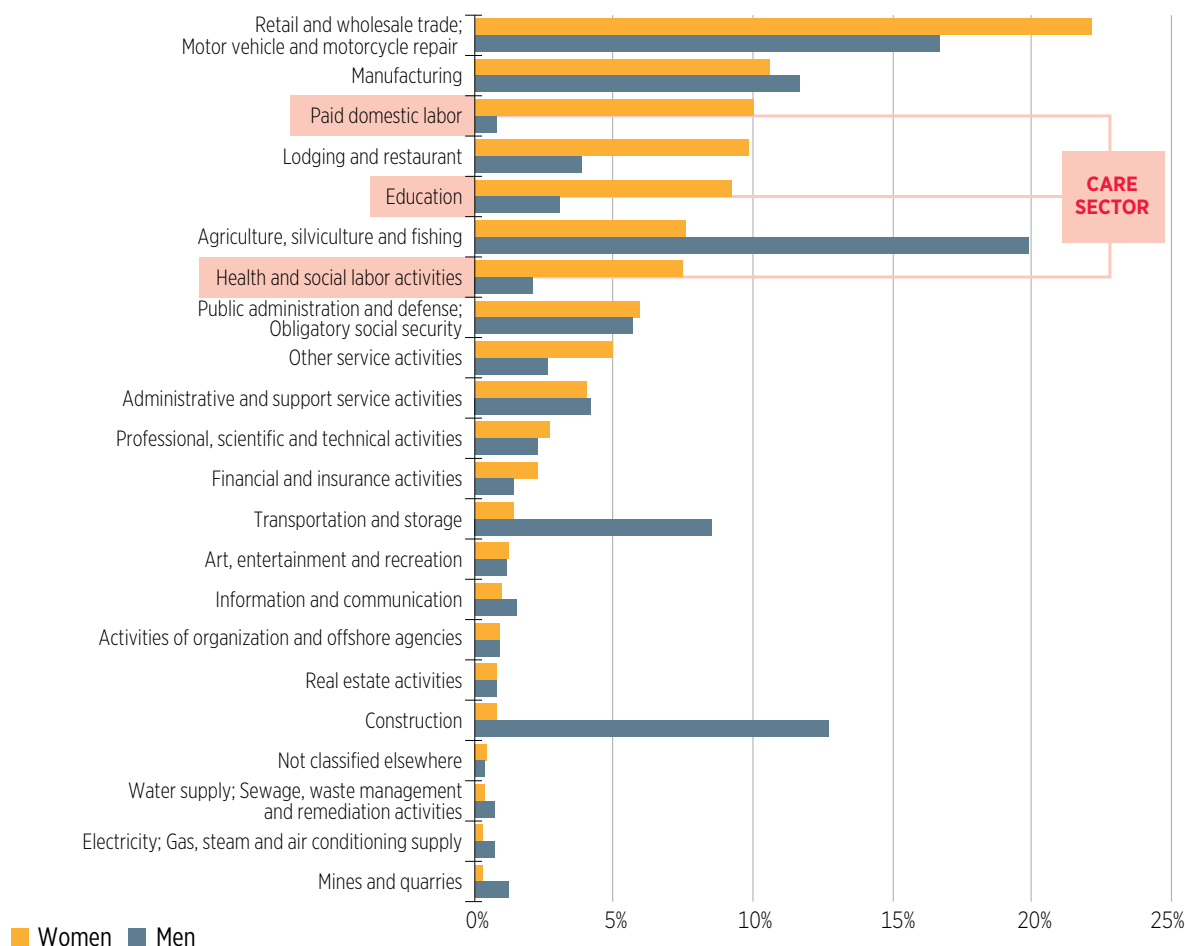
After entering the labor market, women tend to participate in low-quality, low-paying jobs, contributing to the gender wage gap. Women of the region [earn between 5% and 30% less](#) than men with the same education level and similar demographic characteristics such as age, civil status and area of residence.

An important part of the wage gap is explained by the [distribution of employment by gender](#). Women tend to be segregated into traditionally female sectors, which are often poorly remunerated. **As such, almost 30% of women work in**

sectors associated with care (education, health and domestic work). Among men, only 6% are employed in these sectors. In contrast, sectors such as farming or construction employ more than 30% of working men and only 8% of working women. Likewise, service sectors related to commerce, the hotel industry or food comprise almost 30% of all female workers, as compared to 20% of all male workers (graph 3).

Once they have entered the market, women tend to participate in low-quality, low-paying jobs

GRAPH 3. OCCUPATIONAL SEGREGATION: WOMEN CARE, MEN BUILD



Note: The graph shows the percentage of workers by activity and by gender. Estimates prepared by the International Labor Organization (ILO) for the region. Health, education and domestic work sectors constitute the care sector. **Source:** Own preparation with ILO data (2017).

She must prove she can: From sticky floor to glass ceiling

Even within the same professional activity, men and women perform different tasks and their professional progression^v differs due to the so-called glass ceiling, which refers to barriers that restrict women's access to hierarchical positions.

Career interruptions associated with maternity, women's preference for flexible working hours and the different attitudes of men and women toward risk and competition are some factors explaining the glass ceiling's existence².

v. Leadership positions tend to pay better within an organization, so the low representation of women in these jobs also contributes to the gender wage gap. In other words, even when performing the same professional activity, men and women earn different wages (see [Miller, 2018](#) and [Kunze, 2018](#) for a literature review of the gender wage gap in developed countries).

In the region, women hold only 20% of top management positions in public administration, and women represent less than 10% of companies' boards of directors. Just 4.2% of the executive directors of companies publicly traded on the stock exchange are women, and only 7.2% of all executive director posts are occupied by women. [Out of 14,412 companies](#), only 21.4% have a woman in high-ranking positions. Moreover, when they attain a position of leadership, women tend to be involved in support roles as human resource directors or as financial directors³. [Worldwide](#), women hold less than 25% of political leadership positions (as heads of ministries and in legislative posts) and only 34% of managerial positions.

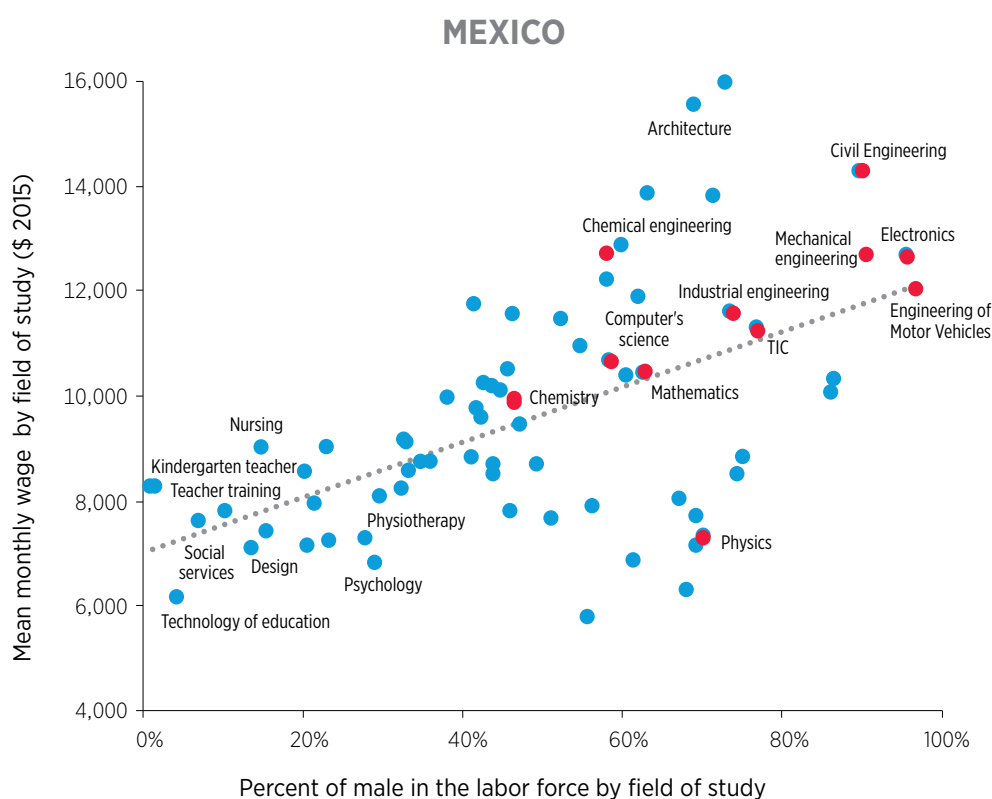


Do men study to be more productive?

The gender-based distribution of occupations is largely the product of segregation in the educational system. Women account for 60% of graduates from tertiary and university programs, **but they represent only 30% of STEM graduates, which reveals their low propensity to choose careers corresponding to high-productivity and, consequently, better-paid sectors.** This problem can be seen mainly in mathematics-intensive fields of study, such as technology and engineering, where approximately 28% of graduates are women.

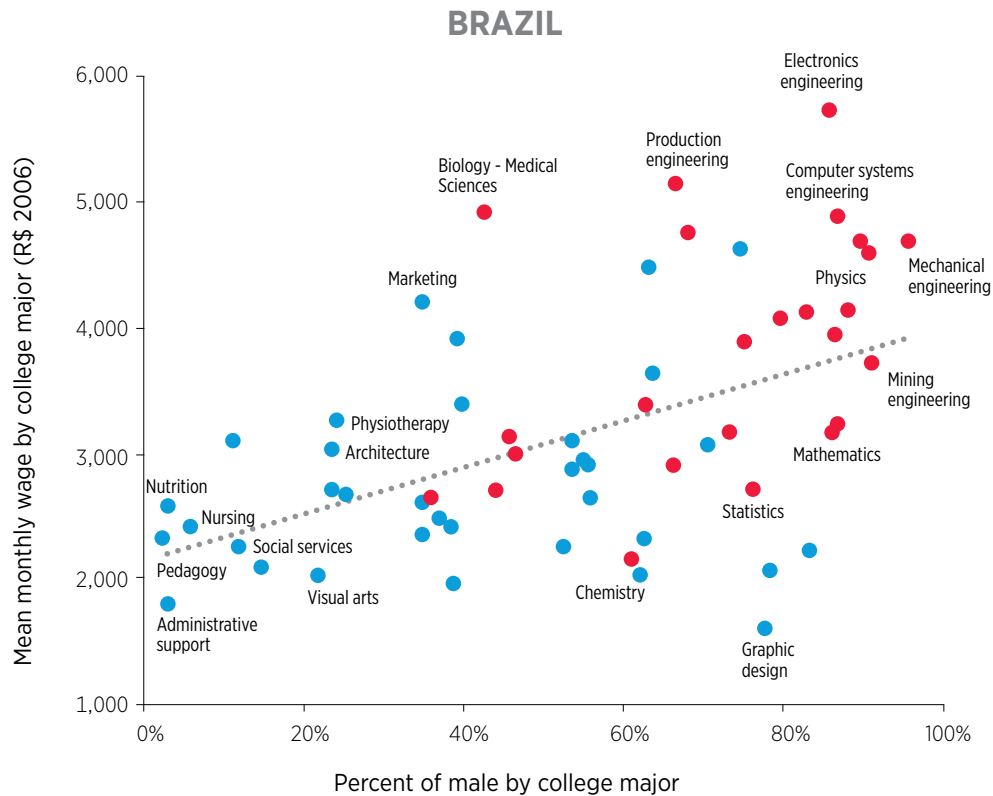
This low representation of women in STEM fields reinforces inequalities that already exist in the labor market. The digital revolution we are experiencing is transforming the world of work, and many of the new employment opportunities are arising in professions related to the creation and use of technology. Data from four countries in the region (Argentina, Brazil, Chile and Mexico) show that out of the 20 skills most demanded by employers, half are directly related to technology development. The United States Bureau of Labor Statistics predicts that demand for statisticians,

GRAPH 4. DO MEN STUDY TO BE MORE PRODUCTIVE?



Source: Own estimates.

Note: The graph shows the correlation between the average salary and the percentage of men in the labor force by field of study. Red dots denote STEM fields of study.



Source: Bustelo et al. (2019a)⁴.

Note: The graph shows the correlation between the average salary and the percentage of men by field of study. Red dots denote STEM fields of study.

software developers and mathematicians will increase by 34%, 31% and 30%, respectively, by 2016. These jobs are among the 10 with the most accelerated growth rates. However, [only three of every 10](#) workers in the fields of mathematics and computer science in the region are women.

The gender gaps observed in STEM areas, in turn, perpetuate the wage gap. Graph 4 illustrates this

relationship, showing the proportion of male workers per study area and their average monthly wages in the labor market in Mexico and Brazil. Two clear messages emerge from this correlation: higher-paid careers are often those in which the proportion of men is higher, and STEM careers, in general, yield the highest pay.

21st century skills: Who's ahead?


Educational and labor market segregation lead men and women to perform different tasks and employ different skills in their occupations. This has important consequences for the future. Smart technologies are redefining the skills required in all industries. [The most valued skills today](#), and those expected to continue rising in demand, referred to as [“21st century skills”](#), include^{vi}:

1) Non-cognitive skills: skills that are inherently human, and therefore difficult to be replaced with robotics; they include creativity, communication, teamwork and critical thinking.

2) Advanced cognitive skills: digital and quantitative skills, such as [artificial intelligence](#) or [data science](#).

Analyzing the available evidence from a set of four Latin American countries (Bolivia, Chile, Colombia and El Salvador), considerable gender gaps can be observed in some of these skills (graph 5). Men are more involved in tasks that require strategic management and communication skills as well as activities that demand physical competencies. However, among working women, there is a large participation lag in tasks

vi. We invite you to read our [21st Century Skills initiative](#).



A great lag exists among working women in the participation in jobs that require digital and math-related quantitative cognitive skills

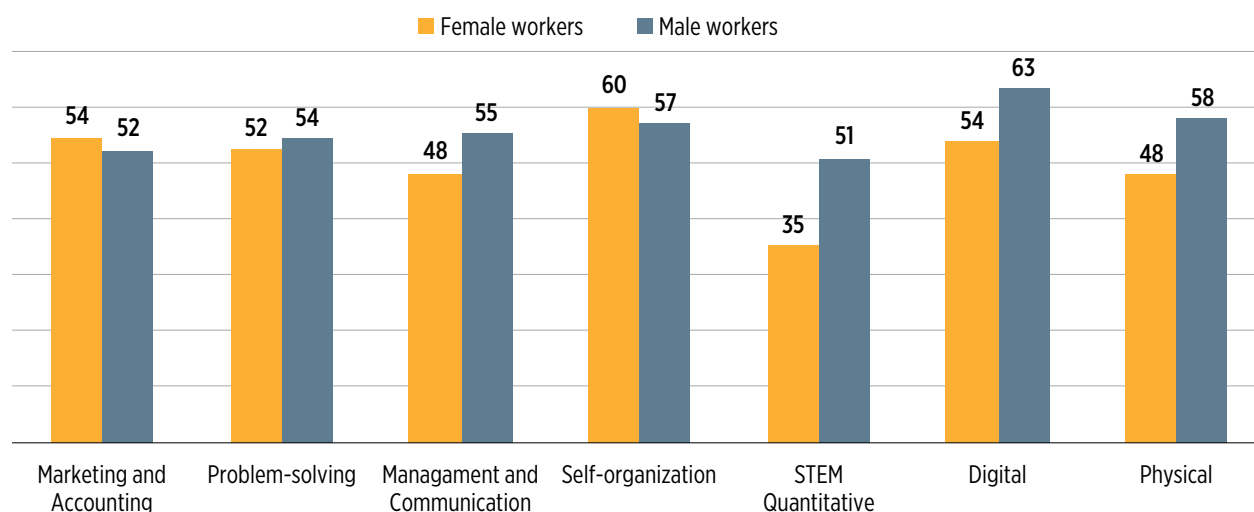
involving digital and math-related quantitative cognitive skills (i.e., STEM skills). However, this picture is not substantially different from that of [OECD countries](#).

In contrast, the gender gaps in the use of other skills are usually small. Women are more likely to perform tasks that require self-organization skills, related to the capacity to adapt to changes and

absorb shocks. In addition, female workers have a greater tendency to perform routine tasks that demand accounting-related skills (such as reading financial documents) and marketing (such as interaction with clients). Meanwhile, their male counterparts tend to be more involved in tasks that require problem-solving skills (predisposition to gain new knowledge to solve tasks).

GRAPH 5. 21ST CENTURY SKILLS: WHO'S AHEAD?^{vii}

AVERAGE FOR BOLIVIA, CHILE, COLOMBIA, AND EL SALVADOR



Note: The graph shows the percentage of workers with a high level of endowment in each skill; in other words, those workers whose endowment is above the average for such skill. An urban sample of working individuals between 18 and 60 years old is considered, excluding the agricultural, forestry, fishing and mining sectors. The gaps between male and female workers are statistically significant at 5% or less. Calculations are based on STEP 2012 and 2013 surveys (Bolivia, Colombia, and El Salvador) and PIACC 2014 (Chile). **Source:** Bustelo et al. (2019b) ⁵.

vii. Routine skills that require physical, marketing and accounting competencies are not part of the set of 21st century skills. They were included in the study by Bustelo et al. (2019b) to follow the classification of skills presented in Grundke et al. (2017) on a group of OECD countries and because they reflect skills that have a significant probability of becoming automated.

BOX 1. ¿HOW MUCH ARE THE 21ST CENTURY SKILLS WORTH TO WORKING MEN AND WOMEN?

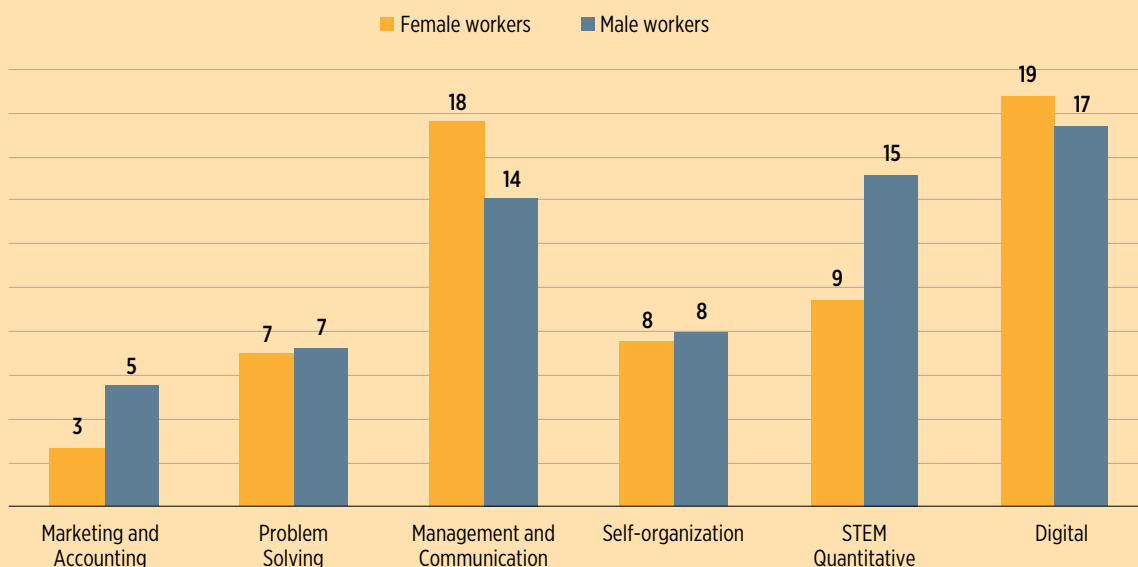
Mathematical skills: double return for men

Returns from the so-called 21st century skills—that is, how much these skills contribute to increase wages—also differ according to gender. The data from Bolivia, Chile, Colombia and El Salvador indicate that, when comparing the income of men and women who have equal education levels, numerical and basic reading-writing skills and other socio-demographic characteristics, **the return from the quantitative skills associated with mathematics (STEM) for men is almost double the return obtained by women.** One-point increase in the value of STEM skills translates to a 15% salary increase for men (0.7 dollars per hour of work), relative to a 9% salary increase for women (0.4 dollars per hour of work).

This higher return from STEM skills for men is a key factor in explaining the wage gap in these countries. However, in the case of digital, management and communication, marketing, accounting, problem-solving and self-organization skills, it is not possible to conclude that the returns are different.

HOW MUCH ARE THE 21ST CENTURY SKILLS WORTH?

AVERAGE FOR BOLIVIA, CHILE, COLOMBIA AND EL SALVADOR



Note: Percentage increase in the salary of men and women by a standard deviation of increase in each skill. Calculations based on STEP 2012 and 2013 surveys (Bolivia, Colombia and El Salvador) and PIAAC 2014 (Chile). The sample is composed of urban salaried men and women from the private sector between the ages of 16 and 64, with the exception of El Salvador, where it is not possible to distinguish between private and public sectors. The agricultural, forestry, fisheries and mining sectors are excluded. Returns obtained from a Mincer equation, estimated by MCO for men, and by a Heckman selection model for women. **Source:** Bustelo et al. (2019c) ⁶.

How can this return gap be explained?

If this gap were the result of innate characteristics in men and women, women should logically accumulate fewer STEM skills. But, as an innate difference is unlikely, it is more plausible that the differentiated returns can be explained by other reasons. [For instance](#), the existence of greater discrimination toward women in STEM-related professions, relative to other professions, or the gender stereotypes that cause women to spend more time than men in unpaid care jobs, which limits their return from paid jobs, may explain the return gap.

These findings reveal the need to implement interventions that prompt women to become involved in STEM areas, and to have a deeper understanding of the causes that promote those differences, to correct them.

In this respect, and continuing with our example, policies of labor market correction may be implemented to combat discrimination. To avoid the burden of care falling mostly on women, policies may be implemented to improve the balance between work and family life, for men as well as women



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AUDIOS

HOW DOES THE DIGITAL REVOLUTION AFFECT WOMEN?
WOMEN IN THE GIG ECONOMY

4 | What's new?

If 10 years ago someone had told us that there would be [airplane-landing robots](#), [self-driving cars](#), human-looking [virtual assistants](#) fluent in 30 languages that can answer questions in real time, [fembots that guide us through museums](#) and [robots looking after the elderly](#), we would have had a hard time believing them. And no, we are not referring to the plot of a science fiction movie. This is real. The future has already arrived.

Given the accelerated advance of technology, a specific question arises regarding the gaps we see in the labor market. Is digital transformation [a risk or an opportunity](#) for gender equality in

the labor market? At present, we have [two types of digital revolutions](#) underway. The first involves **automation technologies**, related to robots and artificial intelligence; the second involves **inter-mediation technologies**, which connect those who offer goods or services with those who use them, through platforms such as Uber, Airbnb, Rappi, Glovo, Freelancer or Amazon Mechanical Turk. Both technologies are equally disruptive to the world of work and the future of workers and represent risks and opportunities for the female labor market. Let's see which ones pose more serious risks and offer greater opportunities.

Automation: A risk or an opportunity for women?

As far as [automation](#) is concerned, **future prospects indicate that the use of robots and artificial intelligence will permeate all labor sectors and occupations to varying degrees.** Robots and artificial intelligence are rapidly improving their ability to handle tasks historically performed by human beings. Expanding automation may displace millions of workers from their current jobs, and many others will need to make radical changes to the way they work. The effects of these technologies on the jobs of the future will depend, fundamentally, on the tasks performed by workers and the skills they apply. What does this mean for women?

Hello robots, goodbye women?

To further explore the impact that automation will have on men and women in the region, we analyzed a dataset available from four countries (Bolivia, Chile, Colombia and El Salvador) that presents detailed information on tasks and skills that workers perform and use in their jobs. Adapting the task-based approach—which considers that automation can displace certain tasks within an occupation, rather than the entire occupation itself—to the region, we estimated the proportion of workers in jobs that may be at high risk of automation; that is, we estimated the proportion of workers at a greater than 70% risk of having the tasks they perform within their occupation be automated.

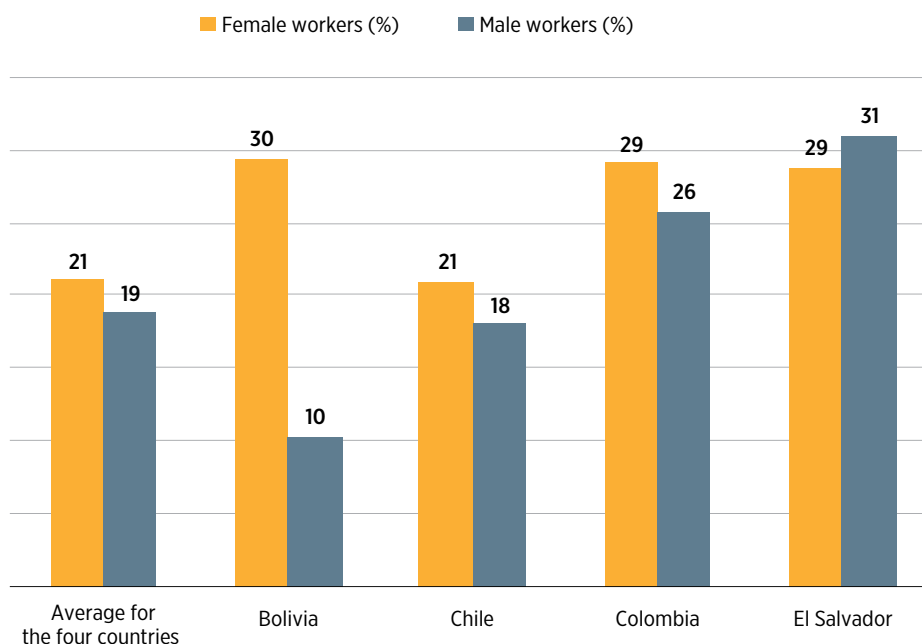
Although both men and women may lose their jobs in this digital revolution, women are at increased risk of being replaced by automation. When the four countries are averaged, the percentage of women that may be affected is slightly higher than the percentage of men: **21% of female workers may require a transition to other occupations, relative to 19% of male workers.**

Behind these average figures, however, there are differences between countries, which largely reflect the different composition of occupational tasks between each of them. When the countries are analyzed separately, heterogeneities on the scale of potential job losses can be observed. In Bolivia, Chile and Colombia, for example, women are at greater risk of robotics or algorithms re-

Although both men and women may lose their jobs in this digital revolution, the jobs performed by women are at increased risk of automation

placing their work. In Bolivia and Colombia, 30% of women may need to transition between occupations, while among male workers, the risk is 10% and 26%, respectively. In Chile, meanwhile, the risk for women is 21%, while for men it is reduced to 18%. In El Salvador, there is a slightly

GRAPH 6. WHO IS AT HIGHER RISK OF BEING AUTOMATED?



Note: Proportion of workers whose automation risk is greater than 70%. For the estimates, the sample of urban employed persons between 18 and 60 years of age, excluding the agricultural, forestry, fisheries and mining sectors, is taken into account. The difference between men and women is statistically significant at 5% or less. Calculations based on STEP 2012 and 2013 surveys (Bolivia, Colombia and El Salvador) and PIAAC 2014 survey (Chile). **Source:** Bustelo et al. (2019b).

higher risk for men of needing to transition to a new occupation (31%) compared to women (29%) (graph 6).

What is behind these results? As we have seen, men and women tend to work in different sectors and occupations. Even when they are engaged in the same professional activity, they carry out different tasks or complete the same tasks with different intensity. As a result, the combination of skills they use also differs. **How men and women use their skills at work contributes to an increase or decrease in the risk of automation, as some skills are more easily automated than others.**

As previously mentioned, men tend to be more involved in management tasks, while women tend to perform more routine tasks, such as accounting. On the other hand, women have a lower propensity to perform tasks that require quantitative analytical skills, related to STEM fields or digital skills. These are precisely the skills most associated with the jobs of the future—the skills required to implement and use technology.

To succeed in the necessary transition toward the workforce of the future, women must acquire the right technological skills and capabilities.

WHAT DO WE KNOW ABOUT THE RISK OF AUTOMATION FOR MALES AND FEMALES IN OTHER REGIONS?

| COUNTRIES | SAMPLE | METHOD | RESULTS | WHAT'S BEHIND THESE RESULTS? | SOURCE |
|---|--|-------------|---|---|---|
| 30 COUNTRIES (28 OECD members, Cyprus and Singapore) | Male and female workers between the ages of 16 and 65. | Task-based. | 11% of female workers and 9% of male workers face high risks of automation in the next two decades (the difference is statistically significant). Women of low educational level aged 40 years or over and those employed in administrative, service, or sales occupations face greater automation risks. | Women perform more routine tasks and fewer abstract tasks than men in the same occupations. | Gender, Technology, and the Future of Work Brussevich et al. (2018) |
| 10 COUNTRIES (Germany, Canada, Cyprus, France, India, Japan, Mexico, United Kingdom and South Africa) | Working men and women of working age. | Other. | 20% of female workers and 21% of male workers face the risk of losing their jobs by 2030 in an intermediate automation scenario (the pace of impacts of automation in terms of employment resembles that of past technological changes, such as automation in agriculture and manufacturing). | Men account for a higher proportion of employment in occupations more likely to be automated due to their high quantities of routine physical tasks (e.g., machine operation), while women have a greater share of employment in occupations at high risk of automation due to their high quantity of routine cognitive tasks (e.g., administrative tasks). | The future of women at work: Transitions in the age of automation McKinsey Global Institute (2019) |

| | | | | | |
|---|--|-------------------|---|--|--|
| 29 COUNTRIES OCDE members | Male and female workers between the ages of 16 and 65. | Task-based. | 23% of women and 16% of men face a risk of automation by the end of the 2020s. The trend is reversed toward the end of the 2030s, when the risk for men is 34% and for women is 26%. | During the 2020s, the tasks to be replaced by technology are performed mostly by women (e.g., filling out forms or exchanging information). During the 2030s, technology should automate routine tasks performed to a greater extent by men, such as those requiring physical effort and manual dexterity. | Will robots really steal our jobs? An international analysis of the potential long term impact of automation PwC (2018) |
| CAMBODIA, PHILIPPINES, INDONESIA, THAILAND AND VIETNAM | Male and female workers aged 15 or over. | Occupation-based. | 61% of women and 53% of men face a high risk of automation in the next two decades. | Women account for a higher proportion of employment in occupations with higher incidences of tasks more likely to be automated. | ASEAN in transformation. The future of jobs at risk of automation Chang y Huynh (2016) |
| 29 COUNTRIES OCDE members | Male and female workers between the ages of 16 and 65. | Task-based. | The risk of automation for men and women differs by industry. For the average of all industries, there are no gender differences in the risk of automation. | Both women and men have high participations in industries at high risk of automation. Men account for the largest share of employment in manufacturing industries, such as construction and transportation, and the same goes for women in retail. | Going Digital: The Future of Work for Women OECD (2017) |
| UNITED KINGDOM | Male and female workers between the ages of 20 and 65. | Task-based. | 7.6% of the population is employed in occupations with high risk of automation. Women account for 70% of employment in these occupations. | Women perform to a greater extent than men tasks that can be replaced by technology. | The probability of automation in England: 2011 and 2017 White et al. (2019) |
| UNITED STATES | Male and female workers aged 18 or older. | Occupation-based. | Of the total jobs with high risk of automation, 58% are held to a greater extent by women. For all racial and ethnic groups, it is true that women's participation in jobs at high risk of automation is higher than that of men. | The occupational segregation pattern shows greater participation of women in occupations with high automation potential that involve routine tasks, such as administrative occupations where collection and information processing tasks are performed. | Women, automation and the Future of Work IWPR (2019) |
| CANADA | Working men and women of working age. | Occupation-based. | 35% of jobs in Canada face a high risk of being automated. Women account for 54% of employment in these occupations. | Administrative, data entry, and accounting occupations employ women to a greater extent and are being replaced by technology. | Advantage women: how an automated future could play to women's strengths RBC (2019) |

Women may also experience gains in employment, assuming they maintain their current share within each job sector. Even with automation, the demand for work may increase as economies grow. One promising prospect for women is the prediction of greater growth in jobs related to health care and education, where women are well represented. This is due to the estimated proportional growth of the [elderly population](#) (with reference to health care) and to sustained increases in education enrollment, especially in preschool and high school (with reference to education). Additionally, these jobs have a lower risk of automation because they require certain skills that are not replaceable by robots.

Thus, [it is projected that the region](#) will require 10.3 million teachers, 2.4 million doctors and 6.2 million nurses over the next 15 years. These predictions are in line with the estimates available

for developed countries. By 2026, professions related to home health care, personal care assistance, medical assistance and nursing are expected to [grow by 47%, 39%, 37% and 36%](#), respectively, according to the forecasts of the Office of Labor Statistics of the United States. These jobs are among the 10 with the most accelerated growth rates.

This growth is good news for the expansion of the labor market for women, who are mainly employed in these sectors. On the flip side, these jobs, which are typically considered “feminine,” are usually of low quality and are among the lowest paying, compared to other jobs regarded as more “masculine” and best paying, such as those related to STEM fields. We are still tasked with [professionalizing these sectors and occupations](#) by promoting better remuneration and quality.

Gig economy: A risk or an opportunity for women?

In addition to progressive automation, technology is producing another major transformation in the labor market through intermediation technologies. By these, we are referring to [gig economy](#) platforms such as Airbnb, Uber and UpWork, which, like automation technologies, present both opportunities as well as challenges for the female labor market.

The gig economy can expand opportunities for women by presenting employment options with high flexibility, reducing barriers to entry into typically male sectors, and facilitating access to clients or international networks.

Time flexibility drives women to work in the gig economy

The flexibility offered by these platforms in terms of where, when and how to work can encourage women’s participation in the workforce, as it facilitates the combination of paid work with the responsibilities of care taking that, as we have already seen, fall mainly on women⁷. For the average of six countries in the region (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru), time flexibility is one of the main reasons why women participate in these platforms. However, it is one of the last reasons for men to do so, as they value other factors more, such as gaining work experience, extra income

and even fun (graph 7). In the same line, 96% of gig economy female workers surveyed in the United States highlight time flexibility as a benefit of working on these platforms⁸.

Greater access to new sectors and economic independence

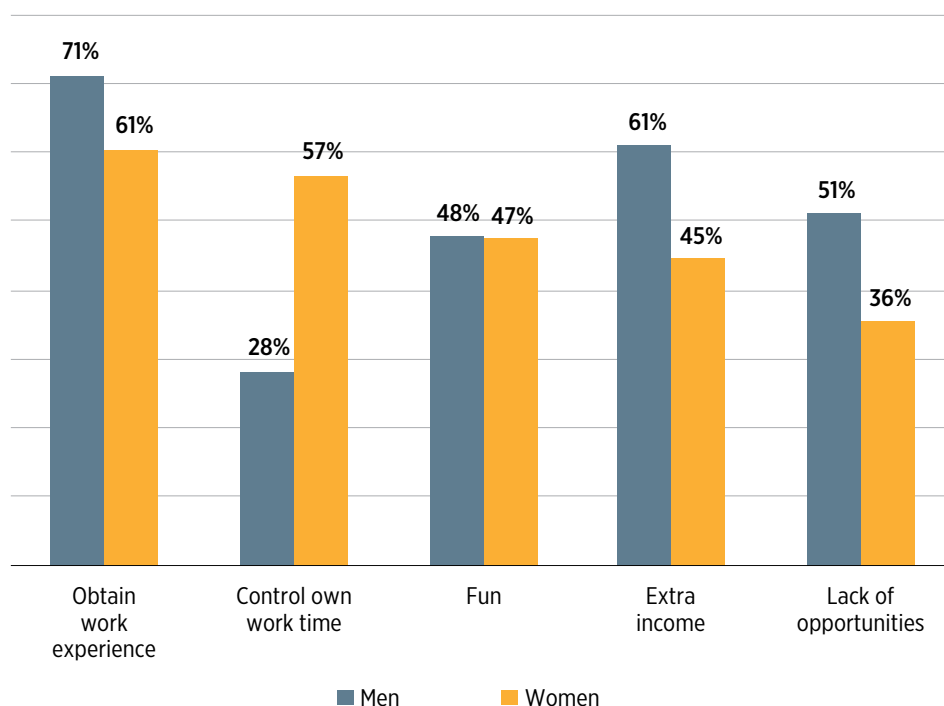
The gig economy lowers barriers to entry and permanence in typically male labor sectors⁹. For example, on the U.S. Uber platform, women account for 14% of drivers, exceeding the average observed in the offline market, where female participation only extends to 8% of the sector¹⁰. For women who want to drive to earn a living, evidence suggests that signing up for Uber is much

easier and less intimidating than going through the process of recruitment by a traditional taxi operator¹¹. In addition, digital platforms can strengthen women's economic independence by providing access to a wider range of customers and saving marketing and sales costs. In turn, this facilitates opportunities for the growth of entrepreneurship, and the collaborative nature of these platforms promotes the flow of knowledge and the creation of networks¹².

However, as will be seen below, these technologies can replicate the gender gaps observed in the traditional labor market, such as participation and wage gaps, as well as occupational segregation.

GRAPH 7. WHY WORK IN THE GIG ECONOMY?

AVERAGE FOR ARGENTINA, COLOMBIA, ECUADOR, GUATEMALA, PARAGUAY AND PERU



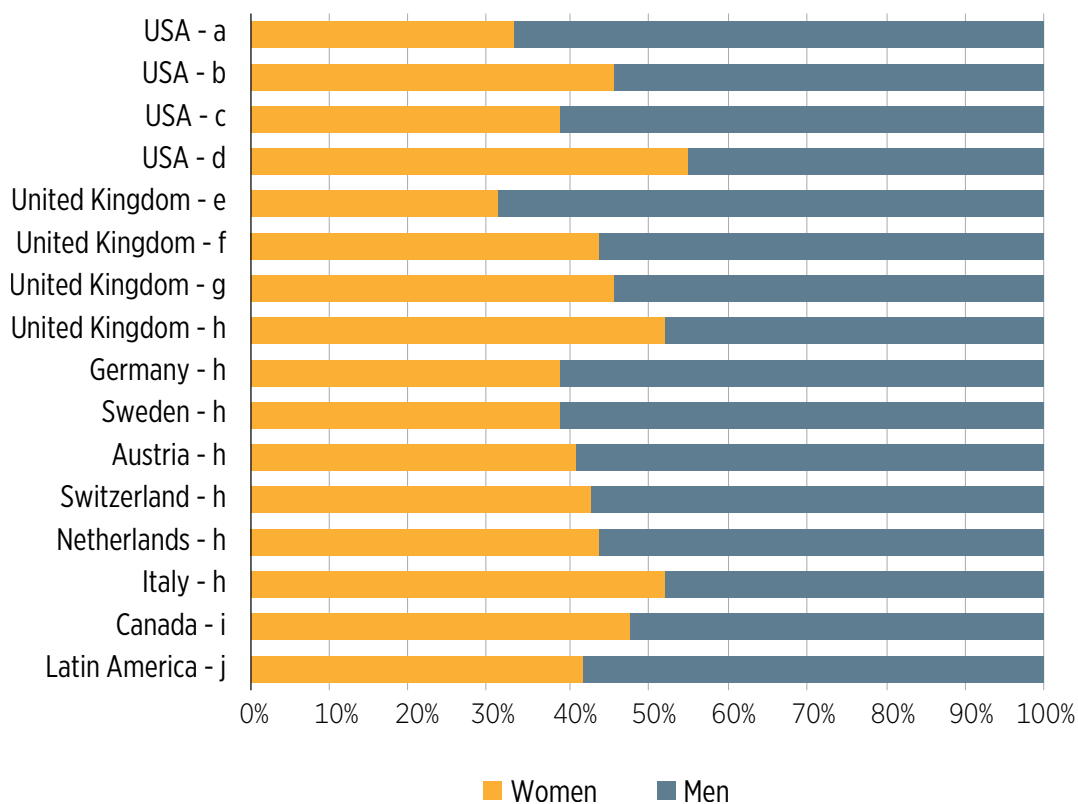
Note: The graph shows the reasons why platform workers participate in the gig economy. Calculations based on the [After Access 2017-2018](#) survey. Average for six countries in the region with available information (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru). **Source:** Agüero et al. (2019).¹⁴

More men than women in the gig economy

As in the traditional market, the scant existing data shows greater male participation in these economies (graph 8). In Latin America and the Caribbean, the average for the six countries that were analyzed shows that women account for 42% of the total workers in the gig economy. The greater participation in these platforms by men

in the region can be linked to skill gaps and uses of digital technologies. Women are still lagging behind in access to technology and the skills to use it. As in other regions, in Latin America and the Caribbean, men make more varied use of technologies ¹³.

GRAPH 8. GENDER GAPS IN PARTICIPATION



Note: The graph shows the gender distribution of workers in the gig economy ^{viii}. a. [Farrell and Greig \(2016\)](#), b. [BLS \(2018a\)](#), c. [Burstion-Marsteller et al. \(2016\)](#), d. [Smith \(2016\)](#), e. [Balaram et al. \(2017\)](#), f. [CIPD \(2017\)](#), g. [Lepanjiuri et al. \(2018\)](#), h. [Huws et al. \(2017\)](#), i. [Block and Hennessy \(2017\)](#), j. Agüero et al. (2019): Calculations based on the [After Access 2017-2018](#) survey. Average for six countries in the region with available information (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru). **Sources:** Agüero et al. (2019) ¹⁴ and [Herndon et al. \(2019\)](#) ¹⁵.

viii. The multiple estimates calculated in the literature are shown, as each study is based on different sources of information. However, even though the numbers differ depending on the source of the information, the trend is the same.

BOX 2. HOW BIG IS THE GIG ECONOMY IN OUR REGION?

There are two limitations to measure the size of the gig economy in the region: the absence of public data and regulation on intermediary companies and the lack of consensus in the literature on how to measure work on these platforms. These issues revolve around how to identify workers of the gig economy. Are they those who routinely use at least one platform as a means of work, or is the person who uses it sporadically also deemed employed?^{ix}

Some evidence in Latin America and the Caribbean has revealed that the participation of men and women in the gig economy is still very low. For the average of six countries in the region (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru), **less than 10% of people who use the Internet have earned money doing some work on any platform in 2017**. This percentage is slightly higher for men than for women: 7% have worked in the gig economy (about 820,000 men in the six countries studied) compared to 5% of women (around 520,000 women).

These figures are in contrast to the statistics available for the United States and 15 countries in Europe, where 15% of people who work independently use digital platforms for their job. Nevertheless, the evidence coincides in that there is a greater participation of men in the gig economy.

Sources: Agüero et al. (2019)¹⁴; [Balaram et al. \(2017\)](#)¹⁵; [Bosch et al. \(2019\)](#)¹⁶; and [Farrell y Greig \(2017\)](#)¹⁷.



**Women continue
to lag behind
in access to
technology and
the skills to use it**

ix. Don't miss [our next notes](#) in this series where we'll continue to provide new data and evidence about the gig economy.

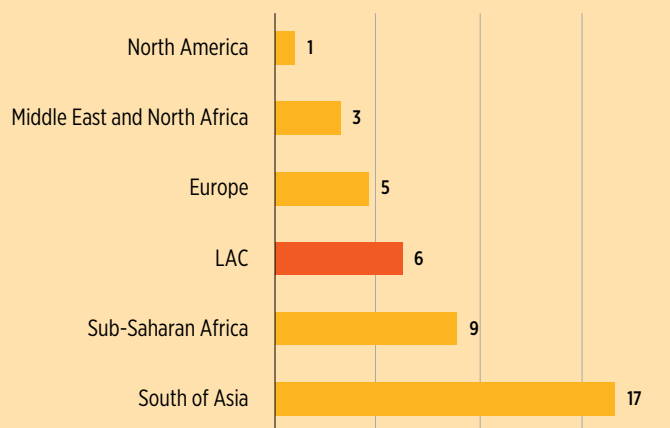


BOX 3. INFORMATION AND COMMUNICATION TECHNOLOGIES: SAME USE FOR DIFFERENT THINGS

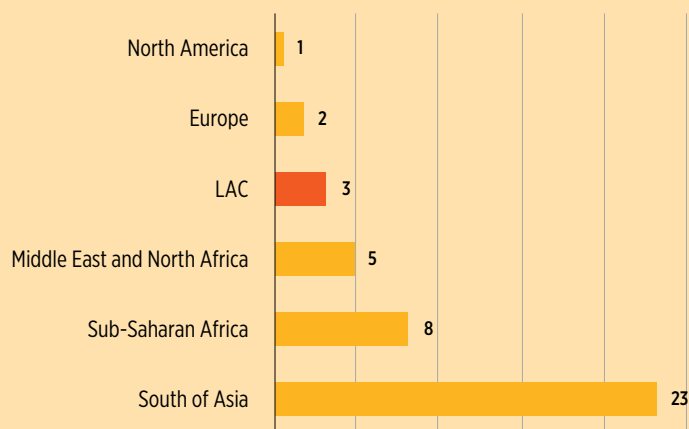
Considering the average of the region, gender gaps in access to information and communication technologies (ICTs) are low. In the period from 2017 to 2018, 63% of men and 57% of women had Internet access, while 83% of men and 80% of women had access to and used mobile phones. This reality contrasts with that of other developing regions, where gender gaps are more accentuated. For example, in South Asia, the mobile phone access gap is 23 percentage points (graph A).

GRAPH A. ACCESS GAPS BY REGIONS

INTERNET ACCESS



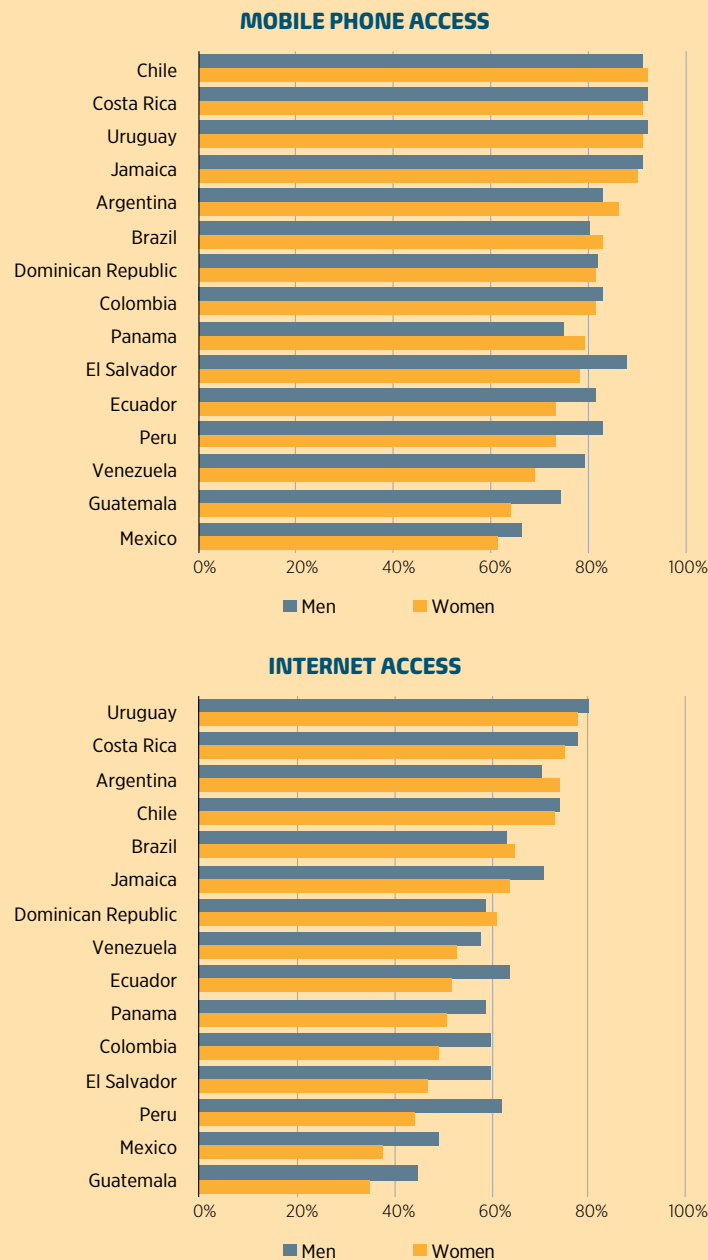
MOBILE PHONE ACCESS



Note: Estimations based on the 2017-2018 Gallup survey. <https://theinclusiveinternet.eiu.com/>.
Source: The Economist Intelligence Unit (EIU) (2019).

However, the regional average conceals important differences between countries. In general, these gaps favor men to extents ranging from 1 percentage point (in the case of Chile) to 18 percentage points (in the case of Peru) (graph B).

GRAPH B. HETEROGENEITY OF ACCESS GAPS IN LATIN AMERICA AND THE CARIBBEAN



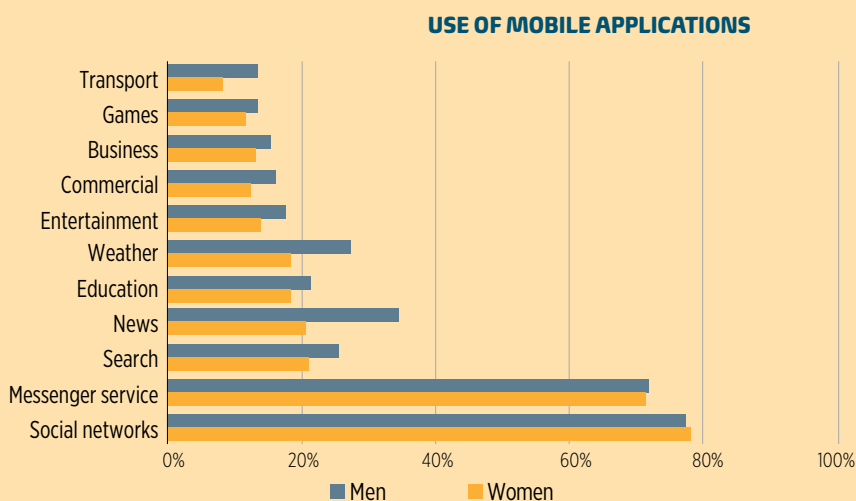
Note: Estimations based on the 2017-2018 Gallup survey. <https://theinclusiveinternet.eiu.com/>.

Source: The Economist Intelligence Unit (EIU) (2019).

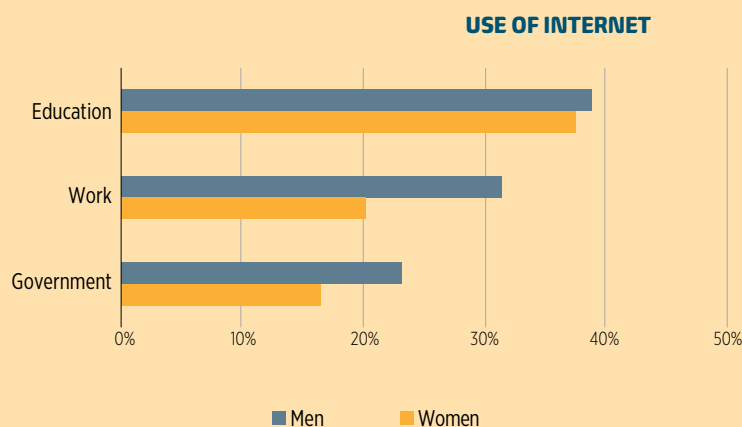
The barriers to ICT access also differ between men and women on average among six countries in the region (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru). While cost is the main barrier to owning a mobile phone, women report, to a greater extent than men, a lack of knowledge about how to use it. Both men and women claim that the main obstacle to using the Internet is not knowing how to use it, although the prevalence of this barrier is higher for women.

However, once they have access, the way men and women use ICT technologies also presents significant disparities. This gap is of particular concern in a world where technological competition increasingly impacts a wide variety of jobs. According to the average of the above-mentioned six countries in the region, men make greater use of the Internet for work activities (such as reviewing job offers or putting their resume online) and government functions (such as completing paperwork or making appointments) (graph C).

GRAPH C. IMPORTANT GAPS IN TYPE OF USE



Note: The graph shows the percentage of women and males that use each type of application on the mobile phone. Estimations based on the After Access 2017-2018 survey. Average for six countries of the region with available information (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru). **Source:** Agüero et al. (2019)¹⁴.



Note: The graph shows the percentage of women and men that use the internet for each type of use. Government category includes uses on how to do paperwork, inquiries, payments, make appointments and file complaints. Work category considers uses on how to review job offers, keep a professional profile in a social network and set an online resume. Education category includes taking online courses, accessing digital libraries, accessing databases and online texts, among others. Estimations based on the After Access survey 2017-2018. Average for six countries in the region with available information (Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru). **Source:** Agüero et al. (2019)¹⁴.

In addition, men also make greater use of the advantages offered by smart phones. For instance, a man is more likely to use his mobile phone to send e-mails, make payments, access e-banking services and search for news information, weather, and transportation, as well as to access entertainment media such as music, videos and games (graph C).

Equality in access to ICT technologies depends not only on the availability and use of mobile phones and the Internet but also on the ability to use technology effectively. **Women make more limited use of digital and Internet devices, including participation in the gig economy. This lag in digital skills limits their ability to reap the benefits offered.**

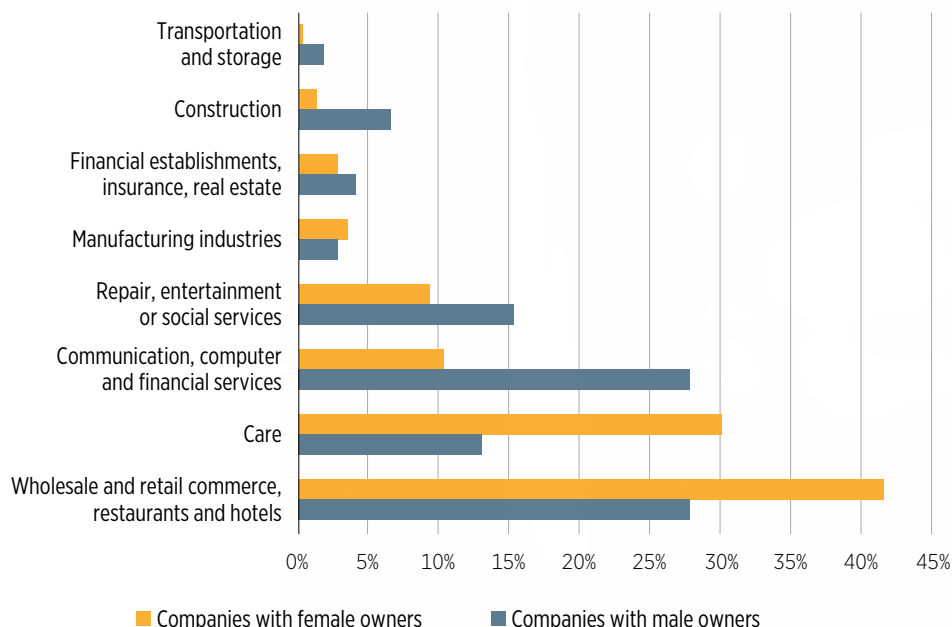
Replicating occupational segregation: A lot of care and few finances

We already know that, in the traditional labor market, women and men tend to segregate in different sectors of work, with women being employed in those of lower productivity (graph 3). The digital labor market tends to replicate this occupational segregation. According to available data on companies that have a digital presence, more than 70% of single-member firms that are led by women focus on sectors of care, commerce and restaurant and hotel service. On the contrary, among entrepreneurship led by men, these sectors represent only 40% of the firms. In addition, there is a strong presence of companies led by men in the areas of communication, data processing and financial services, which represent 28% of the firms, whereas, among women, this sector makes up only 10% of the enterprises (graph 9).

This pattern of occupational segregation is also evidenced by the type of tasks carried out in the gig economy. The information available for six Latin American countries indicates that online tasks, such as conducting surveys or processing data, are the main activity for both women and men, with a somewhat higher incidence among women (graph 10). Among women, online tasks are followed by buying and delivering household items and cleaning services, with differences of between 5 and 7 percentage points compared to men. In contrast, working for rideshare applications is more common for men.

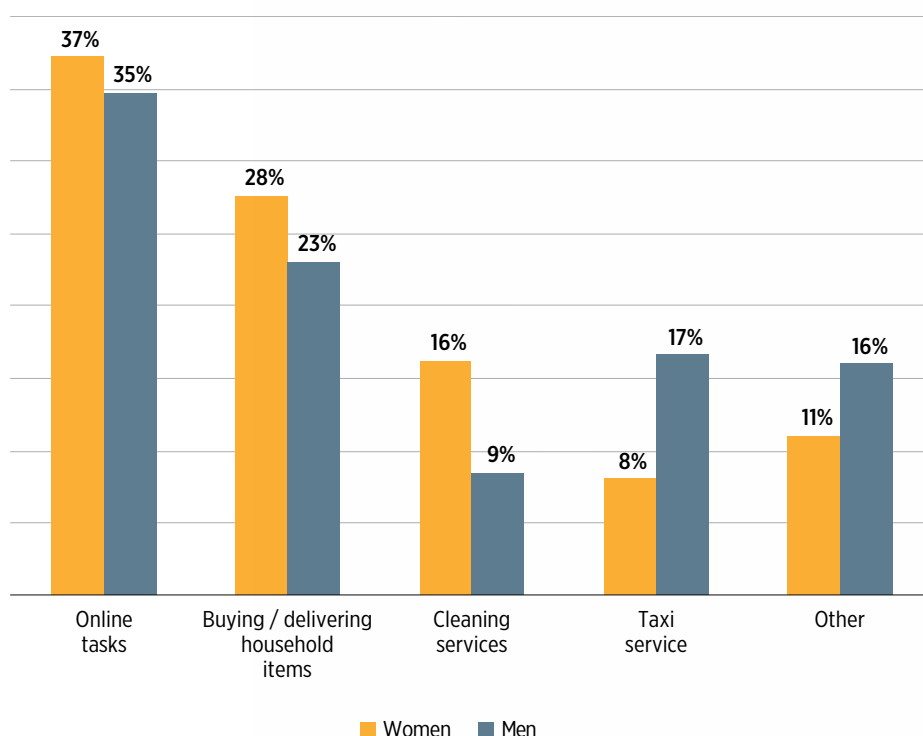
This pattern is also seen in other regions. For example, in the UK, 87% of workers on platforms that offer cleaning services are women, whereas 95% of workers on platforms providing transport services are men ¹⁸.

GRAPH 9. SEGREGATION OF ENTREPRENEURS IN THE DIGITAL ECONOMY



Note: The graph shows the proportion of entrepreneurs by sector from data from the Future of Business survey, a collaboration between Facebook, OECD and the World Bank. The survey is conducted on small and medium-sized enterprises (SMEs) with a digital presence, and it covers 42 countries in developed and emerging economies where the reference population is companies that have a Facebook account. For this graph, only the Latin American countries (Brazil, Mexico, Argentina, Colombia, Chile, Peru and Ecuador) were selected, and the surveys were answered by owners of sole-member companies (about 90% of the firms surveyed in LAC). All gender differences are statistically significant at 5%. Source: Own estimate based on [Future of Business](#) survey (2017).

GRAPH 10. TYPE OF WORK IN THE GIG ECONOMY



Note: Calculations based on the [After Access 2017-2018](#) survey. Average for Argentina, Colombia, Ecuador, Guatemala, Paraguay and Peru. Source: Agüero et al. (2019) ¹⁴.



BOX 4. REPLICATING THE INFORMAL MARKET

One of the main characteristics of the labor market in Latin America and the Caribbean is its informality. Overall, 61% of workers in the region do not contribute to social security¹⁹. Esta condición corre el riesgo de replicarse en la economía de plataformas, que puede promover empleos de baja calidad, con empleos irregulares y sin beneficios ni cobertura de seguridad social, cristalizando así los altos niveles de informalidad laboral existentes en la región.

There is a risk that this situation will be replicated in the platform economy, which can promote low-quality jobs, irregular jobs and a lack of social security benefits or coverage, thus reinforcing the high levels of informal labor in the region.

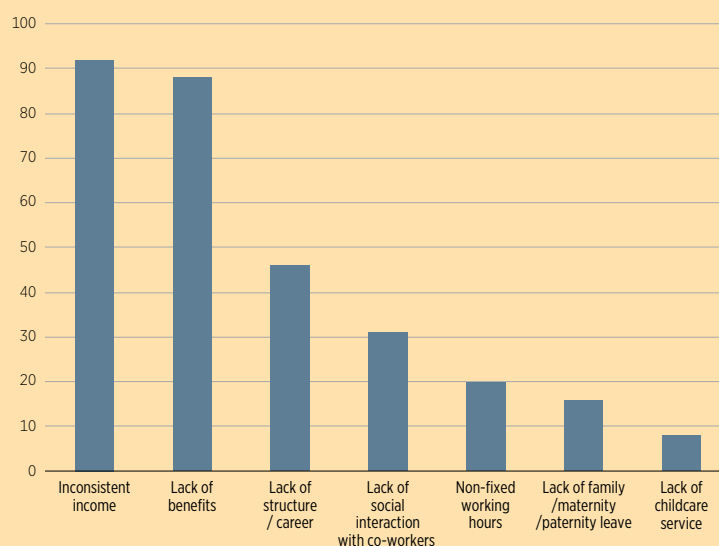
As for workers' mental health, flexibility can present a disadvantage in the form of increased work hours and less separation between one's work and personal life²⁰, which can generate greater stress²¹. Since many jobs in the gig economy involve remote work from home, **these platforms can exacerbate problems such as isolation and poor working conditions²²**.

Female respondents in a survey of gig economy workers in the United States revealed income inconsistency (92%), lack of social benefits (88%), lack of structure and career (46%) and absence of social interaction with colleagues (44%) as major disadvantages.

This combination of factors can make work in the platform economy less attractive, encouraging greater turnover²³. According to estimates, in the United States, 62% of women leave a given platform during the first year, whereas the dropout rate decreases to 54% among men²⁴. This same trend is observed in the UK, with rates of 38% and 25%, respectively²⁵.

Sources: Balaram et al. (2017); Chen (2014); Eurofound y OIT (2017); Farrell y Greig (2017); Hilbrecht et al. (2008); Hyperwallet (2017); Lewis (2018); OCDE (2018); SIMS (2017); and Sirianni y Negrey (2000).

DISADVANTAGES OF THE GIG ECONOMY



Note: Survey of 2,000 women working in the gig economy in the United States.

Source: Hyperwallet (2017).

Who earns the most on digital platforms?

From a wage viewpoint, what is happening in the world of online platforms, where wages are often set in a fair way for a particular task and the client does not see the gender of the worker before the job is reserved? Even in flexible labor markets,

and in the absence of discrimination, some studies have revealed the existence of [gender gaps](#)^x. As in the traditional labor market, the existence of gender stereotypes or the different preferences of men and women can create these gaps.

BOX 5. GENDER WAGE GAPS IN THE GIG ECONOMY

A recent study that included more than 1 million Uber drivers in the United States revealed that women earn 7% less per hour for doing the same work as men. This gap can be attributed to three factors:

- 1) Experience on the platform: Female workers tend to shift, while male workers tend to stay on the platform, accumulating skills that allow them to increase their productivity.
- 2) Choosing where to work: Male drivers tend to live and drive in more lucrative locations and earn additional compensation for working in areas with higher crime rates and closer to establishments serving drinks.
- 3) Driving speed: Men tend to drive faster, completing more trips per hour.

Likewise, a study on the online work platform of Amazon Mechanical Turk, in which the employer is unaware of the gender of the worker he is hiring, found that women earn 18% less than men do. Part of this gap can be attributed to differences in work experience, both offline and on platforms. Meanwhile, the women in the study also reported having larger families than their male peers and claimed to perform care and work tasks simultaneously.

These data reveal a dangerous trend: as the gig economy grows and adds greater flexibility to the labor market, even in the absence of discrimination, the high opportunity cost for women, in regard to the time spent on unpaid work and the different preferences of men and women, can perpetuate the wage gaps observed in the traditional labor market.

Sources: [Adams y Berg \(2017\)](#)²⁶ and [Cook et al. \(2018\)](#)²⁷.

x. While on most platforms workers are identified by a nickname, users are good at inferring the gender of the service provider, and this can lead to instances of discrimination. Literature on this subject, however, is limited. A case study analyzing interactions on eBay finds that women tend to receive fewer offers and a lower payment in auction processes of identical goods ([Kricheli-Katz and Regev, 2016](#)).



MULTIMEDIA CONTENTS

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AUDIO

DOES ARTIFICIAL INTELLIGENCE PERPETUATE GENDER BIAS?

5 | What next?

The world is experiencing a disruptive but exciting digital revolution in which artificial intelligence, automation, demographic changes and globalization are transforming the way we work and the skills required for employment. **How can we accelerate gender equality as technology evolves?** The current gaps we see in the labor market are a major barrier for women to successfully make the necessary transitions to the workforce of the future. **We have one piece of unfinished business: shaping the labor market of the future now, in the present. How do we do that?**



1. Encourage women to acquire the right skills. The situation must change from within. Women must “take over” the new technologies.

They must achieve greater influence in the creation and use of technology and be prepared to use basic (such as ICT) and advanced (such as artificial intelligence or robotics) technologies, as well as to cultivate essential 21st century skills such as creativity, problem-solving, empathy and adaptability. This implies:

- **Encouraging the development of advanced STEM skills among women and girls** to allow more women to benefit from the fast-growing and highly paid technology-driven jobs in these areas^{xi}. The risk that technological advances will have a more negative impact on women than men is aggravated by the current lack of women in STEM jobs, as well as the low percentage of girls and women who are training in these fields.

- **Encouraging the development of digital skills among women and girls.** As a result of the gap that already exists in the use of ICT technologies, women will have greater difficulties in accessing training, jobs and resources that require access to the Internet, whether to learn new skills, work remotely or access new markets.
- **Ending stereotypes that inhibit women’s performance in the classroom and at work.** Stereotyped notions between men and women begin to manifest at very young ages and condition women’s work enormously. Some techniques from behavioral economics, such as nudges, have proven to be effective in this regard.^{xii}

xi. Click [here](#) for an innovative example of teaching and job placement for women in STEM fields in the region.

xii. To learn more about this topic, we invite you to review our [upcoming publication](#) on 21st century skills: “*The Future Is Here: Transversal Skills in Latin America and the Caribbean for the 21st Century*”.



2. Rethink and expand the social protection infrastructure to ensure that women take advantage of the new opportunities offered by technology.

The social protection infrastructure must ensure support for all female and male workers, including those working from remote locations or more flexible environments. This requires reformulating and promoting health insurance, pensions, parental leave and childcare policies. The latter two are especially relevant for the advancement of gender equality, as they promote co-responsibility at home and support changing gender stereotypes.



3. Improve the quality of jobs in the care, education and health sectors

(which now disproportionately employ women and are in full expansion) so that they will include social protection, provide financial stability and offer upward mobility.

The IDB has made a strong commitment to the application of technology for the social good and an ethical mandate to promote gender equality in our region. The future of work is not a still photograph but a scenario in progress. **The time to act is now—no sector that intends to succeed in the future can leave out 50% of the population.**

WHAT PUBLIC-PRIVATE POLICIES PROMOTE WOMEN'S EMPLOYABILITY AND CAREER ADVANCEMENT IN QUALITY JOBS?

LEARN ABOUT SOME EFFECTIVE ACTIONS WITHIN THE FRAMEWORK OF THE TRADITIONAL LABOR MARKET



Expanding the supply of care services, through quality public childcare and preschool education centers, schools with extended hours and senior care services, eases women's time restrictions.



Support programs for breastfeeding at work, and paid parental leave, providing maternity and paternity leave. When paternity leave is not transferable, men are more likely to take advantage of it, promoting a reduction in gender differences in labor force participation rates associated with children, as well as in gender stereotypes regarding childcare and family responsibilities.



Mentoring and support programs foster more dynamic careers and facilitate women's access to contact networks. Formal mentoring programs, where members meet and share professional information and advice, can give visibility to female role models and foster women's self-confidence in their talents. In addition, assigning their mentors the role of sponsorship adds visibility and the possibility of being considered in promising opportunities within the organization.



Public visibility of female role models in leadership positions or in male-dominated careers and sectors helps to reduce gender stereotypes and encourages women's inclination toward those positions. The use of affirmative action (such as gender quotas) can affect people through behavioral channels because giving leadership visibility to women changes perceptions about stereotypes.



There is vast literature in developed countries that presents evidence that **wording (i.e., the way job advertisements are written) matters and contributes to maintaining gender gaps**, thus limiting the participation of women in nontraditional sectors and leadership positions. Women associate certain words with male stereotypes such as *leader*, *competitive* and *dominant*. There are initiatives in developed countries that seek to raise awareness of and correct these recruitment biases in companies.



Increase the provision of flexible work options for men and women, such as teleworking, reorganization of schedules and compressed hours. It is important to allow employees to work flexibly, whenever possible, and for leadership positions to promote these forms of work for both their male and female workers.

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