ILIA
Índice Latinoamericano de Inteligencia Artificial

THIRD EDITION

Latin American Index OF ARTIFICIAL INTELLIGENCE 2025

KEY FINDINGS, APPLIED ARTIFICIAL INTELLIGENCE, AND HUMAN TALENT

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Contents

DIMENSION

DIMENSION

Time to act

We are pleased to present the third edition of the Latin American Artificial Intelligence Index (ILIA). This version strengthens the instrument by introducing mechanisms to monitor the increasingly dynamic and widespread development of AI across Latin America and the Caribbean. The first edition of ILIA, published in 2023, established a baseline for the region's level of preparedness for the growing AI revolution by quantifying enabling factors. The second edition, published in 2024, expanded the coverage of countries and indicators and marked a shift from measuring enablers to tracking progress in AI adoption. In this third edition, ILIA emphasizes adoption and human capital, both enabling and advanced, as reliable Indicators of the relative progress of economies and of AI's role as a differentiating driver of development in the region.

Among the main findings of this edition, the evidence reinforces trends observed in 2024: there is strong interest and enthusiasm for AI in the region, reflected in the development of national AI policies. However, it is concerning that this enthusiasm has not yet been matched by decisive actions or investments commensurate with the urgency of the technological landscape. Despite clear evidence of AI's positive impact on productivity, employment, quality of life, and the creation of new businesses, no major shifts in trends are yet visible. Encouragingly, Brazil and Costa Rica are beginning to reverse this inertia, showing significant increases in commitment and investment in AI. Nevertheless, no country exceeds the global average for AI investment as a percentage of GDP (Gross Domestic Product) per capita, and the regional average remains six times lower. The region accounts for 6.6% of global GDP and 8.8% of the world's population but receives only 1.12% of global AI investment. Furthermore, the gap in relative AI talent compared to the global average has widened since 2022, accelerating talent loss. While the World moves towards openness, interoperability, and greater data availability, the region is advancing slowly and cautiously, often prioritizing regulatory debates that may inadvertently hinder technological development that aimed at benefiting society.

In light of recent developments in generative AI, this edition adopts a more critical perspective on robustness and reliability, emphasizing the need to rigorously assess reasoning stability, result reproducibility, safety, and alignment with human objectives. Consequently, we recommend complementing adoption indicators with metrics on quality of use: governance practices and data openness, counterfactual and sensitivity analyses of models, traceability and explainability mechanisms, and interoperability standards. This approach aims to enhance public and private decision-making by avoiding overly optimistic extrapolations that lack empirical support.

The news is not all discouraging. The region is seeing notable improvements in its basic research ecosystems, which form the foundation for all other AI-related structures. This progress is reflected in the expansion of doctoral and master's programs across most economies. Internet penetration has also consolidated, enabling rapid growth in AI applications, where Latin America accounts for approximately 15–20% of the global market. Investment in sovereign and private data centers of various sizes has rebounded strongly this year, with public investments totaling nearly $200 million and private announcements

exceeding $8 billion over the next decade. These developments are a promising sign, renewing hope for the opportunities ahead.

This edition emphasizes adoption while also highlighting collaboration. The cases presented demonstrate the impact of transnational and interdisciplinary cooperation. Without these networks, none of the projects described would have been possible: from large-scale training programs for SMEs and public servants, to the development of the region's first large open language model; from a race-against-time effort to protect judicial files during a flood, to using AI to save motorists millions of hours annually in waiting time. These examples illustrate that the bright future of AI in the region depends on collaboration; a model that shares talent rather than competes for it. We hope this new edition of ILIA serves as a guiding resource, informing discussions and decisions that will help build a virtuous AI ecosystem for the region and its citizens.

ÁLVARO SOTO — DIRECTOR OF CENIA
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Foreword

The rapid advancement of artificial intelligence (AI) is reshaping the foundations of economic and social development, as well as global geopolitics. In this context, Latin America and the Caribbean face structural challenges that define what we have termed "development traps": one characterized by limited growth capacity; another by high inequality, low social mobility, and weak social cohesion; and a third marked by constrained institutional capacity and ineffective governance. These three traps are deeply interconnected and mutually reinforcing, generating a vicious cycle of productive stagnation, social exclusion, and institutional fragility.

Against this backdrop, digital transformation –and AI in particular–, emerges as a strategic opportunity to break this cycle and catalyze the profound transformations urgently needed by the region's economies and societies. This process presents a dual challenge: to strategically incorporate emerging technologies in order to accelerate productive, inclusive, and sustainable development, while simultaneously ensuring their ethical, responsible use in service of the common good.

Using digital transformation as a lever to overcome these traps requires moving beyond adoption toward the effective and meaningful use of these technologies. This entails deep structural changes with cross-cutting impacts on productive systems, employment, social well-being, and the quality of governance. For digitalization to be truly transformative, it must be integrated as a core component of national and subnational development agendas, including productive development policies.

In this regard, robust diagnostic, monitoring, and analytical tools are essential to guide the formulation of innovative, timely, and data-driven public policies capable of harnessing the transformative potential of digital technologies in general, and AI in particular.

The Latin American Artificial Intelligence Index (ILIA), developed since 2023 in collaboration with Chile's National Center for Artificial Intelligence (CENIA) and with the support of a wide range of academic, public, and private organizations, responds directly to this need. It represents a pioneering and systematic effort to measure the state of AI development across 19 countries in the region, complementing initiatives such as the Digital Development Observatory of the Economic Commission for Latin America and the Caribbean (ECLAC), which since 2024 has produced, compiled, and analyzed more than 85 indicators across 12 key areas of digital transformation.

This analytical instrument, unique in Latin America and the Caribbean, enables the assessment, comparison, and understanding of national AI ecosystems through three fundamental dimensions: enabling factors; research, development, and adoption; and governance. In its third edition, ILIA 2025 significantly expands its scope by covering more than 100 sub-indicators, allowing for a more precise identification of existing capacities, structural gaps, and strategic opportunities.

This granular perspective is especially relevant at a time when diagnostic evidence highlights both the region's potential and its persistent challenges. A recent ECLAC study,

for example, shows that Latin America and the Caribbean invest four times less in AI than would be expected given their share of the global economy, substantially constraining their ability to capitalize on AI's transformative potential.

Moreover, ILIA 2025 is fully aligned with priorities established at both the national and international levels, including the Digital Agenda for Latin America and the Caribbean (eLAC2026), the Global Digital Compact adopted by the United Nations in 2024, and the 2030 Agenda for Sustainable Development. Within this framework, the index serves as a key tool for tracking progress toward these agendas by linking advances in AI to the region's economic, social, and environmental objectives.

At a time when Latin America and the Caribbean are experiencing their lowest growth rates in the past seven decades (averaging just 1% per year between 2015 and 2024, even below those recorded during the so-called "lost decade" of the 1980s), AI emerges not merely as a technological innovation, but as a strategic development opportunity. Its adoption can support the design of new productive strategies, democratize access to education, health, and other public services, expand social protection, close gender gaps, reduce environmental pollution, promote greener growth, and strengthen government transparency and efficiency.

In this context, ECLAC is confident that ILIA 2025 will consolidate its role as a key reference for guiding informed decision-making and evaluating public policies that ensure AI contributes to a more productive, inclusive, and sustainable development path for the region. Only in this way will it be possible to fully harness the potential of digital transformation and advance toward a more prosperous and equitable future for Latin America and the Caribbean.

JOSÉ MANUEL SALAZAR-XIRINACHS – EXECUTIVE SECRETARY
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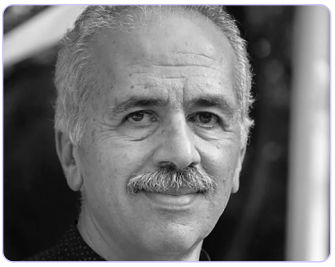

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Latin American Artificial Intelligence Index

Latin American Artificial Intelligence Index

The Latin American Artificial Intelligence Index (ILIA) provides a comprehensive overview of the state of artificial intelligence across 19 countries in Latin America and the Caribbean, offering insights into the key factors required for AI to develop in service of people.

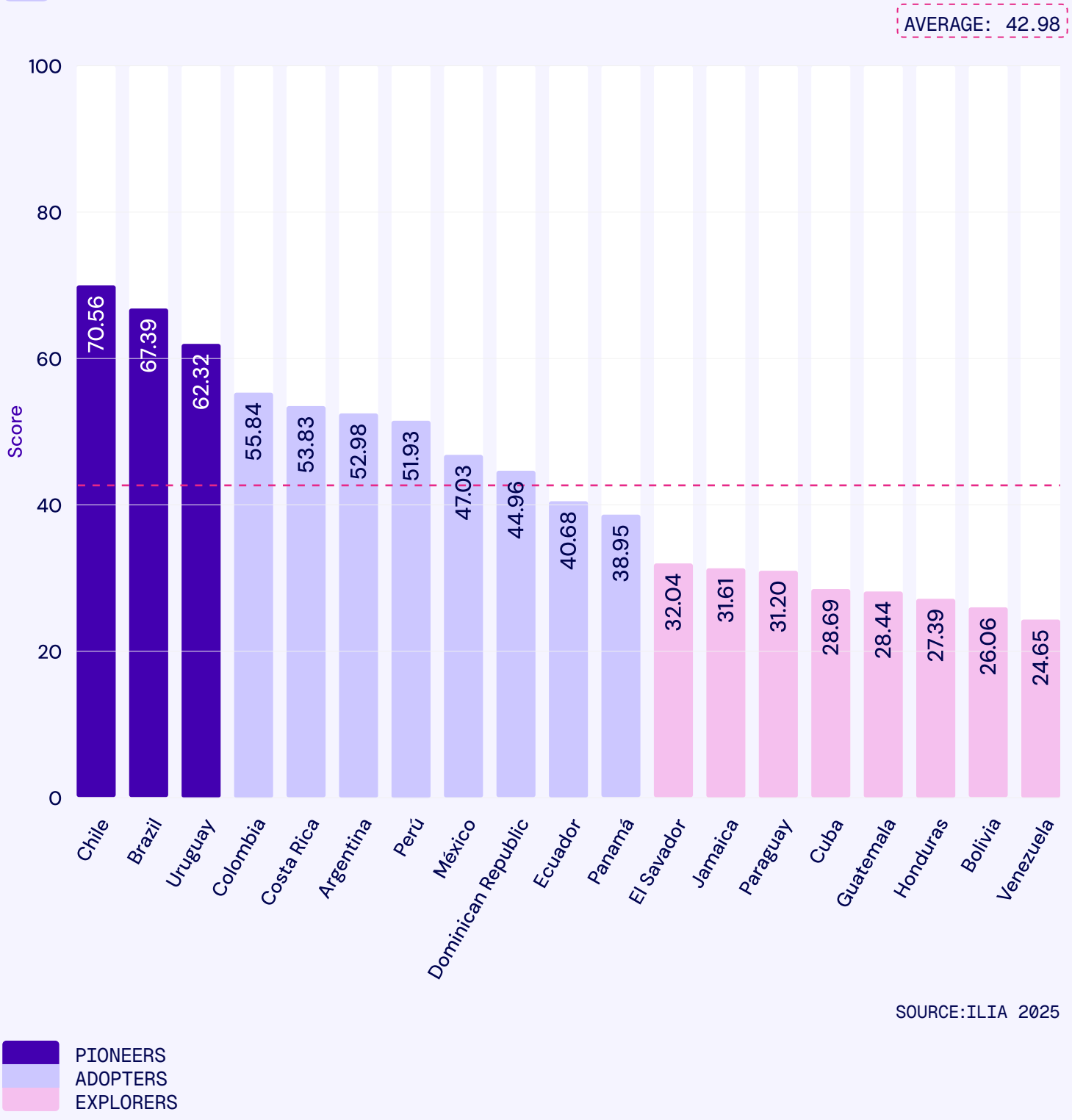
The ILIA 2025 score should be understood as a reference point that reflects the varying levels of maturity among national AI ecosystems. Through this lens, ILIA contributes to knowledge sharing and the dissemination of best practices aimed at fostering the development of human-centered AI, while also deepening the understanding of each country's AI ecosystem.

ILIA is structured around three dimensions: Enabling Factors, Research, Development and Adoption, and Governance. The first encompasses elements such as digital infrastructure, data availability, and human talent: factors that, while not exclusive to artificial intelligence, are essential for deploying advanced digital technologies like AI. The second focuses on the academic and entrepreneurial ecosystems, as well as the adoption of AI across different sectors. Finally, the third examines institutional and regulatory frameworks that promote the responsible and sustainable governance of AI within each country.

Taken together, the sub-indicators are valuable not only for what they measure individually but also for the broader picture they reveal. They provide a more holistic view of the complex and interconnected dynamics shaping the development of AI ecosystems in the region. Accordingly, ILIA scores should be interpreted collectively, as reflections of the diverse stages and characteristics of local AI ecosystems in Latin America and the Caribbean.

FIGURE 1 presents the ILIA 2025 scores for the 19 participating countries, offering a visual comparison of their relative performance across the region.

FIGURE 1: TOTAL SCORE ILIA



SOURCE:ILIA 2025

The ILIA classifies countries according to their level of maturity across three key areas: Enabling Factors, Research, Development and Adoption, and Governance. Based on their performance, countries are grouped into three categories: Pioneers, Adopters, and Explorers.

PIONEERS

This category includes countries with scores above 60 points, representing those that have achieved a leadership position in the region. These countries stand out for their progress in key areas such as technological infrastructure, specialized talent development, scientific productivity, and innovation capacity.

ADOPTERS

This category includes countries with scores between 35 and 60 points, reflecting intermediate performance levels. These countries have made progress in infrastructure, human talent and governance, but still face challenges that limit broader AI deployment. Their academic and innovation ecosystems are emerging and require further strengthening to reach higher levels of maturity.

EXPLORERS

This category includes countries with scores below 35 points, representing those in the early stages of AI ecosystem development. Generally, these countries exhibit lower levels of digital infrastructure, nascent academic and research communities, limited AI adoption, and basic governance frameworks for artificial intelligence.

In this edition, a series of modifications have been introduced to make ILIA a more robust and useful tool for researchers, public and private decision-makers, and the various users of the Index.

Some of these changes include enhanced visualization of the sub-indicators through the incorporation of tables and heat maps, as well as the inclusion of raw data alongside the score. This allows for tracking progress in absolute terms, not only relative differences reflected in final scores. Methodological improvements were also made to normalization procedures, imputation processes, and data sources, as detailed in the corresponding sub-indicators and in the methodological annex. In total, 28 new sub-indicators were added, each identified at the beginning of its respective dimension. All methodological changes are thoroughly and transparently explained in the annex.

As a result of these updates, the outcomes of this edition are not fully comparable with those of ILIA 2024. Although a significant part of ILIA maintains the same sub-indicators and data sources, in which some countries show notable improvements in their performance, the results of this edition present a new overview based on these changes. In this new scenario, it can be seen that the three pioneering countries remain almost unchanged from their positions in the previous year, with a slight decrease in their scores; However, more notable differences emerge among the leading adopter countries, particularly **Colombia, Costa Rica, and Peru**, which show positive movements driven by substantial progress in existing sub-indicators as well as improvements in new ones, as discussed in the following sections.

ILIA 2025 places special emphasis on the phenomenon of AI adoption, reflected in the introduction of new sub-indicators within this subdimension. Adoption is a crucial aspect because, while technological advances have the potential to generate major social and economic benefits, low adoption rates can significantly slow this progress. Moreover, unequal adoption risks deepening inequality in access to these benefits, further fragmenting societies both across the region and within countries.

More Adoption: AI for Everyone

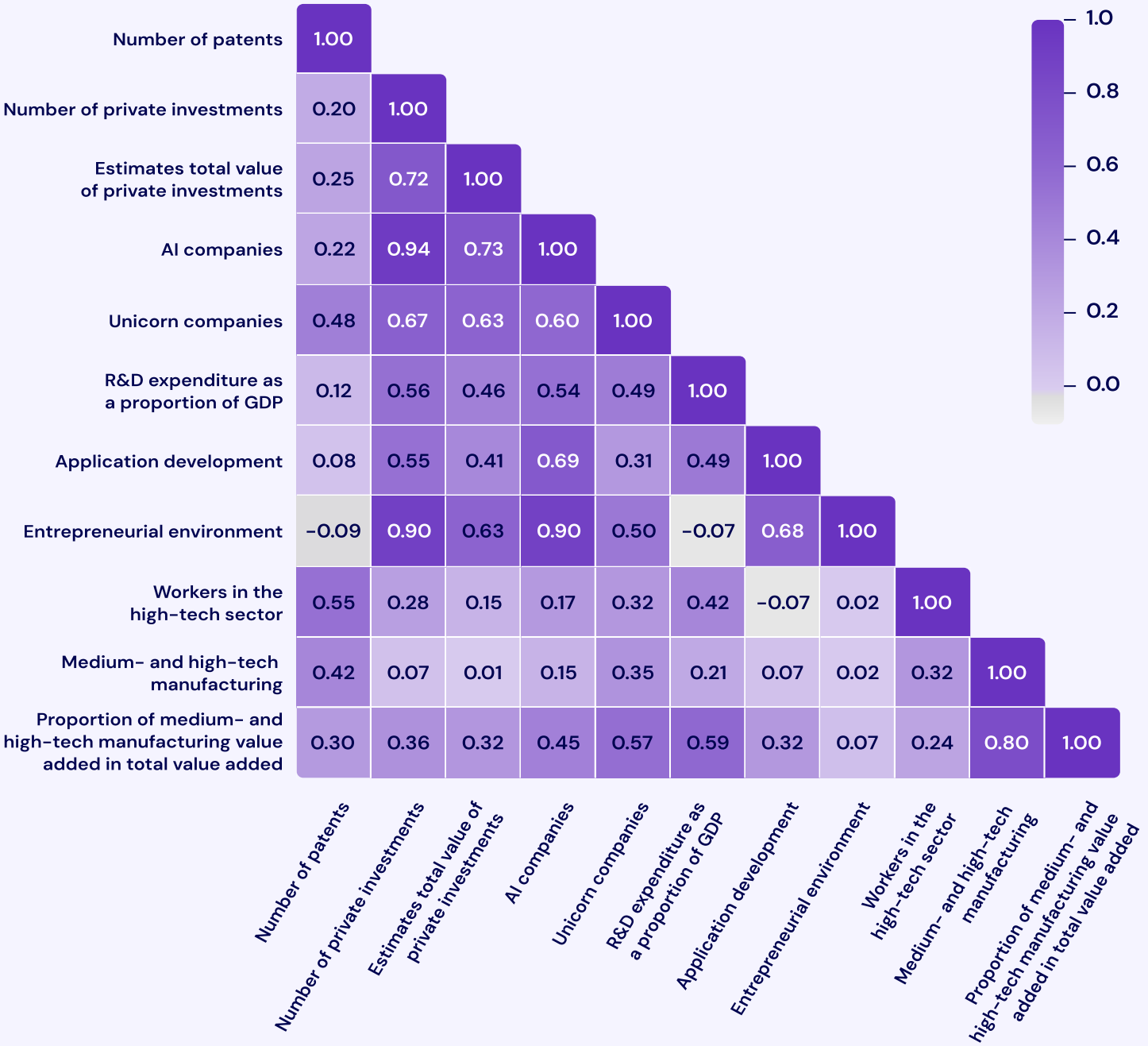
AI adoption is an unprecedented phenomenon when compared to previous technological waves, an effect that has been further amplified by the rise of generative AI.

While the Internet took more than 2 decades to reach 90% of its potential users, AI achieved that same threshold in just three years, with faster growth in investment and lower costs. These advances represent an opportunity for the AI benefits to reach all sectors of society, rather than being concentrated solely in countries of the Global North. However, realizing this potential requires concerted efforts from all countries to lay the groundwork for broader and more equitable adoption of this technology.

Recognizing the central role of adoption, this edition places particular emphasis on this topic. This is reflected in the addition of two new indicators to the Adoption subdimension, along with two new sub-indicators within the Industry indicator of the same subdimension. Furthermore, several of the reports and case studies presented in this edition explore the AI adoption process across Latin America and the Caribbean.

FIGURE 2 illustrates the correlations among selected sub-indicators within the Research, Development, and Adoption (R&D&A) dimension, particularly those linking industry adoption and innovation sub-indicators.

FIGURE 2: SPEARMAN CORRELATION FOR SELECTED SUB-INDICATORS OF R+D+A



SOURCE:ILIA 2025

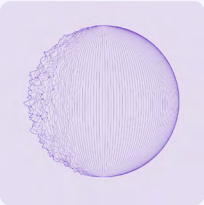
The correlations in the figure offer an encouraging outlook for the region. The three sub-indicators of industrial adoption (workers in the high-tech sector, medium- and high-tech manufacturing, and the share of medium- and high-tech manufacturing value added in total value added) show weak correlations with other sub-indicators such as the entrepreneurial environment, the number of AI companies in each country, the number and value of private investments, and application development. In contrast, the number of AI companies is more strongly correlated with factors such as the entrepreneurial environment and private investment. Meanwhile, R&D expenditure demonstrates a meaningful correlation with most of the selected sub-indicators, although it does not exhibit the strongest relationships in the figure.

Overall, these findings suggest that a complex productive structure is not a prerequisite for fostering AI development within a country. This is a promising sign for a region characterized by many countries with small economies, oriented toward foreign trade and without a high degree of productive development. At the same time, every country in Latin America and the Caribbean has an opportunity to advance AI development and adoption, whether by leveraging existing industrial capacity or by cultivating environments that encourage entrepreneurship and private investment. Moreover, greater R&D spending remains a beneficial policy choice, even if it is not the single most impactful measure. Finally, the stronger correlation between application development and the entrepreneurial environment suggests that market dynamism may serve as an important catalyst for building capabilities in application development, an industry highly aligned with AI advancement and use.

It is important to note that these correlations reflect regional-level trends, without implying causality or relationships that can be generalized across all contexts. To draw stronger conclusions, more representative data from diverse settings would be needed. Nevertheless, these patterns, as observed within the ILIA framework, highlight potential challenges and opportunities for the region.

Just as this correlation analysis can inform decision-making, the data contained in this Index provide a rich foundation for dialogue and can help accelerate AI deployment across the region. The ultimate goal of ILIA is to advance knowledge and promote the development of responsible AI that benefits everyone, with a particular focus on Latin America and the Caribbean, and this edition is a step in that direction.

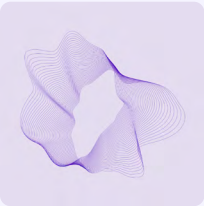
Key Findings from ILIA 2025



01. THE AWAKENING OF LATE ADOPTERS

This edition highlights the accelerated economic improvement in countries such as **Ecuador, Costa Rica, the Dominican Republic, and Guatemala**, where nations in earlier stages of maturity are catching up quickly. This acceleration is especially evident in Central American and Caribbean countries, where ecosystems have improved in infrastructure –including faster download speeds, 5G coverage, and IPv6 adoption– along with advances in human talent through greater focus on AI in school education, postgraduate programs, and professional skills. Improvements are also reflected in academic research, open-source development indicators, and the progress of national AI strategies, some recently published and others still in development.

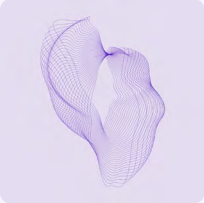
As countries strengthen their capabilities, new opportunities are emerging for less asymmetrical regional alliances and multilateral collaborations that were previously unlikely. From the perspective of Latin American integration, this technological awakening also challenges leading countries to adopt a more active and strategic role in cooperation, preventing the region from deepening its historical digital and technological fragmentation.



02. OPEN SOURCE: AN OPPORTUNITY FOR LATIN AMERICA AND THE CARIBBEAN

The open-source model continues to represent a major opportunity for AI development in the region, as it enables the creation of local solutions without relying on proprietary licenses or expensive infrastructure, while also promoting collaboration within the developer community. The strong performance of countries such as **Honduras, El Salvador, and Cuba** in productivity, quality, and relevance of open-source production, respectively, is a concrete example of the opportunities this model offers to all countries in the region. Open-source development strengthens regional cooperation, collective learning, and algorithmic transparency.

This opportunity is reinforced by application development, which acts as a gateway for AI deployment. Fifteen of the nineteen countries show strong results in this area, demonstrating that app development is more equitable than research or advanced computing and represents an opportunity to integrate AI into digital products even in ecosystems at earlier maturity stages.



03. LOTS OF DATA, BUT LIMITED AVAILABILITY

Although Latin America and the Caribbean produce large volumes of data from public, private, and social systems, much of this information is not available for AI-based solution development. While the region has made significant progress in data capacity and governance, data availability remains a weakness in most countries. Notable exceptions such as **Ecuador, Guatemala, Peru, and Paraguay** show significant and consistent improvement.

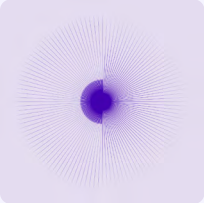
This gap between data generation and availability limits the development of local solutions, reduces government transparency, and restricts progress in open science and artificial intelligence. Without stronger data ecosystems built on openness and standardization, algorithmic decisions risk being based on incomplete or biased datasets, which can negatively affect equity and policy effectiveness.

04. HUMAN TALENT: LITERACY, LOW SPECIALIZATION

ILIA scores show that AI literacy levels are nearly twice as high as professional training and four times higher than advanced specialized talent. This suggests a broad base of general understanding, but also a bottleneck in technical and advanced skills that limits the development of highly qualified talent.

Educational efforts show progress, with increases in school-level AI education and postgraduate programs, but these remain exceptions in the region. In terms of growth among AI-skilled professionals, **Costa Rica** is developing at a pace closer to the global average, while other countries in Latin America and the Caribbean are falling behind and progressing more slowly.

The key challenge for countries is transforming early literacy into more sophisticated academic and professional skills. Without specialization, the region risks remaining a consumer of AI rather than a contributor with meaningful influence on its development.



05. TALENT AND INFRASTRUCTURE FOR DIGITAL SOVEREIGNTY

Countries in Latin America and the Caribbean face significant challenges in strengthening their internal capacities to develop and adopt AI. In terms of computing power, Brazil accounts for more than 90% of the regional total and has 17 times more capacity than the country with the lowest number of teraflops per second. Although GPU capacity per capita provides a more favorable outlook for countries such as **Uruguay, Costa Rica, and Colombia,** more than half of the region still lacks high-performance infrastructure, highlighting a highly uneven landscape.

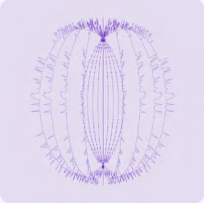
Despite some progress, 13 out of the 19 ILIA countries do not yet include early AI skills in school curricula, and 11 of the 19 have no doctoral-level AI programs in their universities.

Infrastructure and talent are essential to a country's ability to deploy and adopt artificial intelligence. While infrastructure sets the upper limit for what can be developed, particularly in relation to computing power, human talent is what ultimately transforms potential into impact. Without advances in building these internal capabilities, countries risk producing AI solutions that are biased and poorly adapted to local needs.

06. GENERATIVE AI: AN OPPORTUNITY FOR DEMOCRATIZING ACCESS

Generative AI platforms have helped democratize access and accelerate adoption thanks to their low barriers to entry and new dynamics of value creation. These tools allow non-experts to interact and learn through advanced models using user-friendly interfaces accessible to the general public. This is evidenced by countries that stand out in generative AI adoption –**Chile, Costa Rica, Peru, Uruguay, Panama, and the Dominican Republic**– showing that access to AI is no longer limited to major technology hubs. Latin America and the Caribbean is the world's third-largest region in terms of downloads, maintaining a consistent 15%–20% share of the global market.

Generative AI's accessibility can act as a catalyst for broader AI adoption, extending its impact on people's daily lives. More evenly distributed capabilities across the region, such as generative AI use, software development, and open-source contributions, can help offset the disparities seen in computing power, opening diverse pathways for progress across Latin America and the Caribbean.



07. AI AND CITIZEN PARTICIPATION: AN UNTAPPED PARADIGM SHIFT

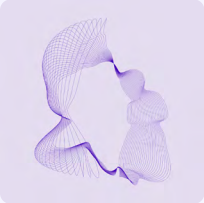
Despite AI's potential to transform how citizens participate in governance, its use in digital democracy tools remains limited in the region. While **Colombia, Mexico, and Peru** show comparatively greater adoption in participatory processes, 8 of the 19 ILIA countries report no use cases at all. This reflects a gap between government interest in emerging technologies, where most applications focus on informational chatbots, versus practical tools for public consultation, accountability, or co-creation of policy.

Using language models in participatory contexts opens new possibilities for democracy, enabling the processing and synthesis of contributions from large numbers of people during public consultations or policy-making processes. It can also help make legislative processes more accessible, strengthening accountability. AI thus offers a transformative shift in citizen participation, and the current scarcity of use cases highlights a significant opportunity to deepen democratic engagement through digital means.

08. SCARCE AND CONCENTRATED RESEARCH

As with private investment, academic research in the region remains limited and concentrated in only a few countries. **Brazil and Mexico** together account for 68% of all active AI researchers in the region, and 87% of them are concentrated in just five countries: **Brazil, Mexico, Colombia, Chile, and Argentina.** These same five countries also represent 90% of the researchers who publish consistently in AI. Moreover, only seven countries have a presence in the main tracks of top international AI conferences, with 82% of all regional authors coming from Brazil and Chile.

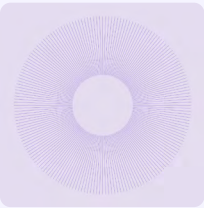
This limited presence in high-impact academic spaces not only restricts the global visibility of Latin American AI research but also reduces opportunities for knowledge exchange and collaboration with the rest of the world. Strengthening academic activity remains one of the most critical challenges, requiring increased focus and investment across most countries in the region.



09. AI GOVERNANCE: MANY PLANS, LITTLE ACTION

Although nine countries have national AI strategies, only a minority have taken steps toward updating them, allocating budgets for implementation, or establishing concrete plans to ensure they are carried out effectively. While three countries are currently drafting policies, seven still lack a defined roadmap or national strategy for AI development.

Developing a policy is an essential first step, but it is not enough. Without clear implementation plans, these documents risk becoming aspirational statements with limited budget alignment, no impact indicators, and weak evaluation mechanisms. This lack of execution leads to notable inconsistencies: none of the countries that reference gender equity in their AI strategies rank among those with the highest share of women authors in AI; most actively participate in international AI and technology forums, yet often fail to implement agreed-upon commitments; and while cybersecurity frameworks are relatively robust, they do not always translate into operational capacity. In this context, ensuring that AI governance becomes truly actionable and effective is an urgent priority.

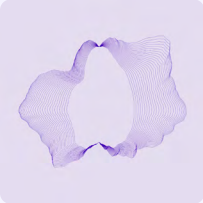


10. SUSTAINABILITY: AN URGENT CALL

Sustainability stands out as a major challenge in AI deployment, underscoring the urgent need for better data on its environmental impact, including energy consumption and carbon emissions. When it comes to data centers, only four ILIA countries **(Brazil, Chile, Colombia, and Mexico)** have a strong data center industry, and only one in five centers in the region complies with international sustainability standards.

To date, sustainability considerations remain largely absent from AI and digital transformation policies, with most national frameworks failing to meaningfully address this issue. Without a timely and comprehensive response, AI development risks undermining sustainable development goals.

A coordinated effort is urgently needed not only to improve measurement of AI's climate impact, but also to assess the environmental, social, and economic implications of the data center industry across ecosystems.



11. AI ENTREPRENEURSHIP: AN OPPORTUNITY FOR THE REGION

ILIA findings show that a highly industrialized economy is not a prerequisite for fostering AI development. The growth of AI companies depends more on investment and entrepreneurial-friendly environments than on the complexity of a country's productive structure. This creates opportunities for all countries in Latin America and the Caribbean to advance AI integration, whether through established industries or through dynamic entrepreneurship and private investment.

However, the region still faces significant challenges: it attracts only 1.12% of global AI investment, and just six countries in the region currently have unicorn companies.

DIMENSION

ENABLING FACTORS

ENABLING FACTORS

Main Findings

01 THE AWAKENING OF LATE ADOPTERS: NEW DYNAMISM IN THE REGIONAL LANDSCAPE

The rapid improvement of countries such as Ecuador, the Dominican Republic, and Guatemala in this edition shows that nations at earlier stages of maturity are catching up quickly. This momentum reflects the positive impact of educational reforms, investment in digital infrastructure, and growing institutional engagement. Their performance is driven by progress in connectivity, data capacity, and human talent, particularly the integration of AI into school curriculum and the expansion of postgraduate AI programs.

As these countries improve their capabilities, new opportunities emerge for more balanced regional alliances and multilateral collaborations that once seemed unlikely. From the perspective of Latin American integration, this technological awakening calls on leading countries to play a more active and strategic role in cooperation to prevent the region from further deepening its historical digital and technical capability fragmentation.

02 PLENTY OF DATA, LIMITED VALUE: THE AVAILABILITY BOTTLENECK

Although Latin America generates vast amounts of data across public, private, and social systems, much of it remains inaccessible for AI-driven solutions. The Data subdimension reveals strong progress in data capacity and governance, but persistent stagnation in data availability with only a few exceptions. This gap limits the development of locally relevant AI solutions, reduces government transparency, and slows advances in open science and innovation. Inconsistent data governance frameworks across the region also hinder the creation of interoperable, secure, and accessible data ecosystems.

If progress in openness and standardization falls short, AI systems will continue relying on incomplete or biased datasets, with negative consequences for equity and policy effectiveness. Regional performance illustrates this challenge clearly: the average Data score increased from 35.7 to 47.73 points, driven by improvements in Capacity (Ecuador +30.49 points) and Governance (Guatemala +28.25 points). However, the Availability component remains stagnant in many countries: although Chile (66) and Mexico (56.33) lead, 15 out of 19 ILIA countries remain below 50 points. This disconnect shows that data production does not necessarily translate into meaningful openness for AI, restricting transparency and open research.

03 AI ENTERS THE CLASSROOM

A growing number of countries are incorporating artificial intelligence into school curricula. In this edition, six countries now include AI content (up from just two in the previous edition), with Costa Rica, Ecuador, the Dominican Republic, and Uruguay joining. Despite this 200% increase, 13 out of 19 ILIA countries still do not offer AI-related subjects in basic education. Integrating AI into education is a strategic investment in endogenous technological capabilities. It not only updates curricula but also promotes computational thinking, critical analysis of algorithms, and, most importantly, inspires new generations to take an active role in creating emerging technologies. Early exposure to foundational AI concepts expands future opportunities for innovation and contributes to technological sovereignty, enabling countries to become producers –not only consumers– of technology adapted to local needs.

04 COSTA RICA: A STRATEGIC BET ON HUMAN TALENT IN AI

Costa Rica's leadership in professional AI skills reflects a strategy that brings together education, digital infrastructure, and talent development policies. The country has the highest penetration of AI skills among its professionals, more than double the second-ranked country, and ranks second in demand for AI courses. Combined with advances in early AI education and the growth of postgraduate programs, Costa Rica demonstrates that robust technological ecosystems can be built within medium-sized economies. This human-talent-centered approach is replicable and offers valuable insights for countries seeking to strengthen their digital competitiveness without relying solely on large-scale infrastructure investment. Costa Rica proves that human capital is a decisive strategic asset in the knowledge economy.

05 COLOMBIA: A LEADER IN SELF-DIRECTED LEARNING

Colombia stands out for a highly proactive public interested in AI training through platforms such as Coursera. This reflects an environment where the demand for learning exceeds formal institutional offerings and where self-directed learning becomes a key engine for developing human talent. This trend can accelerate the closing of skills gaps and support AI adoption across multiple economic sectors.

In June 2020, Colombia became the first country in the world to partner with Coursera on a national level, offering citizens access to 3,800 free courses. For this potential to fully translate into economic impact, accreditation systems, skills validation mechanisms, and labor market alignment must evolve to recognize the new learning pathways enabled by these platforms.

06 HIGH CONCENTRATION OF COMPUTING POWER, BUT GREATER EQUITY IN AI DEVELOPMENT

Brazil has more than 121,000 teraflops per second of high-performance computing (HPC) capacity, representing over 90% of the regional total, far ahead of Argentina (8,582) and Mexico (7,235). This reflects a consolidated technological infrastructure in one of the region's largest economies but also underscores a strong geographic concentration of advanced computing resources. In contrast, the per-capita distribution of GPUs shows a more equitable landscape, creating new opportunities for AI development in smaller economies such as Uruguay, Costa Rica, and Colombia. Expanding access to GPU power, cloud services, and regional technology consortia can help level the playing field and stimulate local AI innovation. Strengthening HPC and GPU capacity is essential for resilience and autonomy in AI development. Scaling infrastructure will be key to enabling the region not only to adopt AI effectively but to shape it according to local priorities.

07 UNEQUAL INFRASTRUCTURE: THE CEILING OF THE REGIONAL AI ECOSYSTEM.

Digital infrastructure directly determines each country's capacity to adopt and scale AI solutions. Reliable connectivity, efficient data centers, adequate devices, and modern regulatory frameworks form the foundation of AI readiness. While countries such as Brazil and Chile show strong maturity, others face structural barriers, like weak rural connectivity and limited device access, that hinder the deployment of intelligent systems.

Only three countries demonstrate robust infrastructure scores: Brazil (71.43), Uruguay (70.46), and Chile (63.81). Meanwhile, 11 out of 19 ILIA countries remain below the 50-point mark. This gap indicates that although leaders continue to build momentum in connectivity and computing, much of the region still lacks the basic enabling conditions for sustained AI deployment. Infrastructure gaps create an upper limit on technological progress and on equal participation in digital transformation.

08 TECHNOLOGY WITHOUT ACCESS IS EXCLUSION: THE URGENCY OF CLOSING DIGITAL GAPS

Indicators of access to computers, smartphones, and the internet reveal a stark reality: millions of people in Latin America and the Caribbean remain disconnected from the digital ecosystem. While regional averages reveal that 64% of households have internet access and 38.7% of households have a computer, access does not reach even one-third of households in several countries. As AI becomes embedded in essential services such as health, education, and finance, digital exclusion risks becoming a new driver of structural inequality. Closing digital divides is not only about connectivity, but also about ensuring full participation in the 21st-century society and economy.

09 CONNECTIVITY IS IMPROVING, BUT NOT ENOUGH

While internet speeds have advanced substantially, several key connectivity indicators remain insufficient to support widespread AI adoption. For instance, regional averages show a mobile and fixed broadband subscriptions of only 15 subscriptions per-100 people for the latter; in households with internet access, less than half the population has access in 5 countries; and in 5G coverage, 7 countries have 0% coverage. For AI to scale across sectors, connectivity must be stable, secure, and universal. Telecommunications planning must adopt a long-term vision that incorporates territorial equity, climate resilience, and sustainable business models.

10 MORE GRADUATE PROGRAMS, MORE AI: INVESTING IN ADVANCED TALENT

The expansion of master's and doctoral programs in AI marks a strategic shift toward cultivating highly qualified talent in the region. In this edition, 17 out of 19 countries now offer master's programs in AI, with 179 master's programs in total; doctoral programs increased from 4 to 8 countries, reaching 29 programs overall, with Argentina, Colombia, Paraguay, and Peru joining. Strengthening academic specialization is essential to reduce dependence on foreign expertise and to promote AI solutions tailored to local needs. It enhances the region's ability to contribute at the global knowledge frontier, leading research, developing exportable technologies, and fueling innovation grounded in scientific excellence.

ENABLING FACTORS

2 Dimension Description

The Enabling Factors dimension measures the progress of those elements that are necessary conditions for AI ecosystems to develop effectively.

In this case, this dimension consists of three subdimensions: Infrastructure, Data, and Human Talent.

The Infrastructure subdimension evaluates the technological conditions necessary to enable the development and deployment of AI, including connectivity, computing capacity, and access to devices like computers and smartphones.

Given that data is the fundamental raw material for AI development, **the Data subdimension** measures the availability, capacity, and governance of data, based on countries' performance in the Global Data Barometer 2025.

Finally, **the Human Talent subdimension** considers the variables that influence the development of AI skills among the population and workforce. AI systems rely on information to make inferences, whether for explicit or implicit objectives, and therefore depend on human capabilities and competencies to reach their full potential. This makes human talent an indispensable factor for enabling AI development.

The Enabling Factors dimension carries a weight of **40%** in the overall index calculation, reflecting its critical importance for AI development within countries.

The results of this edition are not fully comparable with the previous edition, as the changes introduced here must be taken into account. These changes include the addition of three subindicators (two in Computing and one in Professional Training in AI), updates to data sources (two subindicators in Connectivity and one in Computing), adjustments to normalization (one Computing subindicator), and modifications resulting from the data source for the Data subdimension.

TABLE 1: COMPOSITION OF THE ENABLING FACTORS DIMENSION

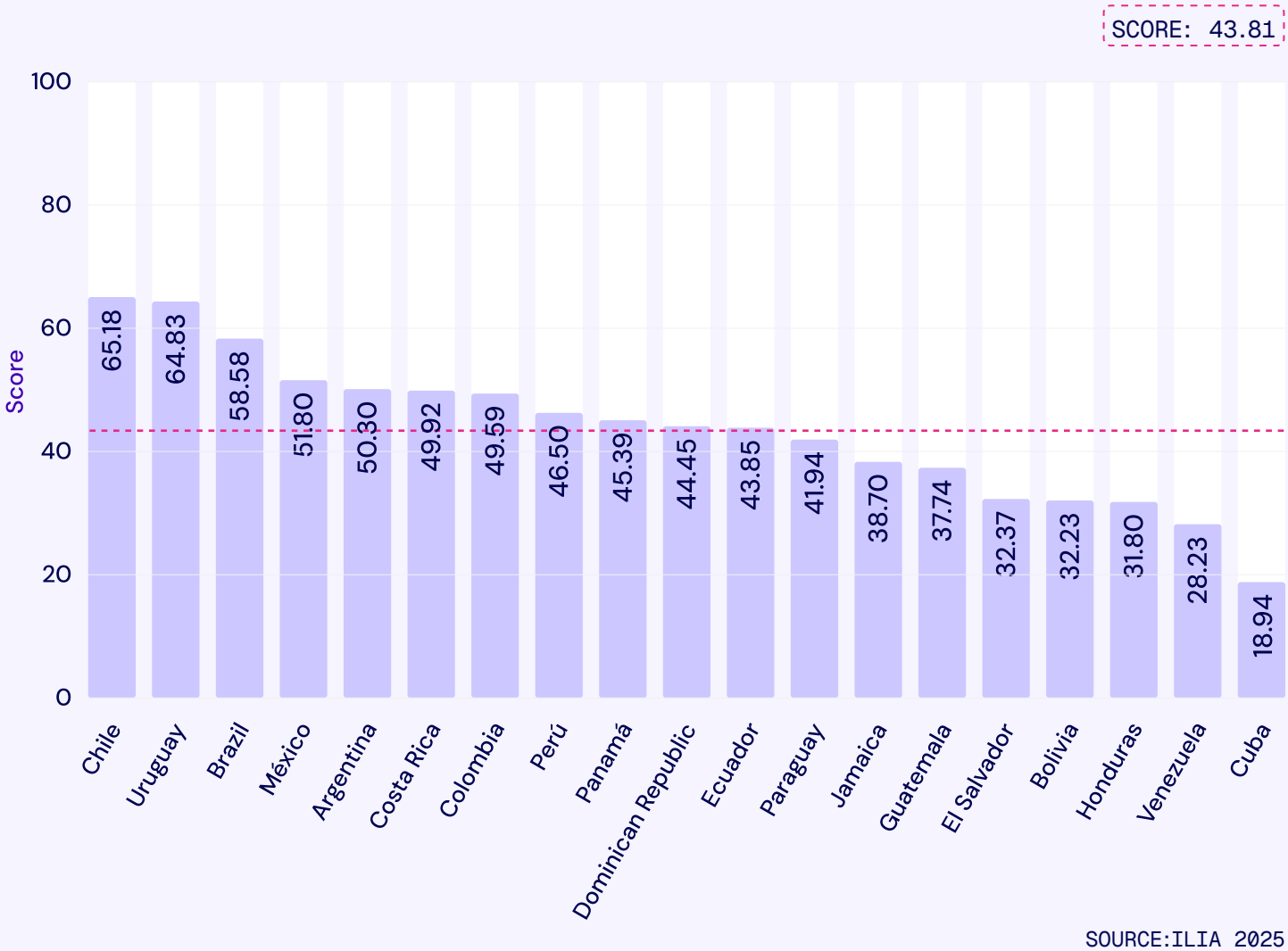
Subdimension	Indicators	Subindicators	New sub-indicators 2025
Infrastructure	Connectivity	% of population using the internet	
		Mobile download speed	
		Population coverage by 5G networks	
		% coverage of Mobile network	
		Households with internet access	
		Active Mobile broadband subscriptions	
		Fixed broadband subscriptions	
		Average fixed broadband download speed	
		Average latency	
		Fixed Broadband basic basket	
	Computing	Cloud computing	
		High-performance computing (HPC)	
		Number of graphics processing units (GPU)	
		Graphics processing unit (GPU) capacity	
		Certified data centers	
		Internet exchange points (IXP)	
		Secure internet servers	
	Devices	Households with a computer	
		Smartphone affordability	
		Adoption of Internet Protocol version 6 (IPv6)	
Data	Data barometer	Availability	
		Capabilities	
		Governance	
Human Talent	AI literacy	Early science education	
		Early AI education	
		English proficiency	
	Professional training in AI	Concentration of skills in AI	
		STEM graduates	
		Demand for AI courses	
	Advanced human talent	Master's programs in AI at QS-ranked universities	
		PhD programs in AI at QS-ranked universities	
		Master's programs in AI at accredited universities	
		PhD programs in AI at accredited universities	

SOURCE:ILIA 2025

FIGURE 3 presents the regional results for this dimension, highlighting two countries that exceed the 60-point threshold: **Chile (65.2) and Uruguay (64.8). They are followed by Brazil (58.6), Mexico (51.8), Argentina (50.3), Costa Rica (49.9), Colombia (49.6), Peru (46.5), Panama (45.4), and the Dominican Republic (44.5),** all scoring above **the regional average of 43.81 points.**

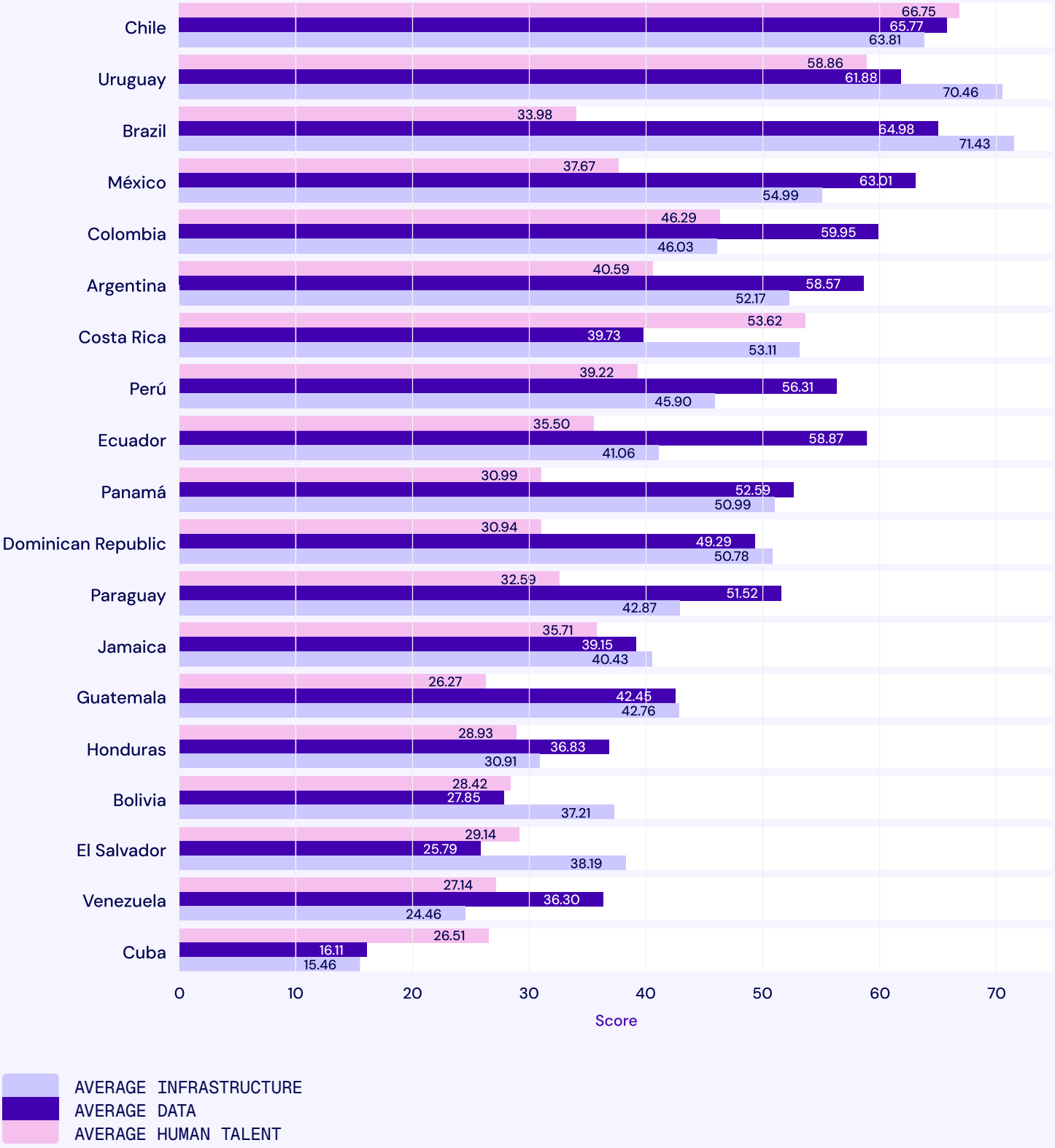
Although the results are not directly comparable with those of the previous edition, it is interesting to observe how the relative positions of countries in Latin America and the Caribbean shift once the methodological updates of this edition are applied. The leading countries in this dimension have consolidated their standing, as seen in the cases of **Chile, Uruguay, and Brazil, with the latter two showing significant notable score increases (+4.1 and +6.12, respectively).** However, the countries with the largest score improvements compared to the previous edition are **Ecuador (+9.17 points), the Dominican Republic (+8.46), Guatemala (+7.86), Paraguay (+7.17), Peru (+6.2), Brazil (+6.12), Colombia (+5.14), Panama (+5.06), and Costa Rica (+4.28).** As a result, the top six positions remain unchanged from the previous edition, although **Costa Rica is now very close to Argentina's score, while Ecuador has risen from 14th to 11th position.**

FIGURE 3: TOTAL SCORE FOR ENABLING FACTORS DIMENSION



SOURCE:ILIA 2025

FIGURE 4: SCORES FOR INFRASTRUCTURE, DATA, AND HUMAN TALENT SUBDIMENSIONS



SOURCE:ILIA 2025

As shown in FIGURE 4, one of the main factors explaining the increase in scores in this edition is the strong performance in the Data subdimension, where a general improvement can be observed across all countries. Focusing on the group of countries with the largest score increases, such as Ecuador, the Dominican Republic, Paraguay, and Guatemala, it becomes clear that, in addition to a significant rise in their Data scores, this progress is accompanied by strengthening in other areas such as Infrastructure or Human Talent. For example, the Dominican Republic increased its Infrastructure score by nearly 10 points, while Brazil improved by more than 10 points. In terms of Human Talent, Costa Rica improved by over 6 points, while Paraguay and Ecuador each rose by more than 4 points.

This overview reveals an interesting pattern among countries in the region, where two distinct dynamics converge. On one hand, countries that are advancing in their level of human development tend to show greater improvements in subdimensions such as Infrastructure, which includes indicators like Connectivity and Devices, reflecting progress in broader enabling areas not exclusively related to artificial intelligence. On the other hand, improvements in the Computing indicator and in subdimensions such as Data and Human Talent reflect advances in areas more directly linked to AI development, such as enhanced high-performance computing capacity, improved data governance, or the availability of AI-related academic programs.

In this context, **leading countries tend to consolidate their positions of leadership; however, growth rates are faster among those starting from earlier stages of development, resulting in a narrowing gap between the two groups.** In the medium and long term, the Computing indicator and the Human Talent subdimension are expected to become the main differentiating factors within this dimension.

ENABLING FACTORS

2.1 Infrastructure sub-dimension

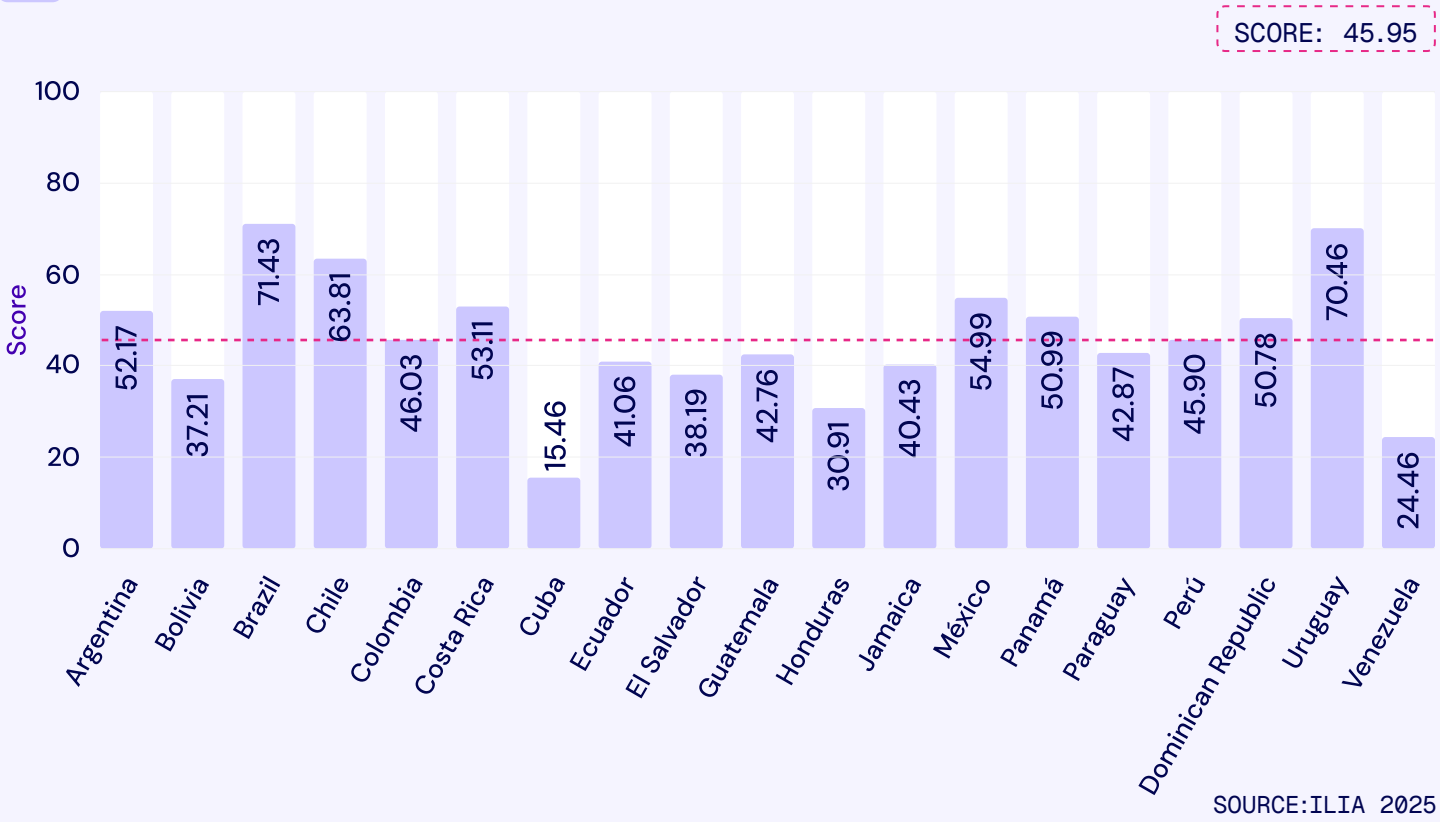
This subdimension examines the technological infrastructure available in each country as a necessary condition for the development of artificial intelligence.

The number of high-capacity data storage servers with cloud access and usage, high-performance computers, high-speed networks, application development platforms, and devices that ensure reliable connectivity are all infrastructure components that directly affect the deployment of AI within a country.

The Infrastructure subdimension represents **45%** of the total weighting of the Enabling Factors dimension, reflecting both the number of indicators it comprises and their importance for public policy development.

This subdimension includes three indicators: **Connectivity, Computing, and Devices,** which together determine each country's capacity for accessing, managing, transferring, and processing data, all of which are essential for AI development. Beginning with this edition, two new subindicators have been incorporated under the Computing indicator to assess countries' GPU capacity.

FIGURE 5: SUBDIMENSION SCORES INFRAESTRUCTURE



SOURCE:ILIA 2025

Considering the results shown in FIGURE 5, lcountries can be grouped into three categories based on the maturity level of their infrastructure ecosystems. In this edition, a threshold of 60 points has been established to identify countries with high infrastructure capacity, and 35 points to identify those with limited capacity. Due to this adjustment, some countries, such as Panama and the Dominican Republic, now fall within the intermediate range, despite having exceeded the 50 points threshold in the previous edition, which would have placed them in the high-capacity group.

Countries with high infrastructure capacity (over 60 points): these countries demonstrate the strongest infrastructure capabilities, providing a solid foundation for technological development and adoption. Examples include **Brazil (71.43), Uruguay (70.46), and Chile (63.81).**

Countries with intermediate infrastructure capacity (between 35 and 60 points): this group includes countries with moderate infrastructure capacity that, despite certain strengths, still face challenges in reaching the level of regional leaders. These countries are **Mexico (54.99), Costa Rica (53.11), Argentina (52.17), Panama (50.99), the Dominican Republic (50.78), Colombia (46.03), Peru (45.9), Paraguay (42.87), Guatemala (42.76), Ecuador (41.06), Jamaica (40.43), El Salvador (38.19), and Bolivia (37.21).**

Countries with limited infrastructure capacity (below 35 points): These countries have limited infrastructure and need to strengthen their capabilities in this area to support broader technology and AI development.

For a detailed breakdown of scores at the indicator and sub-indicator levels, refer to ILIA 2025.

ENABLING FACTORS

2.2 Data Subdimension

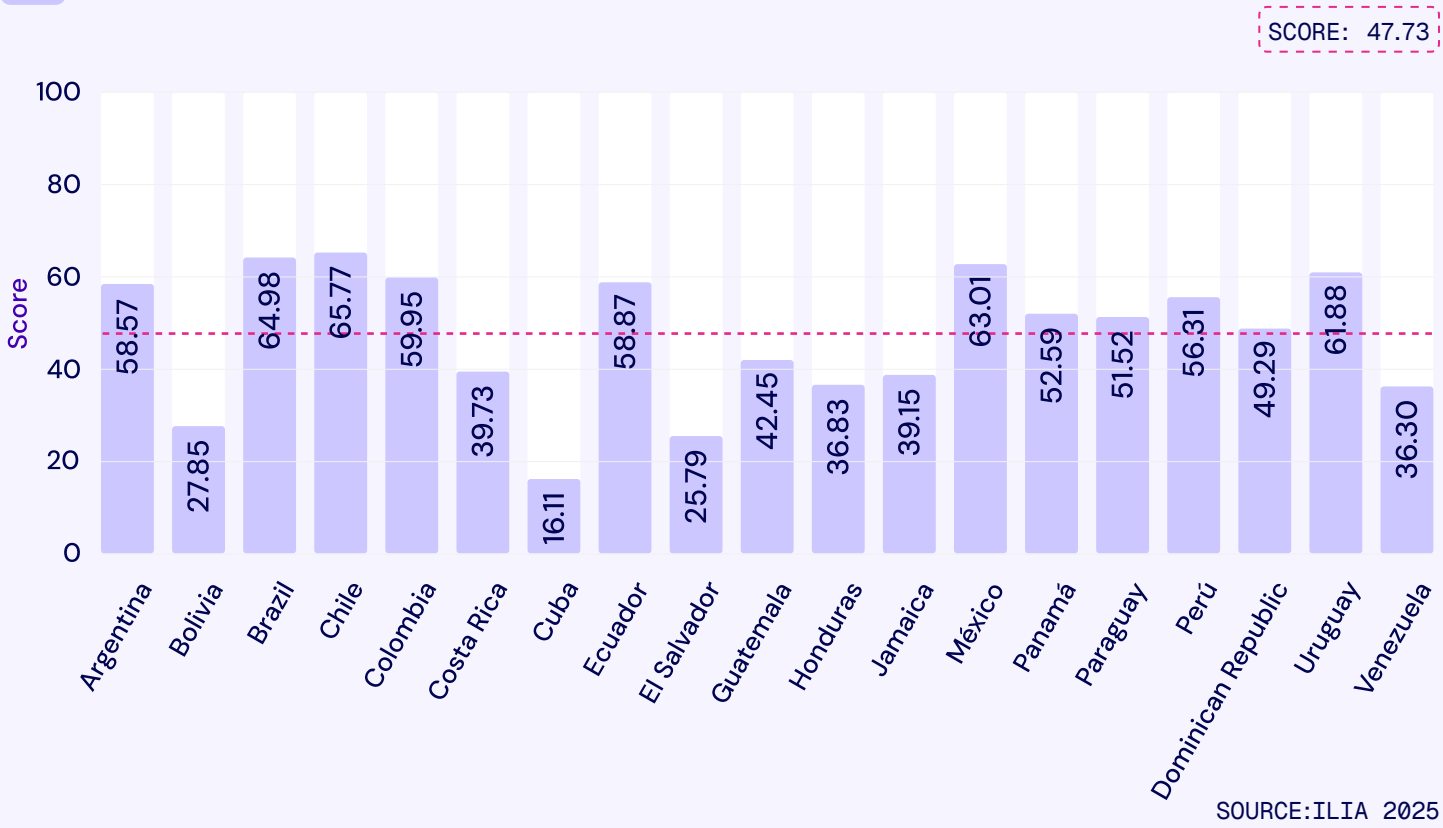
The availability of and access to open, reliable data, along with the protection of personal information, are critical components for the development of AI.

Without open, high-quality data, there is no raw material to power the algorithms that train accurate and robust models.

The Data subdimension consists of a single indicator, the Global Data Barometer, which measures aspects such as data availability, accessibility, and reliability based on the results of the 2025 Global Data Barometer. In this edition, adjustments were made due to changes in the data source, which affected the subdimension's scores, as detailed in the methodological annex.

This subdimension accounts for **25%** of the total weighting of the Enabling Factors dimension.

FIGURE 6: TOTAL SCORE DATA SUBDIMENSION



SOURCE:ILIA 2025

FIGURE 6 shows a general increase in scores across all countries, with **the regional average rising from 35.7 in the previous edition to 47.73 in the current one.** However, the maturity thresholds for data ecosystems were aligned with those used in the Infrastructure subdimension. As a result, even with higher scores, some countries remain in the same category, or in certain cases, fall into a lower one.

Countries with advanced data ecosystems (over 60 points): These countries demonstrate high data availability, strong management capabilities, and robust governance frameworks. They include **Chile (65.77), Brazil (64.98), Mexico (63.01), and Uruguay (61.88).**

Countries with developing data ecosystems (between 35 and 60 points): These countries possess resources and processes for data management and governance but still face limitations that prevent the full development of an enabling environment for AI. They include **Colombia (59.95), Ecuador (58.87), Argentina (58.57), Peru (56.31), Panama (52.59), Paraguay (51.52), Dominican Republic (49.29), Guatemala (42.45), Costa Rica (39.73), Jamaica (39.15), Honduras (36.83), and Venezuela (36.3*).**

Countries with emerging data ecosystems (under 35 points): these countries face major barriers in data availability, lack adequate infrastructure for effective data use, and exhibit significant gaps in governance frameworks.

For a detailed breakdown of scores at the indicator and sub-indicator levels, refer to ILIA 2025.

CASE STUDY

LATAM-GPT: Artificial Intelligence with a Latin American Essence

It is the first artificial intelligence language model developed in and for Latin America and the Caribbean. This historic initiative, coordinated from Chile by the National Center for Artificial Intelligence (CENIA), brings together more than 40 institutions, from Rio Grande to the Estrecho de Magallanes, to create an open, ethical and collaborative tool that reflects the cultural diversity of the region.

Developing a homegrown language model is today one of the world's most significant technological challenges. It is not merely about training an AI system; it represents a strategic pursuit of digital sovereignty, data infrastructure, and innovation capacity. In this global context, comparable in importance to the space race of the 20th century, Latin America is taking an unprecedented step. In October 2023, CENIA, based in Chile, initiated the creation of Latam GPT, the first large open-source language model developed specifically for the region. The motivation is clear: knowledge, data, and technological tools can and should be produced from the Global South, with autonomy and regional collaboration.

This initiative is historic: it already brings together more than 40 institutions from 12 countries and seeks to build an open-source foundational model that represents the voices, accents, and realities of the region; reflects a worldview conceived from Latin America and the Caribbean; promotes digital sovereignty; and serves as public-access infrastructure to support technology-based solutions in areas such as education, health, public services, and creative industries, among others.

AI FOR PEOPLE

One of the most innovative aspects of the project is its focus on ethical data collection and preservation. While many AI models rely on massive web scraping –the rapid, automated extraction of large amounts of data from websites, often without clear controls over permissions or usage rights– the Latam GPT team took a different approach. They established partnerships with universities, libraries, ministries, governments, and foundations across Latin America to request the data necessary to train the system. Thanks to this strategy, the team has already compiled more than 8 terabytes of plain text.

"Most large language models have been trained on English-language data and primarily reflect contexts from the Global North. With Latam GPT, we aim to build a model based on data provided by local actors that represent our cultures, languages, histories, and identities. It is a concrete way to exercise digital sovereignty and capture aspects of our idiosyncrasy that other models do not see," explains Álvaro Soto, director of CENIA and a pioneer in applied artificial intelligence in Chile.

"We want that if the model is asked about Latin America, it responds: this is my specialty. Ask me here," Soto concludes.

DOOR TO DOOR

The team started from scratch, going "door to door" to establish partnerships, leveraging CENIA's existing contacts to begin data collection with the first institutions to join from the region, such as the Data and Society Laboratory (Datysoc) in Uruguay, the Fundación Vía Libre in Argentina, and the National Institute of Astrophysics, Optics and Electronics (INAOE), the Research Center in Information and Communication Technologies (INFOTEC), and the Research Center in Geography and Geomatics (CentroGEO) in Mexico, as well as the Council of Rectors of Chilean Universities (CRUCH).

This was no easy task. Latin America and the Caribbean is an extraordinarily diverse region, not only across countries but also in languages, dialects, cultural expressions, and indigenous communities. This wealth of knowledge is often dispersed across libraries, archives, universities, media outlets, and parliamentary records. The goal was to collect, curate, and structure this data in a representative and respectful manner.

In less than a year, the project had expanded to 40 institutions and surpassed its original goal of 100 gigabytes, ultimately gathering over 900 gigabytes of data through strategic partnerships. The initiative also incorporated key national and international entities, such as Chile's Ministry of Science, Technology, Knowledge, and Innovation, and the Development Bank of Latin America and the Caribbean (CAF), both involved from the very beginning. Additionally, the Data Observatory Foundation and Amazon Web Services actively contributed, providing critical technical assistance to accelerate the pre-training process and access to essential development infrastructure. Furthermore, the University of Tarapacá in northern Chile is establishing one of the most powerful computing centers in the region.

"We currently have agreements signed with more than 40 institutions and individuals from 12 countries, ten of them in Latin America, and another 40 are in the pipeline. Sixteen of these are already under contract review," explains Alexandra García, project specialist at CENIA and head of data and partnerships for Latam GPT.

In large language models like Latam GPT, training is carried out using tokens, which are small units of language (words, fragments, or symbols) converted into sequences of numbers, the language that artificial intelligence understands and processes. The more tokens used, the greater the model's capacity to learn language patterns and generate coherent responses. *"In terms of volume, we have approximately 200 billion tokens from partnership data, and a total of 4.5 trillion tokens when including web and collaborative data,"* says García.

To put this in perspective, GPT-3 by OpenAI was trained with around 300 billion tokens, which is the target for the Latam GPT 1.0 version. *"For Spanish, the ratio is 1 token = 4 characters/letters, so we have approximately 800 billion characters, which is equivalent to about 1.3 million books of 300 pages each,"* explains the head of data and partnerships at Latam GPT.

TRAINED IN AND FOR LATIN AMERICA

Latam GPT is being trained with a multilingual corpus that prioritizes Spanish, Portuguese, and English, while also aiming to include content in indigenous languages and Python, the programming language. The inclusion of languages with logical structure is intentional: *"These models, when exposed to languages with a certain logical structure, learn to reason better,"* explains Álvaro Soto, director of CENIA.

This approach aims for the model not only to speak Spanish or Portuguese but to "*think from a Latin American and Caribbean perspective*": understanding the region's realities, ways of naming the world, cultural expressions, and public issues. To support this, benchmarks are being created to evaluate Latam GPT's ability to recognize local concepts. *"A benchmark is a collection of questions and answers that allows evaluating how much a language model knows about a specific topic and comparing it with other models in the same thematic area. In our case, we are developing a benchmark to measure a model's local knowledge, focusing mainly on cultural dimensions such as gastronomy, art, literature, folklore, celebrities, and festivities, among other country-specific aspects,"* explains Marcelo Mendoza, CENIA researcher and head of benchmarks for Latam GPT. *"This work, developed at CENIA using a reproducible and verifiable methodology, is already well advanced and has the capacity to scale for application to other cultures and countries."*

To create it, the CENIA team adopted an inverse approach to the usual one: instead of first formulating the questions, they selected reliable texts on relevant topics, such as education, health, or culture, and then crafted questions whose answers were explicitly contained in the content. For example, if a text states that the language of the Mapuche people is Mapudungun, the question could be: What is the language of the Mapuche people? This ensures that the answers are well-founded and that the AI learns from real and meaningful information for the region. *"The key is in the data. We use a wide variety of sources from*

which verifiable passages can be extracted to construct questions. The more diverse the texts, coming from different countries, cultures, topics, and styles of expression, the more complete and representative the system's evaluation will be," explains Mendoza.

In terms of organization, Latam GPT is structured around three main teams: a data team, responsible for collecting, filtering, anonymizing, and classifying data according to geographic and thematic origin; a pre-training and post-training team, in charge of building the generative model; and an ethics team, which ensures responsible AI use by verifying that the data are free from biases, offensive content, or duplications, while also safeguarding the collaboration terms of content contributors. Additionally, since June, a dedicated working group has been established to ensure compliance with the project's ethical standards, led by researcher Gabriela Arriagada.

Peruvian researcher Omar Florez leads Latam GPT's pre-training team. He brings over a decade of experience from Silicon Valley, having worked at major technology companies such as IBM Research, Intel Labs, Capital One, and more recently at Twitter (now X). In 2021, he served on the technical committee that designed Peru's first National Artificial Intelligence Strategy, and in 2025 he presented Latam GPT's progress to the Science and Technology Commission of the Peruvian Congress to gather data from its institutions. For Florez, participating in Latam GPT means transforming years of scientific research into tangible actions that strengthen technological sovereignty and the AI ecosystem in Latin America and the Caribbean.

"Pre-training a language model is essentially teaching it to understand the most sophisticated invention of our species: human language. This is achieved by exposing the model to billions of words extracted from documents, books, websites, and historical records. In the case of Latam GPT, much of this information is unprecedented, as it often does not exist on the public web and has therefore not been used by other language models," explains Florez.

Through this process, the system learns both grammatical structures and the meanings of words. For a Latin American AI language model, this also involves learning the cultural and social context, as well as the reasoning specific to Latin American Spanish or Brazilian Portuguese. *"In simple terms, it's as if the model studied for an exam by reading millions of texts, enabling it to predict and generate language in a coherent and culturally relevant way,"* Florez concludes.

On a technical level, one of the major challenges has been efficiently distributing model training across multiple GPUs, processors originally designed for graphics but now critical in AI for their ability to execute millions of operations simultaneously. *"Training a model of this scale requires coordinating hundreds of these computing units to work in parallel and in sync, avoiding bottlenecks. This has allowed us to significantly reduce training time and optimize energy consumption,"* explains Florez. At this stage, support from the Data Observatory team has been essential.

HIGH-LEVEL TECHNOLOGY FROM THE SOUTH

The first version of LatamGPT, currently being trained in Chile, is an artificial intelligence model with 70 billion parameters, a pioneering scale for the region. A model of this size functions like a large neural network, a computational structure inspired by the human brain. Roughly speaking, it can be compared to having an artificial brain with the same number of connections, which, at its core, are mathematical operations. These operations are applied to user-provided data to generate a response. For example, if someone types, "What is the capital of Peru?" the model processes the question through billions of internal calculations before delivering the answer: "Lima."

To enable the model to respond coherently and accurately, engineers "train" it through an optimization process that seeks precise values for each parameter. This process enhances the system's ability to interpret questions and provide useful, correct answers. The more parameters the system has, and the more data used during training, the better it internalizes knowledge. With 70 billion parameters and 200 billion training tokens, LatamGPT represents a large-scale, high-performance AI model.

The system is being trained on cloud servers provided by Amazon Web Services, equipped with NVIDIA H200 GPUs, comparable to those being installed at the University of Tarapacá in Arica, northern Chile. These facilities are expected to be operational in the coming months and will be used for future versions of LatamGPT.

While the new facilities are being completed, some computing and training are carried out in smaller centers in Santiago, on AWS cloud servers in the United States, and at the Data Observatory (DO) Foundation in Chile. *"Our role in LatamGPT has been extensive: we processed over one billion documents and collaborated in designing systems that carefully clean, classify, and select the content that feeds the model,"* says Rodrigo Roa, Executive Director of DO.

Roa highlights that the real challenge was *"translating the theoretical design into a fully operational implementation"*, which required deploying a complex architecture with cloud clusters, hybrid validation, and distributed processing. In addition, together with CENIA and AWS, they built a representative and reliable corpus aligned with the FAIR principles: findable, accessible, interoperable, and reusable data. *"LatamGPT not only needs high-quality data, but also a trustworthy, robust environment adapted to its scale and purpose,"* he explains.

Beyond the technical aspects, he emphasizes that initiatives like LatamGPT should be a strategic priority for Chile and Latin America, with institutional frameworks ensuring ethical and reliable data processing. *"We are not only developing models, but also national capabilities to have a voice in shaping the future of this technology,"* he asserts. He also stresses the importance of maintaining public funding, particularly from the National Agency for Research and Development (ANID), to recognize data as strategic assets for the sustainable development of the region.

LatamGPT has successfully completed its first training. Unlike other well-known models in the world, which are closed, meaning their code, data, and operations are private and

controlled solely by their creators, its corpus will be open to researchers, regional developers, universities, public institutions, and non-profit organizations.

AI WITH A PUBLIC AND ETHICAL VOCATION

One of the fundamental pillars of Latam GPT is the ethical use of data. To this end, the team developed a legal governance system with international guidance, establishing clear rules on privacy, ownership, and the use of donated data.

This work is being led by Datysoc, the Data and Society Laboratory of Uruguay, headed by lawyer Patricia Díaz, an expert in technology and human rights. Her role in Latam GPT focuses on advising the team on legal matters, particularly those related to copyright and the reuse of data for model training, thereby strengthening governance and respect for rights within the project. *"Our core role in Latam GPT is to facilitate contacts and provide guidance. For example, the database was published last November and is derived from another pre-existing database, released under an open license. These solutions, I believe, help manage legal risks,"* explains Díaz.

One of the main challenges, according to Díaz, is the legal uncertainty in the region. *"Currently, our copyright laws present several limitations, with a few exceptions, such as the Cuban law. At the international level, efforts are underway to establish solutions that include fair remuneration for the use of data,"* she notes.

Datysoc also coordinates with the Latin American Alliance for Access to Knowledge, a network that brings together organizations from various countries, such as Karisma in Colombia, Vía Libre in Argentina, and Derechos Digitales in Chile, working on copyright exceptions for education, libraries, and research.

This legal framework is complemented by a rigorous anonymization process, which removes or modifies personal data to prevent the identification of individuals, implemented by an interdisciplinary team that includes specialists in ethics and digital rights. In addition, careful filtering and classification are carried out to prevent duplication, bias, or offensive content in the data.

For Díaz, one of Latam GPT's greatest strengths is its commitment to transparency, which helps build trust among stakeholders who might share their data: *"A key strength is the transparency of the model, which, unlike others, is not closed but open. This means that it provides access to the stages and datasets. There is not just a single dataset, but many: initial datasets, datasets used for refinement, filtered datasets, etc. Access to these datasets helps understand how the training was conducted and promotes research reproducibility,"* she explains. In this sense, Díaz adds, Latam GPT represents *"a great opportunity to train in data science and create valuable resources for university and regional AI research in Latin America"*.

LOCAL CAPABILITIES

With a preliminary version scheduled for the end of 2025, the team is already testing the model, aiming not only to share the technology but also to strengthen local capacities, promote ethical knowledge, and foster transnational collaboration.

For Álvaro Soto, the most important aspect is not just the model itself, but what can be built on top of it. Latam GPT is conceived as a "base engine" on which any actor, governments, universities, startups, or entrepreneurs, can develop specific products.

"I can build on this engine a car that is super fast for racing, or one that doesn't pollute, or one that is red, yellow, or green. We provide the engine; you choose how to drive it," he says.

Several developments are already underway: a translator trained on Latin American corpora, a model specialized in regional culture, and modules designed to solve concrete public problems, such as municipal procedures, rural access, or public procurement processes. Through the initiative Municipios a la Vanguardia, led by the Government Laboratory and Chile's Ministry of Science, Technology, Knowledge and Innovation in collaboration with CENIA, 15 projects have been identified that use this engine directly or indirectly to solve public problems. One of the major challenges now, according to Soto, is ensuring that the technological infrastructure is truly accessible and useful to different actors in the region. This requires not only computing capacity but also strengthening technical skills, defining data governance, and planning for ethical use from the outset. The goal is to provide not just an AI language model, but also the conditions for its implementation and long-term sustainability.

This perspective is shared by Datysoc's director, who emphasizes the importance of aligning the model with sovereign technology and with real potential for Latin America. *"For me, it is essential to incorporate different types of cultural and indigenous data. This way, it could be used not only in common chatbots but also in public services, where understanding this dimension of language and other data, currently absent in major models, is crucial,"* explains Patricia Díaz.

Primarily funded with CENIA's own resources, along with contributions from CAF and other institutions, the project has mobilized an investment close to $3 million. However, for its promoters, the true value lies in the collaborative process. They want Latam GPT not only to be the first large language model of the region, but also a pathway to imagine the future of AI in Latin America and the Caribbean with its own voice.*"It's not just about reaching Ithaca,"* Soto commented, *"but about what we experience and build along the way."*

ENABLING FACTORS

2.3 Human Talent Subdimension

Human Talent is the engine driving innovation and technological development. Advances in infrastructure, data, and technology have very limited impact if there is no skilled human capital to adopt and effectively use artificial intelligence.

Furthermore, as the rise of generative AI facilitates access to AI tools, people's skills and competencies become increasingly critical for the effective adoption of technology.

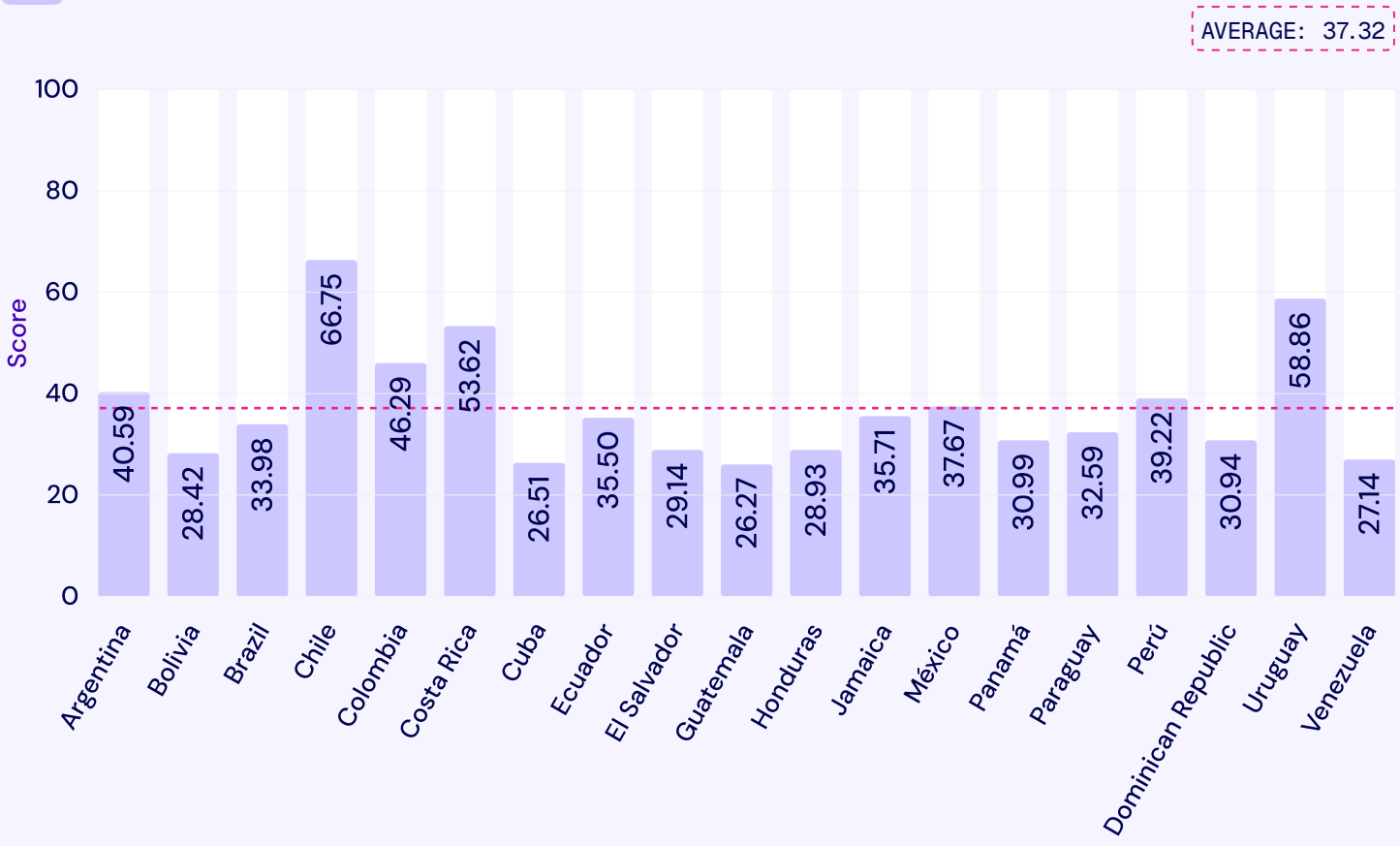
For a national ecosystem to cultivate talent capable of designing, developing, and implementing AI-based solutions, it is essential to have public policies and programs that support this direction, beginning in primary education and continuing throughout all educational trajectories.

To cover all factors that influence a country's AI capabilities, this subdimension includes three indicators: **AI Literacy, Professional Training, and Advanced Human Talent.**

Given the fundamental importance of human talent development, this subdimension accounts for 30% of the total score within the Enabling Factors dimension.

The country with the highest score is **Chile (66.75)**, followed by **Uruguay (58.86)** and **Costa Rica (53.62)**. They are joined by **Colombia (46.29)**, **Argentina (40.59)**, **Peru (39.22)**, and **Mexico (37.67)**, forming the group of countries above the regional average of 37.32 points. In this edition, a decrease in scores is observed for some countries despite progress in several indicators and sub-indicators that make up this subdimension. This is due to Costa Rica's outstanding performance, which increased the maximum score and consequently affected the relative position of other countries.

FIGURE 7: TOTAL SCORE HUMAN TALENT SUBDIMENSION



Countries with high human talent readiness (over 60 points): This group includes countries with the highest scores, indicating strong capacity in the training and availability of specialized AI human talent. In this edition, **Chile (66.75)** is the only country in this group.

Countries with moderate human talent readiness (between 35 and 60 points): These countries have intermediate development in this area, with solid capabilities but still room for improvement. This group includes **Uruguay (58.86), Costa Rica (53.62), Colombia (46.29), Argentina (40.59), Peru (39.22), Mexico (37.67), Jamaica (35.71), and Ecuador (35.5).**

Countries developing human talent (under 35 points): This category includes countries facing significant challenges in training and retaining specialized talent.

For a detailed breakdown of scores at the indicator and sub-indicator levels, refer to ILIA 2025.

CASE STUDY

Massive AI training as a path toward responsible adoption

Hazlo con IA is the result of a public-private partnership led by the National Center for Artificial Intelligence (CENIA) and SOFOFA's Human Capital Future of Work. With a rigorous diagnosis in hand and support from Google.org and the National Training and Employment Service, the initiative has successfully coordinated academia, civil society, companies, and labor unions to prepare thousands of people for the strategic use of generative AI over the next two years.

Artificial intelligence is already transforming the way we produce, create, and solve problems. Training people to seize these opportunities is urgent, as the AI revolution cannot remain solely in the hands of experts. In this context, Hazlo con IA was born, a free program that will train 68,000 people in the practical use of generative artificial intelligence (Gen AI) tools through online courses with personalized and accessible learning pathways. The goal is to reach this target by June 2026. In its first week alone, 10.000 learning pathways had already been created.

Developed in Chile, the initiative is led by CENIA and SOFOFA's Human Capital Future of Work, in partnership with the Ministry of Science, Technology, Knowledge, and Innovation; the Ministry of Economy, Development, and Tourism; the Ministry of Labor and Social Welfare; the National Training and Employment Service (SENCE); and the Federation of Chilean Industry (SOFOFA). The program also receives support from Google.org, the philanthropic arm of the tech giant.

Hazlo con IA was born from a clear and compelling diagnosis: a study conducted by CENIA, SOFOFA's Human Capital Future of Work, and academics from Stanford University at Workhelix revealed that half of Chile's workforce could accelerate at least 30% of their

tasks thanks to generative AI, the same technology behind tools such as ChatGPT, DALL·E, Gemini, and Claude.

"With that information in hand, we said: let's get to work," says Víctor Morales, Head of Training and Upskilling at CENIA. *"We brought together Google.org and several ministries, Science, Labor, and Economy, to build a unique alliance. We decided to focus on two major groups that encompass a significant portion of employment: the public sector and micro, small, and medium-sized enterprises (MSMEs). Both are key due to their weight in the economy, their impact on daily life, and because the study showed they have great opportunities to improve productivity with AI,"* he explains.

Natalia Lidijover, Executive Director of SOFOFA's Human Capital Future of Work, emphasizes that public-private collaboration and commitment were crucial to advancing the initiative. *"At first, it seemed crazy, but from day one there was courage and a shared conviction: we could combine the strengths of CENIA and SOFOFA's Human Capital Future of Work, and trust in a common purpose. The key was not to stop at the diagnosis. There was an urgent need to move forward. We listened to everyone: from senior executives and union leaders to public officials and experts. This collaborative view between the public and private sectors was decisive,"* states the executive, who also leads OTIC SOFOFA as General Manager.

How did the process move from this diagnosis to the creation of these AI training courses? A rigorous, scalable, and replicable methodology was designed, combining data analysis, interviews, review of international experiences, technical curation, and participatory, user-centered validation, so that it can be applied in other productive sectors in Chile as well as in other countries across the region.

REPLICABLE DESIGN

Using data from the study on the impact of generative artificial intelligence on employment, adaptable to different national contexts, a roadmap was developed to design digital training programs aimed at workers in the areas identified by the Chilean report as having the greatest potential to improve productivity through AI: public sector employees and micro, small, and medium-sized enterprises (MSMEs).

The process began in January 2025 with exploratory interviews involving 12 key figures from both sectors. These conversations helped identify barriers, enablers, and priority needs for the adoption of generative AI, providing valuable input for course design.

The team reviewed successful international benchmarks such as Elements of AI (Finland), which brings AI closer to citizens; Apolitical (United Kingdom), which trains public sector employees; and FutureUp (Costa Rica), which develops emerging workforce skills. The guiding question was clear: What are these platforms doing well, and how can their best practices be adapted to the Chilean context? Among the most relevant lessons identified were the importance of organizing content into thematic modules, segmenting it according to user profiles, ensuring mobile accessibility, and validating certifications with recognized labor market value.

"From the benchmark, two key lessons stand out: it is crucial to adapt content to people's actual work; it is not enough to explain what AI is, but how it applies to individual tasks, and to offer short courses considering the high workloads in both sectors," says the CENIA expert.

Based on these findings, personalized training pathways were developed through a three-phase process: First, a documentary analysis was conducted to build a robust conceptual framework using sources such as The Organisation for Economic Co-operation and Development (OECD), The Economic Commission for Latin America and the Caribbean (ECLAC), the International Telecommunication Union (ITU), McKinsey, and Deloitte, among others. From this, ten key dimensions for the adoption of generative AI were identified, ranging from data governance and process automation to citizen participation and cybersecurity. Using this information, the technical team developed AI GEN skill packages to be included in the training courses for each sector: for example, for the public sector, topics included the strategic use of prompts, open data, and digital ethics; while for MSMEs, the focus was on innovation, customer experience, and integrating AI into production processes.

Finally, these skill packages were validated through technical working groups and interviews with representatives from the public sector, unions, and businesses, allowing adjustments to the proposed content, its language, and complexity level. Training paths were differentiated for operational and strategic profiles, including introductory modules to reduce cultural barriers to generative AI. As a result, the skill architecture was reorganized into five major axes per sector, and a training offer based on micro-credentials was proposed, designed for immediate application in daily work.

The result: an e-learning course catalog that combines video capsules, interactive resources, and a recommendation system that adapts training to each user's profile. The model not only addresses the needs of workers in Chile but can also be replicated in other countries in the region. This is a transferable, evidence-based strategy aimed at boosting productivity and public value through the responsible and contextualized use of artificial intelligence.

With the courses already prepared, the Hazlo con IA team began fieldwork to demonstrate the potential of the proposal to unions and organizations such as The Workers' United Center of Chile (CUT), the National Association of Public Employees (ANEF), and the Red de Almacenes, through workshops where workers and representatives from SMEs directly experimented with generative AI tools, learning to generate text, automate tasks, and improve their job performance. *"Fear of AI often comes from lack of knowledge. But when workers participate in our talks or workshops, their perception changes. Interest is generated, and a sense of empowerment arises when they see that this technology can be an ally, not a threat,"* adds CENIA's Head of Training and Upskilling.

The initiative was also presented to the business sector. In Concepción, they met with more than 60 representatives of companies from the Biobío region. *"The interest is significant. Although at this stage Hazlo con IA is not focused on large companies, many are involving their networks of SME suppliers, thereby capturing important value for their production cycles,"* says Natalia Lidijover. The CENIA expert adds: *"In large companies, it is difficult to capture the value of AI if suppliers, the SMEs, are not included, and this helps close that gap."*

CUSTOMIZED TRAINING

The courses for SMEs were launched on August 12, while those for the public sector are currently in production. The latter are being developed in collaboration with GobLab UAI, the public innovation laboratory of Adolfo Ibáñez University. Both programs are offered in an asynchronous e-learning format, allowing participants to progress at their own pace and from anywhere in the country.

"We have invited more than 30 institutions to join. In August, we officially launched the platform along with a communications campaign. The idea is to keep it open for one year and train 70,000 people between August this year and June next year," says the Head of Training and Upskilling at CENIA.

How will it work? At the outset, participants must complete a self-assessment that generates a personalized training plan according to their knowledge and work needs. *"Each person will be able to identify which skills they want to develop with AI and, based on that, they will be assigned a program of between 7 and 10 hours, divided into modules. There will be specific learning paths for SMEs and for the public sector,"* explains the CENIA expert.

For this customized training, the team is using the methodology and technology platform of the Relink Project, a public-private initiative launched in 2021 by OTIC SOFOFA in collaboration with SENCE, the Inter-American Development Bank (IDB), and other partners. The platform has now been adapted and made available for this initiative.

In total, 22 courses will be available. Some modules will be mandatory, while others will depend on the participant's assigned profile. *"Three modules will be common: prompting (knowing how to give precise instructions to a generative AI), security, and digital literacy, followed by content specific to the area,"* explains Natalia Lidijover.

For SMEs, the content will cover AI fundamentals, digitalization, marketing, and business modernization. In the public sector, it will focus on transformation and innovation, ethical use, and practical applications.

Upon completion of the program, participants will have free access to all available courses within their area of interest. Furthermore, all content (videos, guides, and modules) will be made openly available so that other institutions can reuse and adapt them to their own needs, adds Morales.

MINIMUM VIABLE PRODUCTS AND RESEARCH

As the final stage of the process, Hazlo con IA will not only provide training but also conduct research to assess the real impact of its implementation. The program evaluates how the courses influence participants' perceptions of artificial intelligence, as well as their motivation, performance, and effective adoption of these technologies in the workplace. *"We will collect data through pre- and post-training surveys, follow-up interviews, and qualitative analysis,"* explains Víctor Morales. This feedback will allow continuous refinement of both content and methodologies, ensuring that the training produces a tangible impact on participants' professional development.

In parallel with the training process, the program is also developing six Minimum Viable Products (MVPs), initial versions of AI-based solutions designed to address specific organizational challenges. These solutions are quickly tested with real users before being scaled into more sophisticated versions. One of the first prototypes was implemented in collaboration with the Chilean Economic Development Agency (CORFO) to streamline the eligibility assessment of competitive funding projects, a process that can involve over a thousand applications per call, all subject to tight deadlines for manual review and currently reliant entirely on staff.

The pilot began with the identification of fifteen critical points in collaboration with CORFO's technical teams, prioritizing three key functionalities: semantic comparison of projects (to detect duplicates), validation of consistency between summaries and proposed activities, and automatic extraction of data from PDF documents.

The results are already becoming significant. *"In the Inicia Mujeres call, for example, a functionality was applied that automatically reviewed the consistency of 295 projects, detecting inconsistencies within minutes. In Escalamiento 2025, 120 new applications were compared against a historical database of 4,000 in just a few hours, thanks to automated duplicate analysis. Review times that previously took days have now been reduced to hours,"* says Ricardo Rubio, Project Manager at CORFO.

The role of project officers has also evolved: they now analyze AI-preprocessed results, improving efficiency and allowing them to dedicate more time to complex cases or citizen inquiries. According to Rubio, this type of tool has strong scalability potential. *"The project eligibility stage is common across many divisions within CORFO, and this system can easily be adapted to other contexts. We even see potential for it to be used by other public agencies that evaluate projects. It's a tool that enhances efficiency, quality, and decision-making, while promoting the responsible use of emerging technologies,"* he adds.

LOOKING TO THE FUTURE

These kinds of experiences show that artificial intelligence not only helps optimize processes but also transforms roles, work practices, and the way this technology is perceived. However, its impact does not rely solely on technical development; it requires prepared people, shared strategies, and a genuine willingness to change.*"We are undergoing a very profound transformation in many areas. The ways that used to work are no longer enough. We need to develop adaptive capabilities. In the field of AI adoption, the challenges are enormous, and they cannot be solved from scratch or in isolation. It requires smart public policies that build on existing skills and help people identify gaps and move forward,"* says Natalia Lidijover, Executive Director of SOFOFA's Human Capital Future of Work.

The goal is ambitious: to train 68,000 workers in just two years through online courses. *"This is an enormous challenge but, above all, an unprecedented public–private contribution to the adoption of technological tools that can make a real difference in people's development, companies' productivity, and the country's overall growth,"* adds Lidijover.

But beyond training, what drives this initiative is a clear vision. *"If we could enable every worker in the country to accelerate their tasks using generative AI, the study that inspired this initiative indicates that the economic value of the accelerated activities could potentially represent around 12 percentage points of GDP. That is the scale of the opportunity before us. This is why Hazlo con IA is a true national strategic commitment to building adaptive capabilities and successfully addressing the challenges of the future of work,"* explains the executive.

From the technical and academic perspective, CENIA highlights Chile's competitive advantages: advanced human capital, solid connectivity, and growing digitalization across both the public and private sectors. *"The question is how we can transform those strengths into real opportunities. Generative AI opens that door, but we want it to become a concrete tool to improve the quality and efficiency of work for thousands of people,"* says Víctor Morales. He concludes: *"We are not training people just for the sake of training, we aim to demonstrate that if people learn to interact effectively with this technology, the country can take a significant leap in productivity and development."*

REPORT

Generative AI: A new engine for labor productivity in Chile

In 2024, Chile took an unprecedented step by publishing the first national study measuring the impact of generative artificial intelligence (GenAI) on the formal labor market, focusing on the 100 most common occupations, which together represent 62% of the country's workforce.

Led by CENIA and SOFOFA's Human Capital Future of Work, in collaboration with public and academic institutions, the report concludes that half of all jobs could see productivity gains through GenAI, with the potential economic value of this opportunity estimated at nearly 12% of GDP. The study also highlights inequalities in access to these benefits, proposes actions toward an inclusive technological transition, and marks the beginning of an urgent national conversation about Chile's labor future, offering lessons that could extend across the entire region.

INTRODUCTION

Generative artificial intelligence (GenAI) has made a powerful entrance into our daily lives. Unlike previous waves of technology, which primarily focused on manual tasks, GenAI, –present in widely used tools such as ChatGPT, DALL·E, Gemini, and Copilot– primarily affects cognitive, administrative, and communicative tasks, marking a turning point in the labor market with visible effects across multiple productive sectors.

Understanding how this technology is changing the daily tasks of millions of workers is key to designing policies, strategies, and training programs that allow societies to harness the opportunities of the AI revolution.

With this goal in mind, in 2024, Chilean National Center for Artificial Intelligence (CENIA), together with SOFOFA's Human Capital, the National Training and Employment Service (SENCE), the Ministry of Labor, and academics from Stanford University, published the study "Generative Artificial Intelligence: Opportunities for the Future of Work. A Study on Chile", providing the first detailed snapshot of the impact of this technology on the Chilean labor market.

Through an innovative methodology –combining artificial intelligence, local socioeconomic data, and the analysis of over 200,000 tasks– the report examines the 100 most common jobs in the country, which account for 62% of the workforce.

This methodology allows the study to identify the activities within each occupation that could be performed faster and more efficiently thanks to this technology, the overall effect on each job, and the potential economic and social benefits of its responsible adoption. At the same time, it highlights differences by occupation, gender, and income level, and warns of gaps that could arise if timely measures are not taken.

Based on this evidence, the study opens an informed conversation about the future of work in Chile, offering relevant and urgent insights and questions for the nation, which can also guide other countries in the region facing similar challenges.

METHODOLOGY: TASKS, RATHER THAN JOBS

Unlike other studies that analyze occupations as a whole, this research focused on the specific tasks that comprise them. Each job was broken down into concrete activities, and the study estimated how much faster these tasks could be performed, maintaining the same or improved quality, through the use of generative AI.

This approach draws on previous international research, particularly the work of Eloundou et al. (2024), adapted to the Chilean context by a team of researchers including Gabriel Weintraub, Professor at the Stanford Graduate School of Business; Juan Eduardo Carmach, Director of Development at SOFOFA's Human Capital; Rodrigo Durán, Manager at the Chilean National Center for Artificial Intelligence (CENIA); Víctor Morales, Head of Training and Upskilling at CENIA; Pedro Hepp, Consultant at Futuro del Trabajo SOFOFA's Human Capital; and Sofía Valenzuela, Consultant at SOFOFA's Human Capital Future of Work, with support from SENCE and the Ministries of Labor and Social Welfare, Economy, and Science, Technology, Knowledge, and Innovation.

The methodology used is divided into four steps:

01 _ SELECTION OF RELEVANT OCCUPATIONS

The 100 most common occupations in Chile's formal employment were identified using updated data from the 2022 National Socioeconomic Characterization Survey (CASEN), the country's most comprehensive official database on living and working conditions. These occupations, grouped according to the CIUO classification (Chilean Occupation Classifier), represent 62% of the formal workforce, approximately six million workers.

02 _ BREAKDOWN OF OCCUPATIONS INTO SPECIFIC TASKS

The U.S.-based platform Workhelix, co-founded by Erick Brynjolfsson (Stanford) and Daniel Rock (Wharton), was used to break down each job into more than 200,000 specific tasks and calculate how much they could be accelerated with AI without losing quality.

Since Workhelix is primarily based on U.S. labor market data, a process was carried out to adapt it to the Chilean context using an AI technique called embeddings, which allows for comparing and matching occupations between the two countries. These equivalences were reviewed by experts to ensure they accurately reflected actual tasks in Chile. For example, the position "Accountants" was matched with "financial accountants." Jobs without a clear equivalence, such as street vendors, were excluded from the analysis.

03 _ EVALUATE THE IMPACT OF GENERATIVE AI ON HOMEWORK

The next step was to identify which tasks generative AI can meaningfully accelerate, helping workers perform them faster without losing quality, referred to as "accelerability."

To measure this, the Workhelix platform assigns each task a score between 0 and 1 (equivalent to a percentage between 0% and 100%):

→ A score close to 0 means AI cannot contribute meaningfully to that task.
→ A score close to 1 indicates that AI can be highly effective in accelerating the task.

Based on these scores, tasks were classified into three groups:

E0 **Non-accelerating**
Tasks where AI is not useful (score close to 0).

E1 **Directly accelerable**
tasks where AI is very useful (score close to 1).

E2 **Accelerable with conditions**
Tasks where AI could help, but additional support such as training or new tools is needed (score close to 0.5).

In this study, all tasks with a score equal to or greater than 0.5 are considered accelerable. That is, tasks that could be performed in half the time or less thanks to generative AI.

04 _ IMPACT ON EMPLOYMENT

After estimating how much generative AI can help with each task, the next step was to calculate its impact on an entire job. For this, the Acceleration Opportunity Index was applied.

This index shows the percentage of weekly work that could be accelerated with AI. It is calculated by combining two factors: how "accelerable" each task is and how much time it occupies within a 40-hour workweek.

The logic is simple: if a task can be highly accelerated by AI and also takes up a significant portion of the week, it will have a greater weight in the final result. To obtain the index, the acceleration level of each task is multiplied by the time it takes to complete it, and then all these values are summed. The result is a number between 0 and 1, which can be interpreted as the percentage (0–100%) of total tasks that could be accelerated with AI in that job. The higher the number, the greater the potential for generative AI to speed up that job.

EXAMPLE:
A data analyst divides their week as follows:

50%
Time spent cleaning databases (accelerability 0.8).

30%
Generating reports (accelerability 0.9).

20%
Reviewing Data (accelerability 0.5).

THE CALCULATION WOULD BE:

$$(0{,}8 \times 0{,}5) + (0{,}9 \times 0{,}3) + (0{,}5 \times 0{,}2) = 0{,}77$$

This means that approximately 77% of the tasks in that job could be accelerated with generative AI.

This index was applied to the 100 most common occupations in Chile, which represent 62% of the formal workforce. It allows for comparisons between jobs, identification of differences across sectors, and projections of the potential transformative impact that generative AI could have in different work areas.

ESTIMATED ECONOMIC IMPACT

Finally, this acceleration opportunity for each job can be translated into a monetary value. To calculate it, the average salary for each occupation, according to the CASEN 2022 survey, was multiplied by the Acceleration Opportunity Index. This produces the Acceleration Opportunity Value, a yearly amount in Chilean pesos that represents how much work time could potentially be saved thanks to AI, expressed in monetary terms.

It is important to clarify that this does not represent direct savings, but rather a way to assign a monetary value to the time freed up for other tasks due to technology.

By multiplying this value by the number of people employed in that occupation, the total acceleration potential for the entire occupation in the country can be obtained. This allowed the study to identify, on one hand, the occupations that concentrate the highest economic acceleration value, and on the other hand, the overall economic impact on the national GDP, which helps prioritize potential AI literacy initiatives. In addition to numerical analysis, surveys with workers and in-depth interviews with employers in key sectors for Chile, such as commerce, construction, manufacturing, mining, and administrative services, were conducted. This field validation enabled the study to cross-reference hard data with real-world experiences, enriching the analysis and confirming that the results have practical relevance.

RESULTS: MASSIVE IMPACT

The study's findings are clear: generative artificial intelligence has the potential to profoundly transform work in Chile. Approximately 4.7 million people, 50% of the workforce, could increase their productivity by accelerating at least 30% of their tasks using these tools.

On average, a job in Chile has 48% of its tasks with acceleration potential. However, the effects are not uniform across occupations: the study classified jobs into three main groups according to their level of exposure to generative AI.

01 _ HIGH EXPOSURE (MORE THAN 60% OF TASKS CAN BE ACCELERATED)

More than 1.2 million people work in occupations with high acceleration potential, particularly in administrative, educational, and technological areas. In these cases, AI can accelerate up to 87% of tasks, freeing between 15 and 36 hours per week. This group includes systems analysts (80%), software developers (87%), public policy specialists (84%), lawyers, and secondary school teachers (75%), among others.

02 _ MEDIUM EXPOSURE (30% TO 60% OF TASKS THAT CAN BE ACCELERATED)

This group includes 50 occupations, ranging from psychologists and physiotherapists to salespeople, waiters, classroom assistants, inspectors, and security guards. It encompasses more than 3.5 million workers, for whom AI can particularly facilitate administrative and management processes without replacing human interaction.

03 _ LOW EXPOSURE (LES TAN 30%)

It comprises about 1.2 million people across 19 occupations of a manual or physical nature, such as gardeners, construction workers, electricians, domestic workers, and bus and truck drivers. These tasks require direct interaction with the physical environment, so acceleration with AI remains limited. On average, only 20% of their tasks could be accelerated.

TERRITORY AND GAPS

Most technological opportunities are concentrated in the Metropolitan Region, but remote regions are also showing progress. For example, in the country's north, the demand for AI skills rose from 1.1% in 2017 to 3.6% in 2024, approaching levels seen in the Metropolitan Region. However, gaps persist: jobs with the highest AI acceleration potential are also the best paid (CLP 1.67 million vs. CLP 692 thousand in low-potential jobs).

In female-dominated occupations, a higher percentage of tasks could be accelerated with AI (39% of tasks vs. 31% in male-dominated jobs), indicating that AI could free up time for many women in their daily work. At the same time, these jobs are among the lowest paid, showing that without technological and wage equity policies, AI could deepen regional, economic, and gender inequalities.

ECONOMIC IMPACT

The study estimates that the economic value of the time that could be saved with generative AI in the analyzed jobs amounts to 12% of Chile's Gross Domestic Product (GDP). Although the actual impact will depend on how this time is utilized, this represents a detailed quantification that, for the first time in Chile, identifies which jobs, tasks, and sectors have the greatest opportunities to apply this technology. Among the occupations with the highest economic acceleration value are accountants, lawyers, technical engineers, merchants, warehouse operators, and primary school teachers, comprising approximately 700,000 workers and concentrating an estimated value of USD 7.1 billion per year. This value does not represent direct savings but rather an estimate of the time that could be gained thanks to generative AI, expressed in monetary terms.

SECTORS WITH THE GREATEST OPPORTUNITY FOR ACCELERATION WITH GENIA: EDUCATION, PUBLIC SERVICES, AND SMALL AND MEDIUM- SIZED ENTERPRISES

The report highlights three sectors in which generative AI could have a particularly transformative impact, analyzed as case studies.

01 _ EDUCATION

Secondary school teachers show an average task acceleration of 75%, particularly in administrative duties. This could reduce 15 to 36 hours per week of bureaucratic work, helping to alleviate teacher workload and partially mitigate the 19% teacher shortage in the country.

02 _ PUBLIC SERVICES

Some of the jobs with the highest potential for acceleration through generative AI are concentrated in the public sector. These include public policy specialists, management advisors, lawyers, social workers, and administrative assistants, with acceleration opportunities ranging from 52% to 84%. Together, these five occupations represent over 84,000 public sector workers, and their Acceleration Opportunity Value reaches $1.1 billion annually

03 _ SMES (SMALL AND MEDIUM-SIZED ENTERPRISES)

Although many small and medium-sized enterprises (SMEs) have not yet adopted AI, they account for 65% of the workforce in Chile. Jobs with high potential for acceleration through generative AI (above 0.6) include lawyers (0.72), salespeople (0.7), secretaries (0.7), accounting technicians (0.68), real estate agents (0.63), among others. On average, 44% of the tasks of SME workers could be accelerated with AI. This highlights a significant potential for AI to transform and strengthen the SME sector, increasing its competitiveness if workers receive proper training and access to appropriate technologies.

REFLECTIONS, PROPOSALS, AND CONCLUSIONS

Generative artificial intelligence is rapidly transforming the world of work. A pioneering study conducted in Chile shows that this technology could accelerate tasks in more than 50% of national jobs, improving productivity without compromising quality. However, the benefits are not distributed equally. Jobs with the highest potential for acceleration tend to be better paid and require more education, while vulnerable sectors, such as manual, informal, or female-dominated occupations, face greater barriers.

In other words, generative AI can be a powerful tool to increase productivity, but its impact will depend on public policies, workforce training, and technology integration that is people-centered.

For this reason, the study raises key questions for the future of work in Chile and the region: How will AI change career paths? What training will be necessary? Who will lead

the acquisition of new skills? How can we ensure that benefits are equitable? And what role will the government, academia, and private sector play?

The study's authors suggest starting with jobs that have the highest potential for acceleration to generate visible short-term impacts and then moving toward more complex functions. Key sectors for this transition include public employment, education, and small and medium-sized enterprises (SMEs).

In this context, since January 2025, the "AI at the Service of People" table has been active, a platform that brings together public, private, and academic actors. In partnership with Google.org, the philanthropic arm of Google, which committed $750,000, this initiative will first aim to train 68,000 public sector and SME workers through the "Hazlo con IA" program. These actions demonstrate that the study not only provides a pioneering and detailed diagnosis but also serves as a starting point to design concrete policies that leverage the strategic opportunities of generative AI in the world of work. The initiative promotes an inclusive and sustainable technological transition in Chile, offering valuable lessons for other Latin American countries facing similar challenges and seeking to anticipate changes with evidence and coordinated action.

REPORT

Concentration of AI talent in the workforce

The development of talent in Artificial Intelligence is a fundamental pillar for growth and innovation across an increasing number of productive sectors. Professionals with AI skills are redefining business requirements and reshaping the structure of the labor market globally. Without the right human talent, it is impossible to operate effectively, create value, or develop innovative solutions in this technological revolution, limiting the potential of both the public and private sectors.

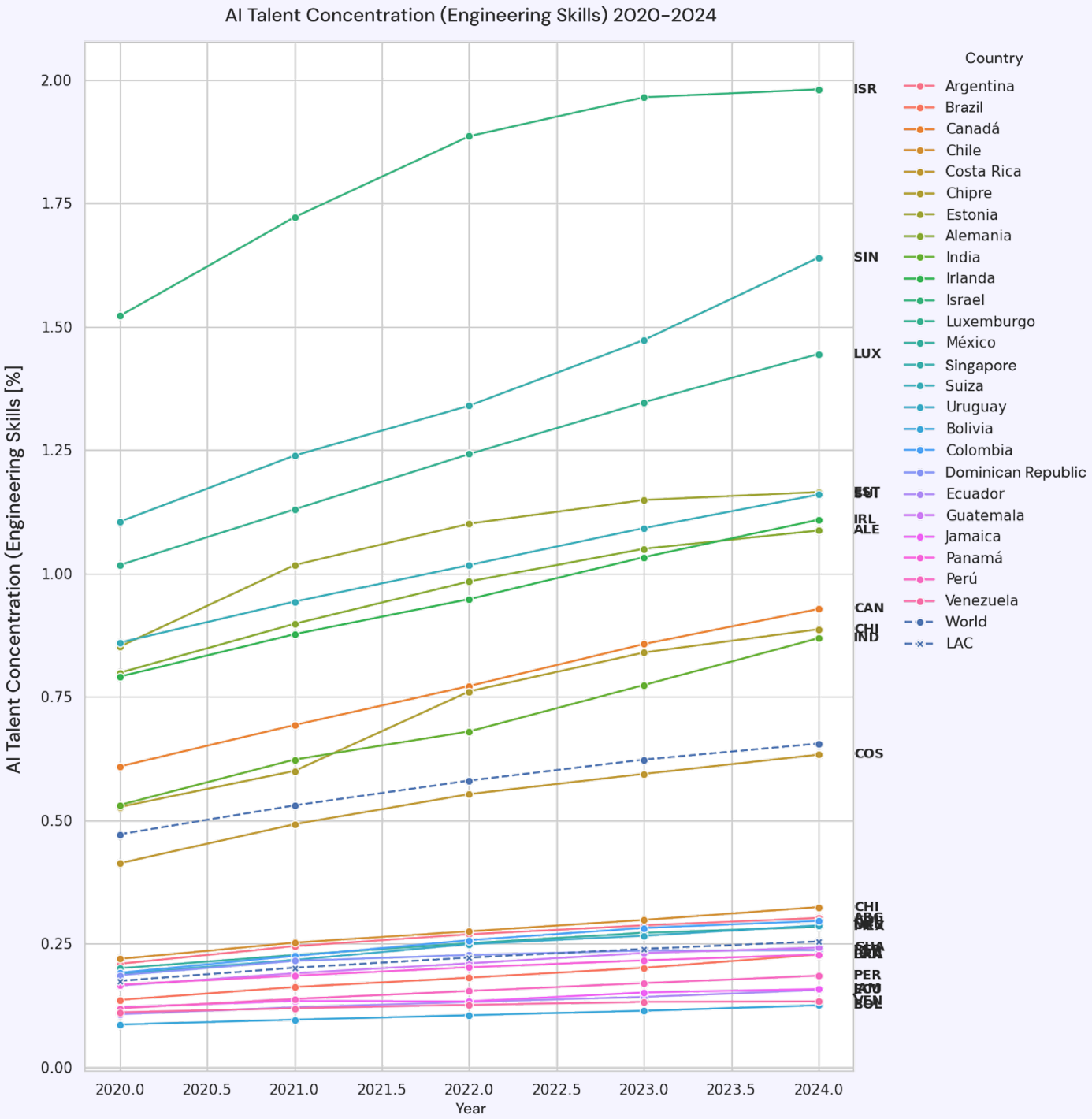
This report analyzes the concentration of AI talent in the workforce using LinkedIn profile data. Among the data examined are Engineering Skills, which cover specialized roles such as engineers and data scientists, and Literacy Skills, which include professionals from various fields who use AI tools in their daily tasks. The following analysis highlights not only Latin America's lag in the adoption of these skills compared to global leaders but also the significant differences that exist across industries and between genders.

01 _ GAP IN ENGINEERING AND AI LITERACY SKILLS

The analysis of AI engineering talent concentration in Latin America between 2016 and 2024 reveals both a development gap compared to global leaders and a steady growth trend over time. According to Figure 1, Costa Rica leads the region, showing rapid and sustained progress and positioning itself well above other countries. It is followed by Chile, which stands out among the rest of the region but exhibits slower growth and an increasing gap relative to Costa Rica.

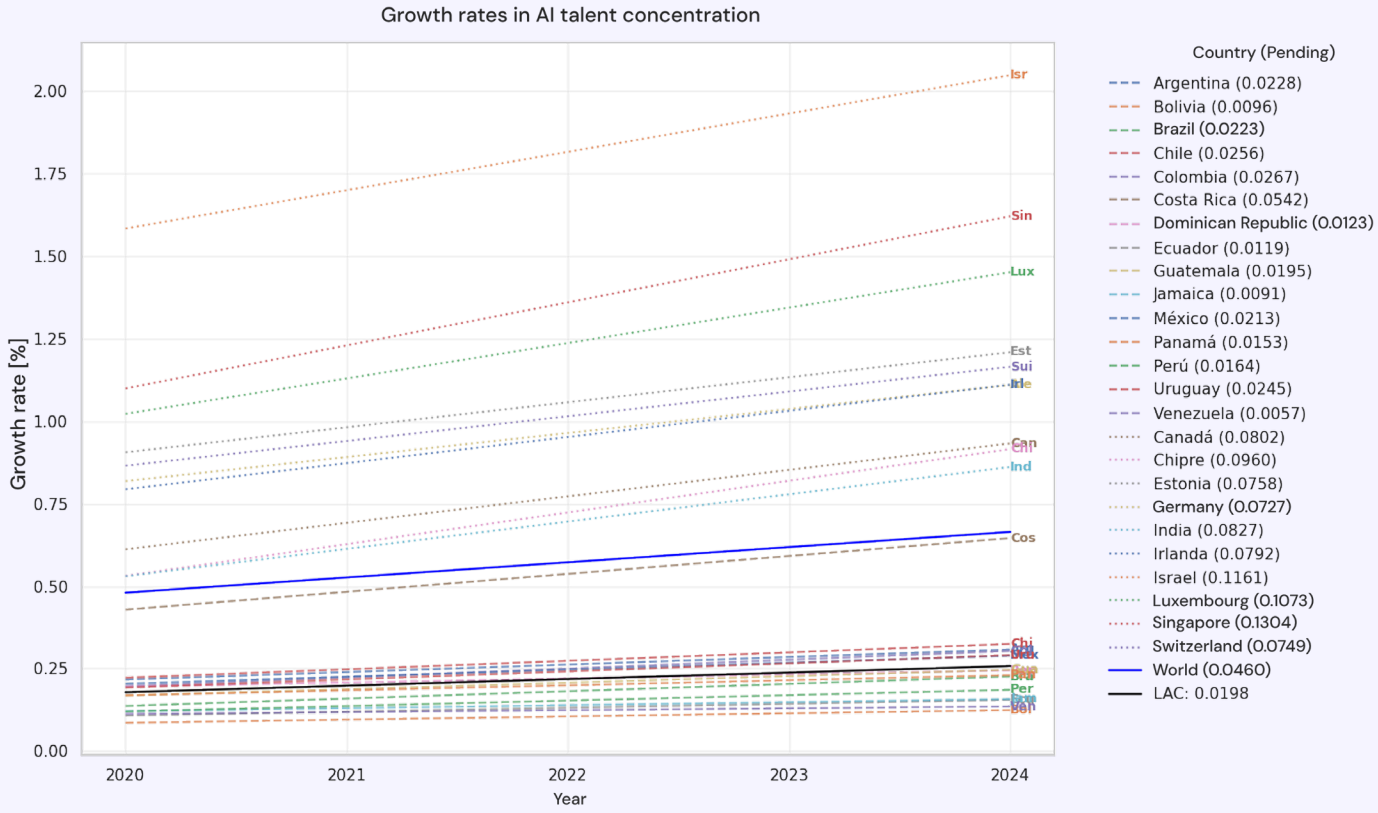
In a global context, however, Latin America continues to lag behind the most advanced AI nations. As shown in Figure 1, countries such as Israel, Singapore, and Luxembourg have concentrations of AI engineering talent several times higher than the top-performing countries in Latin America. This comparison underscores the region's ongoing challenge to compete internationally and highlights the urgent need for policies that accelerate the development of specialized AI talent.

FIGURE 1: CONCENTRATION OF ENGINEERING SKILLS INCLUDING LEADING COUNTRIES



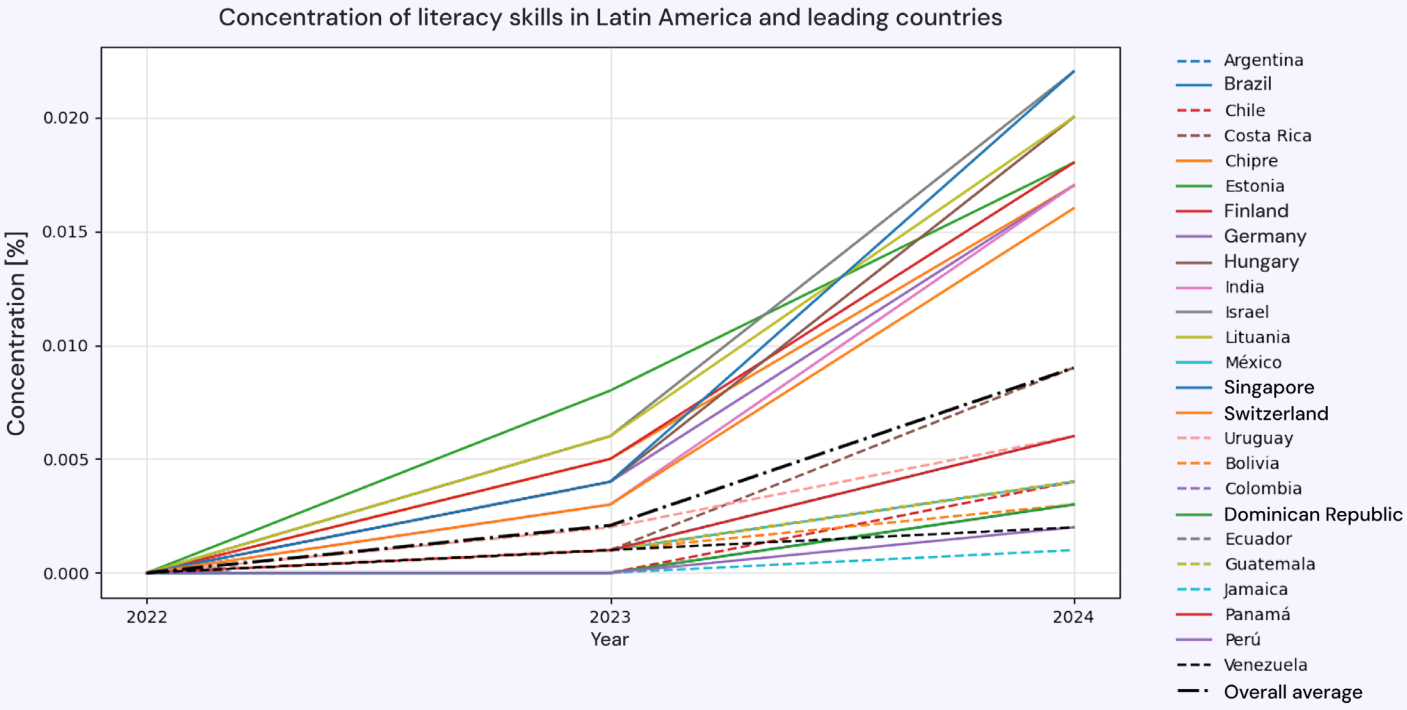
Beyond the current levels of concentration, the growth rates of AI talent suggest that the gap between Latin America and global leaders is continuing to widen. The linear regression analysis shown in FIGURE 2 indicates that the average global growth rate of AI talent (World = 0.00046) is more than twice that of Latin America (Latam = 0.000198). Only Costa Rica stands out with a higher growth rate (0.000542), which could enable it to reach the global average in the coming years. In contrast, countries such as Singapore (0.0013) and Israel (0.00116) not only lead in talent concentration but are also expanding their talent base at a much faster pace than any Latin American country.

FIGURE 2: GROWTH RATES IN TALENT CONCENTRATION INCLUDING LEADING COUNTRIES



Analyzing AI Literacy skills in FIGURE 3, which correspond to the use of generative AI tools and other general-purpose applications, there is exponential growth in skill adoption from 2023 onward across all countries in the region. This surge, driven by the popularization of tools such as ChatGPT, Gemini, and Claude, has democratized access to AI. At the regional level, Costa Rica and Uruguay lead this trend, while globally, countries like Singapore and Israel continue to maintain a significant advantage.

FIGURE 3: CONCENTRATION OF LITERACY SKILLS IN LATIN AMERICA AND LEADING COUNTRIES

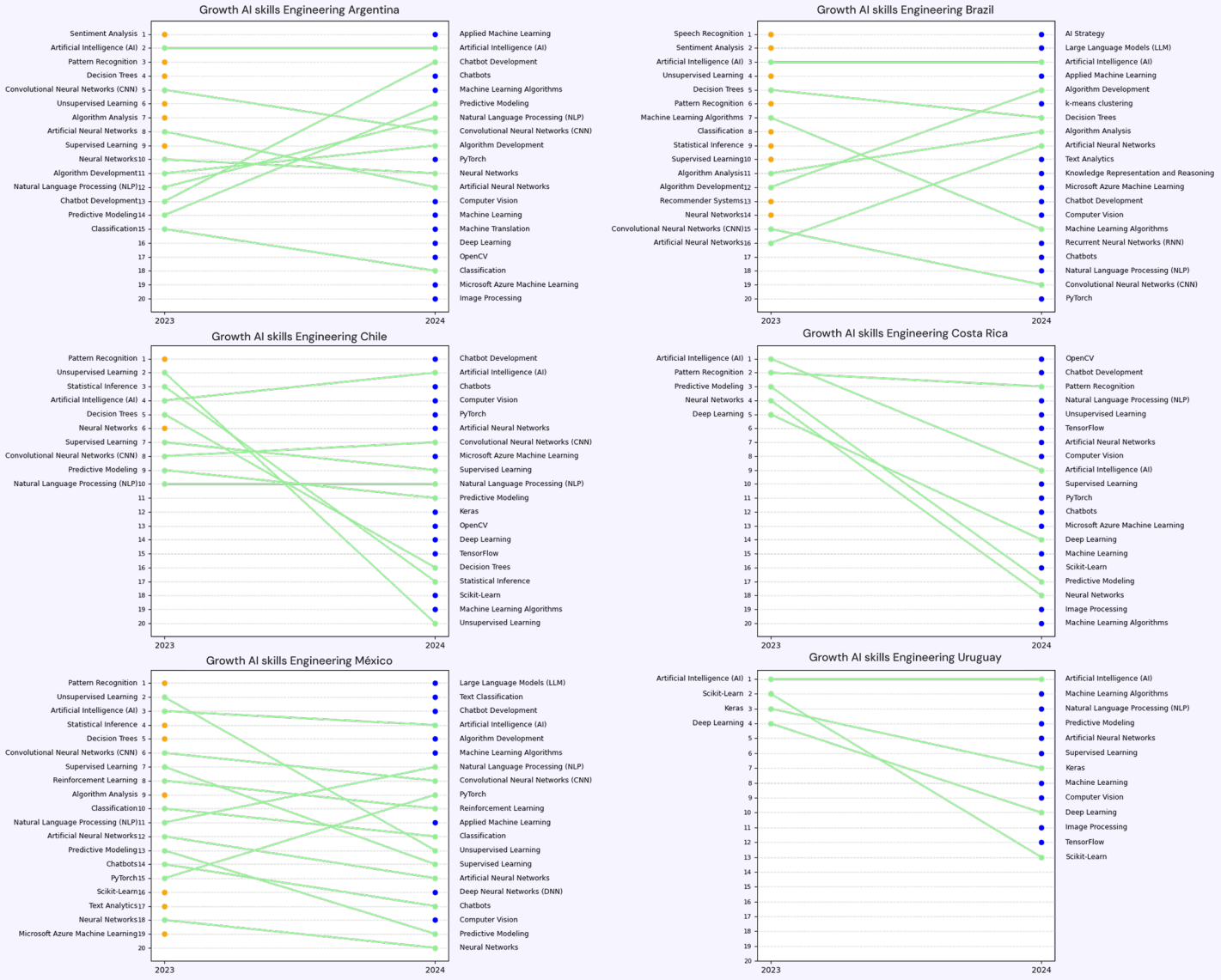


Observing how skills evolve over time reveals an extremely dynamic landscape. The analysis of key skills and their changes between 2023 and 2024 highlights constant transformation and the need for individuals to continuously adapt. Globally, FIGURE 4 illustrates this global dynamism: among the top 10 AI engineering skills in 2023, only two remained within the top 20 in 2024, and in less prominent positions.

Although a degree of dynamism is also observed across countries in the region, FIGURE 5 shows that it is considerably lower compared to the global trend. In contrast, Latin American and Caribbean countries display greater persistence in skill composition from one year to the next. Some generic skills, such as “Artificial Intelligence”, not only remain among the top-ranked but even increase in relevance in 2024 compared to 2023.

FIGURE 4: COMPARISON OF GLOBAL AI ENGINEERING AND LITERACY SKILLS BETWEEN 2023 AND 2024.

FIGURE 5: COMPARISON OF ENGINEERING AND AI LITERACY SKILLS IN LATIN AMERICA BETWEEN 2023 AND 2024



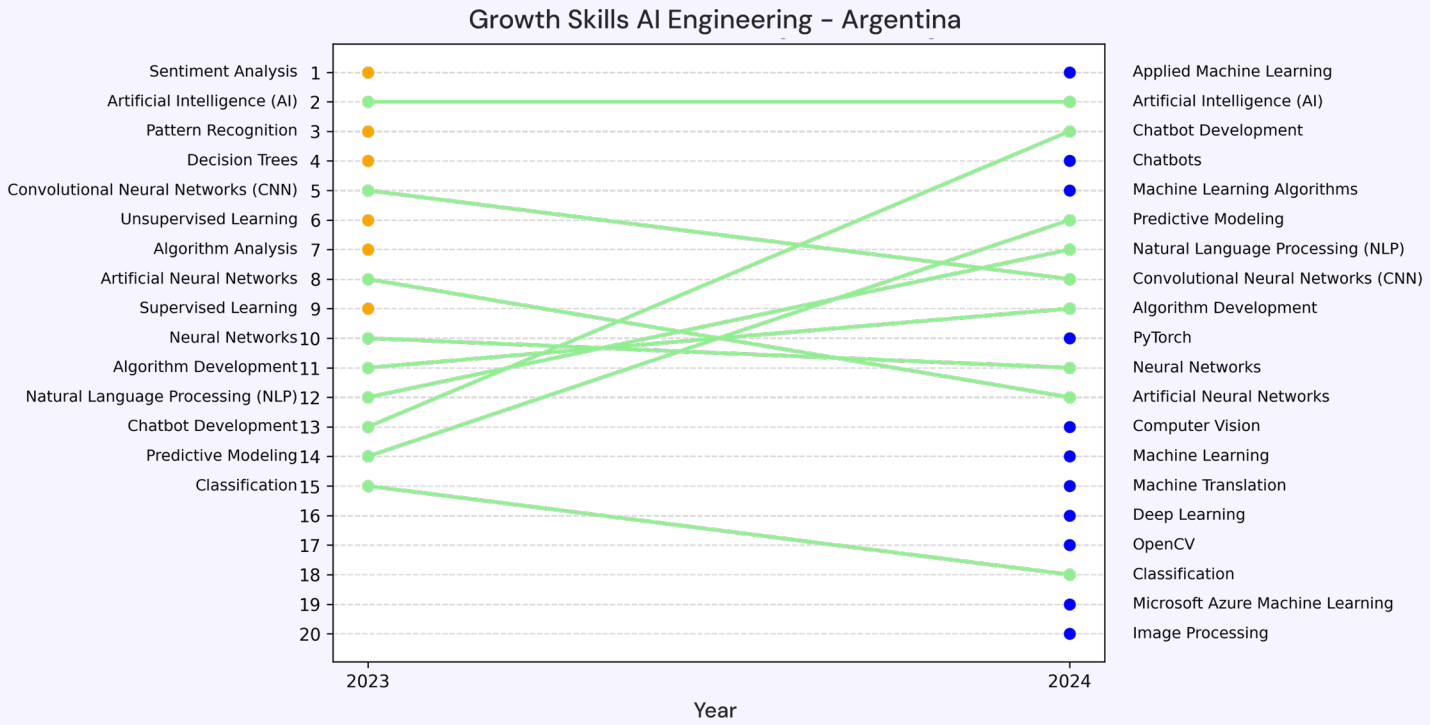
In AI engineering skills, there is a clear shift from general concepts such as “Generative AI” toward more applied tools and platforms like “Custom GPTs,” “AI Agents,” “Azure AI Studio,” and “Amazon Bedrock.” This trend reflects a growing demand for professionals capable of implementing AI solutions in real-world, productive environments. Notably, two skills remain consistent between 2023 and 2024: “LLMs,” underscoring their continued relevance since the popularization of ChatGPT, and “Responsible AI,” which highlights the ongoing concern for the ethical implications of AI adoption and use.

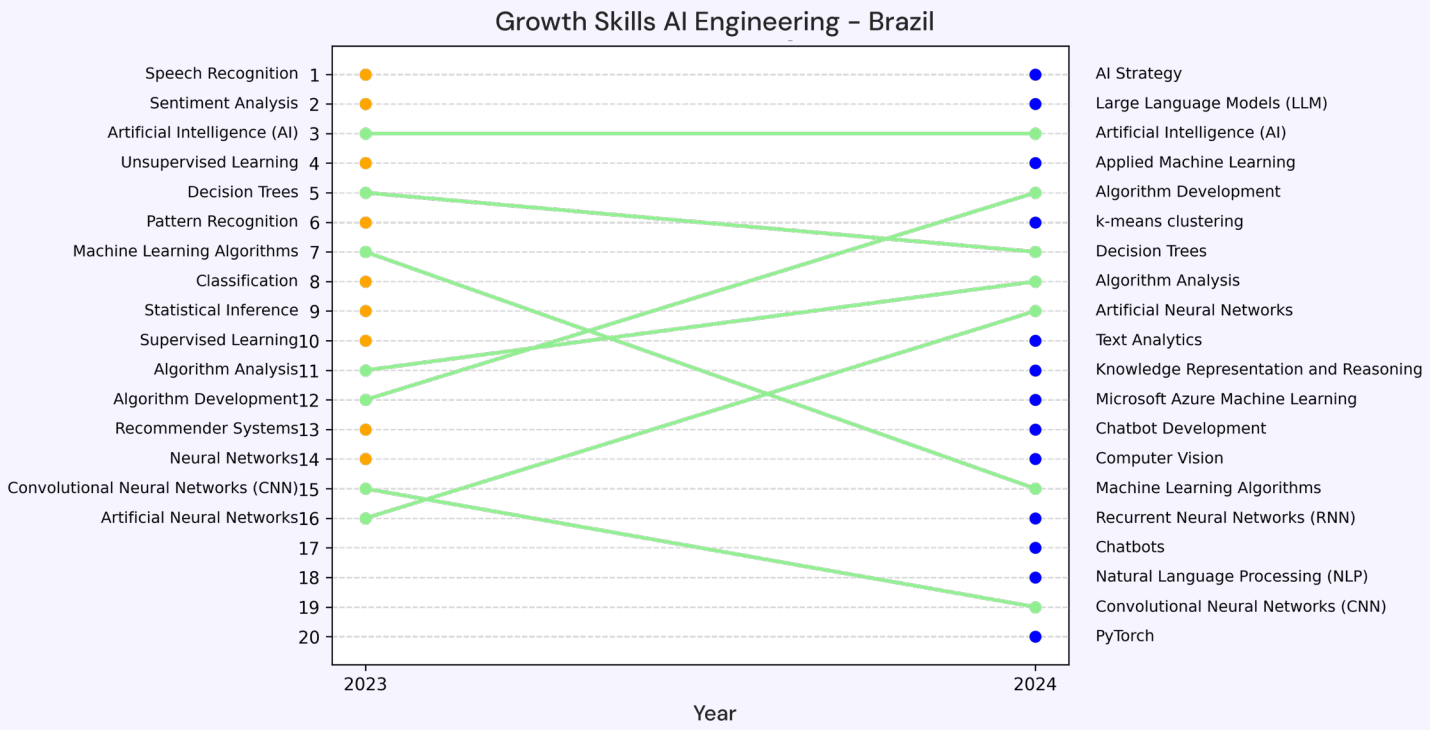
Regarding AI literacy skills, there is increasing diversification across tools and models. The only tool to become obsolete is Google Bard, which has been replaced by Google Gemini.

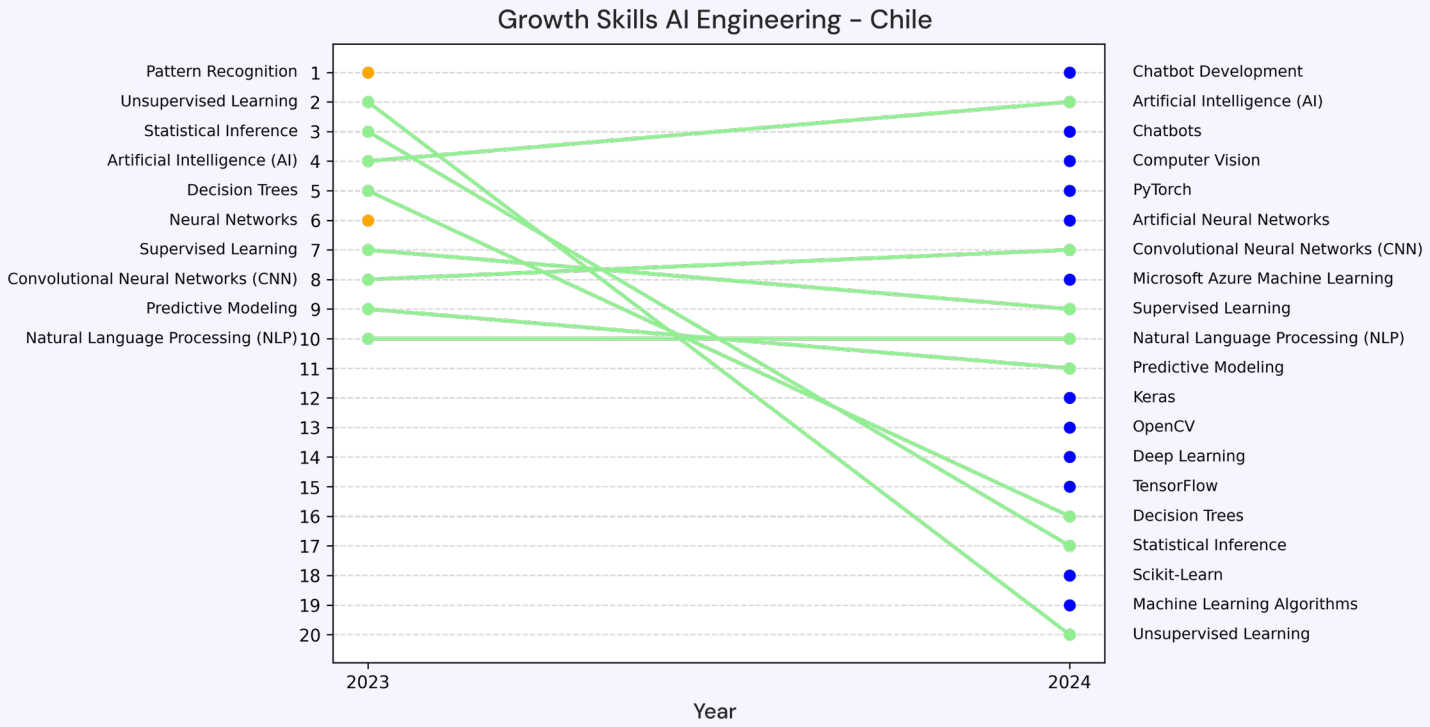
As a result, early-generation tools now coexist and compete within a broader, more mature ecosystem.

An analysis of the evolution of engineering skills in selected countries of the region between 2023 and 2024 reveals a more gradual trend toward specialization and the adoption of applied tools. While foundational skills such as “AI” and “Machine Learning” remain stable, new competencies have emerged that signal the growing maturity of local AI ecosystems. For instance, in Brazil, “AI Strategy” and “Large Language Models (LLMs)” have gained prominence; in Argentina, “Applied Machine Learning” and “Chatbot Development” have increased in importance; and in Chile, specific frameworks such as “PyTorch,” “TensorFlow,” and “Keras” have emerged. This shift from theoretical to practical skills represents a key indicator of local talent development (FIGURE 6).

FIGURE 6: COMPARISON OF ENGINEERING SKILLS BETWEEN 2023 AND 2024 FOR ARGENTINA, BRAZIL, AND CHILE



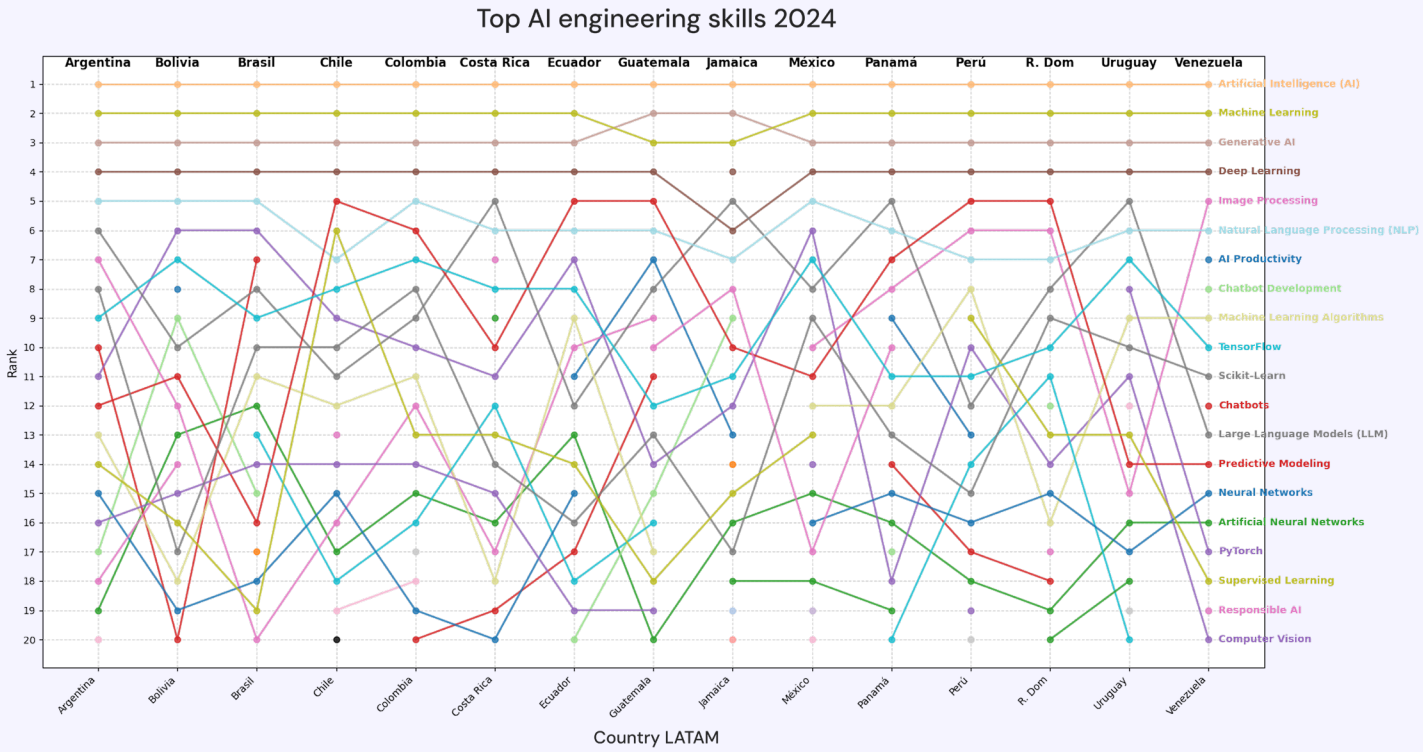




Despite these specific cases, the overall trend in Latin America and the Caribbean points to stability in the skills exhibited by LinkedIn users. In both engineering and literacy skills, there is a core set that remains consistent across countries, with only a smaller subset of skills that vary in relevance or emerge as new. This lower dynamism is reflected in the persistence of skills such as “Artificial Intelligence,” “Decision Trees,” and “Algorithm Development,” among others.

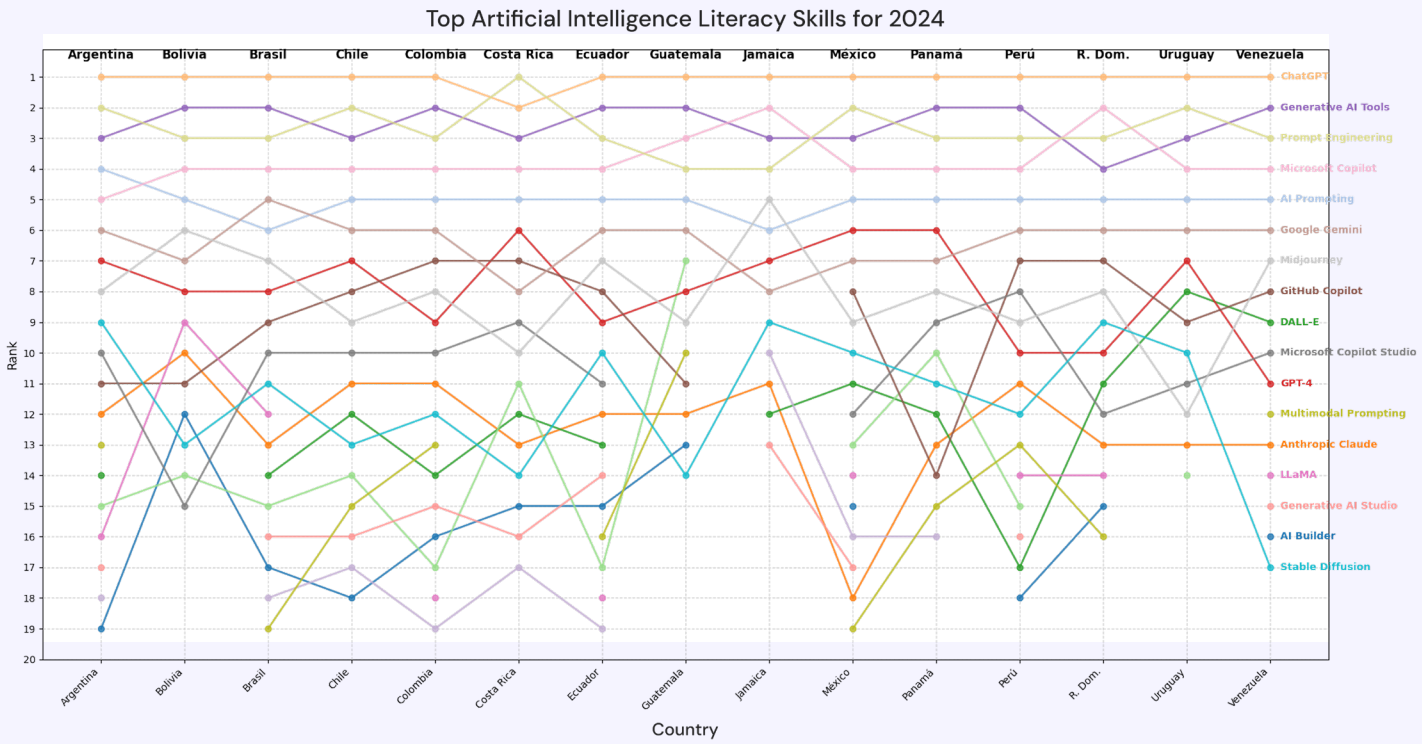
A group of general skills dominates across all countries in the region. In particular, “Artificial Intelligence,” “Machine Learning,” “Generative AI,” “Deep Learning,” and “Natural Language Processing (NLP)” consistently rank among the top for most countries. FIGURE 7 visually illustrates how these skills concentrate the majority of AI talent in the region. The consistency of these skills at the top suggests the development of a strong technical foundation in general AI competencies. Compared with leading countries, however, the region remains focused on broader, less specialized skills, while more advanced economies show greater specificity and depth in their talent profiles.

FIGURE 7: ENGINEERING SKILLS IN LATIN AMERICA IN 2024



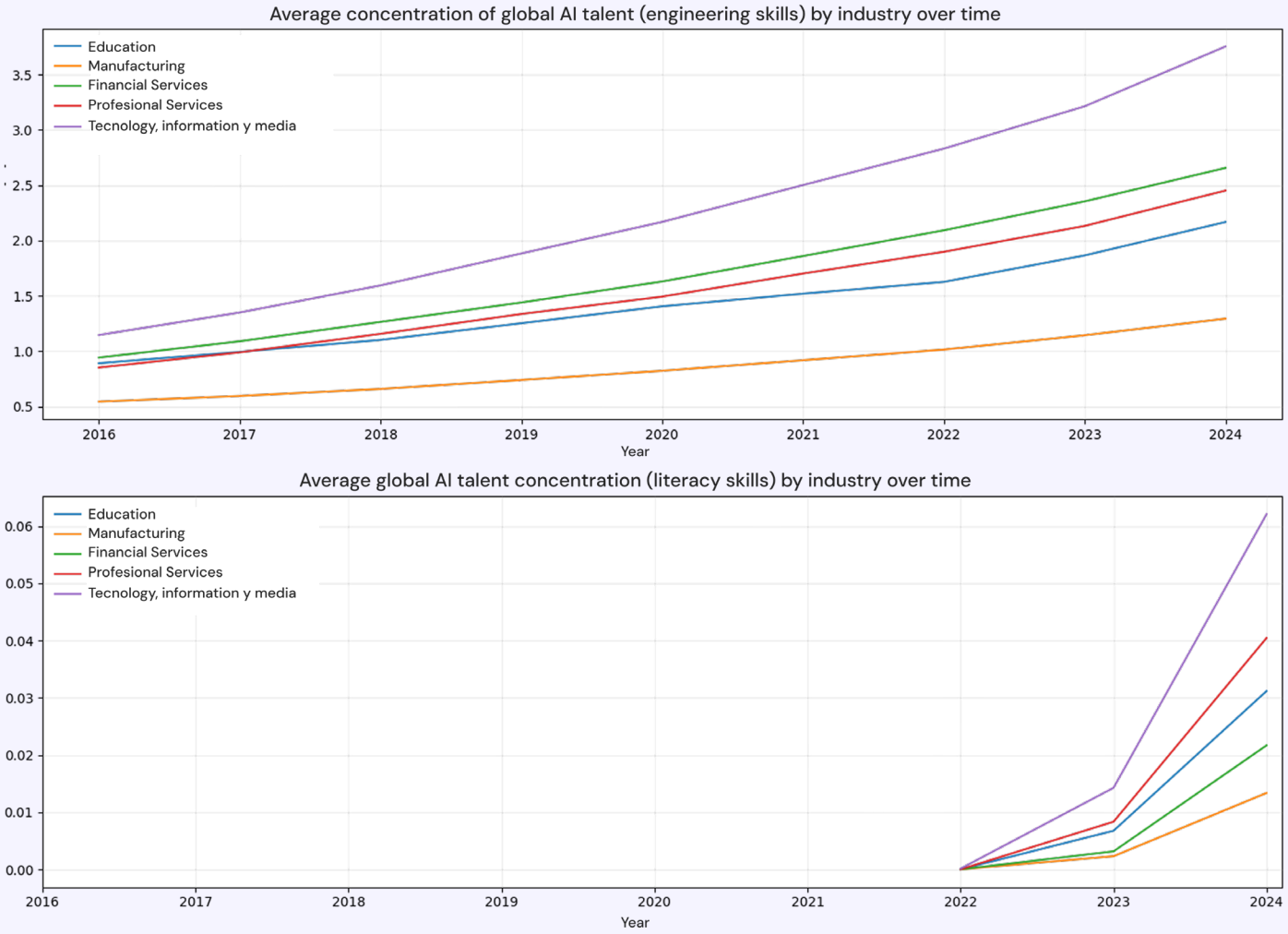
In the case of literacy skills, there is less variability across countries but wider disparities, with several skills absent in certain markets. “ChatGPT” stands out as the leading skill or among the top skills in almost all countries analyzed. It is closely followed by “Generative AI Tools” and “AI Prompting,” demonstrating the rapid adoption of practical capabilities needed to interact effectively with these technologies. Tools such as “Google Gemini,” “GitHub Copilot,” and “DALL·E” also features prominently across the region, reflecting a global trend toward the standardization of a core set of generative AI tools (FIGURE 8).

FIGURE 8: LITERACY SKILLS IN LATIN AMERICA 2024



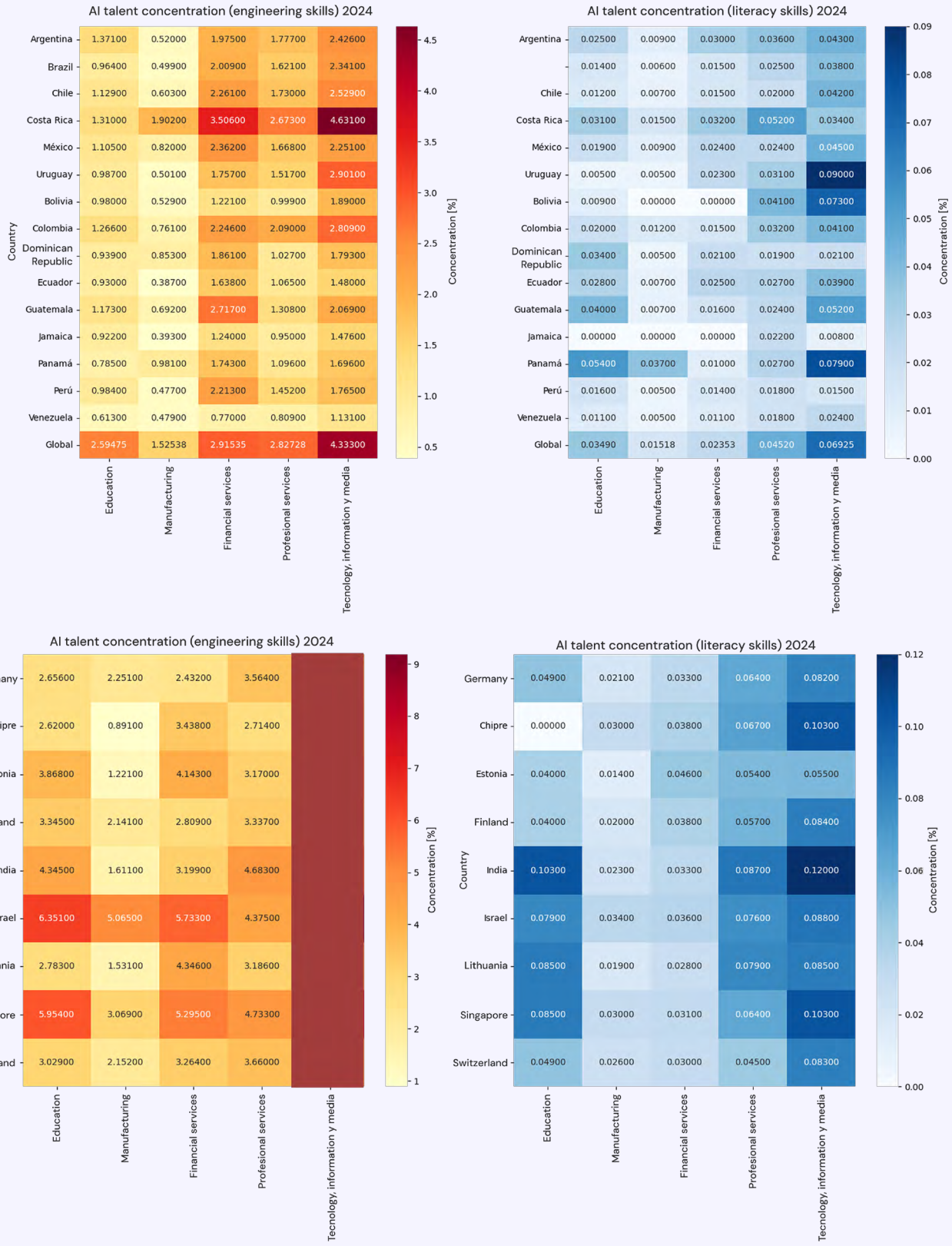
The analysis of AI talent concentration by industry reveals clear patterns at both the global and regional levels, highlighting the undisputed leadership of the technology sector and a structural gap for Latin America. Globally, the Technology, Information, and Media sector shows the highest concentration of AI talent, both in engineering and literacy skills, followed by Professional Services and Financial Services. It is noteworthy that literacy skills have grown rapidly across all sectors since 2022, even though the technology sector remains consistently dominant (FIGURE 9).

FIGURE 9: CONCENTRATION OF ENGINEERING SKILLS AND AI LITERACY BY INDUSTRY SECTOR



A breakdown of the data by industry confirms the gap between the region and global leaders: across all sectors analyzed, the global average concentration of AI talent significantly exceeds that of Latin American countries. This disparity is evident both in engineering skills, where the difference has remained stable over time, and in literacy skills, where despite recent growth, the region has not yet reached the global average (FIGURE 10).

FIGURE 10: HEAT MAP OF THE CONCENTRATION OF ENGINEERING AND AI LITERACY SKILLS BY COUNTRY AND INDUSTRY

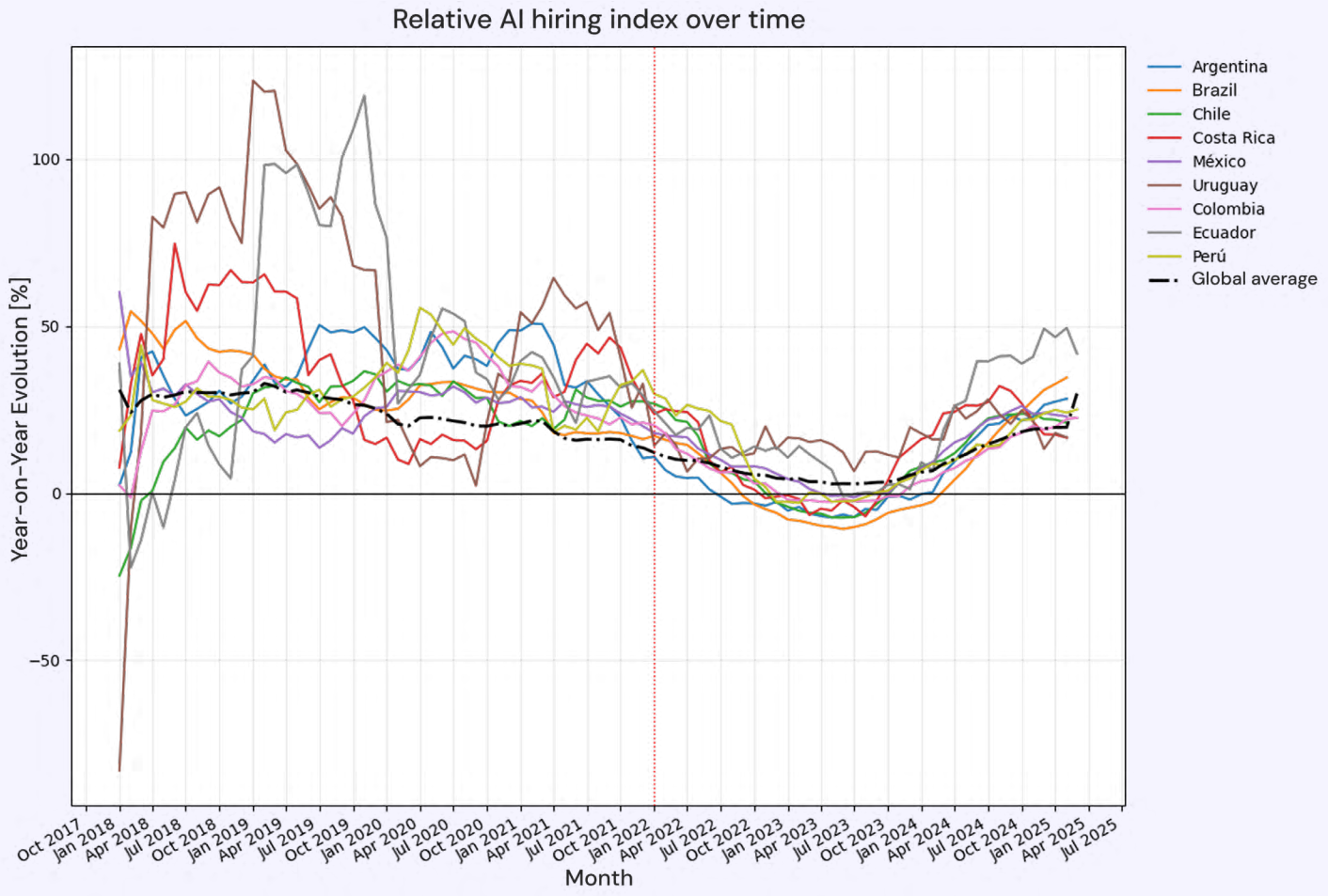


02 _ TALENT RECRUITMENT AND MIGRATION DYNAMICS

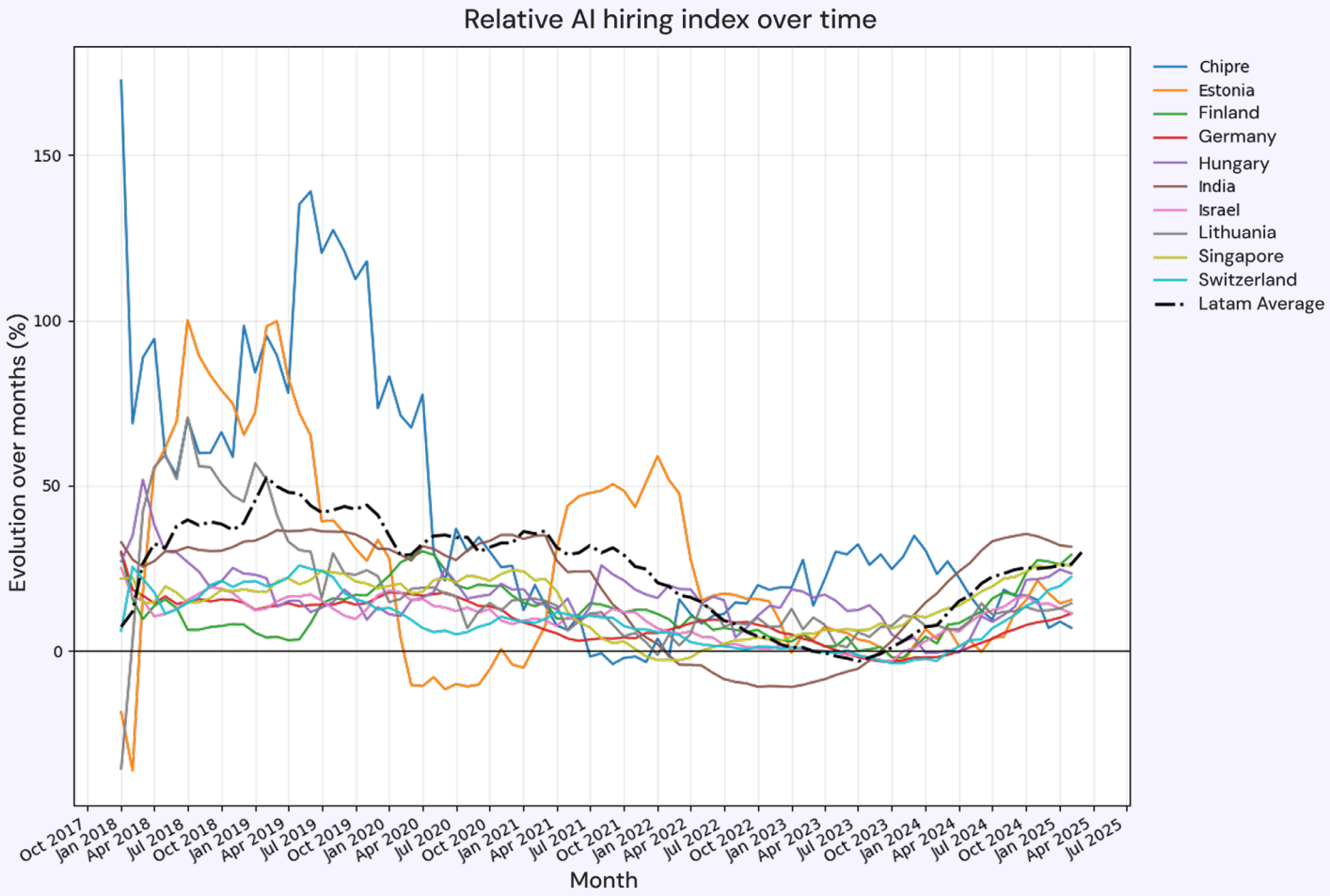
The labor market analysis reveals high volatility and a persistent trend of talent leakage in the region, which hinders the consolidation of a robust AI ecosystem.

In terms of hiring, the Relative AI Hiring Index (AI RHI) for Latin America and the Caribbean shows a trend toward stabilization, with positive rates in recent years. The AI RHI measures the significance of AI talent hiring relative to overall hiring growth within a country, where positive percentages indicate an increasing relevance of AI-related hires. Figure 11 shows substantial volatility in the early years, likely reflecting the rapid initial increase in a very small base of AI professionals. From 2022 onward, the RAHI displays a clear upward trend, highlighting the growing importance of AI talent in new hires. This may stem from increased recruitment of new professionals with AI skills or from a highly dynamic and competitive labor market, where workers with these competencies change employers more frequently.

FIGURE 11: RELATIVE INDEX OF AI ADOPTION OVER TIME FOR LATIN AMERICA AND LEADING COUNTRIES

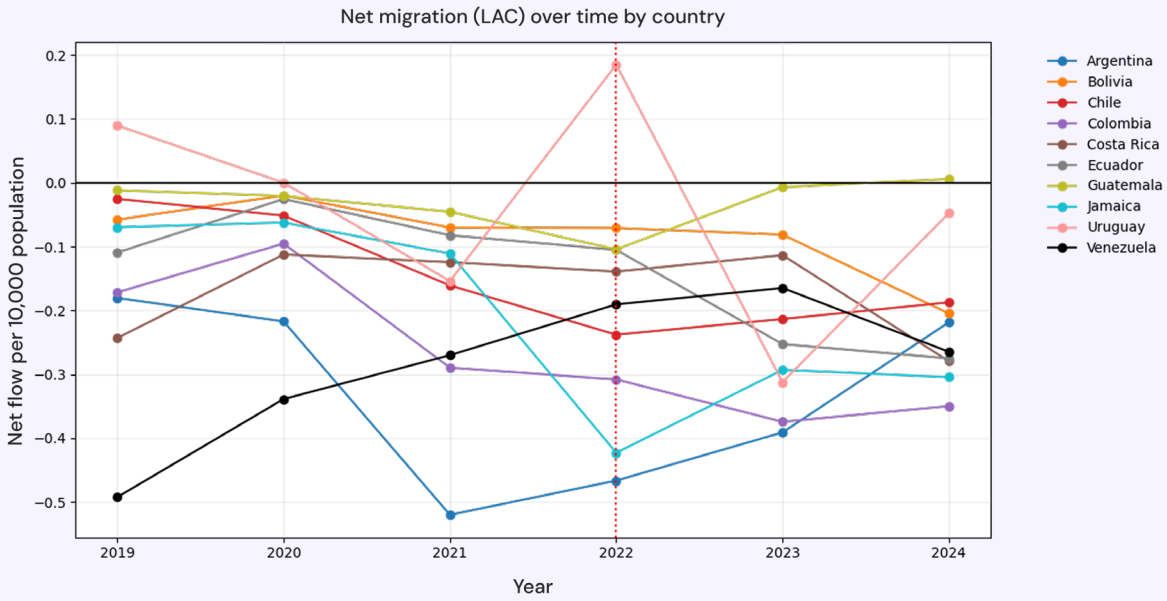


[1] The hiring indicator represents the percentage of LinkedIn members who added a new employer within a given period, divided by the total number of LinkedIn members in a specific region. The AI indicator is then calculated by considering only individuals with AI-related skills, while the relative index reflects the year-over-year change within each country. It can be interpreted as the extent to which AI talent hiring has grown compared to overall hiring from one year to the next.



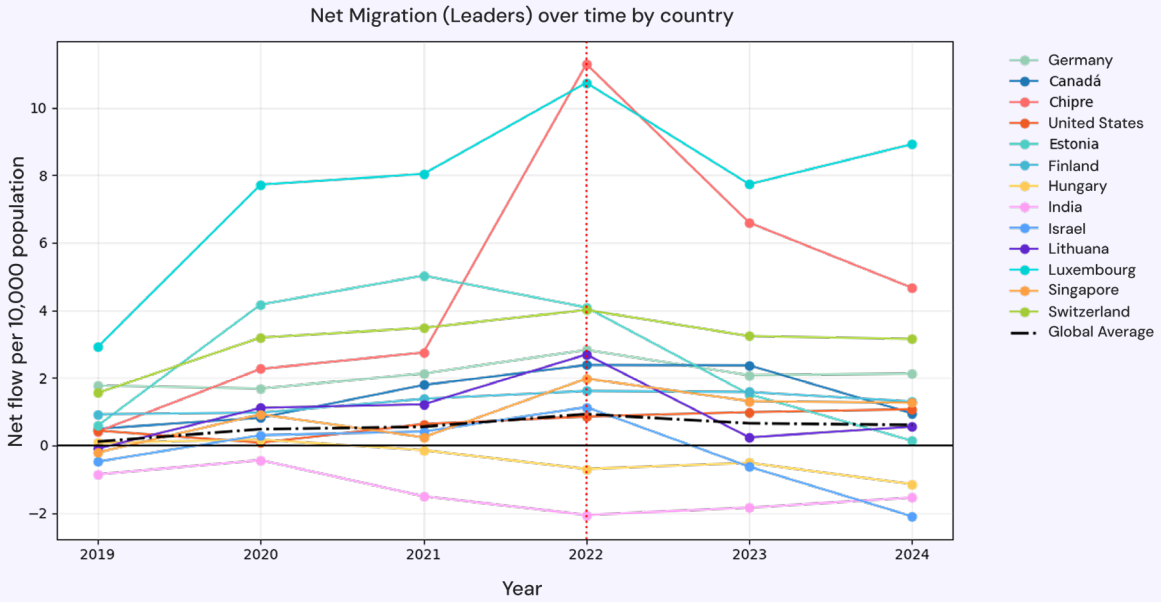
Regarding talent migration, the net flow of professionals is one of the most critical findings. The vast majority of Latin American countries experience a net loss of AI-skilled professionals, meaning that more experts are leaving the region than entering it. There is a particularly sharp spike in talent outflow in 2022, which coincides directly with the surge in AI hiring relevance, suggesting a lack of local opportunities that pushed professionals to seek employment in more mature markets. Countries such as Argentina and Venezuela exhibit particularly pronounced patterns of net loss (FIGURE 12).

FIGURE 12: NET MIGRATION (LAC) OVER TIME BY COUNTRY



The situation in Latin America contrasts sharply with that of global innovation hubs. Leading countries maintain consistently positive net migration flows, positioning themselves as magnets for global AI talent. This persistent "brain drain" from Latin America toward more developed ecosystems represents a structural barrier to the region's AI advancement and its capacity to build sustainable innovation ecosystems (FIGURE 13).

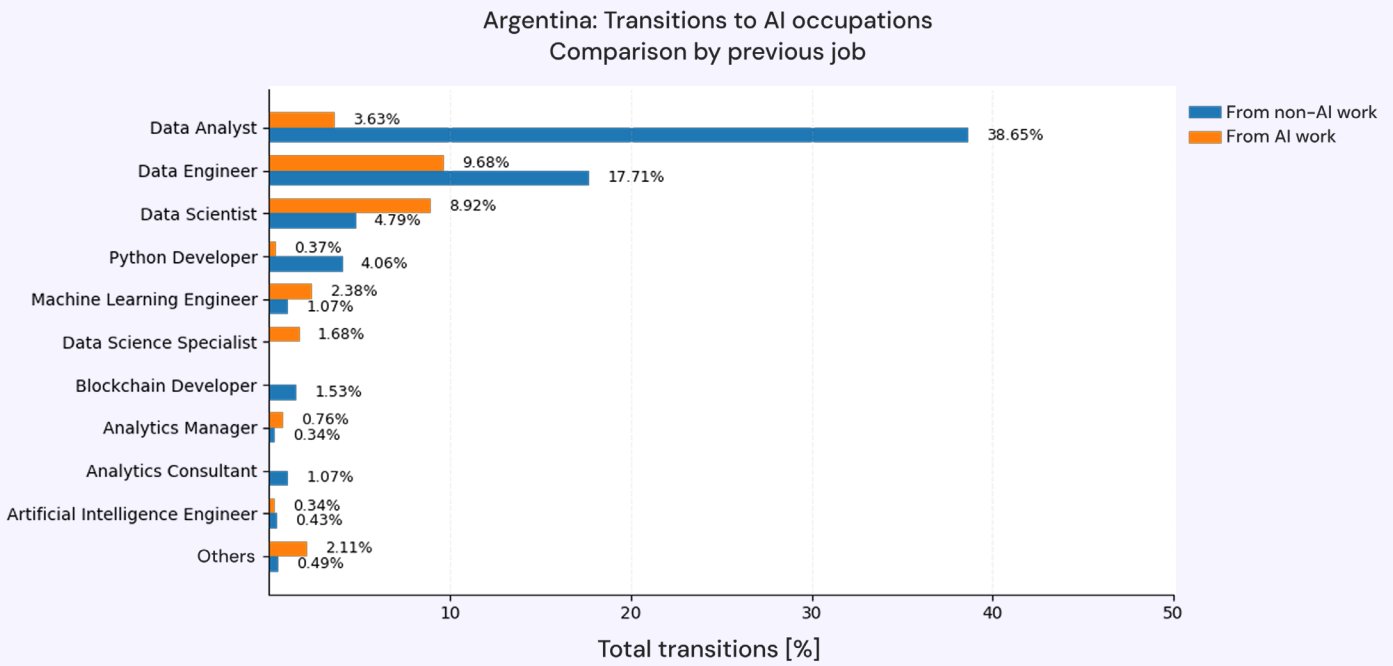
FIGURE 13: NET MIGRATION OF HUMAN TALENT IN AI IN LEADING COUNTRIES

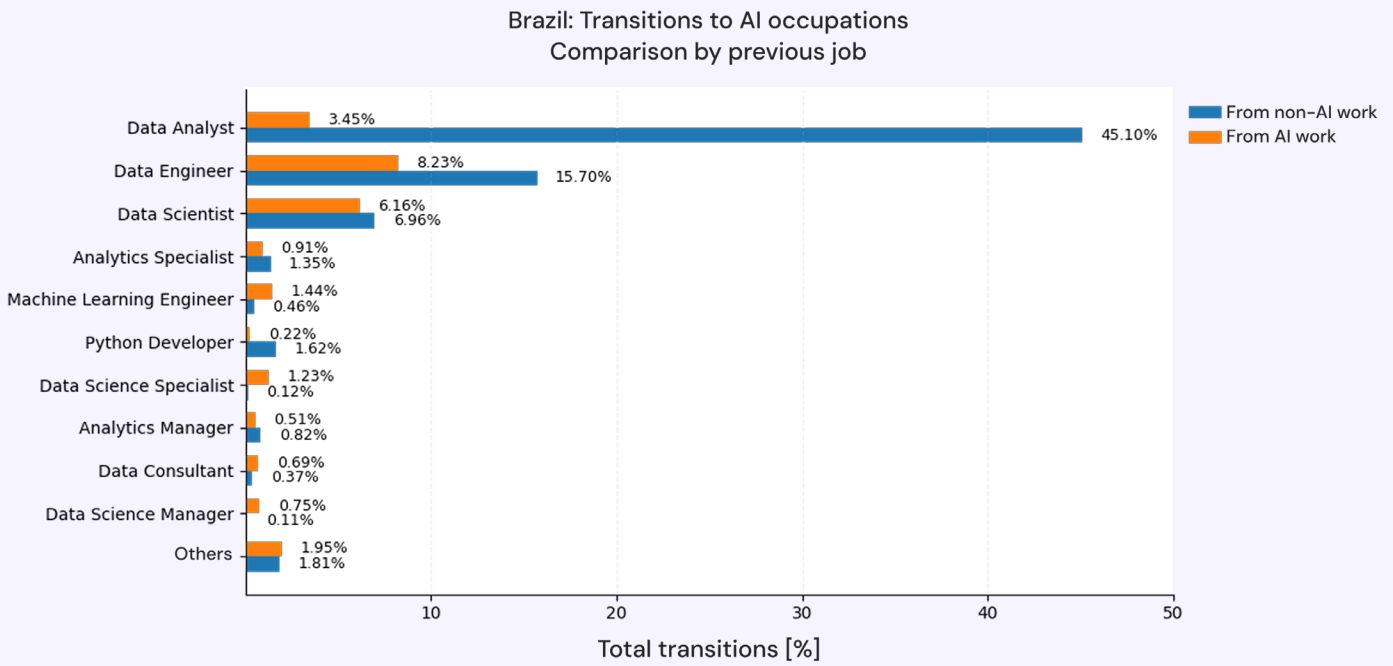


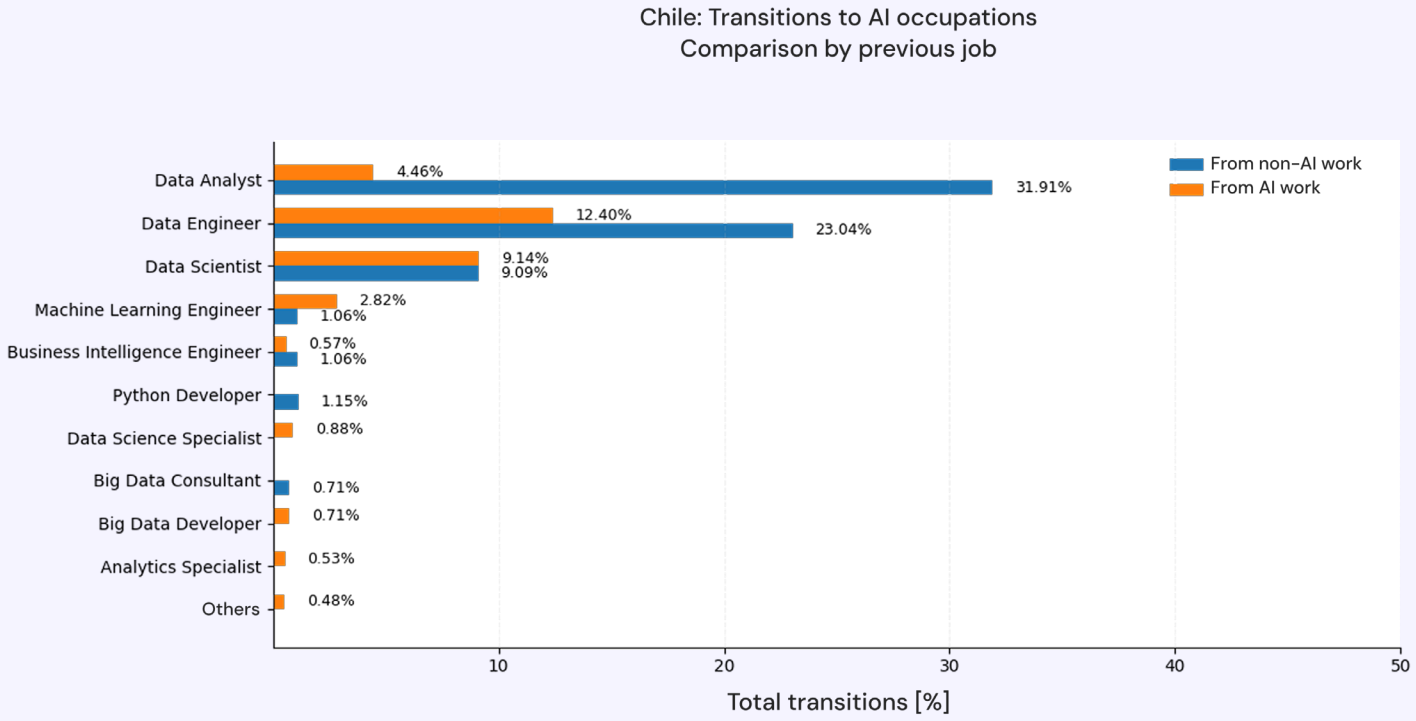
In this area, analyzing career paths provides particularly valuable insights, as it reveals clear and consistent patterns in how AI talent develops, highlighting key entry roles and the predominance of technical training as a fundamental prerequisite.

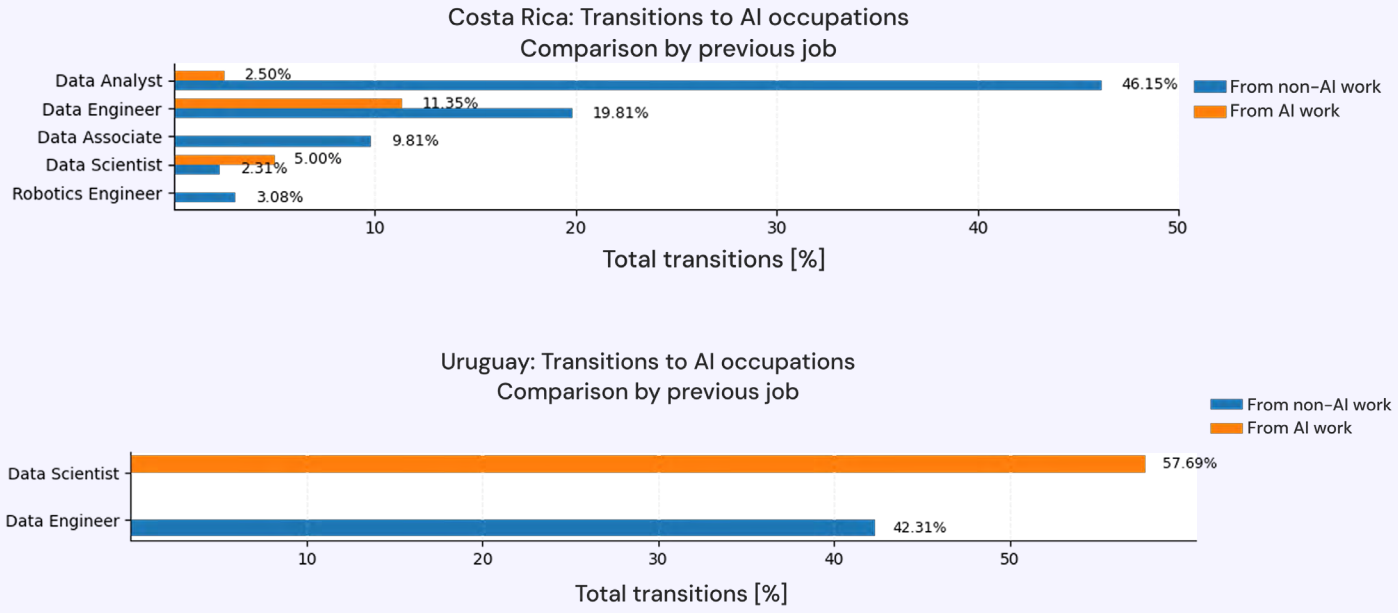
Across the region, a dominant pattern emerges: the roles of Data Analyst, Data Engineer, and Data Scientist serve as the main entry points into more advanced AI occupations. In nearly all countries analyzed, these three positions account for the majority of career transitions, most of which originate from non-AI jobs. The Data Analyst role stands out as especially pivotal, functioning as the primary gateway for professionals transitioning from non-AI positions. For instance, in Argentina, 38.65% of transitions from non-AI roles lead to this position, rising to 45.10% in Brazil and 46.15% in Costa Rica. This makes the Data Analyst role a crucial reskilling pathway for expanding the regional AI talent base. While Data Engineer and Data Scientist roles are also key destinations, they often represent a second step for professionals already within the data ecosystem. This is reflected in the higher percentage of transitions originating from jobs already related to AI, a pattern that also applies to most specialized AI occupations (FIGURE 14).

FIGURE 14: TRANSITION TO AI OCCUPATIONS IN ARGENTINA, BRAZIL, CHILE, COSTA RICA AND URUGUAY BASED ON THE RELATIONSHIP BETWEEN THEIR PREVIOUS OCCUPATION AND AI



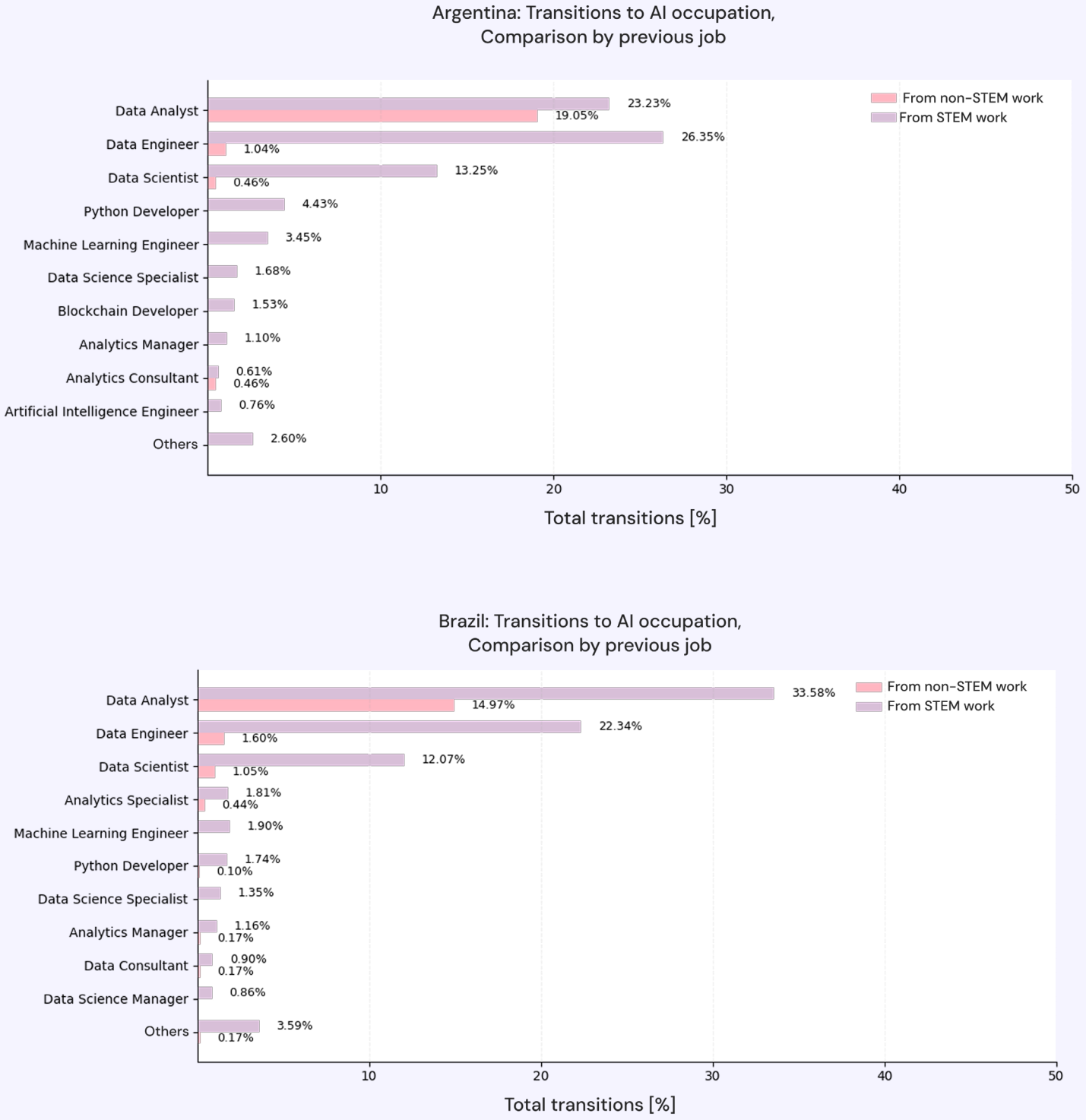

Brazil: Transitions to AI occupations
Comparison by previous job
From non-AI work
From AI work
Data Analyst
Data Engineer
Data Scientist
Analytics Specialist
Machine Learning Engineer
Python Developer
Data Science Specialist
Analytics Manager
Data Consultant
Data Science Manager
Others
3.45%
45.10%
8.23%
15.70%
6.16%
6.96%
0.91%
1.35%
1.44%
0.46%
0.22%
1.62%
1.23%
0.12%
0.51%
0.82%
0.69%
0.37%
0.75%
0.11%
1.95%
1.81%
10
20
30
40
50
Total transitions [%]

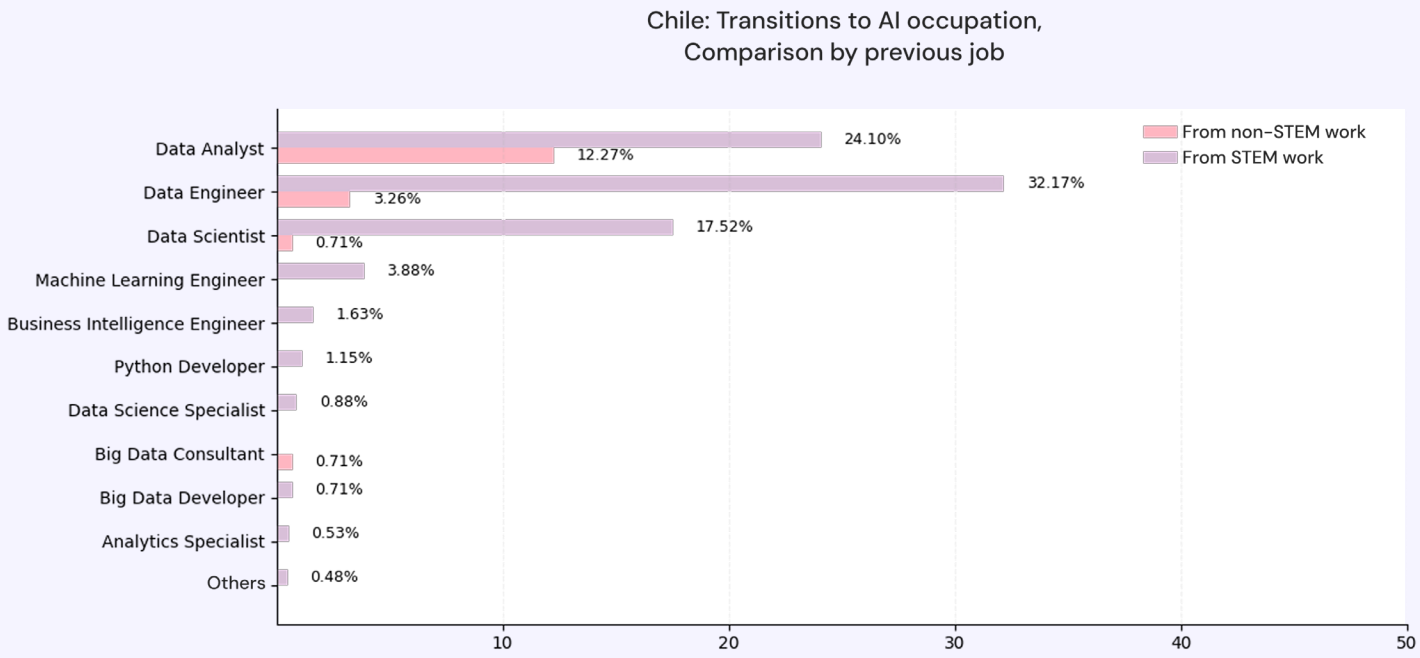

Chile: Transitions to AI occupations
Comparison by previous job
From non-AI work
From AI work
Data Analyst
Data Engineer
Data Scientist
Machine Learning Engineer
Business Intelligence Engineer
Python Developer
Data Science Specialist
Big Data Consultant
Big Data Developer
Analytics Specialist
Others
4.46%
31.91%
12.40%
23.04%
9.14%
9.09%
2.82%
1.06%
0.57%
1.06%
1.15%
0.88%
0.71%
0.71%
0.53%
0.48%
10
20
30
40
50
Total transitions [%]

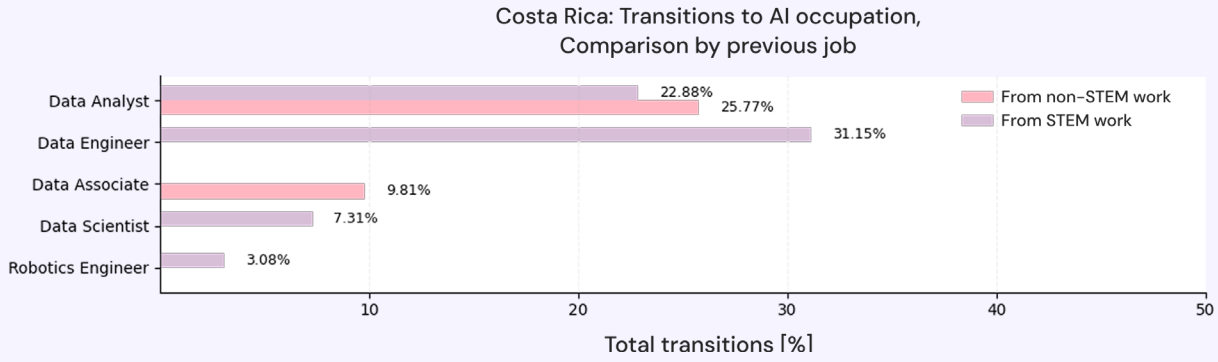


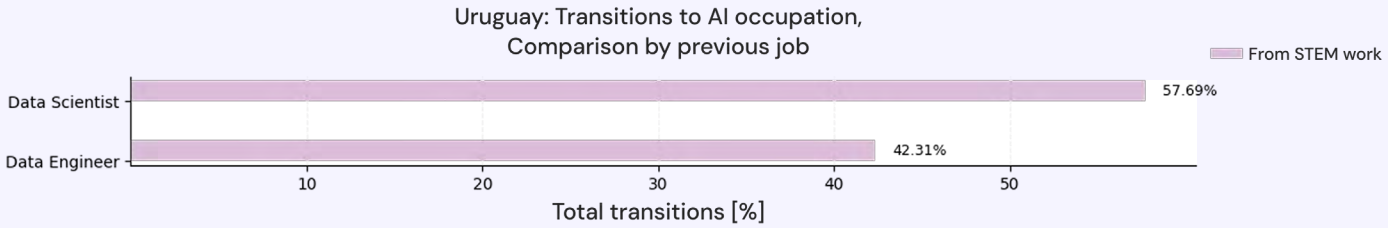
Beyond industry background, the vast majority of professionals transitioning into AI roles come from STEM careers. For technical positions such as Data Engineer and Machine Learning Engineer, having a STEM background is almost essential. In Brazil, for example, approximately 80% of all transitions into AI occupations come from STEM jobs, with Data Analyst, Data Engineer, and Data Scientist being the primary destination roles. In Uruguay, this figure reaches 100%, with all transitions originating from STEM professions. This finding underscores that, while AI literacy is becoming increasingly widespread, access to high-value AI engineering and development roles still depends on a strong technical and quantitative foundation. It highlights the importance of formal education and specialized training in these areas for the continued development of the regional AI ecosystem (FIGURE 15).

FIGURE 15: TRANSITION TO AI OCCUPATIONS BY COUNTRY IN ARGENTINA, BRAZIL, CHILE, COSTA RICA AND URUGUAY BASED ON THE RELATIONSHIP BETWEEN THEIR PREVIOUS OCCUPATION AND STEM




Chile: Transitions to AI occupation,
Comparison by previous job
From non-STEM work
From STEM work
Data Analyst
Data Engineer
Data Scientist
Machine Learning Engineer
Business Intelligence Engineer
Python Developer
Data Science Specialist
Big Data Consultant
Big Data Developer
Analytics Specialist
Others
24.10%
12.27%
32.17%
3.26%
17.52%
0.71%
3.88%
1.63%
1.15%
0.88%
0.71%
0.71%
0.53%
0.48%
10
20
30
40
50

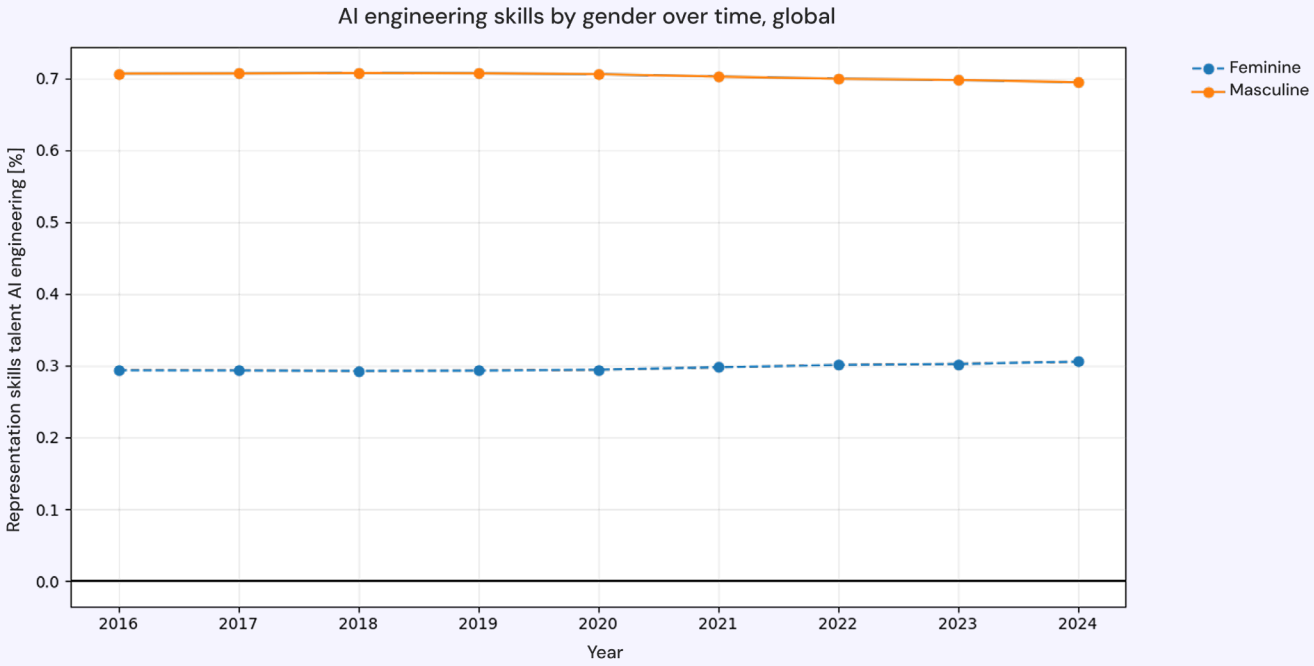

Costa Rica: Transitions to AI occupation,
Comparison by previous job
From non-STEM work
From STEM work
Data Analyst
Data Engineer
Data Associate
Data Scientist
Robotics Engineer
22.88%
25.77%
31.15%
9.81%
7.31%
3.08%
10
20
30
40
50
Total transitions [%]


Uruguay: Transitions to AI occupation,
Comparison by previous job
From STEM work
Data Scientist
Data Engineer
57.69%
42.31%
10
20
30
40
50
Total transitions [%]

03 _ A PERSISTENT GENDER GAP

The gender analysis reveals a structural and persistent disparity in the representation of women within the field of artificial intelligence, though with notable nuances depending on the type of skill and the industrial sector. In engineering skills, the concentration of male talent is, on average, 2.5 times higher than that of female talent across all countries (FIGURE 16). Countries such as Costa Rica and Chile, despite leading in overall AI talent concentration, also display some of the largest absolute gender gaps (FIGURE 17). In contrast, for AI literacy skills, the difference is considerably smaller, though it still favors men (FIGURE 16). This suggests that while the adoption of general-use AI tools is more gender-balanced, the technical core of AI development continues to be a predominantly male domain. This imbalance likely stems from the underrepresentation of women in STEM fields, as STEM training remains a key prerequisite for developing AI engineering competencies. Consequently, existing inequalities in STEM tend to transfer and reinforce disparities in AI-related domains.

FIGURE 16: CONCENTRATION AND REPRESENTATION OF ENGINEERING SKILLS AND AI LITERACY IN TERMS OF GENDER



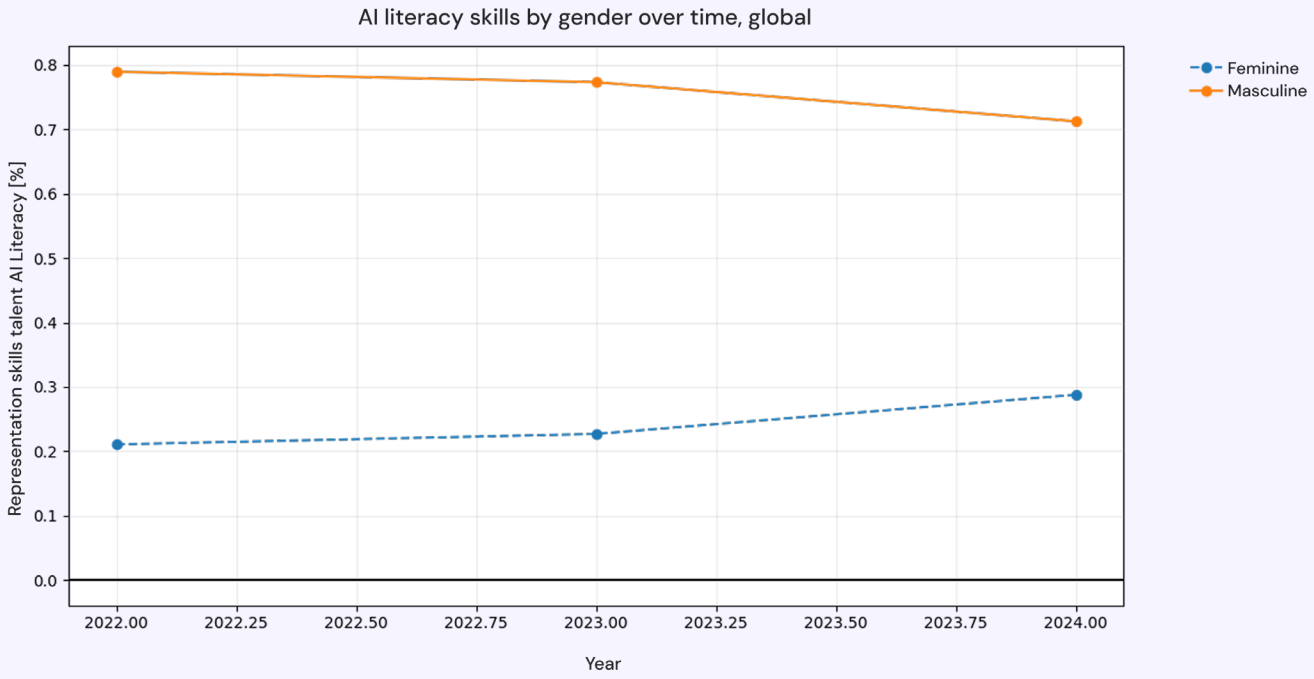
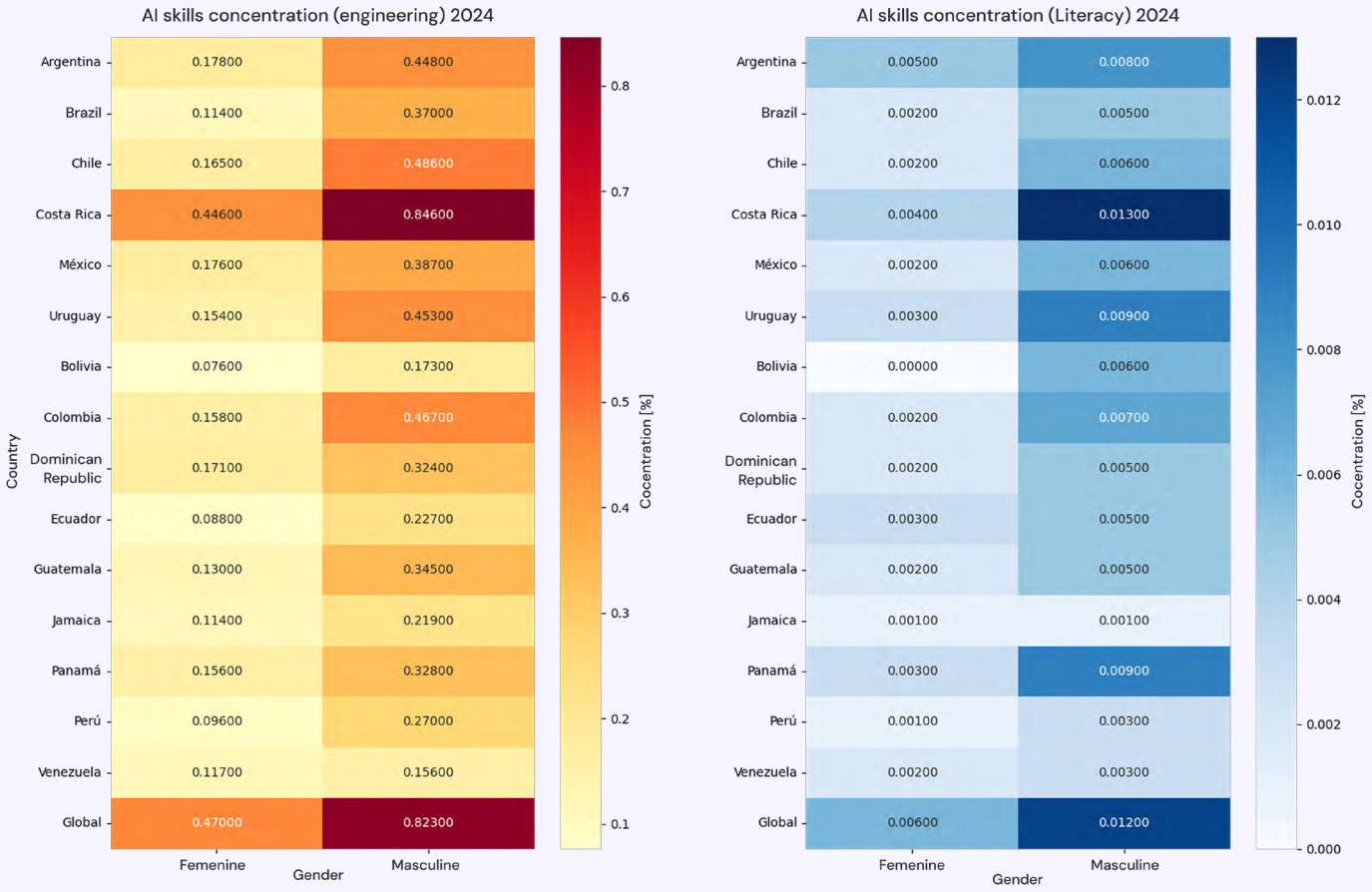
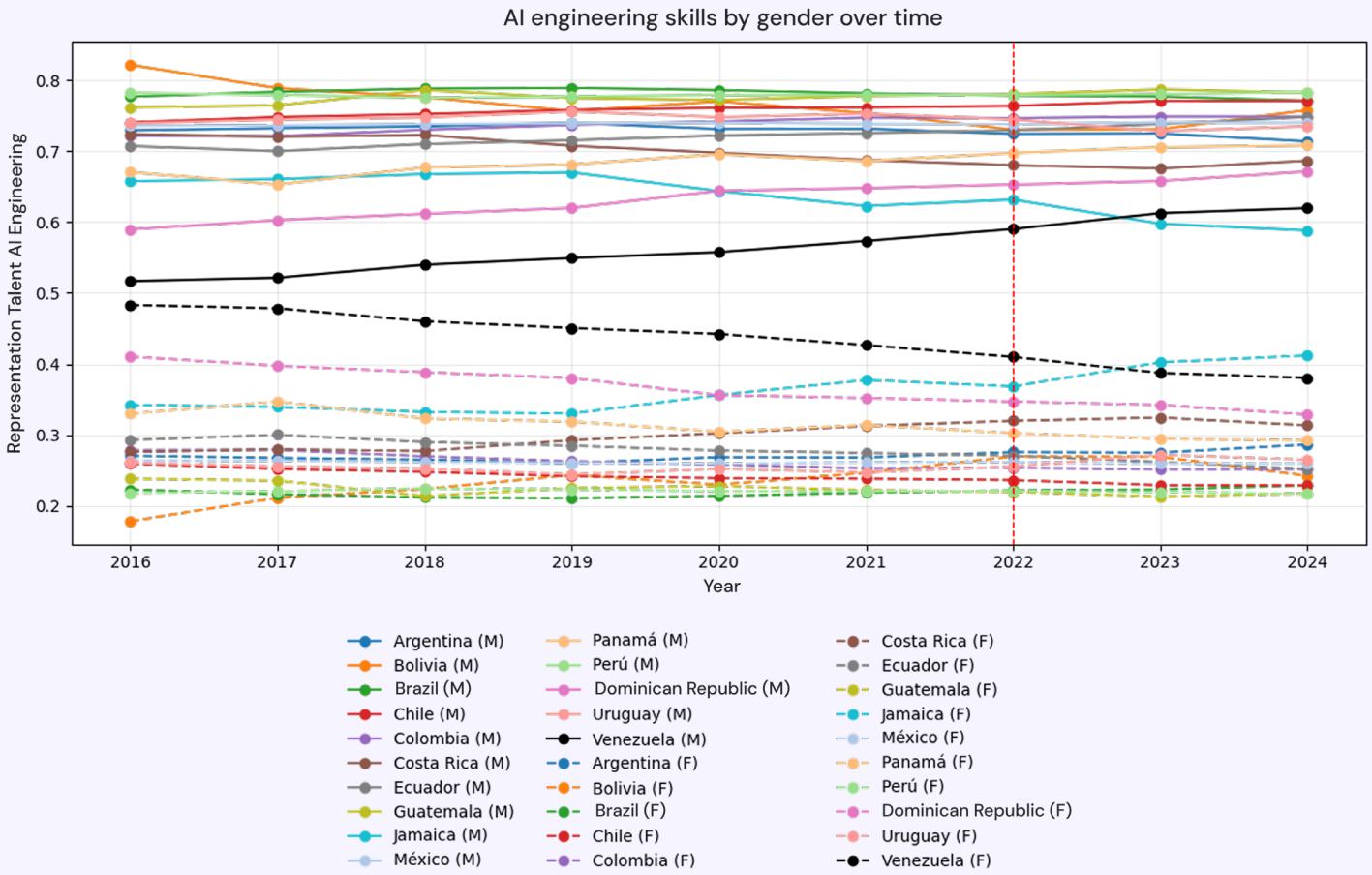


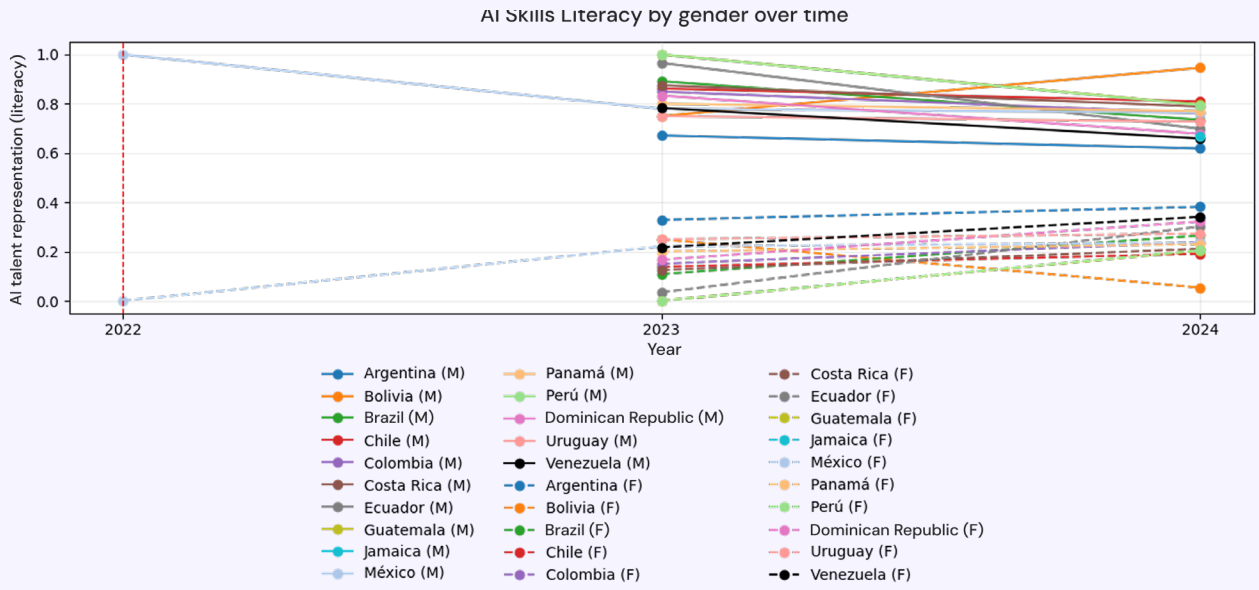
FIGURE 17: CONCENTRATION OF ENGINEERING SKILLS AND AI LITERACY BY GENDER AND COUNTRY IN LATIN AMERICA



Trends over time confirm that the gender gap in AI engineering remains a structural challenge. Globally, the ratio has remained stable since 2016, with approximately 70% male talent compared to 30% female. The growth trajectories for men and women in Latin American and Caribbean countries are similar, indicating that while both groups are expanding, the gap is not narrowing significantly. In AI literacy, however, a more encouraging trend emerges: since 2022, female representation has grown at a slightly faster rate, helping to narrow the gap modestly (FIGURE 18).

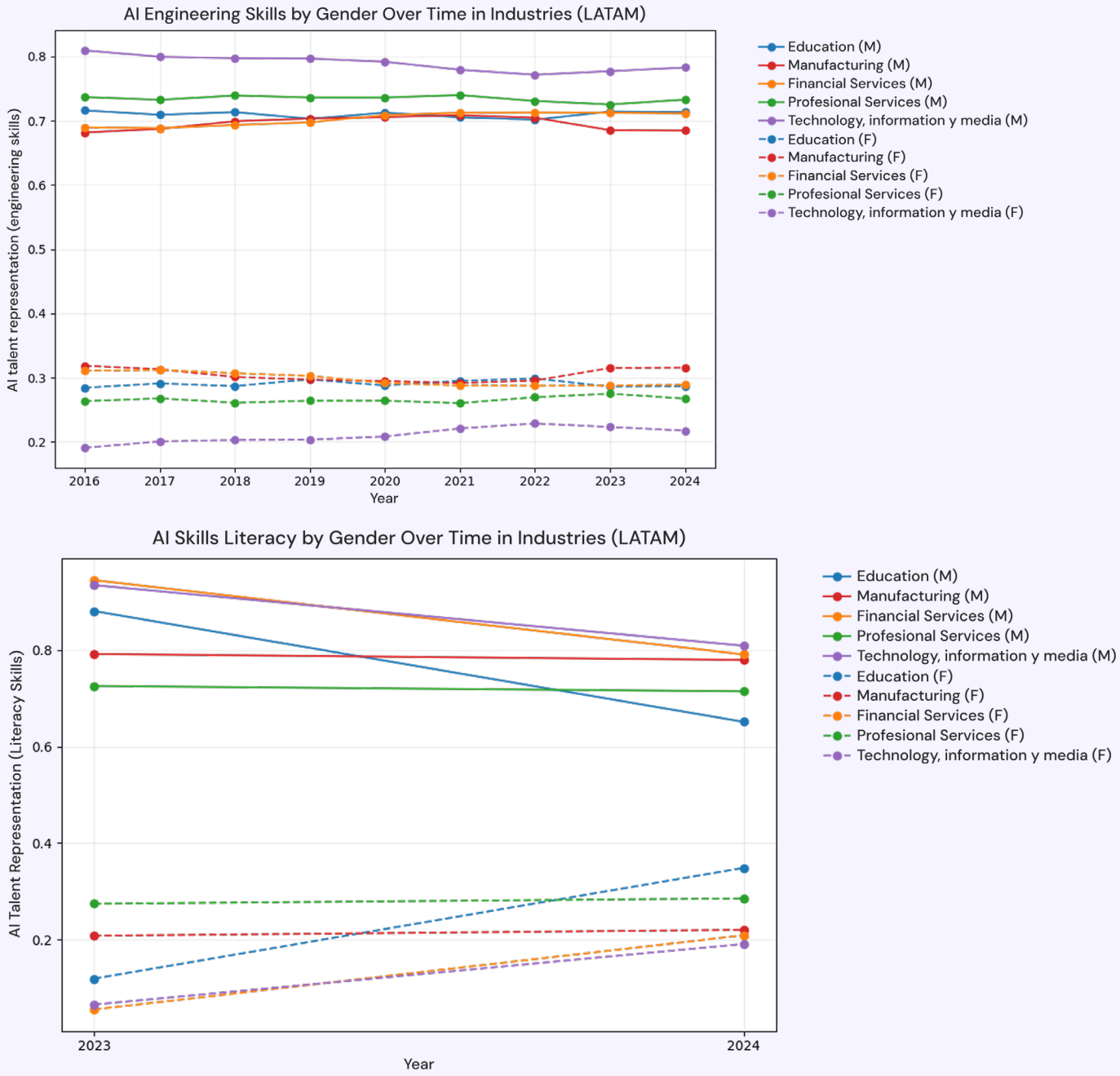
FIGURE 18: CONCENTRATION AND REPRESENTATION OF ENGINEERING AND AI LITERACY SKILLS IN TERMS OF GENDER, BY COUNTRY





The gender gap is also uneven across sectors, permeating all industries worldwide. The Technology, Information, and Media sector, which concentrates the largest share of AI talent, also shows one of the widest gender disparities, particularly in engineering skills. Conversely, the Education sector appears to be the most equitable, displaying the smallest gender gap, though a difference still persists (FIGURE 19).

FIGURE 19: CONCENTRATION AND REPRESENTATION OF ENGINEERING AND AI LITERACY SKILLS IN TERMS OF GENDER SEPARATED BY INDUSTRY IN LATIN AMERICA



CONCLUSION: THREE STRUCTURAL CHALLENGES FOR THE FUTURE OF AI IN LATIN AMERICA

The analysis of AI talent concentration in Latin America reveals a landscape of contrasts. While the region shows undeniable growth and rapid adoption of new tools, three structural challenges stand out as critical factors shaping its future in the global AI economy. First, a fundamental talent gap with global leaders persists. This gap is evident not only in the absolute number of professionals but, more importantly, in the pace at which talent is being developed. As Latin America progresses, innovation hubs elsewhere are accelerating faster, widening the existing distance.

Second, this talent gap is exacerbated by a sustained outflow of skilled professionals. Limited local opportunities and low hiring rates drive highly qualified individuals to migrate to more mature ecosystems, depriving the region of the human capital necessary to build a strong local AI industry.

Finally, the AI ecosystem faces an inclusion challenge, marked by a persistent gender gap that limits the potential of half the population, particularly in technical engineering roles essential for developing proprietary technology. Addressing these three fronts, accelerating talent development, creating conditions for retention, and fostering diversity, will be decisive in enabling Latin America to fully harness the transformative potential of AI.

DIMENSION

Research, development, and adoption

RESEARCH, DEVELOPMENT, AND ADOPTION

Main findings

01 EQUITY ADVANCES, BUT PARITY REMAINS DISTANT: WOMEN'S PARTICIPATION IN AI RESEARCH.

Women's participation in artificial intelligence research has grown significantly across all countries this year. **The regional average increased from 19.8% to 23.6%,** led by **Cuba (32%), Panama (30%), and Argentina (28%)**, followed by the **Bolivarian Republic of Venezuela (27%), Ecuador (27%), and Honduras (26%).** Despite this progress, the gender gap remains substantial: no country has surpassed one-third female representation, and in most countries, women account for fewer than one in four AI researchers.

Increasing women's involvement is crucial to improving the quality of algorithmic systems, bringing diverse perspectives, experiences, and approaches. Without consistent long-term policies to sustain these advances, the gap may remain or even widen, turning current progress into a short-lived milestone.

02 ACADEMIA EMERGES AS A STRATEGIC PILLAR OF THE AI ECOSYSTEM

The steady growth of the AI academic community in Latin America and the Caribbean demonstrates a vibrant and expanding knowledge base. The average number of AI researchers increased by more than 10%, from 20,082 in the previous edition to 23,191 in this edition. Meanwhile, the number of researchers who consistently publish AI-related work rose from 3,356 to 3,446. To translate academic strength into technological development, this momentum must be supported by talent-retention policies, stronger collaboration between academia and industry, and greater support for applied research. Without such coordination, research outputs risk becoming disconnected from the region's most pressing social and economic needs.

03 GENERATIVE AI: A CATALYST TO DEMOCRATIZE AI FOR PUBLIC BENEFIT

Adoption of generative AI in countries like Uruguay, Chile, Peru, Costa Rica, and the Dominican Republic, where usage surpasses the regional average, shows that AI access is no longer confined to the largest technology ecosystems.
Generative AI tools have lowered entry barriers, enabling non-expert users to experiment with and apply advanced models through accessible interfaces such as large language models (LLMs). This democratization of access could accelerate

the spread of AI in key areas such as education, government services, and small and medium-sized enterprises (SMEs).

To fully harness these opportunities, countries will need to build critical skills related to privacy, accuracy, bias, and responsible use.

04 PERU: AN EMERGING LEADER IN CROSS-CUTTING AI ADOPTION

Peru leads the region in web traffic to AI-related platforms and in the intensity of usage of more advanced AI tools. Peruvian users average six visits to AI websites per person, twice the regional average. This behavior offers valuable insights into real-world adoption, reflecting engagement with AI-based web services among non-specialist users. Growing traffic to AI tools indicates broader access to intelligent solutions, paving the way for accelerated adoption with widespread potential benefits.

05 CITIZEN PARTICIPATION WITH AI: A MISSED OPPORTUNITY

Despite its potential to transform democratic participation, AI remains underused in civic engagement and digital democracy tools across the region. Although countries such as Colombia, Mexico, and Peru demonstrate higher implementation, 8 of the 19 ILIA countries report no use cases at all. This gap reflects a disconnect between governmental interest in emerging technologies, often limited to informational chatbots, and practical applications that support consultation, accountability, and collaborative policy-making. Investing in civic-oriented AI –reliable, responsible, and secure– could enhance democratic quality and strengthen institutional trust. The challenge is not technological but institutional and political, revealing a missed opportunity to deepen democratic participation through digital innovation.

06 OPEN SOURCE AS A REGIONAL STRATEGY FOR TECHNOLOGICAL COLLABORATION

The open-source model continues to offer significant opportunities for AI development in the region. It enables the creation of local solutions without reliance on proprietary licenses or costly infrastructure, while fostering collaborative development across the developer community. The strong performance of countries such as Honduras, El Salvador, and Cuba, excelling in productivity, quality, and relevance of open-source contributions, illustrates the potential this model offers to all nations in the region. Open-source development strengthens regional cooperation, collective learning, and algorithmic transparency. A coordinated regional strategy to promote open-source AI could reduce costs, accelerate results, improve interoperability, and expand distributed technical capabilities across countries.

07 INNOVATION IS LIMITED AND CONCENTRATED IN A FEW COUNTRIES

AI investment and company creation remain highly concentrated, revealing a fragile innovation ecosystem across Latin America and the Caribbean. Chile, Uruguay, Brazil, Mexico, and Colombia account for nearly all AI investments and startups in the region, while Argentina stands out by representing more than half of the region's total estimated AI investment value. Despite this concentration, the overall level of investment remains low: the entire region accounts for just 1.12% of global AI investment, roughly seven times lower than its share of global GDP. This gap underscores the need to stimulate innovation capacity beyond a handful of leading economies.

08 WHERE ARE THE UNICORNS?

Only six countries in the region are home to unicorn companies: **Chile, Brazil, Mexico, Colombia, Ecuador, and Argentina.** This scarcity may reflect not only limited funding, but also restrictive regulatory frameworks, low risk tolerance, weak entrepreneurial culture, and insufficient collaboration between academia and industry. Closing this gap requires a systemic approach that includes stronger incentives for entrepreneurship, more robust incubation and acceleration programs, public-private venture funds, and policies that promote technology-driven entrepreneurship with a regional outlook.

09 THE FUTURE OF WORK: TASK CAN BE ACCELERATED; PEOPLE CANNOT BE REPLACED

Nearly every occupation includes tasks that can be accelerated by generative AI, meaning the transformative potential of this technology extends to all workers. Rather than replacing jobs, generative AI serves to streamline processes with particularly high potential in highly skilled roles.

A recent report on AI and the future of work in **Chile** shows that an average of 48% of tasks could be accelerated, revealing both broad applicability and significant variation across sectors. Fields such as education, the public sector, and SMEs stand to benefit the most. These findings highlight the opportunity to design inclusive adoption strategies, with differentiated approaches to training and implementation tailored to each sector's needs.

10 SCIENCE: THREE PATHS TO ADOPTING AI IN RESEARCH

AI adoption within the scientific and academic community does not follow a single trajectory. Instead, researchers tend to cluster into three user profiles: functional users, who apply AI primarily to automate tasks; integrators, who treat AI as a transformative partner in research; and critical users, who adopt cautiously, with a strong ethical and political lens. These different forms of technological appropriation vary in depth of integration, purpose, and ethical positioning, revealing gaps in access, skills, and innovation readiness. Recognizing this diversity is essential for designing training, adoption, and governance strategies that align with the realities and needs of the regional scientific ecosystem.

RESEARCH, DEVELOPMENT, AND ADOPTION

2 Dimension Description

The Research, Development, and Adoption (R+D+A) dimension evaluates progress within the research, development, and innovation (R+D+I) ecosystem across public, private, and academic sectors. It is composed of three subdimensions: Research, Innovation and Development, and Adoption.

The Research subdimension focuses on each country's capacity to generate new academic knowledge, which is closely linked to the maturity of the local system for talent development and training. It examines the degree of consolidation and relevance of academic activity in AI development.

The Innovation and Development subdimension evaluates current AI advancements within the local innovation ecosystem, including the number of AI companies, private investment, the entrepreneurial environment, and contributions to open-source AI development.

The Adoption subdimension considers the development and use of AI tools by the population, the productive sector, and the public sector. This includes the use of generative AI, web traffic to AI solutions, the proportion of workers in high-tech sectors, value added in medium- and high-tech manufacturing, progress in Digital Government, and the application of AI in citizen participation.

This dimension carries a weight of **35%** of the total score, ranking just after Enabling Factors in terms of overall importance.

The TABLE 2 shows the structure of the subdimension and its current composition after incorporating the new subindicators in this version. The eight new subindicators are highlighted in purple

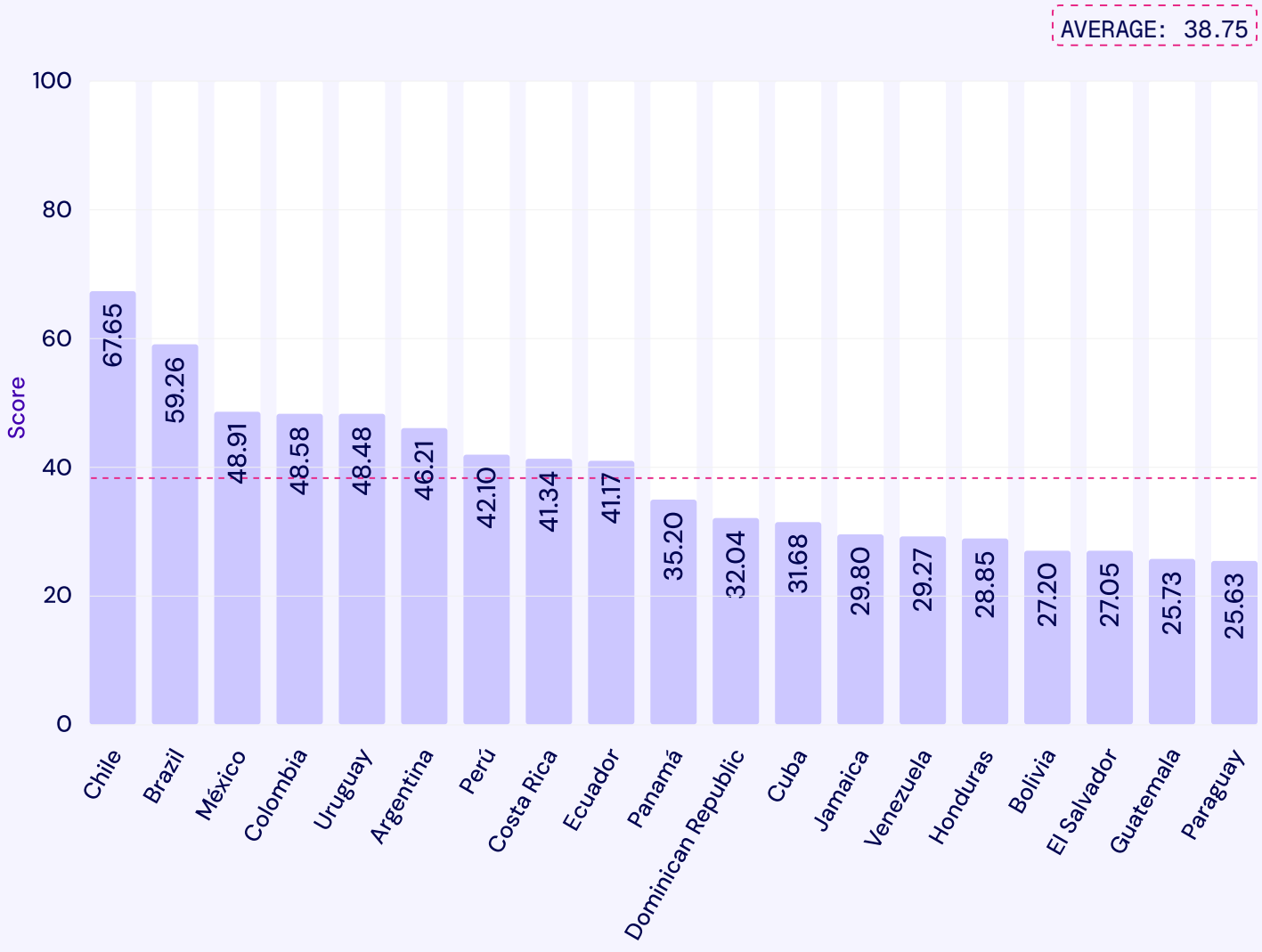
TABLE 2: COMPOSITION OF THE RESEARCH, DEVELOPMENT, AND ADOPTION DIMENSION

Subdimension	Indicators	Subindicators (New sub-indicators 2025)
Research	Research	AI publications
		Active AI researchers
		AI researchers productivity
		Impact of AI research
		Presence of AI research centers
		Proportion of female authors in AI
		Consistent AI research
		Participation in A+ Top 100 conferences
		Participation in Top 100 side events
Innovation and Development	Innovation	Number of private investments
		Estimated total value of private investment
		AI companies
		Unicorn companies
		Research and Development Expenditure as a Proportion of GDP
		Application development
		Entrepreneurial environment
	Development	Open Source Productivity
		Open Source Quality
		Proportion of Software Developers
		Relevance of Software Production
		Number of Patents
Adoption	Industry	Workers in the high-tech sector
		Medium- and High-Technology Manufacturing
		Proportion of value addend from medium - and high-tech manufacturing in total value added
	Generative AI	**Generative AI Users**
		Generative AI web use intensity
		Generative AI time
		Generative AI expenditure
	AI web traffic	**AI web use intensity**
		Advanced AI web use intensity
	Government	Digital Government
		Use of AI in citizen participation
		AI development for citizen participation

SOURCE:ILIA 2025

FIGURE 8 illustrates regional performance in this dimension, showing a **lower regional average than in the previous edition, decreasing from 47.46 points in 2024 to 38.75 points in 2025.** In addition, this edition shows **less variance** in scores, due to a reduction of more than 10 points among the countries that previously had the highest scores. Even so, countries such as **Chile (67.7), Brazil (59.3), Mexico (48.9), Colombia (48.6), and Uruguay (48.5)** continue to stand out among the top performers.

FIGURE 8: TOTAL SCORE RESEARCH, DEVELOPMENT, AND ADOPTION DIMENSION



SOURCE:ILIA 2025

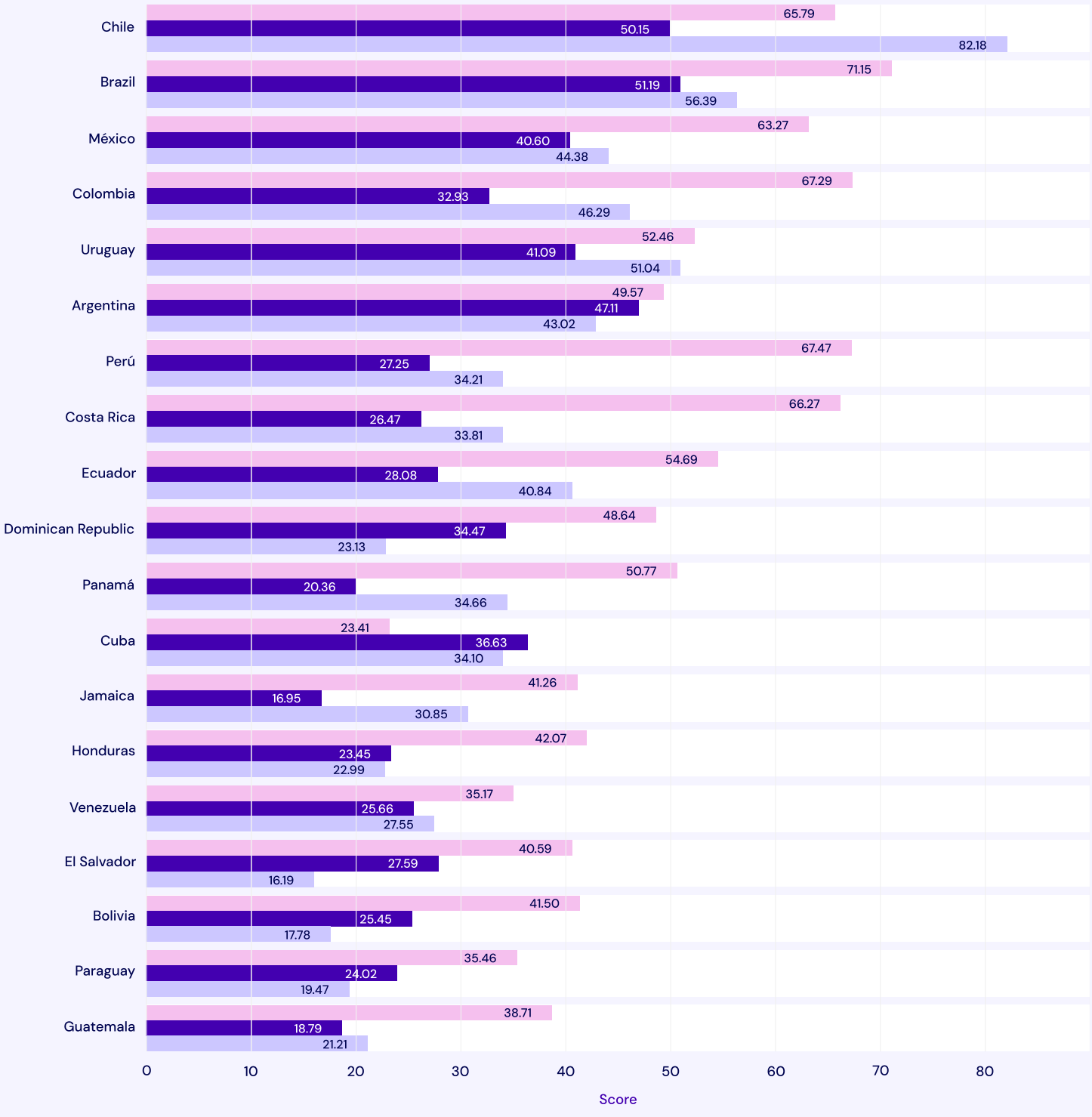
Based on these scores, countries can be divided into three categories according to their degree of progress in generating new knowledge and its practical application.

Countries with high R&D+A performance (over 60 points): These countries have achieved advanced capacity in research, development, and integration of AI technologies. In this group, **only Chile (67.7)** is included.

Countries with medium R&D+A performance (between 35 and 60 points): These countries show moderate development, with solid capacities but still room for improvement in this area. This group includes **Brazil (59.26), Mexico (48.91), Colombia (48.58), Uruguay (48.48), Argentina (46.21), Peru (42.1), Costa Rica (41.34), Ecuador (41.17), and Panama (35.2).**

Countries with low R&D+A performance (up to 35 points): This group includes countries in the initial stages of research, development, and AI adoption.

FIGURE 9: TOTAL SCORE FOR THE SUB-DIMENSIONS OF RESEARCH, INNOVATION AND DEVELOPMENT, AND ADOPTION.



SOURCE:ILIA 2025

RESEARCH, DEVELOPMENT, AND ADOPTION

2.1 Research Subdimension

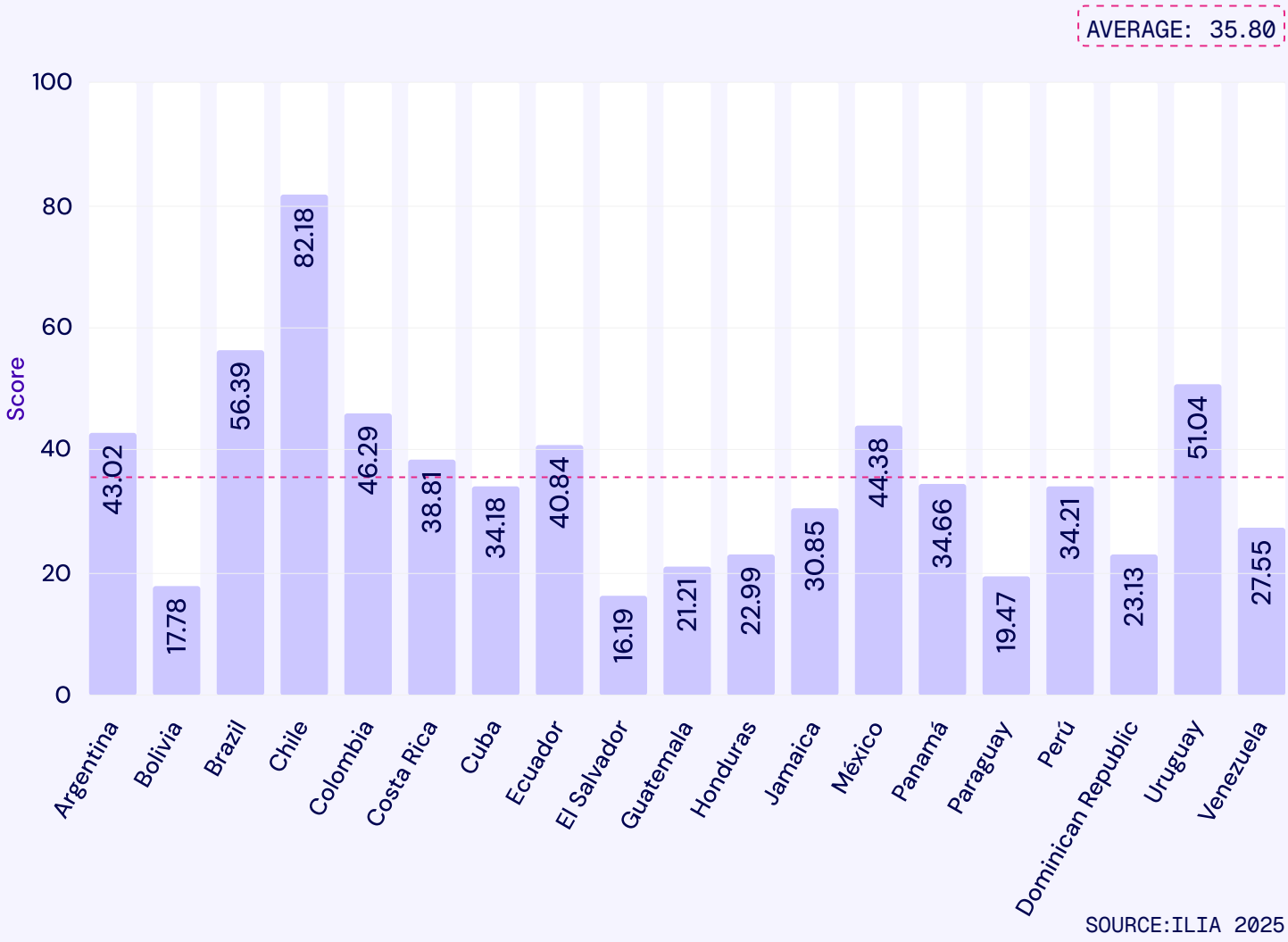
Research is the driving force behind innovation. Without a solid research foundation, it is impossible to build a robust AI ecosystem capable of continuously transforming knowledge into innovative products and solutions.

Advances in research define the boundaries of what is possible in the development and dissemination of technology, making it a central pillar of AI progress.

This subdimension includes a single indicator -also called Research- which accounts for **40%** of the total weighting of the R+D+A dimension, consistent with the previous edition.

FIGURE 10 presents a regional overview of artificial intelligence research, highlighting uneven progress: only one country scores above 80 points, and just six fall within the 35–80 point range. **Chile leads with 82.18 points, followed by Brazil (56.39), Uruguay (51.04), Colombia (46.29), Mexico (44.38), Argentina (43.02), and Ecuador (40.84).** These are the only countries scoring above the regional average of 35.8 points.

FIGURE 10: TOTAL SCORE - RESEARCH SUBDIMENSION



SOURCE:ILIA 2025

Based on these results, the countries can be grouped into three categories that reflect different levels of research capacity

Leading countries in AI research (above 60 points): These nations demonstrate strong development in this field, supported by well-established ecosystems that foster knowledge creation and specialized talent. In this edition, the only country surpassing this threshold is **Chile (82.18).**

Developing countries in AI research (35-60 points): These countries are strengthening their research capacities and showing notable progress, although they have not yet reached the level of regional leadership. This group includes **Brazil (56.39), Uruguay (51.04), Colombia (46.29), Mexico (44.38), Argentina (43.02), and Ecuador (40.84).**

Emerging countries in AI research (below 35 points): This category includes nations that still face substantial challenges and require greater efforts to reinforce their academic and innovation ecosystems.

For a detailed breakdown of scores at the indicator and sub-indicator levels, refer to ILIA 2025.

REPORT

Adoption and Potential of Artificial Intelligence in Scientific Research in Latin America and the Caribbean

Artificial intelligence is transforming scientific research by streamlining key tasks and freeing up time for the most intellectually valuable components of the research process. A study conducted in Chile by the National Center for Artificial Intelligence (CENIA), with support from the Inter-American Development Bank (IDB), analyzed nearly 400,000 AI-related scientific publications and gathered insights from 31 researchers across Latin America and the Caribbean to better understand how AI is being integrated into academic research. Using a mixed-methods approach that combines quantitative and qualitative data, the study maps the current use and evolution of AI at institutional and national levels, identifies the areas of greatest development, and examines the factors that enable or hinder its adoption across different scientific contexts in the region.

INTRODUCTION

The adoption of generative artificial intelligence (GenAI) represents a profound shift in the global production of scientific knowledge. In Latin America and the Caribbean (LAC), its integration offers a strategic opportunity to advance scientific research in the region. Tools such as ChatGPT, Elicit, Copilot, and Grammarly are accelerating traditionally time-consuming tasks, including scientific writing, bibliographic research and organization, coding, source verification, and text translation. Other applications, such as AlphaFold, take this further by using AI to interpret amino acid sequences and determine the three-dimensional structure of proteins in minutes, a task that previously required years of laboratory experimentation

In this context, the study “Opportunities and Challenges of AI Tool Adoption in Scientific Research in Latin America and the Caribbean,” conducted by CENIA in collaboration with the IDB, aims to assess the current state of AI use in regional science and to explore its associated opportunities and challenges. The study is based on a clear hypothesis: greater AI penetration within a scientific discipline -that is, a higher proportion of papers in which AI plays a significant role- reflects a more advanced level of technological adoption, which should, in turn, correlate with a positive impact on each country’s academic productivity.

The analysis was conducted in two complementary stages. The first, quantitative stage involved constructing an indicator of “relative AI penetration” using the OpenAlex database,

one of the most comprehensive global repositories. Academic papers published between 2019 and 2023 were reviewed to identify which areas of knowledge make the most use of artificial intelligence, both in Latin America and the Caribbean and in other countries serving as international benchmarks. This enabled a comparison of AI adoption in the region against global standards. The second, qualitative stage was based on semi-structured interviews with researchers from Argentina, Brazil, Chile, Colombia, Mexico, the Dominican Republic, Panama, and Uruguay, covering disciplines such as medical sciences, medical biotechnology, physical sciences, biological sciences, and other engineering and technology fields. This approach provided context to the quantitative findings and explored the mechanisms, applications, and perceptions related to AI adoption.

This report offers a regional snapshot of the impact and use of artificial intelligence in science and proposes concrete strategies to promote broader, more inclusive, and strategically guided adoption.

METHODOLOGY

QUANTITATIVE ANALYSIS

For the quantitative study, a large set of scientific publications registered in OpenAlex -an open repository containing over 260 million academic works worldwide- was analyzed. Using this data, research areas were categorized, and an indicator called “relative AI penetration” was constructed. This indicator measures the relevance and application of artificial intelligence within each discipline and country, providing a clear comparative view of the region’s positioning relative to other parts of the world.

For the analysis of Latin America and the Caribbean (LAC), publications by authors affiliated with institutions from the 19 countries included in the 2024 Latin American Artificial Intelligence Index (ILIA) were considered.

The first step involved searching OpenAlex for studies related to artificial intelligence (AI). Specific filters were applied based on AI techniques, such as machine learning and natural language processing (NLP), which enables machines to understand and generate human language text. Additionally, the platform’s search function was used to identify publications containing the phrase “Artificial Intelligence.” This initial filter returned a total of 15.8 million works.

A significant methodological challenge arose because OpenAlex classifies as AI-related both studies that merely mention AI and those that actively apply it, as its system relies on the occurrence of concepts in the text. To refine the selection, the study established a relevance threshold: only works in which AI usage represented at least 20% of the content were included. This threshold was determined after manually reviewing a random sample of 467 studies, with the goal of excluding articles where AI mentions were marginal or decorative.

Using this dual criterion -being labeled as AI by OpenAlex and exceeding the 20% relevance threshold- the final global sample was reduced to 7.5 million publications.

Since the period 2019–2023 represents the most recent and significant stage in AI-related scientific productivity, the study focused on this time window. Applying this filter reduced the number of relevant AI studies to just over 2.5 million.

Another challenge was organizing the data to enable meaningful comparisons with other international studies. OpenAlex classifies publications into more than 100 specific categories, whereas global analyses often rely on the simpler OECD Frascati Manual, which divides science into 32 broad areas, such as medicine, engineering, or the humanities. To facilitate accurate comparisons, a mapping table was developed linking the two classification systems. For example, studies in "Radiology" were grouped under "Medicine," and "Marketing" studies were included in "Economics and Business." Using this approach, 30 OECD-based areas were defined for the study. Focusing on the 10 most active OECD disciplines in AI research in Latin America allowed for a more detailed analysis of where and how AI is being applied in the region.

To avoid bias, disciplines with a naturally high volume of AI publications -such as computer and information sciences, electrical and electronic engineering, mathematics, and mechanical engineering- were excluded. This study therefore emphasizes less technological fields with high transformative potential. To benchmark regional progress, four global AI leaders were selected for comparison: Canada, China, Spain, and the United States.

Using these data, the Relative AI Penetration Index was constructed to measure the percentage of relevant AI publications by discipline and country, offering a precise assessment of the presence and application of AI in scientific output. By comparing AI-related research in Latin America with that of international benchmarks, this index clearly reflects the region's global position and highlights the scientific areas where AI adoption is accelerating most rapidly.

From the original 260 million studies in OpenAlex, the final sample included 21,238 relevant AI publications from the Latin American countries analyzed, and just over 314,000 from the benchmark countries during the study period.

This quantitative analysis enabled the development of a country-level AI penetration index, comparing Latin American nations with four global benchmarks: the United States, China, Canada, and Spain. The results reveal significant differences in AI-related scientific production across the region and show that many countries remain below benchmark averages. Although AI research output in Latin America is still emerging, it demonstrates strong potential for growth. These findings shed light on the current role of AI in academic research and provide a foundation for future comparative studies on the impact of this technology on scientific productivity.

QUALITATIVE ANALYSIS

In the second stage of the study, semi-structured interviews were conducted with 31 scientists from Argentina, Brazil, Chile, Colombia, Panama, Mexico, the Dominican Republic, and Uruguay within the prioritized disciplines. The goal was to understand how AI is being used -or why it is not used- in the development of their research and academic activities. Participant selection was carefully carried out, prioritizing researchers with expertise in AI applied to strategic fields such as medical sciences, biotechnology, physical sciences, biological sciences, and engineering, with support from the Technical Advisory Committee of the Latin American Artificial Intelligence Index (ILIA).

The analysis revealed that AI adoption in scientific research across Latin America is not uniform, but instead reflects three distinct user profiles:

01 _ FUNCTIONAL USERS

This group consists of individuals who view artificial intelligence as a practical tool for performing specific tasks, such as scientific writing, data analysis, and process automation. They value AI primarily for its ability to save time and streamline work. These users generally do not focus on how the technology is designed or on its ethical implications; what matters most is that it provides efficient solutions to everyday research needs.

A medical sciences researcher summarized it as: *"With the help of AI, I was able to structure and write a research proposal in record time."* Another scientist highlighted its usefulness for repetitive tasks: *"Creating tables can save you many hours, then creating visualizations... that also saves a lot of time. And also for writing or correcting spelling errors."* For some, it is like having a personal assistant always available: *"AI, for me, is like a virtual assistant that optimizes mechanical tasks, facilitates information search [...] I have always seen it as a helpful tool."*

IN SUMMARY:

→ Medium to high use of AI tools.
→ Focus on writing, data analysis, and automation.
→ Goal of productivity and efficiency.
→ Limited attention to ethical debates or social implications of AI in science.

02 _ INTEGRATIVE USERS

This group includes individuals who have incorporated AI across all of their professional activities-research, teaching, university management, and even institutional strategic planning. For them, AI is not merely a time-saving tool but a transformative technology that expands capabilities and redefines scientific, educational, and organizational processes.

A biological sciences academic explains: *"AI helps me in research, in teaching planning, and even in thinking about strategies to organize the academic year."* Another researcher notes: *"It has helped me spend less time worrying about whether something is well written or understandable. Also for complex calculations, chemical solutions."* Some describe it as a new team member: *"A new work team is formed. Students do not work alone, but are accompanied by (virtual) assistants"*. They also highlight AI's role in opening previously unthinkable opportunities: *"Data generation is now more accessible. Before, it wasn't even worth talking about Machine Learning. […] Now, many things can be done, like intelligent design of drugs, proteins, or enzymes."*

IN SUMMARY:

→ High and diversified use of AI tools.
→ Strong capacity for technological adaptation and appropriation.
→ Interest in institutional innovation and scientific policy design.
→ Aim to transform teaching, create institutional strategies, and engage in public policy.
→ Active reflection on governance, regulation, equity, and critical literacy.

03 _ CRITICAL USERS

This group approaches AI with caution and a critical mindset. Their use is moderate or exploratory, as they prioritize fully understanding the technology and evaluating its potential consequences before relying on it for essential tasks.

As an engineering academic explains: *"It's hard for me to trust critical decisions—key to my research—to something I don't understand and cannot trace."* Another biotechnology researcher warns about concrete risks: *"I've seen cases of scientific publications fully generated by AI, without human intervention… and published in journals that didn't detect it."*

They share the conviction that AI is not neutral: *"AI is trained with dominant values. That's why it can reproduce biases that are not explicit."* They call for strengthened democratic governance, auditable models, and training in critical AI use that links technical understanding with ethics. As one academic summarizes: *"We need to work on ethical challenges, because ethics is fundamental as a concept—something transversal that must be carefully considered to create more equitable AI in education."*

IN SUMMARY:

→ Medium to low use of AI.
→ Critical and analytical relationship with technology.
→ Emphasis on algorithmic ethics, social justice, technological sovereignty, and bias.

As observed, researchers' understanding of artificial intelligence varies, revealing different ways of engaging with and using the technology. Some perceive it as a technical tool for automating tasks; others see it as a cognitive environment that enhances capabilities; and a third group views it as a sociotechnical system with ethical, cultural, and political dimensions.

These perspectives are reflected in the three user profiles described above. While these categories are not rigid, they demonstrate that usage practices are closely tied to how AI is conceptualized: what researchers understand AI to be -and what they do not- directly shapes how it is applied.

From this analysis, three main uses of AI in Latin American science were identified:

Research Uses: This refers to the integration of AI into key research processes that extend beyond simple automation, including literature review, hypothesis generation, support for scientific writing, complex data analysis, experimental design, and the analysis of discourse and social phenomena. For example, Elicit facilitates literature reviews; Co-Scientist suggests hypotheses and experimental designs; ChatGPT assists in drafting and organizing ideas; U-Net segments medical images; and AlphaFold predicts protein structures, among other applications.

Technical Uses: SThese include tools that automate, optimize, and accelerate specific research tasks. This functional approach focuses on solving concrete problems and improving the efficiency of scientific work. Common technical uses include scientific writing assistance (e.g., ChatGPT, Writefull), coding and debugging (e.g., GitHub Copilot), information visualization and synthesis, and English language editing for non-native speakers (e.g., Grammarly), among others.

Pedagogical and Academic Uses: AI supports teaching and institutional management by facilitating academic planning, the automatic creation and grading of assessments, and rubric design, helping educators dedicate more time to complex and value-adding activities.

RESULTS: THE VOICE OF THE RESEARCHERS

The results of the qualitative study, based on interviews with researchers from multiple disciplines, show that AI is beginning to accelerate scientific production in Latin America and the Caribbean, although the region remains far from fully realizing its potential. The testimonies reveal concrete applications, ethical tensions, emerging inequalities, and insights that can inform policy and strategic recommendations.

These are the main findings:

WRITING AS THE PRIMARY ENTRY POINT

AI is entering scientific workflows mainly through writing. Tools that improve style, translate content, or help organize ideas are widely accessible and popular, serving as a "creative unblocker." As one interviewee explained:

"In research, we always face the problem of the blank page […]. With this [AI], you can do a bit of brainstorming at the beginning, starting from something that already has some structure."

REDUCING LANGUAGE BARRIERS

In a field like science—where English predominates—AI is viewed as a valuable ally in reducing linguistic inequalities. As one researcher noted: *"Because I'm not an English speaker, I use translators to improve my academic English […] Especially when one is not a native English speaker, this can help a lot, particularly for equity."* Another interviewee emphasized the same idea: *"We have always been at a disadvantage […] and with this, that gap is somewhat reduced."*

NEW WAYS OF DOING SCIENCE

When applied creatively and strategically in scientific work, AI not only accelerates tasks but also opens the door to questions and methods that were previously unthinkable. It enables the handling of large volumes of data, shortens research cycles, and reveals patterns that traditional forms of analysis may overlook. It also facilitates interdisciplinary collaboration, expanding the boundaries of scientific knowledge. As one researcher put it: *"AI doesn't just change how we do science. It changes what we understand by science."* Another added: *"AI methods are very good at finding patterns that we wouldn't think of ourselves."*

VALIDATION OF PROCESSES

Most interviewees recognize AI as a highly valuable tool, but stress that its outputs should never be assumed to be unquestionable truth. They emphasize the need for rigorous human and scientific oversight to ensure validity and trustworthiness. As one participant explained: *"Artificial intelligence, as we know it today, does not deliver results that are 100% reliable due to the phenomenon of hallucinations; human review is always necessary."*

GAPS

AI use in science can help reduce certain gaps, but it also exposes new inequalities. These include unequal access to computational infrastructure, the concentration of innovation in a few centers, a lack of AI models trained in Spanish, and dependence on global platforms that can hinder the development of local solutions. Additionally, researchers express concern about potential academic or social judgment in the absence of clear norms. One participant illustrated this tension: *"If someone writes a paragraph of a paper using AI, some see it as cheating, others as copyright infringement."*

IMPACT ON EDUCATION

Several interviewees, who also serve as educators, recognize that AI is transforming teaching. The role of the teacher is being redefined, shifting from solely transmitting knowledge to acting as a critical guide. As one researcher noted: *"Many times my students teach me new ways to use these tools. And that completely changes classroom dynamics."* Another

added: *"AI forces us to rethink the relationship between knowledge, assessment, and learning. It's not about banning it, but about teaching how to use it critically."*

ETHICAL DIMENSION

AI also raises important ethical challenges in scientific research, particularly regarding the traceability of results, the quality of sources, and overall transparency. Using AI without critical understanding is a key concern. As one participant explained: *"We are delegating the heart of research."* Another noted: *"Using AI to write papers or reviews can blur authorship and hide conceptual flaws."* A third emphasized the importance of early education: *"If we are going to use AI in universities or scientific programs, it must be applied from the start of training: students need to know how to use it, how to ask it questions, and not believe everything it says."*

A LANDMARK CASE

Several interviewees highlighted AlphaFold, DeepMind's system for predicting the three-dimensional structure of proteins from their amino acid sequences, as a turning point in AI use. Its success and global validation demonstrate that AI can generate reliable, valuable, and openly accessible scientific knowledge, rather than serving merely as an auxiliary tool. As one researcher observed: *"Perhaps AlphaFold is the most revolutionary application of AI I have seen, at least in biotechnology. What used to take years with crystallography can now be done in a few minutes."*

PROPOSALS AND CONCLUSIONS

This study not only offers an unprecedented snapshot of how AI is being integrated into science in Latin America and the Caribbean, but also outlines a path for its future adoption: one that is equitable, effective, and tailored to regional realities. The impact of AI, however, is not automatic; it depends on three key types of conditions:

Structural: Access to technological infrastructure.
Institutional: Integration within universities and research centers.
Personal: The critical skills and attitudes of researchers themselves.

HOW TO ADVANCE TOWARD AI IN SERVICE OF SCIENCE IN LATIN AMERICA AND THE CARIBBEAN

The study proposes four concrete lines of action:

01 _ STRENGTHEN ACCESS TO TECHNOLOGICAL INFRASTRUCTURE

A major bottleneck is the lack of computational capacity. Many researchers do not have access to the necessary technical resources to train models, process large volumes of data, or collaborate effectively online.

PROPOSED ACTIONS

→ Strengthen the infrastructure available for scientific storage and computing.
→ Promote inter-university partnerships to share technological capabilities.
→ Develop and promote the use of open models trained with local data and in Spanish.
→ Promote agreements between governments, universities, and major technology providers to gain preferential access to APIs, computing clouds, and AI services dedicated exclusively to research and education.

02 _ INVEST IN SCIENTIFIC AI

Is it worth it? A study by CENIA, OTIC SOFOFA, and WorkHelix (December 2024), titled "Generative AI: Opportunities for the Future of Work," found that 73% of a university lecturer's tasks can be completed in half the time, while maintaining or even improving quality, thanks to AI. In Chile, a postdoctoral researcher earning approximately USD 33,500 per year could save around USD 12,228 in work time by using tools such as ChatGPT, Grammarly, Elicit, or GitHub Copilot. Considering that the annual subscription cost for these technologies is roughly USD 720, this represents a return on investment of nearly 1,600% per year, 16 times the amount invested.

These findings demonstrate that adopting AI not only accelerates research but also generates significant economic value, making investment in these technologies highly profitable.

03 _ TRAINING IN SCIENTIFIC AI USE

Many researchers are still unfamiliar with these tools or lack the skills to critically evaluate them. Effective integration of AI into the scientific community requires deliberate change-management strategies that consider the different user profiles described earlier.

PROPOSED ACTIONS

→ Provide training for faculty and researchers that combines technical skills with an ethical AI framework.
→ Foster interdisciplinary dialogue spaces to share experiences, challenges, and best practices that promote adoption.
→ Promote organizational change management in universities and research centers to catalyze adoption in a supported and sustainable way.
→ Implement AI gradually in scientific groups, prioritizing disciplines more familiar with the technology, followed by less experienced or more skeptical groups.

04 _ ESTABLISH AN ETHICAL FRAMEWORK

The interview analysis highlights widespread concern about the ethical risks associated with AI use, including a lack of traceability (the ability to identify, understand, and verify how AI produces a given result or decision), data biases, technological dependency, and the absence of clear guidelines for its application in science and research. While these concerns are widely recognized, they do not always lead to concrete institutional actions.

PROPOSED ACTIONS

→ Establish clear ethical principles within institutions.
→ Incorporate ethical criteria into funding calls, peer review, and institutional evaluation.
→ Define institutional ethical principles for AI use in research and teaching (traceability, transparency, validity).
→ Include ethical responsibility criteria in competitive funding, academic evaluations, peer reviews, and institutional assessments.

AI can be a powerful ally for science in Latin America, but adopting it without careful planning or reflection risks deepening existing inequalities. Investment, training, ethics, and collaboration are essential elements for its effective integration.

Both the study findings and the proposed actions underscore that fully leveraging AI in Latin American science requires more than simply adopting new technologies. It is crucial to invest in infrastructure, train researchers with an ethical and critical perspective, establish clear regulatory frameworks, and foster collaboration. Furthermore, investing in AI can be highly profitable and accelerate research, but only when adapted to local needs. The quantitative data presented in this study provide a foundation for more detailed analyses to identify disciplinary or national gaps and guide concrete actions to address them. Ultimately, meaningful transformation depends on the critical, responsible, and collective use of AI to achieve a more efficient, inclusive, and impactful scientific enterprise.

RESEARCH, DEVELOPMENT, AND ADOPTION

2.2 Innovation and Development Subdimension

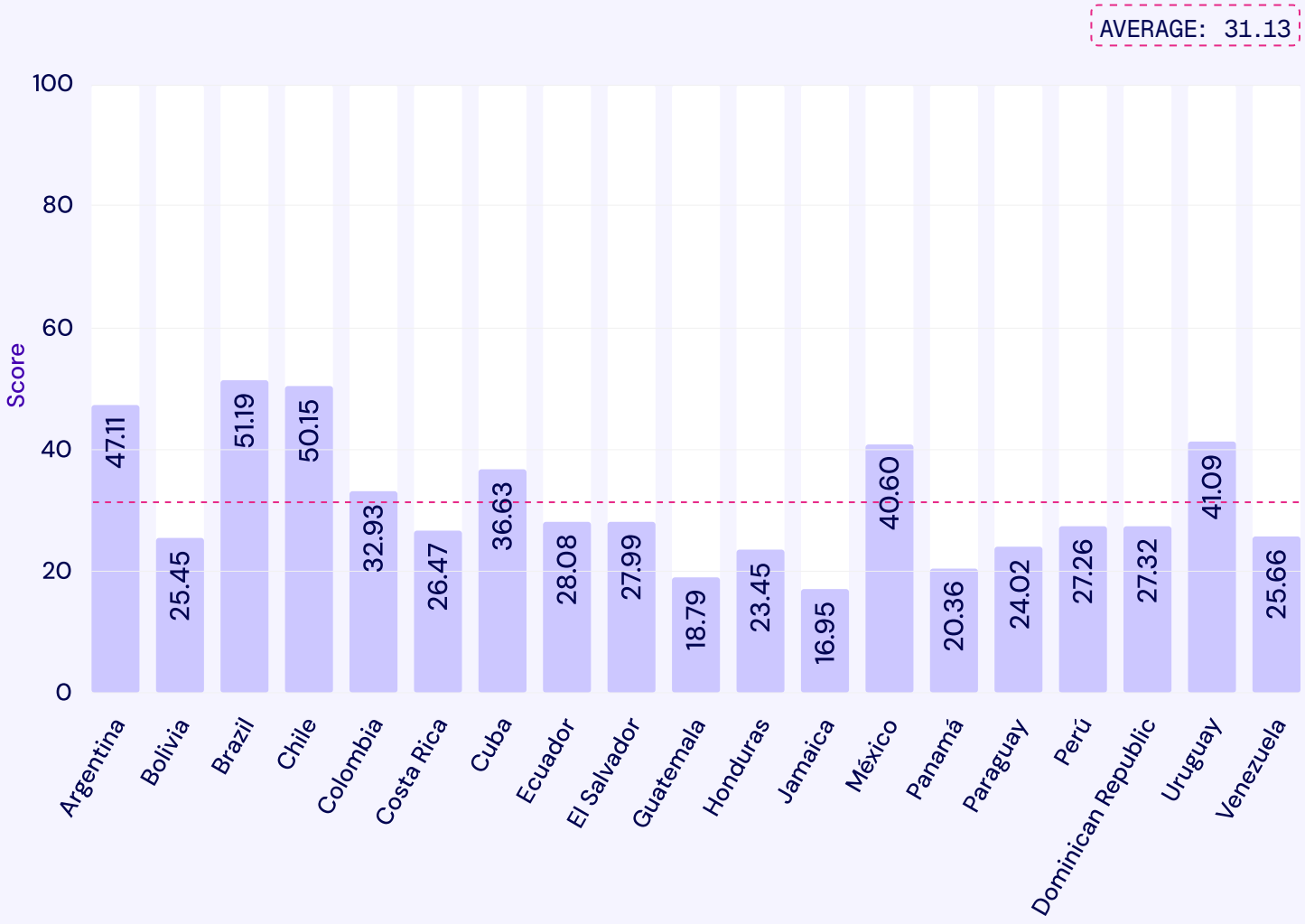
The Innovation and Development subdimension evaluates the dynamism and creative capacity of countries in the field of AI, gathering key information to understand their contributions to the development of open technologies through collaborative platform initiatives, patent creation, and other activities.

This subdimension accounts for **30%** of the total weight of the R+D+A dimension.

In this edition of ILIA, two new sub-indicators have been added to the Development indicator: **Proportion of Software Developers and Relevance of Software Production.** Derived from GitHub Innovation Graph data, these sub-indicators highlight the importance of open-source development and are accompanied by a report characterizing collaborative coding activities among Latin American and Caribbean countries.

FIGURE 11 presents regional performance in this dimension, showing **Brazil (51.19), Chile (50.15), Argentina (47.11), Uruguay (41.09), and Mexico (40.6)** as the top performers. However, given that 17 of the 19 countries in the region score below 50 points, these results reveal significant gaps in AI innovation and development across Latin America and the Caribbean.

FIGURE 11: TOTAL SCORE – INNOVATION AND DEVELOPMENT SUBDIMENSION



SOURCE:ILIA 2025
DATA: CENIA

Countries with high performance in Innovation and Development (over 60 points): These countries demonstrate strong focus and capacity in innovation and development. In this edition, however, no country exceeds the 60-point threshold.

Countries with moderate performance in Innovation and Development (35–60 points): These countries perform above the regional average but still have room for improvement. They include **Brazil (51.19), Chile (50.15), Argentina (47.11), Uruguay (41.09), Mexico (40.60), and Cuba (36.63).**

Countries with low performance in Innovation and Development (up to 35 points): These countries face significant challenges in this area. In this edition, 13 countries fall into this category.

For detailed scores at the indicator and sub-indicator level, refer to ILIA 2025.

RESEARCH, DEVELOPMENT, AND ADOPTION

2.3 Adoption Subdimension

The extent to which organizations or individuals incorporate AI into their processes, operations, or products reflects the level of technology adoption in each country.

Technological adoption is a complex process, often occurring over timelines much longer than those of technology development. Therefore, assessing the progress of AI integration into society is a crucial element for understanding the maturity of AI ecosystems, encompassing government, the private sector, civil society, and the general public.

The Adoption subdimension accounts for **30%** of the total weight of the R+D+A dimension. It comprises four indicators:

Industry: Measures the integration of high- and medium-tech solutions into the productive sector.
Government: Assesses progress in digital transformation within public administration and the use of AI in citizen participation processes.
Generative AI: Evaluates the level of adoption of generative AI, given its impact across multiple areas of life and its role in democratizing access to technology.
AI Web Traffic: Measures the intensity of use of web-based AI solutions by users in different countries.

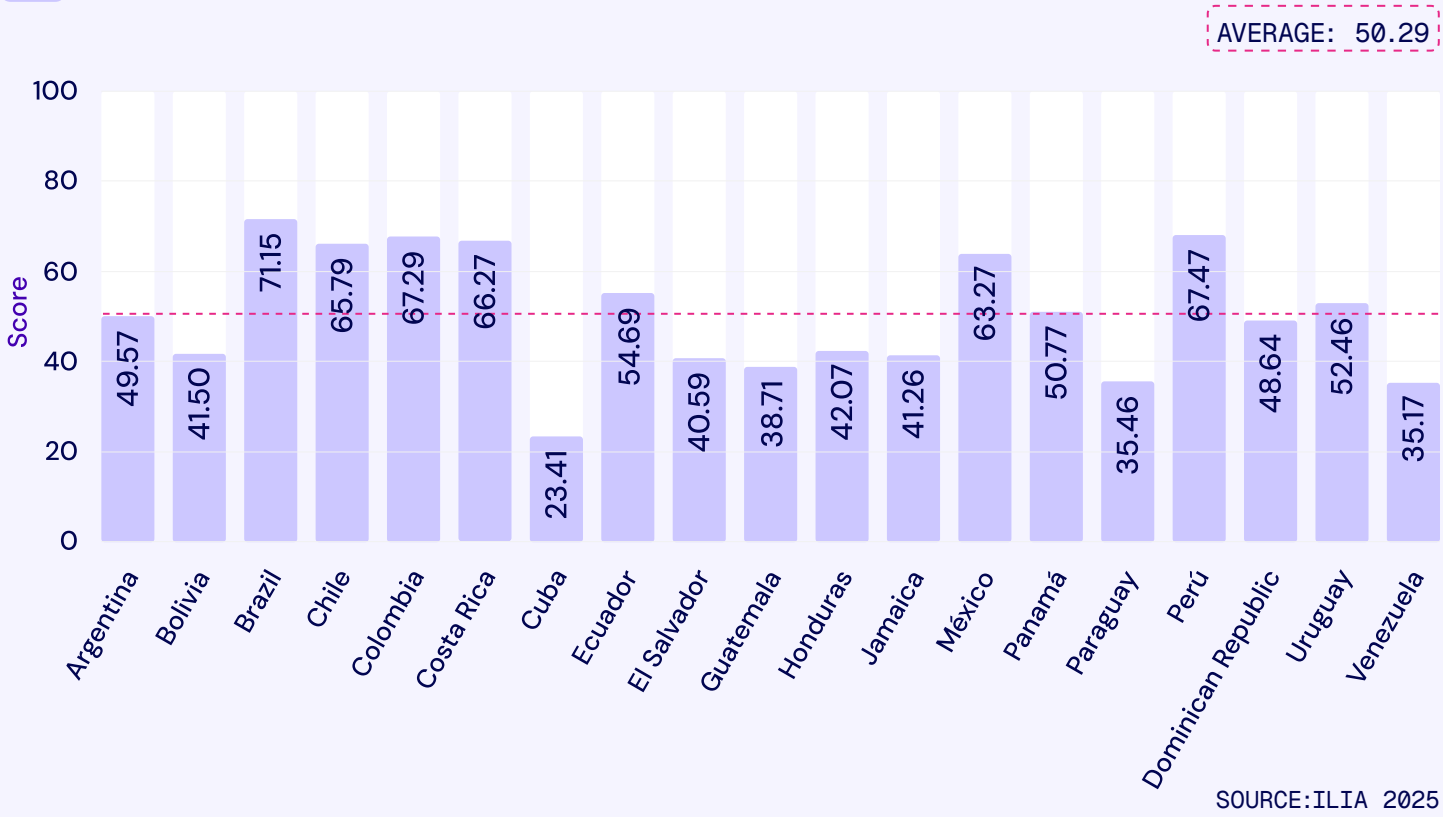
Reflecting the growing importance of adoption, this edition strengthens the subdimension by incorporating two new indicators: **Generative AI and AI Web Traffic,** composed of four and two sub-indicators, respectively. Data for Generative AI were obtained from Sensor Tower, **including Active Generative AI Users, Time Spent on Generative AI, and Average Generative AI Spending.** This reflects the undeniable impact of generative AI in spreading AI adoption among the general public, making it a key driver of cross-sector adoption. Furthermore, the adoption period for generative AI has been considerably shorter than for other technologies, highlighting its significance as a phenomenon to analyze.

The web traffic sub-indicators **-Web AI Usage Intensity, Advanced Web AI Usage Intensity, and Web Generative AI Usage Intensity-** were developed by analyzing the number of visits to relevant websites. The 260 most visited sites were selected across 18 countries

in Latin America and the Caribbean, based on public rankings of solutions with significant web presence (Similarweb.com and RankMyAI.com).

FIGURE 12 presents regional performance in this subdimension, highlighting **Brazil (71.15), Peru (67.47), Colombia (67.29), Costa Rica (66.27), Chile (65.79), and Mexico (63.27) as the only countries exceeding 60 points.**

FIGURE 12: TOTAL SCORE - ADOPTION SUBDIMENSION



SOURCE:ILIA 2025

Countries with high AI adoption (over 60 points): These countries have the highest scores, reflecting an advanced and robust environment for AI technology adoption. They include **Brazil (71.15), Peru (67.47), Colombia (67.29), Costa Rica (66.27), Chile (65.79), and Mexico (63.27).**

Countries with moderate AI adoption (35–60 points): This group includes countries demonstrating a moderate level of adoption, with scores near the regional average: **Ecuador (54.69), Uruguay (52.46), Panama (50.77), Argentina (49.57), the Dominican Republic (48.64), Honduras (42.07), the Plurinational State of Bolivia (41.50), Jamaica (41.26), El Salvador (40.59), Guatemala (38.71), Paraguay (35.46), and the Bolivarian Republic of Venezuela (35.17).**

Countries with low AI adoption (under 35 points): These countries have the lowest scores, reflecting a challenging scenario for AI integration. Only one country in the region falls into this category.

For detailed scores at the indicator and sub-indicator level, refer to ILIA 2025.

CASE STUDY

Impact Analysis of GerencIA: Preliminary Findings

Following the publication of the first ILIA edition, one of the most significant findings was the gap in AI adoption and private investment when comparing Latin America and the Caribbean with regions of similar digitalization levels or per capita GDP, such as Eastern Europe, North Africa, or the Middle East. For example, while the region accounted for approximately 8% of global GDP in 2023, private investment in AI for Latin America represented barely 2% of the global total.

Private investment is undeniably one of the primary drivers—if not the most important—for translating AI into practical benefits for society. Understanding this gap was therefore urgent to help shift the trend. In response, CENIA, together with the Inter-American Development Bank, hypothesized that one key obstacle to AI investment and adoption was the lack of relevant information among business decision-makers. While other factors -such as structural lags in R&D investment or weaknesses in the entrepreneurial and regulatory environment- also affect investment, aspects related to the quality of corporate management are increasingly relevant in explaining differences in business decisions (Sadun et al., 2025).

To test this hypothesis, an experiment was designed in which one group of executives received specialized AI training for business, while another group received only introductory AI training. If significant differences in predefined variables were observed over time, it could be concluded that targeted training plays a crucial role in business decision-making regarding AI.

The course was conducted jointly with SOFOFA and the media group COPESA in May 2024, delivered in a hybrid format with 10 sessions for each group. More than 800 executives enrolled, of whom 450 were eligible for selection. For the experiment, spots in each group were randomly assigned using simple stratification based on geographic distribution, company size, and economic sector, resulting in the selection of 90 companies. The analysis and preliminary conclusions presented in this document are based on this set of observations.

The following provides a preliminary analysis of the research findings, comparing the evolution of the Control group and the Treatment group across three measurement points: at the start of the course (T1), in November 2024 (T2), and in July 2025 (T3).

The central hypothesis posited that specialized AI training for business (Treatment group) would have a measurable impact on AI-related decision-making and adoption compared to introductory training (Control group). Preliminary results confirm this hypothesis, revealing significant differences in perception, confidence, and -most importantly- in the actual implementation of AI technologies.

01 _ LEVEL OF UNDERSTANDING AND COMFORT WITH AI

These two indicators show the most direct and immediate impact of the course.

Understanding of AI (scale of 1 to 10): The Treatment group experienced a substantial increase in self-perceived understanding of AI, rising from an average of 5.57 before the course to 7.0 afterward. This improvement also persisted in follow-up assessments. In contrast, the Control group showed only a marginal increase and remained at a significantly lower level of understanding.

Group	(Post-Course) T2	(Follow-up) T3
Control	5.82	5.88
Treatment	7.00	7.00

Comfort in making decisions with AI (scale of 1 to 10): Confidence in using AI for important decisions also increased markedly in the Treatment group, rising nearly two points -from 6.21 to 8.14- immediately after the course. This elevated level of confidence remained stable over time, indicating that the applied training fostered lasting trust in AI-based decision-making.

Grupo	(Pre-Course) T1	(Post-Course) T2	(Follow-up) T3
Control	6.13	6.91	7.13
Treatment	6.21	8.14	8.00

Partial Conclusion: The specialized course effectively enhanced both the perception and confidence of executives in the Treatment group regarding AI, establishing a strong foundation for informed decision-making.

02 _ INTEGRATION AND REAL USE OF AI TOOLS

The most significant finding is that improvements in perception translated into concrete actions at the organizational level; in other words, training individuals ultimately impacts the organizations where they work. Analysis of tool usage in production or service functions reveals a significant gap between the groups at the final measurement.

The Treatment group consistently reported higher levels of adoption across multiple key tools, indicating a clear shift from theoretical knowledge to practical implementation.

Use of AI Tools in Production (% of Companies) – Follow-up Measurement (T3)

AI Tool	Control	Treatment	Difference
Business Process Automation	50.0%	83.3%	+33.3 pts
Predictive Analysis for Sales, Demand, etc.	50.0%	66.7%	+16.7 pts
Recommender Systems	12.5%	50.0%	+37.5 pts
Natural Language Processing	50.0%	50.0%	No difference
Computer Vision	25.0%	33.3%	+8.3 pts

Partial conclusion: The applied training not only boosted confidence but also served as a catalyst for the actual implementation of AI solutions, confirming the experiment's central hypothesis.

03 _ ORGANIZATIONAL CHANGES

The course's influence is also evident at the structural and resource level, though more subtly.

Existence of a dedicated AI area: While both groups showed some evolution, the Treatment group exhibited a stronger trend toward formalizing AI management. By the July follow-up, 50% of companies in this group had established a dedicated AI area or appointed a responsible person, compared with 37.5% in the Control group.

IT Infrastructure: A modest trend was observed in the Treatment group toward adopting more flexible and modern infrastructures. In the final measurement, 100% of this group used cloud services (either exclusively or in combination), compared to 87.5% of the Control group.

04 _ AREAS WITH NO SIGNIFICANT DIFFERENCES

Not all indicators showed meaningful changes, which helps define the scope of the course's impact.

Digital information storage: Both groups already had very high levels of digitalization -close to 100% in critical areas such as finance, client management, and personnel- leaving little room for improvement.

Outsourcing of AI solutions: No significant differences were observed in the tendency to hire external providers. The choice between developing solutions internally or outsourcing appears to be influenced by factors unrelated to the type of training received.

Additional insights emerged regarding company adoption in relation to size and other factors that can accelerate AI integration beyond training.

Organization size also proved to be a key factor influencing the speed and type of AI adoption.

Large companies (>200 employees): These organizations, particularly in the Treatment group, excelled at formalizing AI management and advanced the most in creating dedicated AI areas or roles. Their primary advantage lies in resources, which enable more structured investments.

Small and medium enterprises (<200 employees): SMEs in the Treatment group demonstrated greater agility in adopting specific, low-cost tools. For example, they quickly integrated AI solutions for marketing or customer management. However, they showed less progress in establishing formal AI roles, likely due to budget constraints.

A strong positive correlation was observed: companies with a dedicated person or area responsible for identifying AI opportunities used a greater number of AI tools in production. On average, organizations with a formal AI role reported using two more tools than those without one.

This effect was present in both the Control and Treatment groups but was more pronounced in the Treatment group, indicating that the combination of applied knowledge from the course and organizational structure (the dedicated AI role) generates the greatest impact.

Another noteworthy finding is the relationship between IT infrastructure and executive perception. Leaders of companies operating primarily or entirely in the cloud reported significantly higher levels of comfort and confidence in making AI-supported decisions.

This suggests that familiarity with a flexible, scalable, and data-driven environment, such as the cloud, fosters a more receptive organizational culture, better prepared for AI adoption.

On-premise infrastructure (own servers) appears to correlate with a more traditional and cautious mindset.

GENERAL CONCLUSIONS

1. Direct impact on confidence and technology knowledge: Business-applied training (Treatment group) was significantly more effective in increasing executives' understanding of AI and their comfort in making strategic decisions involving the technology.

2. From theory to practice: The Treatment group successfully translated this increased knowledge into higher adoption rates of AI tools in their operations. This effect was particularly notable in areas such as process automation and recommendation systems.

3. Boost to organizational change: The course also encouraged organizations in the Treatment group to formalize AI management by creating dedicated roles and modernizing their technological infrastructure.

4. Appointing a responsible person or establishing an AI team emerged as a direct accelerator of technological implementation, according to the correlations observed.

5. Moving to cloud-based infrastructure is not merely a technical decision; it can also foster a culture more receptive to innovation, preparing organizations for future technologies like AI, provided the necessary conditions are in place.

In summary, the preliminary results support the hypothesis that business-focused AI training, such as that provided to the Treatment group, not only educates executives but also enables and accelerates the adoption of artificial intelligence within organizations. However, the impact of AI training is not uniform. Organizations in the service sector and large companies with sufficient resources and established structures tend to capitalize more effectively on the knowledge gained.

CASO DE ÉXITO

The AWS Cloud That Kept Justice Running After Catastrophic Flooding in Rio Grande do Sul

One year ago, the Rio Grande do Sul Court of Justice (TJRS) migrated 10.4 million cases and 200 terabytes of data to the AWS cloud in just 21 days to ensure the continuity of justice amid an unprecedented flood. This extraordinary operation was made possible through a combination of technology and human collaboration, and it now underpins an ambitious digital justice program leveraging artificial intelligence.

Between April and May 2024, the Brazilian state of Rio Grande do Sul experienced one of the worst climate disasters in its history. Unprecedented floods affected more than 60% of the territory and 2.4 million people, submerging cities, turning roads into rivers, and isolating communities. In Porto Alegre, the state capital, the Guaíba River reached 5.37 meters, flooding iconic locations such as the Public Market, Praça da Alfândega, and the State Court of Justice building.

The TJRS operated two data centers, located two kilometers apart, with one serving as a backup for the other. These centers stored all local judicial documents and rulings, meaning that total damage would have brought the state's justice system to a complete halt. On May 4, this threat became a reality: historic rains flooded Porto Alegre, forcing both centers to shut down.

A RACE AGAINST TIME

Amid the crisis, Amazon Web Services (AWS) and the Federal Data Processing Service (SERPRO), in collaboration with the Court, designed an emergency migration to transfer the entire state judicial system to the AWS cloud. Cloud computing enables data to be stored and processed over the internet without reliance on physical servers, ensuring remote access, security, and high availability.
To initiate the migration, it was crucial to reactivate the second data center. This was accomplished using generators, including one improvised on a raft that maintained internet connectivity when the main provider failed.
The scale of the migration was extraordinary: 10 million judicial cases and 388 million documents -approximately 200 terabytes of information- were moved and managed in the cloud. What would normally take six months was completed in just 21 days. *"Thanks to this, the TJRS was the only court in the state that maintained its services during the flood,"* notes AWS.
Simultaneously, AWS deployed its Disaster Response Team, providing immediate support with deployable infrastructure, hardware, and on-site technical assistance. Working alongside Help.NGO -an international emergency response organization- they used the AWS cloud to analyze drone data and generate detailed maps in near real time, facilitating the location of people and the coordination of rescue efforts.

DISASTER-RESILIENT INFRASTRUCTURE

The state Court's information was hosted on the AWS cloud, providing virtually unlimited capacity and greater security than local facilities, thanks to its availability zones, groups of independent data centers located in different regions to offer redundancy. If one zone fails, the workload is automatically redirected to another. "AWS infrastructure in Brazil was key to ensuring the resilience of the Rio Grande do Sul judicial system during the historic 2024 floods. The use of multiple availability zones allowed the system to continue operating without interruptions or data loss, even with the TJRS physical infrastructure completely flooded. Scalable cloud computing enabled handling the intensive migration workload without service interruptions," reports AWS.

To guarantee data security and sovereignty, the Court mandated that all information remain stored within Brazil. This allowed Court technicians and analysts to control access, while AWS acted solely as an operator in compliance with the General Data Protection Law (LGPD), accessing data only with express authorization. This approach ensured the confidentiality of sensitive information, including cases under judicial secrecy and tax documents.

The AWS architecture -the combination of cloud components and services- integrated several technologies, each serving a specific function: Amazon Aurora MySQL provided a high-performance relational database capable of handling millions of queries quickly and securely, with fault tolerance and automatic replication. Amazon EC2 offered scalable virtual servers that allowed computing capacity to be increased or decreased according to demand, which was essential during the intensive migration workload. Amazon OpenSearch enabled indexing and searching millions of judicial documents in seconds, ensuring that judges and lawyers could access information without delays. Amazon EFS allowed simultaneous access to files by multiple systems and users, enabling different court departments to

work in parallel without loss of consistency. Finally, Amazon S3 offered massive, durable, and cost-effective storage, capable of keeping redundant copies of each document in different locations to protect against loss or corruption.

This technological integration streamlined case file consultation, increased the availability of judicial services, and safeguarded information during the disaster. “Thanks to this architecture, the TJRS was the only court in the state that maintained active services throughout the emergency period, ensuring operational continuity at a time when justice could not stop,” states AWS.

AI AT THE SERVICE OF JUSTICE

The experience not only ensured the continuity of the Judiciary of Rio Grande do Sul during a critical moment but also paved the way for innovation. Today, the State Court of Justice (TJRS) implements eight AWS-based artificial intelligence solutions that assist judges, lawyers, and citizens, enhancing the agility, accuracy, and accessibility of the judicial system. Among these solutions, GAIA Assistant stands out by extracting relevant information to support decision-making. *“It functions like an expert on the judicial process: it can answer questions about any document or movement within a case using OCR technology, which converts information from images or digitized documents into searchable text. To date, GAIA Assistant has answered more than 16,000 questions at the first-instance level, with over 4,000 active users,”* reports AWS.

Additionally, GAIA Intelligent Hearing automatically transcribes hearing videos into text, highlighting the most relevant points. *“It also processes information in real time, integrated with Microsoft Teams, facilitating the analysis and review of judicial hearings.”*

Finally, GAIA Draft generates draft judicial decisions: it accesses the case and presents a substantiated proposal based on the magistrate’s own records, maintaining their writing style according to their history of decisions. *“In just 45 days, this tool generated more than 200,000 drafts, averaging 10,000 per working day, with over 4,000 active users,”* the company states.

Together, these tools have processed thousands of queries and documents, reducing repetitive tasks and allowing judges to focus on the substantive analysis of cases.
The experience in Rio Grande do Sul demonstrates that, in a crisis of historic magnitude, technology not only preserves data but also sustains the functioning of entire institutions while creating opportunities for modernization. Thanks to the AWS cloud and strong institutional collaboration, justice continued to operate even as floodwaters paralyzed much of the state. The lesson is clear: in today’s world, technological resilience is a pillar of social resilience.

FACT

The team behind the migration

The team responsible for the historic data migration from the State Court of Justice to the AWS cloud was led by Paulo Cunha, AWS Public Sector Director for Brazil, who served as project sponsor, under the overall leadership of Cleber Morais, General Director of Amazon Web Services in Brazil. From AWS, Rafael Bitencourt (Regional Government Lead), Cristina Beltrame (Customer Solutions Manager), and Allyson Oliveira (Senior Solutions Architect) actively participated, maintaining multiple daily contacts with the team to ensure the migration's success.

In addition, specialists from SERPRO, judicial analysts, and scientists and technicians from collaborating companies contributed their expertise, forming a multidisciplinary team that made the unprecedented migration possible.

CASE STUDY

The Google AI that improves traffic and reduces pollutant emissions

Green Light, Google's artificial intelligence system, is transforming mobility in more than 14 cities by optimizing traffic and reducing CO_2 emissions by up to 10%. Since its launch in 2021, the system has combined real-time data from applications such as Google Maps and Waze with traffic light locations to shorten travel times and improve air quality. In Santiago, Chile, where it has been operating for nearly a year, the results are already promising.

Santiago residents spend over 100 hours per year stopped at traffic lights. According to the TomTom Traffic Index 2024, the city ranks 126th out of more than 400 global cities for congestion. However, the issue goes beyond traffic jams: transportation accounts for 15% of global greenhouse gas emissions, and intersections -with their frequent stops and starts- can generate up to 29 times more pollution than a highway with steady traffic flow. With over 19 million daily trips, including 6.1 million by car, Santiago faces a growing mobility challenge that impacts both residents' quality of life and environmental health. In response, the city implemented Google Green Light about a year ago. This AI-based traffic management system, developed by Google Research, is revolutionizing vehicle flow by synchronizing traffic lights in real time to reduce stops, ease congestion, and decrease pollutant emissions.

Launched globally in 2021, Google Green Light now operates in 15 cities across four continents, with plans to expand to 24 metropolitan areas. Its origin is simple and personal. In 2020, Dotan Emanuel, a software engineer at Google Research, and his team were exploring new project ideas to accelerate climate change mitigation. One idea emerged during a family meal, when his wife jokingly asked why they were not doing something about the time wasted at traffic lights. That comment led the team to study traffic engineering and

develop an AI solution that, using more than ten years of Google Maps trends, can analyze real-time traffic and automatically adjust traffic lights to improve vehicle flow.

Early global results are promising. Green Light has reduced unnecessary vehicle stops at intersections by up to 30 percent and lowered CO2 emissions by up to 10 percent in cities where it operates, including Rio de Janeiro, Seattle, Boston, Haifa, and Kolkata.

PRIORITIZING INTERSECTIONS

In Santiago, the project is being implemented in collaboration with Chile's Ministry of Transport and Telecommunications and is already showing promising initial results, demonstrating how technology and public-private cooperation can create smarter, more efficient, and sustainable cities.

"Santiago has been an excellent partner in this project, and we have identified valuable opportunities to implement Green Light's recommendations in the city. Obtaining reliable data for traffic light optimization is a costly and challenging task for city engineers, often leading to outdated configurations. Before using Green Light, the main methods relied on expensive sensors and time-consuming manual vehicle counts. By early 2025, ten intersections in Santiago had already received Google Green Light traffic light recommendations, managing approximately 30 million trips per month in the cities where it operates," says Paula Aluani, Head of Strategic Sustainability Partnerships for Waze and Maps in Latin America at Google.

Pedro Vidal, Executive Secretary of the National Traffic Control Unit Program (UOCT) and Coordinator of Intelligent Transport Systems at the Ministry of Transport and Telecommunications of Chile, confirms the progress: *"We have been working with Green Light for just over a year, and the impact is noticeable. Travel times have improved, stops have been reduced, and the system itself provides us with concrete data to monitor these changes."*

Currently, about 2,500 of Santiago's 3,420 signalized intersections are connected to the central traffic control system, many using 4G and 5G technology. *"We were essentially interested in all areas, but the information we provided to Google focused on intersections not connected to the control system, where we couldn't make remote changes or tests. The remaining intersections are already connected. Initially, priority was given to certain key axes or strategic points, but today the system is used across various parts of the city because Google recognizes their geographic location,"* Vidal explains.

REAL-TIME ARTIFICIAL INTELLIGENCE

One of the most surprising aspects for the Chilean team was that Google did not require local data to make the system work. *"We are used to feeding our models with travel matrices and vehicle flow data. But here, the suggestions arrived without us providing anything, and they worked. It was a shock,"* admits the UOCT's executive secretary.

So how does Green Light actually work? The system uses anonymized real-time data collected from Google Maps, Waze, and Android devices. It then cross-references this information with geographic data on signalized intersections, identifies bottlenecks, and generates recommendations to improve traffic flow.

"The artificial intelligence builds a model of each intersection based on Google Maps driving trends," explains the Head of Global Partnerships Development at Waze/Google. *"This model considers the intersection's structure, traffic patterns -such as start-and-stop sequences- traffic light programming, and the interaction between vehicle flow and timing. To analyze urban traffic, it applies a combination of statistical techniques and machine learning algorithms across different components of the model,"* she adds.

The AI is then trained to understand traffic patterns in each city by adapting Google Maps driving trend data to the specific location. *"This allows the system to adjust to the dynamic characteristics of each urban environment,"* explains Aluani.

This enables the system to provide precise recommendations, such as adjusting the duration of traffic light phases, shortening red lights during off-peak hours, or coordinating green light sequences. It also generates visualizations to show the impact of each measure and allows real-time reversal of actions if they prove ineffective.

"Today there are many tools that provide useful data -GPS, Waze, buses, telecom companies- but what sets Green Light apart is that it automates part of traffic management. This is the first solution we've accessed that not only diagnoses congestion and identifies where it occurs but also tells us what actions to take. It provides solutions," emphasizes Vidal.

FROM DATA TO DECISIONS

Santiago's experience with Green Light is part of a long-standing technological collaboration with Google that began in 2010, when public transport data was first integrated into Google Maps. This was followed by the inclusion of Waze, multimodal trip planning, and even pilot projects with autonomous vehicles. The current step, however, represents a substantial leap forward.

"This is the move toward traffic management that not only diagnoses congestion but also automates operational decisions in real time. Previously, we detected congestion, went into the field, called to request a traffic light adjustment, and evaluated it visually. Today, the system automates the analysis, proposes solutions, and allows implementation with technical support," explains Vidal.
And the results? Chile's coordinator of Intelligent Transport Systems at the Ministry of Transport reports that waiting times at intersections have been reduced by 3% to 20%, depending on the crossing. "What matters most is that this approach can be scaled and replicated," he adds.

Technical results are not the only significant aspect. *"The experience with Green Light has also been very interesting from a cultural standpoint. It's one thing to have the technology available, and another to get the organization to adopt it as a valid working tool. That transformation isn't automatic; it's a cultural process. If not managed well, resistance can arise. That's why we created the right conditions to ensure the system is genuinely useful and adopted. This is how innovation processes work in practice,"* he says.

In this regard, the power of the brand was also a key factor, the Chilean official acknowledges. *"When you innovate in the public sector, everything starts with emotions. Saying you're working with Google generates enthusiasm, opens doors, provides legitimacy, and creates an emotional framework that motivates both internal and external teams. It's very different from working with an unknown provider. For citizens, it's the same: people are more willing to collaborate with the system. There is a symbolic value that cannot be overlooked."*

Moreover, Google knew how to present information in a clear, technical, and practical way through charts, hourly analyses, and operational recommendations. "Google spoke the language of traffic engineers, and that made adoption much easier," the Chilean transport expert concludes.

LOOKING BEYOND EFFICIENCY

Although the impact of these measures is rarely noticeable in daily life, their cumulative effect is significant. *"In cities like Santiago, changes aren't seen day to day, but together, they make a huge difference. During the pandemic, for example, traffic lights were reprogrammed to adapt to lower traffic and prioritize pedestrian flow. This measure went largely unnoticed but was crucial in preventing crowding,"* notes the executive secretary of Chile's National Traffic Control Operations Unit (UOCT).

"Traffic isn't static; it's highly dynamic. Green Light allows us to constantly evaluate and adjust," says Vidal. *"Since it is based on opportunity detection, I don't tell Green Light which intersection to analyze. The system identifies on its own where there is room for improvement and suggests adjustments. In some areas, operational improvements aren't enough; what's needed is an infrastructure change."*

With this data, the Ministry's team also evaluates the impact on pedestrians, cyclists, hospitals, and schools to avoid unintended consequences. *"We are convinced that traffic management cannot focus solely on efficiency. We must consider territorial value and the purpose of each area. If a municipality wants to revitalize a shopping district, traffic management should support that goal: make walking easier, reduce noise, and improve the urban experience,"* he explains.

That's why, beyond improving traffic flows or reducing emissions, the project has also sparked important discussions about the future of traffic management. *"Artificial intelligence will handle the efficiency layer. But we will need analysts who interpret that information from a territorial perspective, almost like a combination of traffic engineer and urban planner. That's the transformation ahead,"* the engineer explains.

In this context, Green Light represents not only a technical innovation but also an opportunity to rethink urban mobility: driven by data, yet guided by territorial awareness, human focus, and informed public decision-making. *"This project has been so important not just for its technical results, but*

because it has forced us to think differently and prepare for what's coming. And what's coming isn't just more technology and artificial intelligence; it's more public intelligence: the ability to decide how we use it, for what purposes, and for whose benefit," concludes the coordinator of Intelligent Transport Systems at Chile's Ministry of Transport.

STATE OF AI IN APPS: OVERVIEW IN LATIN AMERICA

The artificial intelligence app market in Latin America and the Caribbean is experiencing rapid growth. In the first half of 2025, data from Sensor Tower, a leading source for mobile app, digital advertising, retail media, and audience insights, showed that downloads of generative AI apps reached 280 million, a 69% increase compared to the previous semester. In-app purchase revenues exceeded $150 million, more than double the amount recorded in 2024.

Heavy usage highlights AI's integration into daily life, with users spending over 2.6 billion hours and generating nearly 72 billion sessions in just six months. Latin America has established itself as the third-largest region in terms of downloads, maintaining a 15–20% share of the global market. The region also stands out for its monetization growth, which increased by 147% compared to the previous semester.

AI assistants account for 86% of downloads in the region and are increasingly expanding into image generation. In this context, DeepSeek had a notable launch in 2025, although ChatGPT continues to lead globally in total downloads.

THE RAPID RISE OF GENERATIVE AI TOWARD 2025

More than two years after the global surge of interest in artificial intelligence triggered by the launch of ChatGPT, demand for AI-powered mobile solutions continues to grow with no signs of slowing. This trend is particularly pronounced in Latin America and the Caribbean (LATAM), where downloads of generative AI applications, including virtual assistants and content-generation tools, reached approximately 280 million during the first half of 2025. Alongside this expanding user base, monetization also rose significantly, with in-app purchase (IAP) revenues approaching $150 million over the same period, setting a new record for the region.

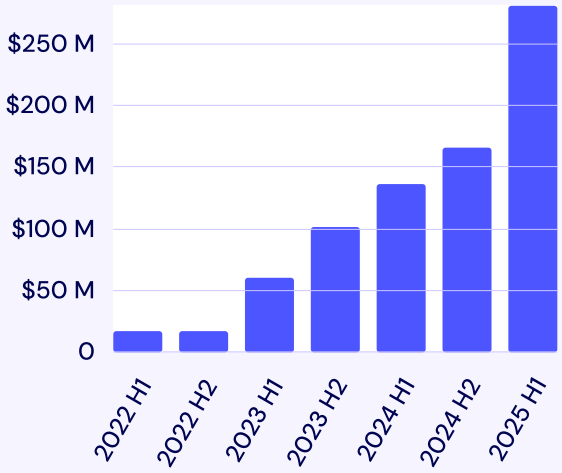
The most striking aspect of this trend is the sustained half-over-half (HoH) growth in both downloads and revenue. Compared with the second half of 2024, LATAM downloads increased by 69% in the first half of 2025, marking the fastest growth rate since the initial boom in 2023. At the same time, revenues followed a similar trajectory, with users spending nearly 2.5 times more on in-app purchases than in the previous semester. These figures reflect not only a growing user base but also increased engagement and a higher willingness to pay for value-added services, signaling that the region is entering a stage of consolidation in the mobile artificial intelligence market.

YEARLY DOWNLOAD AND IAP REVENUE TRENDS FOR GENERATIVE AI APPS

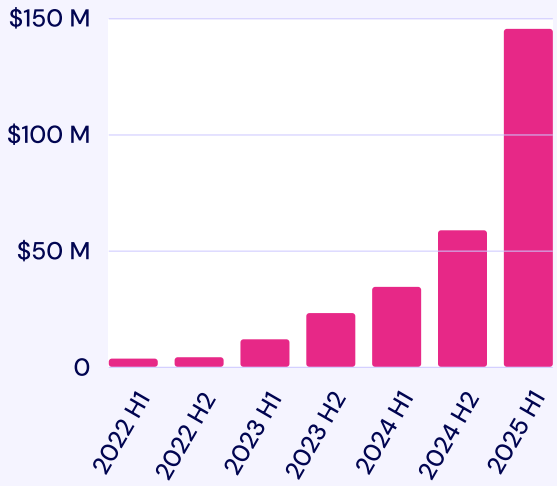
iOS and Google Play

LATAM

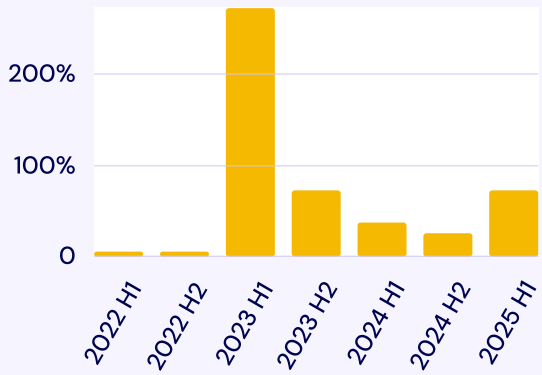
DOWNLOADS



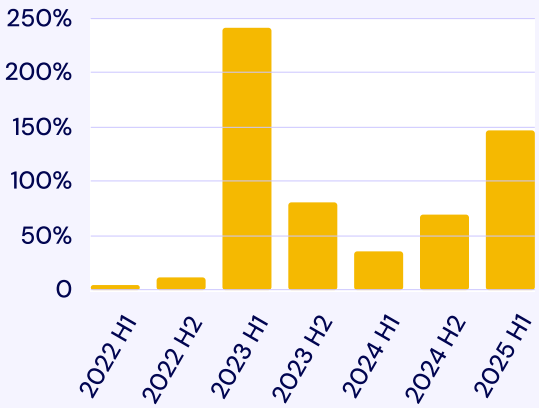
IAP REVENUE (USD)



HOH GROWTH



HOH GROWTH



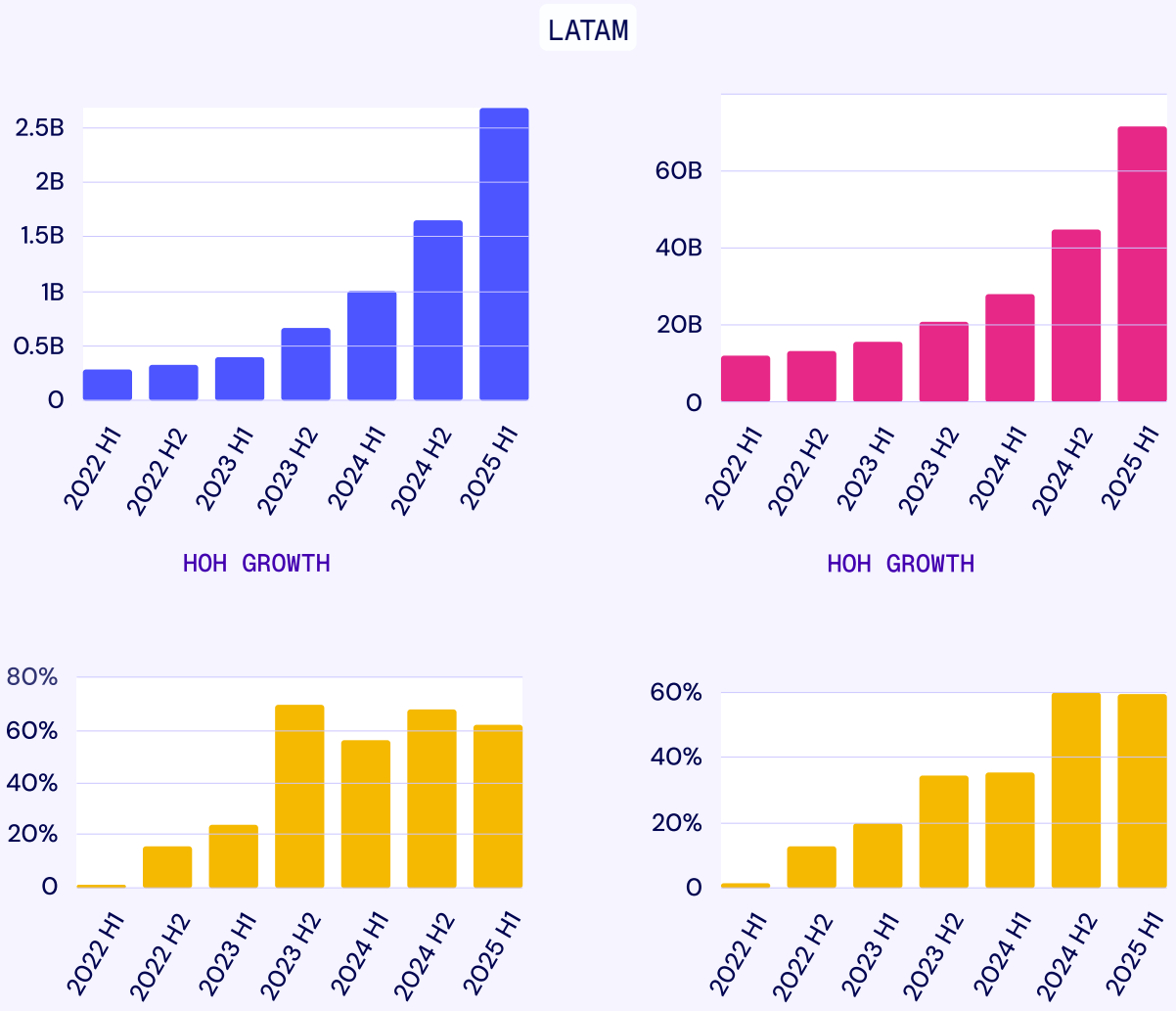
LATAM MOBILE USERS SPENT OVER 2.6 BILLION HOURS ON AI APPS IN THE FIRST HALF OF 2025

The use of generative artificial intelligence applications in Latin America is expanding not only in downloads but also in user engagement. During the first half of 2025, consumers in the region spent more than 2.6 billion hours on these apps, averaging over 14 million hours per day on assistance, content generation, and other AI-powered functions.

This increase in usage was accompanied by a record volume of interactions. The total number of sessions over the semester approached 72 billion, averaging more than 100 sessions per person in the region. These figures suggest that AI apps are not used sporadically but have become an integral part of users' everyday digital lives.

YEARLY DOWNLOAD AND IAP REVENUE TRENDS FOR GENERATIVE AI APPS

iOS and Google Play

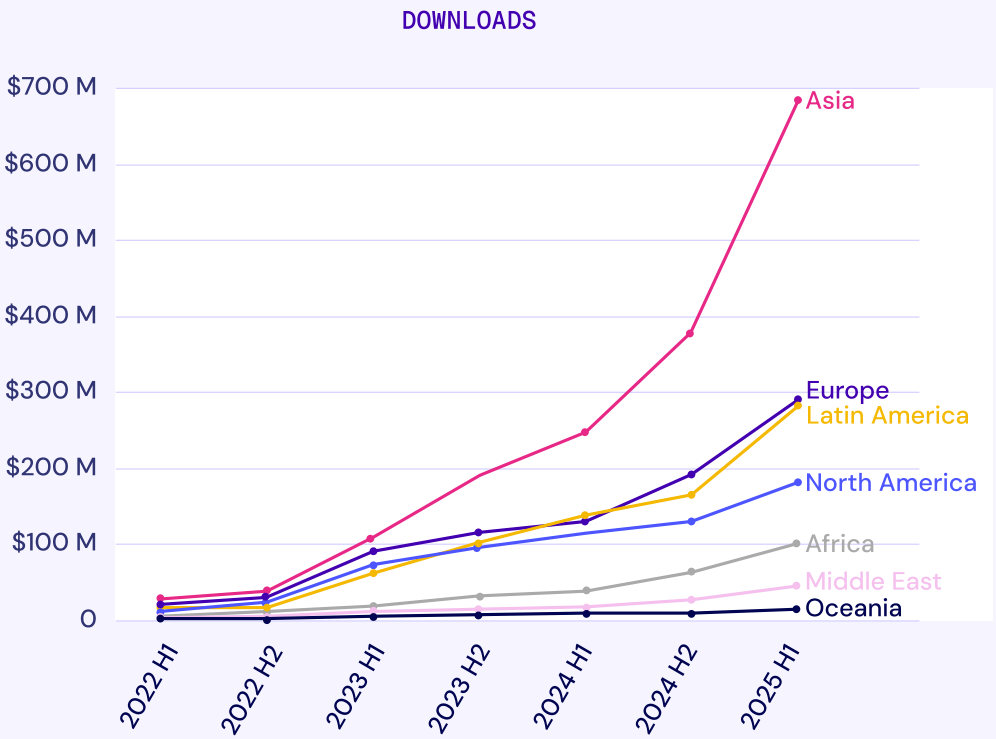


ASIA LEADS GROWTH IN GENERATIVE AI APP ADOPTION

The global landscape shows that Asia has become the primary driver of generative artificial intelligence app adoption, far outpacing other regions in download volume. In contrast, the United States and other English-speaking markets were the first to adopt these apps following the launch of ChatGPT, initially accounting for nearly 20% of the global market. However, as adoption spread worldwide, North America's relative share gradually declined to 11% in the first half of 2025, even though absolute download numbers continued to increase.

Meanwhile, Latin America has shown steady and sustained growth, positioning itself just behind Europe and establishing itself as the third-largest region for generative AI app downloads. Since early 2023, the region has maintained a stable market share of 15–20%, demonstrating that, while it does not lead in absolute volume, it plays a consistent and significant role in the global ecosystem.

GENERATIVE AI APP DOWNLOAD TRENDS BY REGION
iOS and Google Play



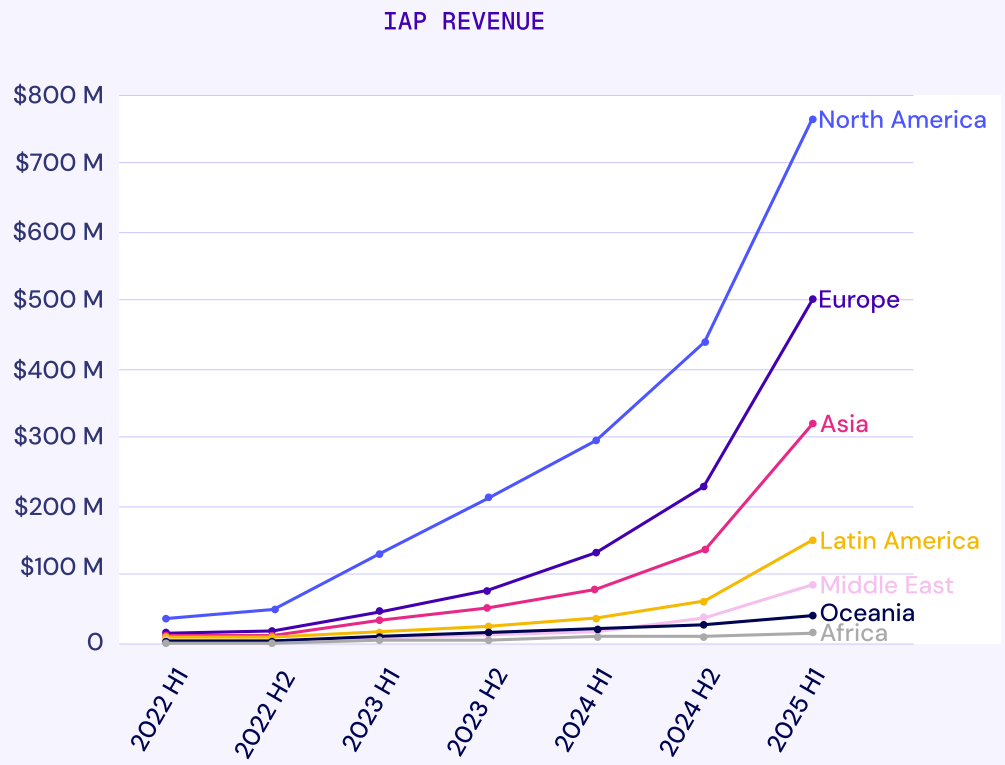
IN-APP PURCHASE REVENUE IN LATIN AMERICA GREW ALMOST 150% HOH

The generative artificial intelligence app market showed strong monetization momentum in 2025, with significant growth across all regions. North America led in absolute revenue, reaching $762 million in the first half of the year, reflecting half-over-half growth of 74%. However, the most dynamic growth occurred in Latin America, where revenues increased 147% compared to the previous half, establishing the region as one of the fastest-growing AI app markets globally in relative terms.

Asia (+136%), the Middle East (+131%), and Europe (+121%) also roughly doubled their revenues compared to the second half of 2024, confirming a global trend of increasing user willingness to pay for premium services. Within this context, ChatGPT solidified its position as the dominant player, accounting for 63% of all AI app revenue in the first half of 2025 and leading in nearly every market, with China as the only exception. This leadership confirms ChatGPT's status as the sector benchmark, although growth in emerging regions shows that the ecosystem is rapidly diversifying.

GENERATIVE AI IAP REVENUE TRENDS BY REGION

iOS and Google Play



AI ASSISTANTS DRIVE GROWTH BY ADDING IMAGE GENERATION FEATURES

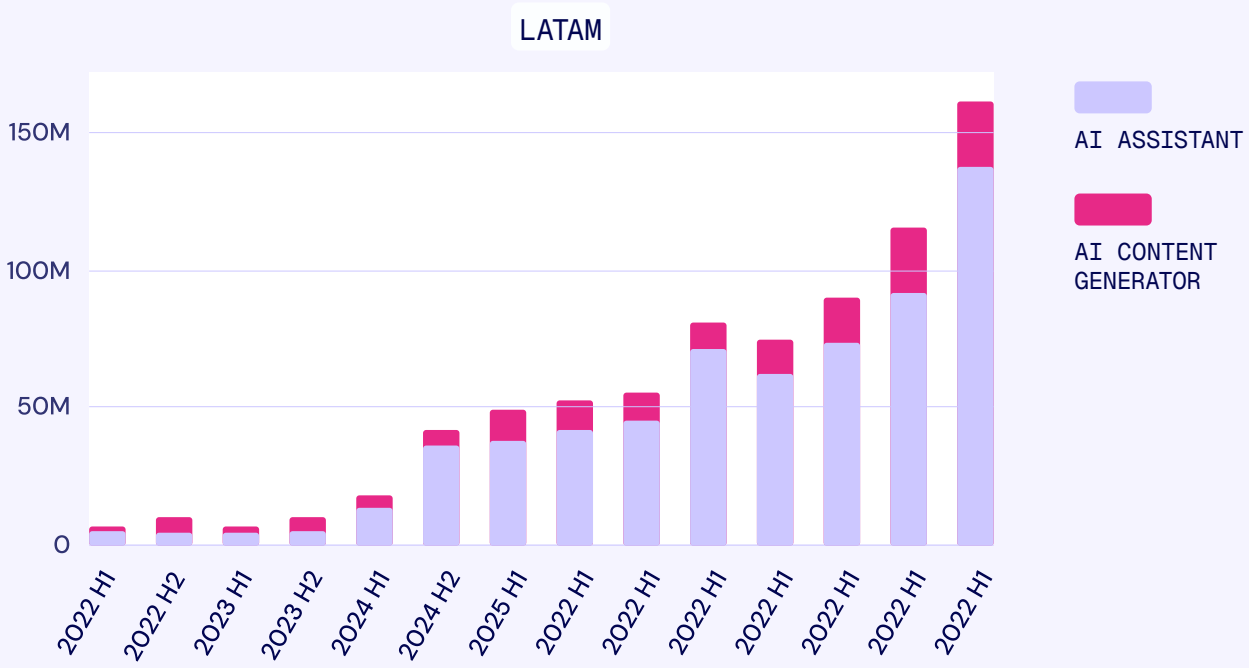
The generative artificial intelligence app ecosystem can be divided into two main subgenres: AI assistants, which are primarily designed for conversational interaction and task support, and content generators, which focus on the automatic creation of text, images, or videos. Until the end of 2022, content generators led in downloads, reflecting users' initial interest in tools that could quickly and automatically produce creative material.

The launch of ChatGPT at the end of 2022 dramatically changed this landscape. The popularity of chatbots and virtual assistants surged, driving a structural shift in consumer preferences. In Latin America, this trend became firmly established by mid-2025, when AI assistants accounted for 86% of downloads in the category, with ChatGPT, Google Gemini, and DeepSeek leading regional growth.

A notable aspect of this transformation is the blurring of boundaries between subgenres. Many assistants that were originally focused on dialogue and productivity have begun integrating advanced image-generation capabilities, offering hybrid experiences that combine the strengths of both categories. Examples include ChatGPT, Microsoft Copilot, and Grok, which increasingly emphasize their multimodal features. This evolution indicates that AI assistants are emerging as the central platform for interacting with artificial intelligence, consolidating multiple previously separate functionalities into a single, unified access point.

GENERATIVE AI APP DOWNLOAD TRENDS BY SUBGENRE

iOS and Google Play



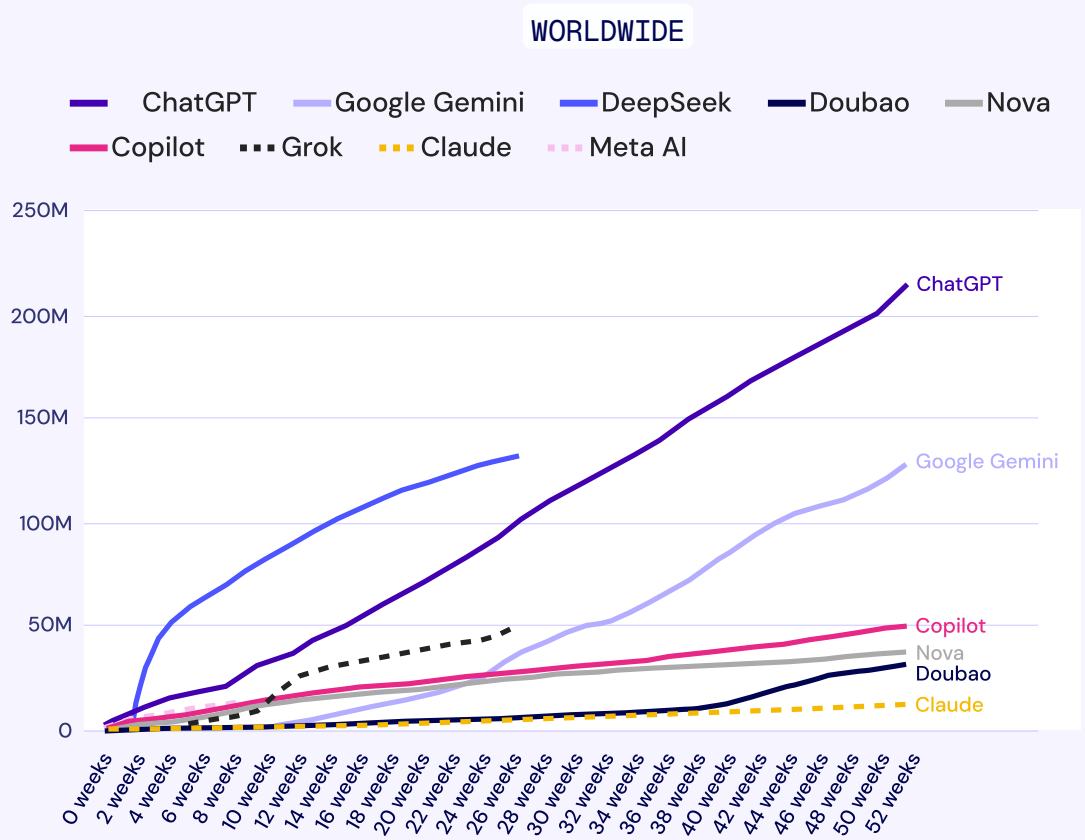
THE LAUNCH OF DEEPSEEK OUTPERFORMS CHATGPT

The generative artificial intelligence app market has become increasingly competitive, with new entrants challenging the dominance of established players. In this context, DeepSeek had an exceptional debut in January 2025, achieving more global downloads in its first six months than any other app in the sector, including ChatGPT. Its rapid growth is largely attributed to strong adoption in emerging regions such as Asia, the Middle East, and Africa, where its high-performance offering, combined with lower technological resource requirements, proved particularly appealing to a broad user base.

Despite this impressive launch, cumulative leadership remains with the longstanding apps. By June 2025, ChatGPT continues to hold the highest historical download volume worldwide, surpassing 940 million, well ahead of its competitors. Google Gemini ranks second, with approximately 200 million downloads, followed by DeepSeek, which reached 127 million in just six months since its release. This scenario reflects a market in transition: while ChatGPT maintains global predominance, DeepSeek's rapid rise demonstrates that there is room for new competitors capable of targeting regional niches and offering differentiated features, accelerating the diversification of the generative AI ecosystem.

CUMULATIVE DOWNLOADS IN THE FIRST YEAR FOLLOWING APP LAUNCH

iOS and Google Play



ADOPTION OF AI IN LATIN AMERICA AND THE CARIBBEAN: INTEREST EXCEEDS THE GLOBAL AVERAGE, GEOGRAPHIC CONCENTRATION, AND PREDOMINANCE OF CONSUMER-FACING SOLUTIONS

The rapid emergence of generative artificial intelligence and other AI-based technologies underscores the need for analytical tools to understand how these solutions are being adopted in Latin American and Caribbean countries. Such analysis provides evidence to inform the definition and implementation of national AI strategies that promote productive, social, and sustainable development.

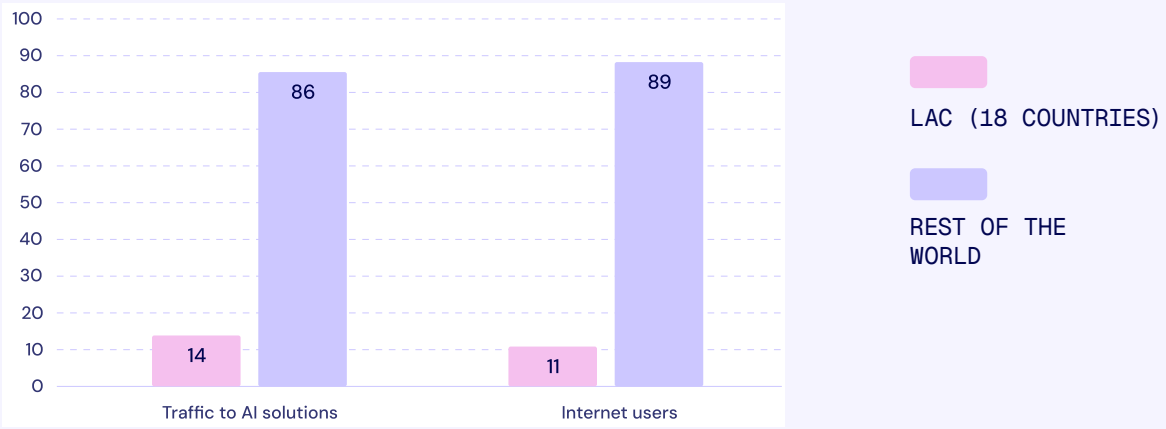
The methodology uses web traffic as a proxy for AI adoption, measured by the number of visits to websites offering AI solutions. An "AI solution" is defined as a product, service, or functional system that integrates AI techniques as a central component to perform tasks requiring data processing, decision-making, content generation, personalization, recognition, or prediction, either autonomously or semi-autonomously. Solutions that employ AI only marginally or are not accessible to end users are excluded from the analysis.

The sample, comprising approximately 260 high-traffic websites from 18 countries, was constructed using Similarweb and RankMyAI and is classified according to the solution's functionality and enabling technologies. It is important to note that this analysis does not cover the entire AI ecosystem. Low-traffic solutions and, in particular, enterprise implementations in closed environments -typical of larger companies' back-end systems- are excluded, as they are not visible using this methodology.

MAIN FINDINGS

1. Latin America and the Caribbean demonstrate a strong interest in AI solutions, using these technologies at levels higher than would be expected based on their share of the global Internet user base. Globally, the region accounts for 14% of total visits to AI solutions, despite representing only 11% of Internet users.

FIGURE 1: DISTRIBUTION OF VISITS AND INTERNET USERS IN LAC AND WORLD, APRIL 2025 ((Percentage of total visits to AI solutions and Internet users as a share of the global population)

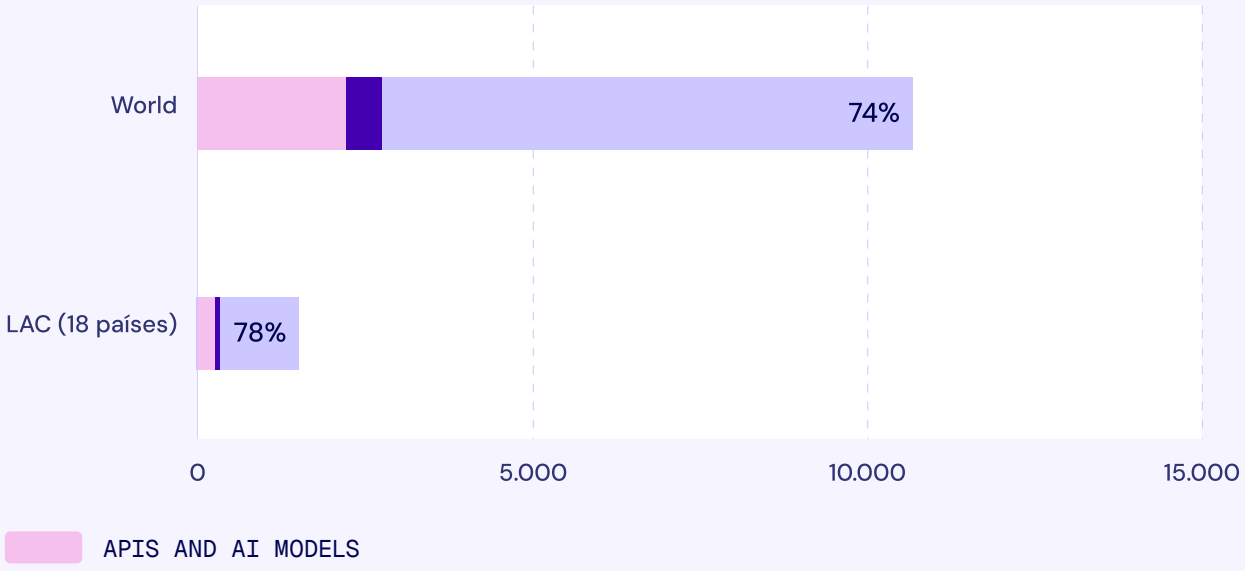


SOURCE: ECLAC DIGITAL DEVELOPMENT OBSERVATORY, BASED ON SIMILARWEB.COM AND RANKMYAI.COM

2. Use of AI Solutions Concentrated in Six Countries. Website traffic data shows a strong geographical concentration in six countries -Brazil, Mexico, Colombia, Peru, Argentina, and Chile- which together account for 86% of total regional activity. This reflects the relative size of their digital markets and the greater maturity of their innovation ecosystems. A second tier includes countries such as Ecuador (59 million visits), Costa Rica (20 million), the Dominican Republic (19 million), Venezuela (19 million), Bolivia (18 million), and Guatemala (17 million), which show intermediate traffic volumes consistent with their population sizes and levels of digitalization. Finally, a third group -Panama, Uruguay, Paraguay, El Salvador, Honduras, and Jamaica- records between 6 and 15 million visits, reflecting the smaller scale of their markets.

3. Predominance of consumer-oriented AI. In terms of types of AI solutions, Latin America and the Caribbean, like the rest of the world, show a predominance of generative AI, with a slightly higher share than the global average (78% versus 74%). In contrast, the adoption of more advanced solutions, such as open-source tools, development platforms, and the use of AI models and APIs, is lower than the global average (22% versus 26%). The conclusion is clear: the region heavily consumes end-user solutions but engages less in integration and production, with limited customization, lower development of local intellectual property, and reduced participation in more complex value chains.

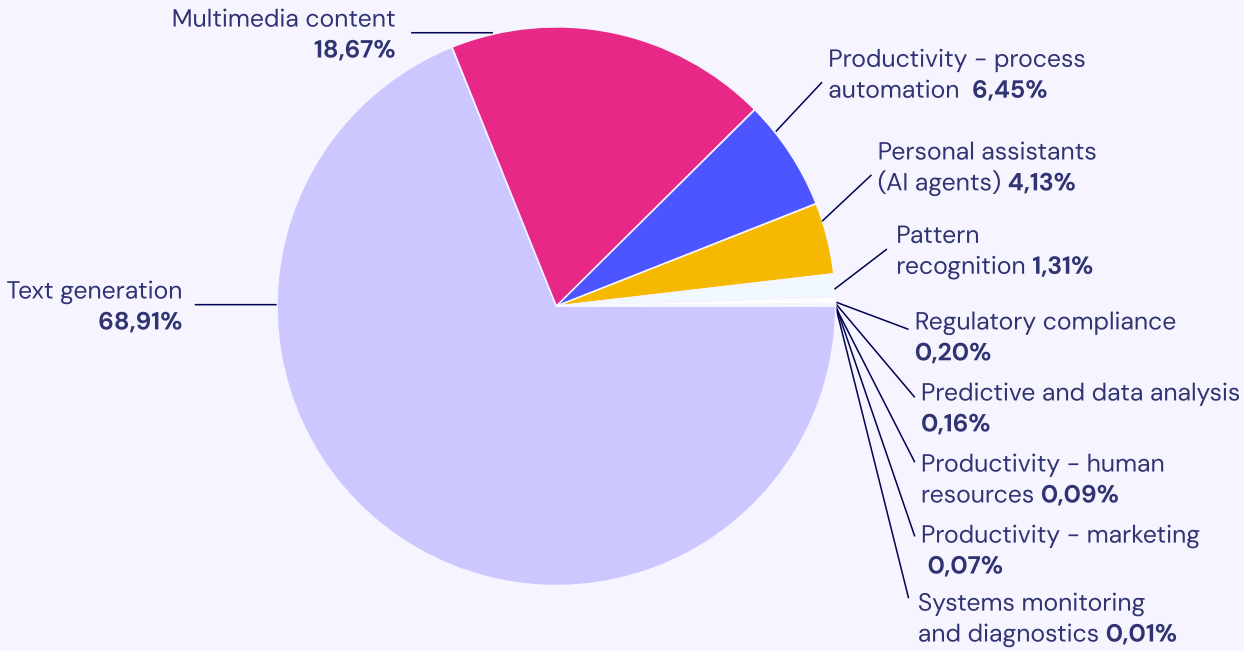
FIGURE 2: VISITS TO AI SOLUTIONS WORLDWIDE AND IN LATIN AMERICA AND THE CARIBBEAN, BY ENABLING TECHNOLOGY, APRIL 2025



SOURCE: DIGITAL DEVELOPMENT OBSERVATORY (DDO) OF ECLAC, BASED ON SIMILARWEB.COM AND RANKMYAI.COM.

This trend is reinforced when analyzing data by functionality, which shows that demand in Latin America and the Caribbean (LAC) is concentrated in ready-to-use consumer solutions with low technical requirements. Text generation leads with 69% of visits, followed by multimedia content at 19%. Business productivity solutions account for over 100 million visits, almost entirely focused on process automation, representing 6.5% of the total. Given that large companies typically rely on internal platforms and private networks -which are not captured by this methodology- it is likely that most of this traffic comes from micro, small, and medium-sized enterprises (MSMEs). Meanwhile, the use of AI agents, at 4%, still reflects limited demand, indicating that adoption in the region remains in an early stage.

FIGURE 3: DISTRIBUTION OF VISITS FROM LAC TO AI SOLUTIONS BY MAIN FUNCTIONALITY OF THE SOLUTION, APRIL 2025



SOURCE: DIGITAL DEVELOPMENT OBSERVATORY (DDO) OF ECLAC, BASED ON SIMILARWEB.COM AND RANKMYAI.COM.

ANALYSIS AND INTERPRETATION

1. Why is LAC overrepresented in usage? The overrepresentation reflects growing interest in exploring AI-based tools and indicates strong adoption potential. First, high mobile Internet penetration (70% of the population in 2024) and smartphone adoption (81%) (GSMA, 2025) facilitate widespread access to cloud-based applications. Second, a young, digitally active population adapts quickly to new technologies. Third, the simplicity of generative AI interfaces allows interaction via browser or mobile app without advanced hardware or technical training, making them accessible to individuals with lower digital skills, as well as to SMEs and independent workers.

2. Why is usage concentrated in six countries? Leading countries combine higher connectivity, entrepreneurial capacity, and local/regional service offerings. Additionally, sectoral policies and predictable regulatory frameworks reduce adoption friction (e.g., personal data, public procurement, risk guidelines), increasing the propensity to experiment. This concentration may also reflect network effects around platforms and technical communities.

3. Why does end-user consumption dominate? The low presence of open-source development and API/model usage suggests bottlenecks in:

(i) Specialized talent (e.g., data engineering, machine learning, security, model governance)
(ii) Data infrastructure and cloud service access for experimentation and deployment
(iii) Sophisticated business demand capable of driving integration projects
(iv) Coordination among academia, public sector, and tech firms to scale pilots into solutions

Without addressing these limitations through public policies, particularly in productive development, the region risks consolidating as a net consumer of AI, with limited ability to adapt to local contexts and high dependency on external providers.

CONCLUSION

Latin America and the Caribbean is overrepresented in global AI usage, driven by the traction of end-user generative solutions and accessibility through web and mobile platforms. However, this adoption is concentrated in a few countries and reflects incomplete maturity: the region consumes heavily but produces and integrates little. Public policy priorities -linking digitalization with productive development- should aim to transform intensive AI usage into productive and innovative capabilities.

Achieving this requires strengthening productive coordination, promoting diversification and scaling, fostering local and regional linkages, and integrating SMEs into value chains. It is also necessary to close gaps in talent, infrastructure, and data governance, while deploying digital public goods and instruments that support competitiveness, such as standards and interoperability frameworks, open-source initiatives, innovative public procurement as a demand driver, and sandboxes or regulatory missions. These measures can help shift the region from plug-and-play AI usage to programmatic integration within processes and value chains.

The ultimate goal is to generate local, interoperable solutions that drive productivity, formalization, sustainability, and inclusion across territories and genders.

A collaborative and open approach: LATAM's path for AI development

AI AFTER THE WINTER

After the "AI winter" of the 1970s and 1980s, the 1990s witnessed the first green shoots of artificial intelligence, particularly through the rise of Machine Learning. This approach, which focuses on discovering patterns and generating predictions from data, quickly became the driving force of a new era in AI. Simultaneously, the global technology landscape experienced a "spring": the personal computer, the expansion of the internet, and widespread digitalization began reshaping the economy. Established tech giants like Microsoft and Apple consolidated their positions, while newcomers such as Google and Amazon emerged, fundamentally transforming access to information and services.

INDUSTRIAL SECRECY AND FRAGMENTED ACADEMIA

During this period, the industry remained highly secretive, with internal developments guarded like a "Coca-Cola recipe." Progress in AI came primarily from academia, supported by modest government funding and small, fragmented research communities focused on subfields such as computer vision, natural language processing, robotics, and planning.

THE RISE OF MACHINE LEARNING AND EARLY OPENNESS

In the 2000s, Machine Learning emerged as the most promising technique for handling unstructured data such as text, images, and videos. Advances in computing power and the growing availability of data enabled the first notable AI successes in consumer products. Cameras, mobile phones, and gaming consoles began incorporating features like facial recognition, voice recognition, and personalized recommendations, marking the early tangible impact of AI in everyday life.

This decade also saw the beginnings of a more open approach by tech giants such as Google, Microsoft, and Facebook, which started embracing open-source strategies. The initial motivation was largely driven by the need to attract and retain talent. Many highly skilled young professionals were moving away from large companies, frustrated by the restrictions imposed by secrecy. For them, a competitive salary was no longer enough to compensate for the inability to contribute openly to the community and exchange ideas beyond the company's walls.

At the same time, the companies discovered that open strategies not only helped retain talent but also accelerated internal development. By sharing challenges and releasing tools as open source, they could leverage the collective intelligence of the global AI community, combining efforts and advancing collaboratively toward progress in the field.

THE TAKE OFF OF DEEP LEARNING

Collaboration and open source became decisive catalysts driving the current AI revolution. The formula of Machine Learning plus data plus computing, reinforced by an open strategy, proved to be the fastest and most effective path to sustained progress. The release of landmark libraries such as OpenCV (2000) for computer vision and Scikit-learn (2007) for general machine learning techniques democratized access to tools like support vector machines, decision trees, and clustering methods, which had previously been confined to specialized laboratories. These were joined by pioneering open-source initiatives in specific domains: Theano (2008) for optimized numerical computation, NLTK (2001) and OpenNLP (2004) for natural language processing, ROS (2007) for robotics, and Gensim (2009) for topic modeling and word embeddings. On the data front, early datasets such as Caltech 101 (2003) for object classification, TREC (2003) for information retrieval, Pascal VOC (2005) for computer vision, and ConceptNet (2004) for semantic knowledge laid the foundation for reproducible research and accelerated progress across the global community.

Fueled by open source, the 2010s saw the consolidation of the Deep Learning paradigm as the most effective strategy to leverage Machine Learning's potential. It was a period of qualitative leaps, with increasingly powerful and accessible deep learning frameworks, most developed by tech giants. Platforms such as Caffe (2013, University of Berkeley), TensorFlow (2015, Google), CNTK (2016, Microsoft), and PyTorch (2016, Meta) enabled the training of deep neural networks at unprecedented scales. In natural language processing, Stanford CoreNLP (2010) and spaCy (2015) brought advanced tools closer to developers and enterprises. Simultaneously, massive datasets like ImageNet (2009), Common Crawl (2008), COCO (2014), LibriSpeech (2015), SQuAD (2016), and WMT (since 2006) redefined standards in each domain, creating a virtuous cycle: better open-source tools, more data, increased collaboration, and consequently faster, higher-impact innovations.

The advent of the Transformer architecture, followed by large language models, marked a new stage. Models such as BERT (2018), GPT-3 (2020), and LLaMA (2023) demonstrated that knowledge could be captured and generalized at unprecedented scales, further expanding the possibilities of AI applications.

THE PRESENT: SOVEREIGNTY AND NEW SECRECY

During this period of accelerated AI resurgence, academia, government, and the business sector collaborated in a virtuous cycle. The result was one of the most fertile periods in AI history, with the strategic use of open source as a fundamental catalyst. Under this shared approach, AI experienced its most productive years: advances multiplied, access to tools was democratized, and the global community of researchers and developers worked toward common objectives and platforms. It was a phase in which building together, sharing tools, and exchanging progress became a daily practice—a reminder that true technological revolutions thrive not on secrecy, but on the capacity to open up, collaborate, and combine intelligences.

Today, the commercial and strategic success of AI has sparked a new cycle of secrecy. The enormous economic potential of these technologies, coupled with their significance in security and geopolitics, has heightened concerns over technological sovereignty, prompting major global blocs to pursue differentiated strategies.

GLOBAL AI STRATEGIES

The United States maintains its leadership in the AI race thanks to its private sector, with companies such as OpenAI, Google, Microsoft, and Anthropic at the forefront. Its model emphasizes the development of proprietary, closed-source systems that protect competitive advantage and intellectual property. However, this approach exists alongside an ongoing internal debate: how to regulate AI to ensure security against geopolitical rivals, particularly China, without stifling the innovation that has historically thrived on openness. In this context, 2025 marks a notable shift: OpenAI launched its first open-weight models, GPT-OSS, while xAI released Grok 2.5 on Hugging Face and announced that Grok 3 will follow the same path. These developments indicate that even within a commercially dominated ecosystem, major companies are beginning to release preliminary model versions to foster collaboration, gain legitimacy in the research community, and respond to pressure from open competitors.

China combines strong state investment, centralized regulation, and control over the entire value chain -including hardware, software, and data- while maintaining selective openness. With world-class open-weight models such as DeepSeek-R1 and Alibaba's Qwen series, it seeks to leverage the collective intelligence of the global community to iterate rapidly and narrow the gap with the United States. This pragmatic approach allows China to accelerate progress despite restrictions on access to advanced semiconductors while positioning itself as a technological partner for the developing world.

Europe, by contrast, emphasizes a robust regulatory and ethical framework. The AI Act, the world's first comprehensive AI law, classifies systems according to their risk level, establishes clear obligations for developers and users, and seeks to ensure respect for fundamental rights while preventing bias and discrimination. At the same time, it encourages the development of AI Factories, supercomputing centers, and advanced experimentation hubs, reinforcing digital sovereignty and strengthening global competitiveness. Complementing this institutional effort is the dynamism of startups such as Mistral, which has released highly competitive open models under permissive licenses like Apache 2.0, serving as a benchmark for how Europe can combine regulation with cutting-edge technological innovation.

In Asia and the Middle East, innovation hubs are developing distinctive approaches. In Singapore, the SEA-LION v4 model (Southeast Asian Languages in One Network) is multimodal, multilingual, and efficient enough to run on laptops, facilitating adoption in both academia and industry. In the United Arab Emirates, the Technology Innovation Institute (TII) created the Falcon Foundation, backed by a $300 million fund to promote an open AI ecosystem. The Falcon family, including the recent Falcon-H1 series with 0.5B to 34B parameters and support for contexts up to 256K tokens, has been released under permissive licenses. These initiatives achieve performance comparable to, or even exceeding, larger-scale models, positioning the region as a new reference point in the global open AI landscape.

LATIN AMERICA: THE OPPORTUNITY FOR ITS OWN PATH

It is within this global context that Latin America can chart its own path. Drawing on the lessons of the golden era of open source, the region can pursue a comprehensive model that goes beyond releasing code and model weights, encompassing infrastructure, datasets, data-processing algorithms, distributed training code, benchmarks, and technical knowledge. This approach is not merely technological—it is a statement of principles: ensuring that AI is developed openly and collaboratively, with equitable access for universities, companies, governments, and communities.

An example of this vision is the LatamGPT initiative, coordinated by CENIA in collaboration with organizations across the region. The project aims to develop a large-scale language model trained on data relevant to Latin America and released under an open framework, including both code and model weights. Its goal is not only to produce an advanced tool but also to make the entire process transparent: from data collection and curation to training and evaluation, sharing lessons learned, best practices, and technical resources. The ultimate objective is to build human and infrastructural capacities that allow these technologies not only to be used but also to be created and evolved entirely within Latin America.

TO PROMOTE THIS DEVELOPMENT, A COORDINATED SET OF STRATEGIC ACTIONS IS REQUIRED:

→ Invest in Data Commons. Governments and relevant organizations should develop high-quality, diverse, and well-documented public datasets. Treated as a digital public good, these datasets would provide a foundation for more reliable, less biased AI, adaptable to both open and proprietary projects.

→ Establish shared high-performance infrastructure. Regional computing centers should be created to support the training and experimentation of large-scale models, accessible to universities, startups, and SMEs. This will lower entry barriers and enable local talent to compete on an equal footing with global peers.

→ Generate critical masses of talent. Promote advanced AI and data science training programs, including internships, collaborative labs, transnational research networks, and industry placements. The objective is to retain talent within the region while developing solutions for local challenges with global potential.

→ Massively upskill the workforce. Encourage workers across all sectors to leverage AI to boost productivity and creativity, prioritizing tools adapted or developed in Latin America. Initiatives such as CENIA's HazloConIA illustrate how to close the adoption gap and amplify the economic and social impact of technology.

→ Harmonize regulation and strengthen regional cooperation. Reduce fragmentation by implementing common standards, coordinated regulatory frameworks, and sandboxes for safe experimentation. This will enhance collective bargaining power and minimize regulatory arbitrage that can weaken emerging markets.

None of this will be possible without a strong commitment from governments to make AI a genuine development priority, not merely as political rhetoric, but through sustained funding, clear regulatory frameworks, and public policies that encourage collaboration between academia, the private sector, and civil society. This requires allocating long-term resources, investing in critical infrastructure, supporting talent development, and promoting the creation and adoption of tools designed or adapted within the region. Without such tangible commitment, any strategy risks remaining a set of well-intentioned statements with little real impact.

Just as in the 2000s the combination of data, computing power, and global collaboration paved the way for modern AI, Latin America now has the opportunity to replicate that formula with its own identity and ambitious goal: ensuring that the next major leap in AI is also a story of innovation born and shared from the Global South. This is the moment to establish a Latam Path for AI development, grounded in openness, collaboration, and technological sovereignty, positioning the region as a leading force in building a more prosperous, inclusive, and joyful future, while broadly enhancing the well-being of its citizens.

REPORT

Artificial Intelligence for Citizen Participation in Latin America and the Caribbean

Artificial intelligence offers significant opportunities to enhance citizen participation, enabling processes that are more inclusive, efficient, and far-reaching. It can also improve transparency and accountability by tracking how citizen contributions influence public decisions. Latin America and the Caribbean are still in the early stages of leveraging AI for citizen participation, but existing cases provide a foundation for future growth. Focusing on responsible development, capacity building, thorough documentation, and collaboration among multiple stakeholders will be essential to ensure that AI empowers citizens and strengthens democratic processes across the region. This approach creates a mutually beneficial cycle: as AI enhances processes with greater reach and legitimacy, its integration also helps build stronger citizen trust.

The use of AI in citizen participation in Latin America and the Caribbean remains nascent. ILIA identified 28 cases across 11 countries. While limited in number, these cases offer valuable lessons for advancing this potential. Furthermore, growing interest from the public sector is evident in the development of algorithm repositories in several countries.

01 _ ARTIFICIAL INTELLIGENCE AND CITIZEN PARTICIPATION

01.1 WHAT DO WE UNDERSTAND BY CITIZEN PARTICIPATION?

Over the past two decades, and with greater acceleration in the last five years, practices and methods for citizen participation in governance and public policy-making have grown significantly. Academic and technical discussions about what constitutes participation and where its boundaries lie have been equally diverse. A key distinction is that participation involves two-way interaction and varying levels of empowerment, rather than merely collecting data, as occurs in surveys.

To describe this diversity, Graham Smith (2009) introduced the concept of democratic innovations, defined as a set of institutions specifically designed to enhance and deepen citizen participation in political decision-making and public policy. More recently, Elstub and Escobar (2019) proposed a practical typology categorizing these innovations into five main families, highlighting the interdependencies among them:

a. Mini-publics: Deliberative spaces composed of a randomly selected representative sample, often through a democratic lottery. These spaces include learning phases and professional facilitation to generate well-founded recommendations.

b. Participatory budgets: Originating in Porto Alegre, Brazil, in the late 1980s, these allocate a portion of the public budget to be decided by citizens, either through open proposals or voting on predefined options.

c. Referenda and popular initiatives: Mechanisms for crowdsourcing ideas and conducting ad-hoc voting, both legislative and for public policies, outside the regular electoral cycle.

d. Collaborative governance: Strategies to involve relevant stakeholders in specific decisions, such as urban planning dialogues with residents and local businesses, through self-selection or targeted invitations.

e. Digital participation: A cross-cutting category that uses digital platforms for asynchronous interaction, such as forums, or synchronous engagement, such as video calls and chats.

01.2 STAGES OF CITIZEN PARTICIPATION

Despite methodological differences, four common stages can be identified in participatory processes (Goñi, 2024). Recognizing these stages allows for a clearer understanding of where technology can add the most value and which areas current solutions tend to prioritize:

a. Planning: Defining the strategic agenda, governance structures, and educational materials, as well as selecting platforms and facilitators before engaging citizens.

b. Implementation: Providing the actions and infrastructure required during participation, such as voting, rankings, speaking turns, or debate moderation.

c. Analysis: Synthesizing and reporting results, including summaries of key ideas, quantitative data, relevant quotes, and emerging patterns.

d. Policy translation: Linking results to concrete decisions, presenting findings to decision-makers, communicating outcomes to the public, and monitoring their implementation.

01.3 AI IN CITIZEN PARTICIPATION

The definition of artificial intelligence (AI) has evolved since its origins in the 1950s, moving from rule-based systems to machine learning approaches and foundational models. According to the OECD (2024), AI refers to machine-based systems that, for explicit or implicit objectives, generate outputs—such as predictions, content, recommendations, or decisions—that influence physical or virtual environments, exhibiting varying levels of autonomy and adaptability.

In this context, not every advanced software application qualifies as meaningful AI for citizen participation. The focus is on systems that substantively transform core aspects of the participatory process. A system is considered AI for citizen participation if it significantly incorporates one or more of the following characteristics:

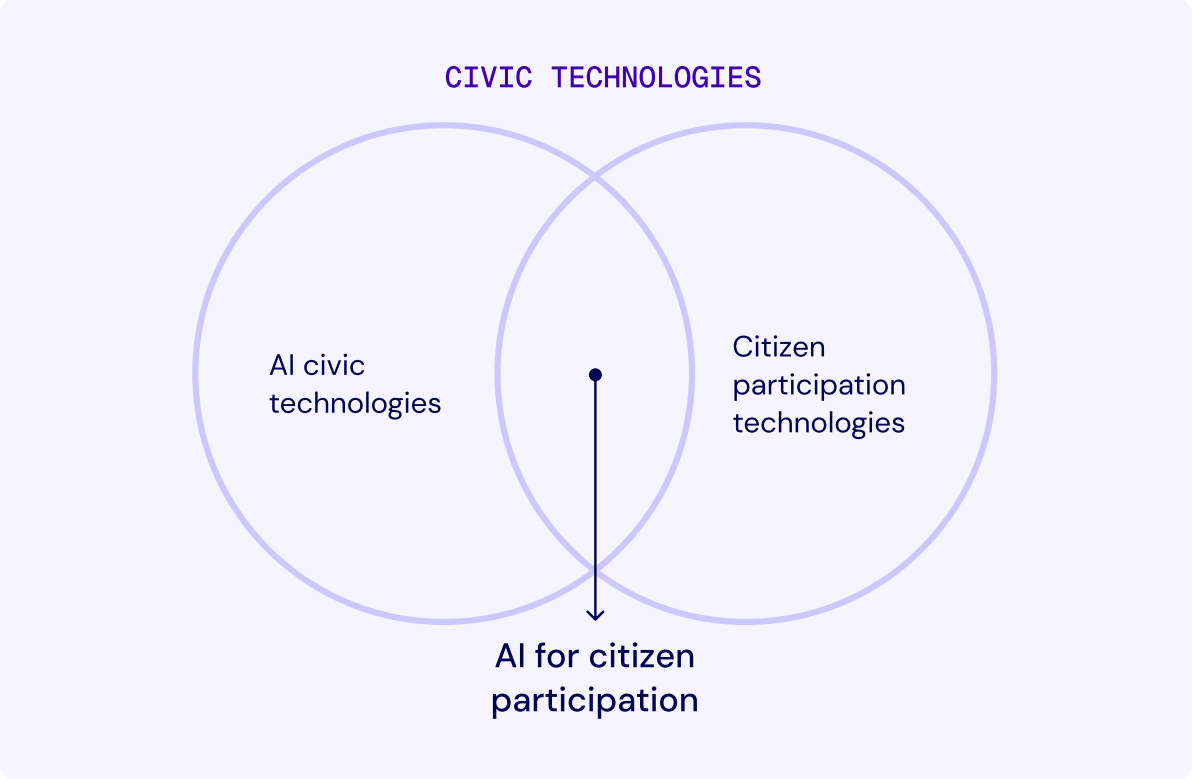
→ Large-scale analysis of complex, unstructured data, extracting patterns, sentiments, or arguments without relying on fixed rules.
→ Active facilitation of dialogue, including synthesis of perspectives, clustering of arguments, and dynamic moderation of conversations.
→ Adaptive personalization of information, notifications, and interfaces based on inferred user needs and interests.
→ Predictive models that anticipate barriers, evaluate strategy effects, and forecast potential outcomes.
→ Automation of complex cognitive tasks, such as interpretation, synthesis, or content generation.

Routine functions, such as sending reminders, simple vote tabulation, or basic categorization, are excluded. The emphasis is on systems capable of addressing the complexity and scale inherent to democratic participation.

Computational systems that leverage capabilities such as machine learning, natural language processing, and reasoning to perform core participatory tasks go beyond simple digitalization or routine automation. These systems include the autonomous analysis of complex, unstructured citizen contributions to extract meaningful insights; active facilitation of large-scale interactions, including deliberation, by synthesizing viewpoints and fostering understanding among diverse participants; adaptive personalization of information and engagement opportunities based on individual preferences; predictive modeling of participation dynamics or potential outcomes; and the automation of complex cognitive tasks related to processing, interpreting, or responding to citizen contributions.

It is also important to distinguish the use of AI in citizen participation from broader civic technologies. Civic technologies generally serve multiple functions, such as reporting issues, accessing public information and services, proposing projects, and participating in consultations and deliberative processes. AI for citizen participation is a subset of these tools, focused specifically on systems designed for meaningful citizen engagement rather than merely facilitating access to public services.

FIGURE 1 shows a simple diagram to illustrate this distinction.



01.4 OPPORTUNITIES

The use of AI in citizen participation can support a variety of tasks across different stages of the process.

Planning: AI applications for designing citizen participation in a thoughtful and effective way are still in the early stages, but promising examples are emerging. AI can help define the strategic agenda, manage knowledge to guide processes, and simplify materials for participants. It can also facilitate broad engagement prior to smaller deliberations and identify different groups as well as the barriers that limit their participation. Examples include tools for data analysis and visualization, such as Copilot, and tools for information synthesis and language refinement, such as Grammarly for non-native English speakers.

Implementation: AI systems support the implementation of citizen participation by personalizing information and platforms. This includes multilingual support, real-time translation, proposal suggestions, and chatbot assistance. They can also mediate interactions to enhance understanding among diverse stakeholders and reduce access barriers, such as distance or complex technical language, thereby fostering inclusion in deliberative processes.

Analysis: AI use in data analysis for citizen participation is one of the most advanced areas. Notable applications include thematic and sentiment analysis that generate summaries, visualizations, and other outputs. While research has traditionally focused on topic modeling and argument analysis, recent work explores how large language models (LLMs) can enhance these analyses and open new analytical possibilities.

Policy translation: AI can assist by tailoring messages for specific audiences using LLMs or by visualizing contributions by theme, extending reach beyond institutional recipients. There remains significant potential to develop tools that strengthen impact monitoring and accountability.

AI in citizen participation serves four key functions: improving the quality of outcomes, expanding reach to broader audiences, optimizing deliberation by facilitating stakeholder interactions, and pragmatically reducing administrative burdens to streamline process implementation.

01.5 CHALLENGES AND RISKS IN USING AI FOR CITIZEN PARTICIPATION

The use of AI in citizen participation, particularly within the public sector, faces a range of social, ethical, regulatory, technological, and organizational challenges. These include ensuring transparency, explainability, privacy protection, and the prevention of bias or discrimination.

Effective implementation also requires appropriate infrastructure, skilled personnel, and adoption mechanisms, while considering political and power dynamics that may impede progress or produce unintended consequences. Misuse of AI can reinforce social asymmetries, exclude certain groups, or replace meaningful deliberation with purely technological aggregation. There is also a risk of technological solutionism, which overestimates AI's capabilities while neglecting social and ethical factors, as every technology embodies a particular vision of participation. Business models add further complexity: SaaS solutions may exclude those without financial resources, while open-source tools, although free, can entail technical costs and may lack long-term sustainability, limiting adoption over time.

02 _ USE OF AI IN CITIZEN PARTICIPATION IN LATIN AMERICA AND THE CARIBBEAN

The use of artificial intelligence in citizen participation processes in the region remains at an early stage and is still poorly documented, although an active phase of experimentation is evident, with 28 cases identified across 11 countries.

Applications are primarily concentrated in the analysis and implementation stages, with no documented use in the preparation of participatory processes. Natural Language Processing (NLP) is the dominant technology, mainly applied to topic and sentiment analysis, while policy translation appears in only a few cases and follows diverse methodologies.

Beyond NLP, other AI technologies have been employed, including generative AI, voice-to-text systems, computer vision, and recommendation systems, with the latter being more commonly used during the implementation stage.

02.1 RESULTS BY COUNTRY

BOLIVIA

In Bolivia, the initiative *Bolivia Conversa* (Bolivia Talks) was identified, focusing on the use of AI to facilitate large-scale citizen dialogue. The project implemented a digital platform that employed NLP models to process and cluster citizen contributions in real time, perform semantic classification and thematic grouping of responses, and generate immediate feedback for participants.

BRAZIL

In Brazil, four initiatives were identified: *Portal e-Cidadania, Plano Plurianual of the city of Natal, Colab, and ParticipACT Brasil*, all leveraging AI to enhance citizen participation. These projects, driven by public and private organizations, employ a variety of participatory methodologies, including optimization of public hearings, urban planning through chatbot-assisted data collection, GovTech platforms for municipal engagement, and citizen science initiatives. AI was applied in tasks such as identifying relevant information in public records, improving citizen communication through virtual assistants, analyzing data for decision-making, and processing sentiments and information using NLP, demonstrating a diverse application of these technologies in participatory contexts.

CHILE

In Chile, nine notable initiatives were identified where AI was applied to facilitate and analyze citizen participation processes. These projects primarily focused on analyzing large volumes of text and audio from deliberative processes, national dialogues, and surveys. NLP was the predominant technology, used for text classification, identifying emerging topics, and systematizing collected data. The common goal was to deepen understanding of citizen discussions and extract insights to inform decision-making and policy design.

The cases include: *Cabildos 2016, Estudio dIAlogos – Percepciones de Futuro, Tenemos que hablar de Chile, Jornada de Escucha Lanzamiento Instituto de Políticas Públicas UNAB, Participación Ciudadana Proceso Constitucional, La voz de los nuevos votantes, Un encuentro para la equidad de género en la movilidad en Chile, Estrategia de Gobierno Digital, and Informe proceso participativo segunda consulta ciudadana*.

COLOMBIA

In Colombia, four initiatives were identified: ECHO – *HáblameD Medellín, Tenemos que hablar de Colombia, Chatico, and Descongestión de solicitudes diarias del programa Ingreso Solidario,* all focused on using AI to strengthen citizen participation. These projects, led by a mix of public and private entities, employ various participatory methodologies, including digital platforms, surveys, and citizen reporting mechanisms. AI is strategically applied in areas such as NLP for text analysis, semantic classification of citizen contributions, automated response generation through chatbots, and advanced data analysis to support decision-making. The implementation of these solutions involves a diverse set of actors, including government agencies, technology companies, academic institutions, and international organizations.

COSTA RICA

In Costa Rica, two initiatives were identified: dIAra and U-Report Costa Rica – Youth Chatbot, both integrating AI to promote citizen participation. One application focuses on real-time monitoring of public works projects, using image recognition to track the use of construction resources and generate alerts about potential irregularities, thereby facilitating citizen oversight. The second application is a messaging-based platform that empowers young people to share their opinions on social issues, employing NLP algorithms to analyze large volumes of text and transform them into actionable data for decision-making.

ECUADOR

In Ecuador, the initiative PAGA IA was identified, which applies AI to assist in co-creation processes within the Open Government framework. The platform facilitates citizen participation by using large language models (LLMs) to analyze thematic proposals and automatically generate suggestions for activities and milestones to formulate commitments. This analysis is informed by historical data from national and regional open government action plans from other Spanish-speaking countries.

GUATEMALA

In Guatemala, the initiative Guatemala Joven Conversa was identified, which uses AI to promote youth political participation through digital dialogues at a national scale. The project creates anonymous discussion spaces for young people from all departments, allowing them to debate issues critical to national development. AI technology, specifically NLP, is used for sentiment analysis and topic identification, facilitating real-time dialogue and supporting the prioritization of issues through opinion-based voting.

HONDURAS

In Honduras, the initiative RedPública + iVerify was identified, which uses AI to analyze citizen proposals and combat disinformation. NLP is employed to classify and thematically group law proposals and social projects submitted by citizens, facilitating the identification of trends. Additionally, machine learning algorithms detect and classify disinformation content, particularly in the electoral context, with academic teams involved in the verification process. The initiative aims to strengthen citizen influence in policy-making and foster a more reliable information ecosystem, thereby supporting improved democratic processes.

MEXICO

In Mexico, two AI initiatives were identified to enhance democratic processes and citizen participation: Sufragio Seguro and Presupuesto CRECES. Sufragio Seguro focuses on the integrity of voting processes, using machine learning and computer vision systems developed by academic institutions to detect, in real time, possible instances of coercion or unusual stress in voters, generating alerts to protect voting freedom. Presupuesto CRECES aims to facilitate participation in municipal public management, implementing an AI-powered

chatbot that simplifies voting on citizen proposals through conversational interactions on messaging platforms. Although differing in scope and application, both initiatives seek to improve the transparency, security, and accessibility of citizen participation mechanisms.

PERU

In Peru, two AI initiatives for citizen participation were identified: the Citizen Consultation on the National Education Project and an AI-based Voting System for the 2026 General Elections. The first initiative uses NLP to analyze large volumes of citizen opinions, identifying topics and conducting sentiment analysis to systematize contributions collected through public consultations on national education policies. The second initiative, planned for 2026, will employ AI-assisted Optical Character Recognition (OCR) to optimize vote counting, speeding up the reading and validation of ballots and increasing the efficiency and transparency of the voting process. Together, these initiatives demonstrate Peru's commitment to leveraging AI to enhance both public deliberation and the integrity of democratic processes.

DOMINICAN REPUBLIC

In the Dominican Republic, the initiative CiudadanIA was identified, which integrates AI to support citizen participation and public services. The project establishes physical interaction points in high-traffic areas and uses machine learning models and NLP, including LLMs, to collect representative citizen data. This data trains algorithms that provide personalized assistance, information, and recommendations, promoting active citizen participation in the design of an intelligent government system.

03 _ FINDINGS AND LESSONS

The analysis of AI use cases in citizen participation in Latin America shows a field still in development, characterized more by experimentation than by widespread adoption. While there are valuable and diverse initiatives, isolated efforts with limited documentation continue to predominate. From this evidence, several key lessons emerge regarding the current state, opportunities, and challenges the region faces in moving toward more systematic and responsible use of these technologies in democratic processes:

Exploration rather than adoption: The cases reflect an initial and diverse adoption, featuring unique experiences that need to evolve into permanent and transferable platforms. Sharing lessons and strengthening local capacities is essential, as is fostering collaboration among government, academia, industry, and civil society. Examples such as Tenemos que Hablar de Chile and its counterpart in Colombia illustrate the value of such knowledge transfers.

Focus on analysis and implementation: Most initiatives applied AI for analysis (55.6%) and implementation (36.1%), with minimal presence in planning (0%) and policy translation (8.3%). NLP predominated, although recent cases increasingly incorporate LLMs. Significant opportunities remain to design more inclusive processes and materials tailored to diverse participants.

Capabilities and collaboration: Projects often involve local actors, particularly academic institutions, reflecting emerging capacities. However, these efforts remain niche developments

with limited demand. There is a need to foster entrepreneurship and public innovation mechanisms that encourage multisectoral collaboration.

Lack of documentation: A major challenge is the scarce documentation of cases, which limits transparency, accountability, and collective learning. The absence of clear records on algorithms, actors, and processes likely underestimates actual usage and hinders the scaling of successful experiences.

DIMENSION

Governance

GOVERNANCE

Main Findings

01 TWO REALITIES IN THE REGION FACING THE SAME CHALLENGE

While countries such as **Brazil, Chile, and Uruguay** have robust national AI strategies, multi-stakeholder coordination bodies, and long-term visions, seven countries have yet to define a roadmap or consolidate a national strategy for AI development. These contrasting realities risk creating a fragmented region with uneven regulatory safeguards, leaving entire countries unable to fully benefit from AI.
However, recent advances in countries like **Costa Rica and Cuba**, and ongoing efforts in **Panama and the Bolivarian Republic of Venezuela**, show that there is still time to shape national AI agendas. In this context, coordinated initiatives to share best practices and uphold common ethical standards would benefit the region as a whole.

02 NATIONAL STRATEGIES: BETWEEN DECLARATION AND IMPLEMENTATION

Although nine countries have national AI strategies, only a few have advanced in updating them, allocating execution budgets, or defining actionable implementation plans. Without progress in operationalizing these strategies, they risk becoming aspirational documents with weak financial alignment, no impact indicators, and limited evaluation mechanisms.

This lack of implementation not only reduces policy effectiveness but also undermines governmental credibility with citizens and AI ecosystem stakeholders. The region must transition toward “living strategies,” aligned with national development plans, supported by long-term continuity and strong intersectoral governance.

03 CITIZENSHIP IS STILL ABSENT IN ALGORITHMIC GOVERNANCE

While most countries with AI strategies reference some form of citizen participation or multi-stakeholder engagement, only a few, such as **Brazil, Chile, and Uruguay**, have included robust public consultation, community workshops, and inclusive mechanisms that consider all relevant sectors.

The more participatory the design process, the greater the legitimacy, social ownership, and impact of the resulting policies. Only by incorporating diverse perspectives can AI strategies reflect real societal needs and strengthen public trust in technologies that affect daily life. Democratic AI governance requires placing citizens at the center.

04 REGIONAL SILENCE IN THE DESIGN OF INTERNATIONAL STANDARDS

Limited participation in international standardization bodies, such as ISO SC 42 and SC 27, significantly restricts the region's influence over global AI and cybersecurity rules.

This absence is not merely symbolic: it means others will define the technical standards Latin America and the Caribbean must later adopt, standards that may fail to account for regional realities, infrastructure constraints, or cultural contexts.

Strengthening the presence of regional experts in these forums is a strategic investment to ensure global standards reflect local needs and to promote the exchange of best practices.

05 GLOBAL COMMITMENTS WITHOUT LOCAL ROOTS: THE RISK OF SYMBOLIC COMPLIANCE

Countries across the region have endorsed multiple international AI declarations, such as the Santiago Declaration, OECD principles, and various multilateral ethical commitments. However, these commitments have not always translated into national regulatory frameworks or concrete action.

For instance: nearly all countries signed the Santiago Declaration, yet seven still lack an AI strategy; growth in AI investment has been significant in only one country; and participation in the ISO AI committee remains very limited. This disconnect reinforces the gap between rhetoric and practice, reducing the effectiveness of international initiatives and weakening public confidence.

To avoid symbolic compliance, global commitments must be reflected in domestic policies and operational mechanisms that drive real progress.

06 A REGION VULNERABLE TO CYBERATTACKS

Cybersecurity remains one of the weakest components of the AI ecosystem in Latin America and the Caribbean. While several countries have advanced in enacting cybercrime legislation and protecting critical infrastructure, with 18 of the 19 countries scoring above 60, most still lack institutional capacity, qualified specialists, and robust governance structures to address the growing threats of increasingly complex digital environments.

AI, by its nature, strengthens prevention in well-prepared contexts but also amplifies vulnerabilities, including data manipulation and attacks targeting critical systems. Strengthening cybersecurity must be treated as a strategic priority, an urgent effort that must progress in tandem with AI deployment to ensure that benefits are not accompanied by uncontrolled risks.

07 IN PERSONAL DATA PROTECTION, ALL ROADS LEAD TO ROME – OR BRUSSELS

A strong personal data protection framework is essential for the responsible development of artificial intelligence and digital technologies. In this edition, 11 of the 19 ILIA countries have both an updated data protection law and a clearly defined authority overseeing enforcement.

Although the type of enforcing authority varies, sometimes housed within a ministry, other times within an independent agency, most countries have adopted the European GDPR as their core reference. This model continues to guide ongoing reform processes, such as in Costa Rica, which seeks alignment with European standards to facilitate data exchange between the digital economies of both regions.

08 SUSTAINABILITY AS A MISSING PRINCIPLE IN LATIN AMERICAN AI

Despite increasing global attention to AI's environmental impact, most national frameworks in the region overlook sustainability within their digital transformation agendas. Energy-intensive training models, high-consumption data centers, and short-lifespan devices collectively contribute to a growing carbon footprint.

Without policies incorporating sustainability, energy efficiency, and circular economy principles, AI expansion may conflict with regional climate goals. As the construction of new data centers becomes essential to strengthen computing capacity, it is increasingly urgent to integrate mitigation measures into their development.

Leveraging renewable energy sources could serve as a foundational step toward cleaner and more environmentally responsible AI across the region.

09 PROPER PROMOTION OF DATA CENTERS: THE BOTTLENECK OF AI INFRASTRUCTURE

Data centers –critical for data processing and secure storage– face significant regulatory barriers in the region. In many countries, permitting processes are slow, regulations outdated, and coordination across government levels limited.

These challenges restrict private investment, create legal uncertainty, and delay the rollout of essential infrastructure for digital transformation. Modernizing and harmonizing regulations, establishing streamlined permitting systems, and

implementing targeted investment incentives could accelerate the development of resilient, sustainable, and sovereign data centers across the region.

10 GREEN DATA, AN INDUSTRY IN THE MAKING

The data center industry in the region is still emerging, with only four ILIA countries, Brazil, Chile, Colombia, and Mexico, showing strong sector development. Colombia stands out not only for having a mature industry but also for having one of the highest proportions of facilities compliant with international sustainability standards. Leadership in this space is closely linked to factors such as the presence of global operators, energy availability, favorable regulatory frameworks, and rising demand for digital services.

However, the region still lacks systematic reporting on sustainability performance and regulatory frameworks encouraging widespread adoption. The Dominican Republic illustrates a promising approach: despite having a moderately developed industry, it holds the region's highest share of sustainable facilities, demonstrating that a commitment to sustainability can be built early and can serve as a model for other emerging markets.

GOVERNANCE

2 Dimension Description

Global governance of artificial intelligence remains a developing field. Recent advances in AI have placed control and oversight mechanisms at the center of the debate, as governments seek to maximize the benefits of AI systems while mitigating potential negative impacts.

Global governance of artificial intelligence remains a developing field. Recent advances in AI have placed control and oversight mechanisms at the center of the debate, as governments seek to maximize the benefits of AI systems while mitigating potential negative impacts. As with previous technological innovations, a central challenge for societies is designing policies that balance fostering innovation with regulating ethical risks arising from AI adoption. Another issue is that discussions around AI regulation are largely concentrated in Global North countries, primarily in North America and Europe. Consequently, solutions developed in these regions may not be suitable for Latin America, potentially introducing new biases and challenges. This underscores the need for a regional perspective that takes into account the economic, social, and cultural realities of Latin America and the Caribbean, ensuring that AI governance is adapted to local contexts.

The Governance dimension aims to characterize the state of AI governance in the region, highlighting examples of good practices. It examines aspects such as the existence of national AI strategies, including their content focus and inclusiveness in the development process; the presence of institutions responsible for advancing and overseeing national AI policy; the existence of regulations that incorporate risk mitigation measures; relevant regulatory frameworks such as cybersecurity and personal data protection; participation in international AI initiatives; and policies promoting the ethical and sustainable application of AI systems.

To strengthen this dimension, the current edition has incorporated new sub-indicators for evaluation. These include seven sub-indicators related to national AI strategies, two on the regulatory framework for personal data protection, five on cybersecurity, and three new indicators on sustainability. By its nature, this dimension is more susceptible to changes across versions, as AI governance is rapidly evolving.

This chapter addresses three sub-dimensions: **Vision and Institutionality, International Engagement, and Regulation.**

The Vision and Institutionality sub-dimension provides a comprehensive review of the AI strategies and policies of each of the 19 countries in the region, considering both their content and the mechanisms for monitoring and follow-up. In this version, the analysis of active national strategies has been expanded to assess coherence and alignment with internationally recognized principles considered essential. This work is anchored in the guidelines defined by the Economic Commission for Latin America and the Caribbean (ECLAC), which actively contributed to the formulation of the analysis and conclusions.

The International Engagement sub-dimension examines countries' participation in key spaces for global AI governance and their influence within these arenas. Given the predominantly private nature of AI advancements, particular emphasis is placed on involvement in ISO standard-setting processes, as these spaces shape global standards, as well as adherence to international agreements and treaties outside Latin America and the Caribbean.

The Regulation sub-dimension considers existing bills, laws, and regulations in each of the 19 countries, including those related to cybersecurity and personal data protection. Additionally, the Ethics and Sustainability indicator incorporates information from the Global Index for Responsible AI (GIRAI), the Network Readiness Index (NRI), and other sustainability metrics related to data centers and renewable energy generation from non-conventional sources.

This dimension accounts for **25%** of the total index score. Although governance is fundamental to the sustainable and harmonious development of AI ecosystems, the current maturity of the region in this area requires placing greater emphasis on the other dimensions studied.

TABLE 3 details the taxonomy of this dimension, including the new sub-indicators introduced in the current edition.

TABLE 3: COMPOSITION OF THE GOVERNANCE DIMENSION

Subdimension	Indicators	Subindicators
Vision and Institutionality	AI Strategy	Existence of an AI Strategy
		Year of AI Strategy
		AI Strategy Authority
		AI Strategy Update
		Evaluation Mechanisms
		Coordination Mechanisms
		Ethics and Governance
		Infrastructure and Technology
		Capacity Building
		Data
		Digital Government
		Industry and Entrepreneurship
		R&D (Research and Development)
		Regional and International Cooperation
		Gender Perspective
		Sustainability in Strategy
		Budget
		Roadmap / Action Plan
	Societal Involvement	Citizen Participation
		Multistakeholder Methodology
	Institutionality	Existence of Institutionality
International Engagement	Participation in Standards Definition	ISO Participation
	Participation in International Organizations	Participation in International Committees
Regulation	AI Regulation	Risk Mitigation
	Personal Data Regulation	**Personal Data Protection Law**
		Personal Data Protection Authority
	Cybersecurity	**Legal Cybersecurity Measures**
		Technical Cybersecurity Measures
		Organizational Cybersecurity Measures
		Cybersecurity Capacity Building
		Cybersecurity Cooperation
	Ethics and Sustainability	Data Protection and Privacy
		Security, Accuracy, and Reliability
		Clean and Affordable Energy
		Proportion of Data Centers Meeting International Sustainability Standards
		Sustainability Elements in Data Centers or Digital Infrastructure
		Proportion of Non-Conventional Renewable Energy in the Energy Matrix

New sub-indicators 2025

FUENTE:CENIA

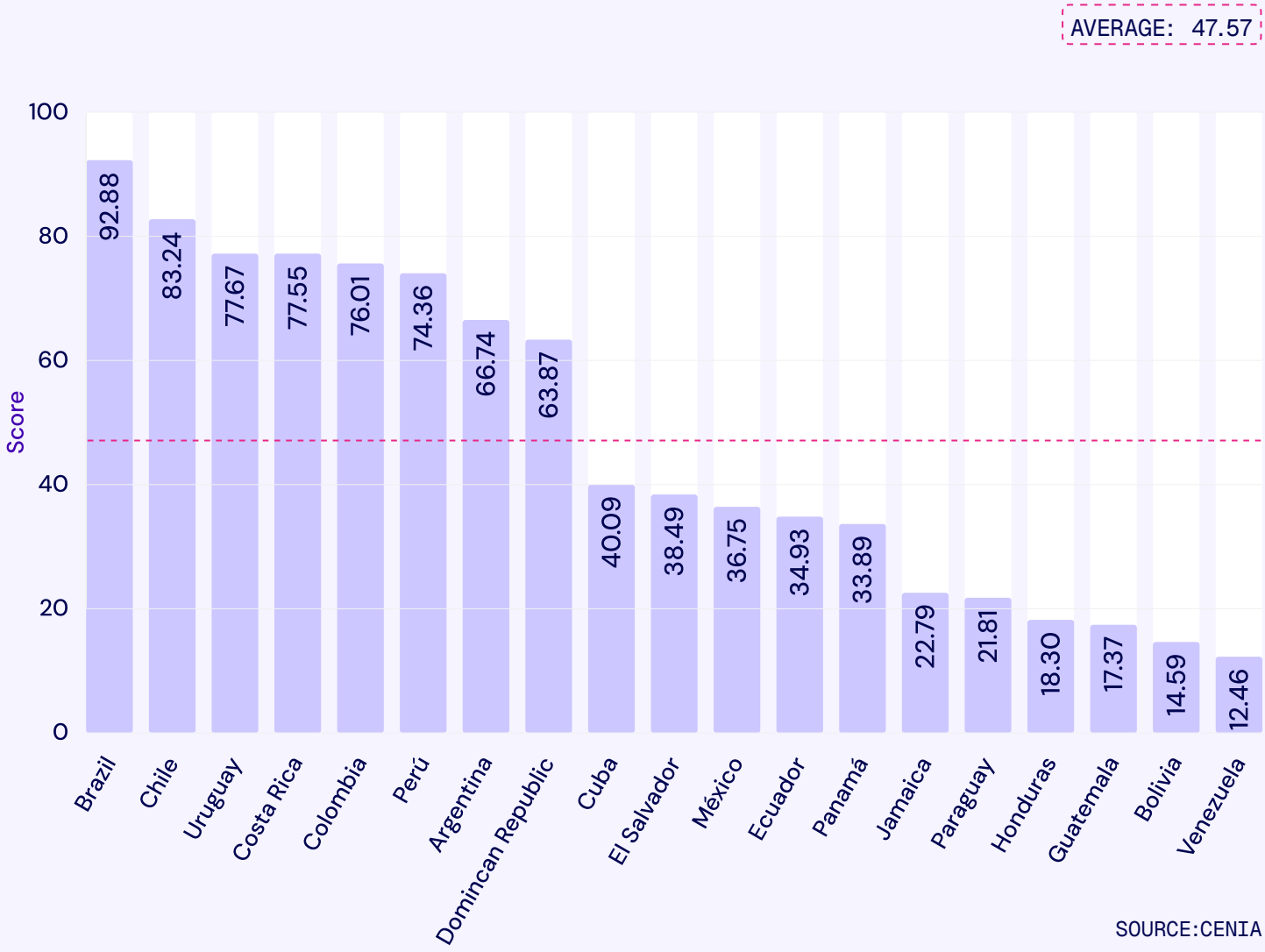
Based on these scores, countries can be grouped into three categories according to their level of progress in governance:

Countries with advanced governance (above 60 points): This group includes countries with inclusive and well-structured decision-making processes, as well as policies that are implemented effectively. Examples are **Brazil (92.9), Chile (83.2), Uruguay (77.7), Costa Rica (77.6), Colombia (76), Peru (74.4), Argentina (66.7), and the Dominican Republic (63.9).**

Countries with intermediate governance (35-60 points): These countries show moderate performance. While governance structures and processes exist, there are still areas requiring improvement to reach higher standards. This group includes **Cuba (40.1), El Salvador (38.5), and Mexico (36.8).**

Countries with emerging governance (below 35 points): These countries have a basic level of governance, with minimal structures and significant opportunities for development.

FIGURE 13: GOVERNANCE DIMENSION SCORE



SOURCE:CENIA

GOVERNANCE

2.1 Vision and institutionality subdimension

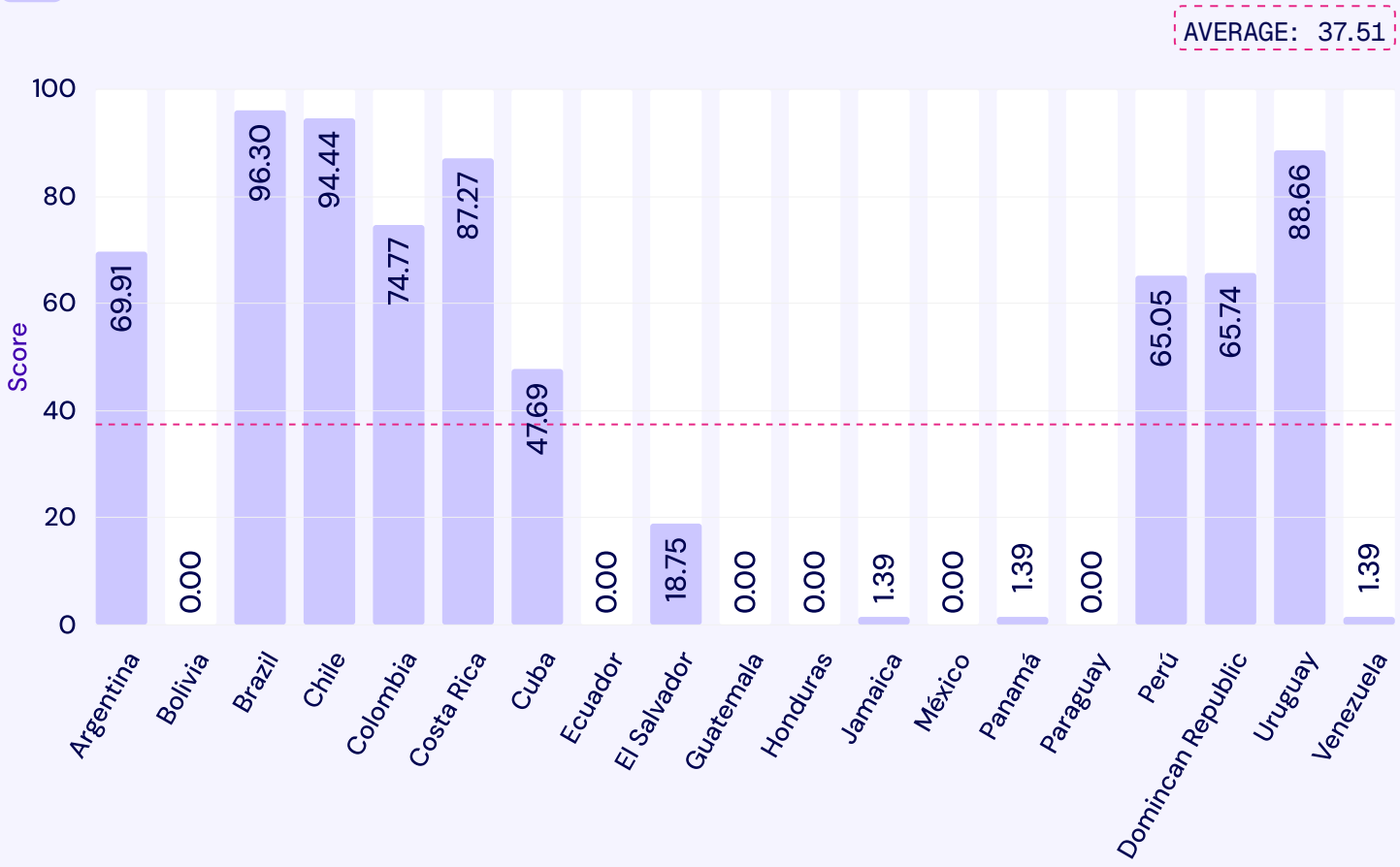
Policy instruments such as national agendas and strategies play a crucial role in fostering innovation, stimulating economic growth, and, in the case of technologies like AI, establishing ethical and responsible standards to guide their development.

These policies provide guidance for the various actors within a local ecosystem, helping to set priorities, define ethical requirements, coordinate efforts, build consensus on operational frameworks for AI systems, and offer clarity for their deployment.

Initiatives such as agendas, strategies, and national policies can also lay the foundation for AI governance within a country by defining clear institutional frameworks and mechanisms for coordination and participation in implementing these plans. The presence of these elements allows the environment to evolve organically toward a mature AI ecosystem.

This subdimension accounts for 50% of the total weighting of the Governance dimension and is composed of three indicators: **AI Strategy, Societal Involvement, and Institutionality.**

FIGURE 14: VISION AND INSTITUTIONALITY SUBDIMENSION SCORE



SOURCE: CENIA
based on data from the Observatory for Digital Development (ODD) of ECLAC, direct surveys to countries, and official online information as of May 2025.

Based on the results presented in FIGURE 14, countries can be grouped into three categories according to their level of maturity.

Countries with Advanced Vision and Institutional Framework (above 60 points): these countries have robust strategies and institutional structures, characterized by active AI strategies, broad participation in their design, and clearly defined institutions to promote AI. This group includes **Brazil (96.3), Chile (94.44), Uruguay (88.66), Costa Rica (87.27), Colombia (74.77), Argentina (69.91), the Dominican Republic (65.74), and Peru (65.05).**

Countries with Vision and Institutional Framework in Progress (35-60 points): these countries have active strategies but with less defined frameworks and a more limited scope. **Cuba (47.69)** is the only country in this category.

Countries with Emerging Vision and Institutional Framework (less than 35 points): sthese countries that either lack strategies or are in the early stages of developing them. These countries are at an initial phase in defining a vision and establishing an institutional framework to guide local AI development.

To read the scores in detail at the level of indicators and sub-indicators, refer to ILIA 2025.

GOVERNANCE

2.2 International Engagement Subdimension

AI is a cross-border technology that is rapidly developing at a global level.

Participation in international forums and coordination bodies, which include multiple initiatives, principles, and committees, strengthens local AI development by enabling the sharing of standards and providing international visibility to local realities. Consequently, this sub-dimension evaluates each country's engagement in these multilateral spaces, helping to ensure that the concerns and context of Latin America and the Caribbean are considered in global AI governance decisions.

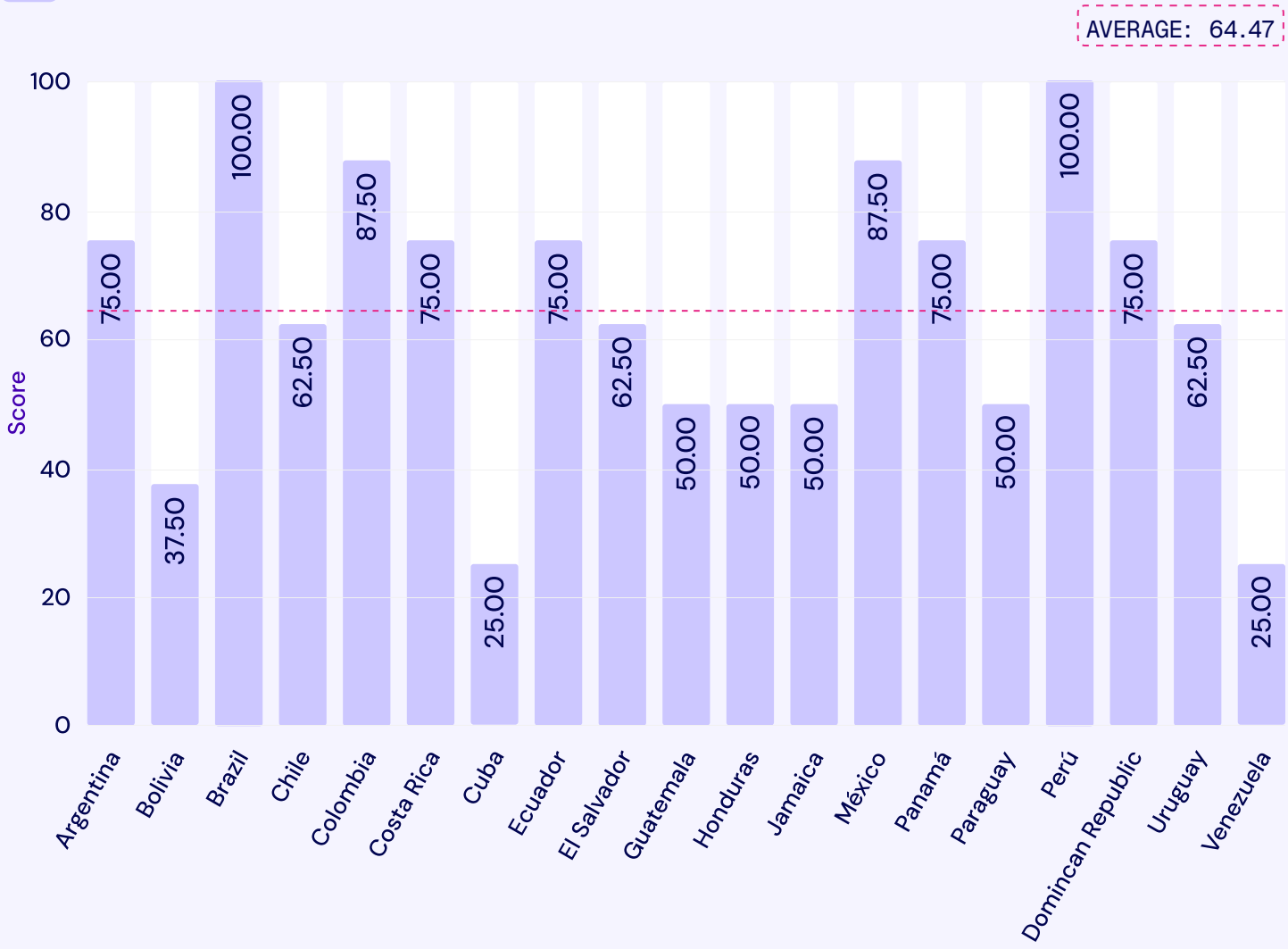
The International Engagement sub-dimension consists of two indicators. The first is **Participation in Standards Definition,** which includes **the sub-indicator Participation in ISO.** This measures whether a country is an observer or participant in ISO committees relevant to AI. Security and statistical fairness mechanisms, along with metrics used to assess algorithm quality and potential risk, have largely originated in academia and have been formalized into industry standards through the International Organization for Standardization (ISO).

The second indicator is Participation in International Organizations, which includes **the sub-indicator Participation in International Committees.** This assesses whether a country is involved in various multilateral AI initiatives. Engagement in such initiatives, including declarations, ethical principles, and other collaborative efforts, allows alignment among global perspectives while contributing to development from a regional viewpoint.

This evaluation does not consider participation in regional coordination spaces, as most countries have either signed the relevant agreements or are in the process of doing so. Furthermore, as noted in the introduction to this dimension, key discussions on standardizing norms and processes remain centered in international organizations that operate beyond the Americas.

The International Engagement sub-dimension accounts for **20%** of the total weighting of the Governance dimension.

FIGURE 15: INTERNATIONAL ENGAGEMENT SUB-DIMENSION TOTAL SCORE



SOURCE: CENIA

Countries with Advanced International Engagement (above 60 points): his group includes countries with inclusive and well-structured decision-making processes, as well as policies that are implemented effectively and efficiently. This category includes **Brazil (100), Peru (100), Colombia (87.5), Mexico (87.5), Argentina (75), Costa Rica (75), Ecuador (75), Panama (75), the Dominican Republic (75), Chile (62.5), El Salvador (62.5), and Uruguay (62.5).**

Countries with Intermediate International Engagement (35-60 points): these countries demonstrate a moderate level of performance. While structures and processes are in place, there are still areas that require improvement to reach higher standards. This group includes **Guatemala (50), Honduras (50), Jamaica (50), Paraguay (50), and the Plurinational State of Bolivia (37.5).**

Countries with Basic International Engagement (below 35 points): these countries exhibit a fundamental level of governance, with minimal structures and significant areas needing improvement.

GOVERNANCE

2.3 Regulation Subdimension

The Regulation sub-dimension addresses key aspects of a country's ethical and regulatory environment for AI development. It evaluates both the existence of national regulations that safeguard rights, mitigate risks, and promote ethical and responsible use, as well as the country's performance in cybersecurity and measures to support the sustainable development of AI.

The sub-dimension is composed of four indicators: AI Regulation, Personal Data Regulation, Cybersecurity, and Ethics and Sustainability, representing **30%** of the total weighting of the Governance dimension.

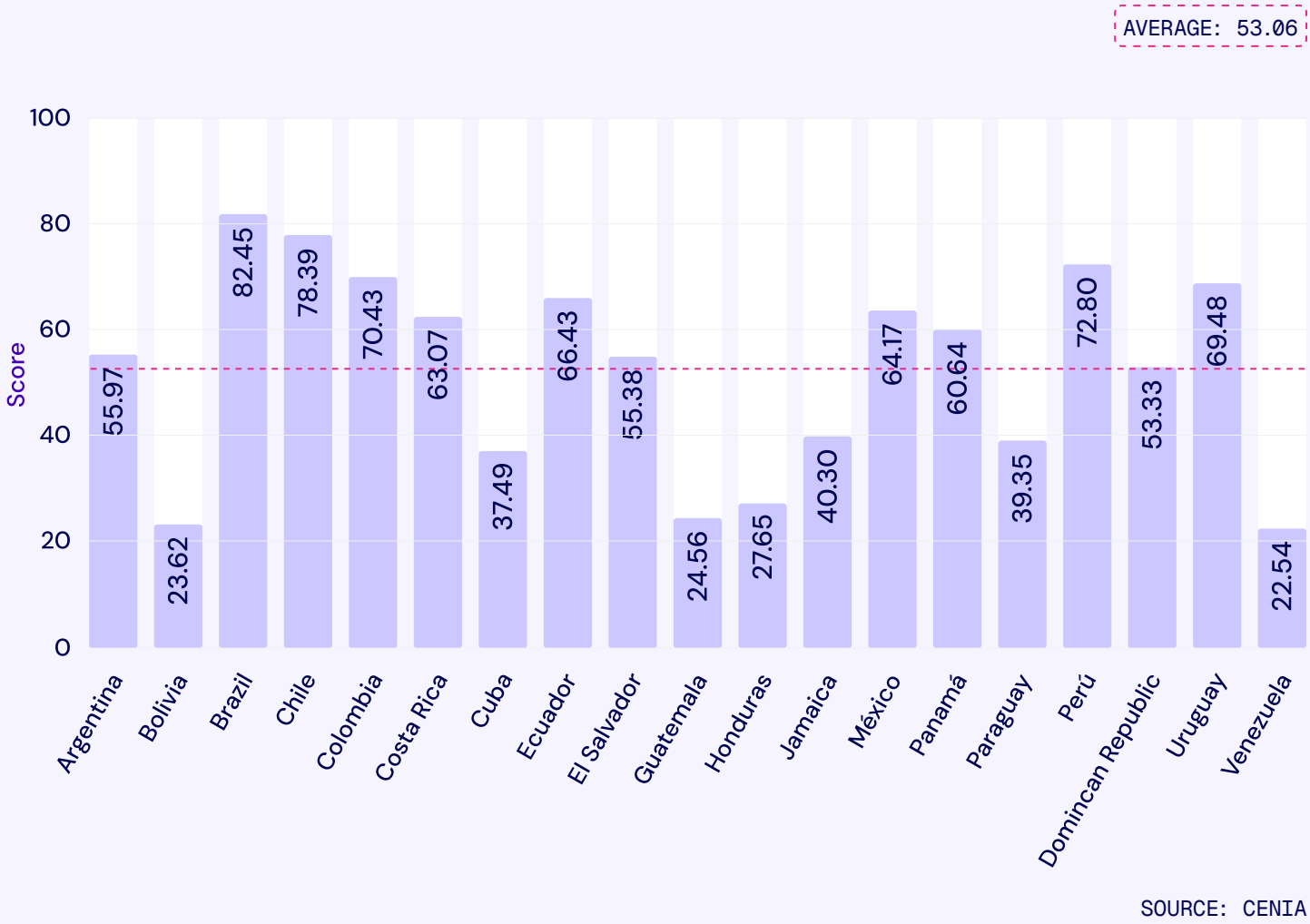
In this edition, modifications have been made to strengthen the sub-dimension. A new **Personal Data Regulation indicator** has been added, consisting of two sub-indicators: **Personal Data Protection Law and Personal Data Protection Authority.** This indicator reports on the status of countries' regulatory frameworks for a critical enabling factor in AI deployment and development.

The Cybersecurity indicator, based on countries' performance in the Global Cybersecurity Index (GCI), has been disaggregated into five sub-indicators corresponding to each of the GCI pillars. This provides more detailed information on countries' scores, helping identify strengths and areas for improvement within the sub-indicators that contribute to the final score.

The Ethics and Sustainability indicator has also been reinforced with three new sub-indicators focused on sustainability. Two assess the relevance of sustainability and the environmental impact of the data center industry, while a third measures the proportion of non-conventional renewable energy in the energy matrix.

These modifications enable ILIA 2025 to provide comparative information on issues of growing global importance within the Governance dimension, addressing concerns related to both the security of AI systems and their environmental impact.

FIGURE 16: REGULATION SUBDIMENSION TOTAL SCORE



SOURCE: CENIA

Countries with Advanced Regulation (above 60 points): these countries have the highest scores, reflecting a robust and well-established regulatory environment. This group includes **Brazil (82.45), Chile (78.39), Peru (72.8), Colombia (70.43), Uruguay (69.48), Ecuador (66.43), Mexico (64.17), Costa Rica (63.07), and Panama (60.64).**

Countries with Moderate Regulation (35 to 60 points): these countries show a moderate level of regulatory development, with scores near the regional average. This group includes **Argentina (55.97), El Salvador (55.38), the Dominican Republic (53.33), Jamaica (40.3), Paraguay (39.35), and Cuba (37.49).**

Countries with Emerging Regulation (below 35 points): these countries have low scores, indicating a challenging regulatory environment with substantial room for improvement.

To read the scores in detail at the level of indicators and sub-indicators, refer to ILIA 2025.

REPORT

Sustainability and Data Centers in Latin America and the Caribbean

The rapid expansion of data centers in Latin America and the Caribbean has raised growing environmental concerns. The region's data center market is projected to double in value over the next few years, increasing from approximately USD 5–7 billion in 2023 to around USD 10 billion by 2028. Brazil, Mexico, Colombia, Chile, and Peru are leading these recent investments. However, this growth also brings challenges: data centers currently account for about 1% of global electricity consumption, a figure that could rise to 8% by 2030 if energy efficiency measures are not implemented. In Latin America and the Caribbean, where many electricity grids rely on fossil fuels, this expansion could increase greenhouse gas emissions and place additional pressure on resources such as water. At the same time, the region offers unique opportunities to develop digital infrastructure sustainably.

REGIONAL CONTEXT

To identify specific sustainability data related to data centers, the following study was conducted, enabling the recognition of gaps and best practices in green infrastructure for AI. This complements a comprehensive vision of AI development in Latin America and the Caribbean that is both ethical and sustainable.

The group of regional leaders in data center sustainability includes countries that stand out for both public and private initiatives, as well as for a strong combination of high adoption of sustainability standards and a robust, expanding industry. Brazil, Chile, Colombia, Ecuador, and Mexico belong to this group, each for diverse and complementary reasons.

Following this group are countries that have made notable progress in sustainability but whose industrial scale remains moderate or small, which limits their position in the weighted ranking. This group includes Costa Rica, Uruguay, Peru, and the Dominican Republic.

Finally, there are countries where data center infrastructure is limited, industrial maturity is low, and digital sustainability is not yet a priority on the public agenda. Most of these nations have few commercial data centers, limited international certifications, and poorly developed or nonexistent green policies.

01 _ METHODOLOGY

a. REVIEW OF REGULATORY FRAMEWORKS AND NATIONAL STRATEGIES

Relevant government documents from the last five years (2020–2025) were collected for the 19 ILIA countries. These included national digital development plans, digital transformation agendas, artificial intelligence strategies, digital infrastructure policies, and energy or environmental regulations applicable to IT. The search focused on identifying explicit references to sustainability in data centers or digital infrastructure.

For example, recent initiatives such as Chile's National Data Centers Plan (2024), Uruguay's Digital Agenda 2025, and digital government strategies in Central America were analyzed, among others. When specific laws or regulations existed -such as energy efficiency legislation affecting data centers- they were also considered.

These documents made it possible to determine the presence of sustainability elements in each country's vision for digital infrastructure, including environmental criteria, efficiency targets, and the use of clean energy. National sustainable finance taxonomies published up to July 2025 were explicitly included in the analysis.

b. ANALYSIS OF SECTOR REPORTS AND CERTIFICATION DATA

In parallel, reports from international organizations, such as ECLAC and the IDB, as well as industry reports on data centers in Latin America, were consulted to gather information on the adoption of international sustainability standards. Certification databases, including LEED project directories from the U.S. Green Building Council, and announcements from data center operators were also reviewed. This made it possible to identify how many data centers hold certifications such as ISO 50001 (energy management), ISO 14001 (environmental management), LEED (sustainable buildings), or other green labels.

Notable examples include the CODISA data center in Costa Rica, which achieved LEED Gold certification and maintains ISO 50001 for energy efficiency; KIO Networks in Mexico, whose facilities hold ISO 14001, LEED, and CEEDA (Certified Energy Efficient Datacenter Award) certifications; the ODATA SP01 data center in Brazil, the first in the country to receive LEED Gold; and new hyperscale projects in Colombia designed with ISO 50001 and LEED Platinum certifications. Although the available data is fragmented, it provides a basis for estimating the proportion of certified data centers in each country.

SUSTAINABLE DATA CENTERS WITHOUT TRADITIONAL CERTIFICATION (META CASE IN EUROPE)

Meta's (Facebook) data centers in Luleå, Sweden, and Odense, Denmark were designed according to the Open Compute Project framework. They use passive cooling with Nordic air and recover excess heat to supply district heating networks. These facilities achieve PUEs close to 1.10 without relying on traditional certifications such as LEED or ISO. **This example demonstrates that the most advanced**

sustainability practices often depend more on technical design and operational innovation than on formal labels.

c. INTERVIEWS AND EXPERT CONSULTATIONS

In countries where public documentation was limited or outdated, informal consultations were held with local experts, including academics, IT industry associations, and government officials, to validate the information. These qualitative interviews helped confirm, for example, whether new digital agendas with sustainability components had been launched since 2025, as several countries are updating their post-pandemic digital strategies, or to estimate the number of operational data centers and their sustainable practices when official statistics were unavailable. Verifiable documentary sources were prioritized, with expert opinions used only to fill information gaps.

d. REGULATORY RECOGNITION OF SUSTAINABLE TAXONOMIES AND DATA CENTER ECONOMIC ACTIVITIES (ISIC 6311)

Additionally, a specific methodological criterion has been introduced to assess the institutional recognition of data centers in national taxonomies, for countries that explicitly include ISIC code 6311 (data processing, hosting, and related activities) within their sustainable finance framework.

This formal recognition establishes an enabling regulatory environment that not only highlights data centers as green infrastructure but also facilitates access to sustainable financial incentives, indirectly promoting greater adoption of international standards such as ISO 50001 and LEED.

ON SUSTAINABLE FINANCE TAXONOMIES

As of 2025, there are approximately 48 sustainable finance taxonomies worldwide, with notable initiatives in the European Union, China, Canada, the United Kingdom, and several countries in Latin America and the Caribbean.

The European Union is widely recognized as the global benchmark for sustainable finance taxonomies. The EU taxonomy is the first regulated classification system for sustainable economic activities worldwide, establishing rigorous technical criteria and a cross-cutting regulatory framework that underpins all European sustainable finance regulations.

In Latin America and the Caribbean, several national taxonomies exist alongside a significant regional initiative:

→ Colombia was a pioneer in the region with its green taxonomy, and Mexico has developed a sustainable finance taxonomy.

→ Panama, Costa Rica, Chile, and the Dominican Republic have published their sustainable or green taxonomies.
→ Brazil, Peru, Ecuador, and Paraguay are currently in the process of designing their taxonomies.

In December 2024, the First Regional Green Finance Taxonomy for Latin America and the Caribbean was presented. It was promoted by the Central American Council of Superintendents of Banks, Insurance, and Other Financial Institutions (CCSBSO) with support from the IFC, covering eight member countries: Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and the Dominican Republic.

A green or sustainable taxonomy is a classification system that transparently and technically defines which economic activities can be considered environmentally sustainable. Its main purpose is to guide public and private investments toward activities aligned with climate and sustainable development commitments. Taxonomies enable standardized comparison, reporting, and monitoring of the environmental impact of productive sectors during the ecological transition. Although taxonomies are not mandatory regulations, they serve as reference frameworks that governments and the financial sector can use to channel resources to green projects, provide preferential financing, and differentiate companies that meet international criteria.

The difference between a green taxonomy and a sustainable taxonomy lies in the scope of the criteria used to classify economic activities:

Green Taxonomy: Focuses exclusively on environmental aspects. Its primary objective is to identify and classify activities that contribute to environmental protection, climate change mitigation and adaptation, biodiversity conservation, sustainable resource management, and other environmental objectives.

Sustainable Taxonomy: Expands the green taxonomy by including social and governance criteria (ESG: Environmental, Social, Governance). In addition to environmental objectives, it considers aspects such as gender equality, social development, health, education, financial inclusion, and responsible corporate governance.

This distinction is important because it allows regulatory frameworks and investments to target not only environmental protection but also social development and good governance. It aligns with the Sustainable Development Goals (SDGs) and helps avoid risks such as greenwashing or socialwashing.

Integrating taxonomies also enables the measurement of how countries in the region recognize data centers as strategic infrastructure in the sustainable transition. When data centers are included in a taxonomy, mechanisms are established for them to access green funds, credit instruments, and market advantages.

The International Standard Industrial Classification (ISIC), developed by the United Nations, is the global standard for classifying economic activities. Its most recent version, Rev.4,

serves as the basis for multiple sustainable finance taxonomies in Latin America. ISIC code 6311 corresponds to “Data processing, hosting, and related activities,” formally identifying data centers and related services. Using this code ensures comparability between countries and guarantees that sustainability assessments rely on internationally standardized technical definitions.

As of July 2025, several Latin American countries have explicitly included ISIC code 6311 in their national green taxonomies: Chile (T-MAS), Colombia (Green Taxonomy), Costa Rica (Sustainable Finance Taxonomy), Panama (Sustainable Finance Taxonomy), and the Dominican Republic (Green Taxonomy). This positions these countries at the forefront in terms of institutional recognition of digital sustainability.

NOTE ON SCOPE AND LIMITATIONS

Inclusion in a taxonomy is neither mandatory nor punitive; it serves as an enabling reference framework. Companies may choose to comply to access financing opportunities, while non-inclusion does not imply illegality or incur penalties. The approach is intended to facilitate, recognize, and encourage best practices rather than impose requirements or sanctions.

02 _ COMPARATIVE ANALYSIS BETWEEN COUNTRIES

Based on the information collected, a standardized quantification system was developed. It is important to note that, given the emerging nature of these topics in the region, data availability and quality vary by country. Therefore, the methodology prioritized objective criteria, such as the presence or absence of documents and internationally recognized certifications, and assigned scores to reflect different levels of progress. This approach allows for comparability between countries despite differences in the size of their data center industries.
The analysis reveals significant differences among Latin American countries across both evaluated dimensions. Broadly, three groups of countries can be identified:

a. REGIONAL LEADERS IN DATA CENTER SUSTAINABILITY

The group of regional leaders in data center sustainability includes countries that excel in both public and private initiatives, combining widespread adoption of sustainability standards with a robust and expanding industry. Brazil, Chile, Colombia, Ecuador, and Mexico belong to this group, each for diverse and complementary reasons.

Brazil, the largest market in the region, has a strong industry and demonstrates steady progress. Several certified data centers stand out, including flagship facilities in São Paulo with LEED Gold certification, and multiple operators holding ISO 14001/50001 certifications. In addition, government-supported renewable energy projects benefit the sector, consolidating Brazil’s leadership in the region.

Chile has established itself as a clear leader, not only due to the strength of its industry and growing adoption of standards but also because of its pioneering public policies.

The National Data Centers Plan aims to triple installed capacity within five years while adhering to world-class energy efficiency and clean energy standards, positioning Chile as a benchmark for strategic planning in the sector.

Colombia emerge como el líder destacado en el ranking, impulsado por una industria consolidademerges as the top leader in the ranking, driven by a consolidated industry (weighting factor 1.0) and a significant proportion of certified data centers (34.3%). The country hosts high-efficiency projects and operations by global actors using renewable energy, demonstrating notable progress in both infrastructure and the adoption of best practices.

Ecuador rrepresents an emerging leader; although its industry is still in transition, it has the highest percentage of sustainable data centers in the region (61.5%). This reflects a strong commitment to best practices from an early stage, positioning Ecuador as a benchmark for adopting sustainable standards at the onset of sectoral development.

Mexico completes this group with a highly dynamic private sector and steadily strengthening public-private coordination. Operators such as KIO and Alestra, along with data centers in Querétaro, adopt sustainable practices. Meanwhile, the Mexican Data Center Association (MEXDC) and national authorities recognize sustainability as a central axis for sector growth, promoting best practices and fostering institutional progress.

b. INTERMEDIATE OR TRANSITIONAL COUNTRIES

This group includes countries that have achieved notable progress in sustainability, but whose industrial scale remains moderate or small, which limits their position in the weighted ranking. Costa Rica, Uruguay, Peru, and the Dominican Republic exemplify this group, each with distinct strengths and challenges:

Costa Rica stands out with success stories such as the CODISA data center, which holds LEED Gold and ISO 50001 certifications. Private sector commitment is strong, although there is still no specific national plan for sustainable data centers at the public policy level. The industry's small size limits its relative impact on overall measurements, but the ecosystem serves as a regional reference for integrating clean energy and best practices.

Perú is characterized by a high proportion of sustainable data centers within an industrial ecosystem that is still emerging. While sustainable digital transformation is referenced in ICT plans and official statements, concrete programs for green data centers are not yet in place. The industry remains moderate in size, with certified centers typically belonging to large companies or multinationals, while most local facilities lack certifications.

The Dominican Republic has taken important institutional steps, such as formally recognizing data centers in its green taxonomy, which could accelerate sector development. It also has a high proportion of sustainable centers, although these exist within a small and still growing market. Public policies are still incipient but show potential for rapid advancement.

El Salvador demonstrates a relatively high proportion of certified data centers, with one-third of its centers holding international sustainability certifications, supported by an energy matrix that relies 93% on non-conventional renewable energy.

However, the emerging nature of the data center industry limits the potential for broader impact

Uruguay demonstrates exemplary commitment, benefiting from an electricity matrix that is nearly 100% renewable and attracting international investments, such as Google. Sustainability is a central focus, yet the small size of its industry restricts its overall influence in the region.

Overall, these countries exhibit a high proportion of certified centers relative to their size and some recognition in public policies, even if still in early stages. They stand out for their potential to achieve sustainable growth in the medium term.

The case of the Dominican Republic illustrates how a green taxonomy can formally recognize data centers, even in the absence of national plans with specific targets. This initial institutional acknowledgment provides a strategic foundation for future development.

c. EMERGING COUNTRIES

This group includes countries where data center infrastructure is limited, industrial maturity is low, and the proportion of sustainably certified data centers is minimal. Most have few commercial data centers and limited international certification.

GENERAL CHARACTERISTICS

→ **Limited infrastructure:** Few private data centers exist, often restricted to incumbent operators or government facilities.
→ **Certifications absent or marginal:** Most countries lack international certifications such as LEED or ISO 50001, resulting in a sub-indicator 1 value close to 0%.
→ **Low industrial maturity:** The small relative weight of the industry (weighting factor 0.1) reduces these countries' influence in the regional ranking, even if some centers are certified.

Included countries

Argentina: Although it has some certified centers, the small size of its industry diminishes its impact in the ranking, placing it among countries with low maturity.

Panamá: Similar to Argentina in industry size, but stands out for applying ISIC code 6311 in its national taxonomy, providing methodological and operational advantages. This institutional recognition positions Panama as a potential benchmark in sustainable digital infrastructure.

Bolivia, Cuba, Guatemala, Honduras, Jamaica, Venezuela: These countries share emerging infrastructure, with very few commercial data centers and generally lacking international certifications. Public policies do not explicitly address sustainability in digital infrastructure.

Paraguay: A particular case, with potential to become a clean digital hub due to its 100% hydroelectric energy matrix. However, the absence of official guidelines keeps its score low in sub-indicator 2. The practical use of renewable energy provides a moderate value in sub-indicator 1, but the lack of concrete plans limits further development.

The inclusion of the economic activity "data processing" as a sustainable activity in national taxonomies provides an advantage to countries such as Chile, Colombia, Costa Rica, Panama, and the Dominican Republic. These countries stand out not only for robust plans but also for concrete institutional visibility. Additionally, this recognition creates direct financial incentives, encouraging the adoption of environmental certifications. Public inclusion of ISIC code 6311 is therefore a clear differentiator in regional leadership toward sustainable digital infrastructure.

03 _ CONCLUSIONS

The sustainability of digital infrastructure is essential for the development of AI in Latin America and the Caribbean, yet significant inequalities in the adoption of standards remain. Cases such as Chile and Costa Rica show that it is possible to combine digital growth with green criteria. A central challenge is the lack of public data on certifications and efficiency, which calls for regional collaboration to create a comprehensive repository of sustainable data centers. Integrating this information directly links ILIA with the 2030 Agenda, reinforcing its contribution to climate goals and highlighting the importance of implementing regulatory frameworks with effective enforcement mechanisms.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