

# ATLANTICS

## Latin America Digital Transformation Report 2023

August 30, 2023

# Readme.txt

**Tectonic Shifts.** The movement of gigantic plates that make up our world's foundation, that has led to earthquakes and volcanic eruptions but also to the emergence of life itself. A fitting metaphor for Latin America today.

Great change can bring great challenges, but also great opportunity to those who embrace it. As we explore the five forces transforming Latin America today, we aim to help innovators weave change into opportunity and progress.

A confluence of rich mines, fertile land, and a young population will make **Latin America the engine of the world** in a decade during which energy is going green and food demand peaks. The region has also harvested hard lessons from the past into wisdom for the future: survivors of the long battles against hyper-inflation, central bankers quickly reacted to the first signs of rising prices and are now ahead of the world in lowering interest rates to fuel economic growth. In a polarized context of U.S.-China relations, Latin America's neutrality has allowed it to reap rewards from both sides. Factories are sprinting to keep up with US nearshoring demand while trade with China reaches historic levels.

The **digital democratization** we have undergone has evolved online demographics to mirror local society. Fueled by greater access from middle- and lower-income classes, the penetration of e-commerce and financial services accelerated. All this despite a backdrop of expensive and slow data for the poor. As progress reduces friction, we should see further increases in internet access and usage in a region that is already a world leader in both.

After a challenging year, we now see a **renewal of the entrepreneurial spirit**. Founder optimism increased by more than fivefold and rightfully so: Access to financial capital has stabilized at healthy levels and access to human capital is strong despite recent layoffs and battered stock prices. The region promises decades of compounding growth in technology value-creation in the hundreds of billions, if not trillions, of dollars. In a region that has historically produced exits that are more numerous and larger than its peers, despite an order-of-magnitude less capital, there is room for excitement.

Brazil has become a role model for the region in its success, as money moves from paper to pixels. As **money goes digital**, we see instant digital transfers leave cash and card payments in the dust; interactions with financial institutions are 95% through digital channels. Digitalization of money leads to the formalization of the economy and labor. This, in turn, leads to greater inclusion in the financial system and access to credit, unlocking a powerful flywheel of economic development. Brazil's example is inspiration for neighboring countries, many who have ambitious initiatives underway. The ease of opening accounts and moving money have led to a battle for principality and an existential need to use data to manage risk.

We see the potential for **AI as the great equalizer**, considering recent step-function advances in the technology. Latin America is embracing artificial intelligence's potential, with great optimism among businesses, entrepreneurs, and the population. Capital and innovation stand to accelerate (and benefit from) this new era, if ambitious regulators are able to adequately mitigate risks without killing innovation.

To reflect our own enthusiasm, we have used a plethora of AI tools and models throughout this report: from generating images inspired by Latin artists to summaries written in the style of the region's great authors.

Despite all our optimism for Latin America, we cannot lose sight of problems that still plague the region: chronic poverty, lagging education and low access to healthcare. The true power of AI (and technology in general) rests not in its ability to generate cute pictures and funny poems. If we can drastically increase the ability of children to learn and families to be healthy, we can make important strides towards eliminating poverty and leveling the playing field.

As lives become increasingly digital, optimism flourishes from the knowledge that digital can also transform lives.

# Atlantico is a leading early-stage venture capital fund investing in Latin America

## Digital Report Creation Team



**Julio Vasconcellos**  
Partner



**Ana Martins**  
Partner



**Victor Ramos**  
Associate



**Maria Ernanny**  
Head of Platform & IR

## Atlantico Venture Partners



**Hugo Barra**



**Mate Pencz**



**Ariana Poursatip**



**Gui Telles**

# 2023 Digital Report Research Team



**Paola Lopez**  
Project Lead  
HBS

**João Logemann**  
UPenn

**Frida Herdan**  
UPenn

**Gonzalo de Cárdenas**  
UPenn

**Santiago Saldivar**  
Harvard

*...and the entire Atlantico team who made this possible!*

# Thank You to Our Sponsors

These partners helped us shine a light on the LatAm tech ecosystem, supporting our endeavor in bringing this report to life

## Flagship

Google for Startups



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# Our Research Partners

We are thankful for the help of these organizations and contributors who partnered with us on primary research, data collection, interviews and analyses

## Primary Research Initiatives



**The Future of Work in Latin America 2023:** Runa and Atlantico surveyed 500 company leaders across Latin America



AtlasIntel

**National Opinions:** AtlasIntel and Atlantico surveyed a representative population across 5 Latin America countries



**Internal Data** internal data from seven different teams including Finance, Pay, Product, Ads, Cloud and Marketing



**Atlantico Student Survey:** Preparo alongside Atlantico surveyed over 500 undergraduate students

## Research Partners



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... and countless other experts and friends who we interviewed and helped us with on- and off-the-record data, information, and insights.

# Thank you!

# Tectonic Shifts

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**ATLANTIC**

01

# Engine of the World



ATLANTIC

/imagine engine of the world in the style of **Vik Muniz**

# Latin America as the engine of the world

In the mist of numbers, **Latin America was an enigmatic woman**—ageless, oscillating between youthful zeal and historical scars. **She mused on her size—660 million souls, \$6 trillion in dreams**—akin to the world's third-largest country. Brazil and Mexico were her eyes, capturing most of her economic beauty.

Her youth was her treasure, a demographic dividend outpacing China and the U.S. But the years had been cruel. A recession melted into a pandemic, hindering progress. **Yet, she rose from the ashes, resilient but scarred.**

In this panorama, essentials like education and healthcare were elusive. And geopolitically, she **found new friends in both China and the United States**, becoming the **bread and butter of the world in commodities.**

**Inflation came like a fever**, testing her trust in the high priests of finance—central banks. **Brazil and Chile managed to steer the ship**, while the labor market remained a chaotic blend of formality and informality.

As she stood on tomorrow's edge, Latin America was more than GDP and youth; she was an engine of dreams and struggles, **forever the enigmatic engine of the world.**



*A piece on the Engine of the World in the style of **Clarice Lispector***

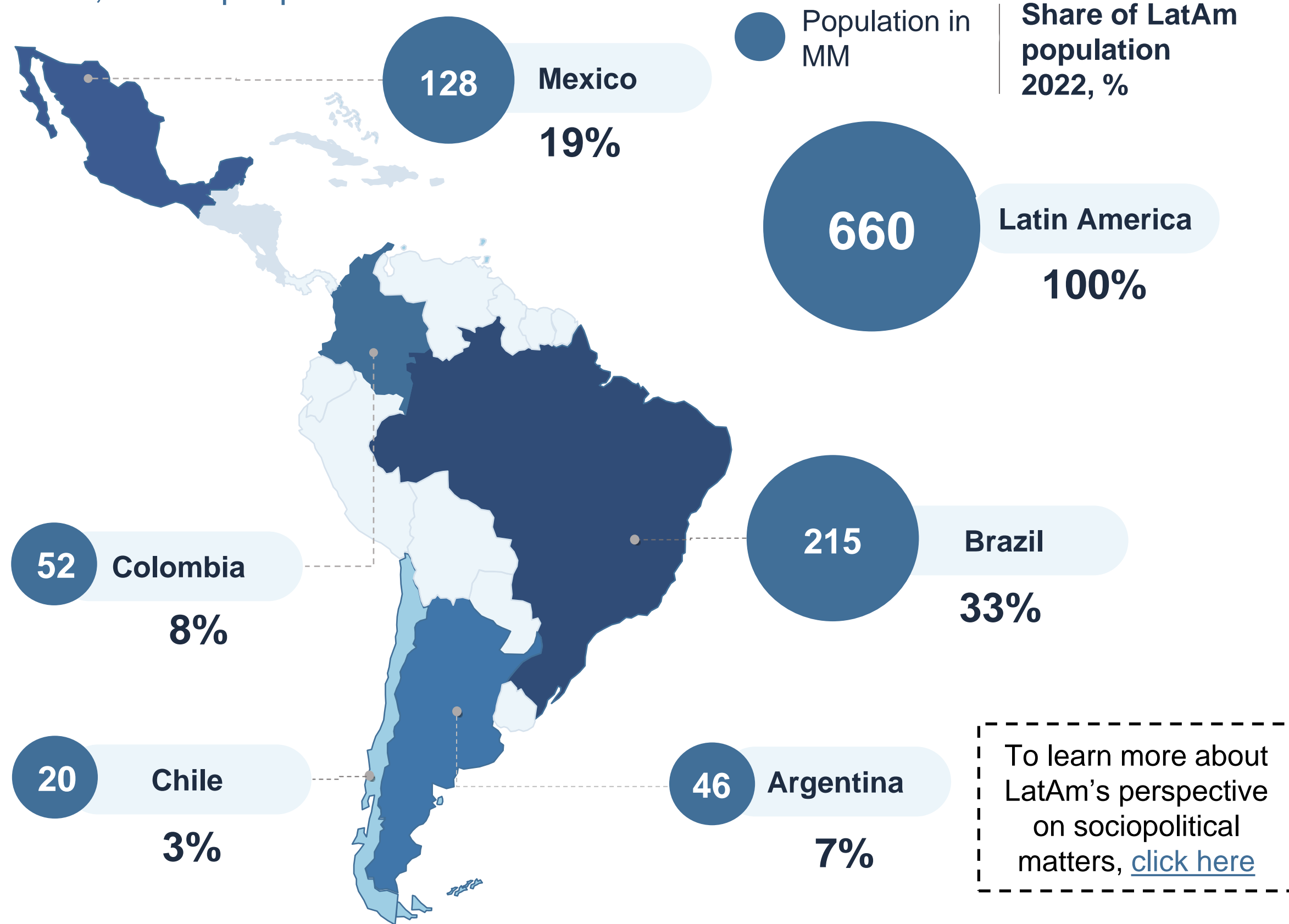
*Using GPT 4 – 1.7 Trillion parameter model by Open AI*



# Latin America's 660 million people and \$6T of GDP would make it the #3 economy if it were one country

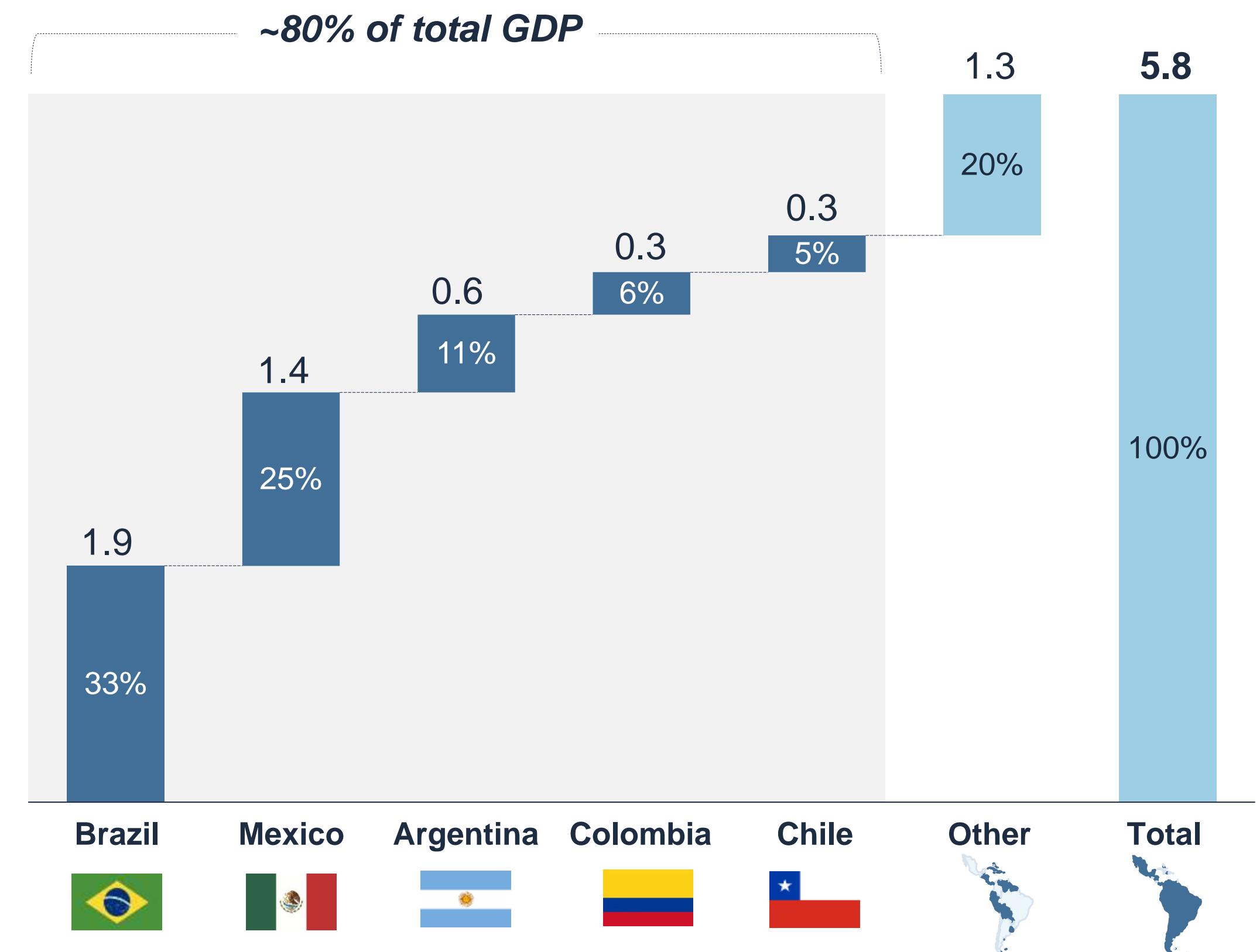
## Total population<sup>1</sup>

2022, MM of people



## Total GDP<sup>2</sup>

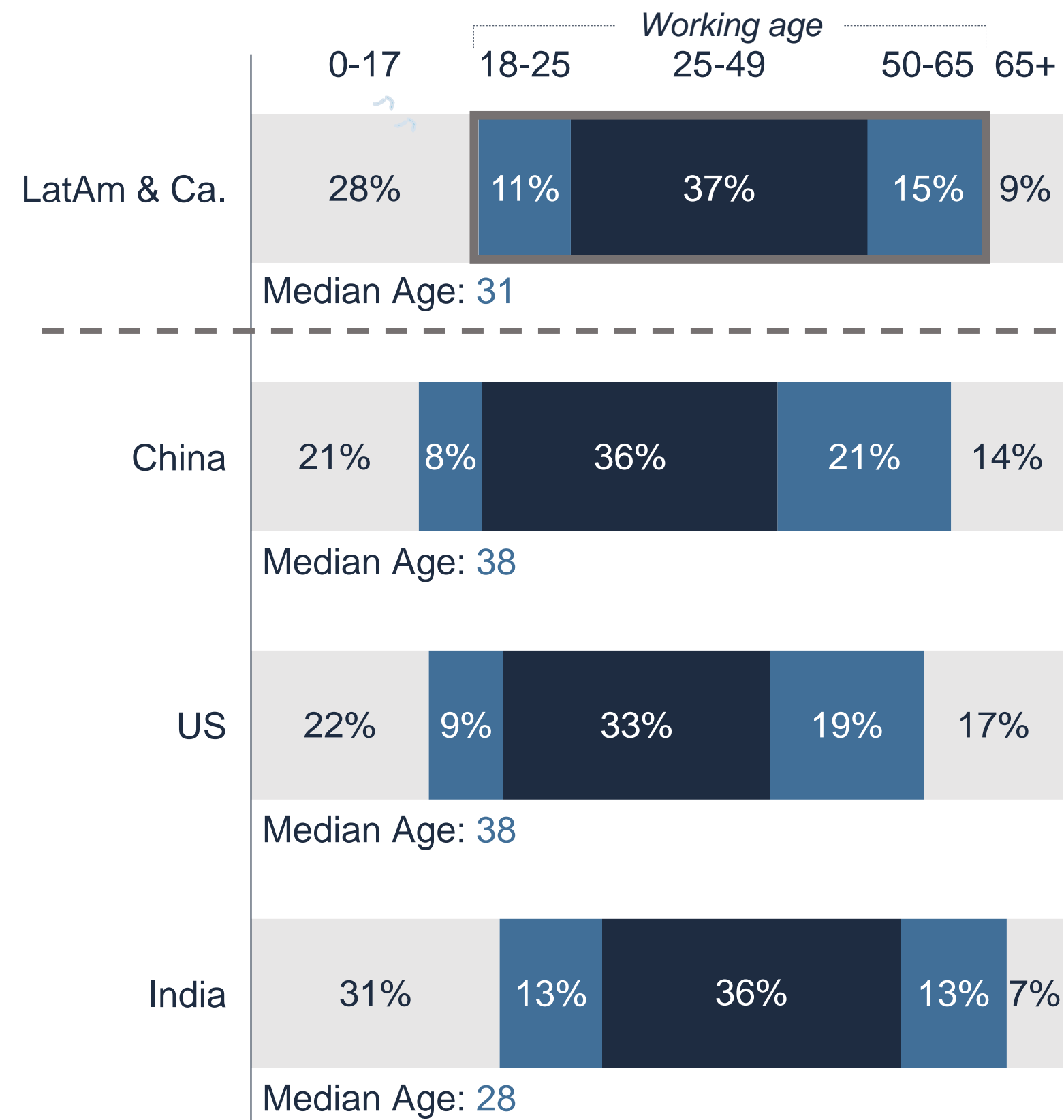
2022, % of total Latin America GDP, US\$ T



# Latin America's population is younger than that of more developed peers and will reach peak growth in 2050

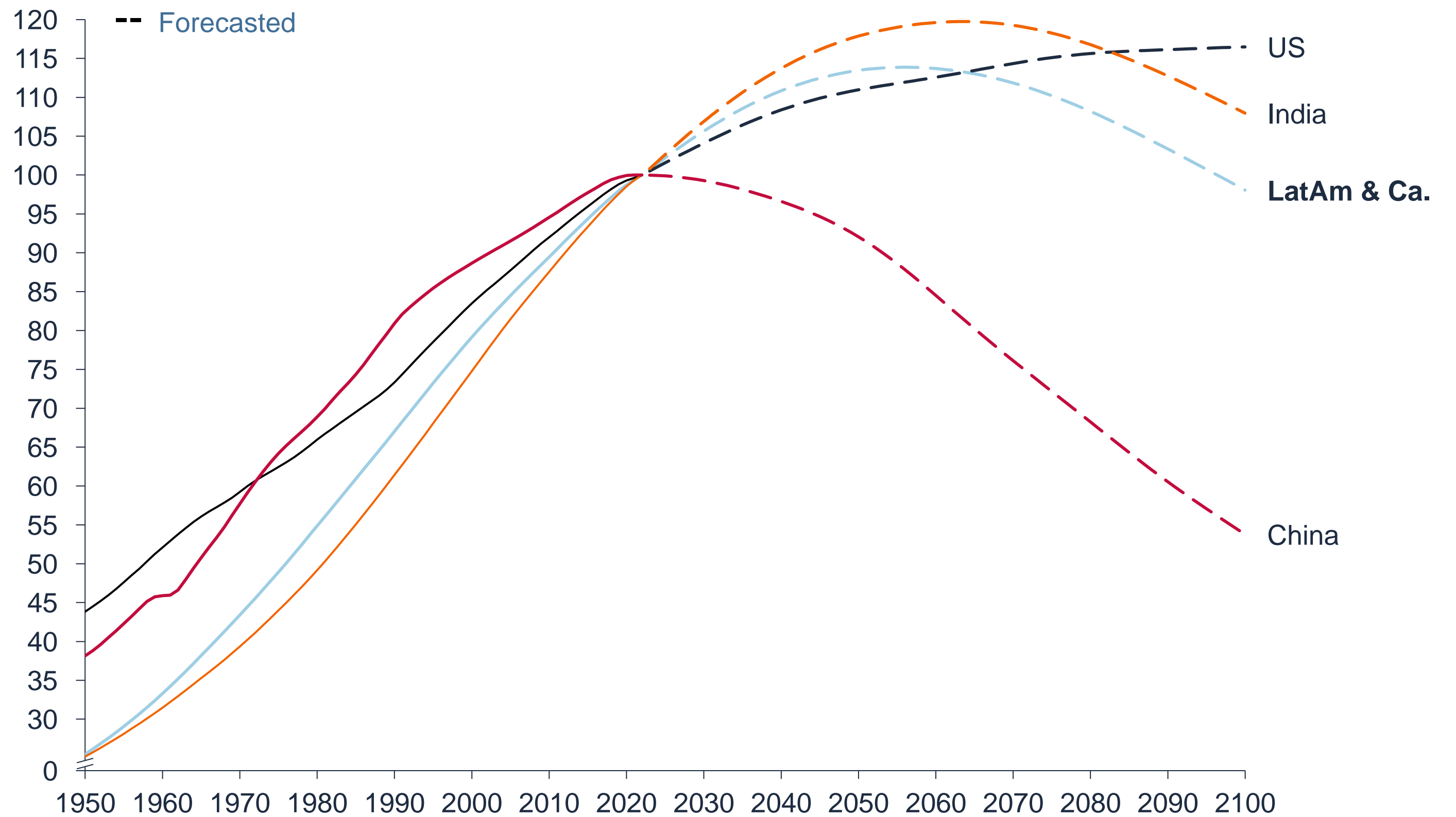
## Population breakdown by age cohort<sup>1</sup>

2022, %



## Population growth<sup>1</sup>

Indexed at 100 in 2022

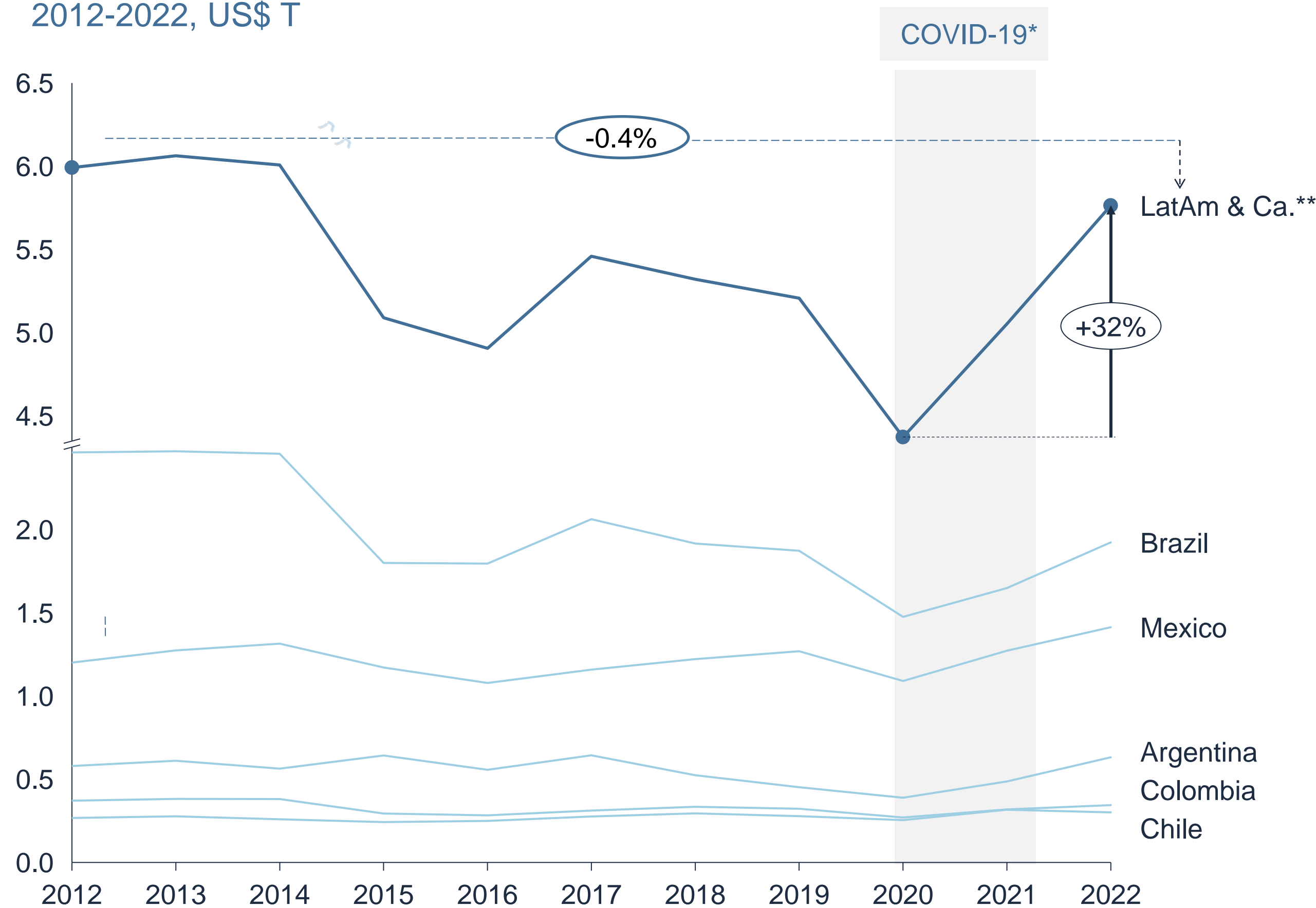


Note: (\*) LatAm & Ca. = Latin America & Caribbean  
 Source: (1) United Nations Population Portal

# Recession followed by the pandemic led to stagnant GDP over the last decade, hindering the battle against poverty

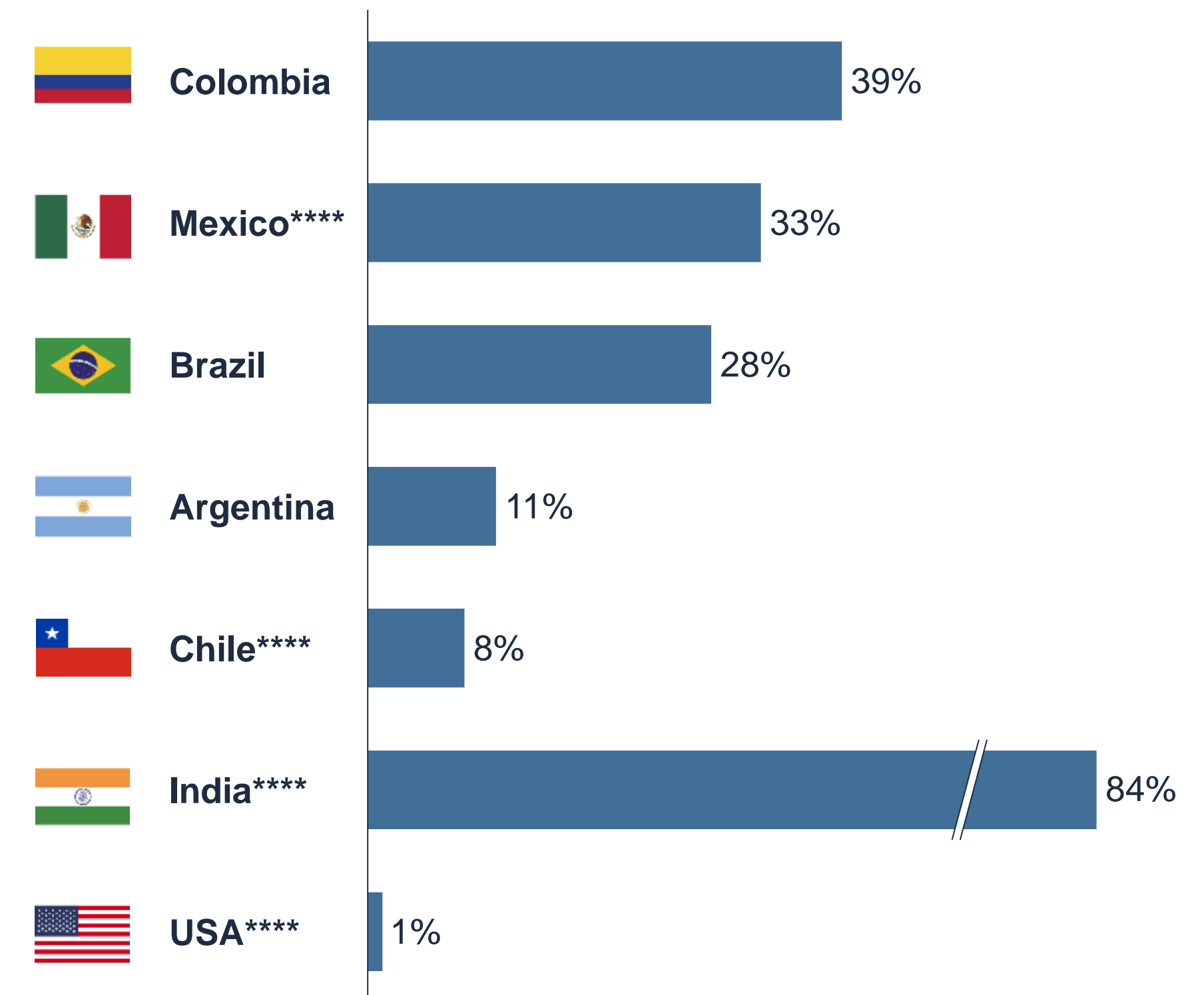
## GDP by country<sup>1</sup>

2012-2022, US\$ T



## % of population making less than \$6.85 a day<sup>2,\*\*\*</sup>

2021, % of total population



Notes: (\*) Period in which the world economy halted at moderate or extreme level; (\*\*) LatAm & Ca. = Latin America & Caribbean; (\*\*\*) Poverty headcount ratio (%) at US\$ 6.85 a day (2017 purchasing power parity); (\*\*\*\*) Latest available data for Mexico, USA and Chile is from 2019 and India data is from 2020

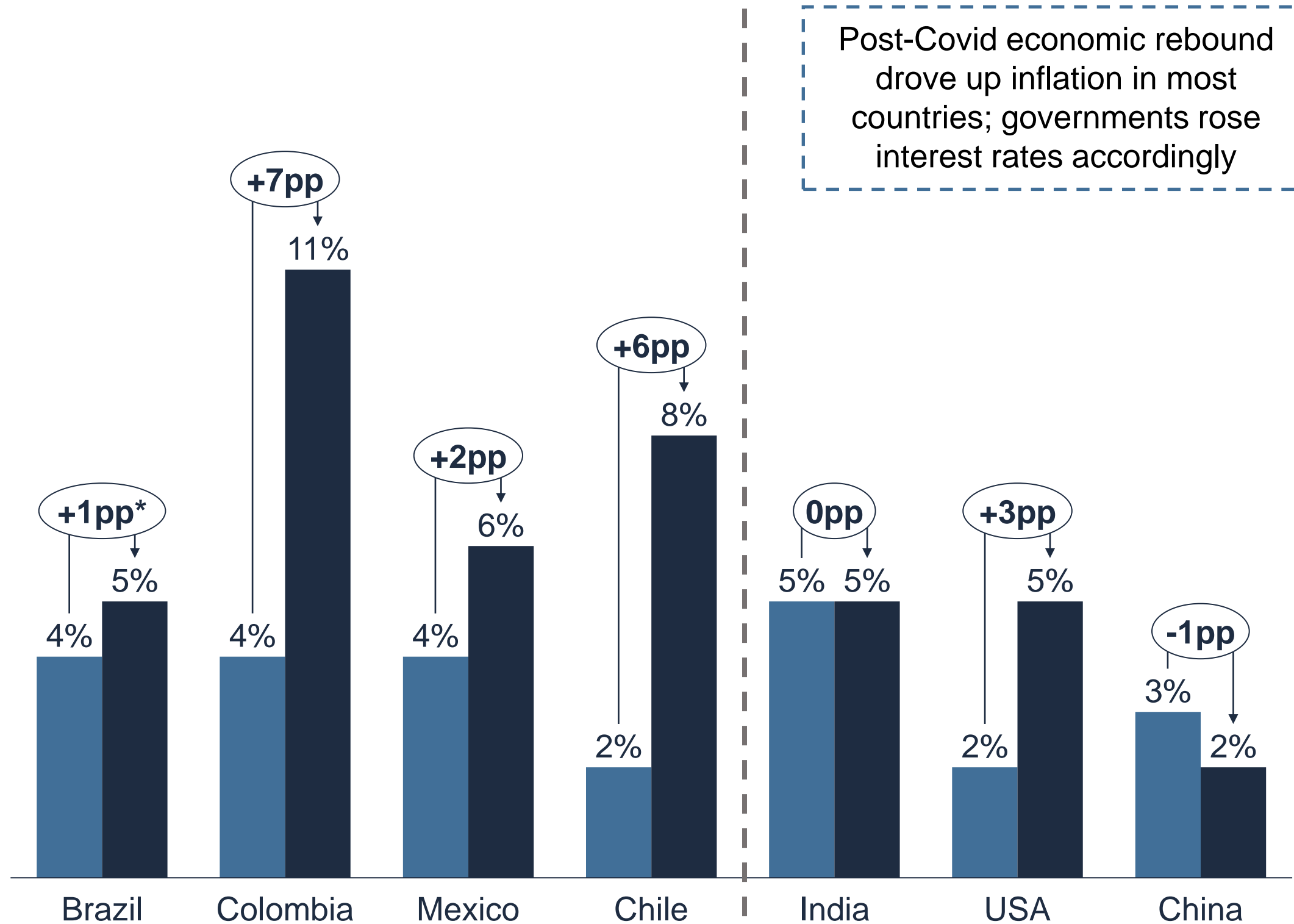
Source: (1) International Monetary Fund (IMF); (2) The World Bank

# The recent economic rebound is being threatened by a spike in inflation and subsequent interest rate hikes

## Inflation rate<sup>1</sup>

2019 vs. 2023\*\*, %

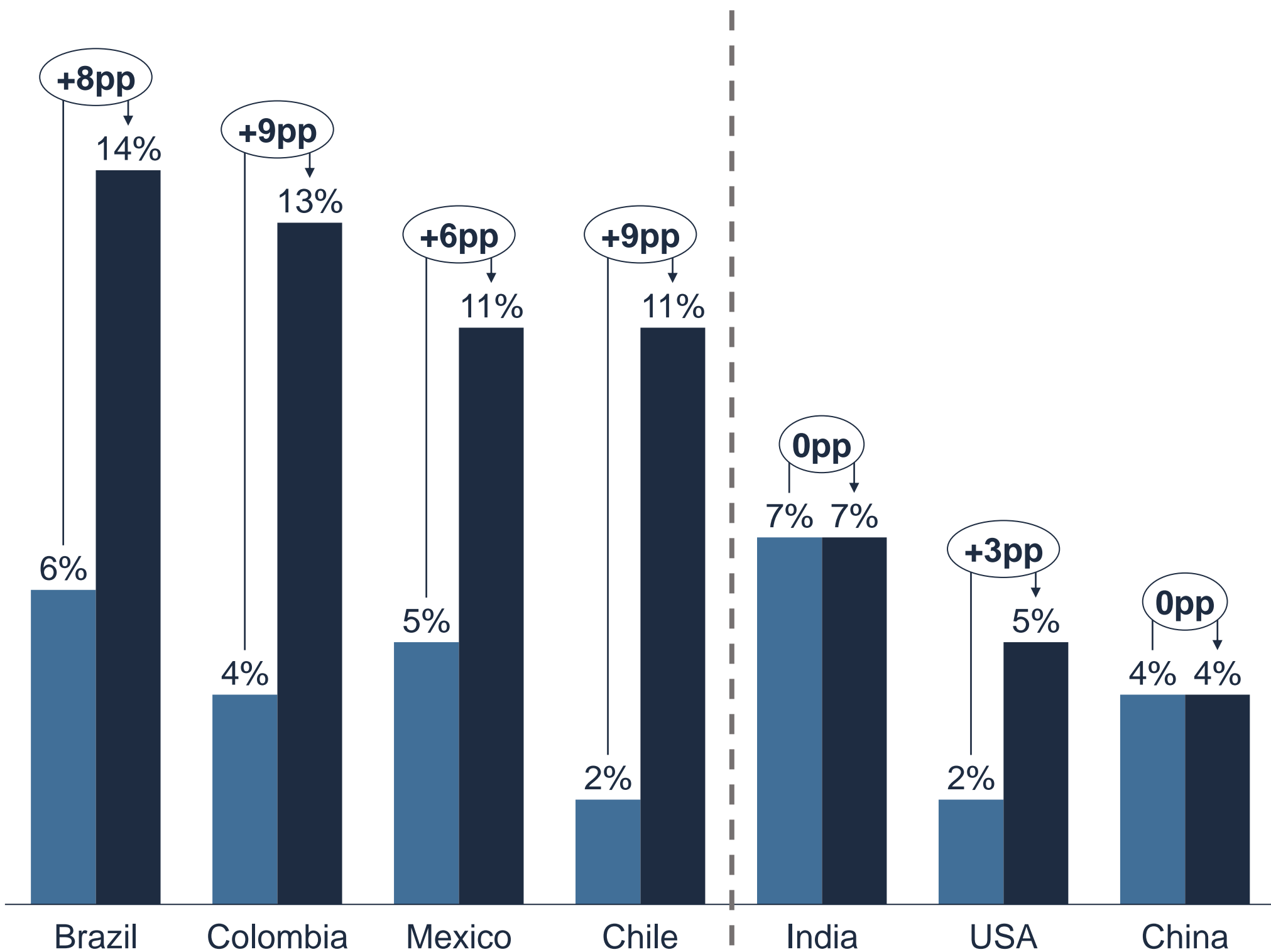
■ 2019\*\* ■ 2023



## Interest rate<sup>2</sup>

2019 vs. 2023\*\*, %

■ 2019\*\* ■ 2023



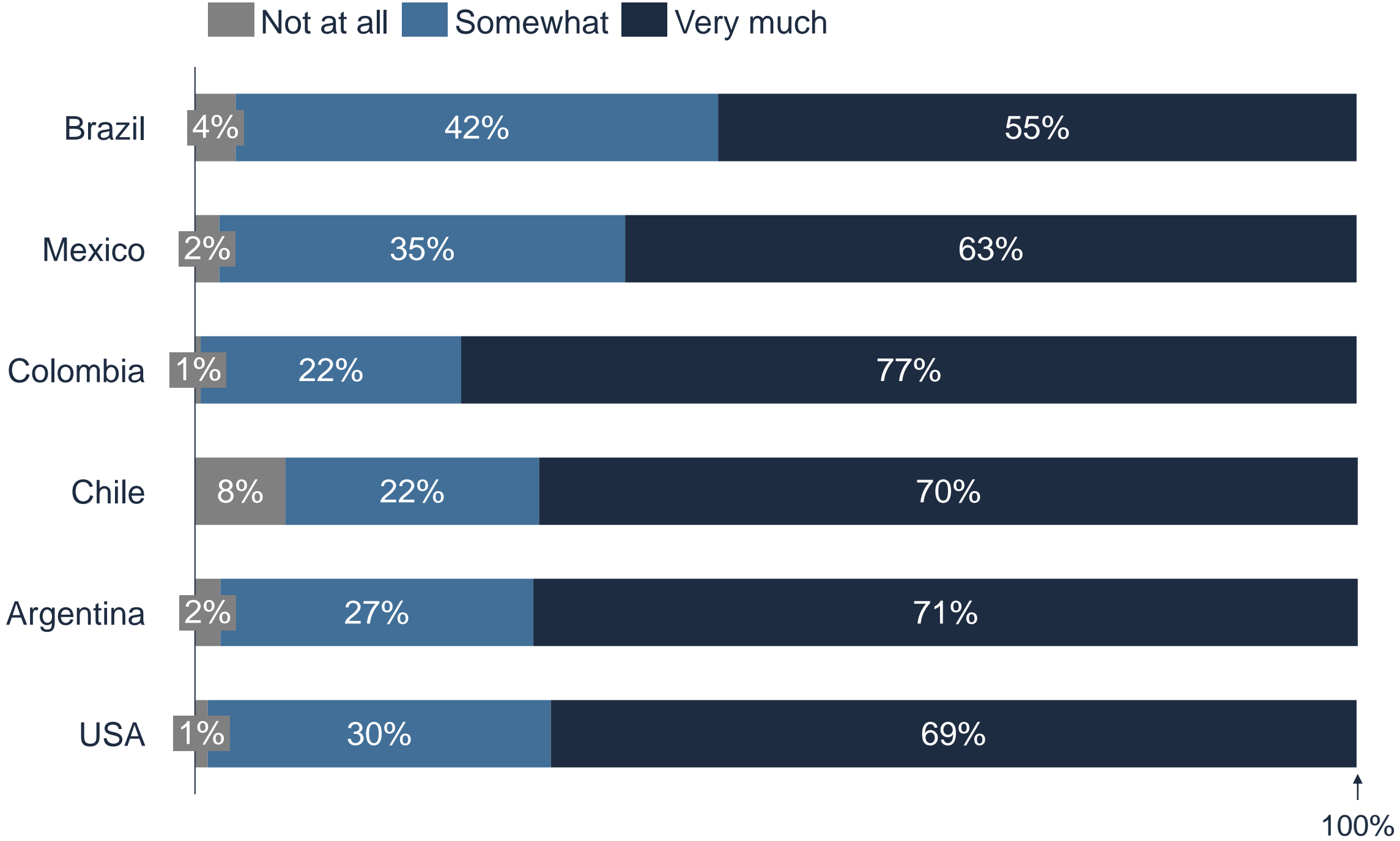
Notes: (\*) pp = percentage point, which refers to the absolute % difference; (\*\*) 2019 and 2023 used to compare 2023 with pre-pandemic levels  
 Sources: (1) World Bank; (2) Trade Economics

# Inflation was strongly felt, with varying confidence in the ability of each country's central bank to manage the spike

## Effects of inflation on selected countries<sup>1</sup>

2023, % of respondents\*

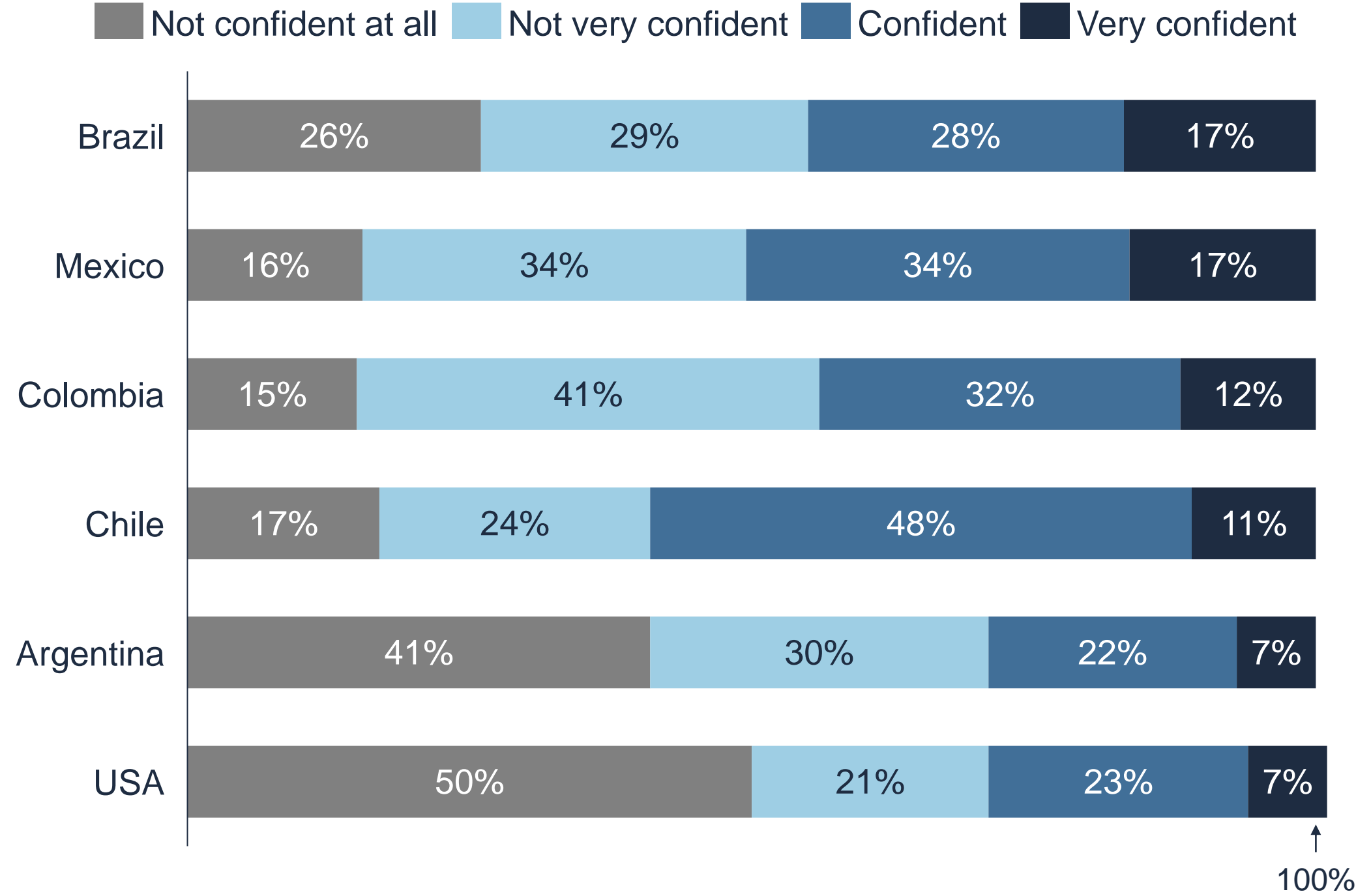
*Has the rise in prices affected your family in the past year?*



## Confidence on Central Bank's inflation management<sup>1</sup>

2023, % of respondents\*

*Are you confident in your country's Central Bank's ability to effectively manage and control inflation?*

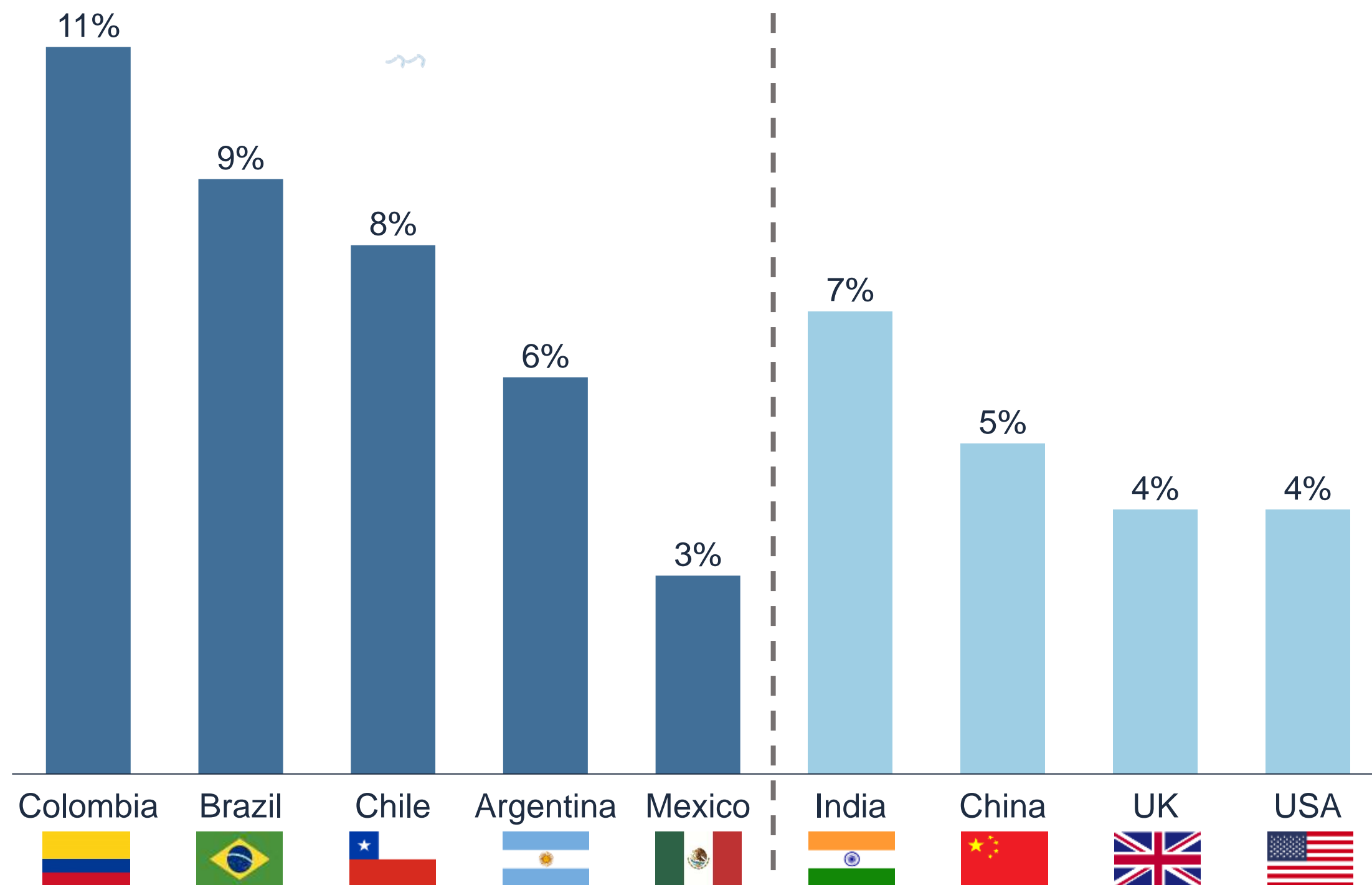


Notes: (\*) Margin of Error: ±3 percentage points; Confidence Level: 95% Data Collection Period: July 15th to August 15th, 2023  
 Source: (1) Atlantico and AtlasIntel survey 2023

# Most Latin American countries still suffer from high rates of unemployment and labor informality

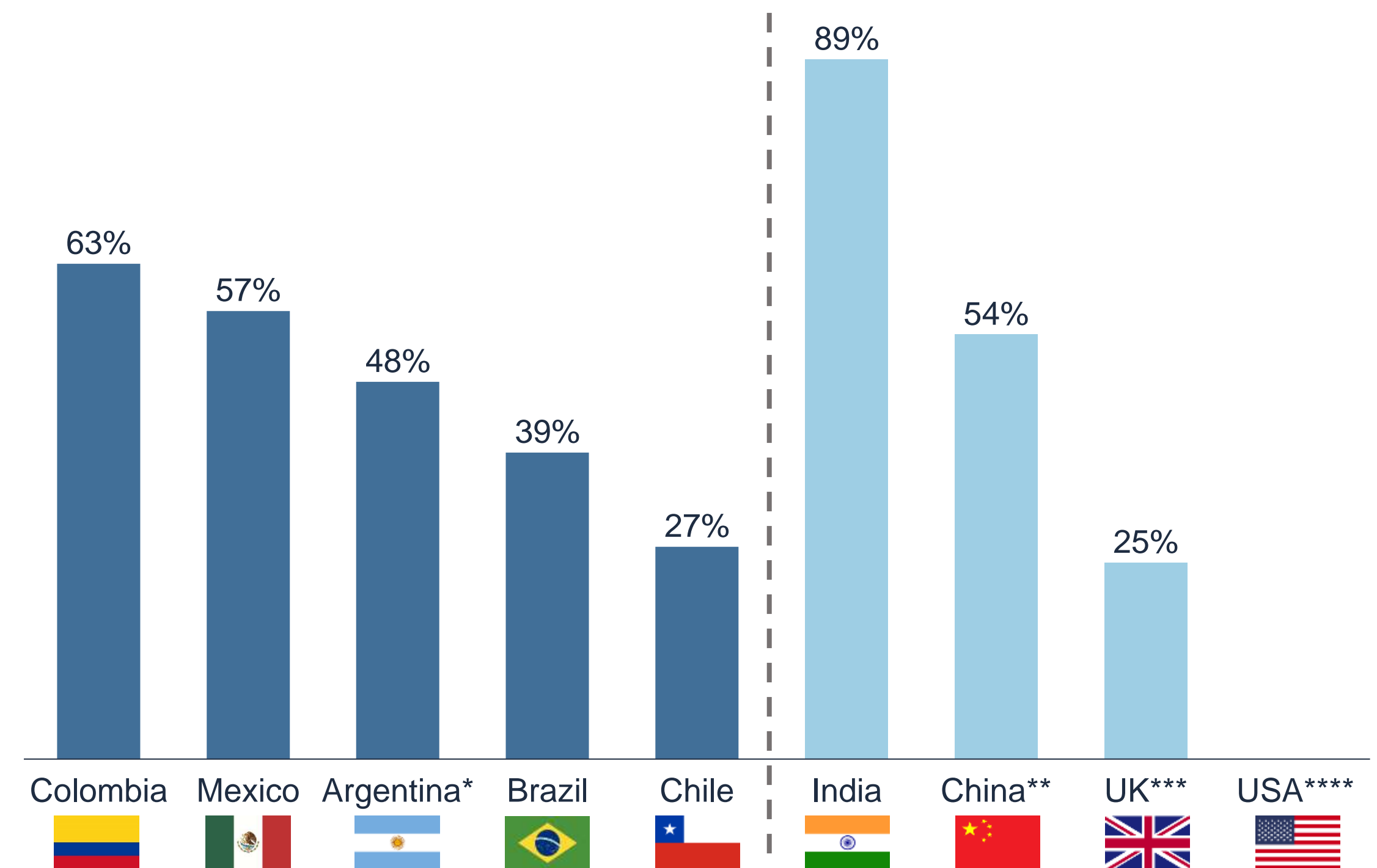
Unemployment rate<sup>1</sup>

2022, %



Labor informality rate<sup>2</sup>

2022, %



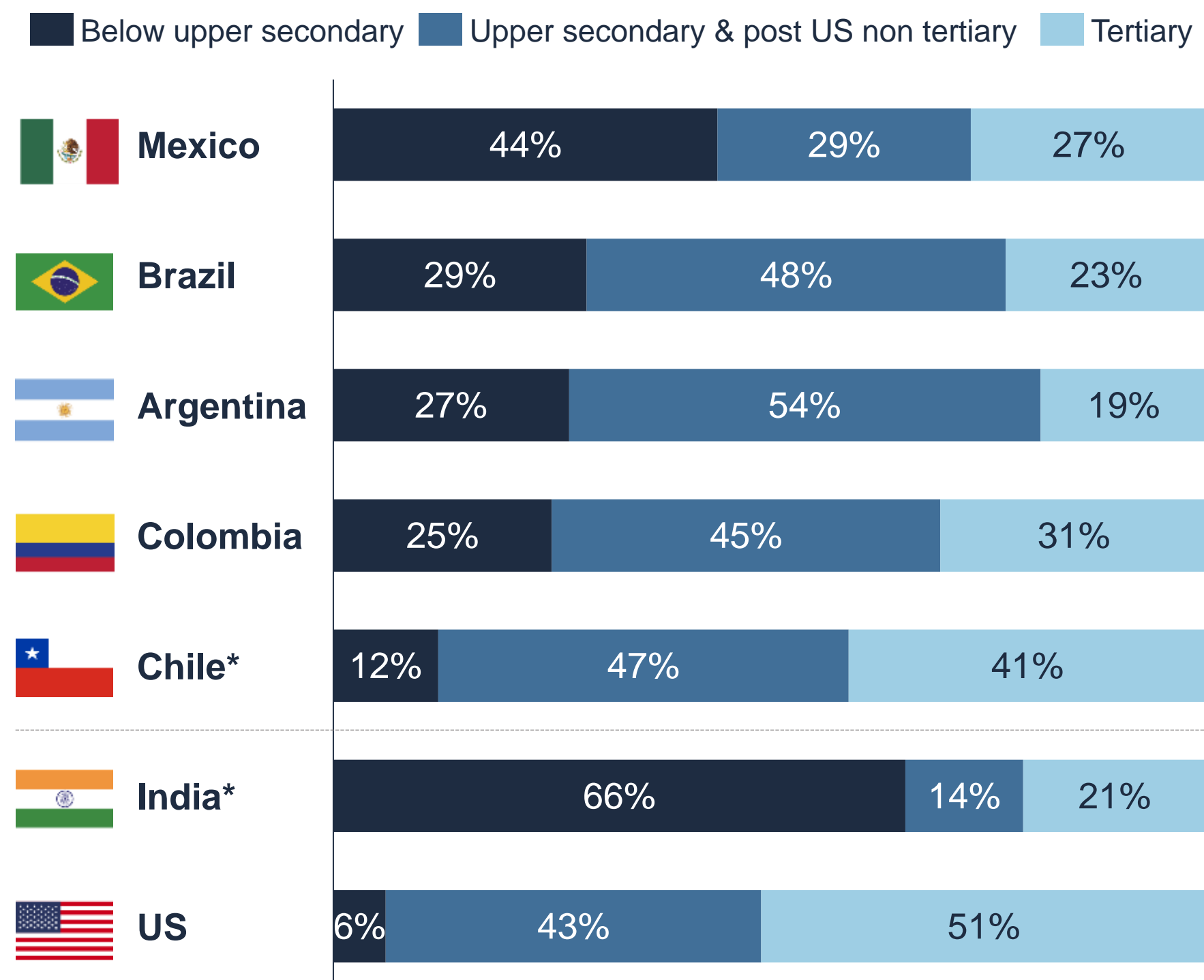
Notes: (\*) data estimated by OECD (2020); (\*\*) data estimated by the Institute of Chinese Studies (2020); (\*\*\*) data from 2018; (\*\*\*\*) US data on labor informality rate is not available and UK data was used as a means of comparison

Sources: (1) International Labor Organization (ILOSTAT); (2) World Bank

# Lack of essentials: Latin America faces an ongoing battle against low educational attainment and poor healthcare

## Highest education level attained<sup>1</sup>

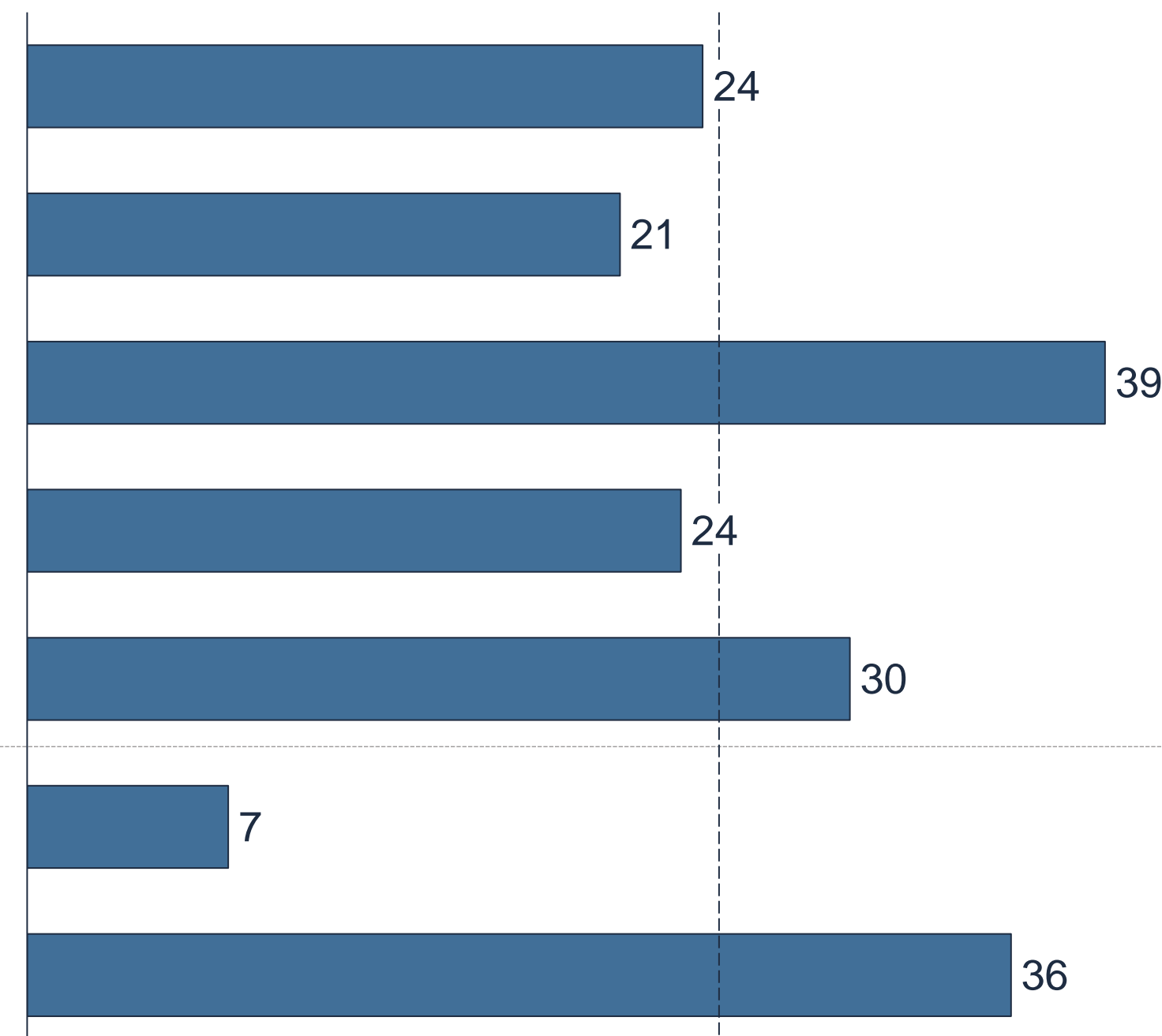
2022, % of 25 to 34-year-old population by education level



Below upper secondary: no education / any education below high school;  
 Upper secondary & post US non tertiary: high school;  
 Tertiary: undergraduate school (college)

## Number of doctors per 10,000 people<sup>2</sup>

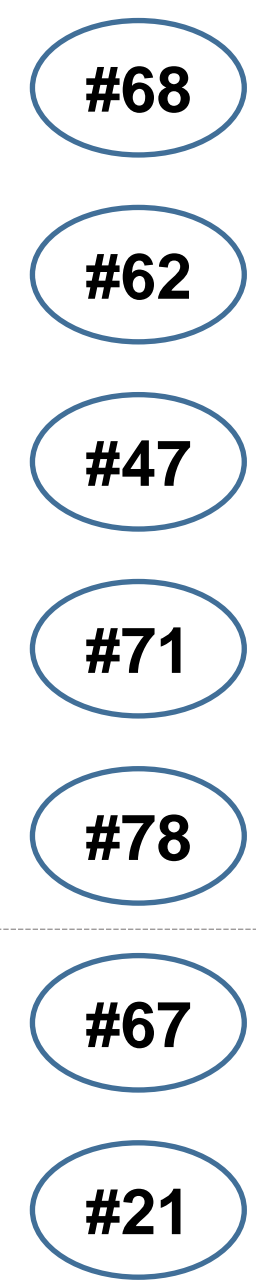
2020-2021\*\*, No. of doctors



WHO\*\*\* recommendation

## Health systems ranking<sup>3</sup>

2023, Ranking out of 85 countries



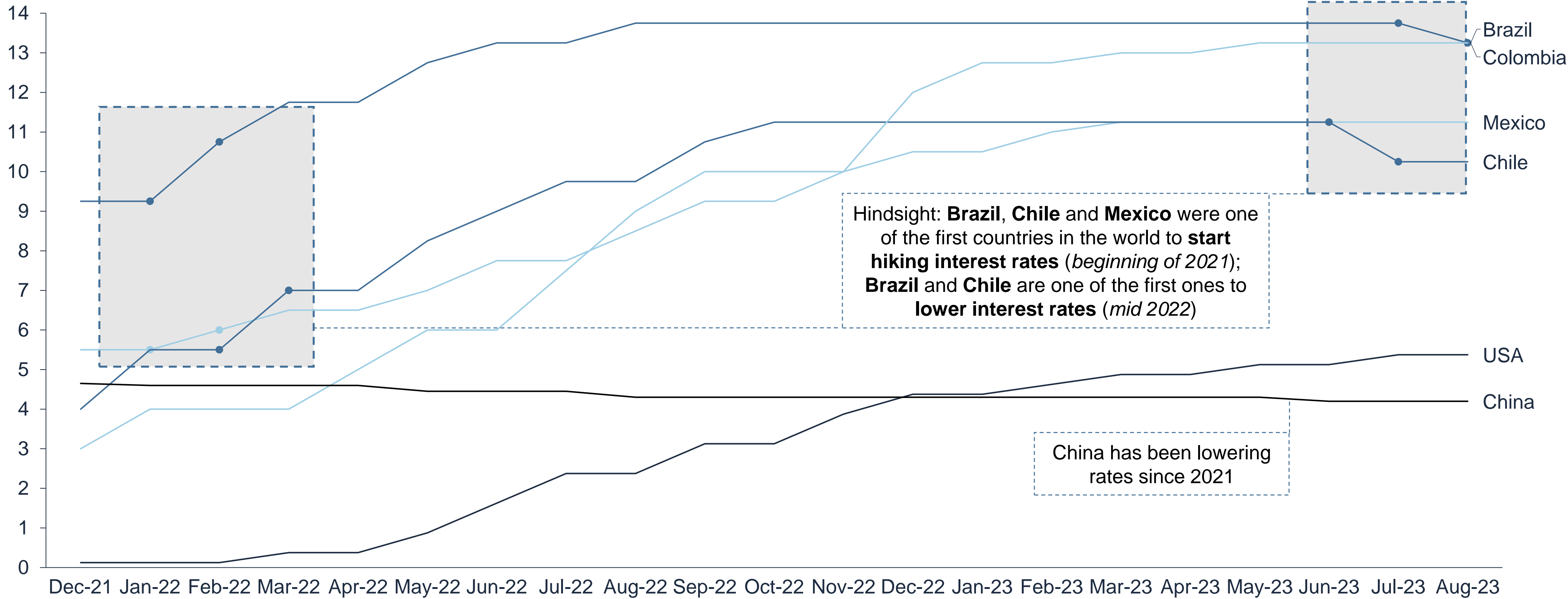
Note: (\*) Latest available data is from 2020; (\*\*) Most recent data by each country (either 2020 or 2021); (\*\*\*) World Health Organization

Source: (1) OECD Education Report 2022; (2) World Health Organization; (3) US News

# Brazil and Chile's rapid rate hikes post-COVID enabled them to be among the first to lower rates globally in 2023

Interest rates fluctuations by country<sup>1</sup>

2021-2023, %

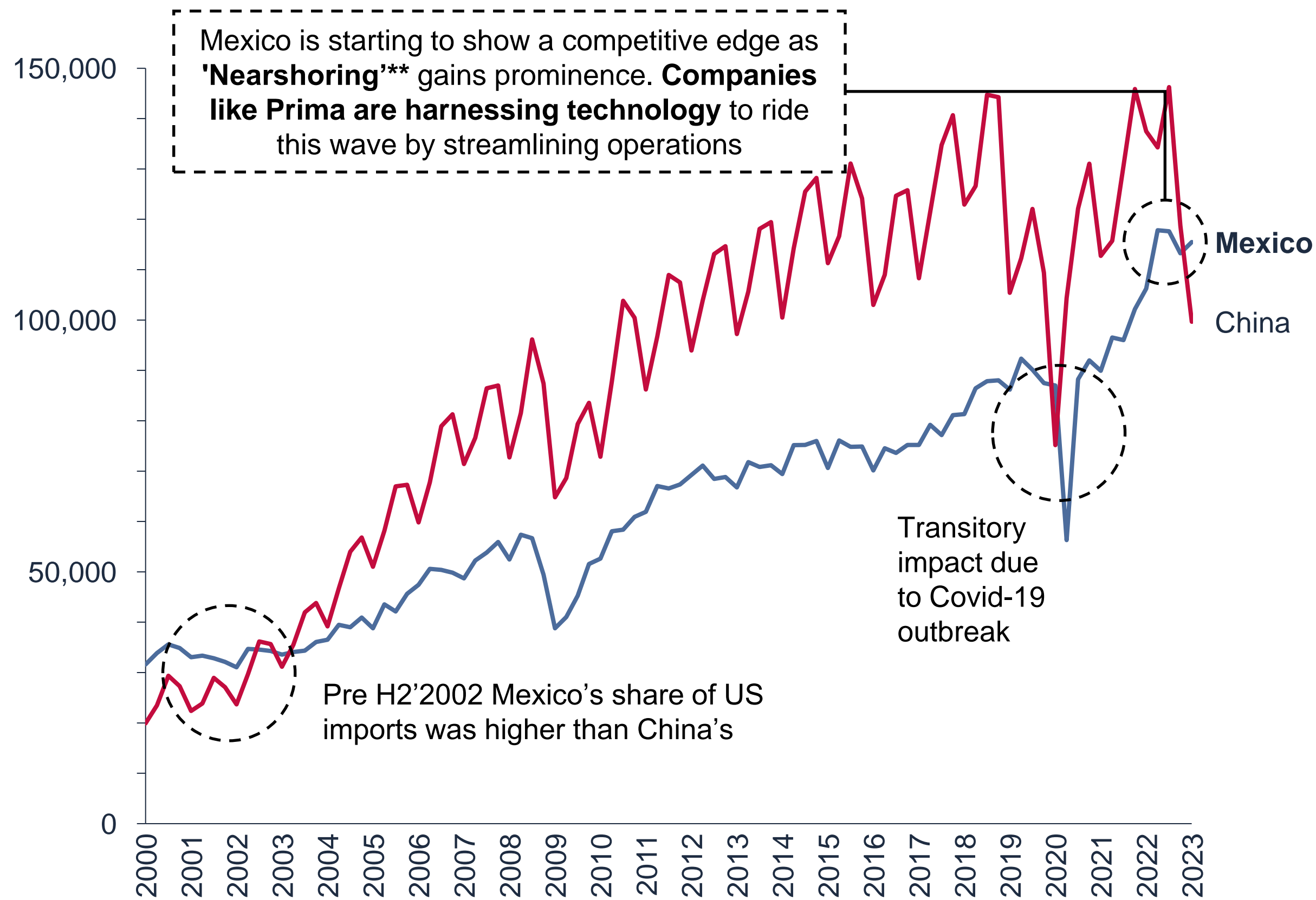




# Mexico benefits from US-China tensions, while China emerges as primary trading partner for the rest of LatAm

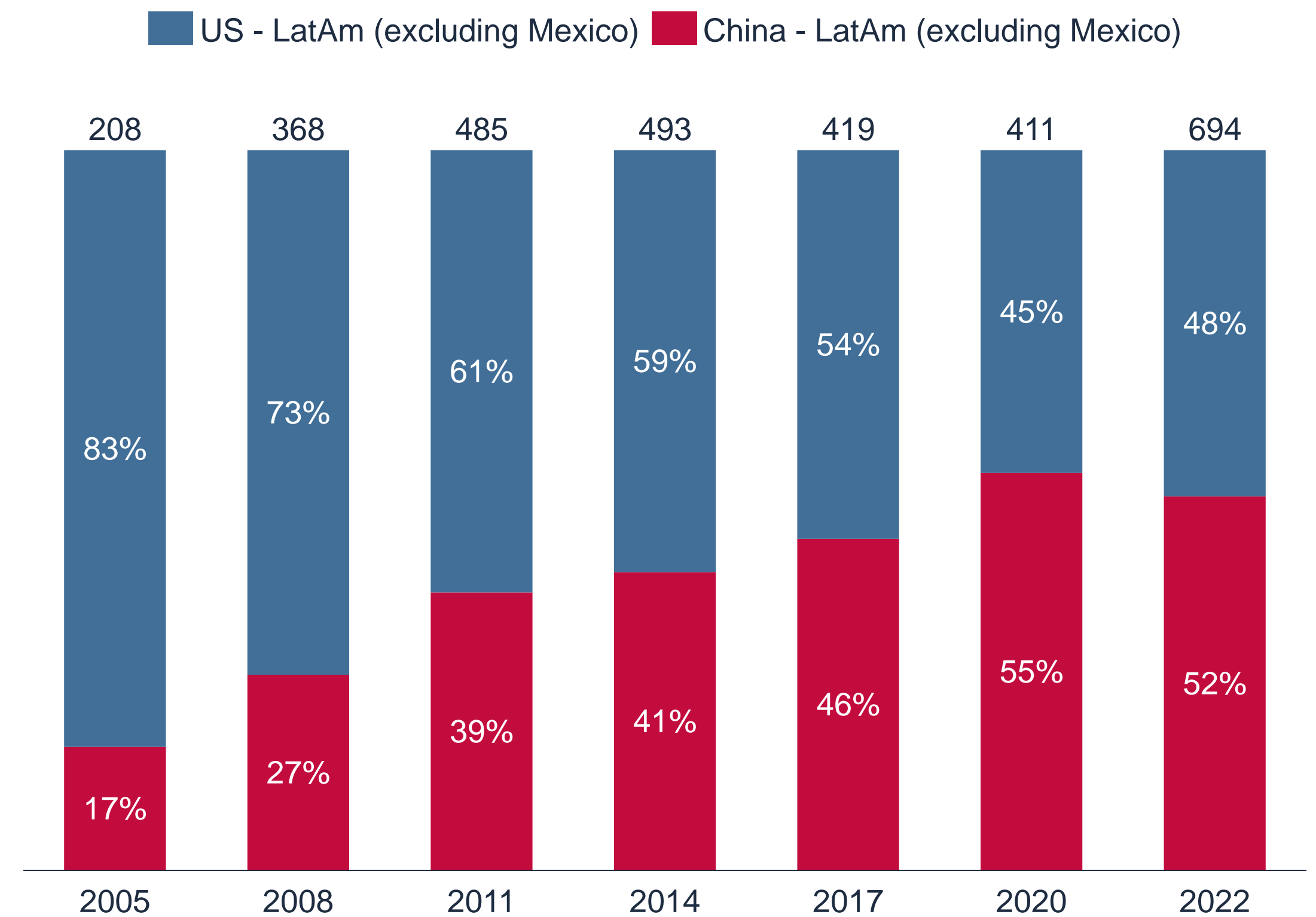
USA Imports from Mexico and China<sup>1,\*</sup>

US\$ M



China-Latin America value of yearly trade (ex Mexico)<sup>2,3,\*\*\*</sup>

2005-2022, %



Notes: (\*) Data points for Q1 of each year; (\*\*) Nearshoring is the practice of outsourcing business operations or tasks to companies in nearby or geographically close countries; (\*\*\*) Total value of yearly trade calculated by adding exports and imports  
 Source: (1) Prima analysis with data from the US Census Bureau on trade in goods with China, Mexico; (2) International Monetary Fund (IMF); (3) Council on Foreign Relations: "China's growing influence in Latin America"

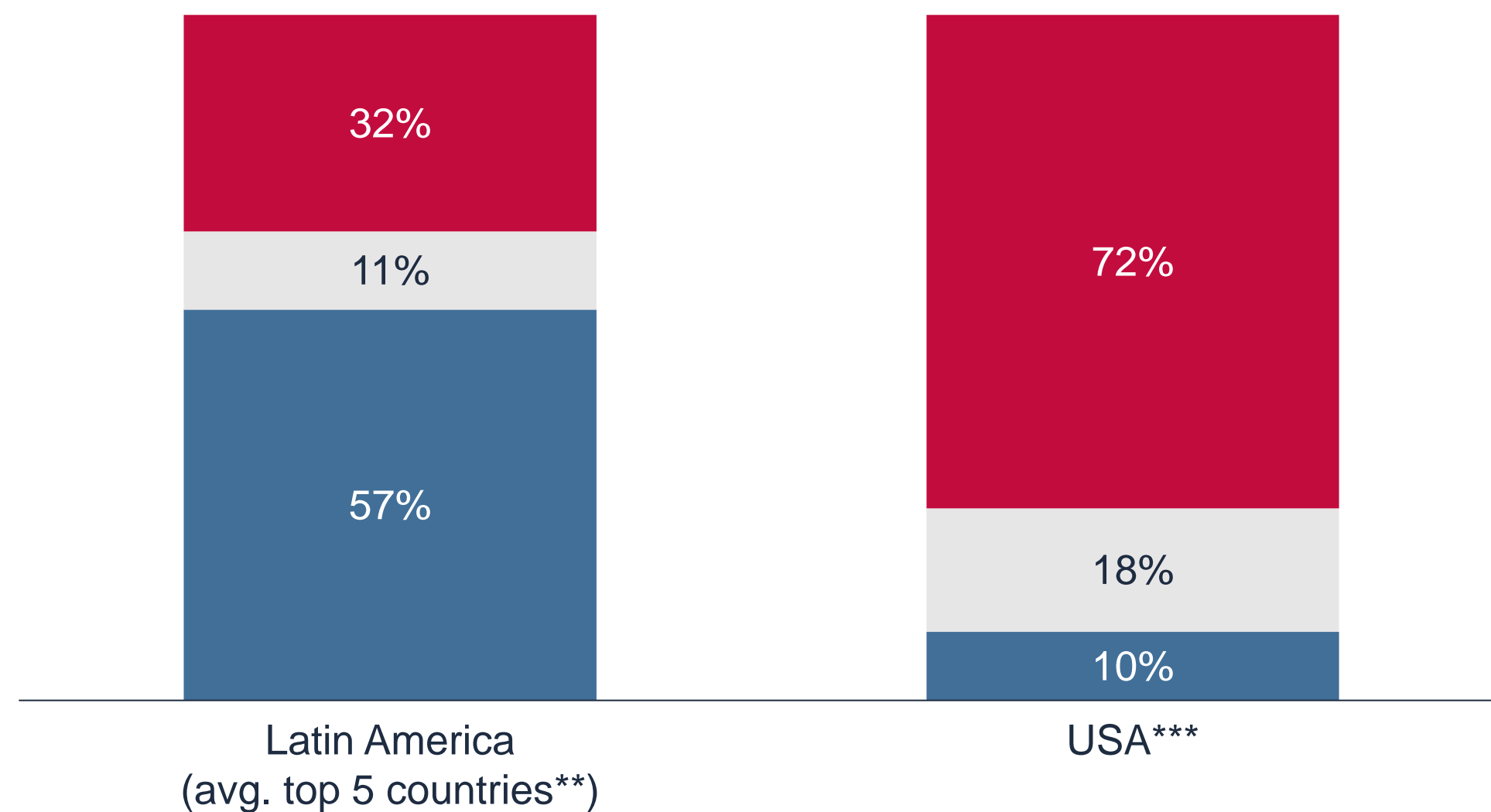
# China's increasing influence is well-received in LatAm; most Brazilians consider China an important trade partner

## Latin Americans' view on China's regional influence<sup>1,\*</sup>

2023, % of respondents by region of respondent

*Do you see the growing influence of China in Latin America (through investments and commerce) in a positive (opportunistic) or negative (threatening) way?*

■ Negative or Very Negative ■ I don't know ■ Positive or Very Positive

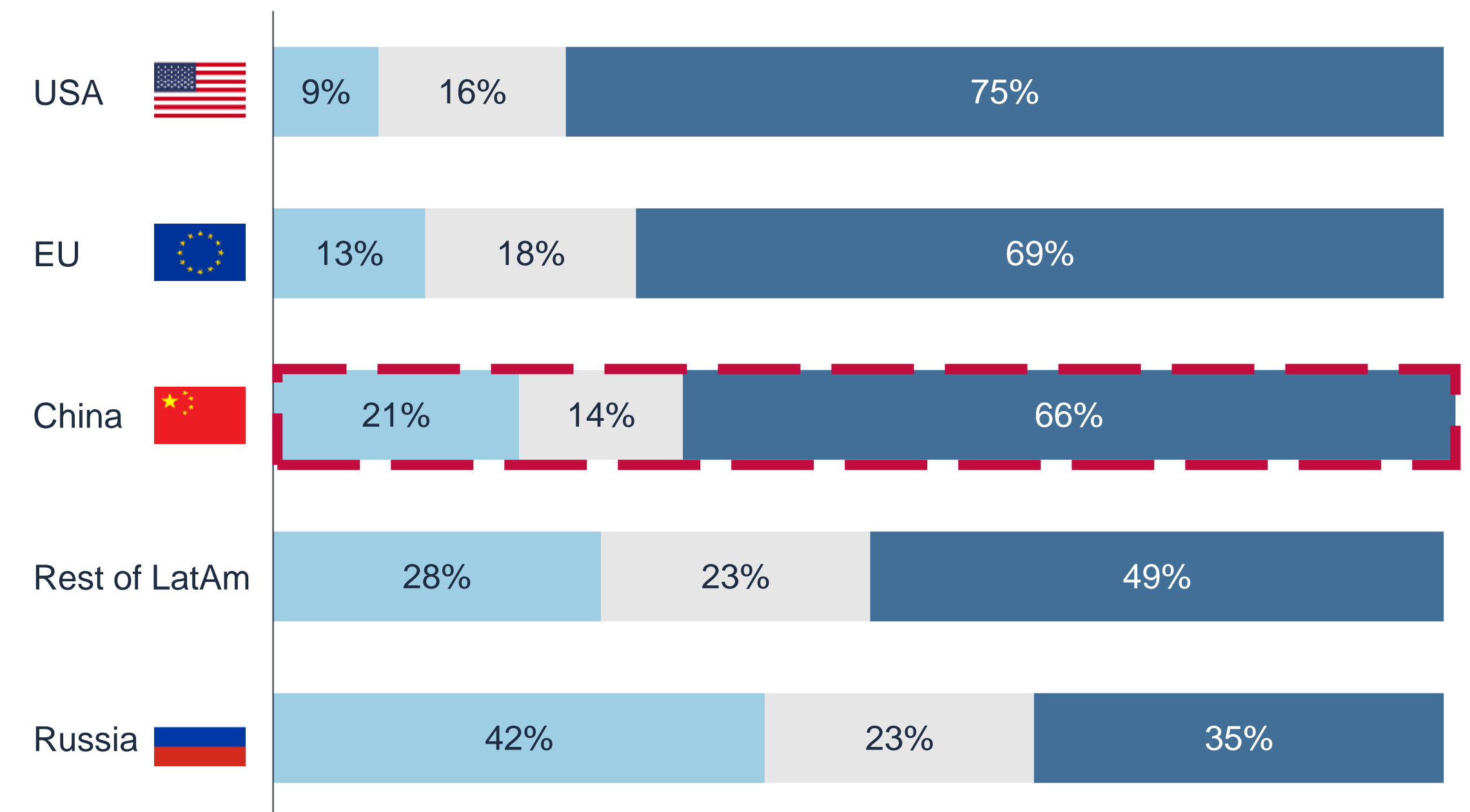


## Importance of different trade partners to Brazil<sup>1,\*</sup>

2023, % of Brazilian respondents

*From 1 to 5, what is the importance of each of the following trade partners to Brazil? (1 being not important at all and 5 being very important)*

■ Not important (1 or 2) ■ Indifferent (3) ■ Very important (4 or 5)

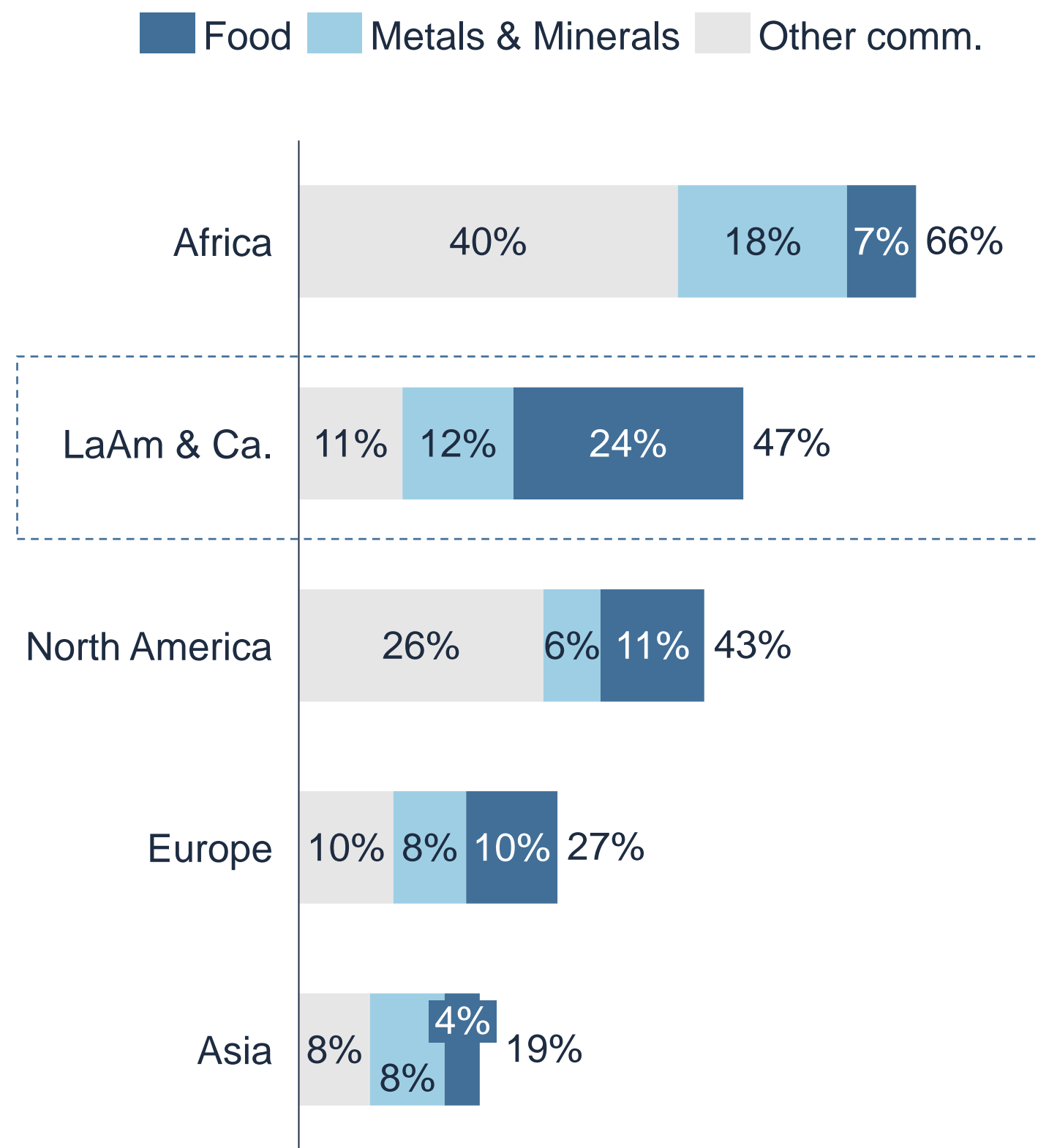


Notes: (\*) Margin of Error: ±3 percentage points; Confidence Level: 95% Data Collection Period: July 15th to August 15th, 2023; (\*\*) Average of country results for Brazil, Mexico, Argentina, Colombia, Chile; (\*\*\*) refers to respondents from the United States  
Source: Atlantico and AtlasIntel Survey 2023

# Latin America holds large essential metal reserves and leads in agriculture

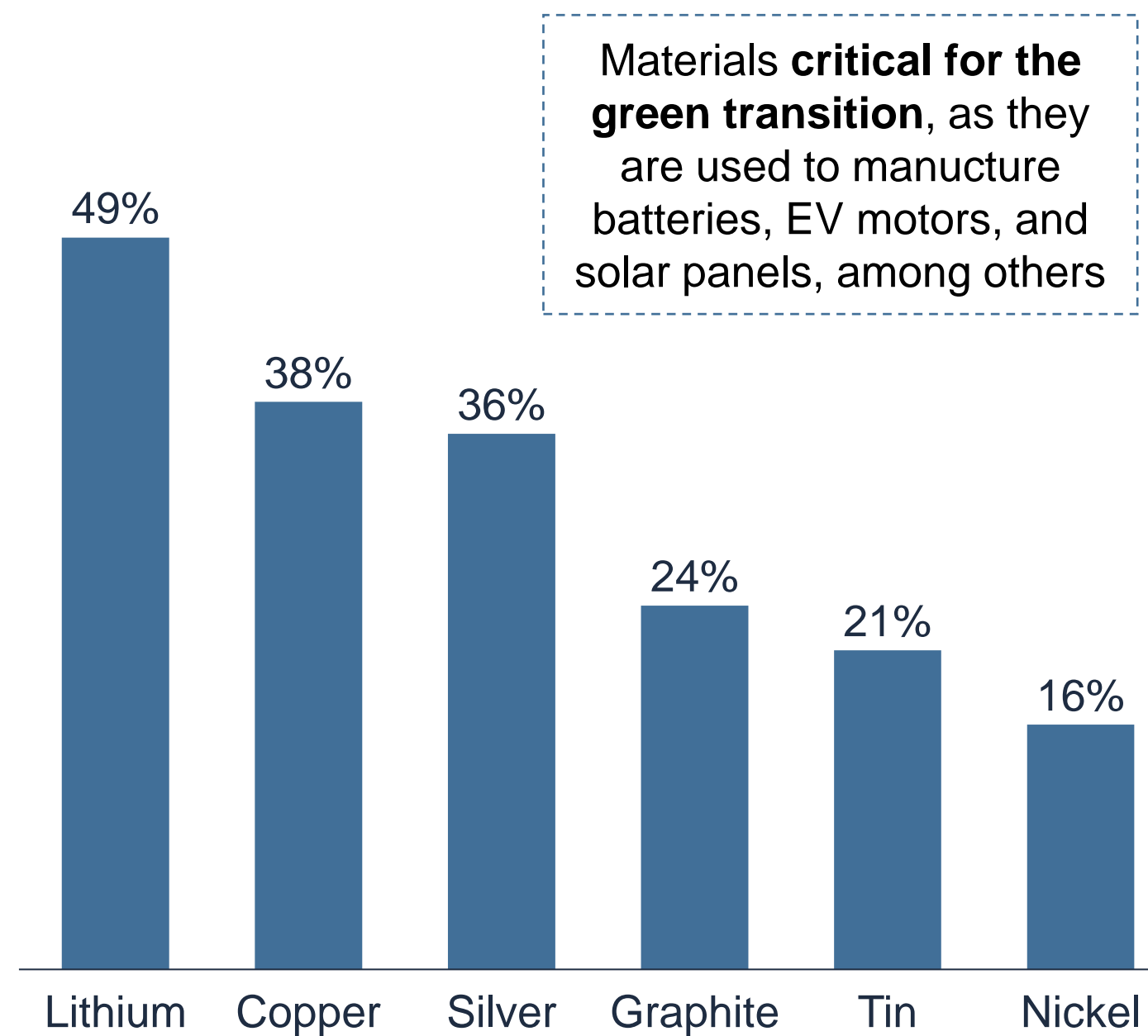
## LatAm relies heavily on commodities<sup>1</sup>

2019-21, Median share of merchandise exports



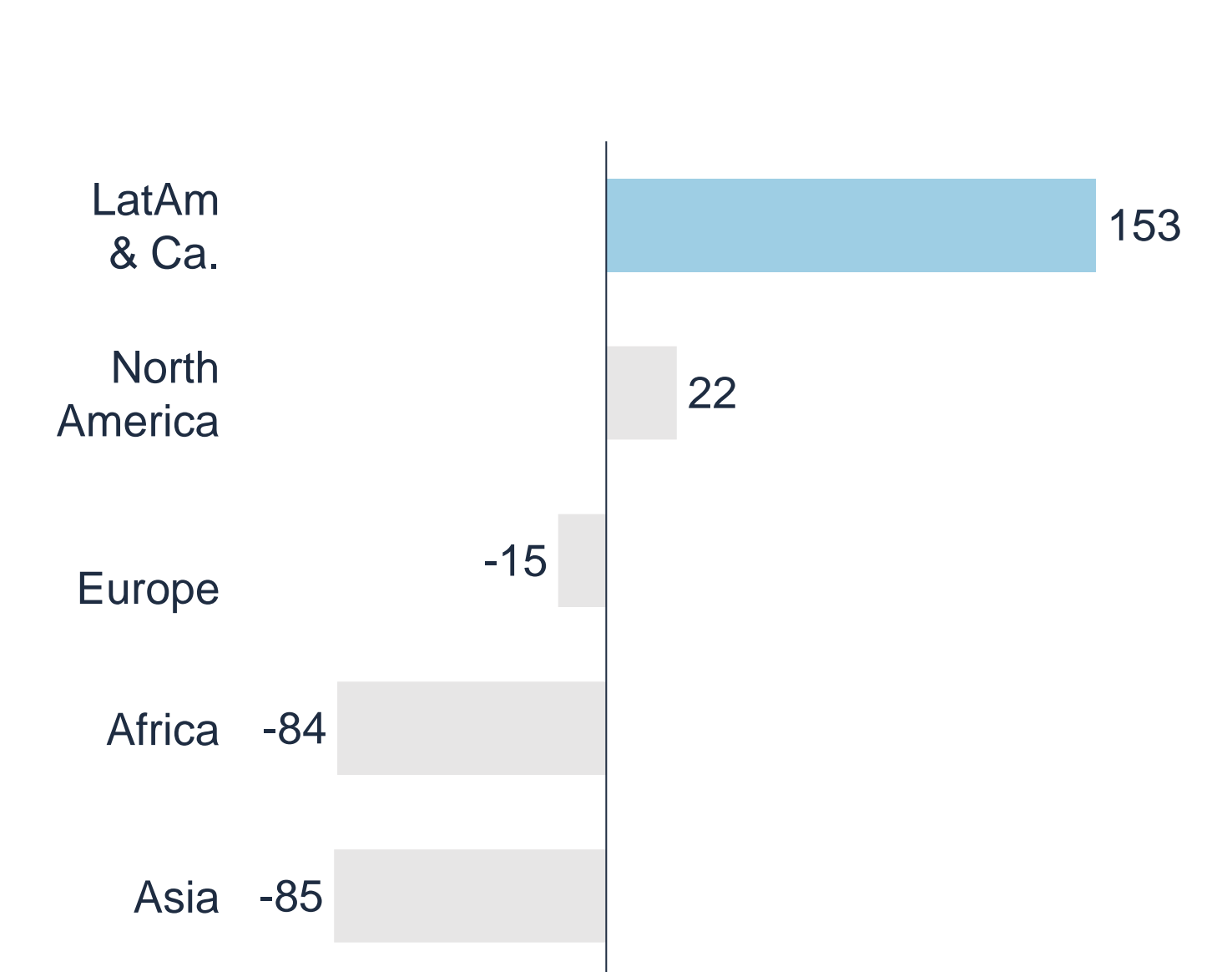
## Region holds large reserves of sought-after metals and minerals

### LatAm's share of world reserves by country 2023, %<sup>2,3,5</sup>



## Latin America leads the world in agricultural trade balance

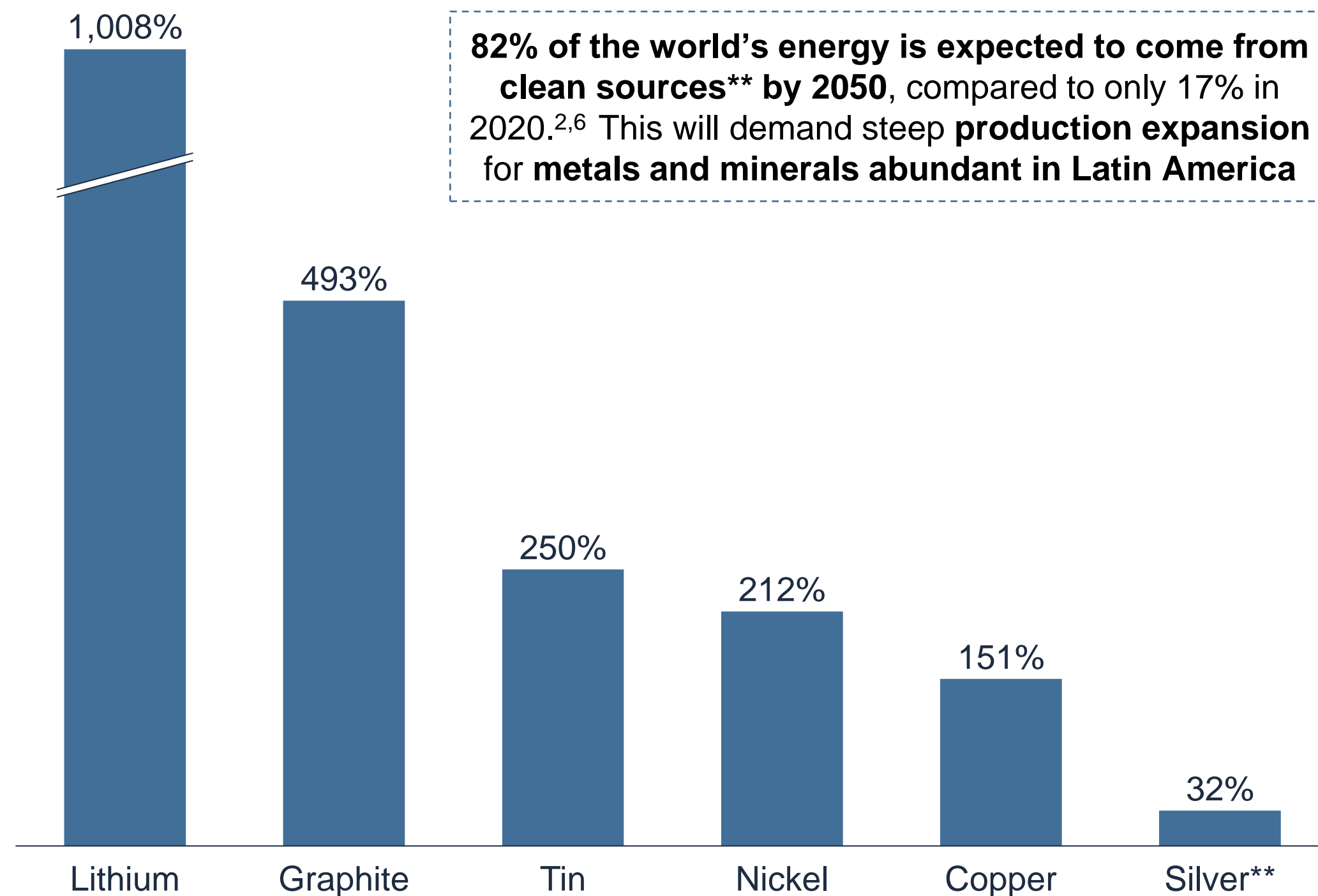
### Average annual net trade for agricultural prod. 2020-22, US\$B<sup>3,4,5</sup>



# Latin America will continue to lead supply to growing global demand for ores & metals and food over next decades

## Energy transition alone will demand sharp increases in ores & metals production<sup>1</sup>

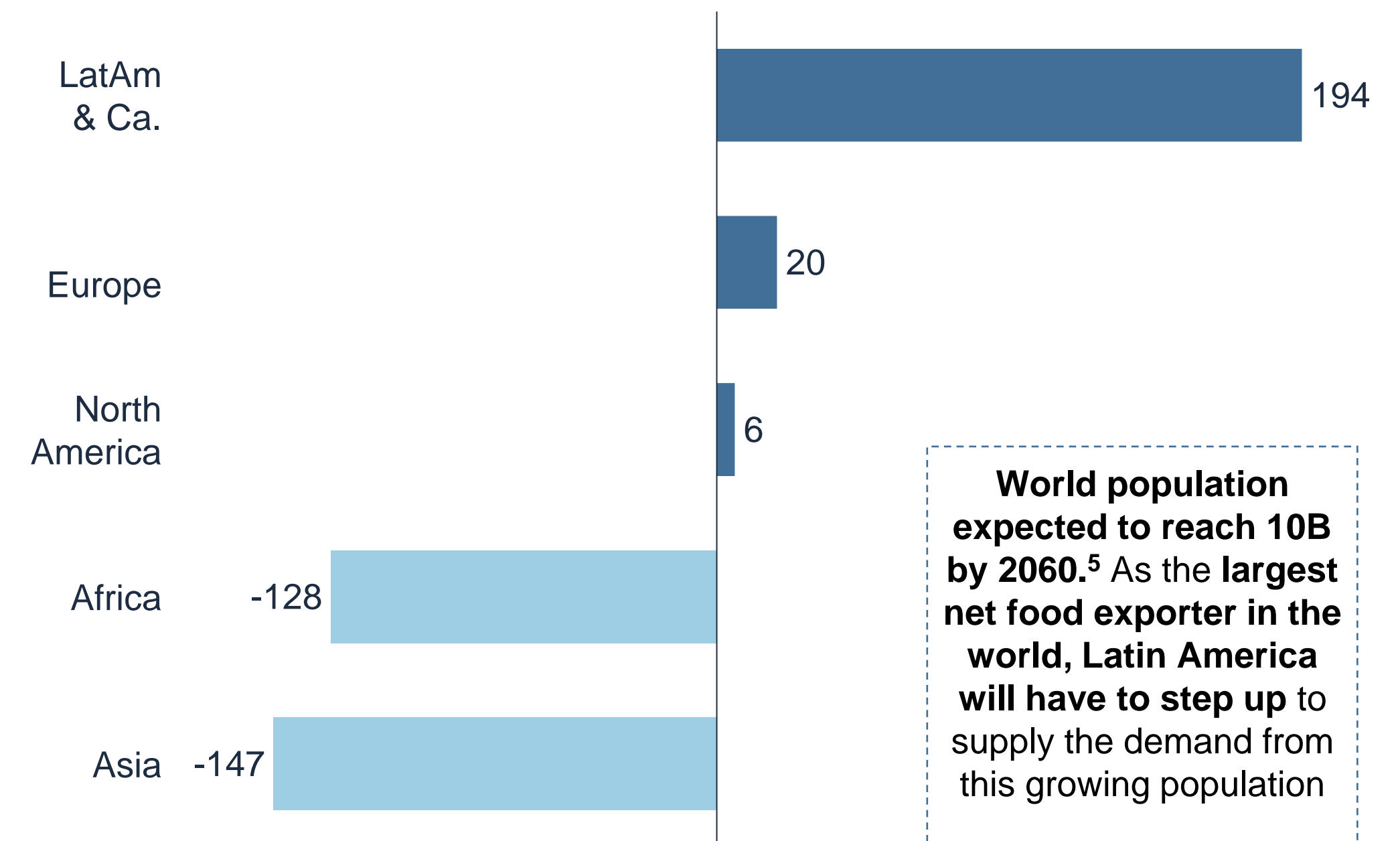
2050 estimated annual demand to get to Net Zero emissions, as % of 2022 world demand for clean energy



**82% of the world's energy is expected to come from clean sources\*\* by 2050, compared to only 17% in 2020.<sup>2,6</sup> This will demand steep production expansion for metals and minerals abundant in Latin America**

## Latin America leads the world in agricultural trade balance<sup>3,4,6</sup>

US\$B; Forecasted annual average of net trade (exports – imports) for agricultural products in 2032



**World population expected to reach 10B by 2060.<sup>5</sup> As the largest net food exporter in the world, Latin America will have to step up to supply the demand from this growing population**

Notes: (\*) Clean sources include Renewables and Nuclear; (\*\*) Mostly used in clean energy for solar panels, Silver demand is forecasted to peak in 2030  
 Source: (1) IEA, "Critical Minerals Data Explorer"; (2) IEA, "World Energy Outlook" (2022); (3) OECD-FAO; (3) The Economist, (5) Euromonitor; (6) Atlantico Analysis

02

# Digital Democratization



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/imagine digital democratization in the style of **Fernando Botero**

# Digital Democratization

**The digital wave has arrived**, Bringing hope and joy to all. It has spread like the waves of the sea, Reaching even the most remote corners of our continent, LatAm.

**The poor and the rich**, The young and the old, Can now connect and share. Hours spent on screens surpass even the bold; we **lead the world in digital flair**.

**No longer are we limited by geography or social class**, but united in a realm without borders or glass.

Just like 'The Girl from Ipanema,' the internet walks on by, a rhythm in every click. It's 'Waters of March,' promising new life; **banking and commerce on the rise**.

With 'One Note Samba' in our ears, 74% now belong. But **'Desafinado' (off-key) are the fees, a tune we must change**. So, let's not just connect or browse; let's aim for justice, here and now.

The digital revolution is a unique opportunity, yet it's a heavy lift for the bottom 20%. **Even with speed and tech that trail, our digital engagement sets sail**.

We can't let this pass, for it's our shot to equalize the lot. A chance to build a better world, where **internet's promise is unfurled**.

Let's do this together, Through the light of our eyes.



*Song on the Digital Democratization  
in the style of Tom Jobim*

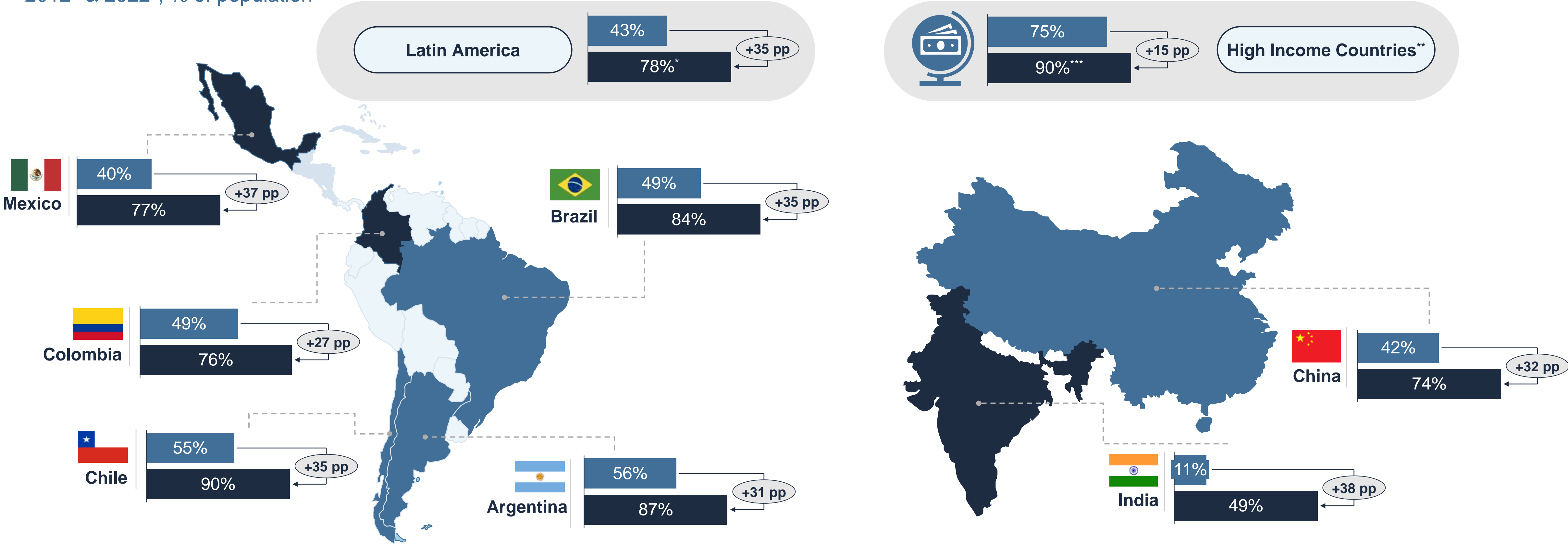
*Using Bard (PaLM2 340 Billion parameter model) by Google*

# Internet access in Latin America grew steeply over the last decade, and is in-line with access in high-income countries

Internet penetration rate in selected Latin American countries, China, and India

2012 2022

2012<sup>1</sup> & 2022<sup>2</sup>, % of population

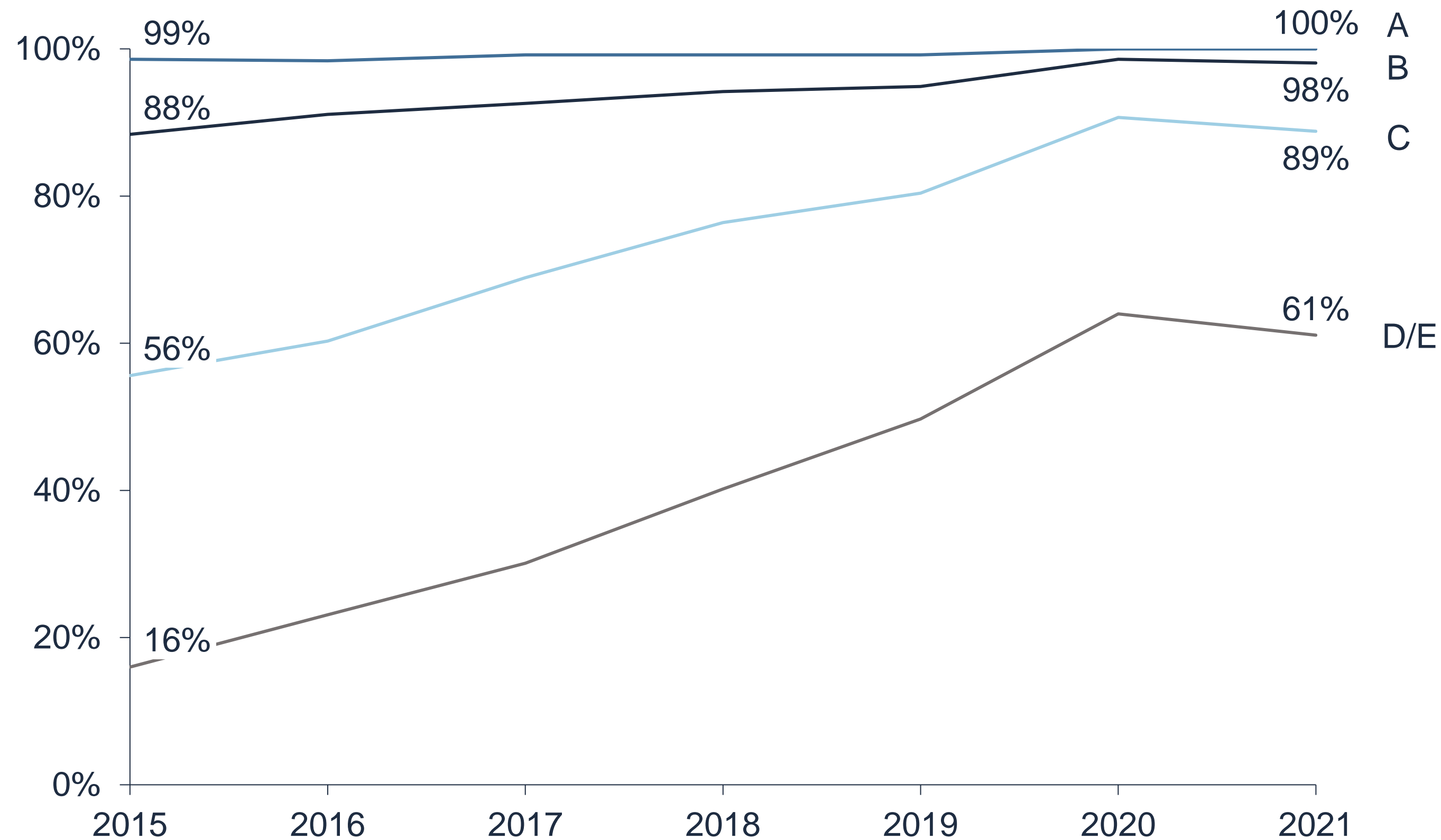


Notes: (\*) 2022 Estimate calculated from internet penetration by Latin America and weighted average of population (We Are Social); (\*\*) High Income Countries (HICs) are nations with a gross national income per capita of US\$13,205 or more in 2022; (\*\*\*) Data from 2021  
 Sources: (1) World Bank; (2) We Are Social, "Digital 2023" (2023)

# New internet access was predominantly driven by the inclusion of the middle and lower-income classes

## Household with access to internet by social class in Brazil<sup>1</sup>

2015 - 2021, % of households



## Brazilian social classes<sup>2</sup>

2022, % of population by monthly income

	Population (%)	Avg. income (US\$/month)
<b>A</b>	3%	\$4.5k
<b>B</b>	22%	\$1.4k
<b>C</b>	47%	\$0.5k
<b>D/E</b>	28%	\$0.2k

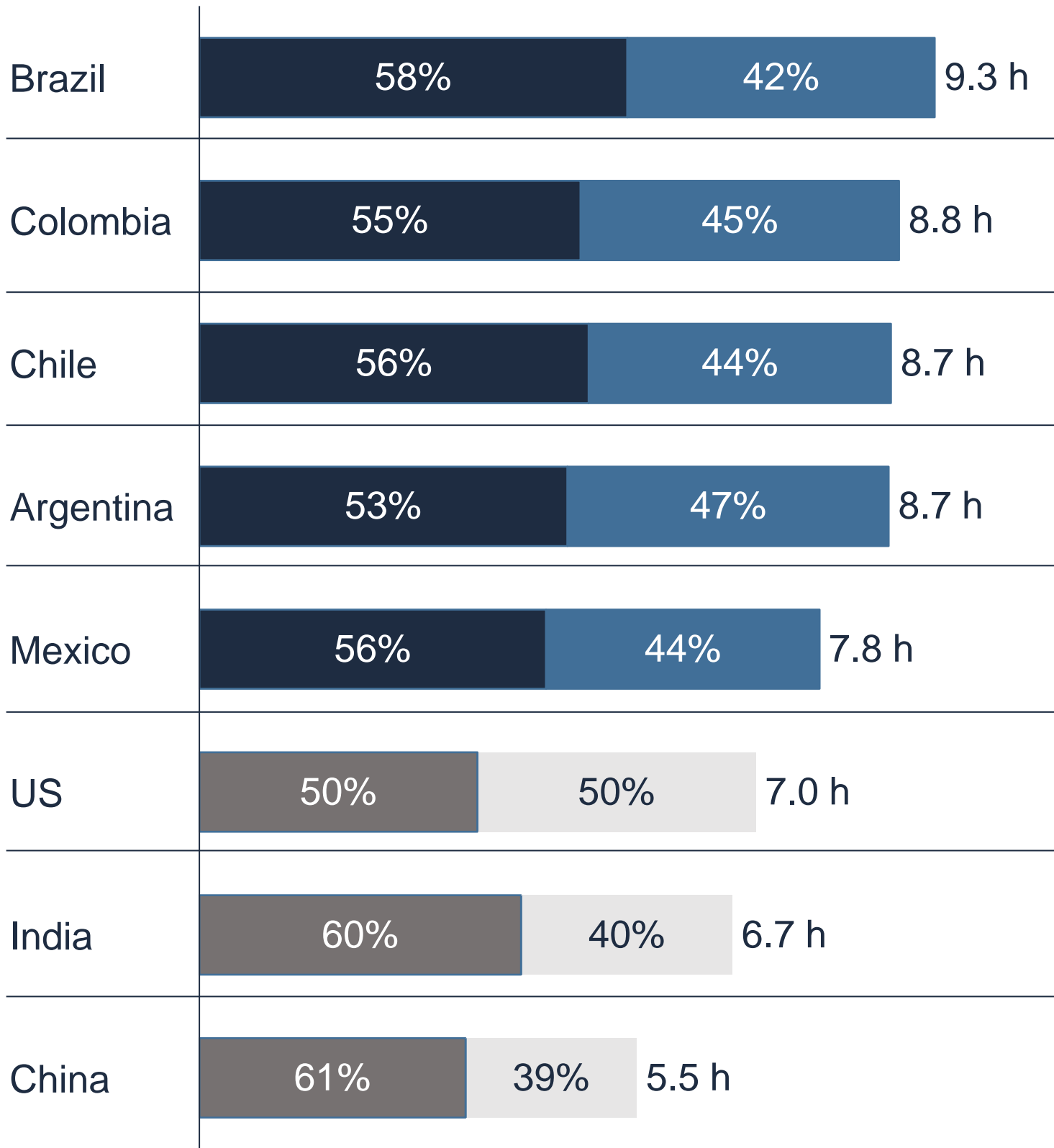
Sources: (1) CGI.br/NIC.br, "Pesquisa sobre o Uso das Tecnologias de Informação e Comunicação nos domicílios brasileiros"; (2) Brazilian Association of Research Companies, "Critério Brasil 2022" (2022)



# Latin Americans are amongst the heaviest internet users in the world and lead global usage for many social platforms

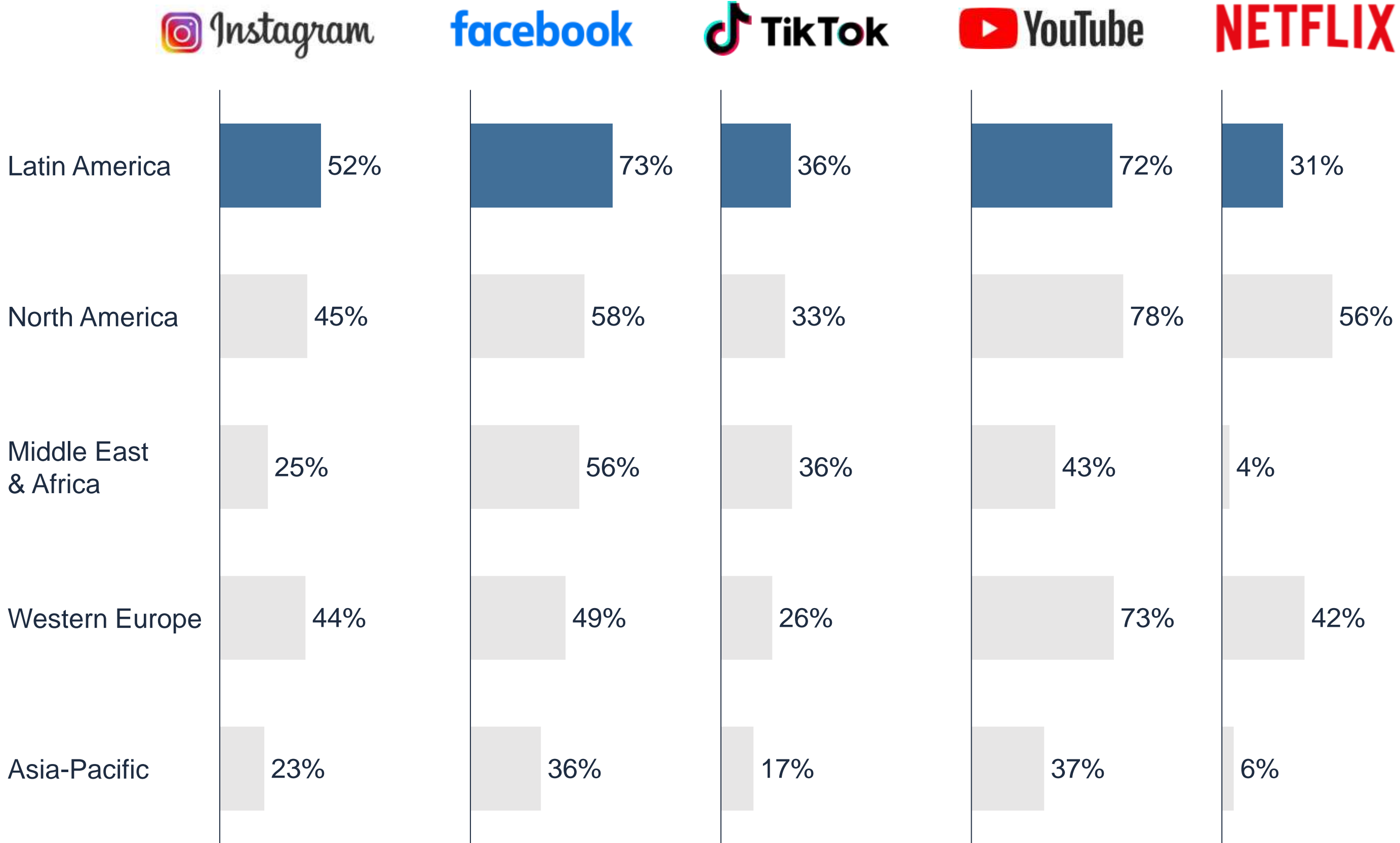
Daily average time spent on the internet (users from 16 to 64)<sup>1</sup>

Q4 2022, # of hours ■ % mobile ■ % computers\*



Users who access selected platform at least once a month<sup>2</sup>

2023, % of internet users

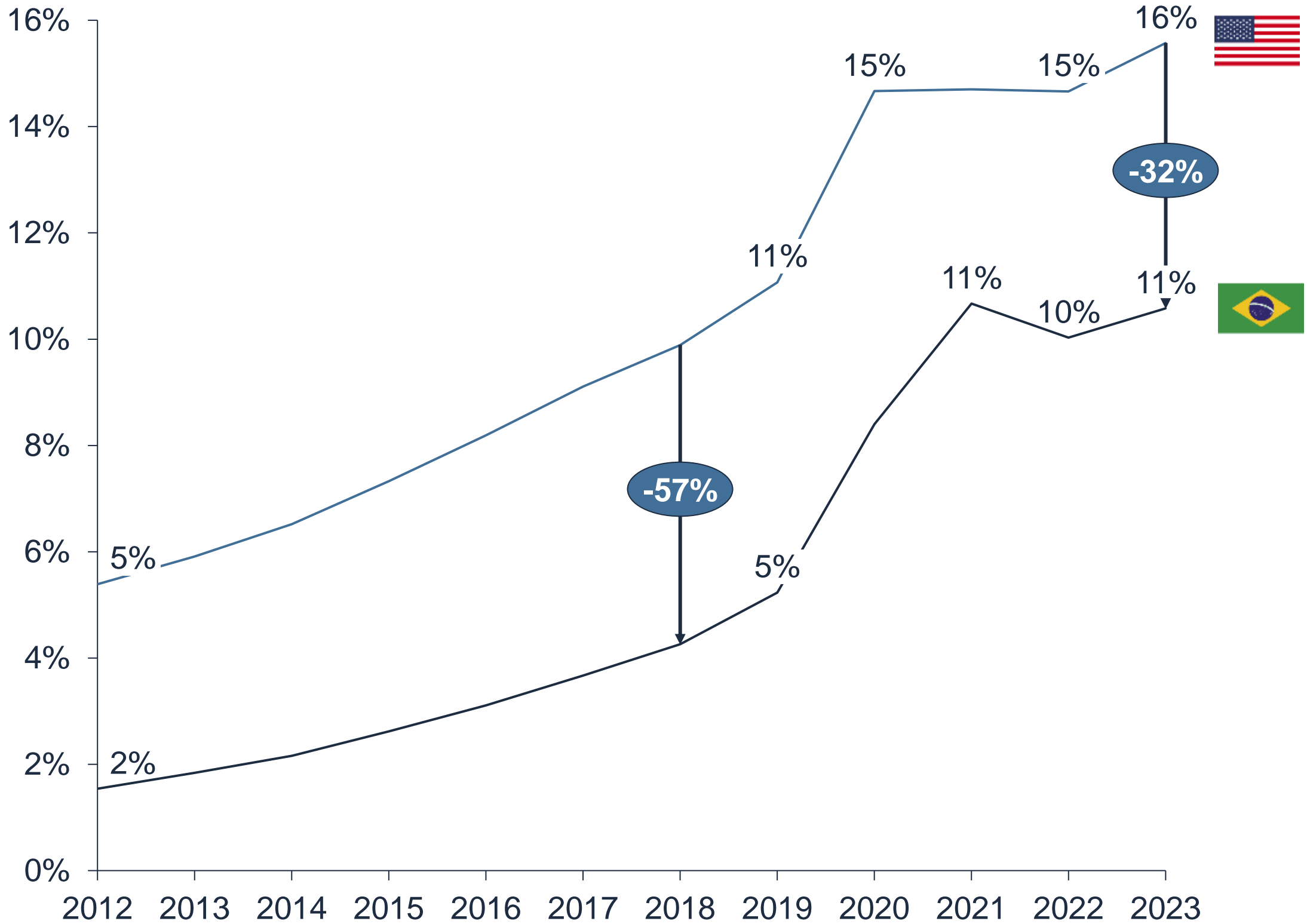


Note: (\*) Computers are laptops, desktops, or tablets  
Sources: (1) We Are Social; (2) eMarketer | Insider Intelligence

# Brazil is closing the gap in the penetration of e-commerce vs the US, fueled by a large share of mobile commerce

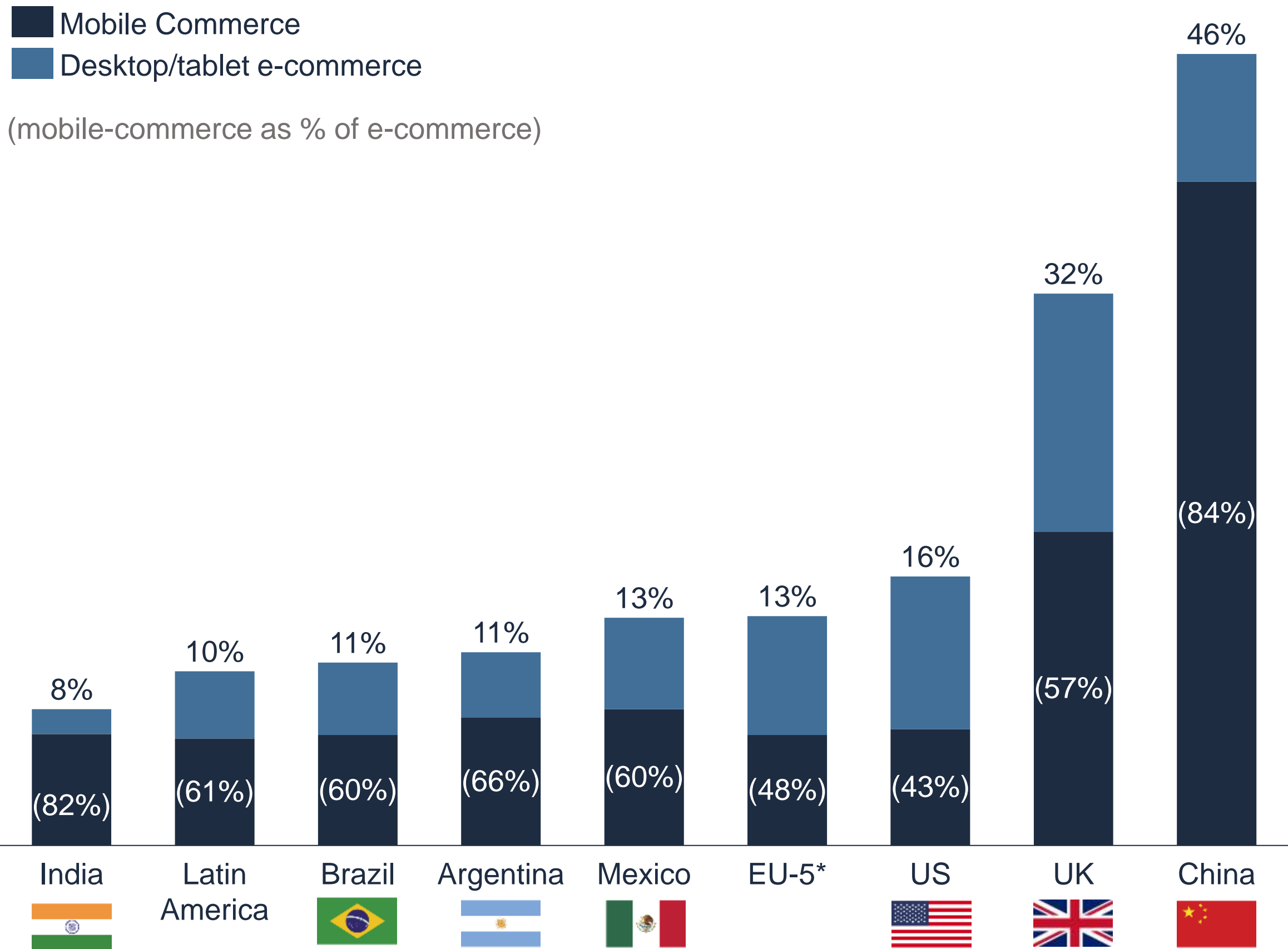
## Online share of total retail<sup>1</sup>

2018 -2023, E-commerce as % of total retail sales



## Retail e-commerce sales across countries<sup>1</sup>

May 2023, % of total retail sales

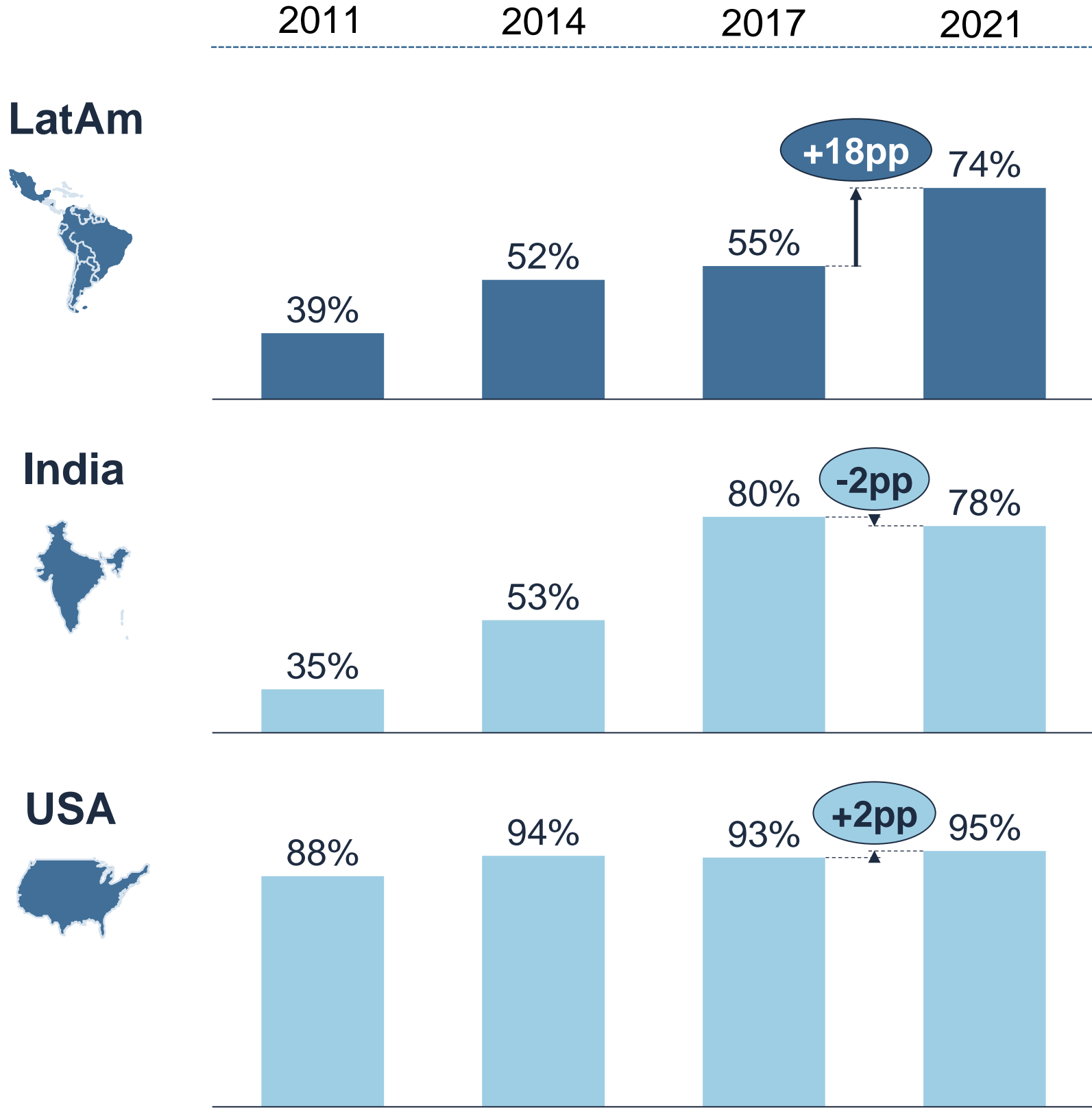


Note: (\*) EU-5 Countries are France, Germany, Italy, Spain and the United Kingdom  
 Source: (1) Insider Intelligence | eMarketer

# Access to banking in Latin America grew significantly over the last decade, largely through digital channels

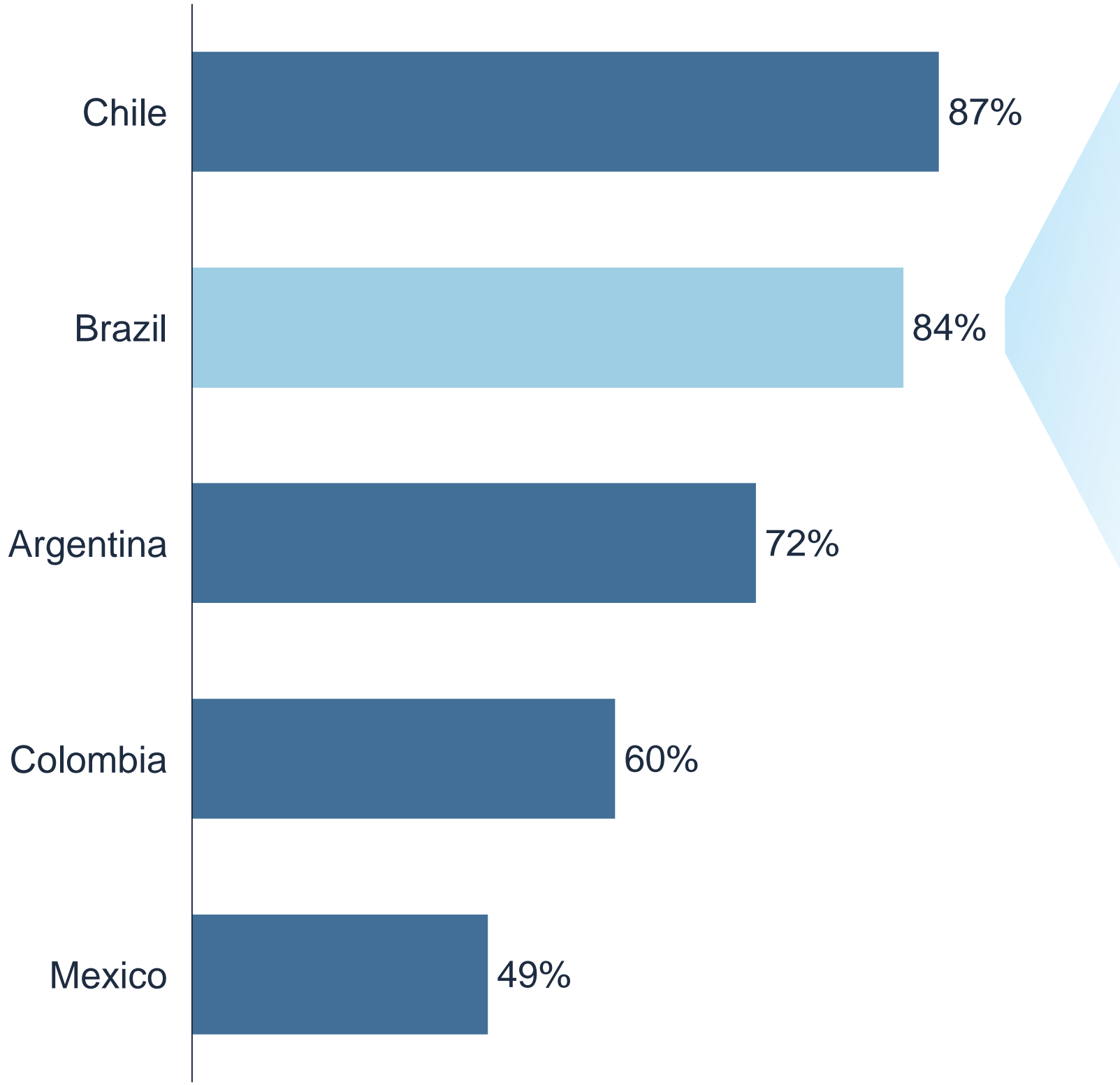
## Bank account penetration<sup>1</sup>

2011, 2014, 2017 and 2021, % of population (age 15+)



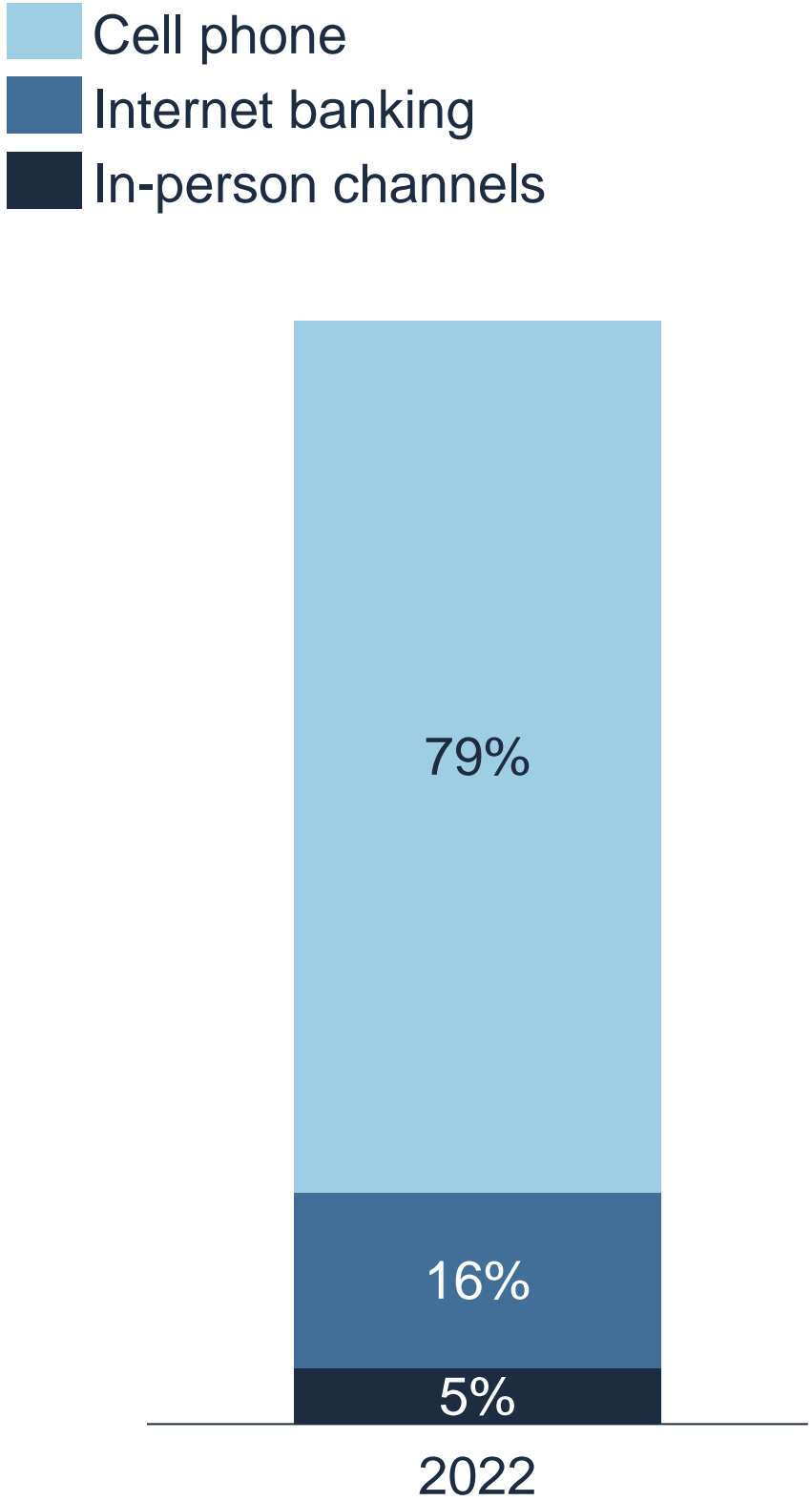
## Bank account penetration across 5 largest LatAm economies<sup>1</sup>

2021, % of population (age 15+)



## Share per channel for accessing financial services<sup>2</sup>

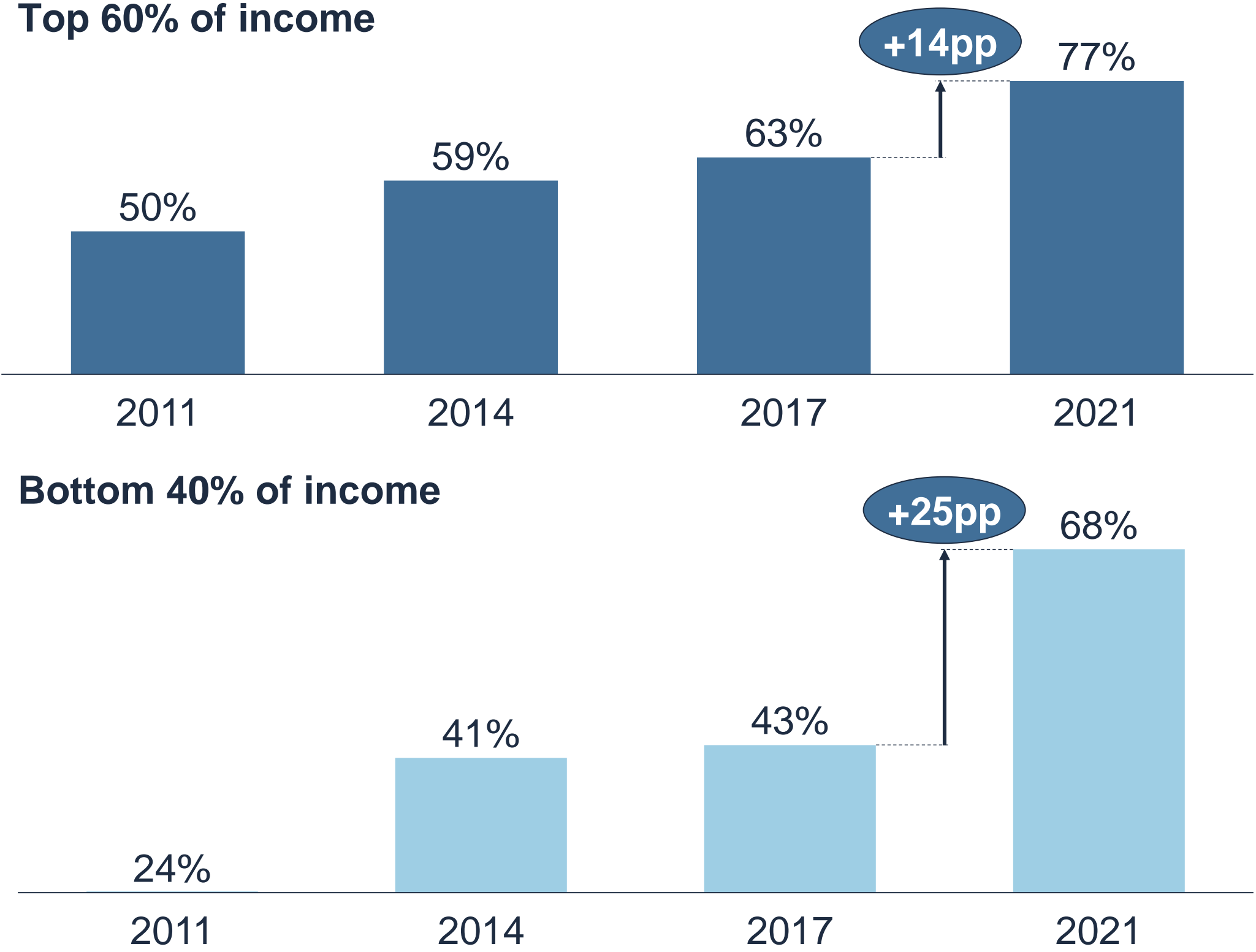
Brazil, 2023, %



# Lower-income clients drove new banking access, but those who remain unbanked perceive bank accounts as expensive

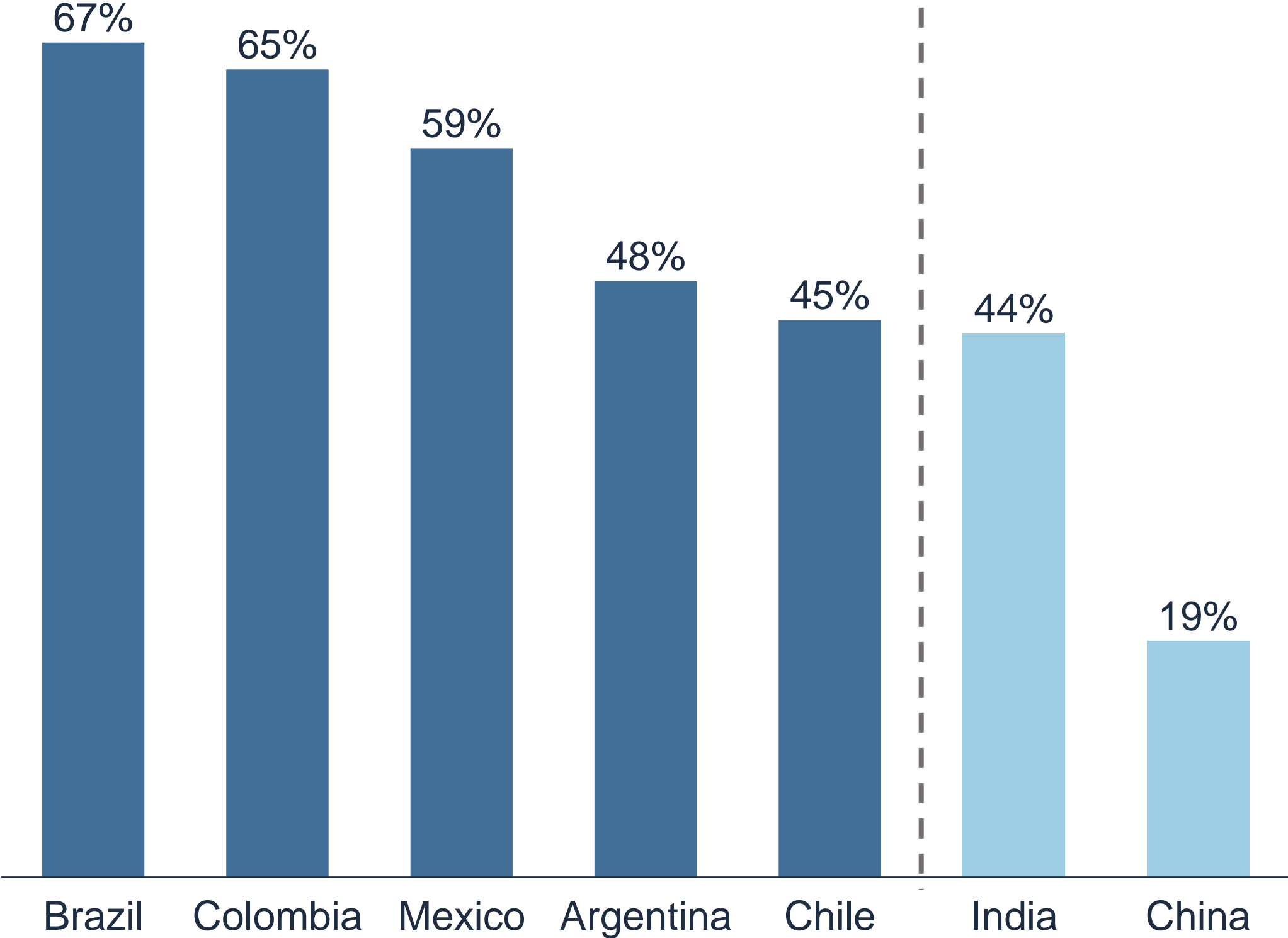
## Bank account penetration in Latin America<sup>1</sup>

2011, 2014, 2017 and 2021, % of population (age 15+)



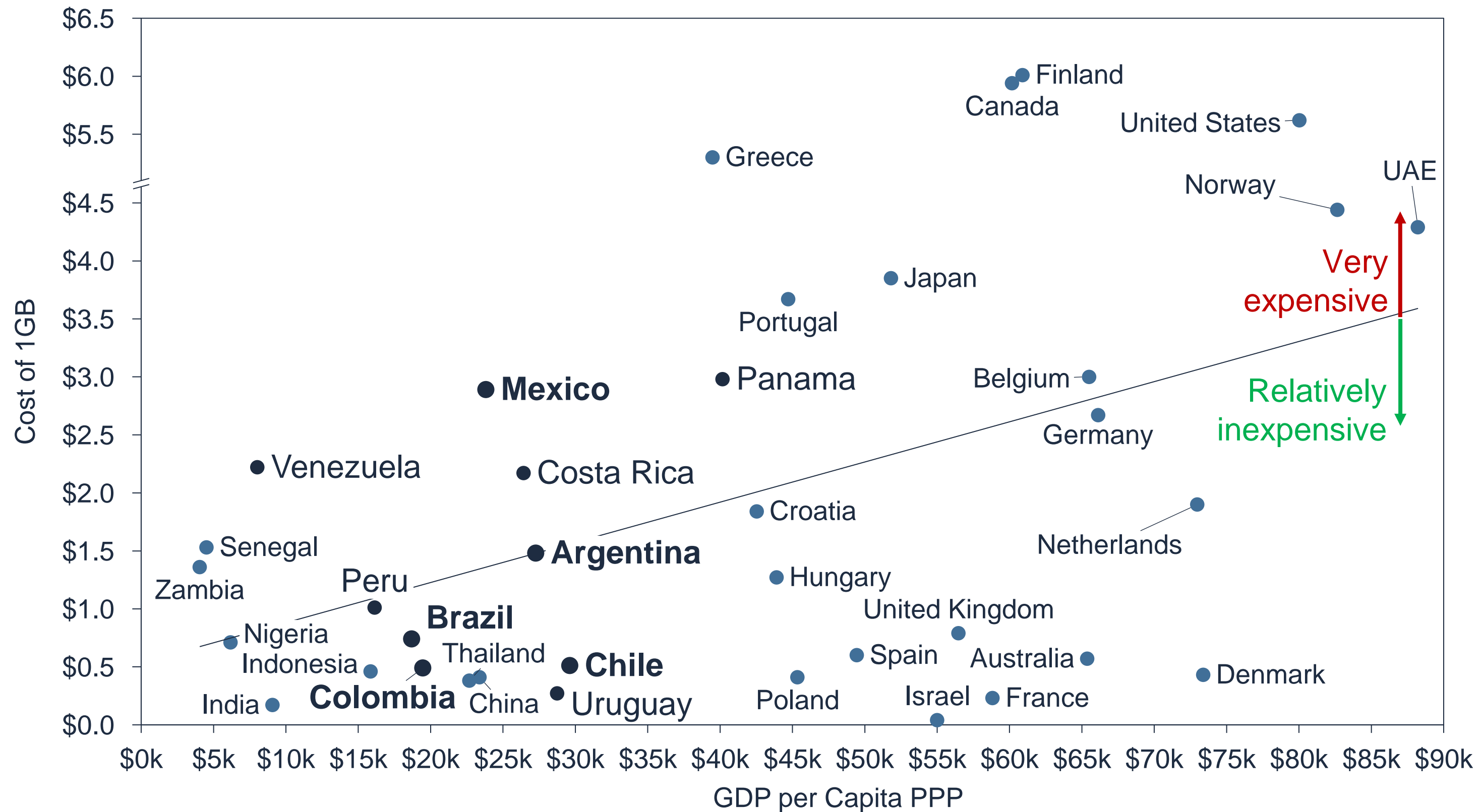
## % of people without a bank account who perceive cost as the main barrier to opening an account<sup>1</sup>

2021, % of population (age 15+)



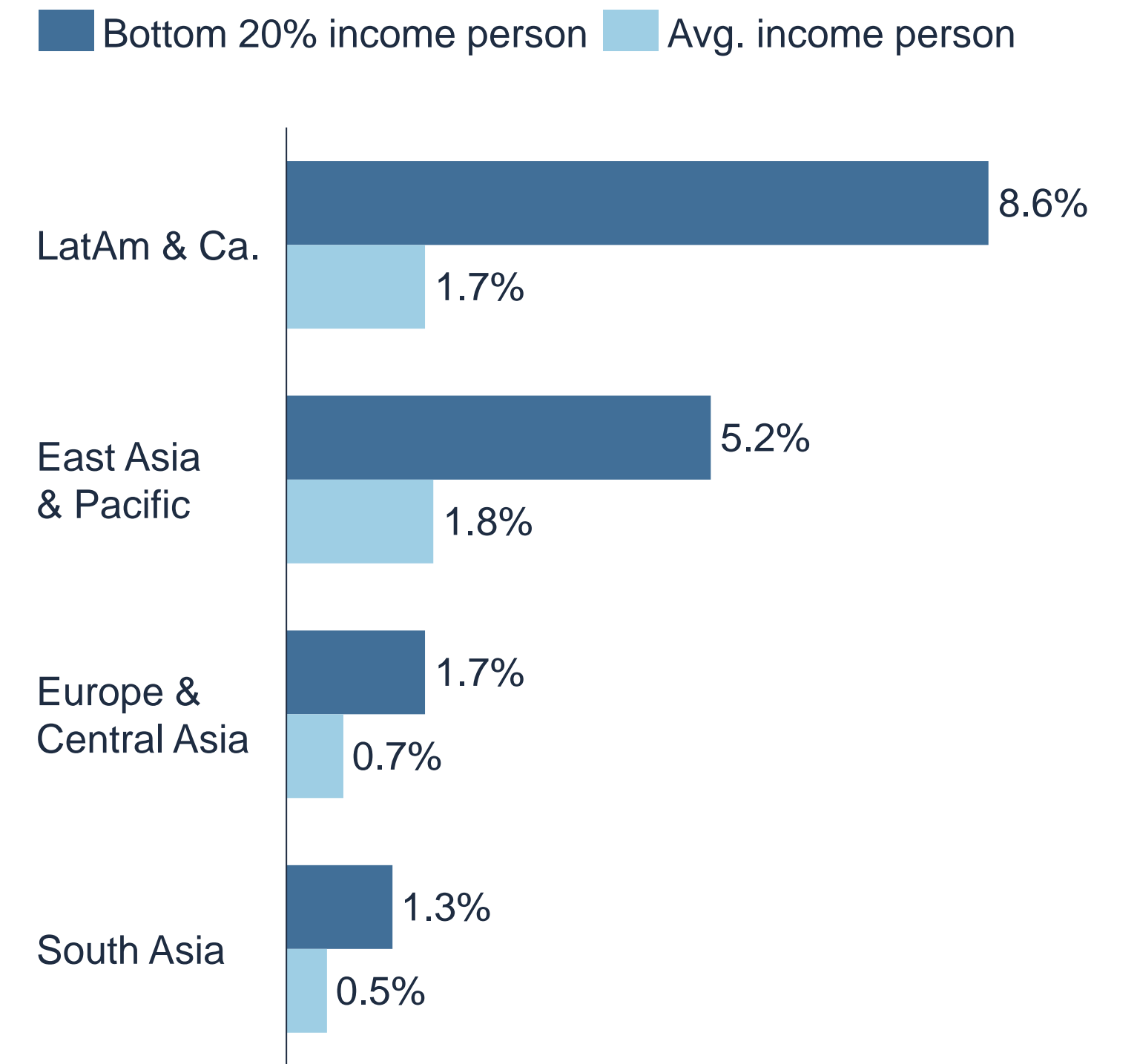
# While LatAm's data cost is mostly in line with purchasing power, it's overly expensive for the bottom 20% of earners

Average price of 1GB of mobile data (2022)<sup>1</sup> vs. GDP per Capita (PPP)\* (2023) for selected countries<sup>2</sup>  
2023, USD\$



Affordability of 1 GB of Mobile Broadband Data<sup>1</sup>

2021, median cost as % of monthly GDP

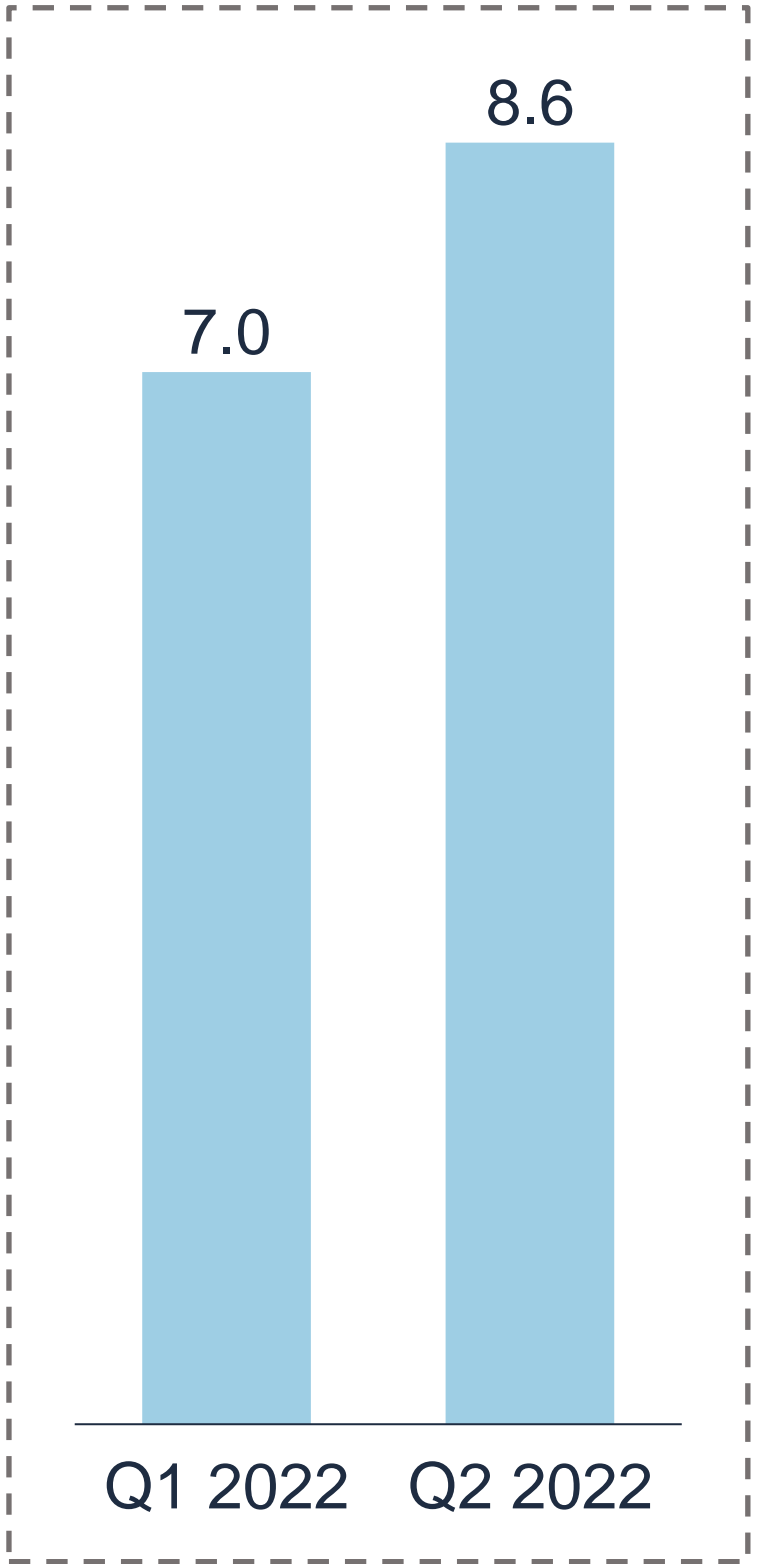
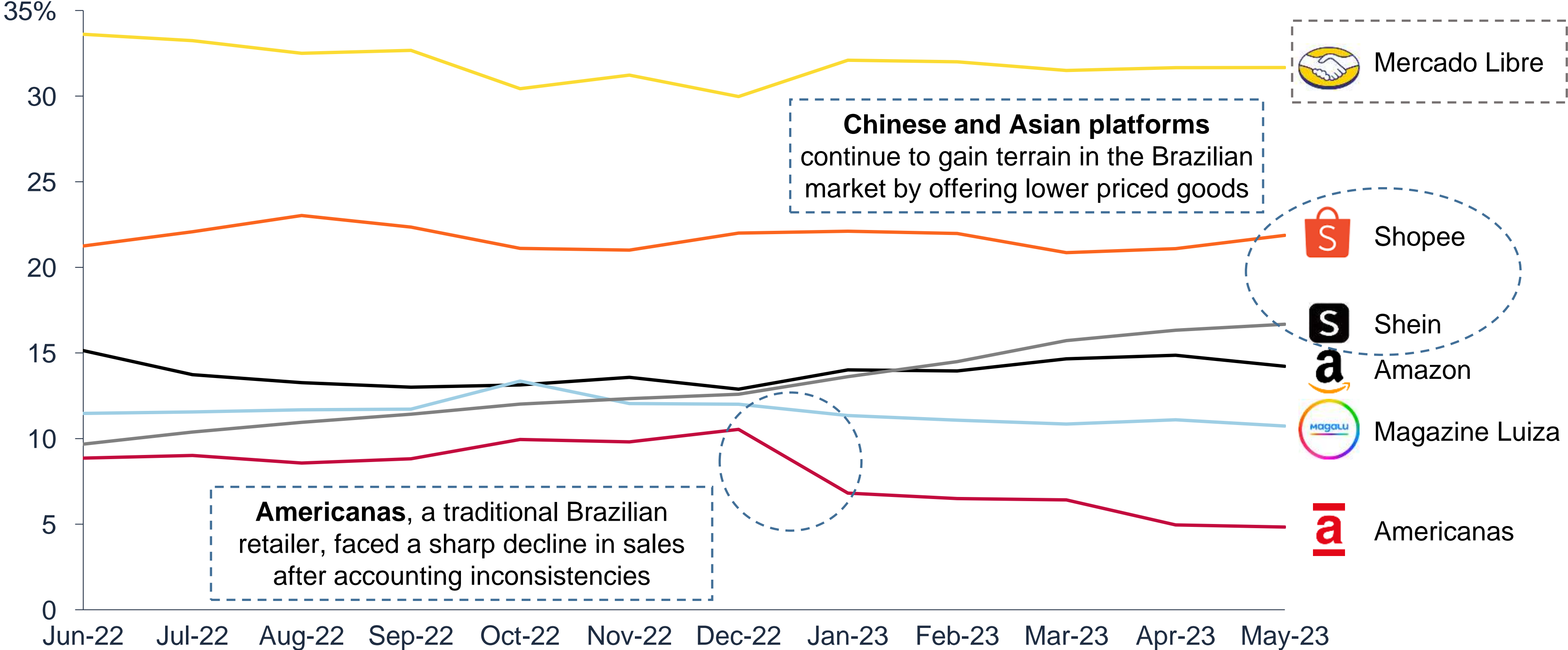


Note: (\*) Purchasing power parity (PPP) is a money conversion rate used to express the purchasing powers of different currencies in common units  
Sources: (1) GSMA "The State of Mobile Internet Connectivity 2022" (2022); (2) CGI.br/NIC.br, "Pesquisa sobre o Uso das Tecnologias de Informação e Comunicação nos domicílios brasileiros"

# Mercado Libre leads the e-commerce market in Brazil by a wide margin, with a third of the total volume of visits

Estimated market share of visits to top e-commerce retailers in Brazil<sup>1,\*</sup>  
2022 - 2023, % of website and app visits

Mercado Libre sales<sup>2</sup>  
Q2 2021; Q2 2022, US\$ B



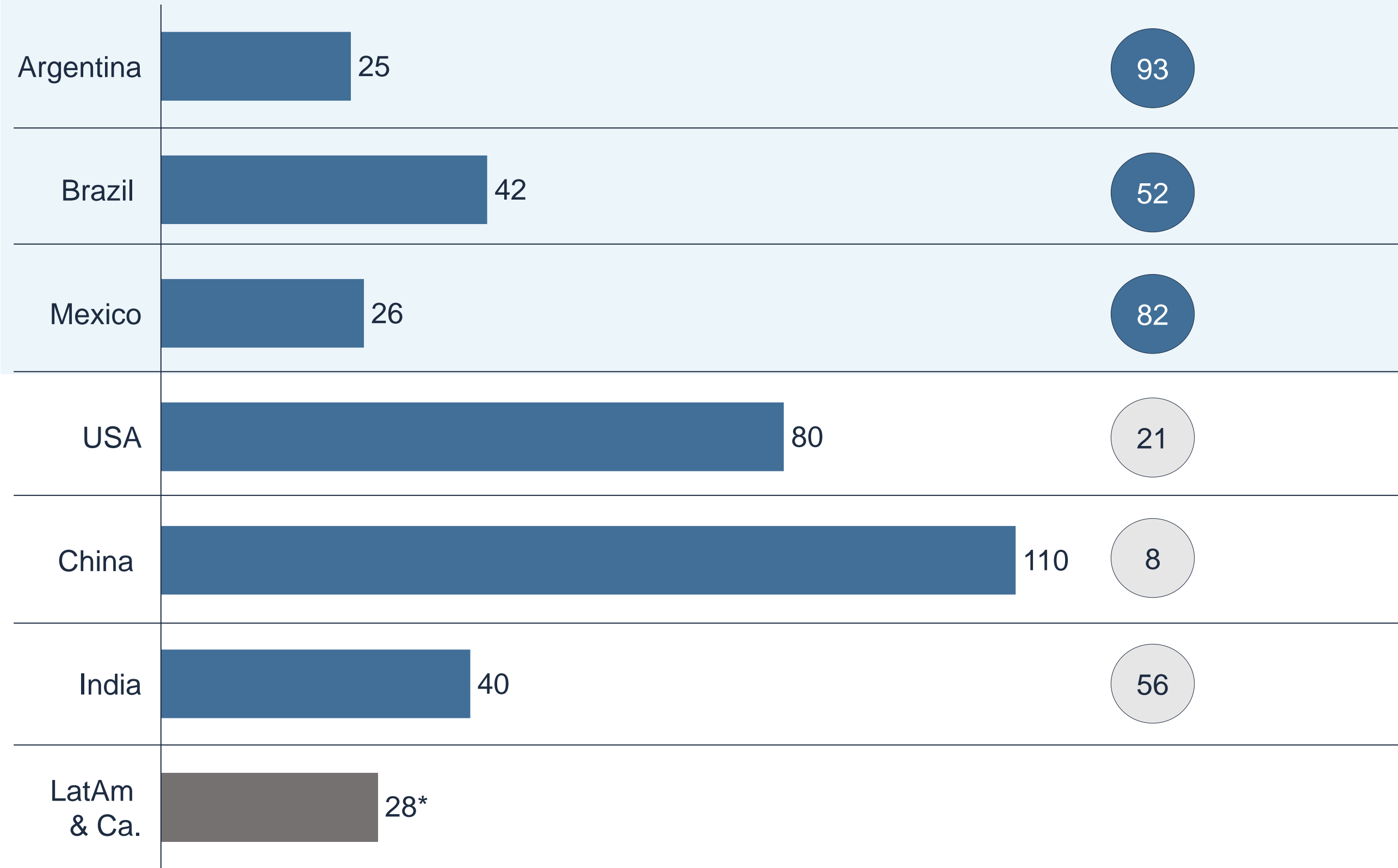
Note: (\*) Estimated share of traffic on websites and apps; this does not reflect \$ share as it does not take into account differences in average ticket size  
Sources: (1) Google Trends, Data.ai, expert interviews, Atlantico Analysis; (2) eMarketer | Insider Intelligence

# Heavy usage of internet and e-commerce retail grew despite slow connection speeds and low smartphone penetration

## Median download mobile internet connection speeds<sup>1</sup>

May 2023, Mbps

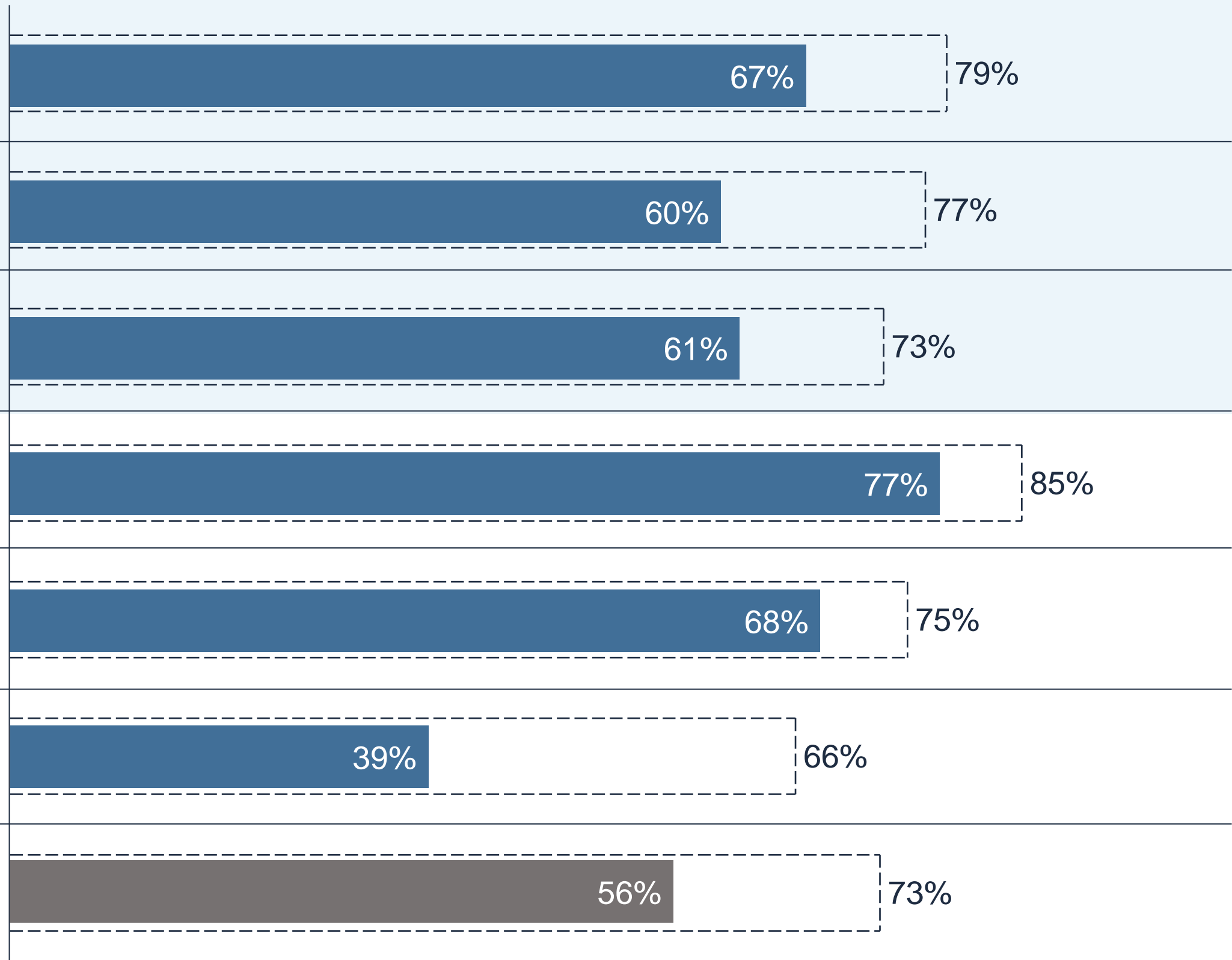
# Global rank of median download speeds



## Smartphone user penetration vs. total cell phone users<sup>2</sup>

2023, % of population

■ % smartphone users □ % total phone users



Note: (\*) Estimated based on available Ookla country data and weighted average by country population  
 Sources: (1) Ookla; (2) Insider Intelligence | eMarketer

03

# Renewal of the Entrepreneurial Spirit



ATLANTIC

/imagine renewal of the entrepreneurial spirit in the style of **Frida Kahlo**



# Renewal of the entrepreneurial spirit

The spirit of the entrepreneur falters,  
**Funding dries up, dreams deferred.**

Yet still there glimmers hope—  
Capital flows in LatAm, not severed.

**Belt-tightening times, hard choices made.**

Talent remains, though some jobs fade.

**Morale lifts, optimism rebooting—**

Founders excited, tech jobs recruiting.

The prize awaits to be claimed,  
**Trillions in value, vast potential untamed.**

LatAm's tech behind but ready to rise—

With focus and vision, the future lies.

Rewards will come, it's not mere hype,  
**LatAm punches above its weight in exits and IPO type.**

Robust pipeline of unicorns set the stage,  
**Public tech stars soon will engage.**

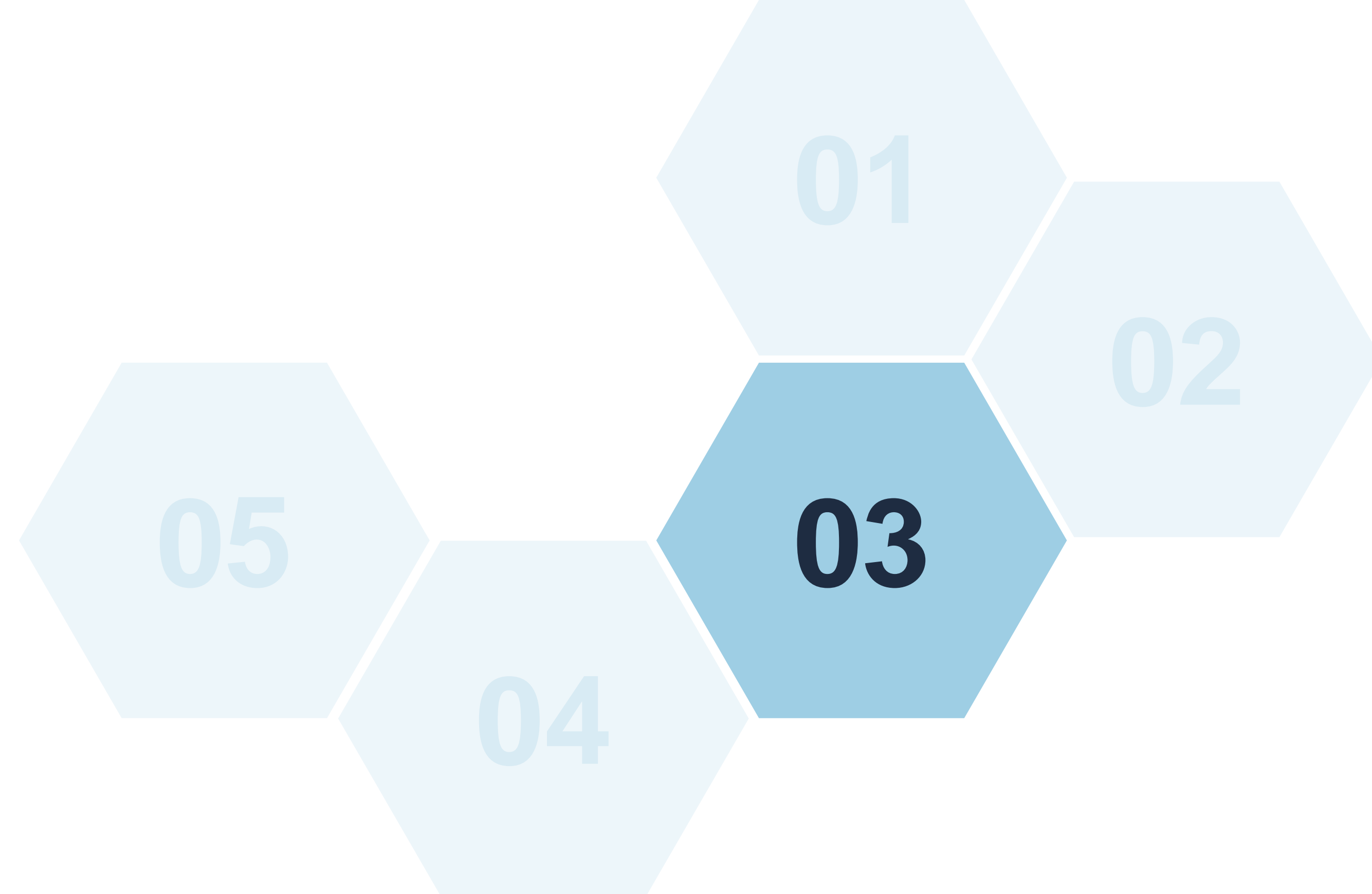
**LatAm's just beginning,**  
Angels investing,  
SMBs are the core,  
Digital hopes ring pure.

**In this new software era, tailored for each industry's domain—**

Unique solutions herald change, in each specialized reign.

Others will surely follow, **myriad markets yet to realize the gain—**

We're just beginning, LatAm's vast landscapes await the digital train.



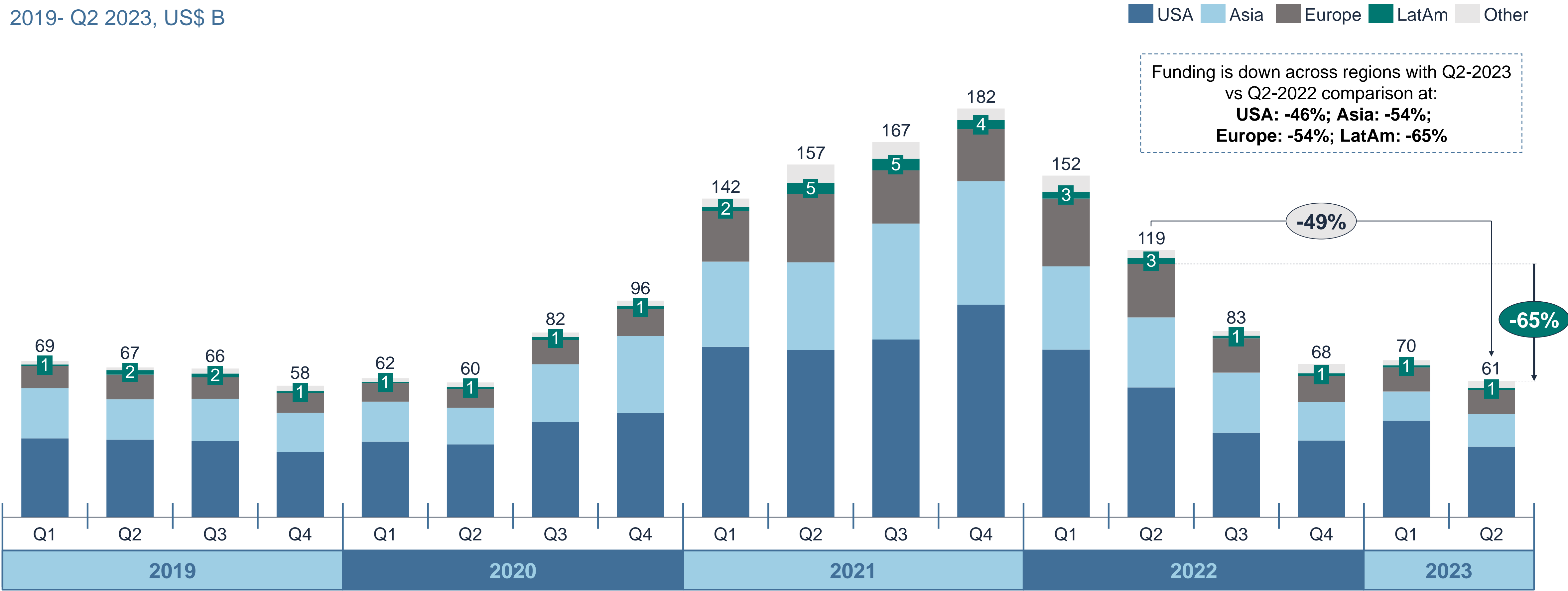
*Poem on Renewal of the Entrepreneurial Spirit in the style of Pablo Neruda*

*Using Claude – 137 Billion parameter model by Anthropic*

# Global venture funding fell by 49% in Q2-2023 vs. Q2-2022, with LatAm showing the highest regional variance

## Venture capital activity by region<sup>1,2</sup>

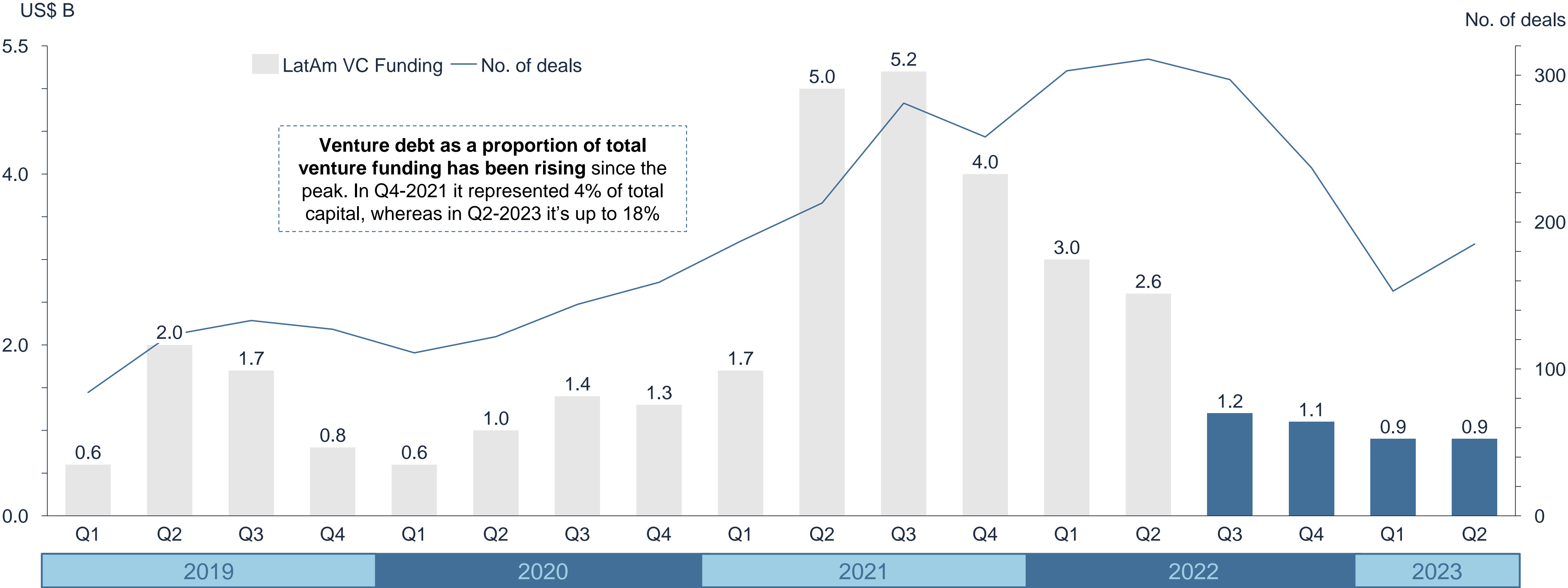
2019- Q2 2023, US\$ B



# Healthy access to capital: Latin American tech funding has stabilized at a level similar to the pre-2021 period

## Latin America Venture Funding<sup>1</sup>

2019-Q2 2023, US\$ B, No. of deals



Venture debt as a proportion of total venture funding has been rising since the peak. In Q4-2021 it represented 4% of total capital, whereas in Q2-2023 it's up to 18%

Note: Share of venture debt in total venture funding was 5.4%, 3.5%, 5.3%, 15%, and 31% (2019, 2020, 2021, 2022 and H1 2023, respectively)  
 Source: (1) LAVCA data for total venture funding (includes equity and venture debt)

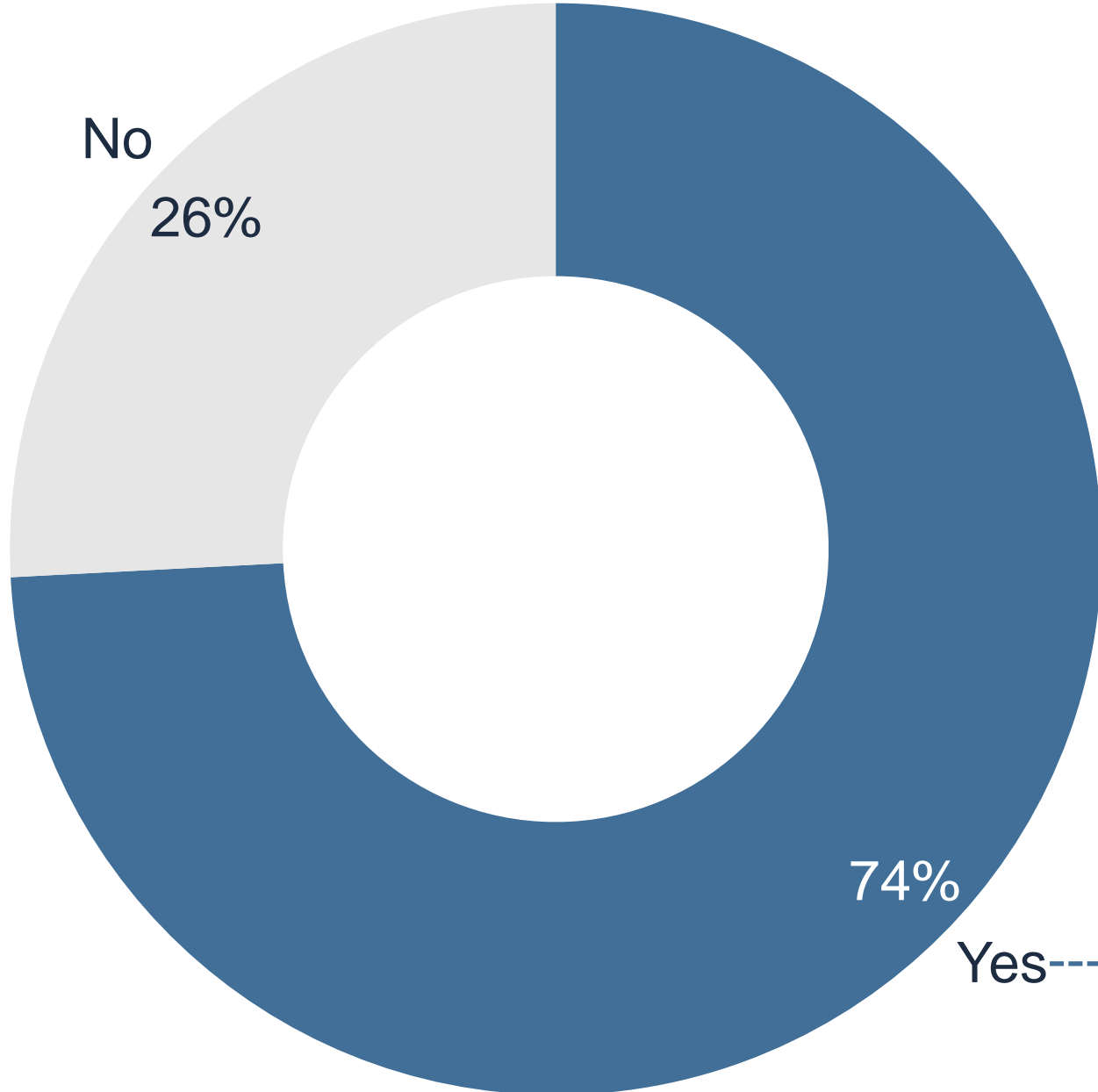
# Founders took the hard medicine to cut costs, and continue to have access to a strong pipeline of human capital

## Company layoffs over last 18 months<sup>1</sup>

2023, % of respondents



Over the last 18 months, did your company perform any layoff?



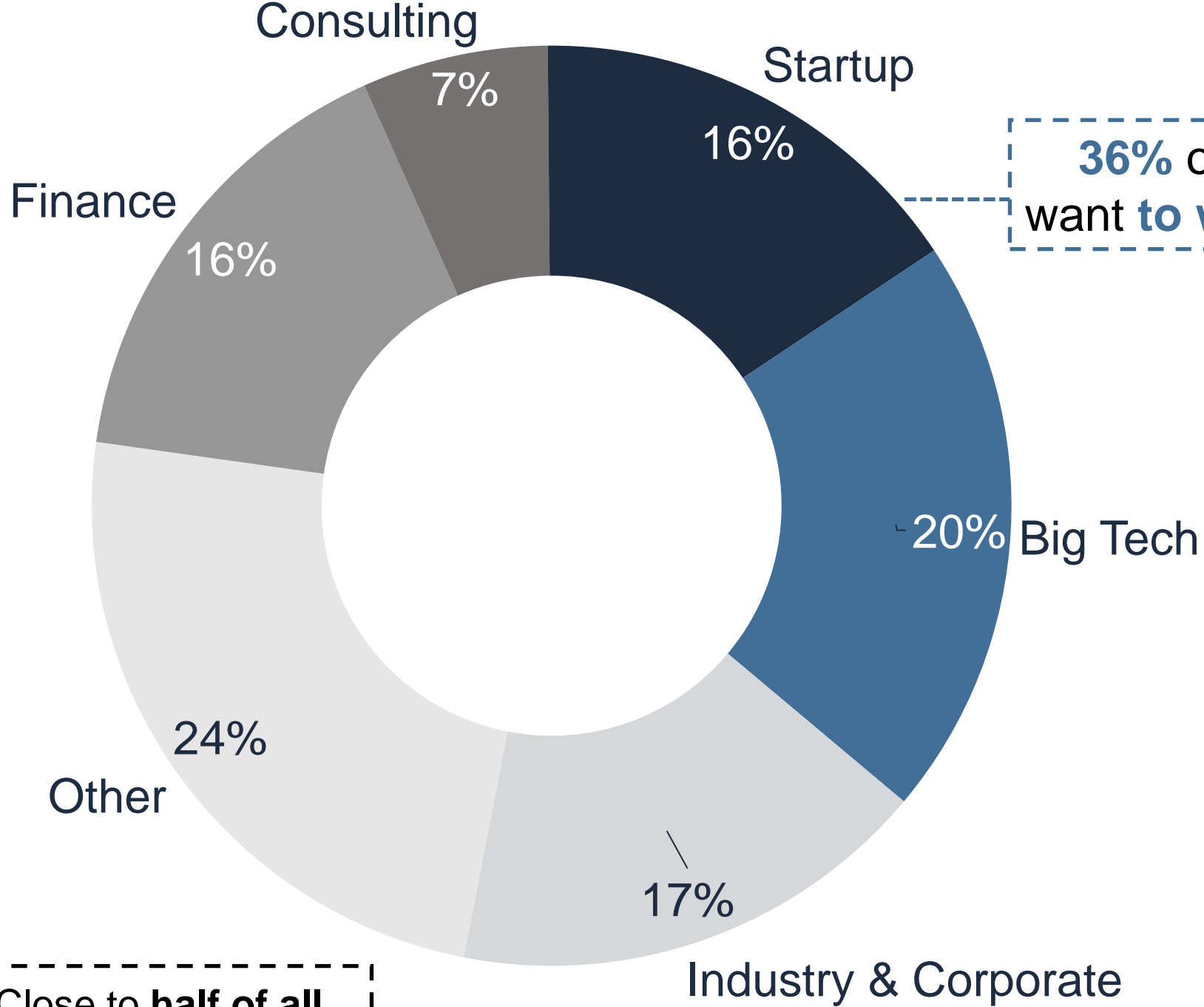
40% of companies have fewer employees than they did one year ago

## Student short-term post-graduate outcomes<sup>2</sup>

2023, % of students surveyed



In which area do you see yourself working in the short term (i.e., immediately after graduation)?



36% of students want to work in tech

Close to half of all students wish to be a founder long-term

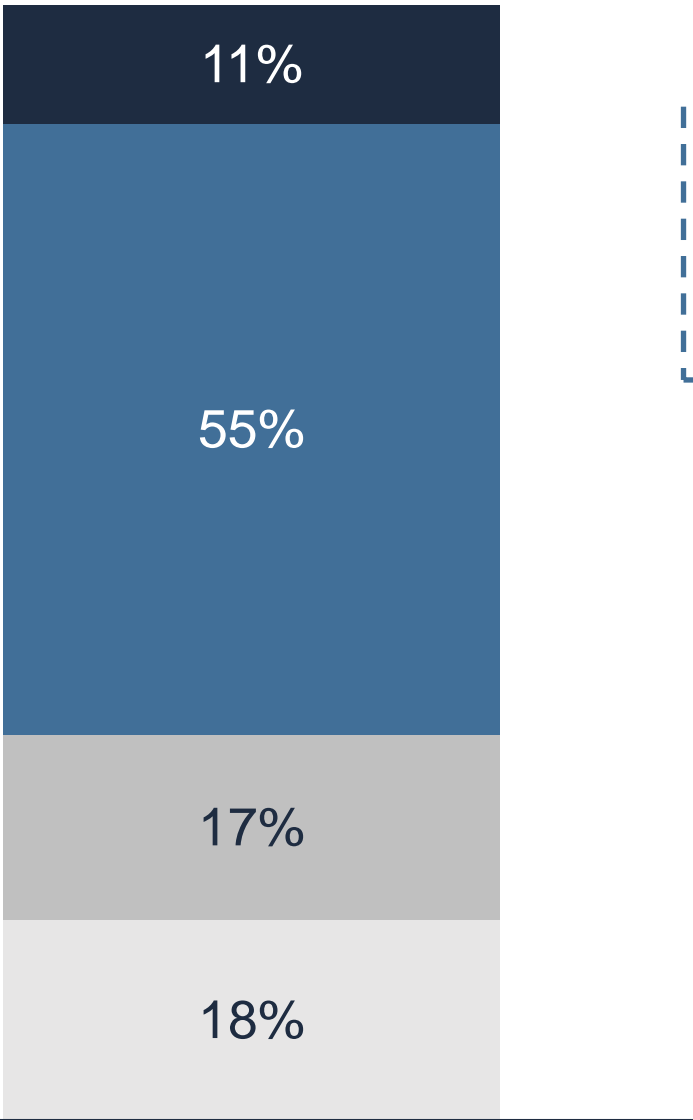
# Companies resumed hiring albeit conservatively; tech companies are willing to pay up vs. their non-tech peers

## Current state of hiring

2023, % of respondents

### Is your company actively hiring?<sup>1</sup>

- Yes, many open positions
- Yes, for a few positions
- No, no need
- No, hiring freeze

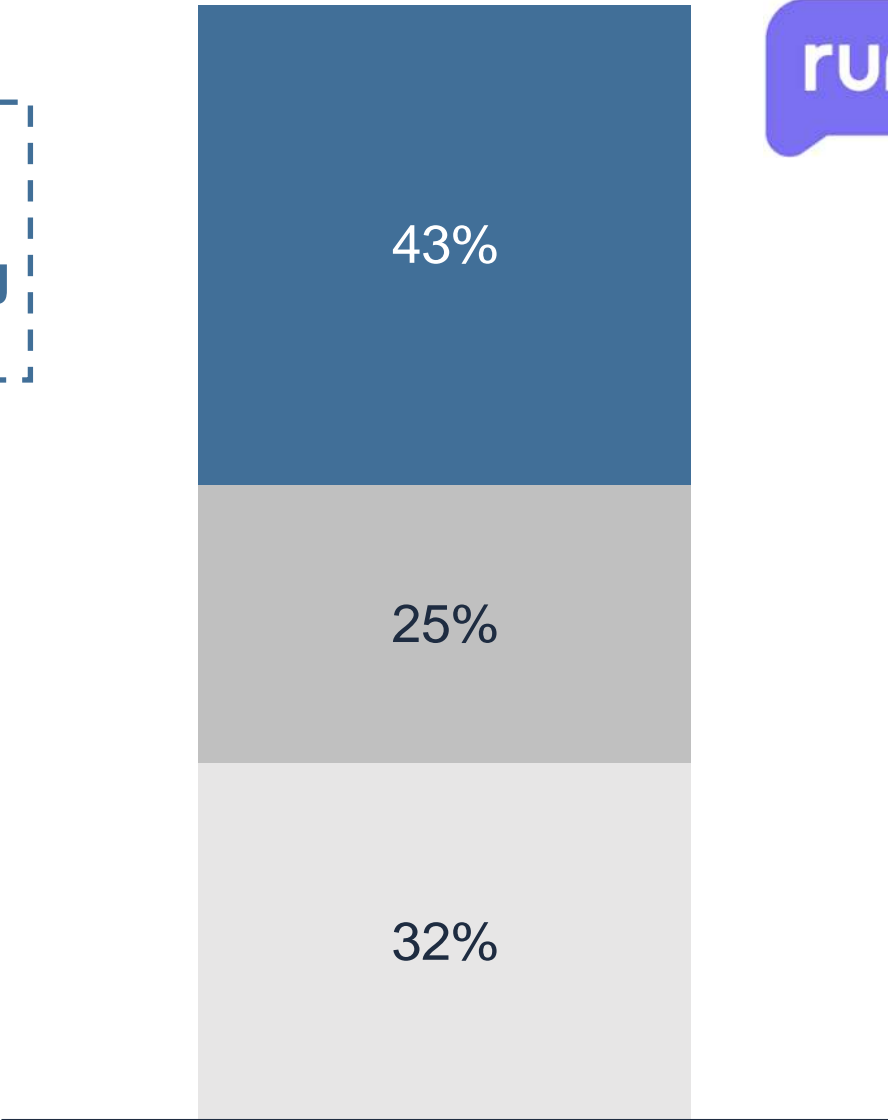


66% of tech companies are currently hiring and 43% of companies overall are finding it easier to do so

For state of remote, [click here](#)

### Is it easier or harder to hire vs. a year ago?<sup>2</sup>

- Easier
- The same
- Harder

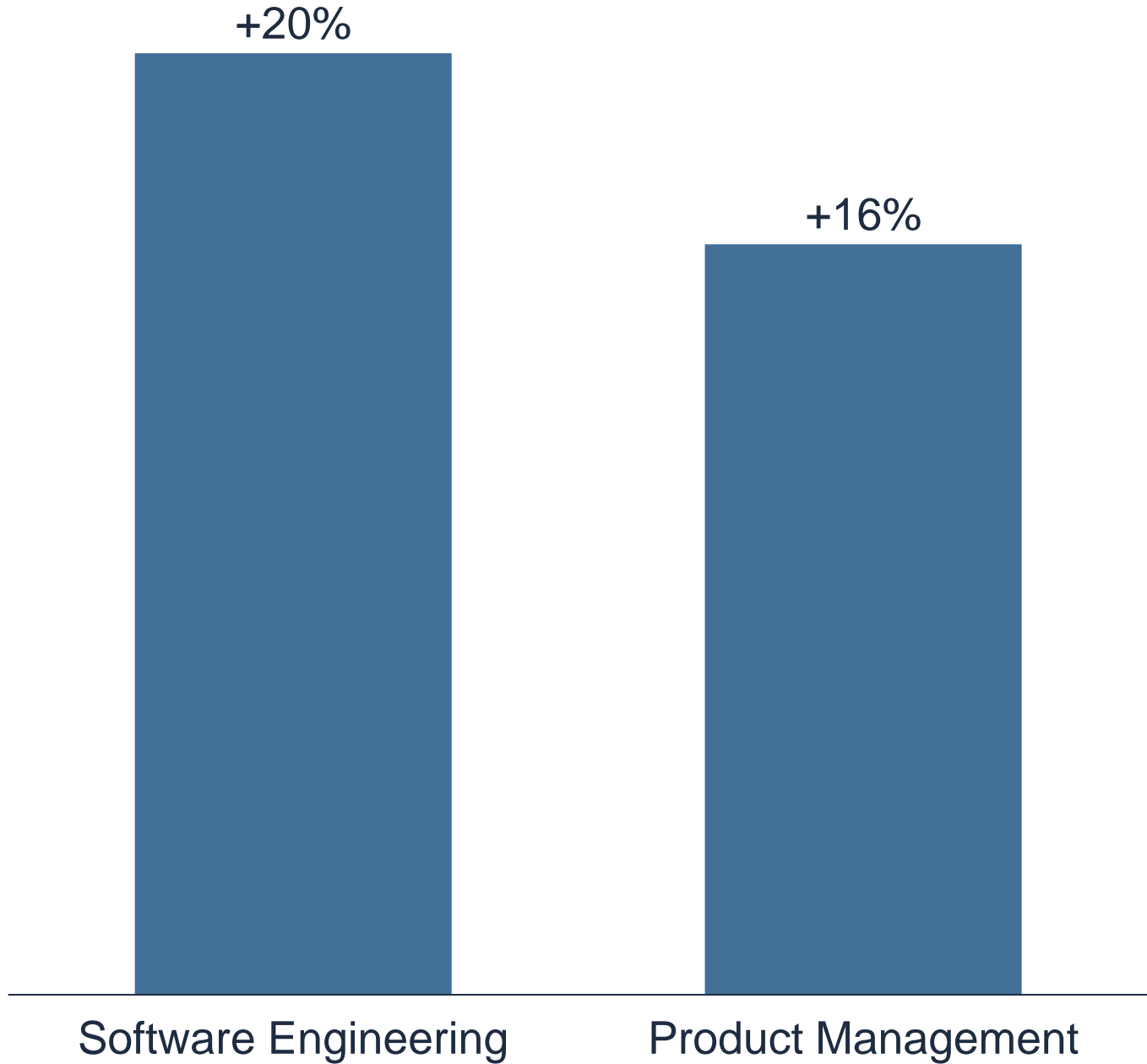


## Difference in cash compensation between tech and non-tech companies<sup>3,\*</sup>

Q2 2023



Tech companies pay higher cash compensation for technical talent compared to traditional companies



Note: (\*) Comp is a Brazil-based compensation startup that hosts the country's largest total compensation database (over 500 tech companies contributing their anonymized data)

Sources: (1) Atlantico Tech Sentiment Survey 2023 (n=217); (2) Runa and Atlantico Survey 2023 (n=508); (3) Comp Internal Data

# Optimism Reboots: Founders and tech employees report feeling optimistic 5X more than last year; caution persists

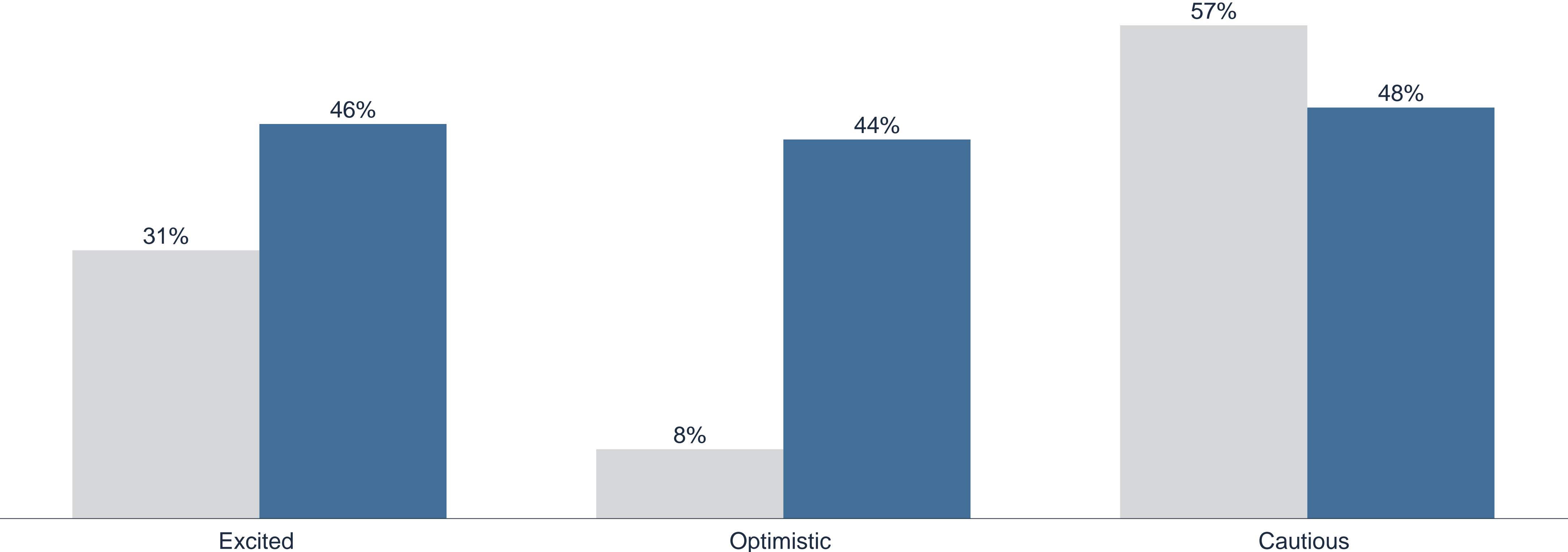
Feelings about the upcoming year in the tech market in comparison with 2022<sup>1,2</sup>

2022-2023, % of respondents, n (2023)=217 vs. n (2022)=202

2023 survey partners: **CANARY** **LATITUD** **cubo**

Considering the last year in the tech market, how are you feeling about the upcoming year? (Select all that apply)

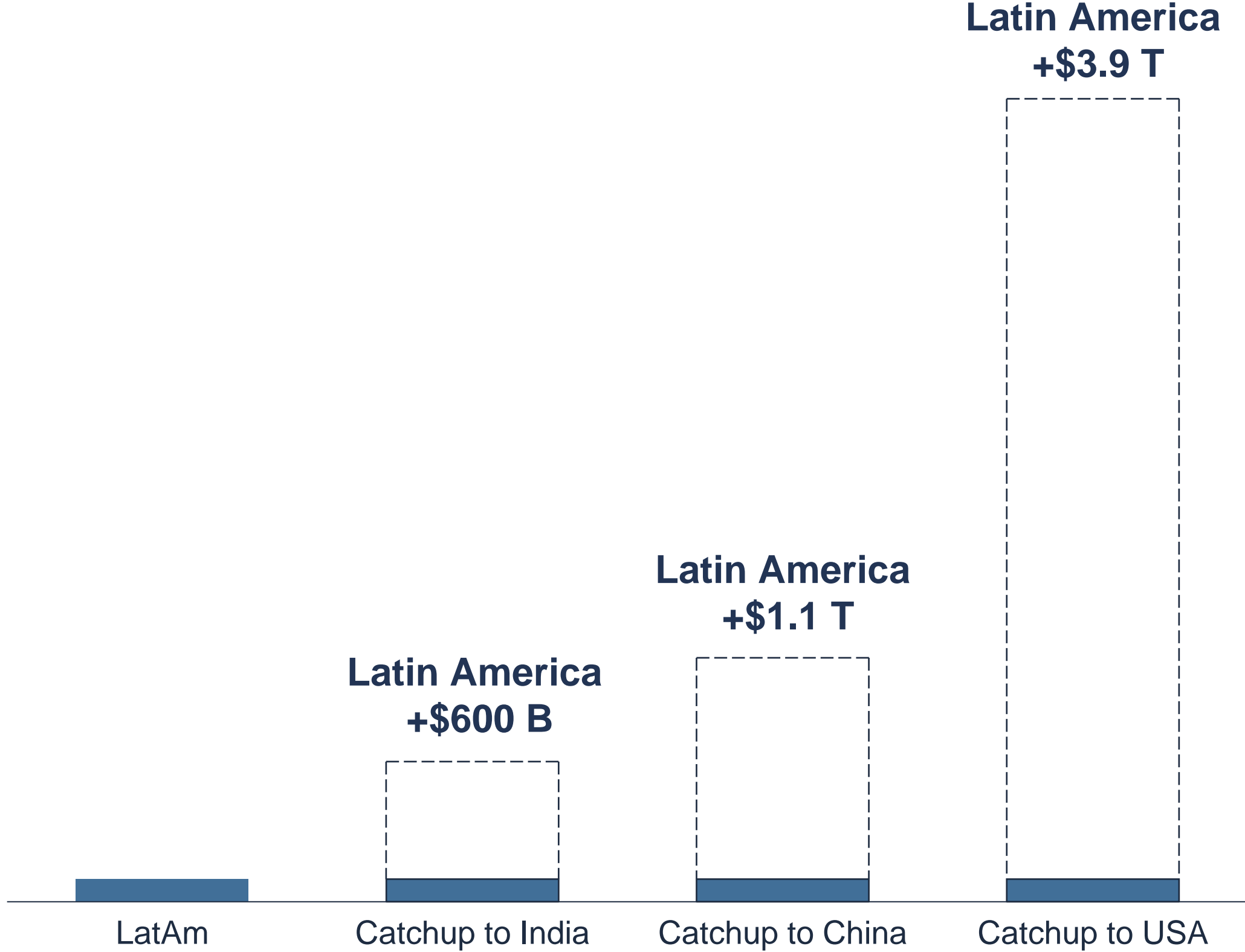
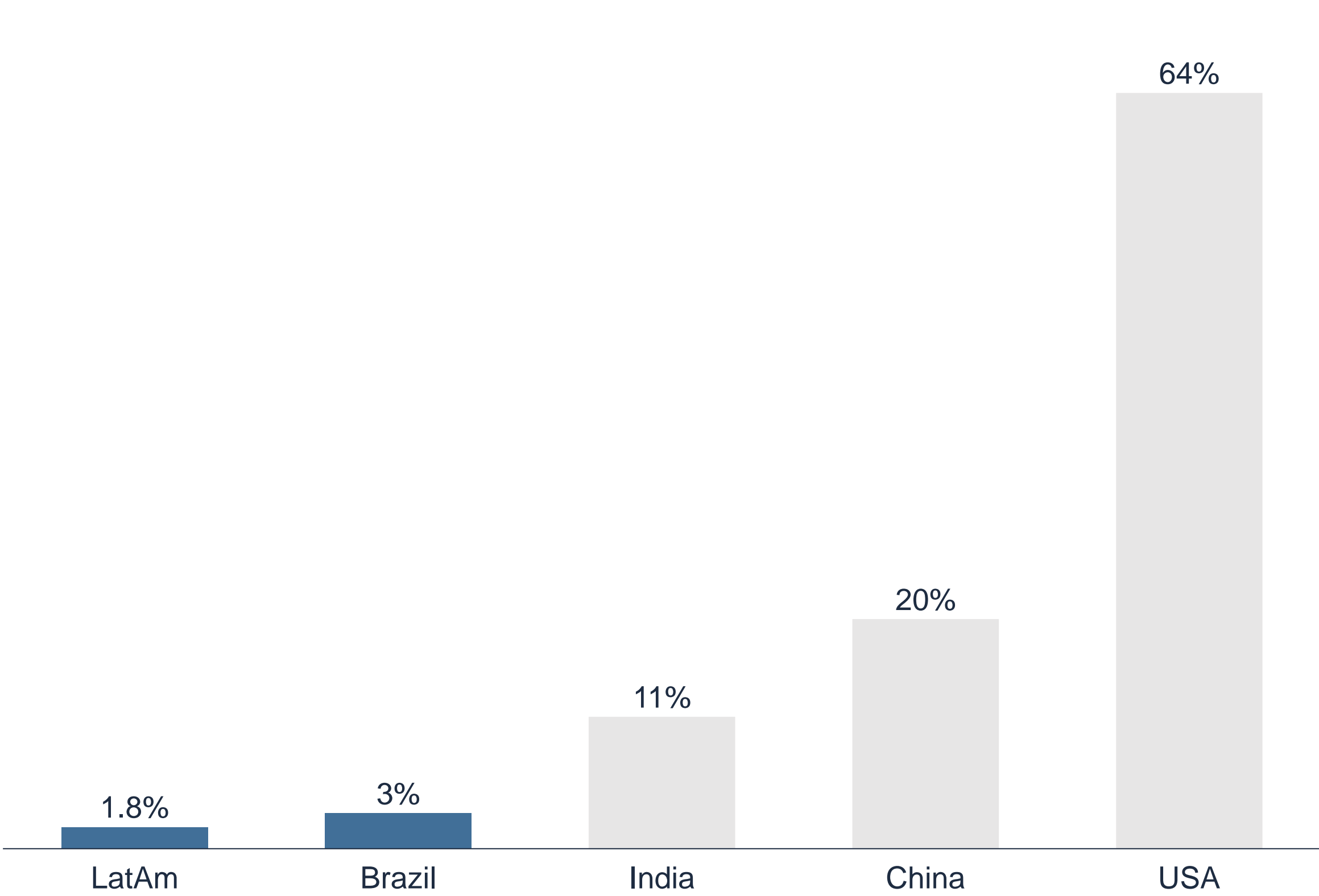
2022 2023



# Optimism is warranted: The prize is massive, with trillions in potential value creation as region catches up to peers

**Atlantico Digital Transformation Index<sup>1,2,3</sup>**  
 Q2 2023, Tech company market cap as % of GDP

**Latin America Tech Value Creation Catch-up Potential<sup>1,2,3</sup>**  
 Q2 2023, US\$ B

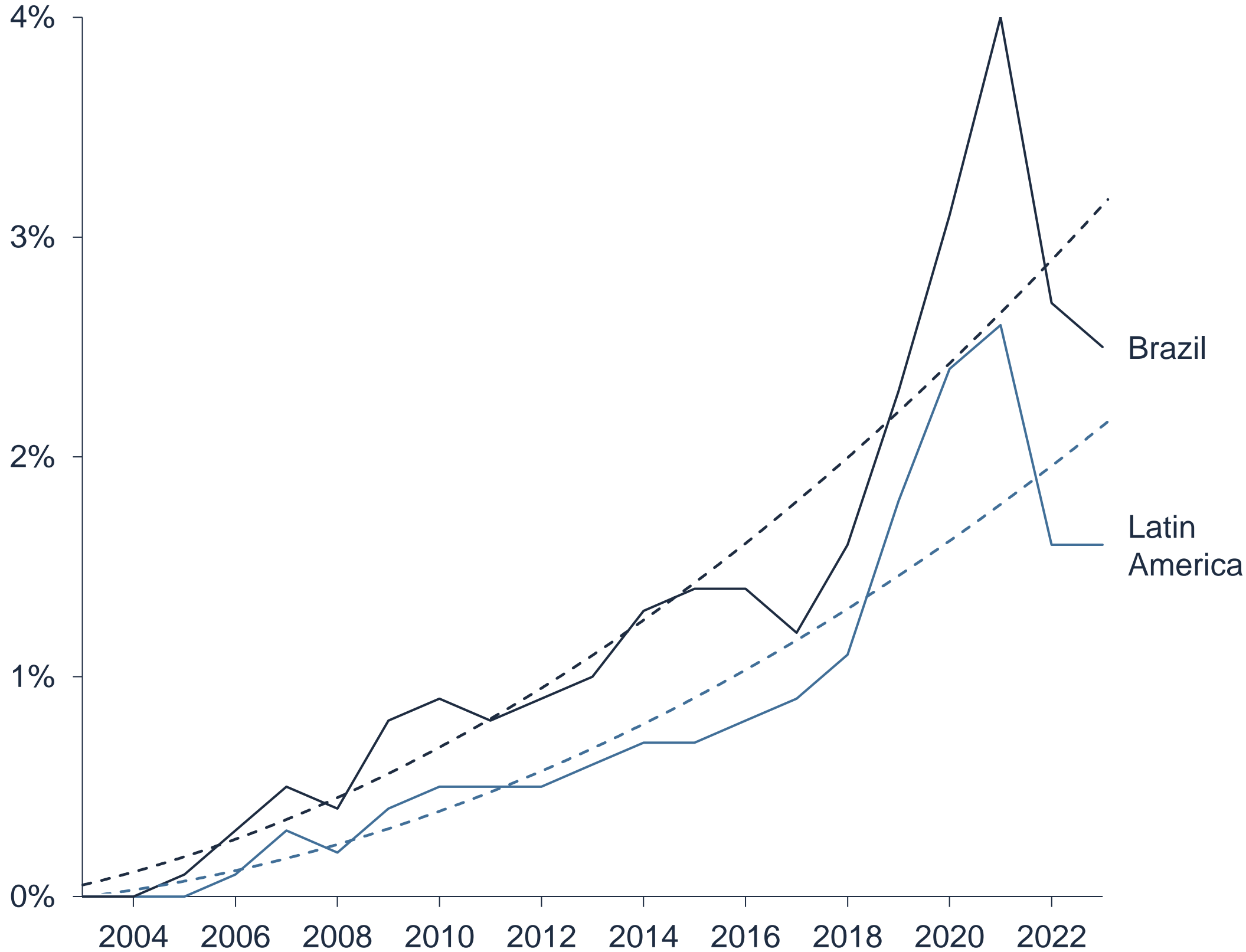


Note: HQ location was used to define company region; for all countries we used the average of the respective year's quarters to calculate GDP and market cap  
 Sources: (1) Capital IQ; (2) OECD; (3) Atlantico Analysis

# A Long-Term Horizon: The rewards in Latin America will compound over the next several decades

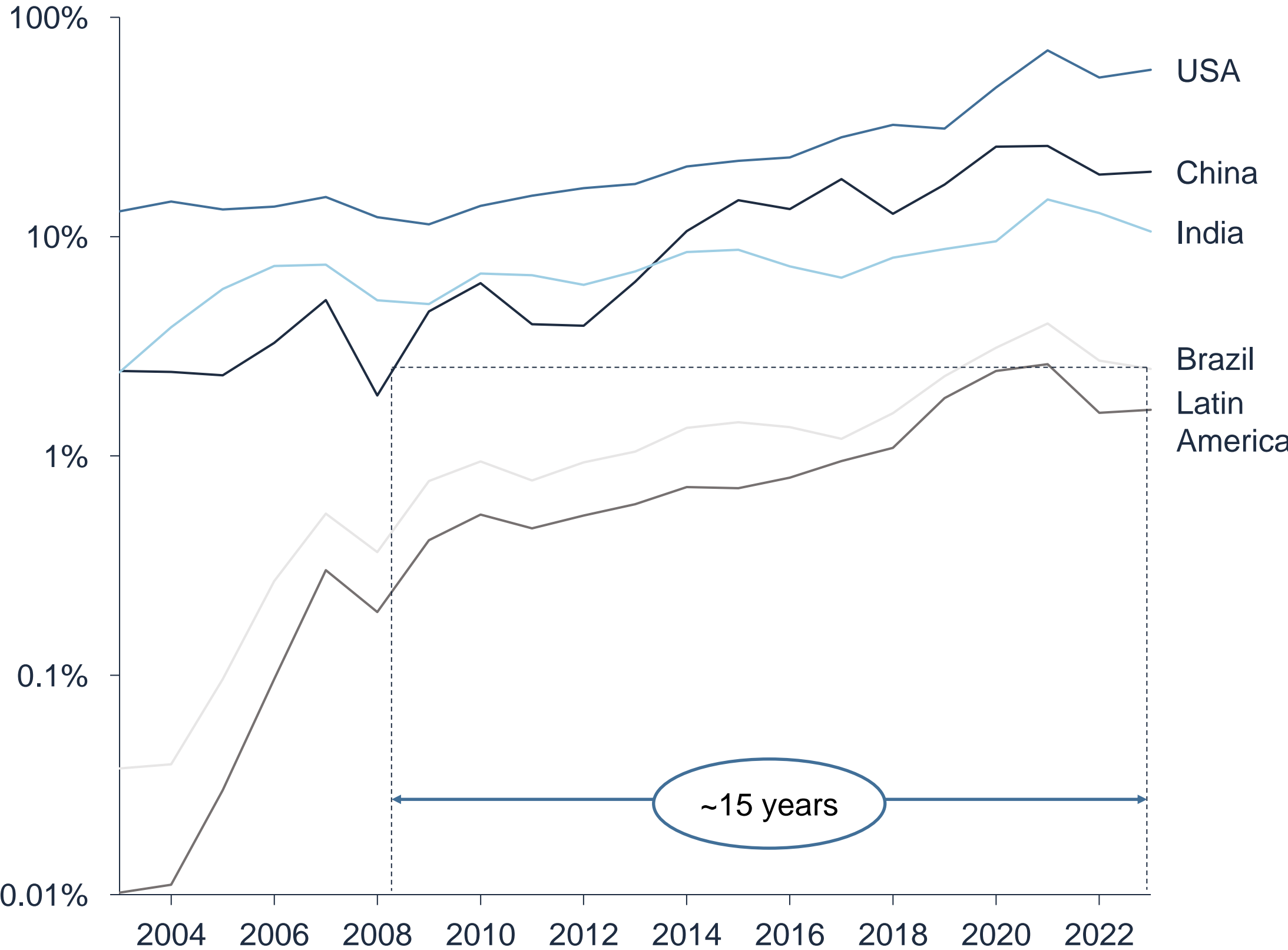
**Atlantico Digital Transformation Index – Brazil and LatAm<sup>1,2,3</sup>**

2003 - 2023, Tech company market cap as % of GDP, Linear scale



**Atlantico Digital Transformation Index<sup>1,2,3</sup>**

2003 - 2023, Tech company market cap as % of GDP, Log-scale



Note: HQ location was used to define company region; for all countries we used the average of the respective year's quarters to calculate GDP and market cap  
 Source: (1) Capital IQ; (2) OECD; (3) Atlantico Analysis

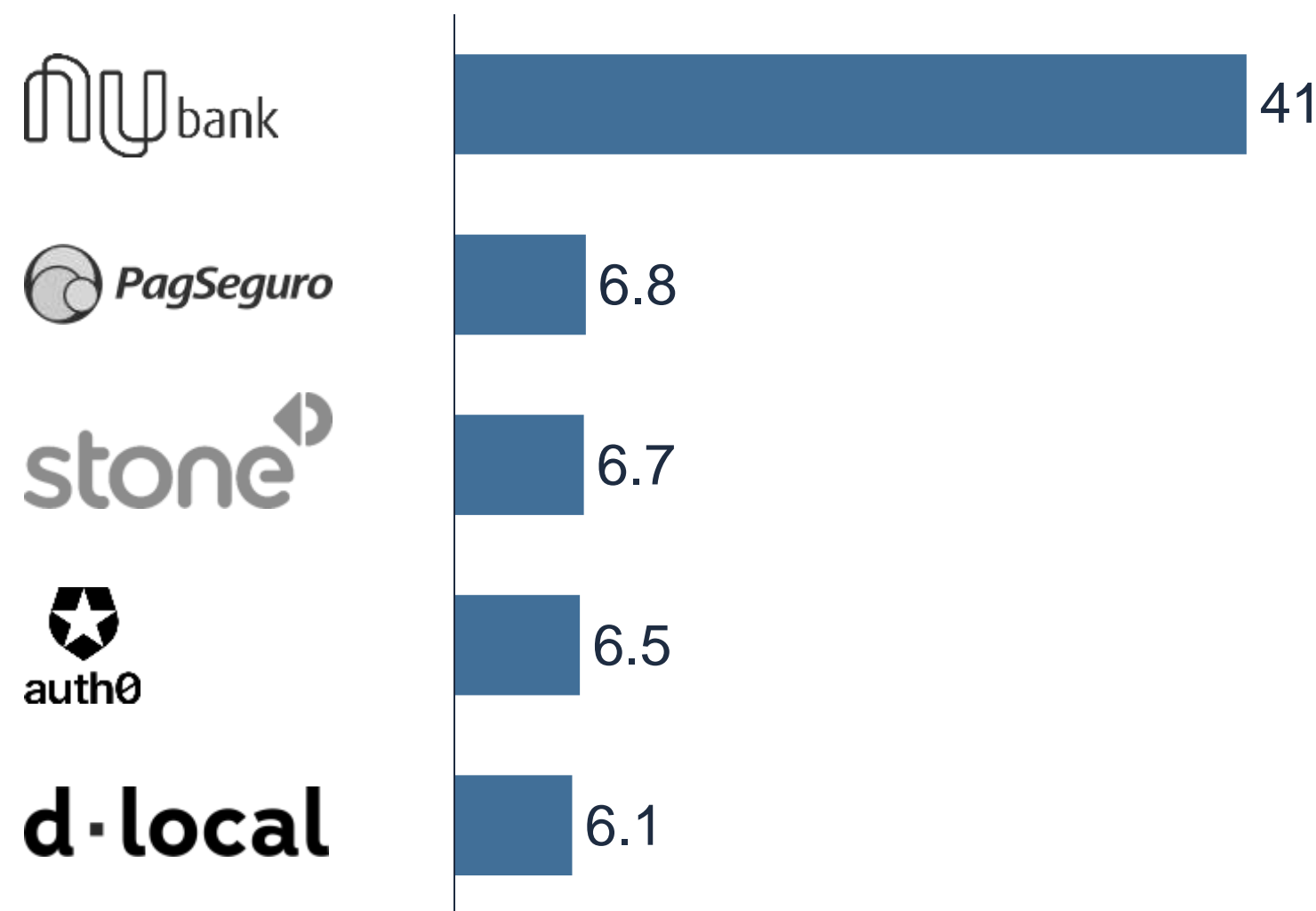


# More with less: Despite fewer venture dollars, Latin America punches above its weight on IPOs and M&A exits

## LATIN AMERICA

VC Investment as a % of GDP, 2017 | 2022<sup>1,2,5</sup> **0.02%** | **0.1%**

Top 5 Exits and Market Cap at Exit<sup>3,4,5</sup>  
2017-2023, US\$ B

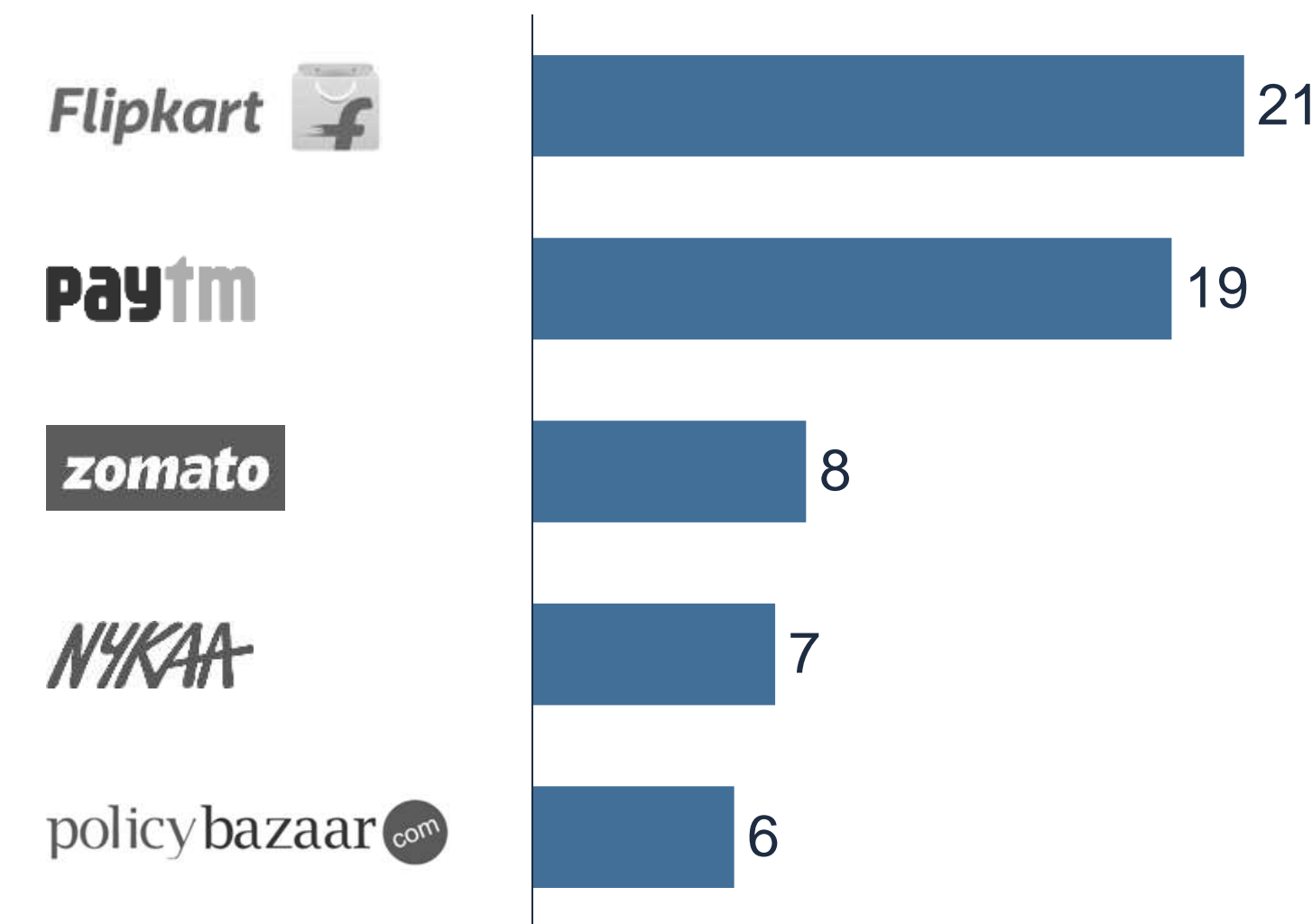


**12** Total Exits above \$1B | **\$82B** Market Cap\*

## INDIA

VC Investment as a % of GDP, 2017 | 2022<sup>1,2,5</sup> **0.5%** | **0.7%**

Top 5 Exits and Market Cap at Exit<sup>3,4,5</sup>  
2017-2023, US\$ B

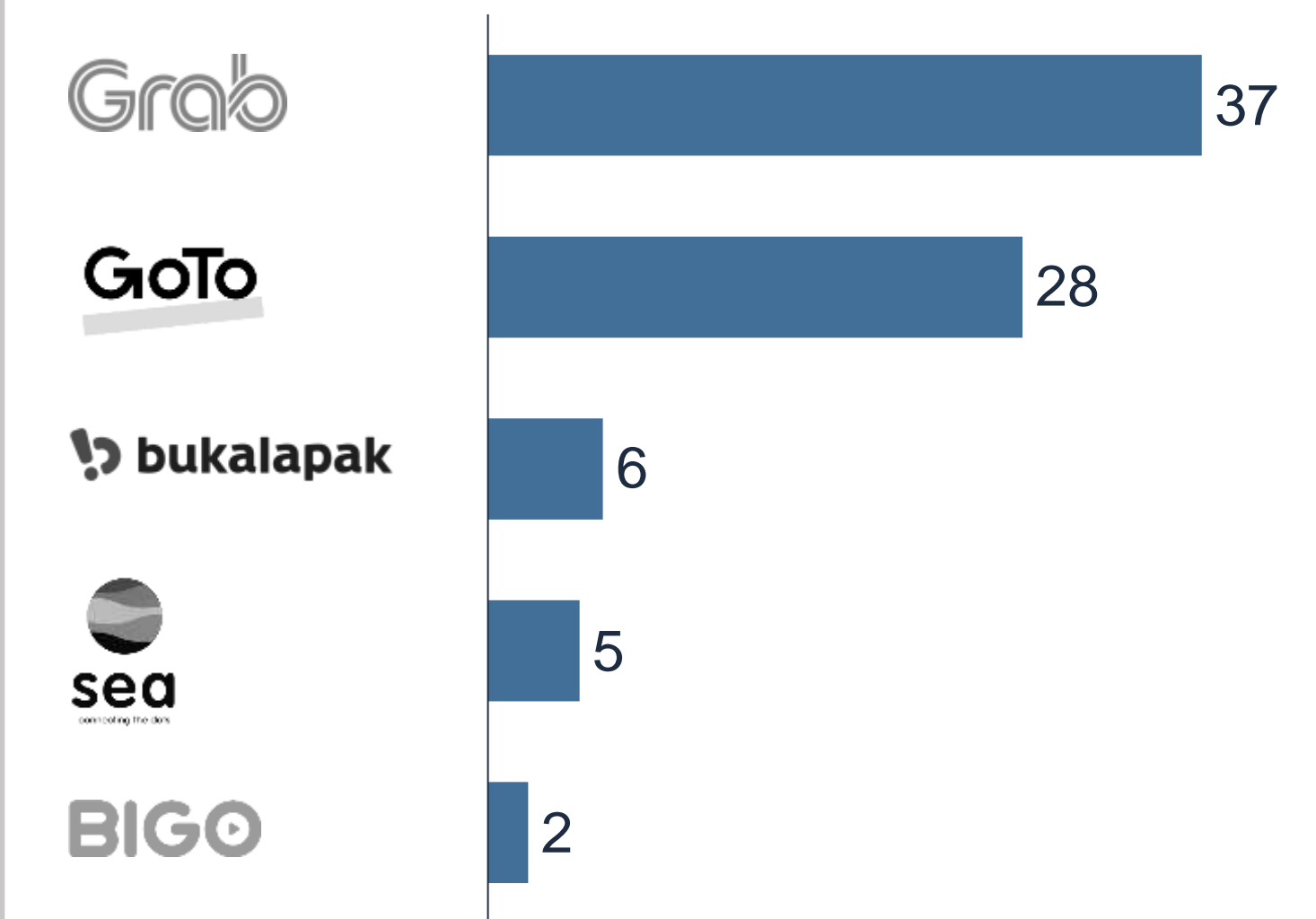


**8** Total Exits above \$1B | **\$67B** Market Cap\*

## SOUTHEAST ASIA

VC Investment as a % of GDP, 2017 | 2022<sup>1,2,5</sup> **0.2%** | **0.3%**

Top 5 Exits and Market Cap at Exit<sup>3,4,5</sup>  
2017-2023, US\$ B

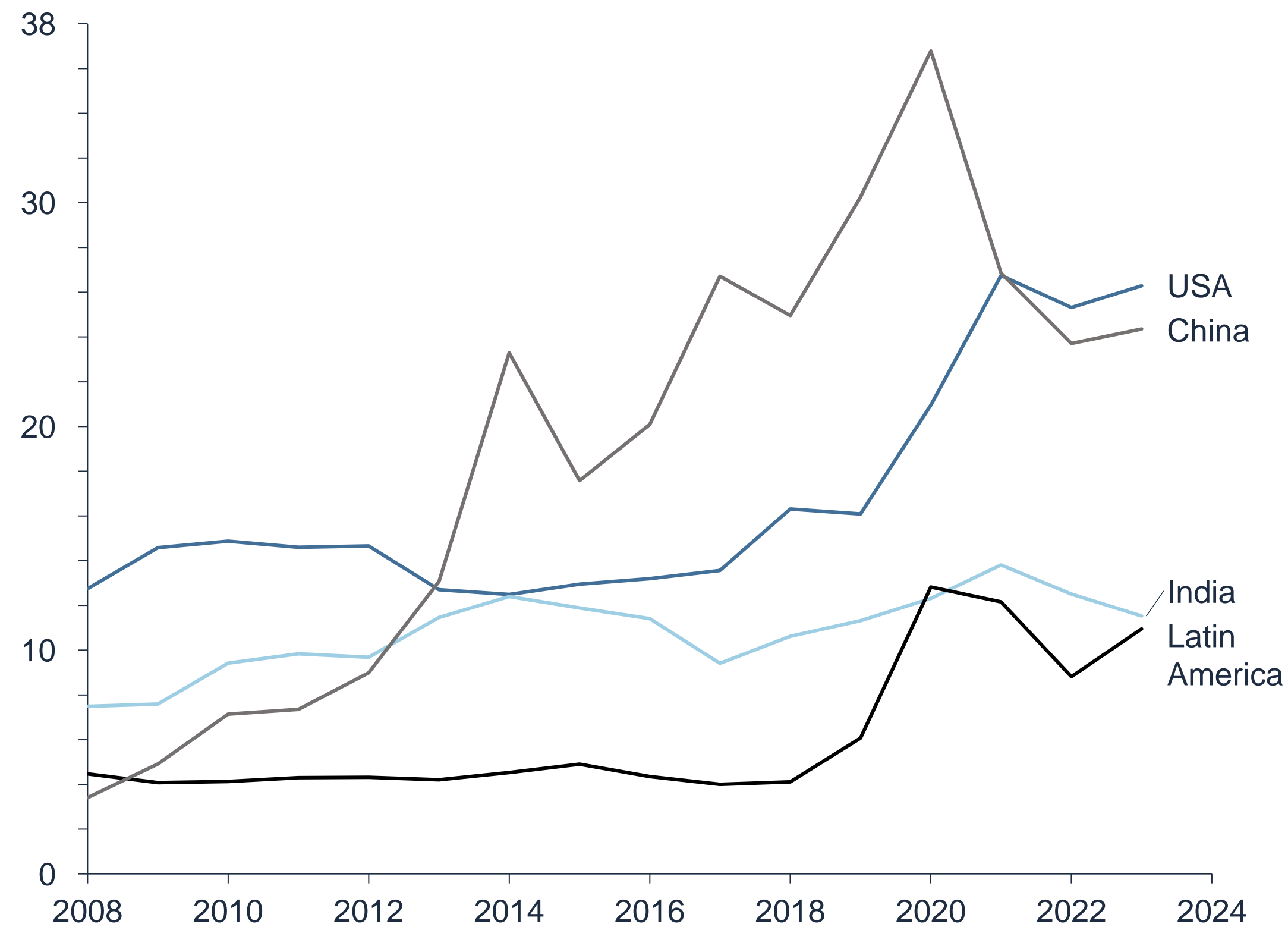


**7** Total Exits above \$1B | **\$80B** Market Cap\*

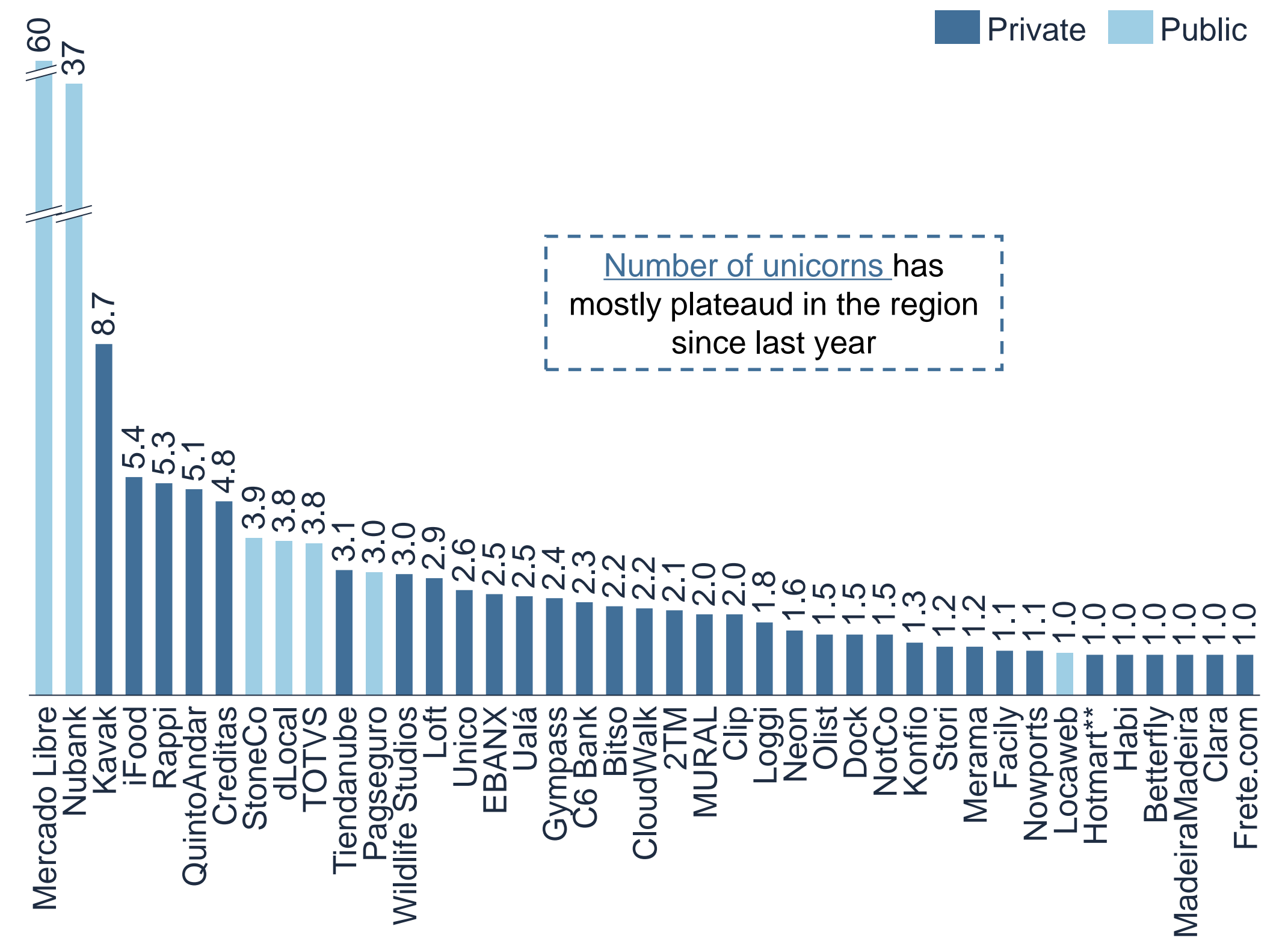
Note: (\*) Market cap per region was calculated by adding the market caps at the time of exit of the companies with exits greater than US\$ 1B  
Sources: (1) LAVCA; (2) World Bank; (3) PitchBook; (4) CB Insights; (5) Atlantico Analysis

# LatAm is just getting started: Large queue of unicorns presents a robust pipeline for future public tech companies

Public tech companies as a percentage of total market cap<sup>1,3</sup>  
2008 - H1 2023, %



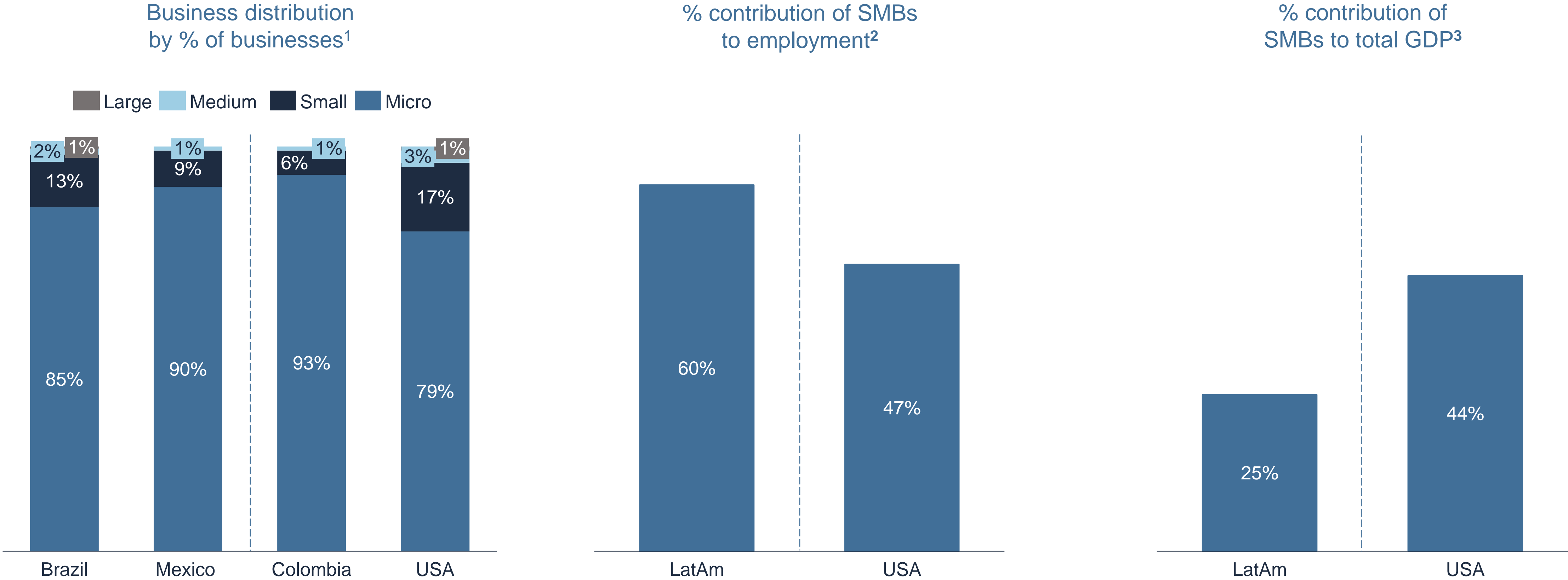
Tech Companies in Latin America (US\$1B+ valuation)<sup>1,2,3,\*</sup>  
Market capitalization in US\$B as of June 30th, 2023



Note: (\*) Valuations based on latest press releases found; (\*\*) Hotmart didn't disclose valuation of last round, only that it achieved unicorn status  
Source: (1) Clocktower Ventures analysis (adapted with additional data); (2) CB Insights; (3) Atlantico Analysis

# Entrepreneurship beyond tech: Latin American SMBs represent over 98% of businesses (though only 1/4 of GDP)

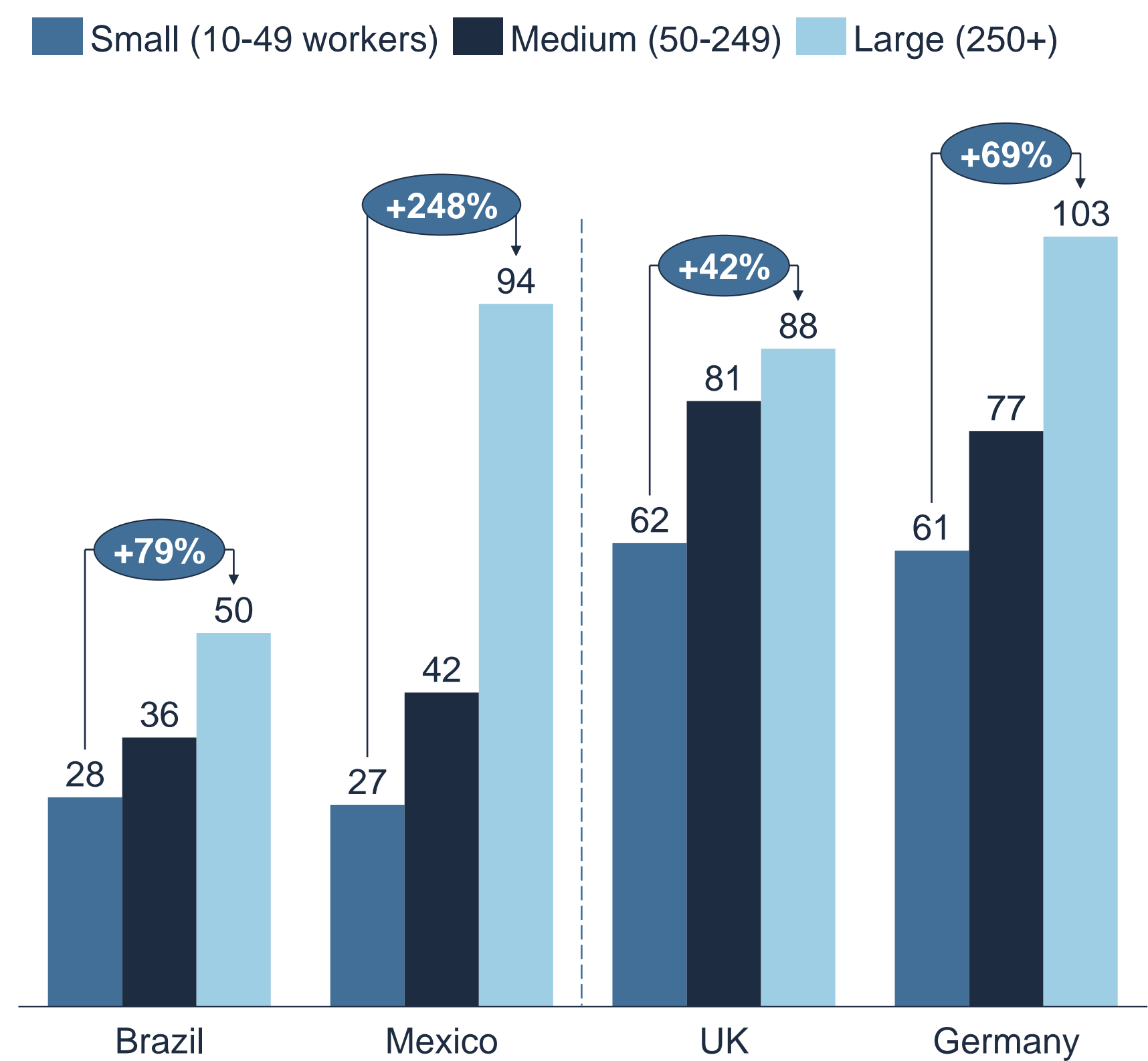
## Latin American SMB contributions to the economy



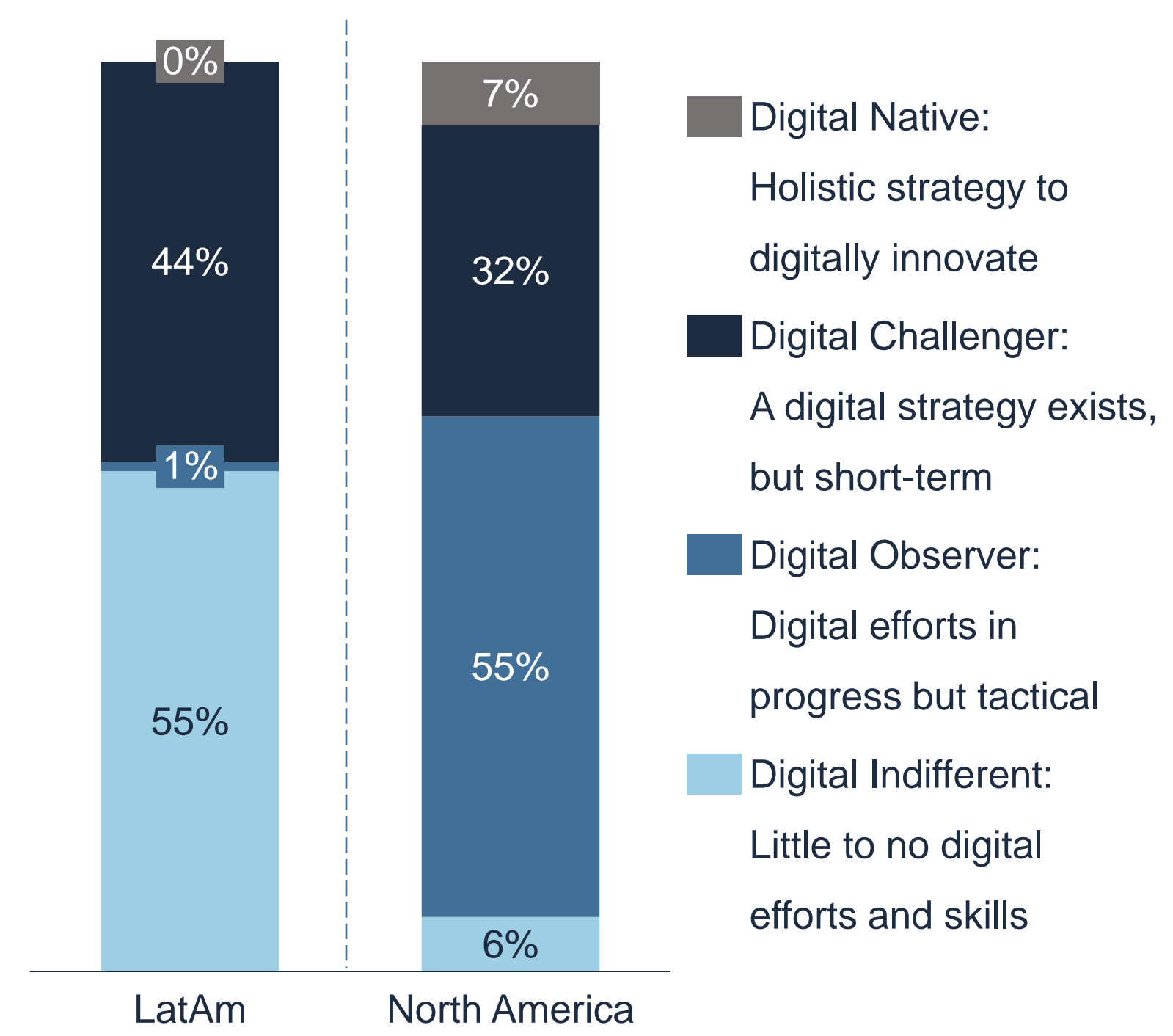
Sources: (1) OECD, "Financing SMEs and Entrepreneurship" (2022); (2) U.S. SBA, "Small Business Profile" (2021); (3) U.S. SBA, "Small Businesses Generate 44 Percent of U.S. Economic Activity" (2019)

# Latin American SMBs lag in labor productivity but are hungry for digital tools and access to more financing

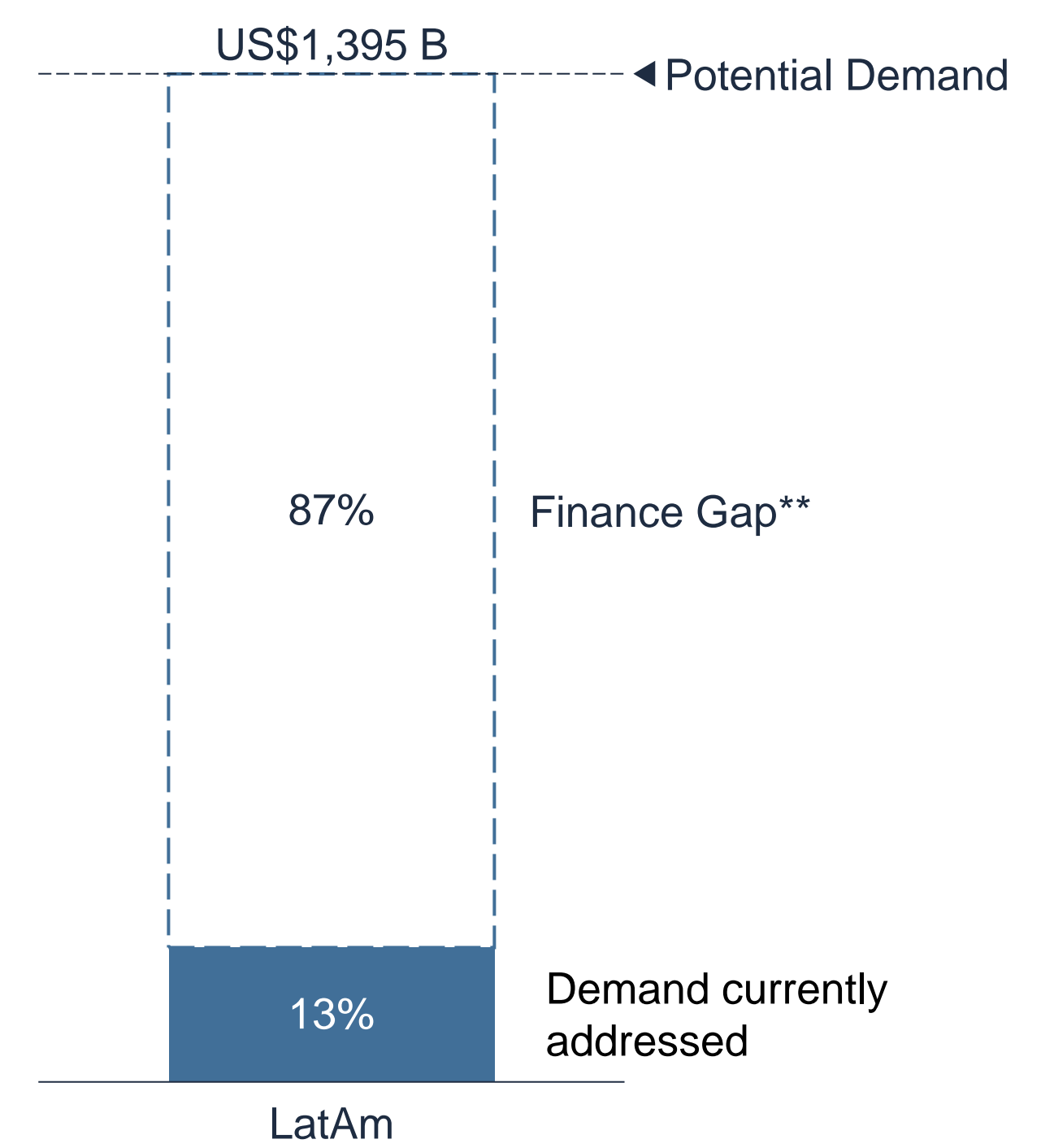
**Labor productivity by firm size<sup>1,\*</sup>**  
Value added per person employed, US\$ k



**Latin American SMB digital maturity<sup>2</sup>**  
% of companies by stage



**SMB Finance Gap<sup>3</sup>**  
Gap as % of potential financing demand



Note: (\*) Excludes finance and insurance activities; (\*\*) Finance gap = Potential demand – Existing supply  
Source: (1) OECD, “Compendium of Productivity Indicators” (2021); (2) Cisco, “2020 Small Business Digital Transformation” (2020); (3) World Bank, “MSME Finance GAP” (2017)

# We are in a new era of software, emerging to build technology for SMBs



**Software Wave 3**  
Broad, SMB-focused



**Software Wave 2:**  
Broad, mid-to-large-focused



**Software Wave 1:**  
Narrow, SMB-focused

Software houses built limited-scope solutions for SMBs, in a market fragmented (geographic and sector).

Companies consolidated as foreign players entered the market\*. Leading solutions became multifunctional and focused on mid-to-large customers.

TOTVS, formed from mergers of key first-wave companies, is the protagonist of this era.

Startups start tackling the software gap for SMBs by providing broad solutions.

The rise of APIs and cloud-based infrastructure allow companies to build one-stop-shop platforms for specific needs and industries.

Building blocks



**Cloud infrastructure** enabled software to be easily deployed, in a self-serve manner, and constantly improved



**API and embedded services widespreadness** enabled software to become full platforms for businesses

Note: (\*) Until 1991, Brazil's Market Reserve Law kept foreign providers from selling in the country. After its end, foreigners entered the country, most notably SAP in 1994

# Software tailored to specific industries has emerged as a powerful model to serve SMBs as a one-stop-shop platform

SaaS companies focused on a single industry, called Vertical SaaS, seize **control points** to embed themselves into users' operations, since SMB customers look for one-stop shops to serve their needs

Vertical SaaS companies in different industries leverage different control points on their journeys to becoming users' **one-stop shops**

Examples of Latin American Vertical SaaS companies\*

Control points

## Control Points

A control point is any system or service that creates a very sticky connection between business and user, giving the business the 'right to own the account'.

Potential control points:



Managing most critical **workflows**



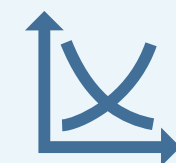
Holding most critical **data**



Being system with most **user engagement**



Offering **credit** when scarce



Bringing in additional **demand**

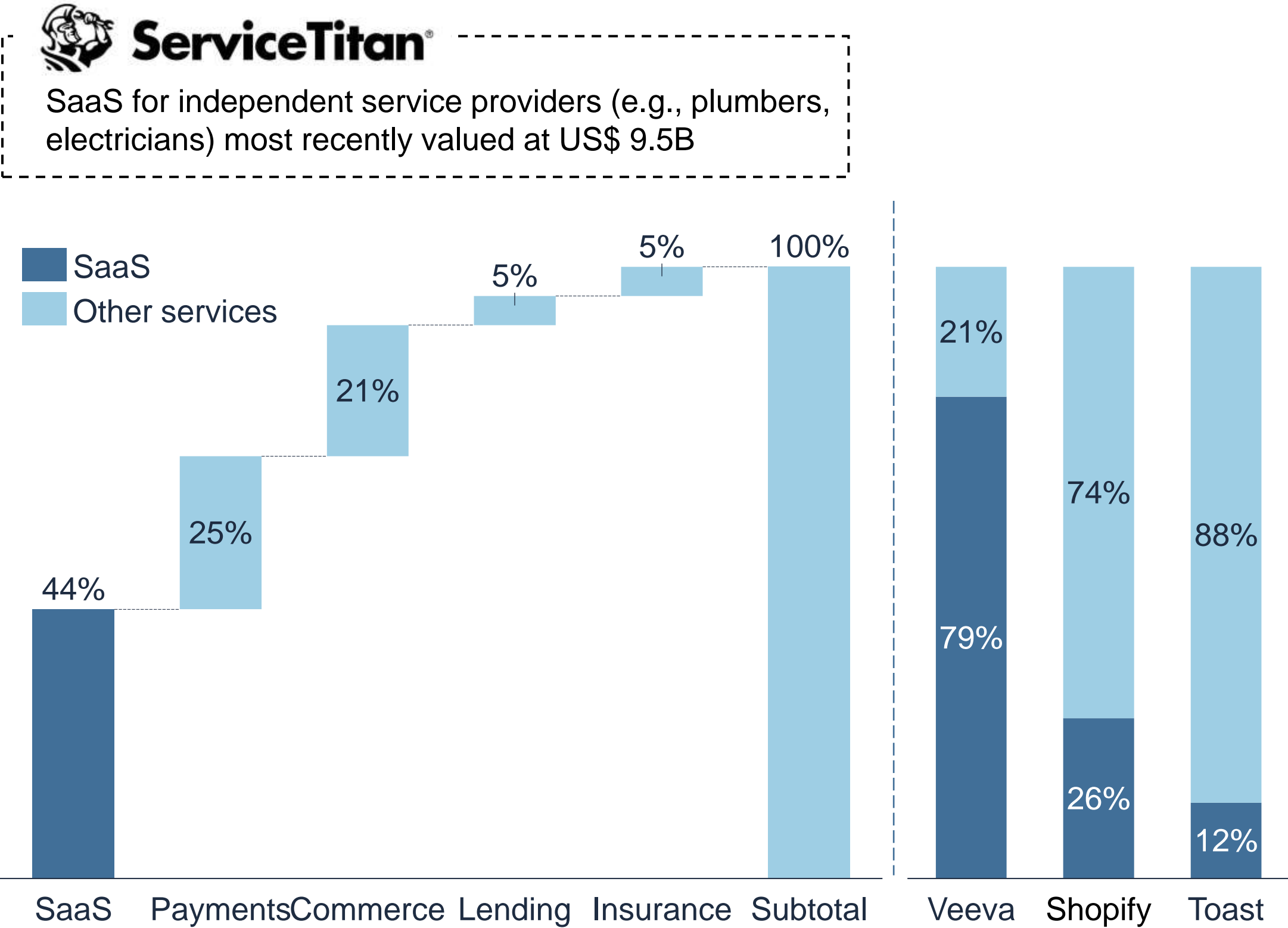
<b>Education</b>	<b>mattilda.</b> Collections Workflow Revenue Guarantee	<b>cometa</b> Collections Workflow	<b>isaac</b> Collections Workflow Revenue Guarantee
<b>Healthcare</b>	<b>capim</b> BNPL** for Procedures	<b>healthat@m</b> Scheduling Workflow	
<b>Food</b>	<b>FUDO</b> Order & Delivery Workflow Inventory Data		
<b>International Trade</b>	<b>vixtra</b> Import Financing	<b>finkargo</b> Import Financing	

Notes: (\*) Companies listed don't necessarily have any relationship with Tidemark or Atlantico; (\*\*) Buy Now Pay Later  
Source: Tidemark; Atlantico Analysis

# Vertical SaaS companies show diversified revenue streams and benefit from lower CAC\* versus horizontal SaaS peers

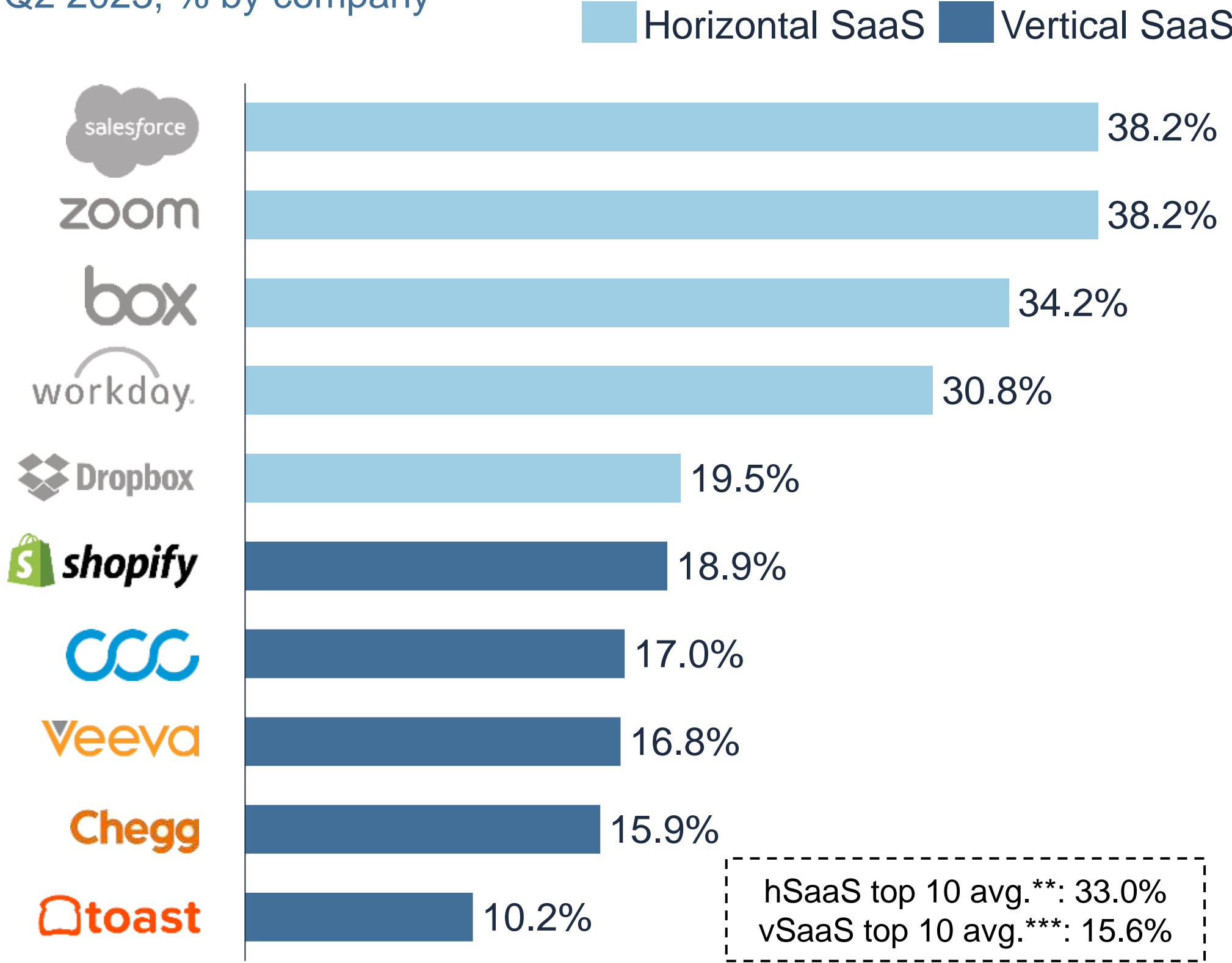
## Revenue Breakdown (Software and Other Services)<sup>1,2</sup>

Q2 2023, % contribution of product to total revenue, per company



## Sales & Marketing Expenses as % of Revenue<sup>2</sup>

Q2 2023, % by company



Note: (\*) Customer Acquisition Cost; (\*\*) Disco, Constellation, Shopify, RateGain, Compass, Autodesk, Toast, Veeva, Shift4, Tyler; (\*\*\*) Oracle, Salesforce, ServiceNow, Workday, Zoom, GoDaddy, Atlassian, Dropbox, RingCentral, HubSpot  
Source: (1) SaaSolic; (2) Calculated with data from Capital IQ

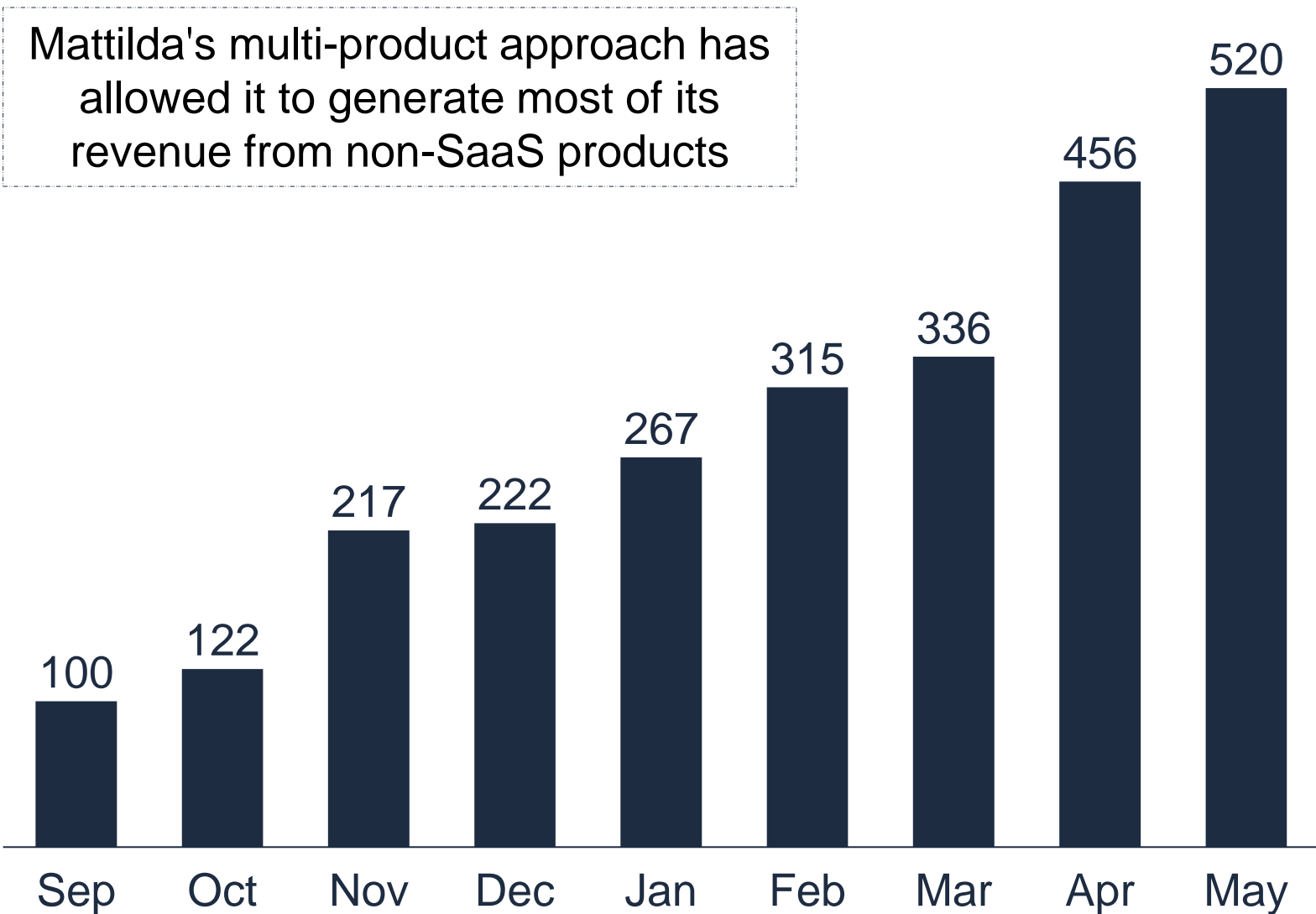
# Mattilda is a Vertical SaaS company that has successfully expanded beyond SaaS while benefitting from reduced CAC



Mattilda, a Mexico-based financial platform, streamlines financial management for private schools in Mexico and Latin America. It consolidates all payment collections on a single platform, saving users' time

### Non-SaaS revenue evolution

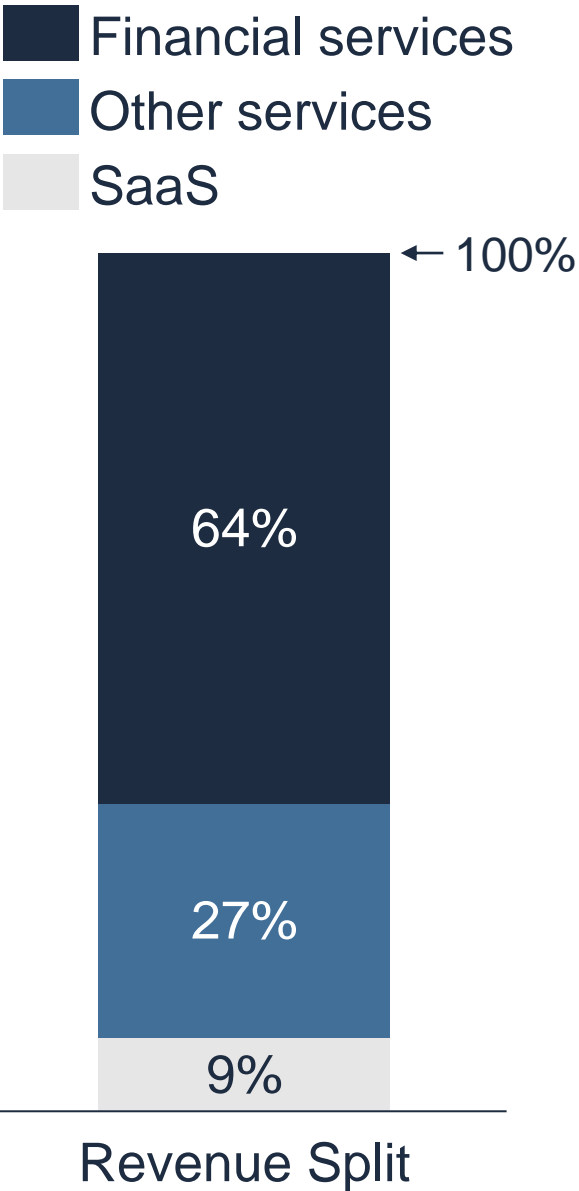
2023, indexed\*



Mattilda's multi-product approach has allowed it to generate most of its revenue from non-SaaS products

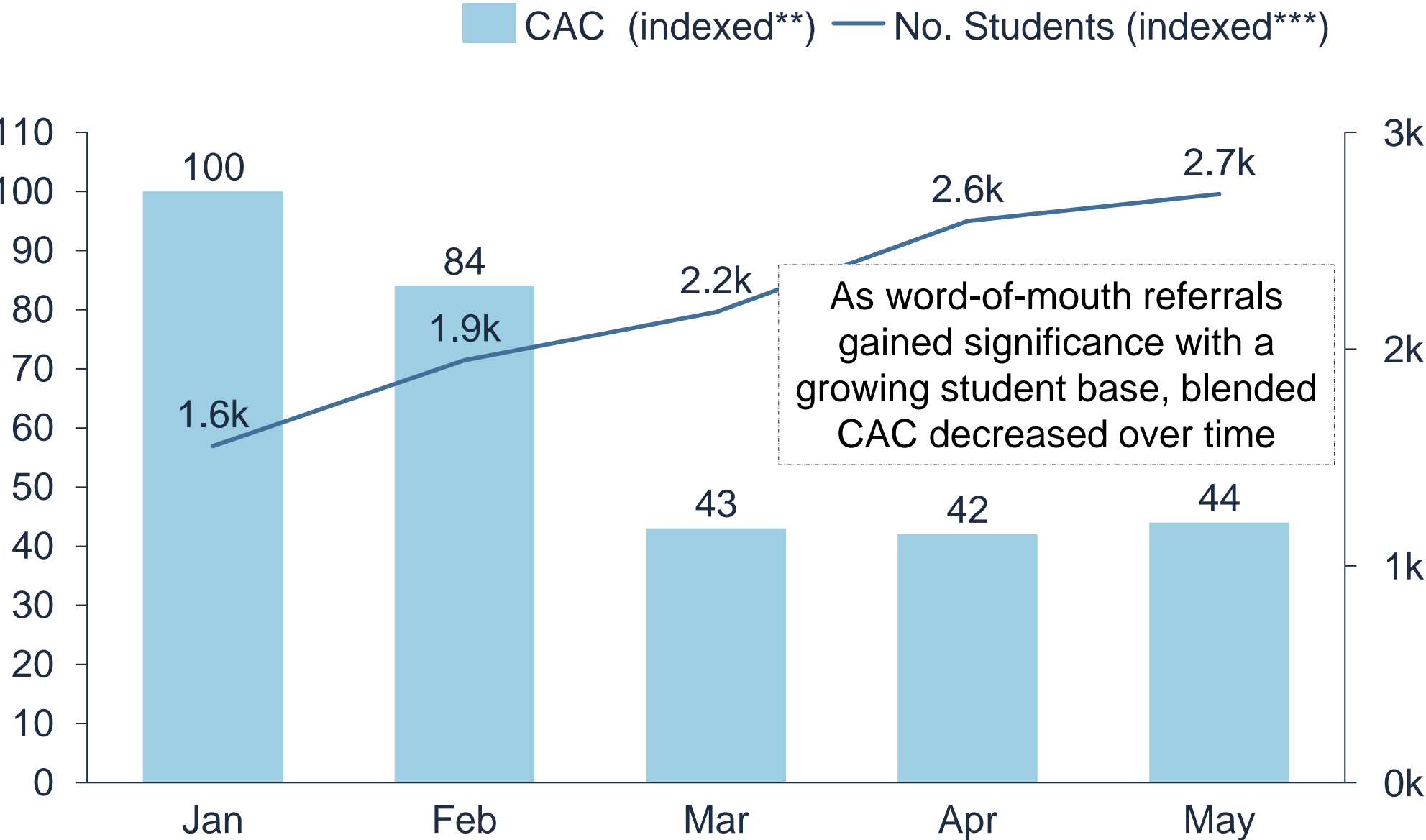
### Revenue split

2023, %



### CAC and number of students evolution

2023, # students and CAC



As word-of-mouth referrals gained significance with a growing student base, blended CAC decreased over time

Note: (\*) indexed to September 2022 at 100; (\*\*) Blended Customer Acquisition Cost (CAC), defined as Sales and Marketing expenses divided by number of schools onboarded on same period, indexed to January 2023 at 100 ; (\*\*\*) Number of students indexed to August 2022 at 100  
Source: Mattilda internal data





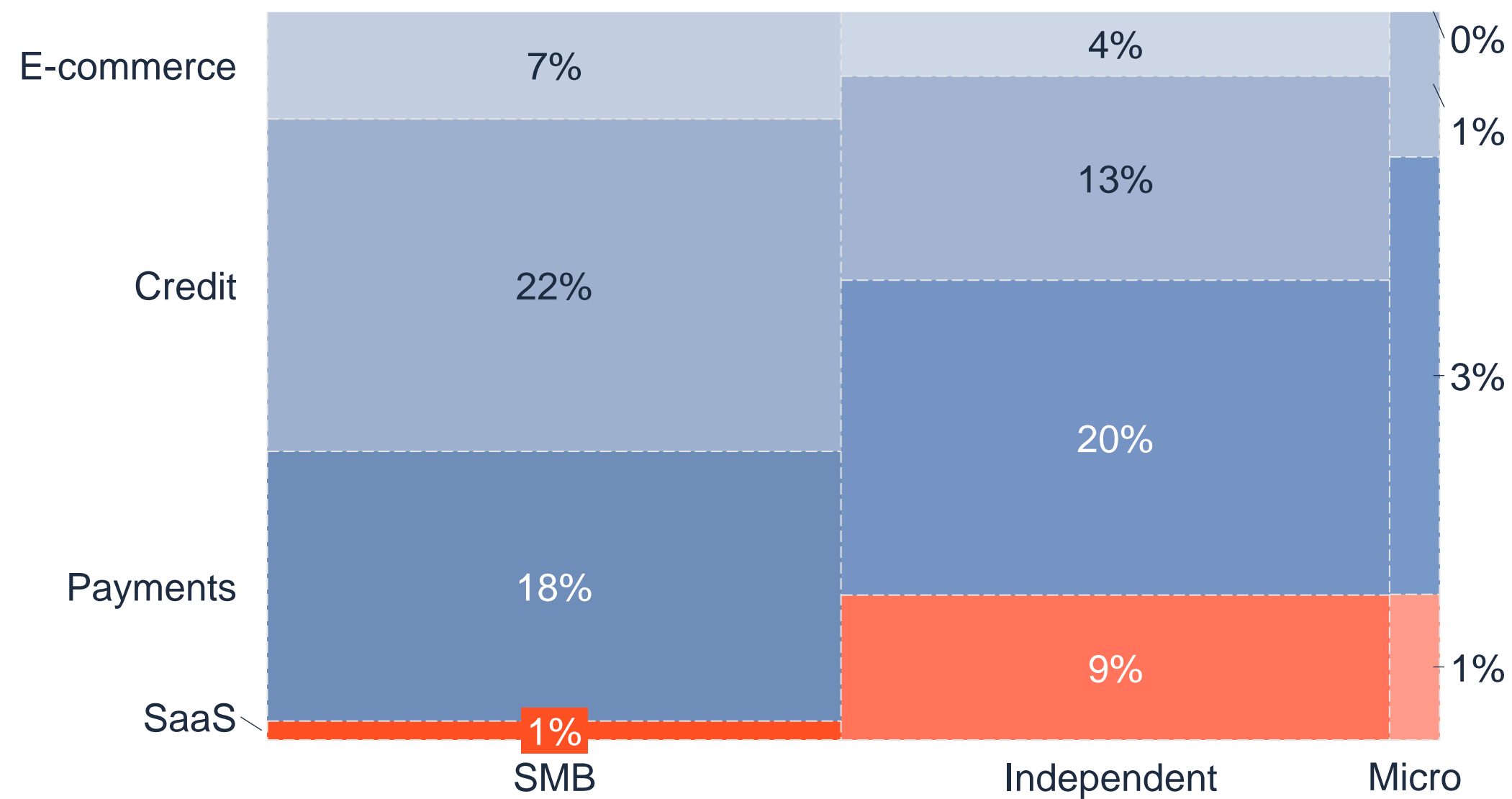
# Fudo's vertical SaaS solution for restaurants addresses a huge market opportunity for SMBs of various sizes



Fudo is a vertical SaaS solution for the food industry that operates across five countries and allows clients to manage their businesses across multiple areas, tailoring the product to the needs of SMBs of various sizes

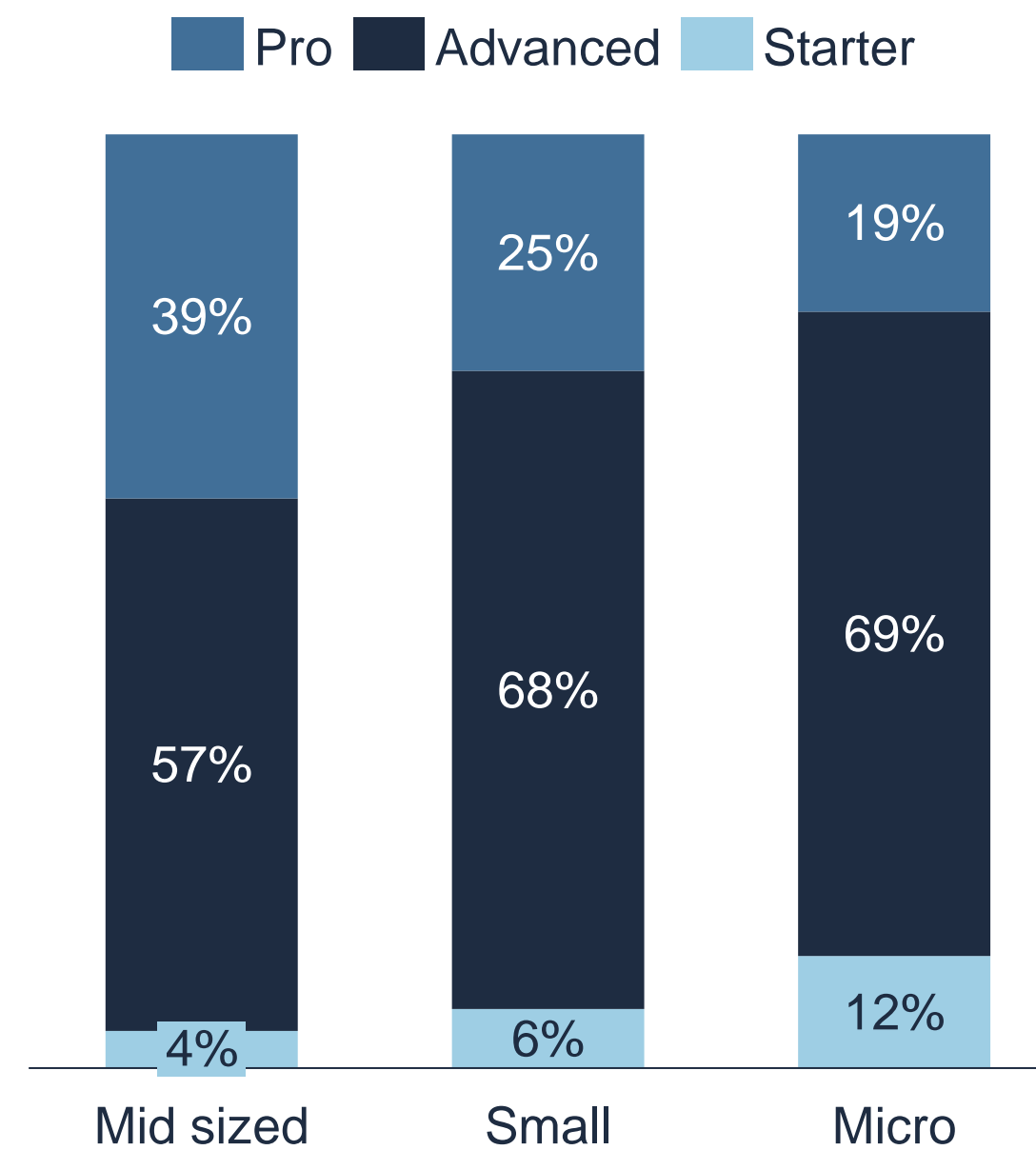
## Latin America restaurant market opportunity<sup>1,2</sup>

Fudo estimates that **SaaS represents only 12% of the total addressable revenue pool** for restaurants in Latin America



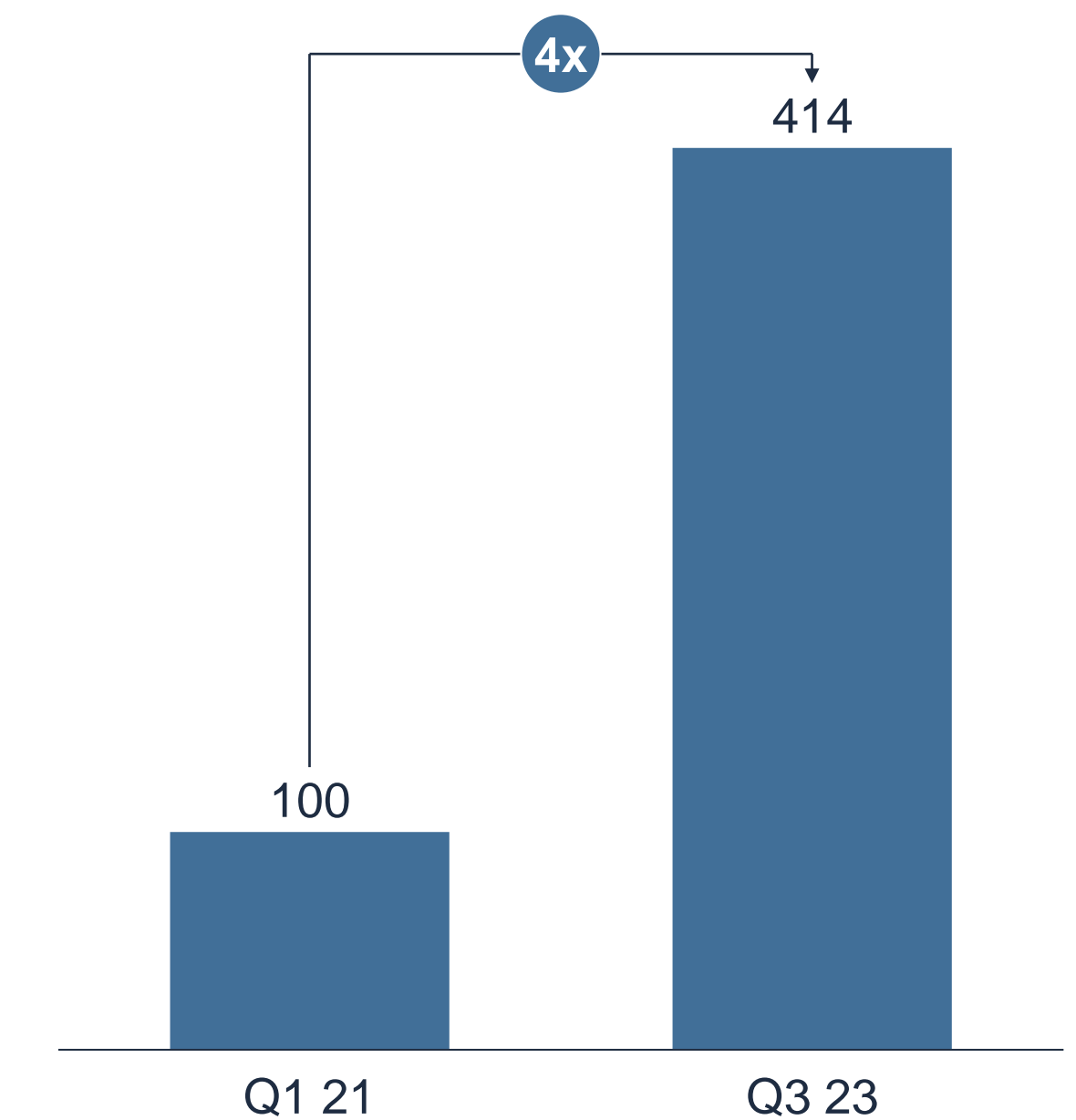
## Users by tier<sup>1</sup>

% of restaurants

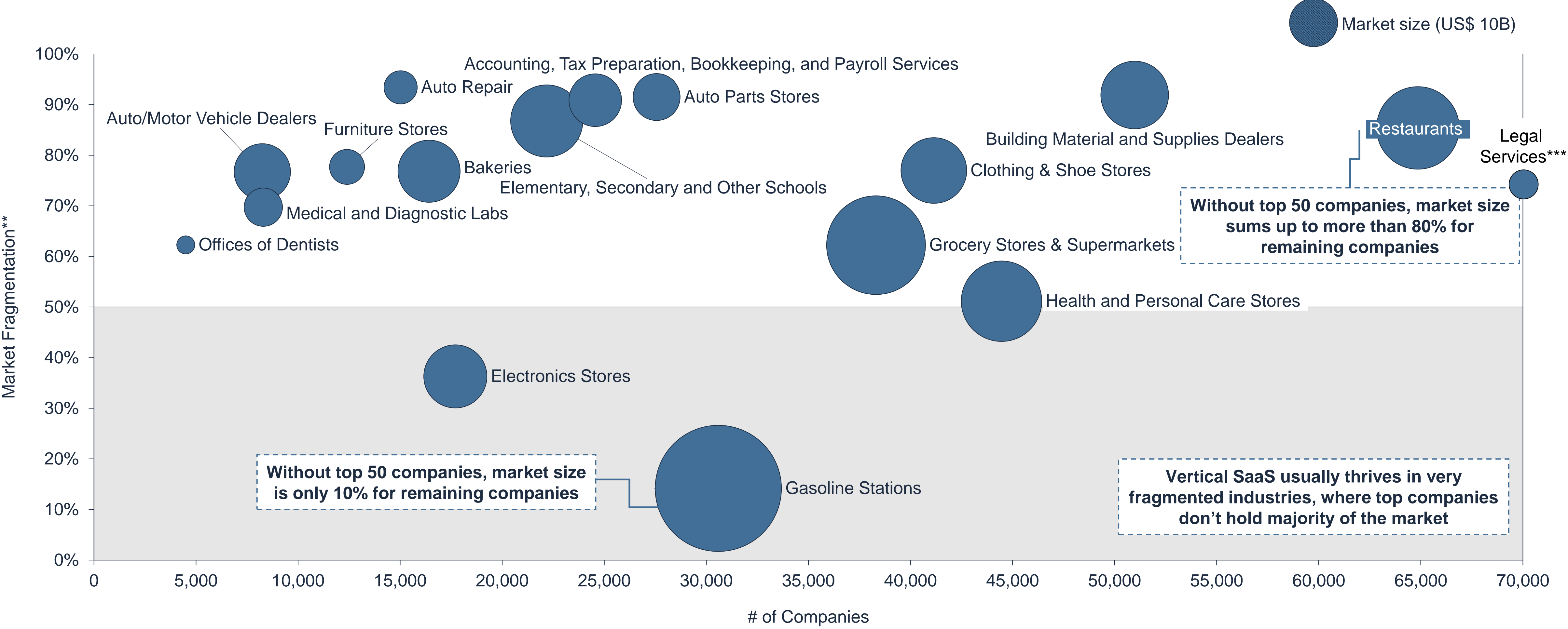


## Userbase growth<sup>1</sup>

Number of restaurants, base 100



# We are just getting started: Brazil has several large and fragmented markets\* that can benefit from digitalization



Note: This analysis is directly inspired by Tidemark's ['Picking Your Market' piece](#) and the analogous analysis done in it by Tidemark Fellow Bob Solomon (Former SVP/ GM of Supplier Network and Financial Services, Ariba); (\*) Analysis carried out with select industries among those with the highest number of companies; (\*\*) Market share of all companies excluding top 50 in each sector; (\*\*\*) Total number of firms is estimated to be around ~130k  
 Source: EMIS, Editora Forum, Atlantico Analysis

04

# Money Goes Digital



ATLANTIC

/imagine money goes digital in the style of **Beatrix Milhazes**

# Money Turns Digital

In a Brazilian village where time stood still, **Pix arrived like a tropical storm, leaving nothing untouched.** The days of cash hidden in mattresses vanished; transactions became digital wisps. Astonishingly, Pix outpaced India's UPI, capturing 15% of global real-time payments.

Here, the sorcerer—the traditional financial gatekeeper—found his spells waning as Pix's algorithms ascended. This competition sparked a **battle for "principality" among financial entities.** The villagers, their loyalty up for grabs, enjoyed the increased services but wavered in their allegiances. This freedom brought risks; **newfound credit threatened to turn into a curse of debt.**

**The sorcery of Pix did more than quicken payments; it disrupted the very fabric of work and credit.** Formal labor eclipsed the informal as Pix's adoption soared, and even the credit market bloomed by 15%. A magic called "Pix Parcelado" started to challenge the once invincible reign of credit cards.

As the village pondered its path, whispers grew of Open Banking, another enigmatic force on the horizon. **A neighboring village, Mexico, watched cautiously. Cash was still king there,** but the arrival of DiMo signaled winds of change.

The village stood at a crossroads—its future opaque as a moonless night, yet tantalizing like uncovered treasure. **"What magic comes next?" they wondered, lives altered and still yearning for the next revelation.**



*Tale on Money Turns Digital in the style of Gabriel Garcia Márquez*

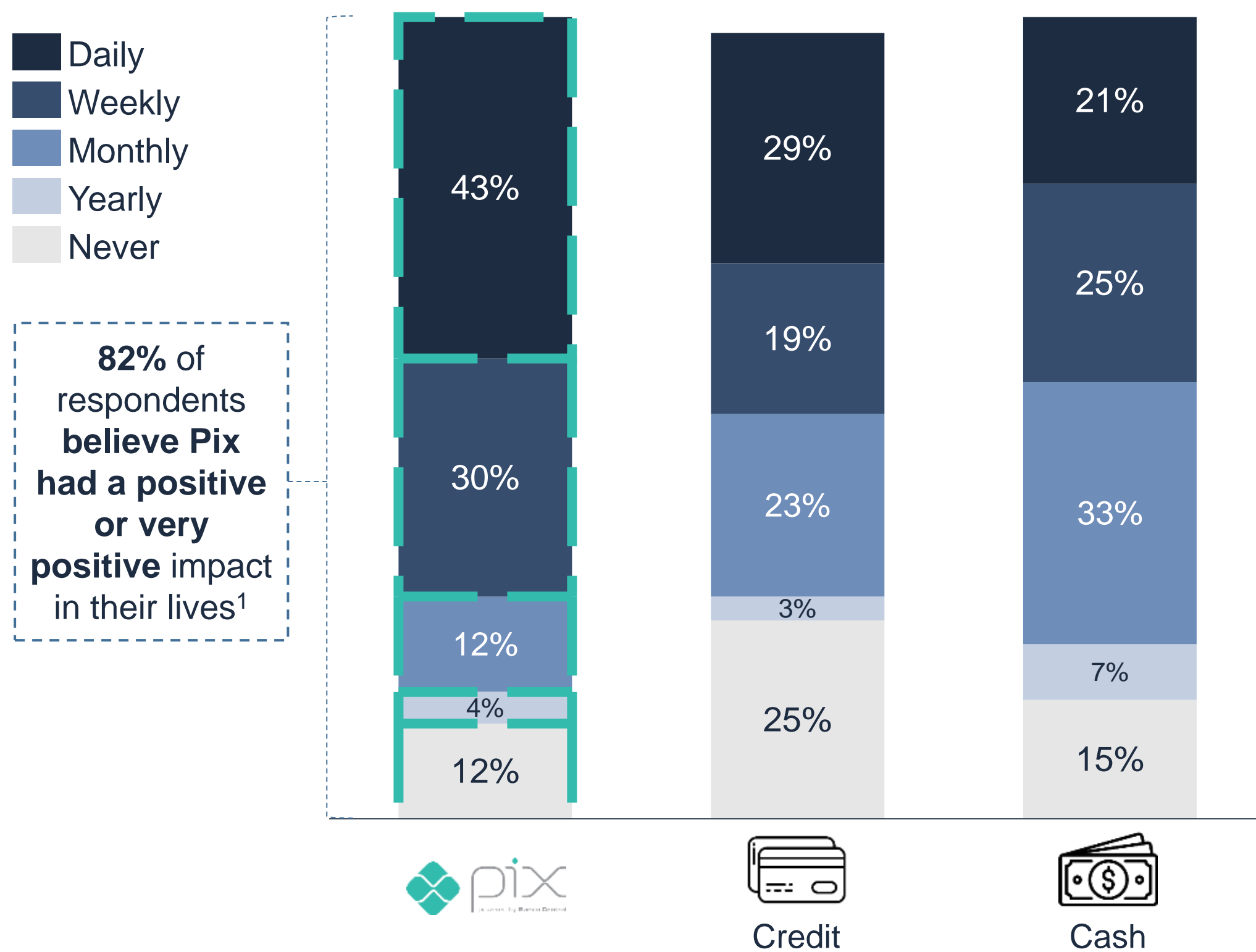
*Using OpenAI's GPT4 and Llama 2 – 70 Billion parameter model by Facebook*

# Money goes digital: Strong adoption of Pix and digital banking show potential for a digital financial system

## Most used forms of payment by Brazilians<sup>1</sup>

2023, % of respondents\*

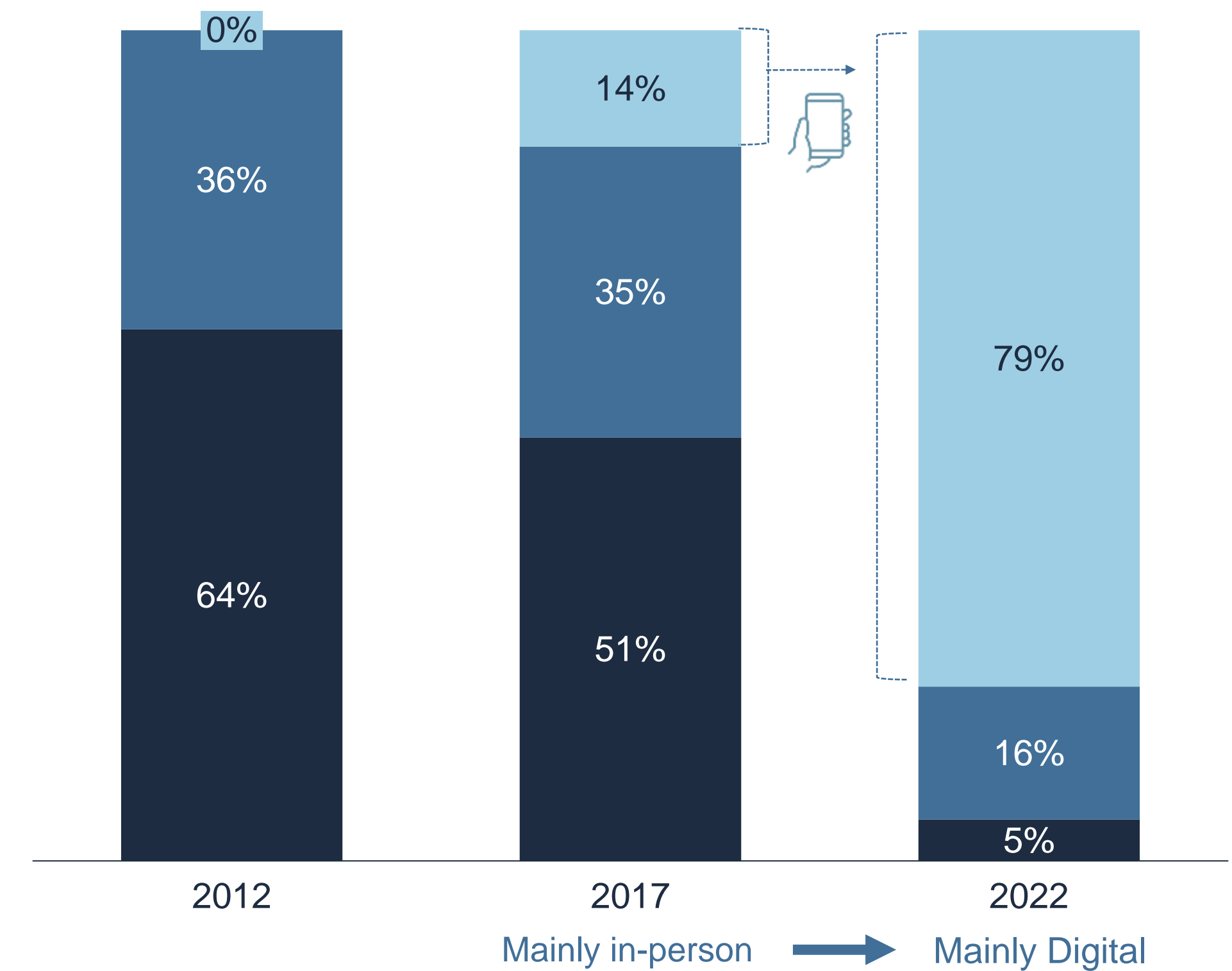
With what frequency do you use the following payment methods?



## Share per channel for accessing financial services<sup>2</sup>

2023, %

Mobile phone Internet banking In-person channels

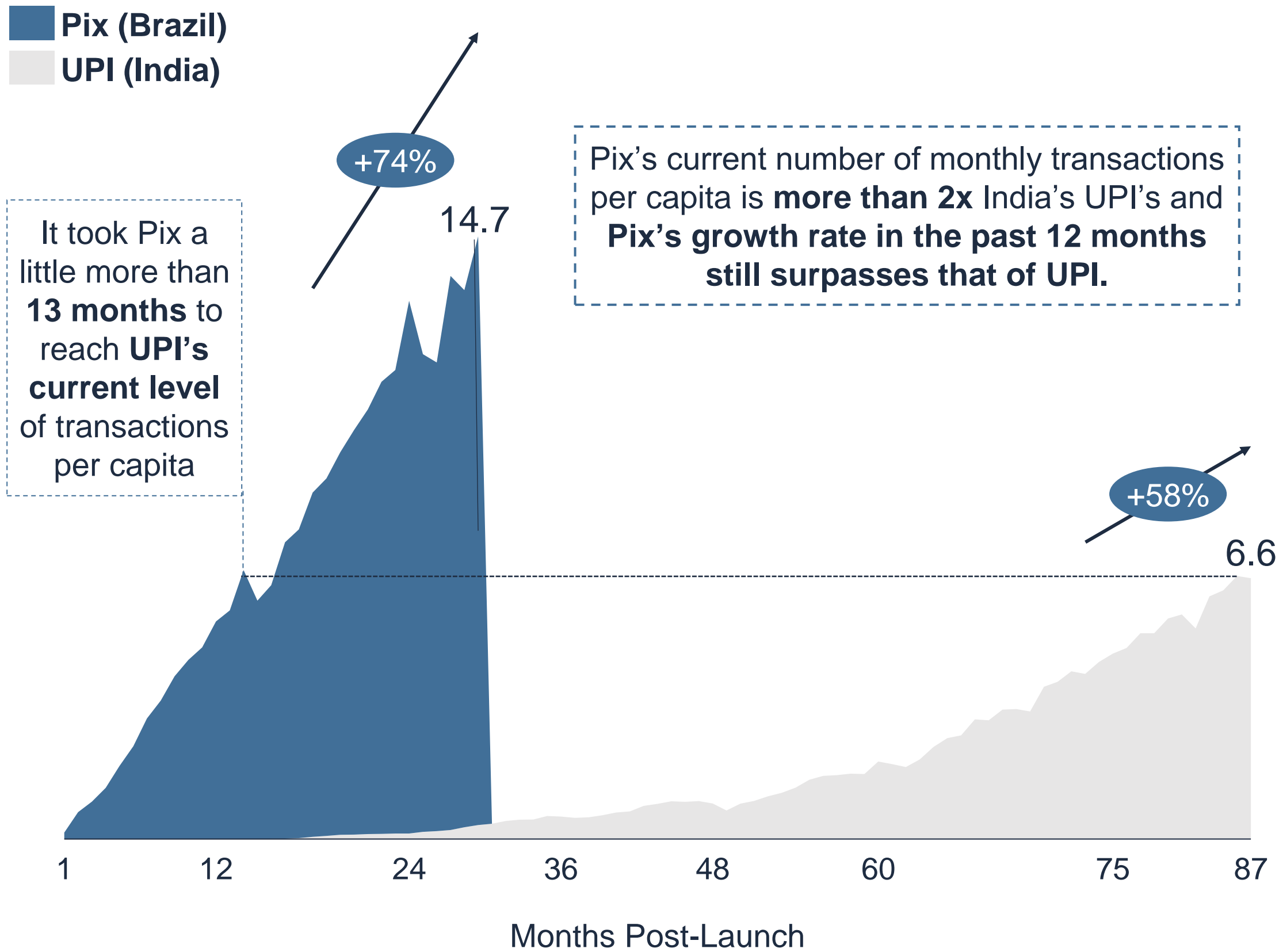


Note: (\*) n=801; Margin of Error: ±3 percentage points; Confidence Level: 95%; Data Collection Period: Jul. 15th to Aug. 15th, 2023  
Sources: (1) Atlantico and AtlasIntel Survey 2023; (2) Central Bank of Brazil

# Global Giant: Usage per capita of Brazil's instant payment system Pix soared to double that of India's UPI's

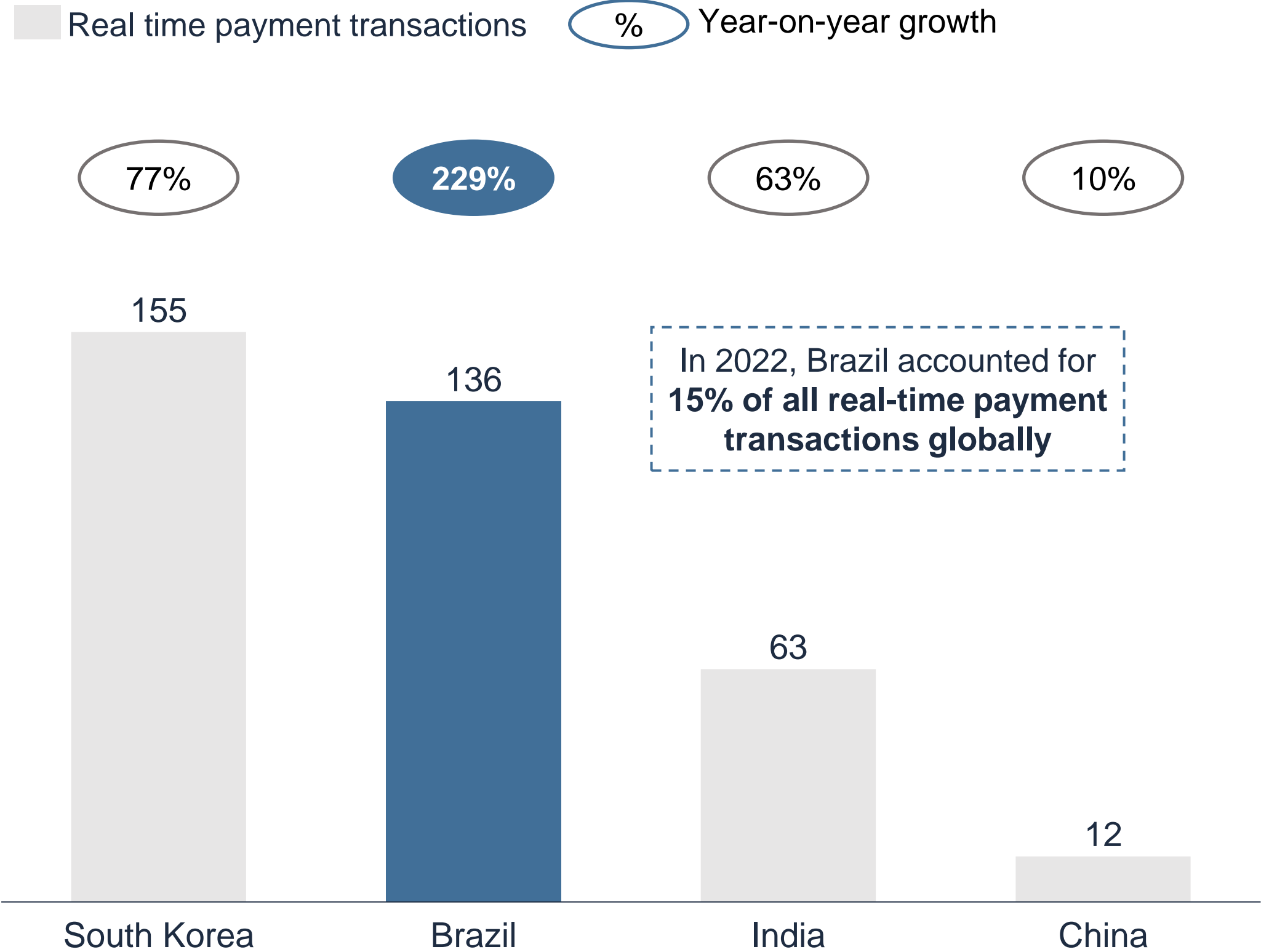
## Pix<sup>1</sup> vs. UPI<sup>2</sup>: number of monthly transactions per capita

2016-2023, Billions of monthly transactions



## Top 5 real-time payment markets per capita globally<sup>3</sup>

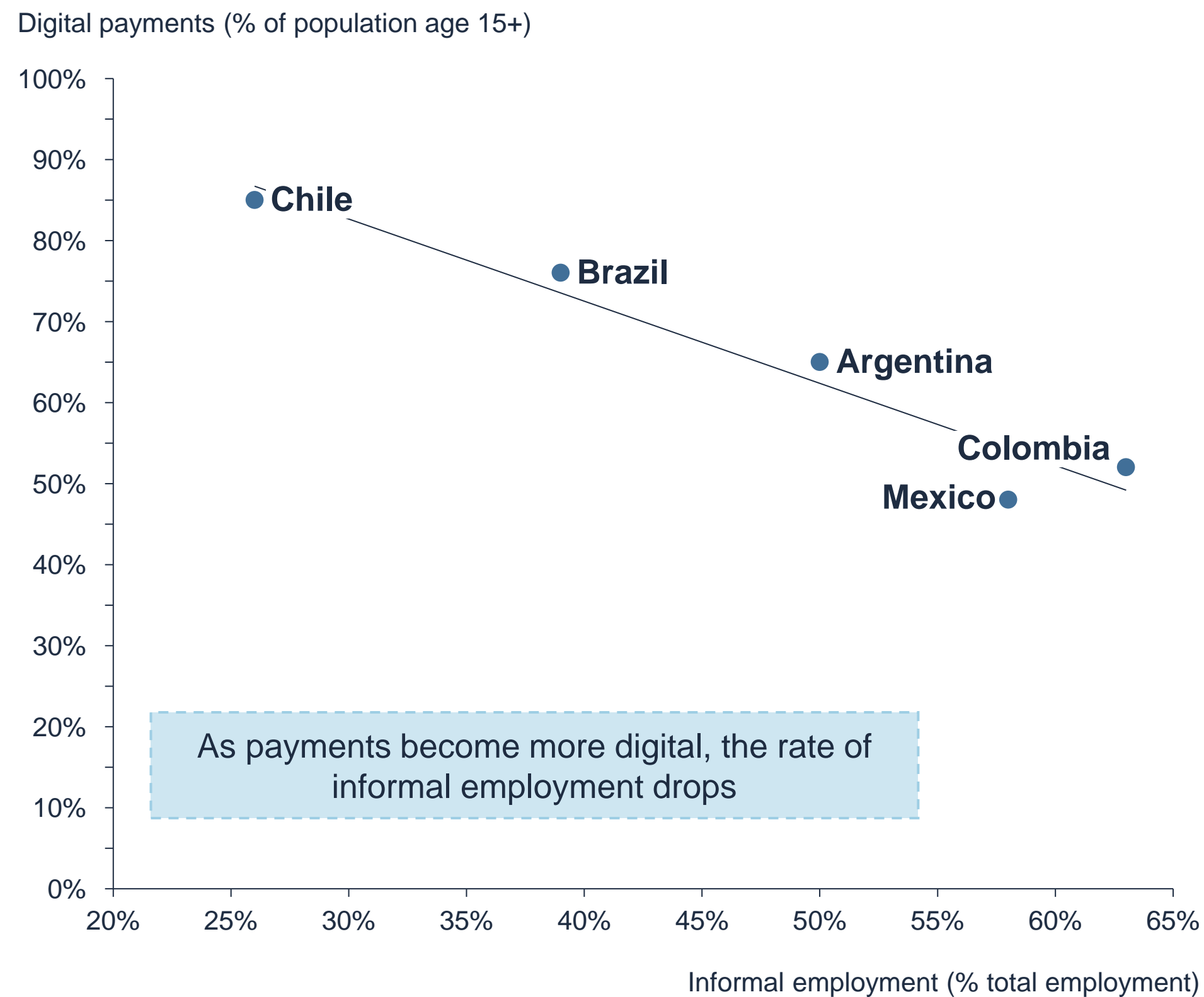
2022, Transactions per capita



# Flywheel of development: Adoption of digital payments correlates with formalization of labor and access to credit

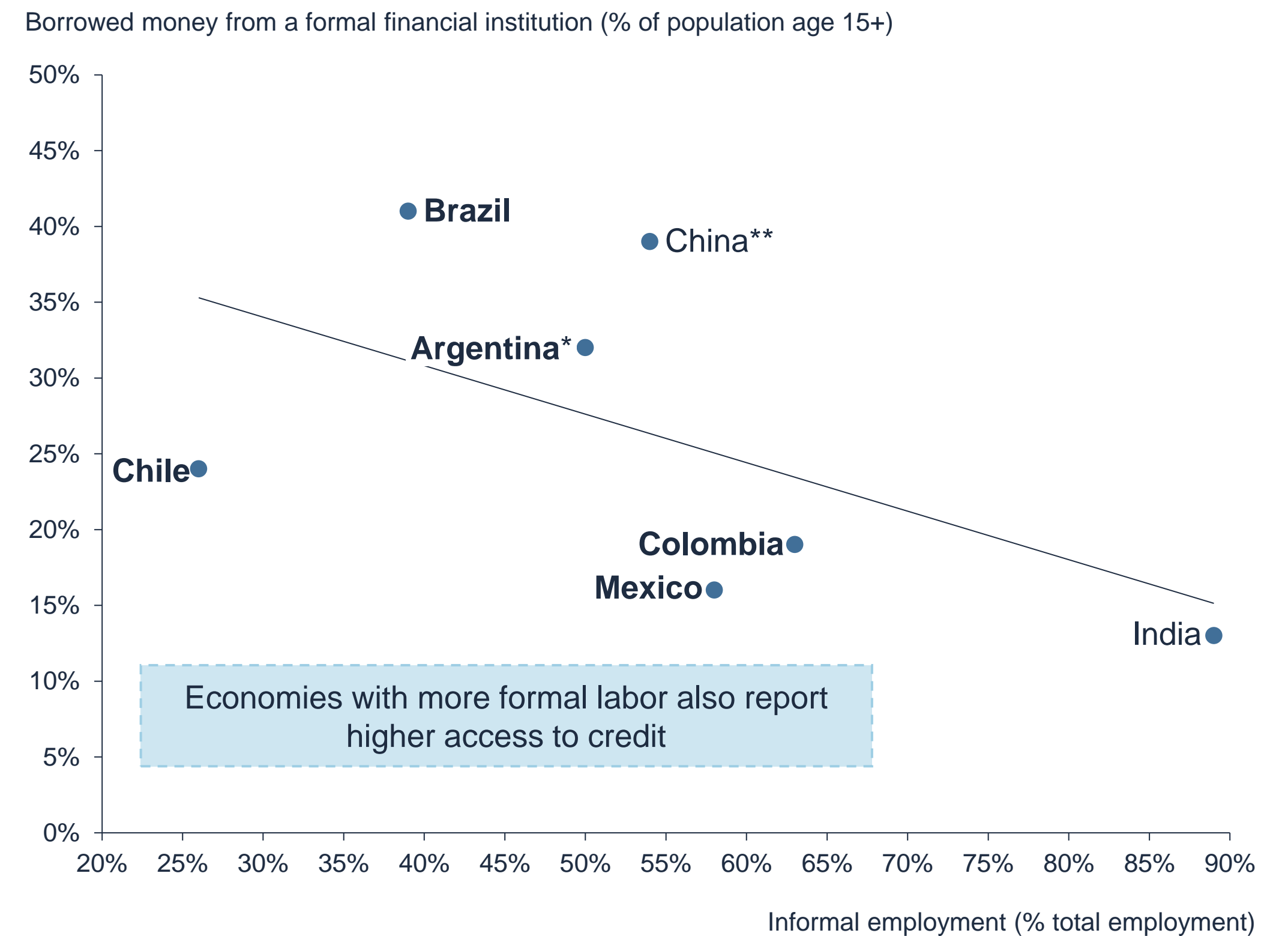
## Digital payments<sup>1</sup> and labor informality<sup>2</sup>

2023, % of population and % of total employment



## Formal borrowing<sup>3</sup> and labor informality<sup>2</sup>

2021, % of population and % of total employment

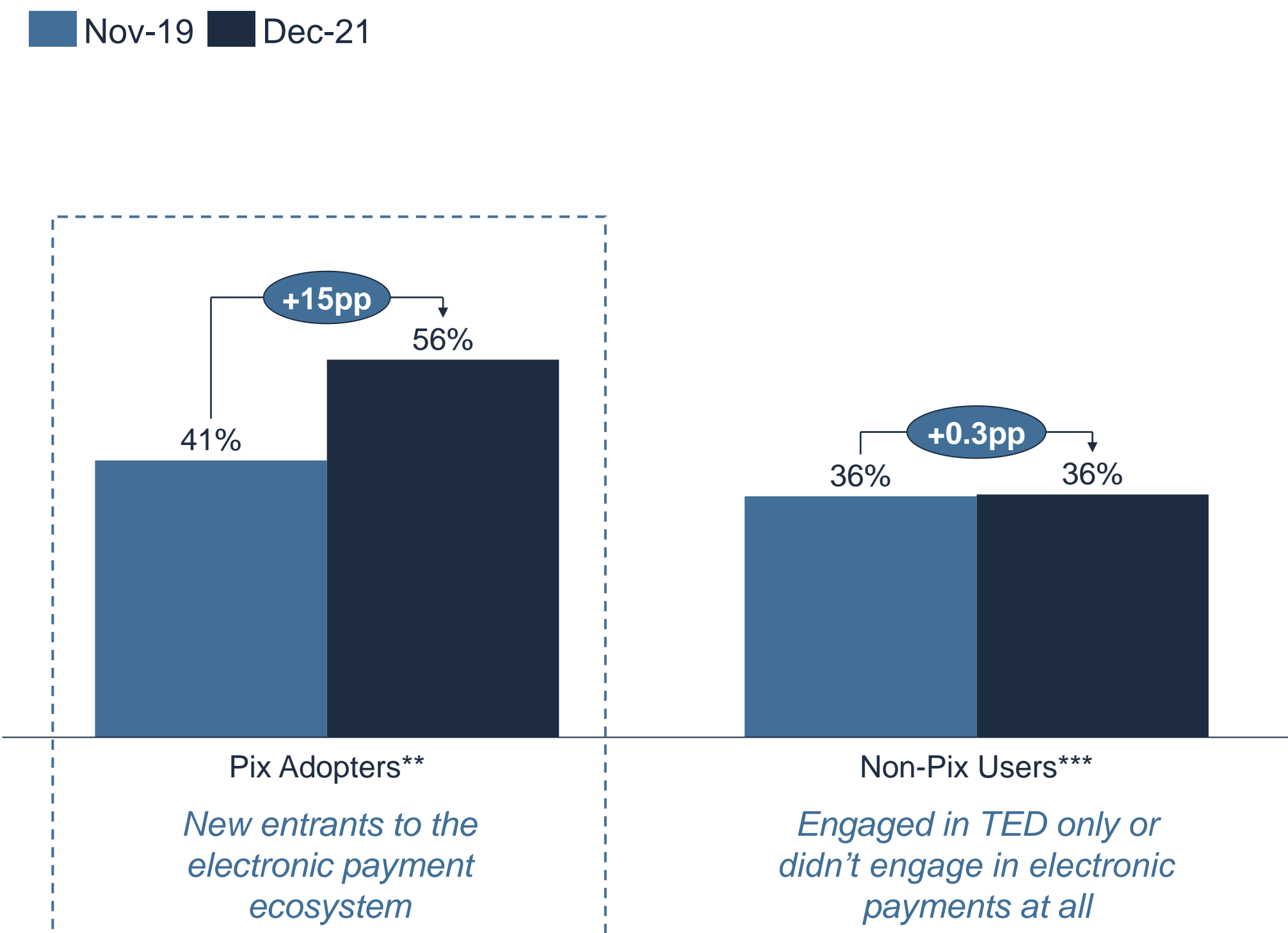


Notes: (\*) Labor informality data estimated by OECD (2020); (\*\*) Labor informality data estimated by the Institute of Chinese Studies (2020); Sources: (1) Central Bank of Brazil; (2) World Bank; (3) World Bank Fintex Database

# Rising tide: Pix adoption is boosting access to credit and upcoming credit functionalities may challenge credit cards

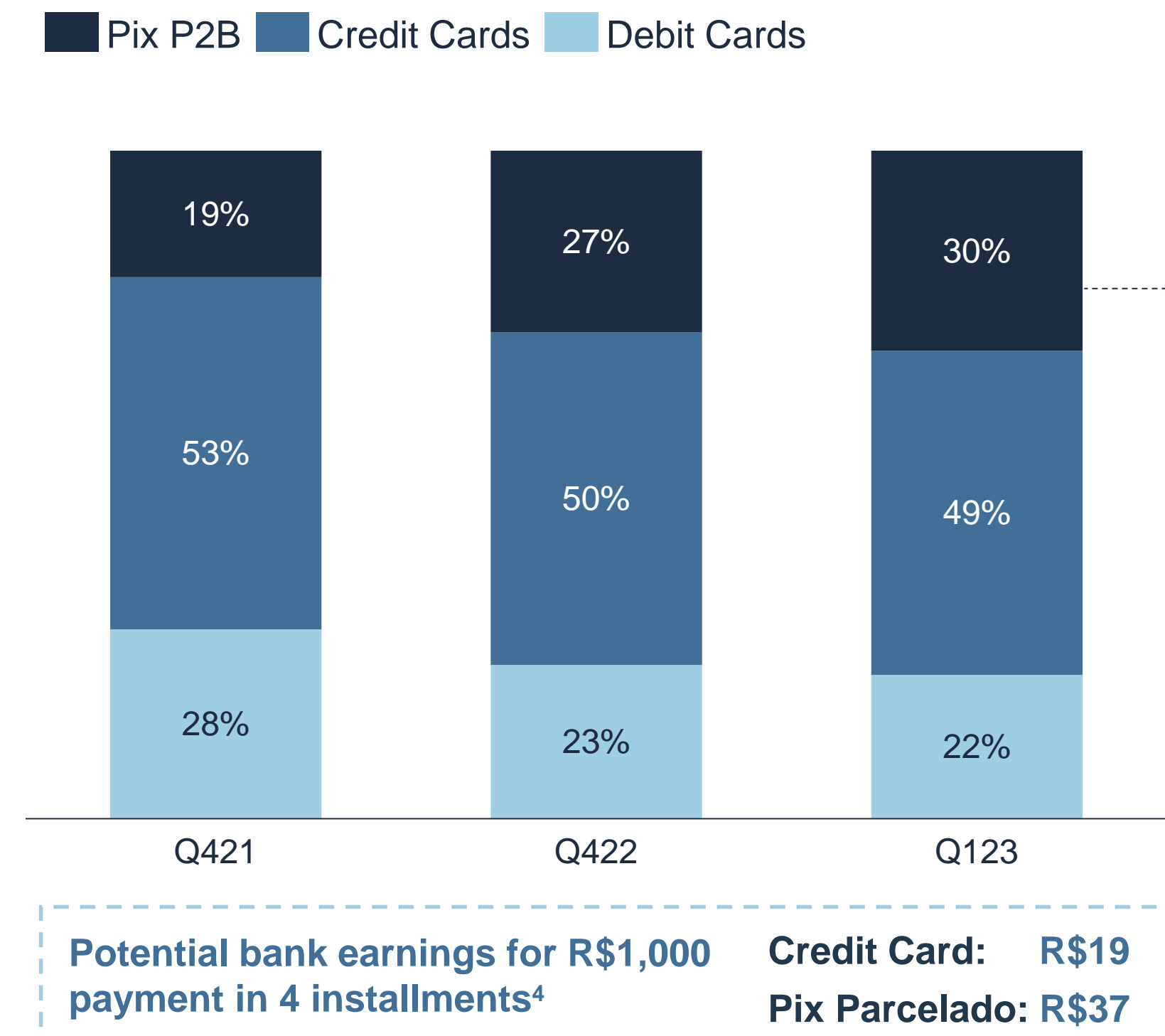
## Consumer participation in the credit market<sup>1</sup>

% of borrowers by financial inclusion status the month of Pix launch



## Pix P2B\* vs. Credit and Debit Card Volumes<sup>2</sup>

% of transactions



Notes: (\*) Peer-to-Business, (\*\*) Individuals who were not using the TED payment system (equivalent to a wire transfer) in the 12 months prior to Pix launch but have made at least one payment with Pix in the 14 months after; (\*\*\*) Individuals who haven't adopted the Pix payment system. It comprises those who continued using the TED system or didn't engage in any electronic payments, including Pix, in the 14 months following launch.

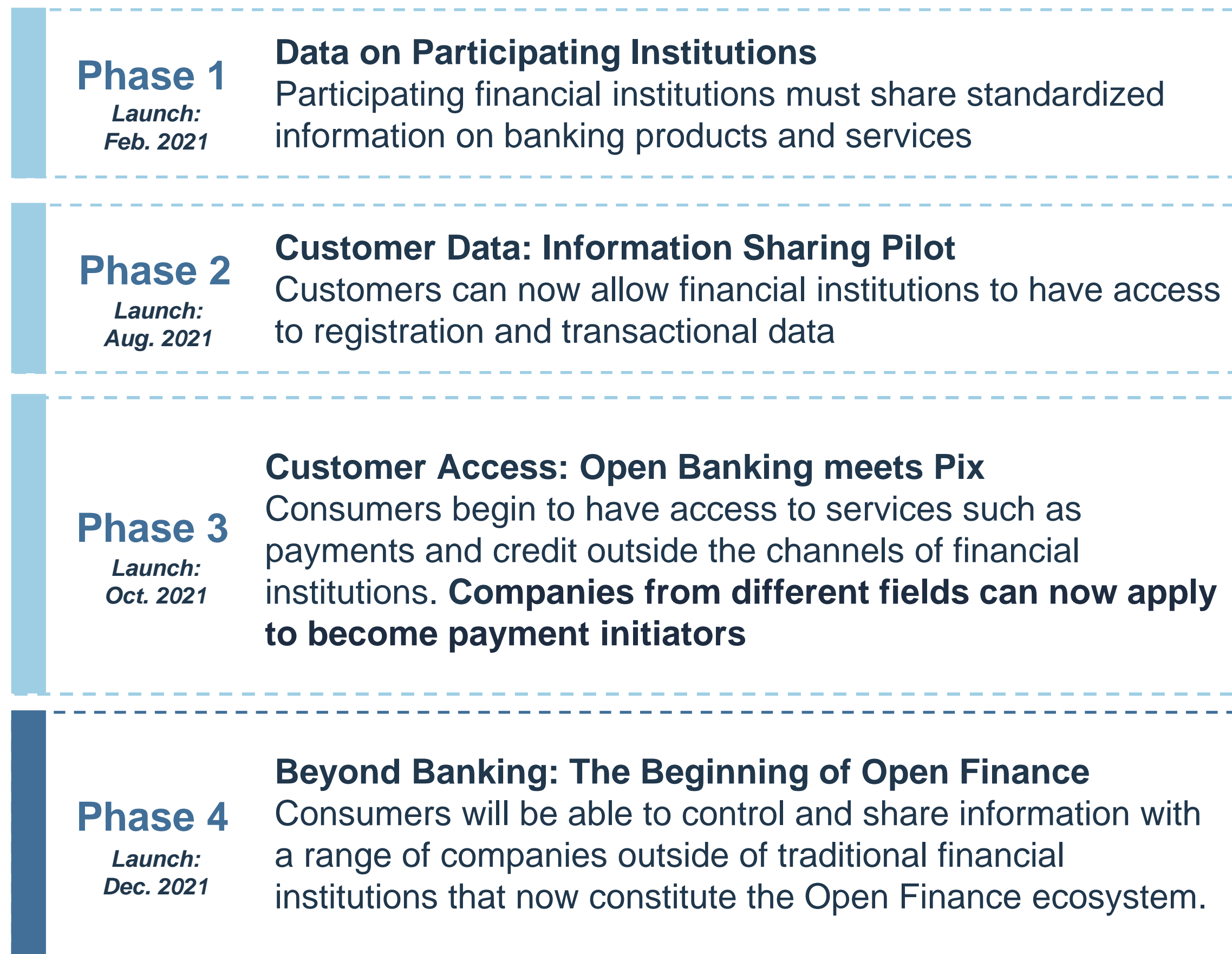
Sources: (1) Central Bank of Brazil "Banking Economy Report" 2021; (2) Central Bank of Brazil; (3) Gmattos Payments Study 2023; (4) UBS BB



# On the heels of Pix, Brazil has rolled out an ambitious open banking agenda, which extends much beyond data sharing

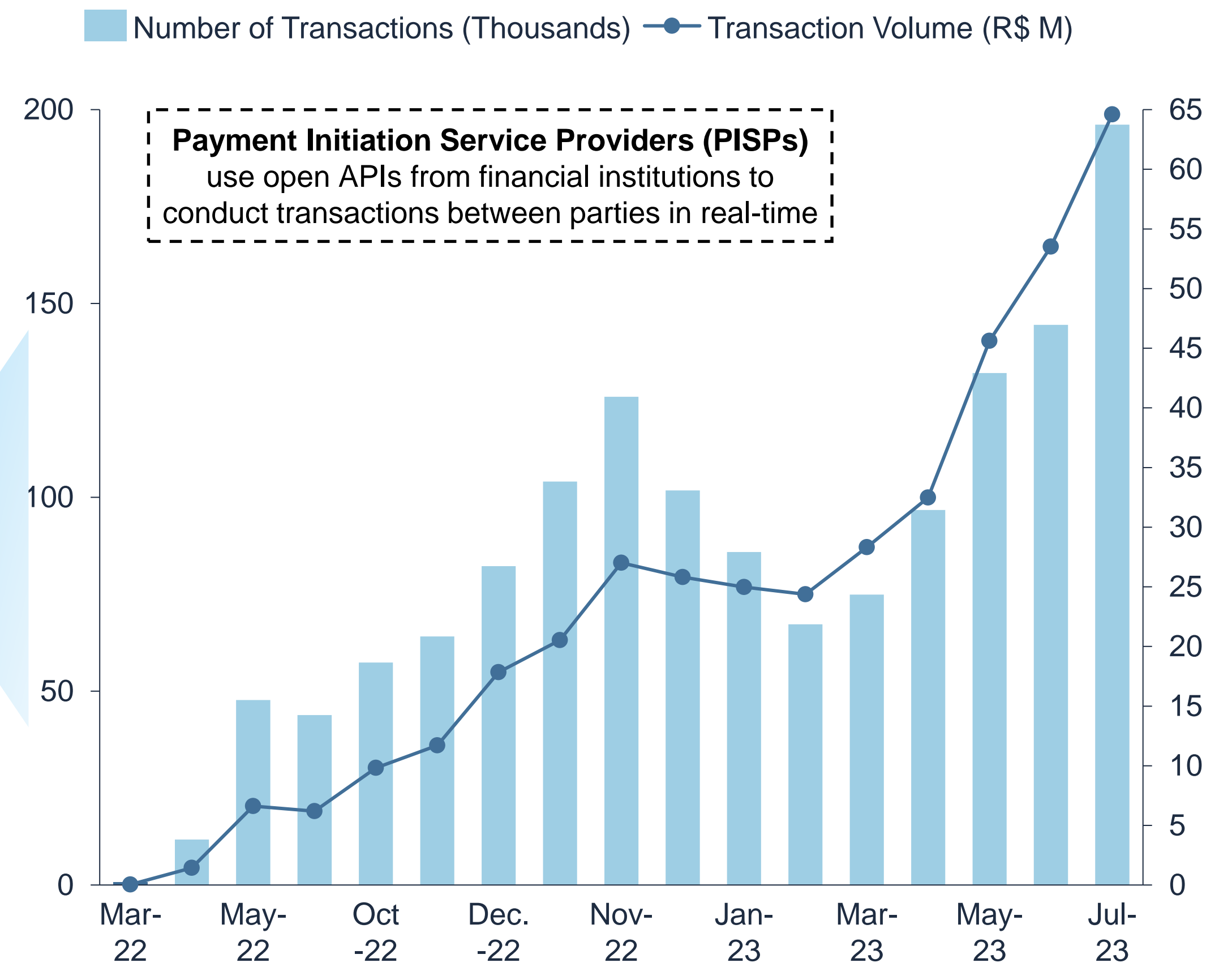
## Brazil's Open Banking Agenda

Ongoing implementation; each phase at a different stage of roll-out



## Payment initiators transactions in Brazil

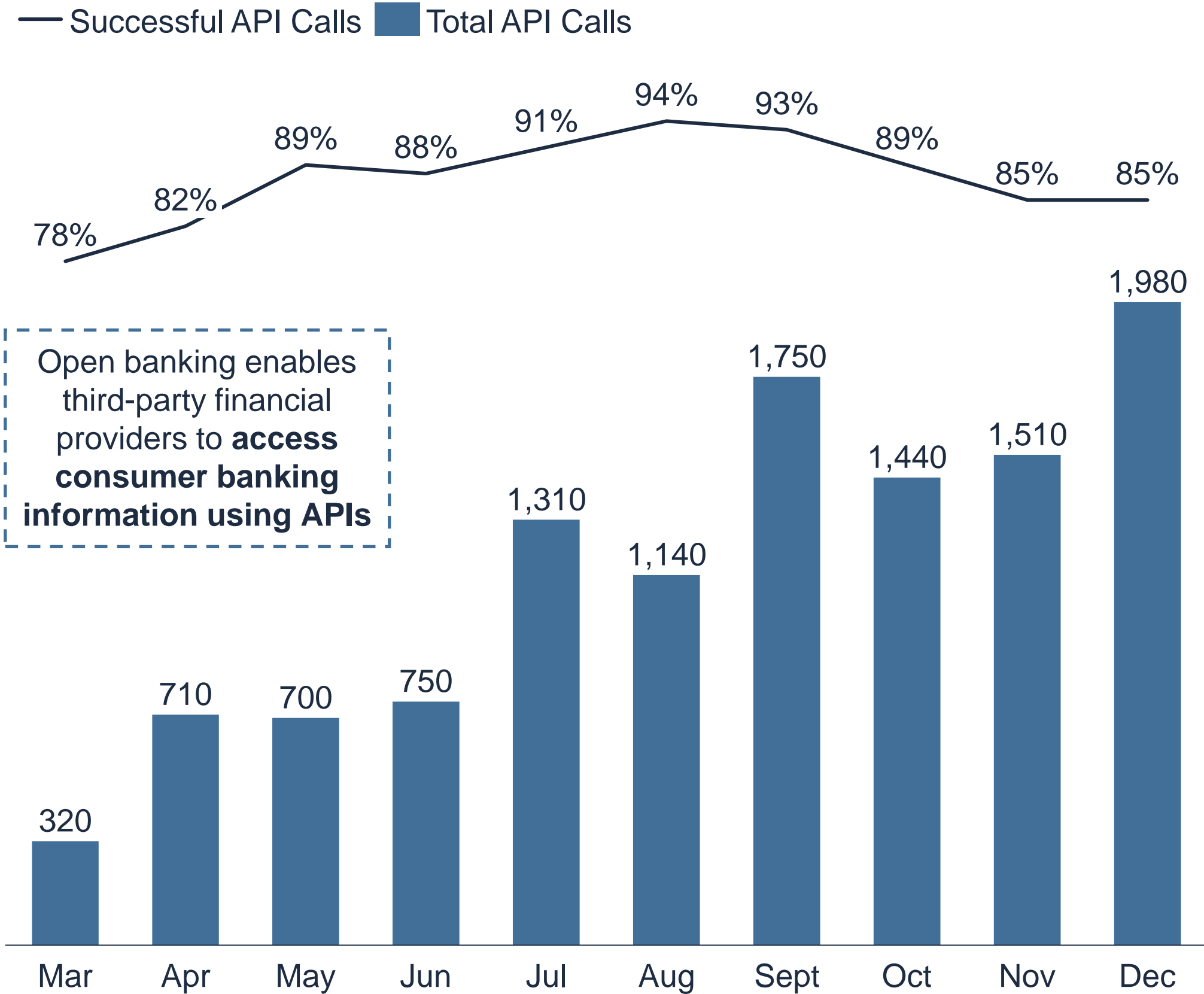
2023



# While open banking uptake is rising, data sharing remains challenging and uneven across digital and traditional banks

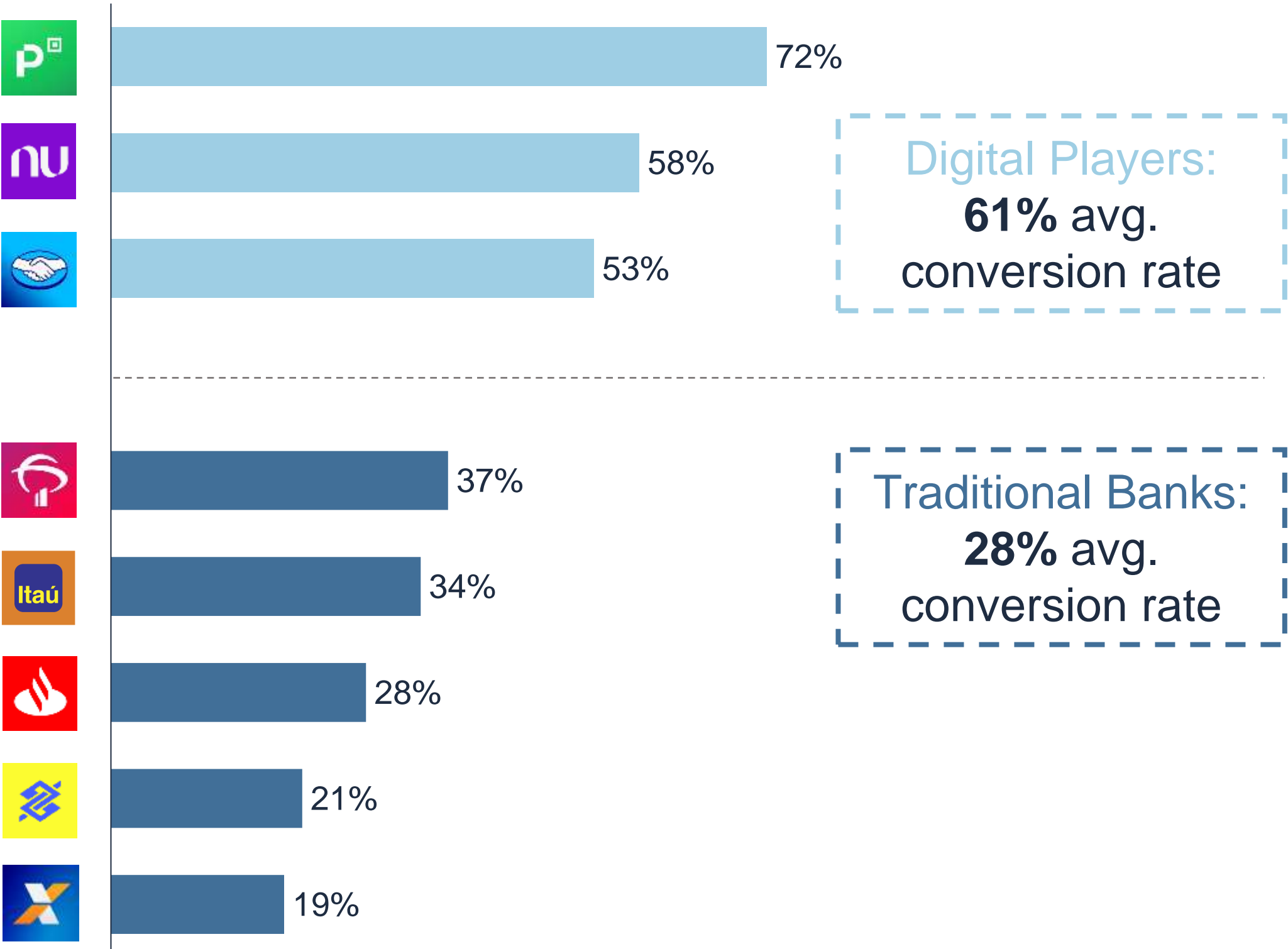
## Banking API calls in Brazil<sup>1</sup>

2022, % and MM



## API conversion rate\* by financial institution<sup>2</sup>

2023, % conversion rate

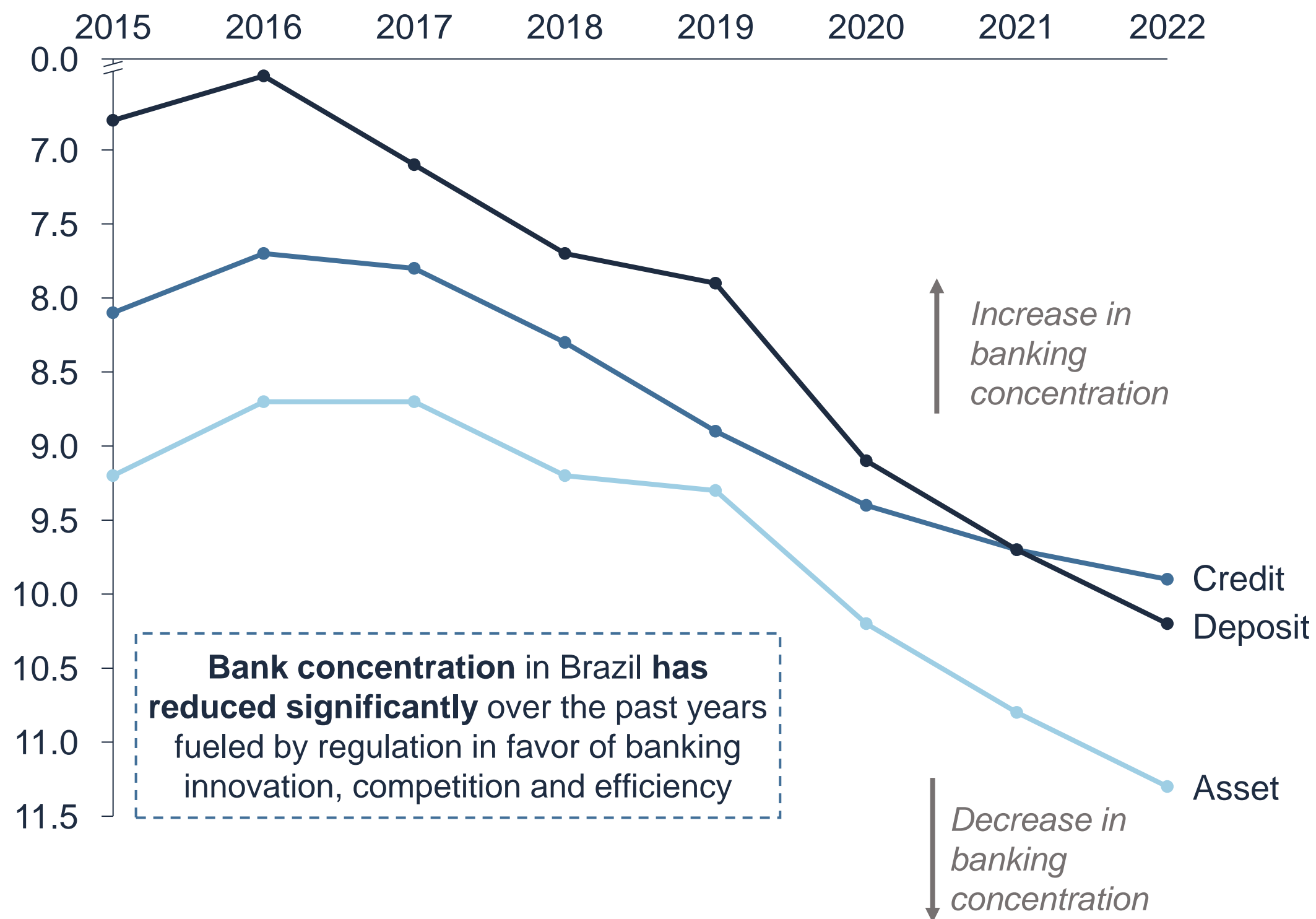


Note: (\*) Conversion rate: # of users who successfully authorize data sharing / # of users prompted to authorize data sharing  
 Sources: (1) Central Bank of Brazil "Banking Report" (2022); (2) Open Finance Brazil Report (May 2023)

# Latin America's banks have enjoyed record ROE, but this could change as more players enter the market

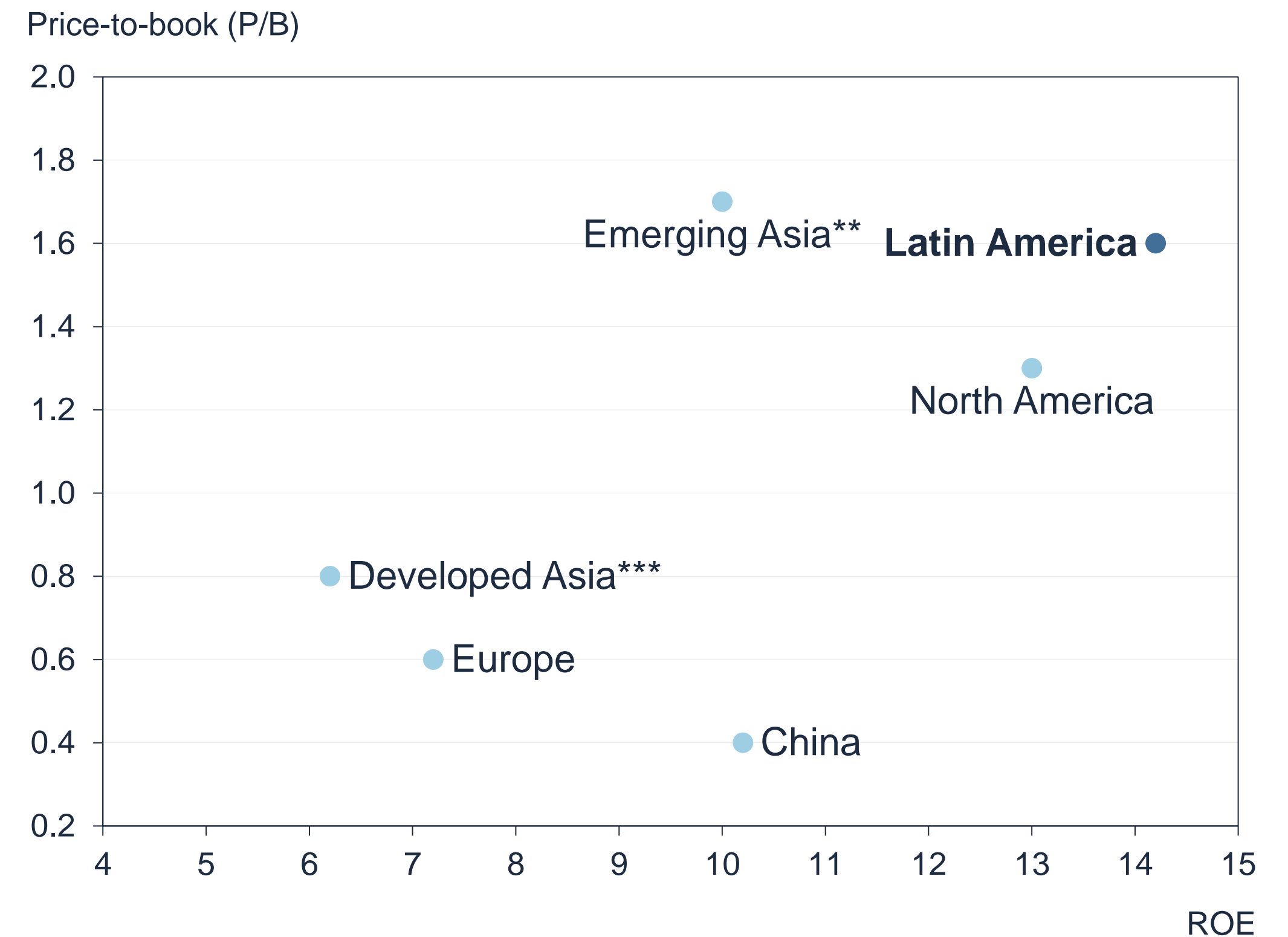
## Bank concentration in Brazil<sup>1</sup>

2023, HHI (number of institutions, upside down for ease of interpretation)\*



## Banks' ROE and Price-to-book correlation chart<sup>2</sup>

2021 (ROE) and 2022 (P/B), %



Notes: (\*) The Herfindahl-Hirschman Index (HHI) is a common measure of market concentration; (\*\*) Emerging Asia includes India, Indonesia, Malaysia, the Philippines, Thailand and Vietnam; (\*\*\*) Developed Asia includes Australia, Hong Kong SAR, Japan, Korea, New Zealand, Singapore and Taiwan

Sources: (1) Central Bank of Brazil; (2) McKinsey & Company, "Banking on a Sustainable Path" (2022)

# Greater competition led to a boom in adoption of financial services and a battle for principality\* between players

## Snapshot of Brazilian Bank Usage 2023

**4.3** Banking brands used per person

*Consumers aged 25-44 average 4.6 brands while higher income consumers average 5.0*

**1.8** Main banking brands per person\*

**5.0** Banking products per person

*Incumbents lead in accounts, credit and insurance. Digital banks lead in cards, investments and Pix*

## Principality perception across banks 2023

### Incumbents

**34%** Of incumbents' user base see them as a 1st bank and **58% as either a 1st or 2nd bank**

### Digital Banks

**17%** Of digital banks' user base see them as a 1st bank and **35% as either a 1st or 2nd bank**



Nubank stands out among digital banks: selected as a **1st bank by 42% of clients** and either a 1st or 2nd bank among 71%

## The Effects of Principality

**33%** More products sold to clients with a primary bank

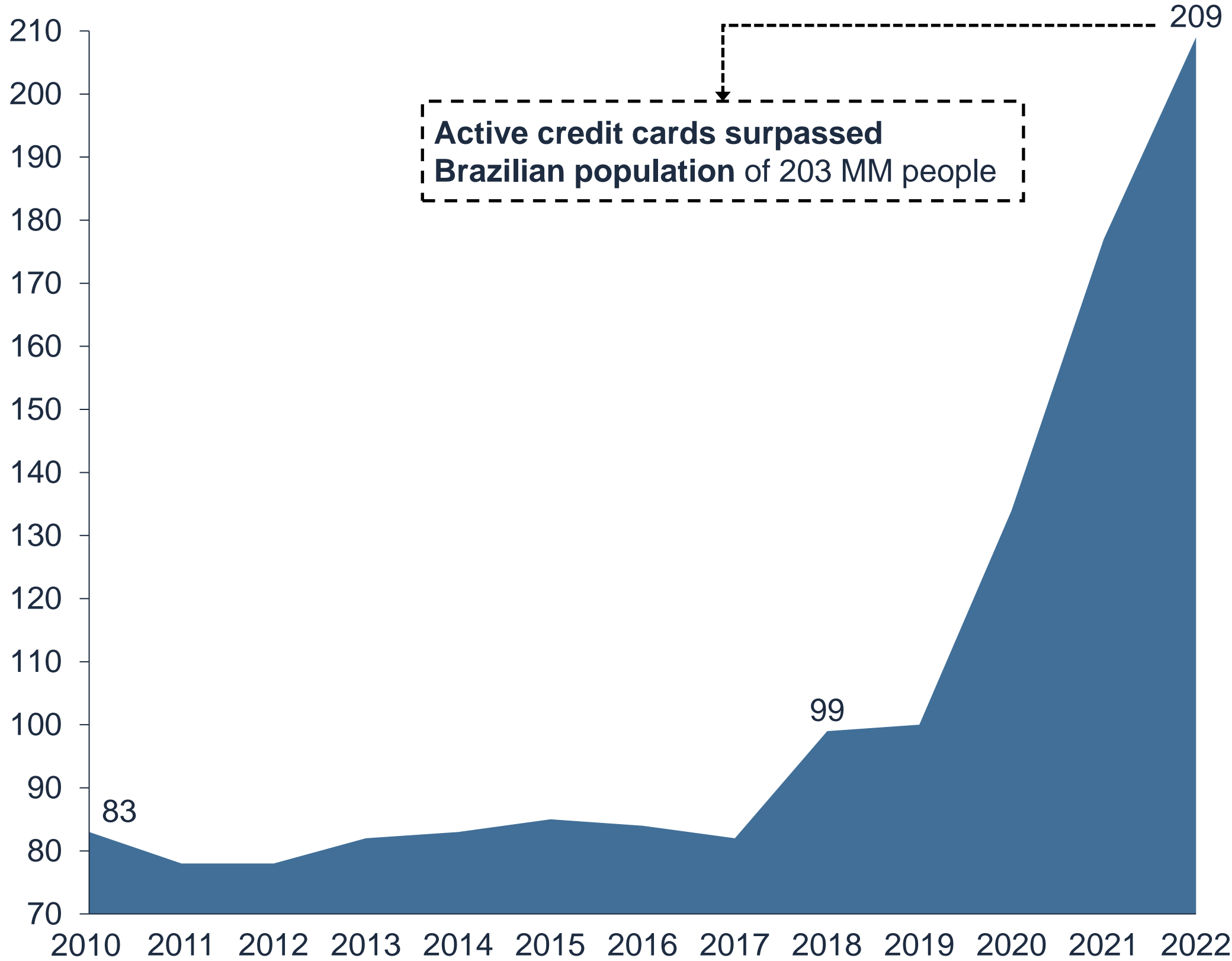
**28pp** Increase in NPS from clients with a primary bank

**57%** Of Brazilians consider switching primary banks: **retention is not guaranteed**

# A double-edged sword? Greater access enabled increased borrowing, but could lead to more indebted populations

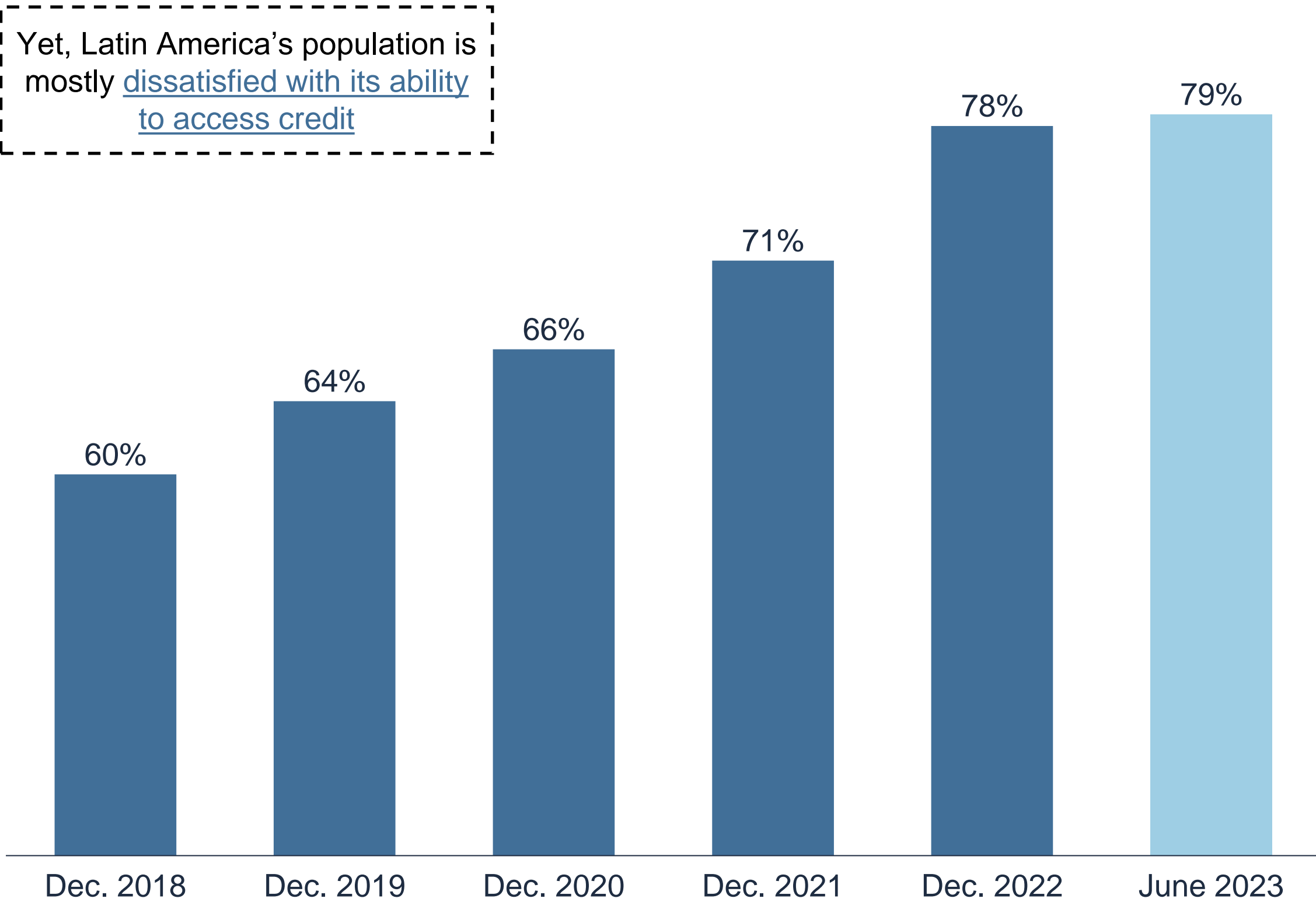
**Growth in number of credit cards in Brazil<sup>1</sup>**

2010-2022, MM



**Consumer debt increase in Brazil<sup>2,\*</sup>**

2018-2023, % of consumers with debt



Note: (\*)Types of debt considered include credit card, overdraft, post-dated check, payroll loan, personal loan, installment booklets, car financing, home financing and others

Sources: (1) Central Bank of Brazil; (2) CNC Research on Consumer Indebtedness and Default (2023)

# Brazil 2.0: Ambitious plans for the digitization of money, Open Finance and Drex are the next frontiers for Brazil

## Future Agenda



**2021: Open Banking Launch**  
 Launch for financial institutions.  
**37M consents** given  
**API calls rose to 1B weekly**

**2021: Open Finance Launch\***  
**Companies other than financial institutions allowed to join** open financial system and began standardizing their information

**2023-24: Open Finance Implementation**  
**Companies begin to share transaction data**, with APIs being released for investments, FX, insurance, pension and others in stages



**2020-2022: Pix Rollout**  
 Send or receive an **instant payment** through registered financial institutions

**2023: Pix "Garantido"**  
 Purchasers able to pay retailers through **regular installments**; Similar to **buy-now-pay-later** model

**2023-2024: Pix Offline and Pix Automatic**  
 Users can and receive payments **without needing access to the internet and in recurring form**

**2024: Pix International**  
 Transactions to be carried out **between global bank accounts**. Instant and free of charge.



**2020: Guidelines to Develop Drex**  
 Central bank announced the **guidelines for the development of a digital currency**, later named Drex


**2022: Drex Use Cases Identified**  
 Through the **LIFT Challenge**, the Central Bank worked alongside companies and financial institutions to identify use cases for the pilot

**2023-2024: Drex Pilot**  
 Pilot with an **initial platform** that greenlights 16 proposals from the LIFT challenge to operate with the Digital Real

Note (\*) With the implementation of Phase 4 of the Open Banking Agenda, the Brazilian Central bank adopted a new name for the Open Banking project: Open Finance. This change reflects the extension of Open Banking outside of traditional banking services to include players such as insurance companies, pension funds, investment platforms, fintechs and Atlantico research

# Role Model: Brazil's success in Pix and Open Banking helped countries in the region to evolve their own initiatives

Brazil's Pix's influence on Mexico's New Payment System<sup>1</sup>

	CoDi 2019	Pix 2020	DiMo 2023
<b>Access Channel</b>	QR code, NFC* or push notifications	QR code, NFC, registered key of payee and others	Registered key of payee (phone number)
<b>App</b>	App provided by Banxico and embedded into some financial institutions' apps	Embedded into financial institutions' app	Embedded into financial institutions' app
<b>Participants</b>	Licensed financial institutions, third parties can develop applications for payment requests	Financial institutions, payment institutions and fintechs	Licensed financial institutions, but STP** is working on offering DiMo to fintechs

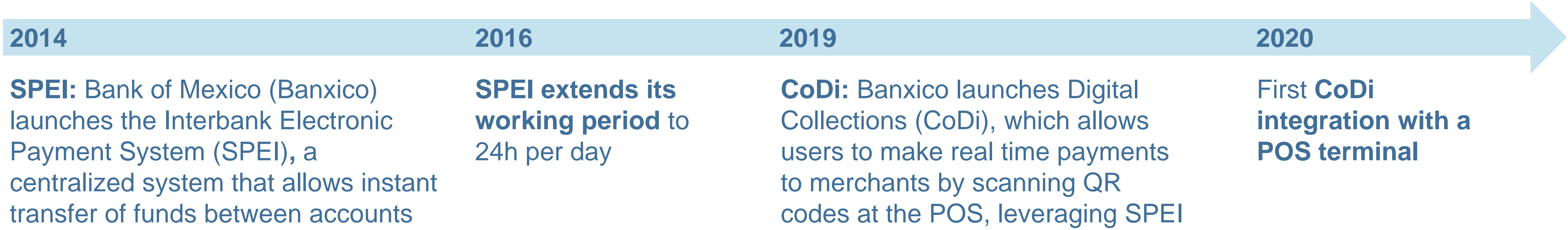
Brazil's influence on Colombia's Open Banking Agenda<sup>2</sup>

	Brazil Open Banking Agenda 2020	Colombia Decree 1297 2022
<b>Data Sharing</b>	Phase 2: Users can consent to share data between participating institutions	Financial institutions can process and commercialize data with user consent
<b>Third-party access</b>	Phase 3: introduces Payment Transaction Initiators (ITP)	Introduces the figure of a payment initiators
<b>Expansion to Open Finance</b>	Phase 4: expands data sharing to include companies beyond financial institutions	Open financial architecture to allow financial institutions to collaborate with entities from other sectors

Notes: (\*) NFC (near field communication) technology allows the transmission of data and information through bringing two mobile devices closer to each other; (\*\*) STP is a participant of the Interbank Electronic Payment System (SPEI) that offers products and services for electronic transfers

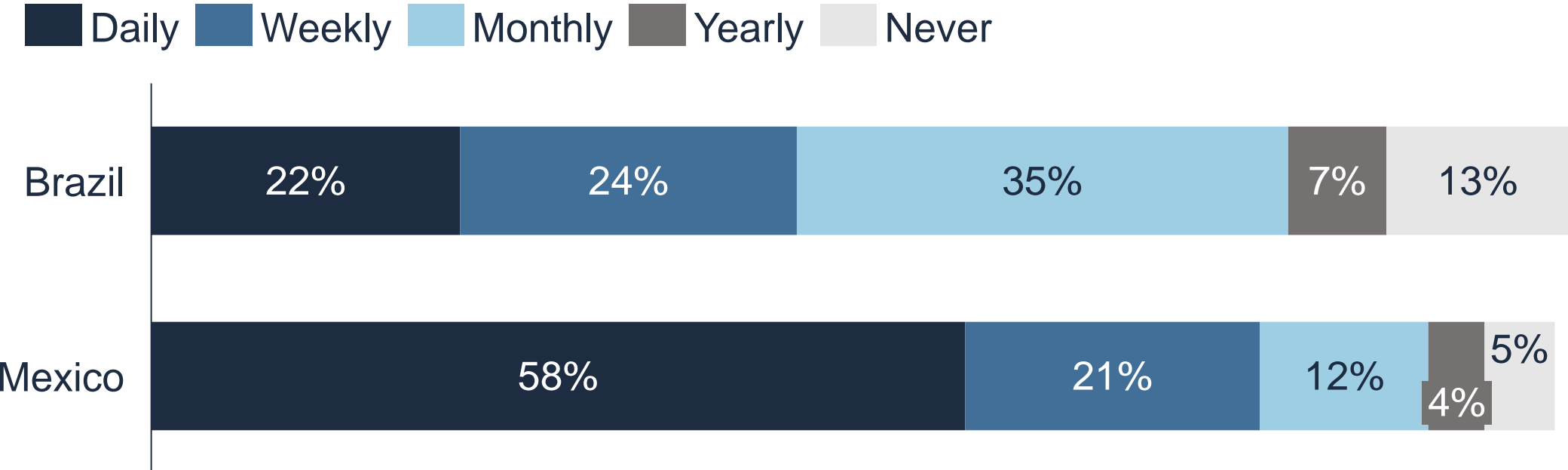
Sources: (1) Central Bank of Brazil and Bank of Mexico, (2) Central Bank of Brazil and Brigard Urrutia Internal Report

# Cash is King: Efforts to digitize money in Mexico have yet to take off, keeping the country heavily reliant on cash

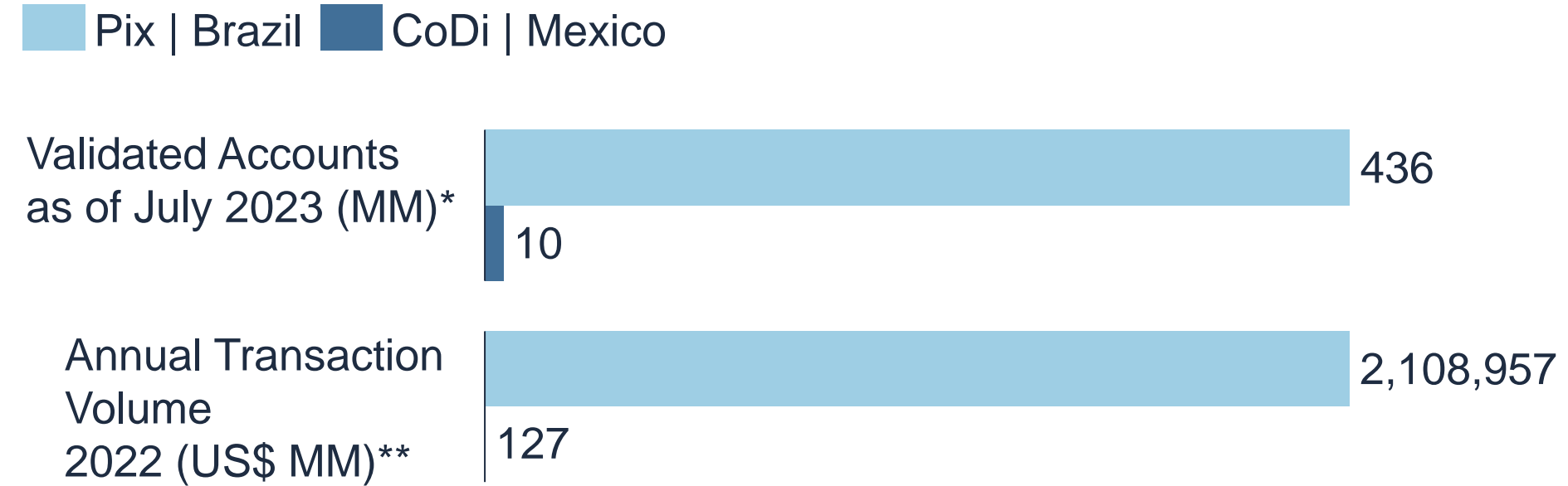


## Although real time payments continue to grow, Mexico still lags significantly in money digitization

Cash Payments in Mexico vs. Brazil<sup>1</sup>  
*How frequently do you use cash as means of payment? \*\**



CoDi vs. Pix: Accounts and Transaction Volume<sup>2</sup>



Notes: (\*) Brazil's numbers are as of July 31<sup>st</sup>, 2023, and Mexico's are as of July 8<sup>th</sup>, 2023; (\*\*) Transaction volume adjusted to US\$ from local currency based on 2022 average exchange rate (\*\*) Sample Size: 801 respondents; Margin of Error: ±3 percentage points; Confidence Level: 95% Data Collection Period: July 15th to August 15th, 2023

Sources: (1) Atlantico and AtlasIntel Survey 2023; (2) Central Bank of Brazil and Bank of Mexico



# A push from fintechs coupled with Bank of Mexico's launch of DiMo may begin to move the needle on digitalization

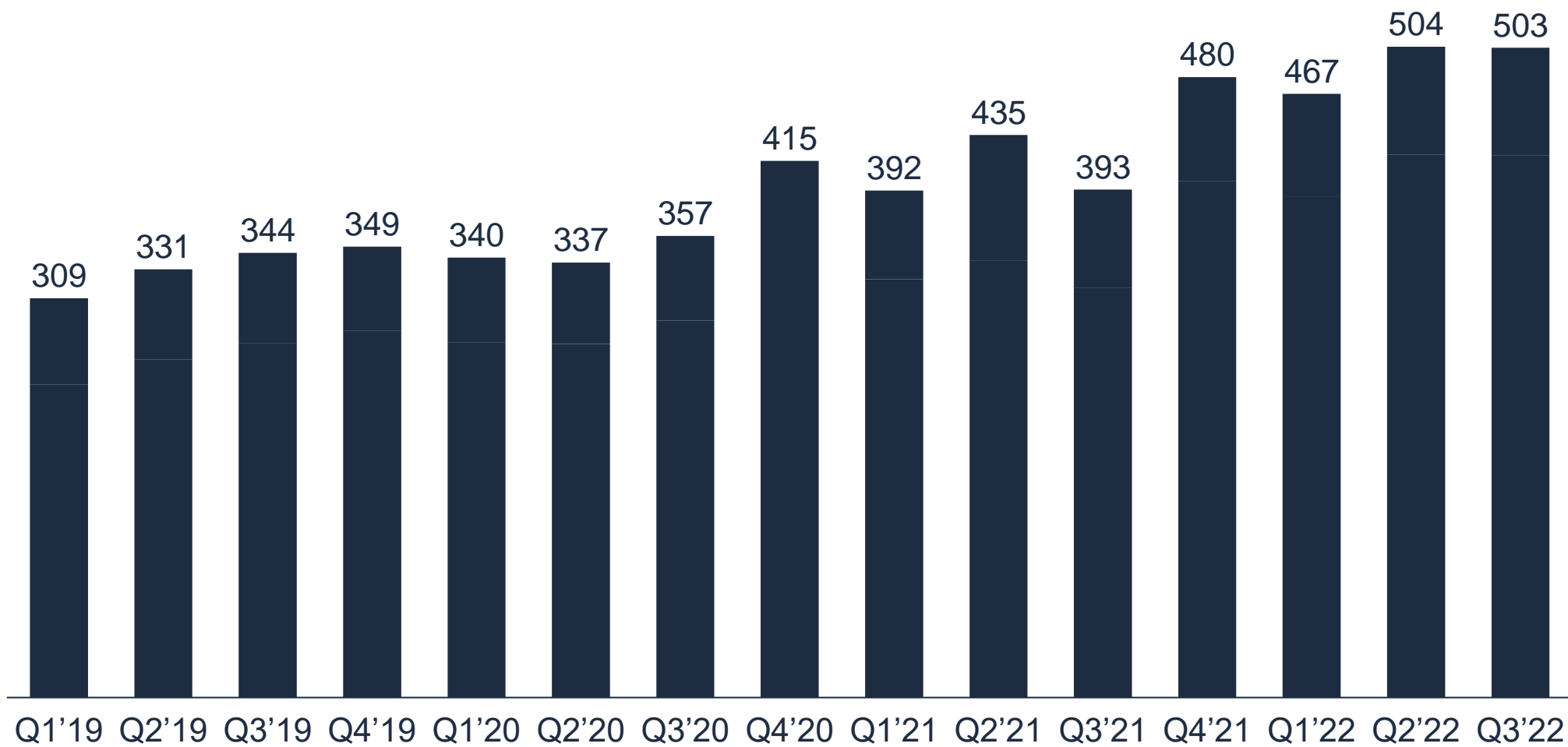
## Number of Neo Banks in Mexico<sup>1</sup>

2022, #



## Number of transfers through digital banking<sup>4</sup>

2019-2022, # MM

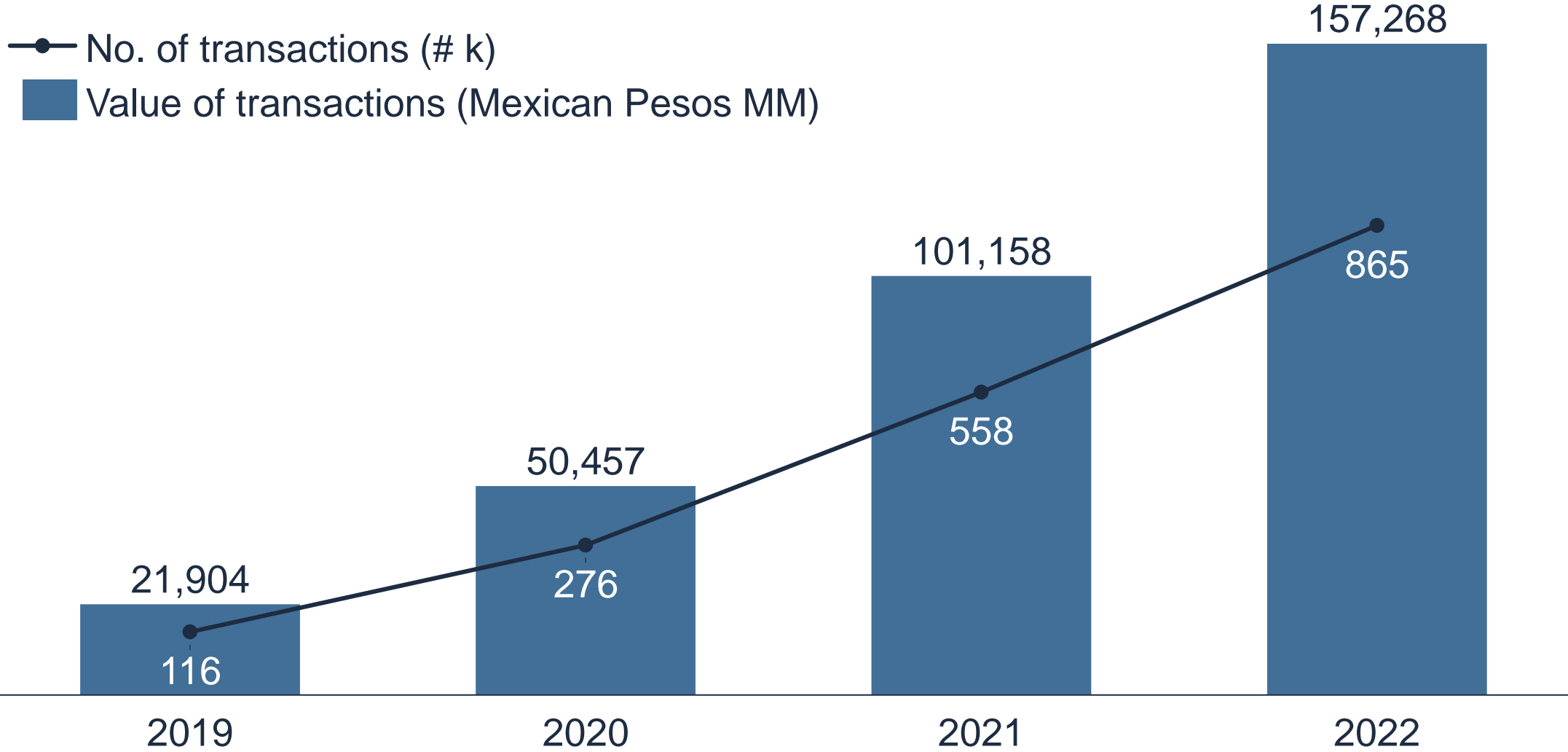


In September, Banxico plans to launch DiMo, a real-time payment system that allows digital transactions only needing the phone number to link the account. It will be added to CoDi and use SPEI

DiMo targets low-amount digital transactions of ~400 pesos (~\$23 USD), which constitutes US\$ 800B+ in annual volume. A successful launch could significantly accelerate Mexico's digital payments ecosystem

## Low-amount digital transactions in Mexico<sup>3</sup>

2019-2022, # in thousands and Mexican Pesos MM



05

# AI: The Great Equalizer



**ATLANTIC**

/imagine Artificial Intelligence in the style of Os Gêmeos

# AI: The Great Equalizer

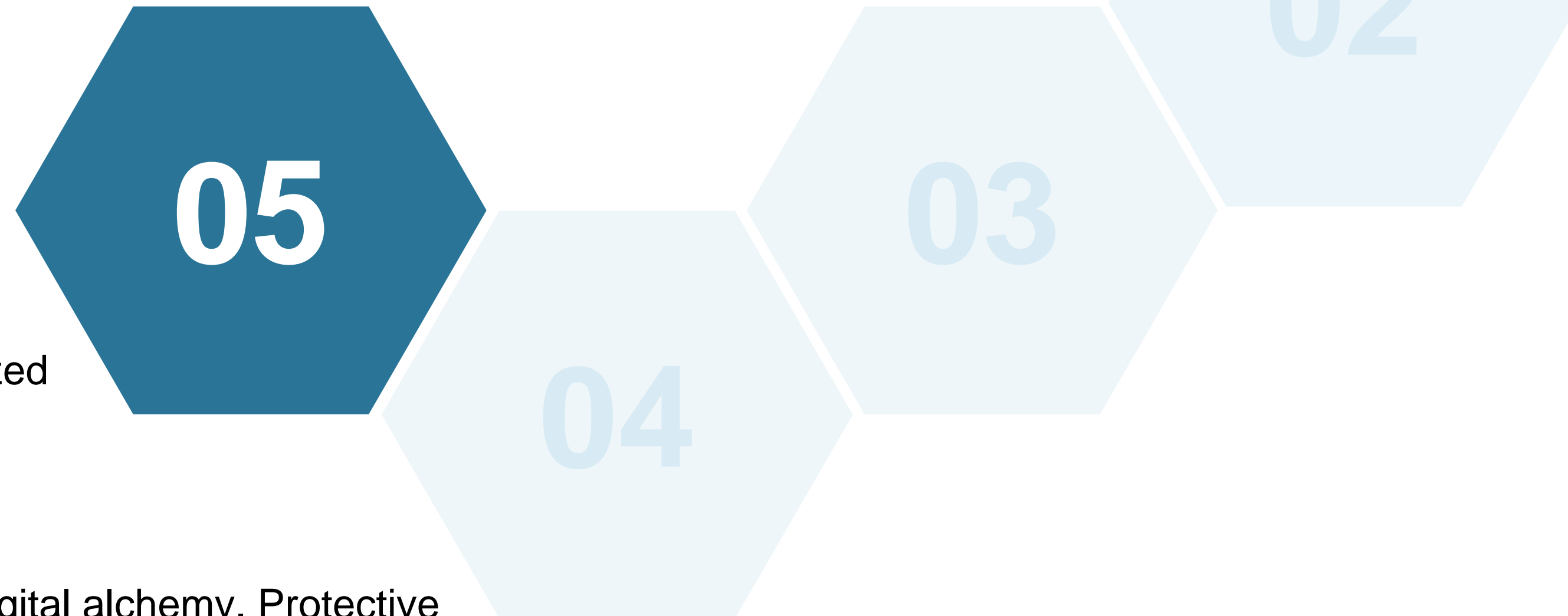
In an era where the boundaries between magic and technology seemed to blur, **the saga of Artificial Intelligence blossomed** like an exotic orchid in a forgotten rainforest. Its roots, tracing back to the intellectual vigor of the 1970s, had slumbered until celestial algorithms and cavernous data vaults catapulted it into cosmic hyperdrive.

In the North, the **United States hoisted its flag as a pioneer**, symbolized by the resplendent bounty Microsoft bestowed upon OpenAI. This pioneering spirit was echoed in the enchanted halls of Y Combinator, where **startups sprouted like magical herbs** in a sorcerer's garden.

**Latin America watched, its soil ripe and fertile** for the seeds of this digital alchemy. Protective spells of government regulation were conjured, and the elusive fairy of **venture capital fluttered its wings**, albeit hesitantly. In Brazil, the dance had already begun; tech sirens like iFood and Blip pirouetted gracefully, although they had yet to **conquer the twin dragons of skill shortage and steep costs**.

As the dawn of AI colored the horizon, **age-old shadows—lack of healthcare, yawning gaps in education—begin to retreat**. Clivi's spellwork meandered through Mexico's rural pathways, bringing medical hope. In Brazil, Letrus became a whispering muse to young souls yearning for literacy.

The poetic essence of AI, its true allure, was its ambition to embody humanity's noblest aspirations: providing **egalitarian access while threading a note of caution** through its coded veins. Thus, across Latin America, a guarded yet fervent hope unfurled its leaves, stretching toward the warm embrace of an uncertain yet tantalizing sun.



*Piece on AI: The Great Equalizer in the style of Isabel Allende*

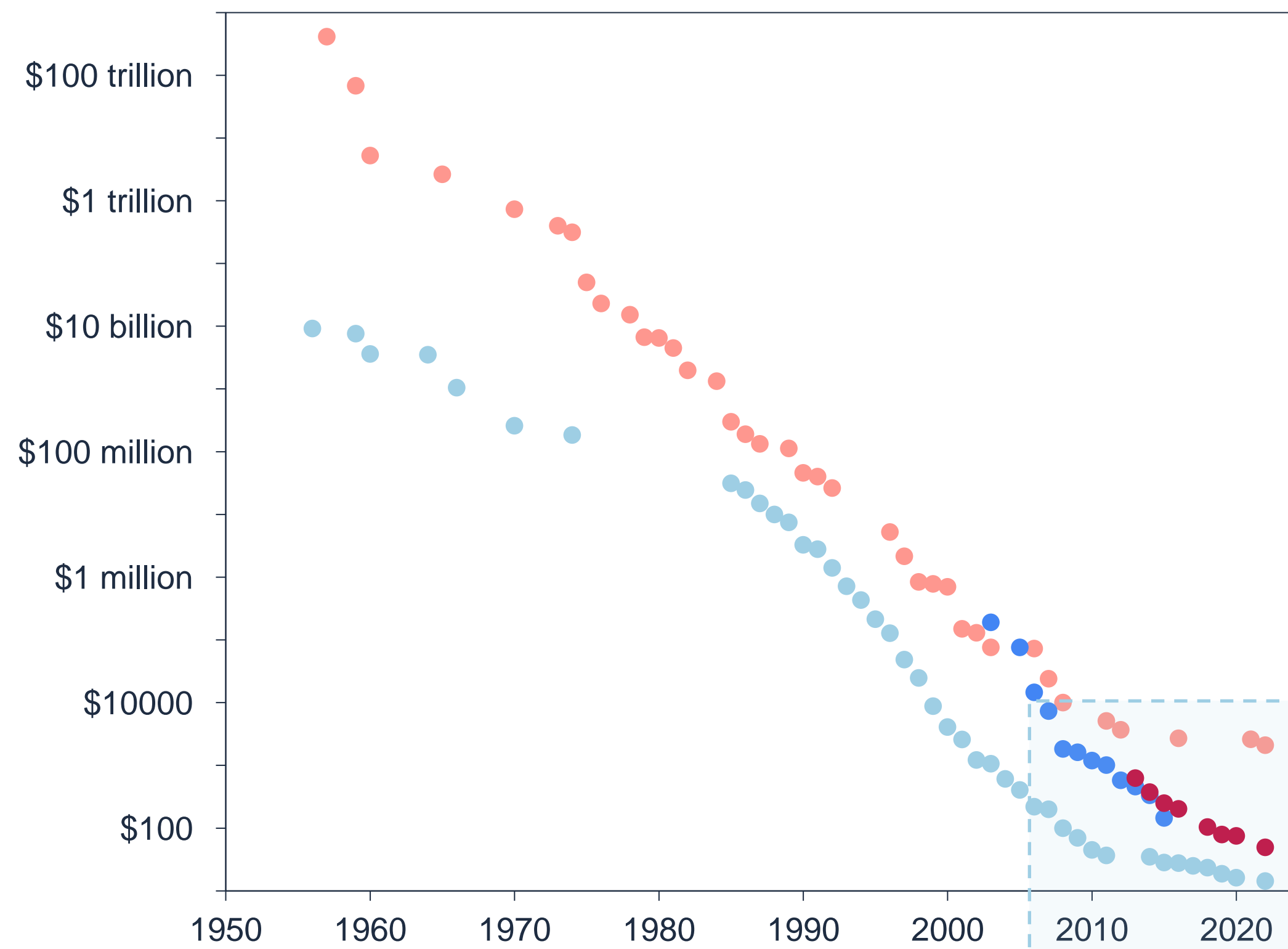
*Using Command – 52 Billion parameter model by Cohere*

# Historically, decreasing costs of storage enabled vast increases in data volumes; software rode the wave of growth

## Historical cost of computer memory and storage<sup>1</sup>

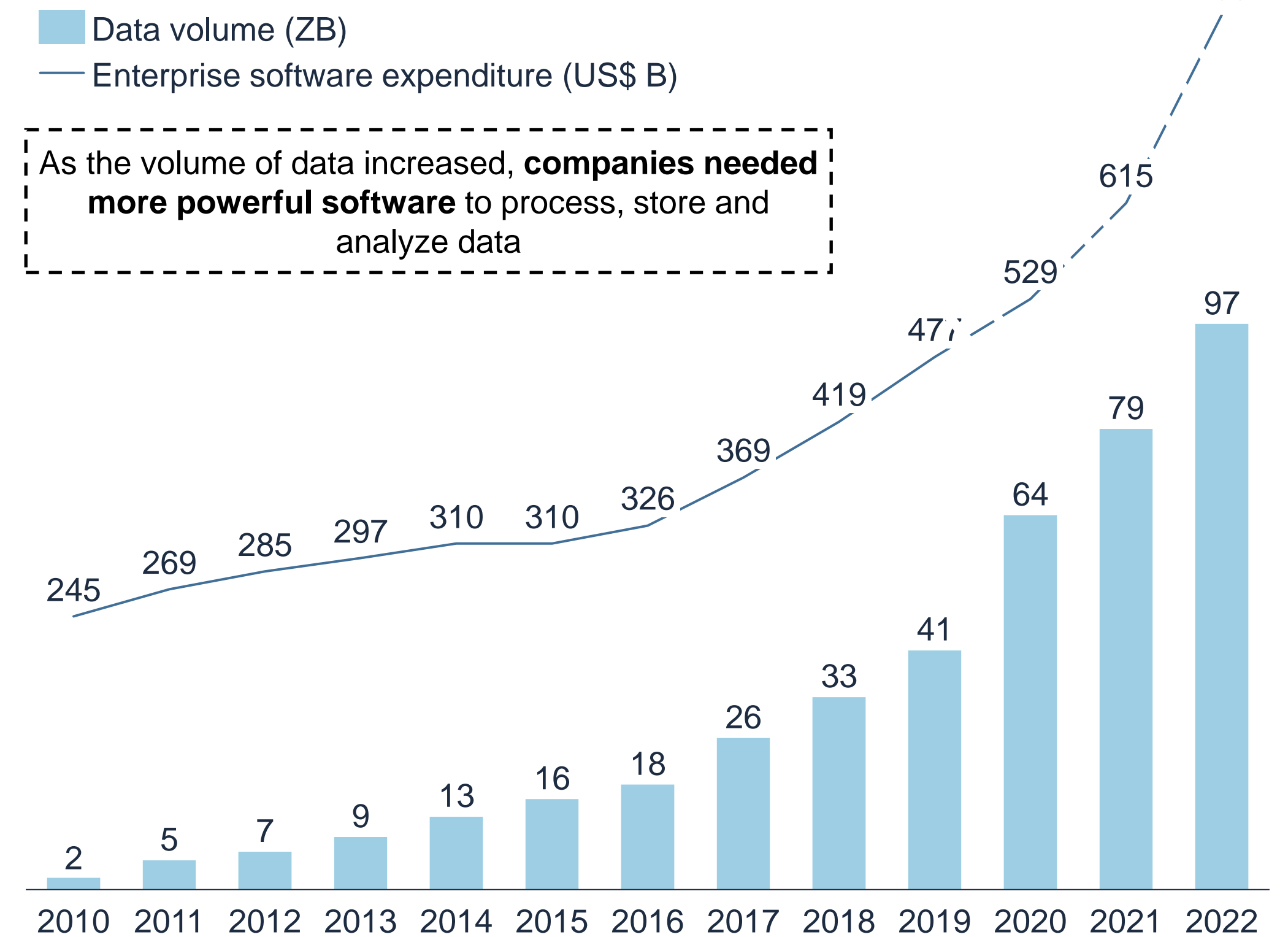
1950-2022, US\$ per terabyte (log scale)

● Memory ● Flash ● Disk Drive ● SSD



## Worldwide data consumed, created, copied, and captured<sup>2,\*</sup> and enterprise software total expenditure<sup>3</sup>

2010-2022, data in zetabytes (ZB)\*\*, spending in US\$ B



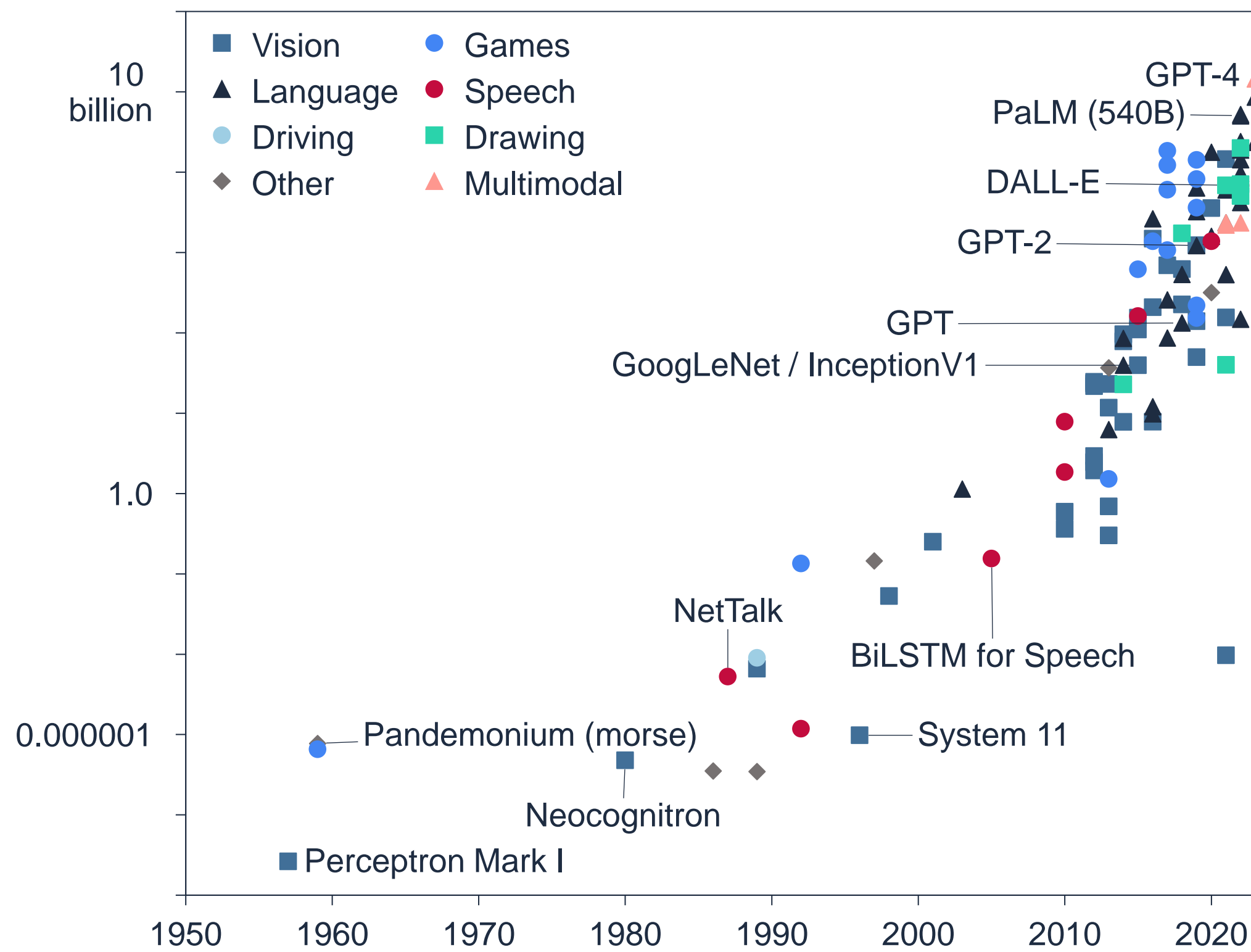
Notes: (\*) The volume of data is projected for the years 2020-2022; (\*\*) One zetabyte (ZB) is equal to 1 trillion gigabytes (GB)

Source: (1) Our World in Data; (2) IDC; (3) Gartner

# Into Hyperdrive: Better algorithms, larger models, and cheaper compute further accelerated the historic AI trend

## Computation used to train notable AI models<sup>1</sup>

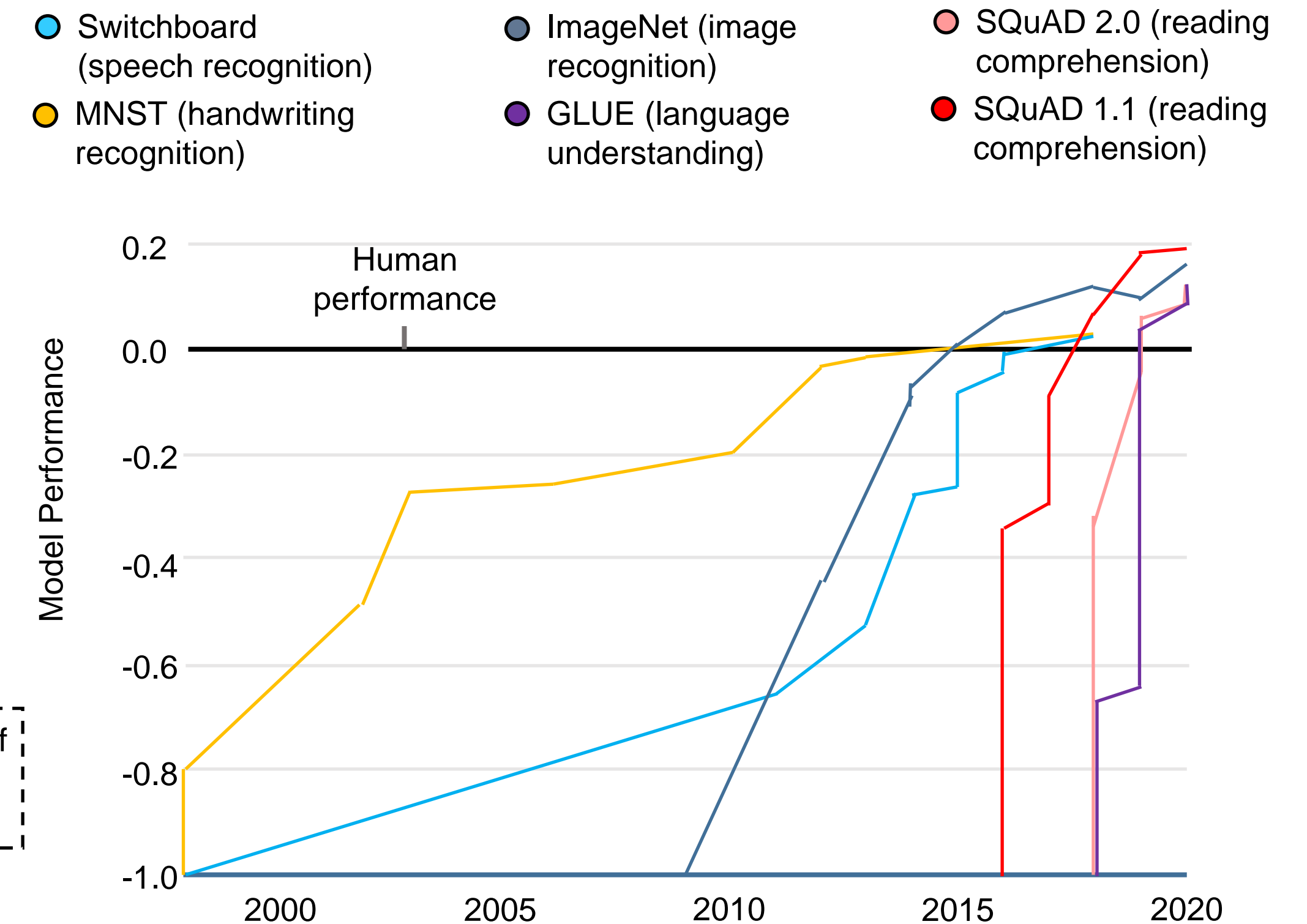
1950-2023, total petaFLOPs\*



For a brief history of AI development, [click here](#)

## Speed at which AI models surpassed human baselines<sup>2</sup>

1995-2020, model performance\*\*



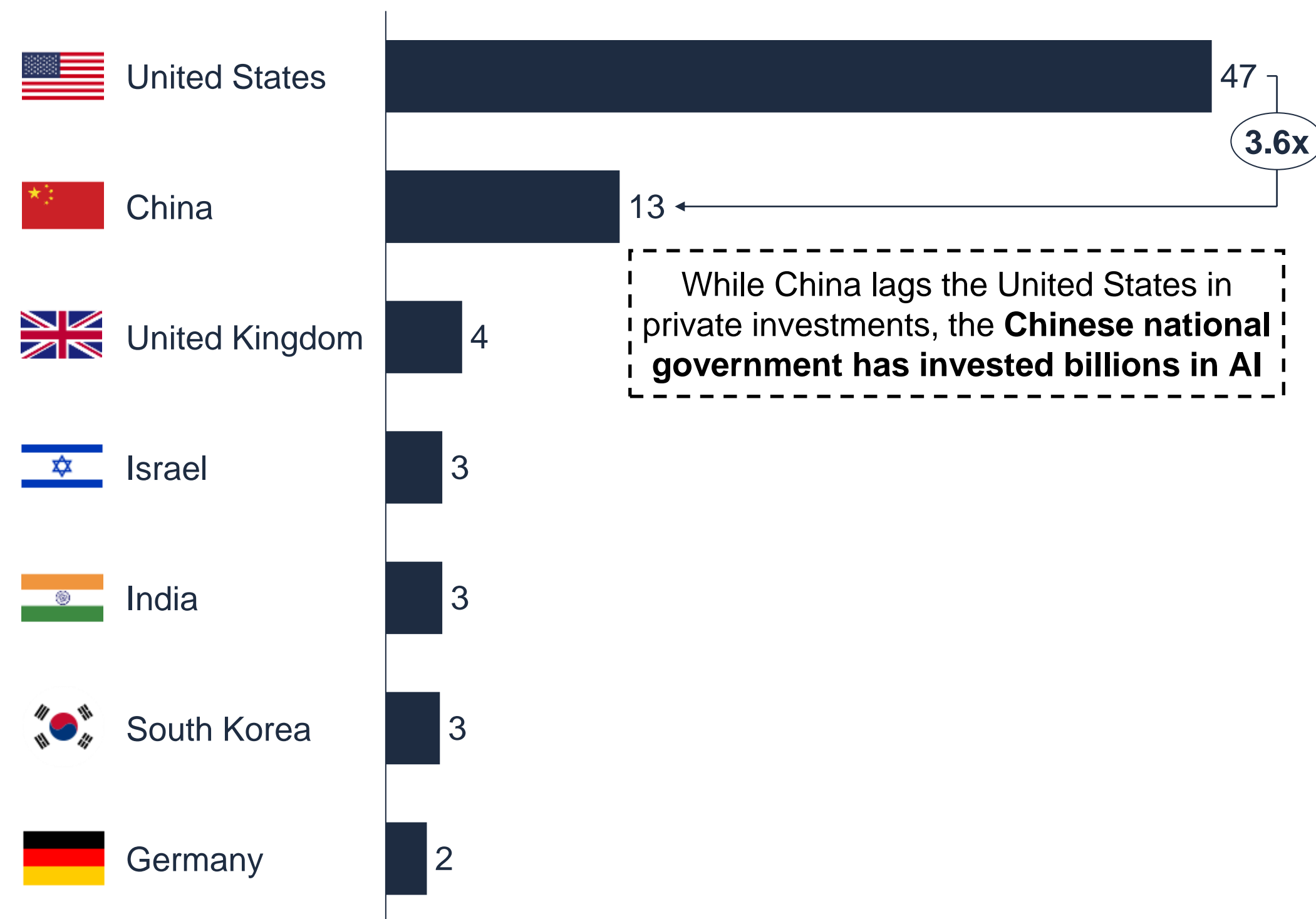
Notes: (\*) a petaFLOP is a unit of computing speed equal to one quadrillion floating-point operations per second; (\*\*) Performance on popular benchmarks normalized with initial performance at minus one and human performance at zero

Sources: (1) Epoch; (2) Science, "Taught to the Test" (2022)

# Today, the United States leads in investment volume while the private sector has raced ahead of academia in AI development

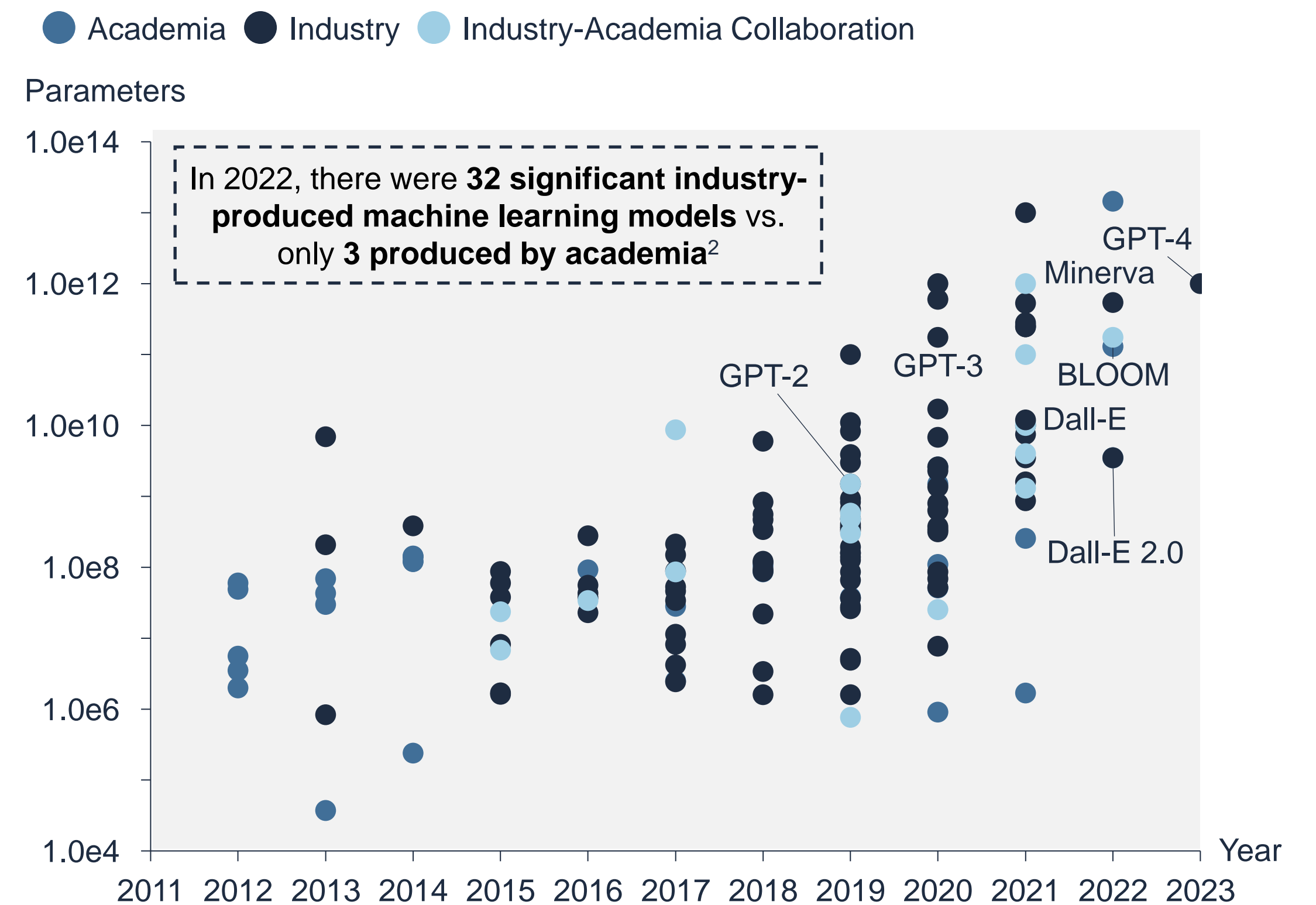
Private Investment in AI by country<sup>1,2,\*</sup>

2022, US\$ B



Number of parameters of ML models by sector<sup>1,2,\*\*</sup>

2012-2022



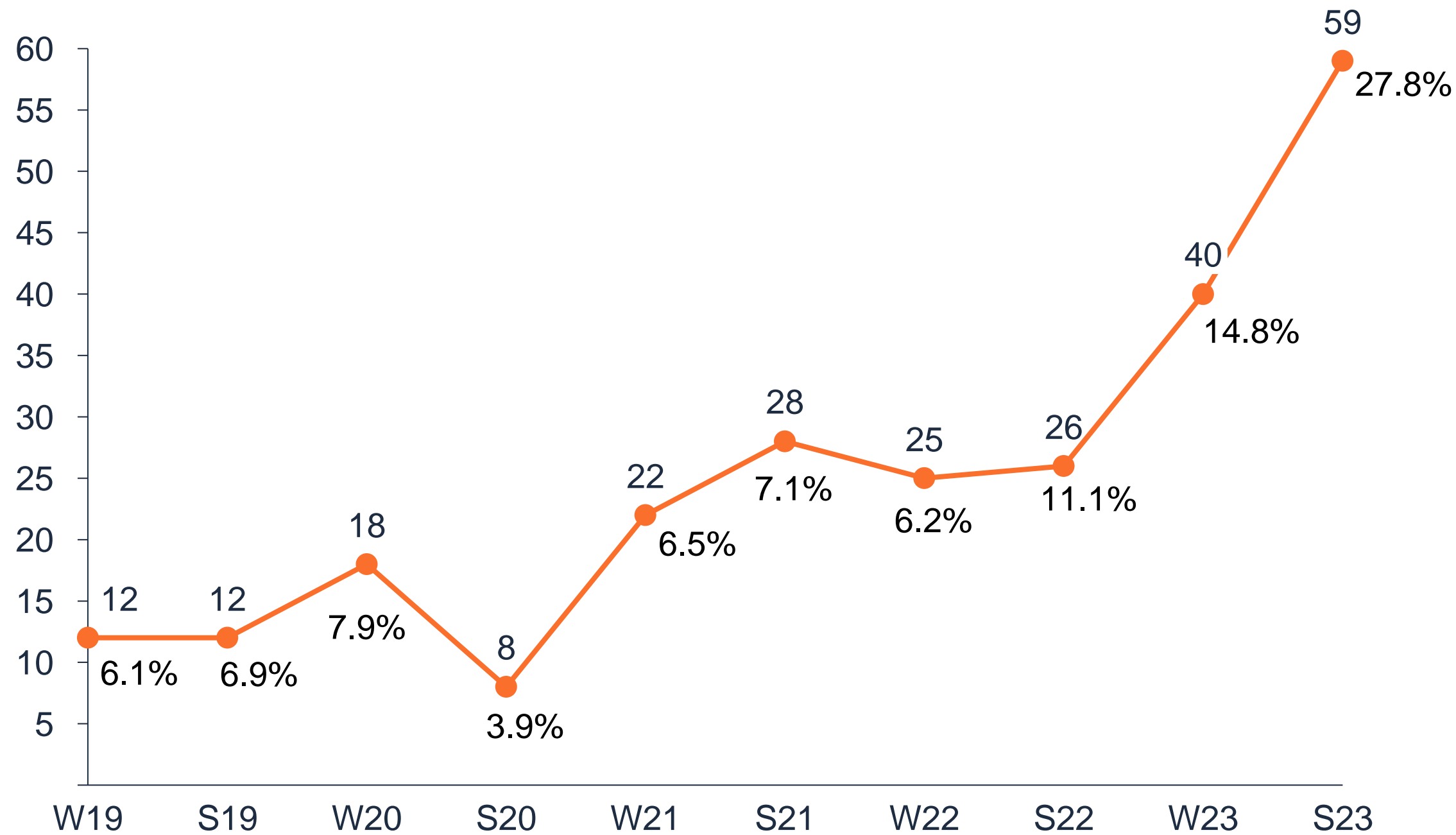
Notes: (\*) Private investments involve a private sale of newly issued securities by a company to selected investor(s), (\*\*) Parameters are part of Machine Learning (ML) models that tailor the model based on data fed into it; generally, more parameters imply higher specificity in output

Sources: (1) NetBase Quid (2022); (2) Stanford "AI Index Report" (2023), (3) Federal News Network

# The proportion of AI startups nearly doubled in YC's\* latest batch, with a total of 59 AI companies, or 27% of total

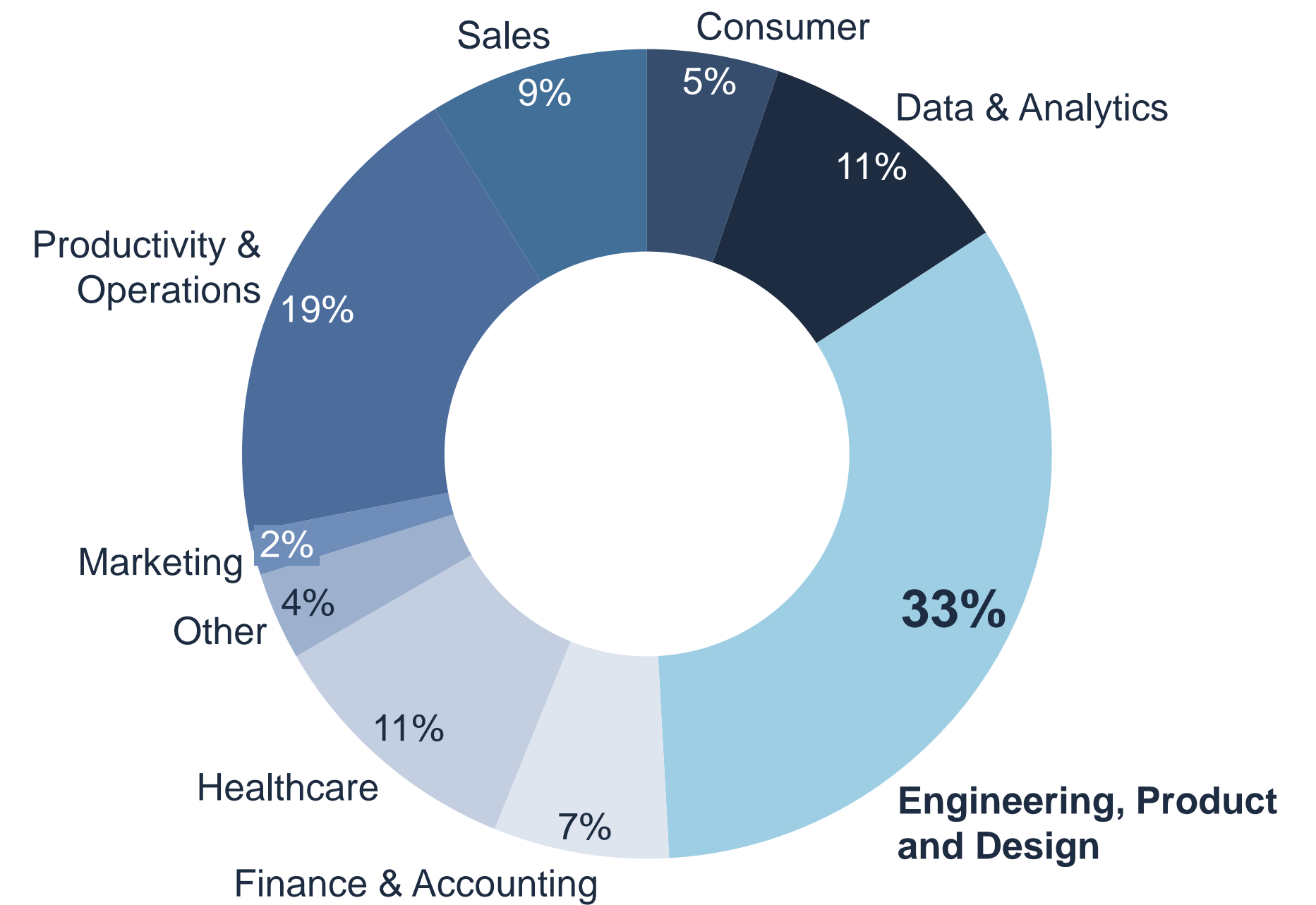
## Y Combinator investments in AI companies<sup>1</sup>

2019-2023, number of companies, % of total YC investments



## Y Combinator Summer 2023 AI companies by category<sup>1,2</sup>

2023, % of AI batch

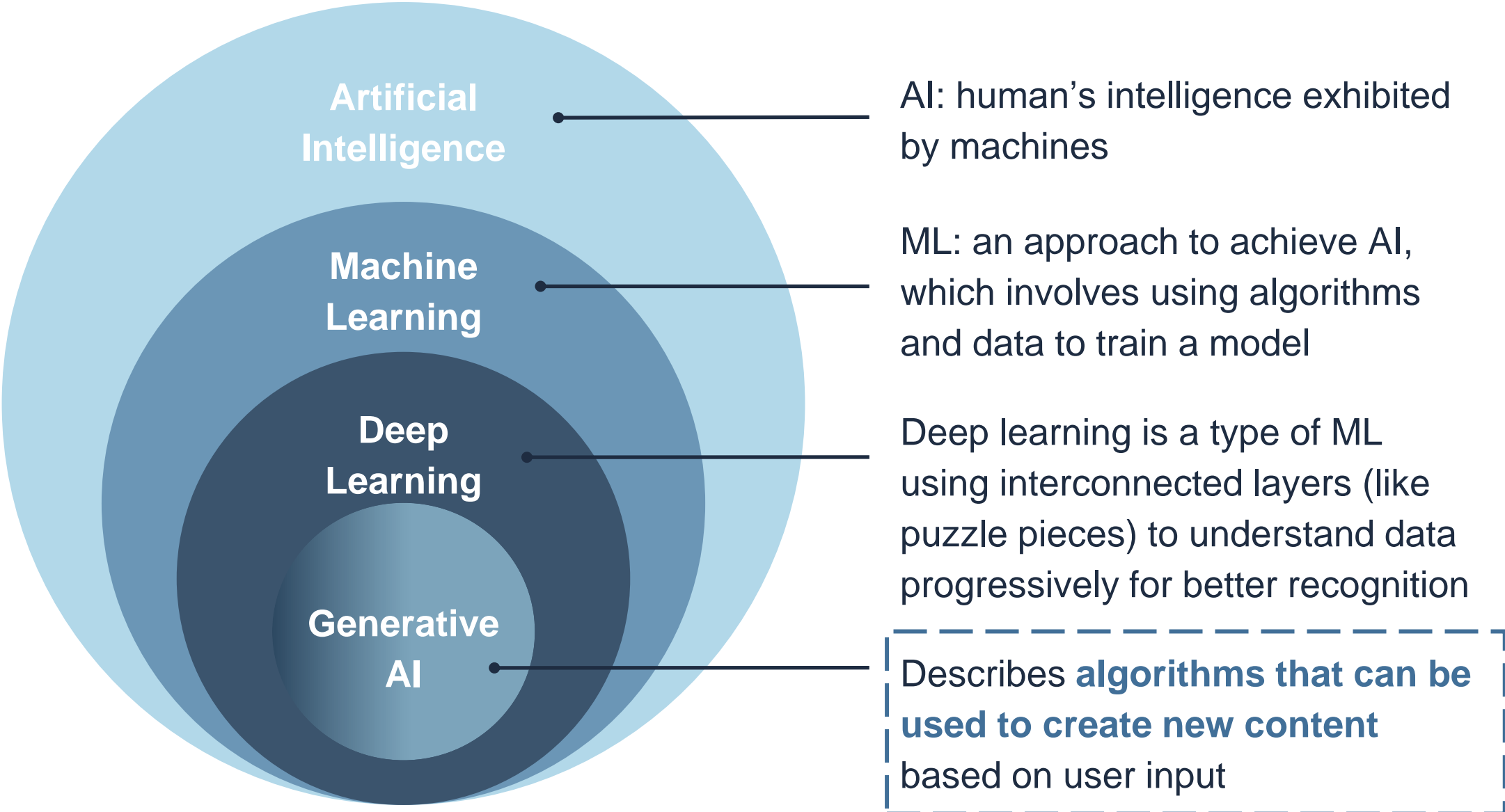


Note: (\*) Y Combinator is widely recognized as one of the world's most respected startup accelerators; it organizes companies into two batches per year (Summer and Winter)

Sources: (1) Y Combinator; (2) Atlantico analysis

# Generative AI broke into public consciousness in the past year, with the advent of ChatGPT and rise in VC funding

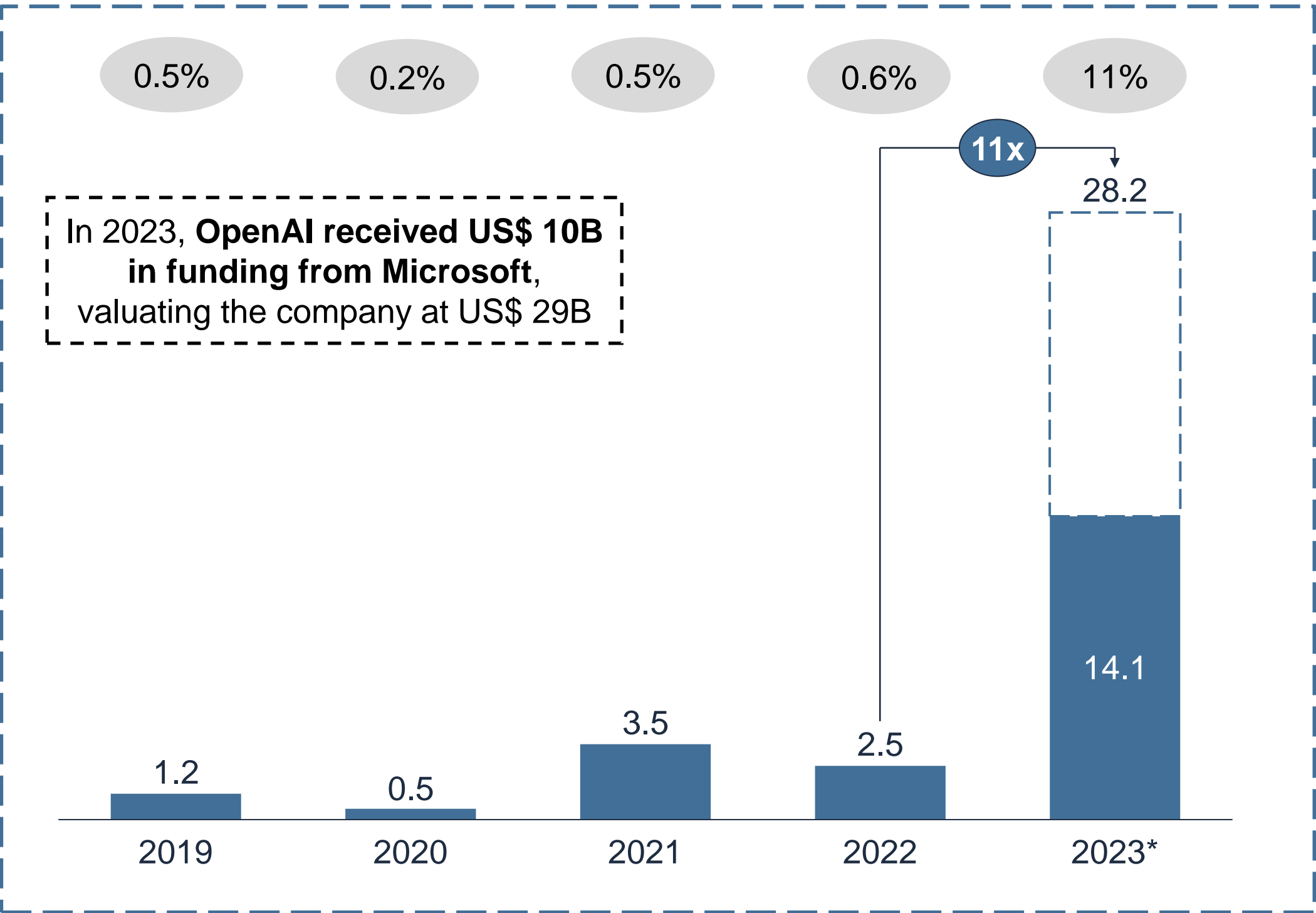
## The four interacting domains of AI<sup>1</sup>



## Global Generative AI venture funding<sup>2</sup>

2018-2022, US\$ B

% of total VC funding ■ Generative AI VC funding



Note: (\*) Annualized based on venture funding deployed in Q1 and Q2 of 2023  
Sources: (1) Atlantico Analysis; (2) CB Insights



5.1

# Regional Impact



**ATLANTICO**

/imagine AI in Latin America in the style of **Rufino Tamayo**

# Latin America is above the global average for AI readiness, with human capital presenting the biggest bottleneck

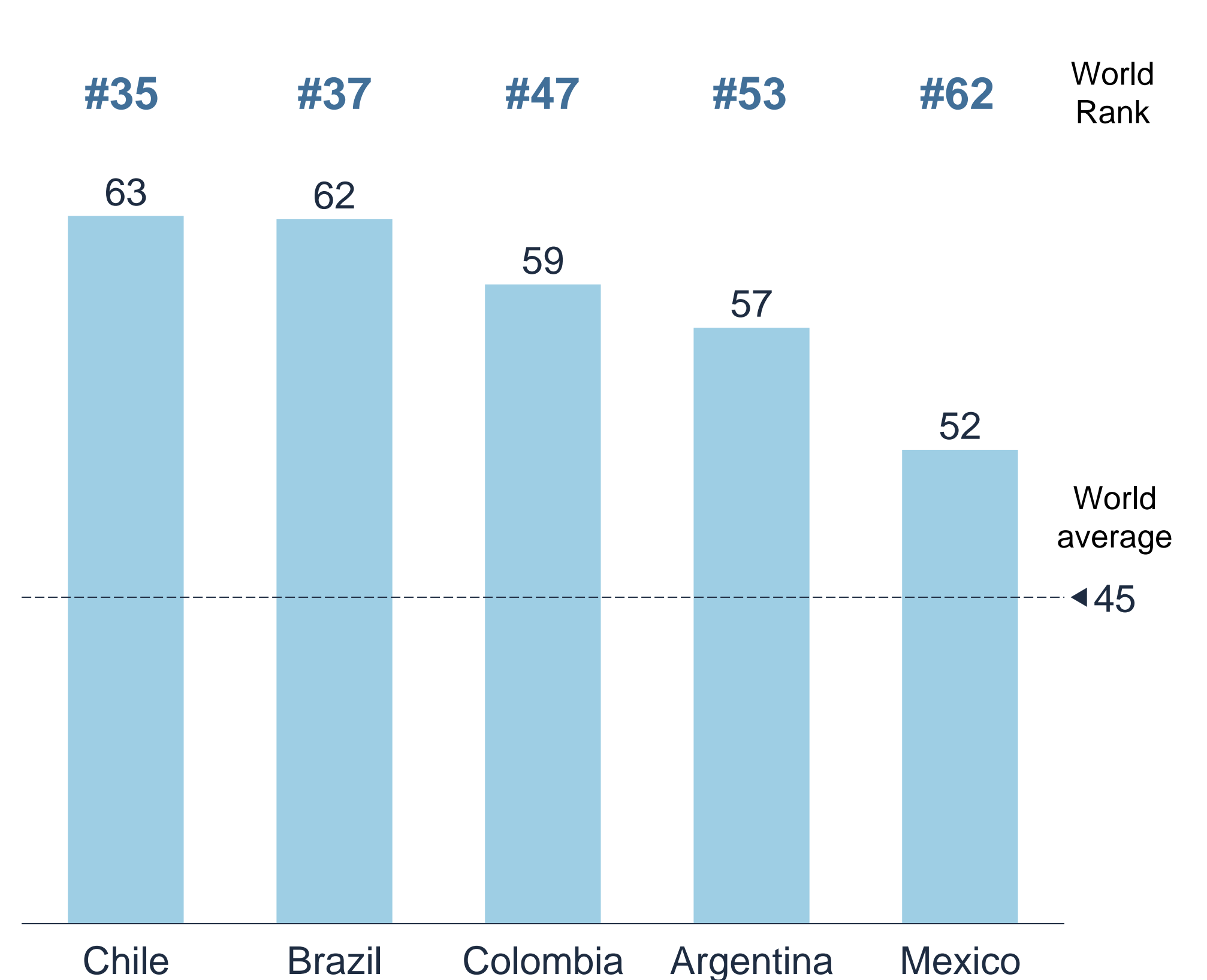
## The three pillars of the AI Readiness Index<sup>1</sup>

○ Latin America & The Caribbean overall score (out of 100)



## AI Readiness by Latin American Country<sup>1</sup>

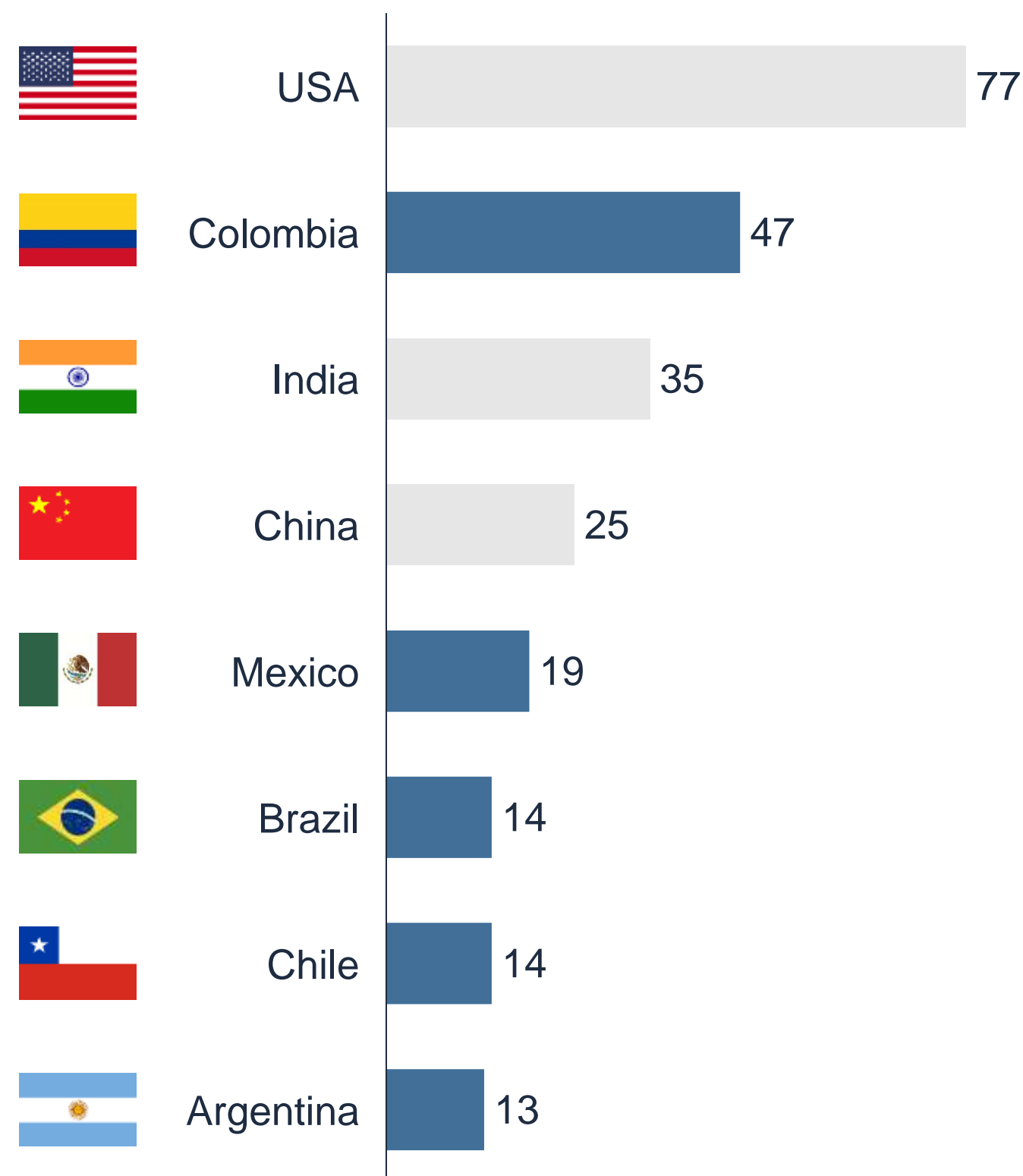
2022, AI readiness Index by country



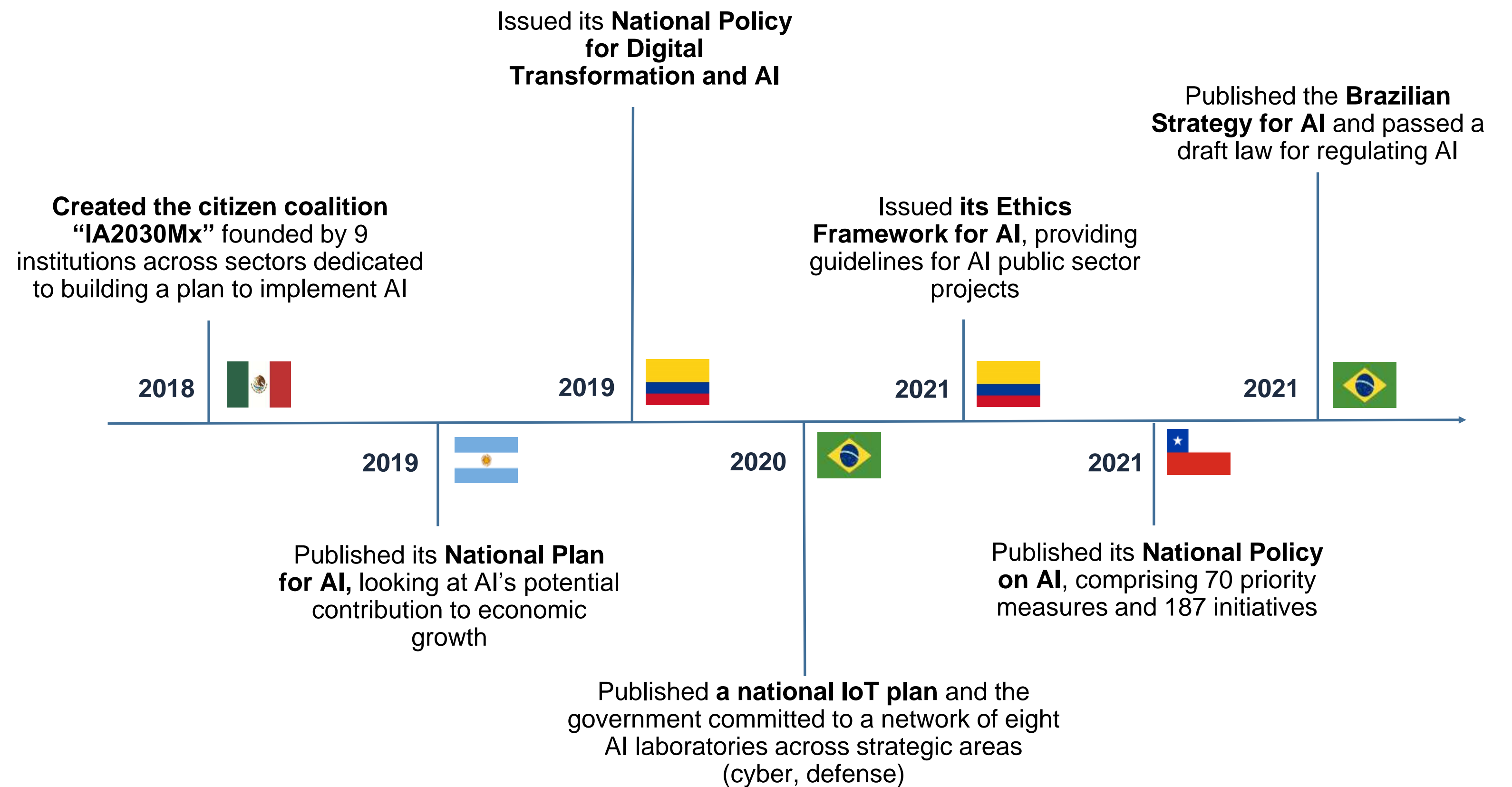
# LatAm governments have been actively drafting new AI regulation; these must carefully weigh risks vs benefits

Number of AI policy initiatives<sup>1\*</sup>

2023



Most impactful government initiatives in the region by country<sup>2</sup>



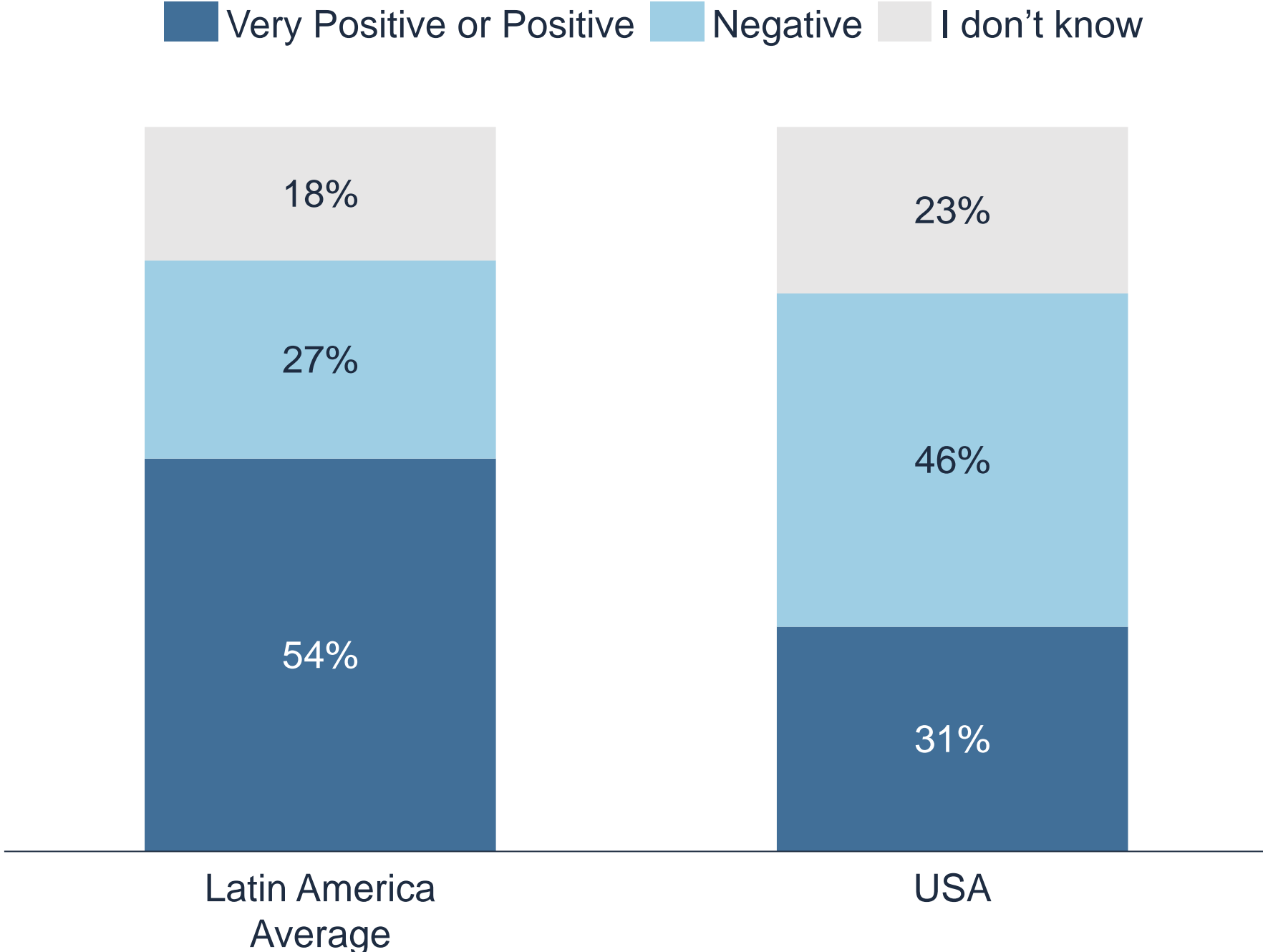
Note: (\*) AI initiatives refer to policies and strategies across Governance, Guidance and Regulation, AI enablers and Incentives and Financial Support  
 Sources: (1) OECD AI Policy Observatory, (2) The Economist & Google "Seizing the Opportunity: the Future of AI in Latin America" (2022)

# The Latin American population feels optimistic about the impact of AI, although it fears AI will bring some job loss

## Impact of AI across selected countries

2023, % of respondents\*

*Do you think the impact of AI on our society will be positive or negative?*

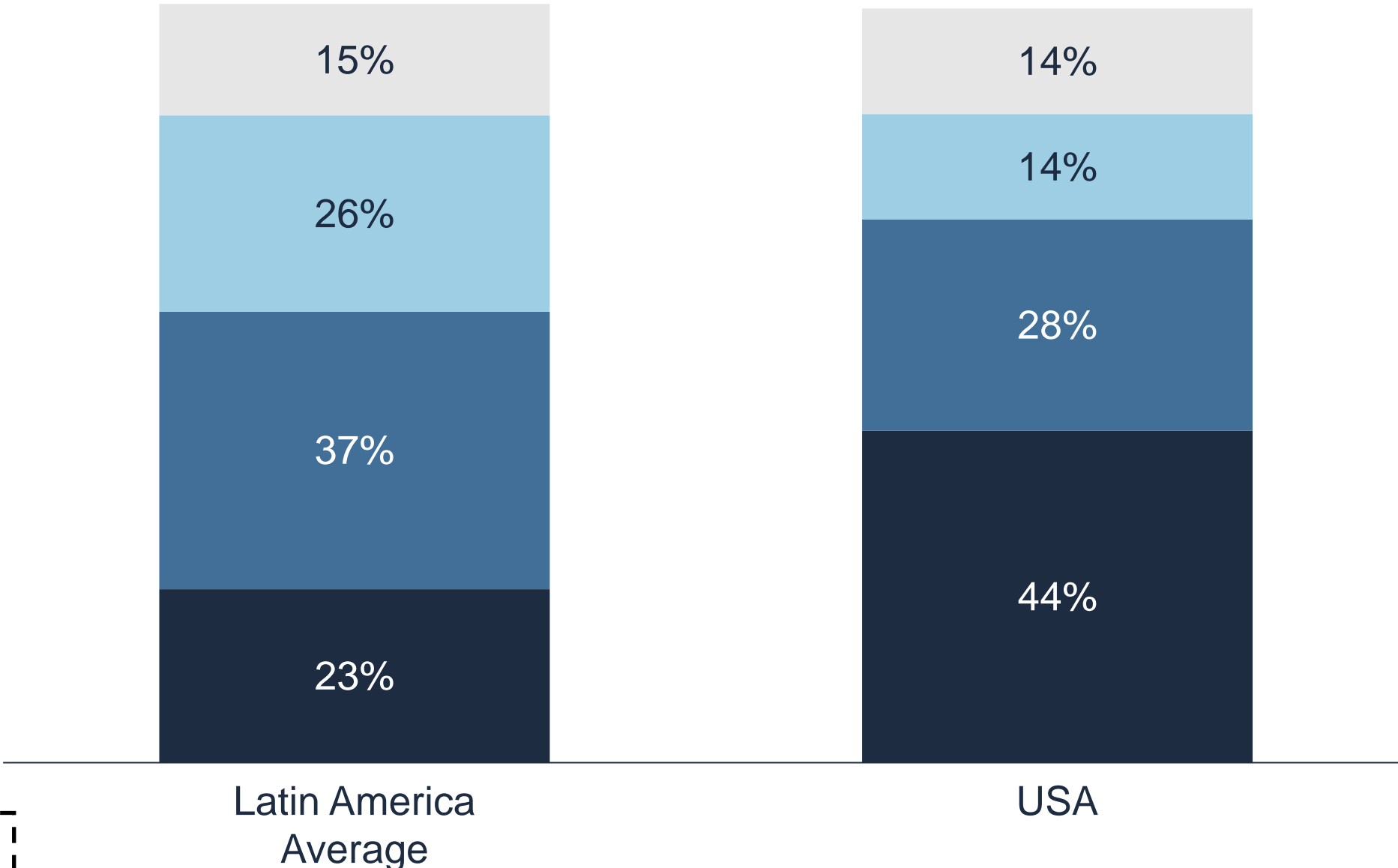


## Threatening sentiment from AI in selected countries

2023, % of respondents\*

*Do you believe that your work could be threatened by AI in the near future?*

■ I do not believe AI will threaten my job    
 ■ I believe AI could perform most or all of my job  
■ I believe AI could perform some of my job    
 ■ I don't know



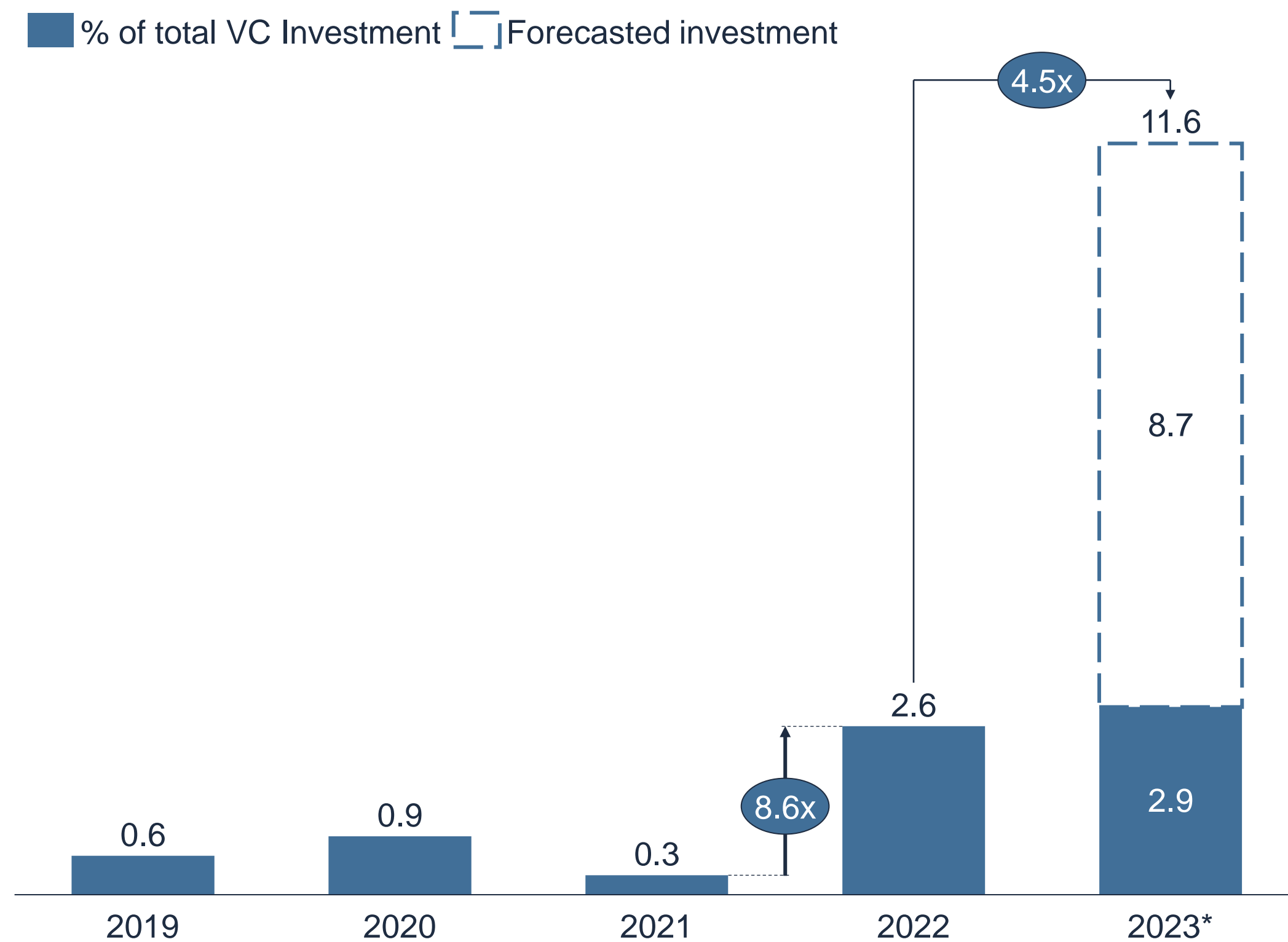
For a deep dive on Latin America's population view on AI, [click here](#)

Note: (\*) sample size: 801, margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
 Source: Atlantico and AtlasIntel Survey 2023

# Off to the Races: While venture capital funding for AI in Latin America still lags the US, it has been growing rapidly

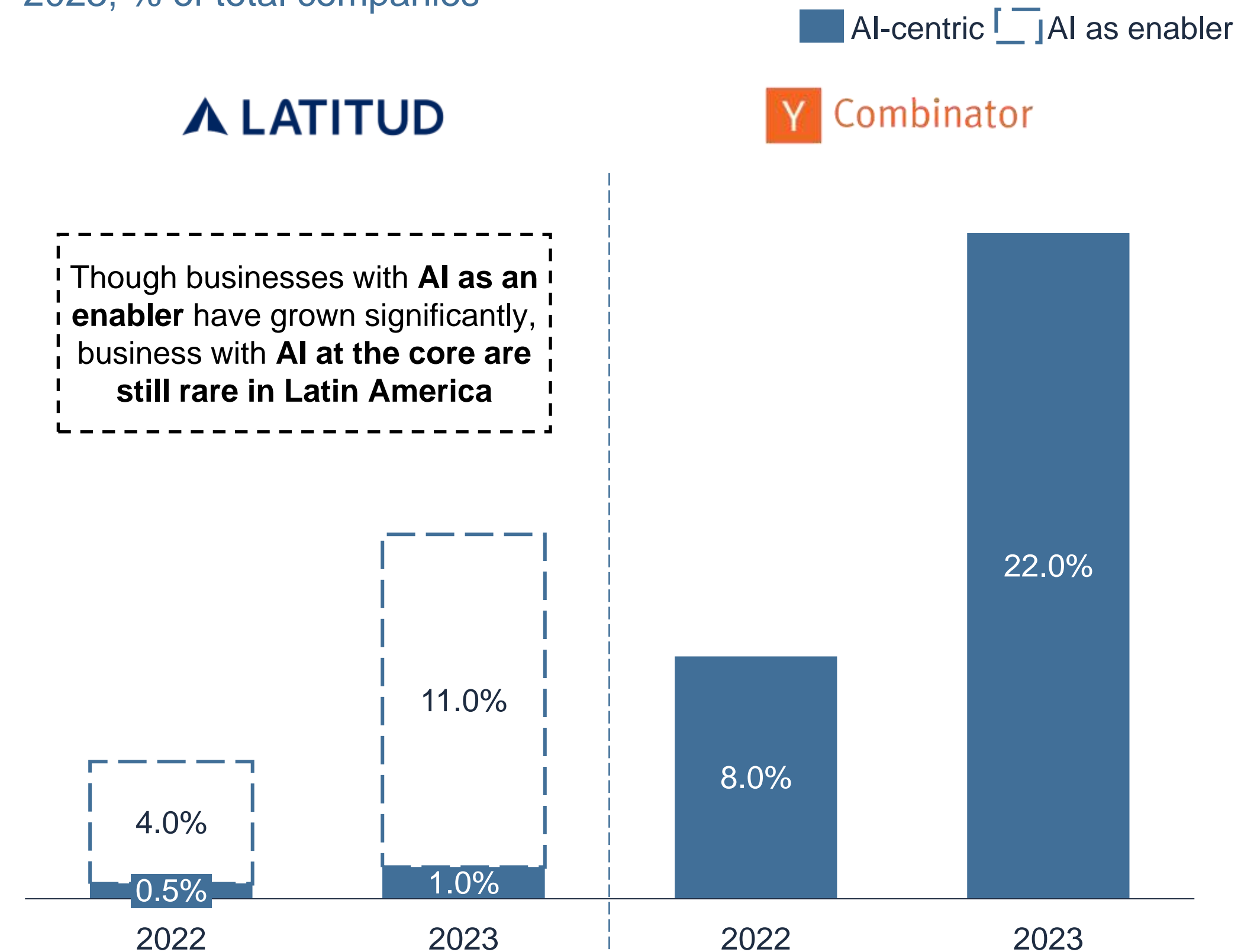
## Venture Investment in AI in Latin America<sup>1,2</sup>

2019- Q1 2023, % of respondents



## Latitud AI fellowships & Y Combinator\*\* AI investments<sup>3,4</sup>

2023, % of total companies



Notes: (\*) Extrapolated from Q1, (\*\*) YC data considers batches of Winter 2023 and Summer 2023 (as of August 22<sup>nd</sup>, 2023)

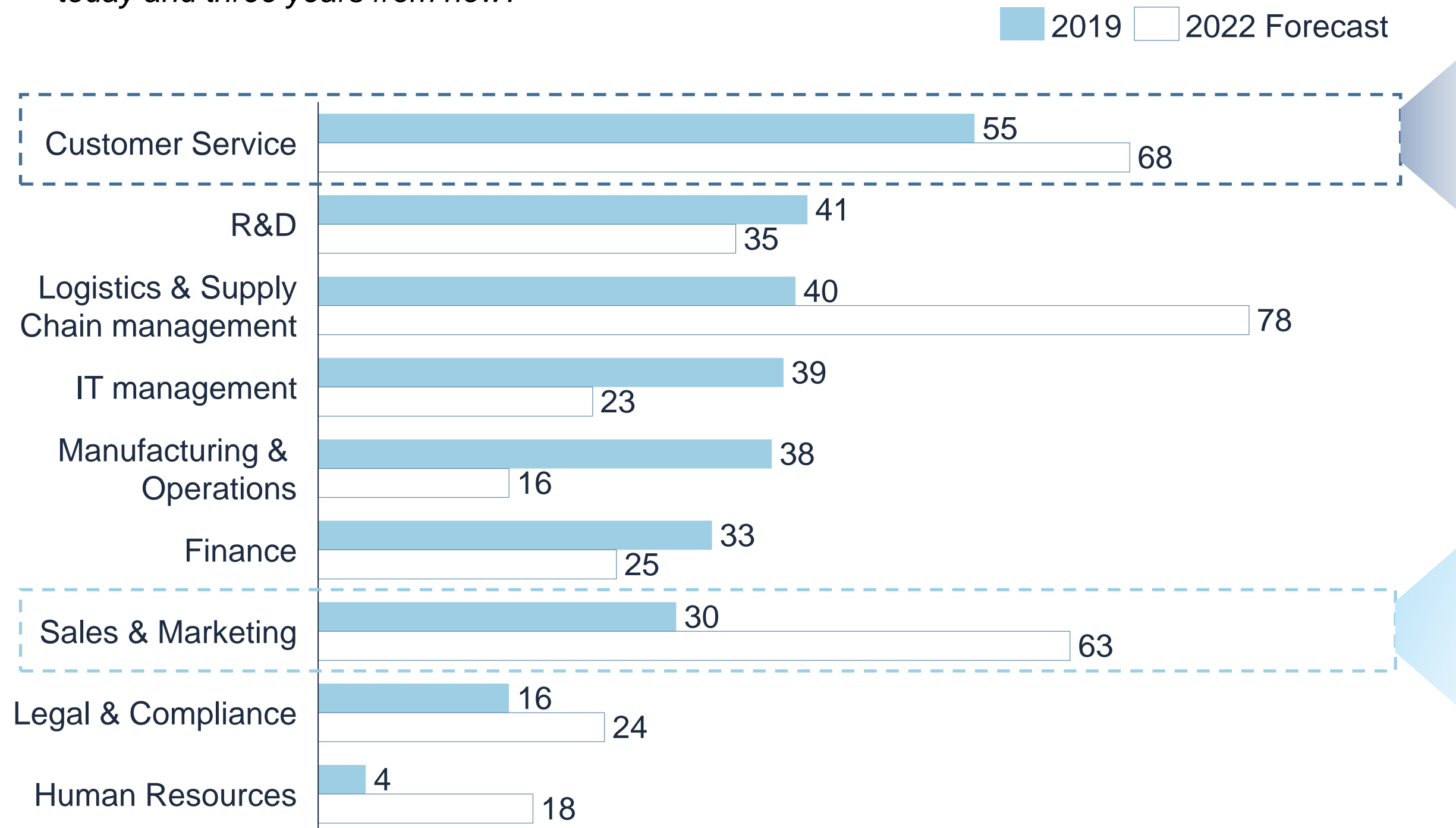
Sources: (1) LAVCA AI Investment in Latin America 2019-Q1 2023; (2) LAVCA Industry Data; (3) Y Combinator; (4) Latitud, a platform for top LatAm tech founders

# Customer Service and Sales & Marketing emerge as the most prominent use cases for AI in regional businesses

## Business areas where AI is used in Latin America<sup>1</sup>





2019 vs. 2022, % of respondents

*In which three parts of your business are AI technologies being used most actively today and three years from now?*



## Business leveraging AI in Latin America

Case examples

Customer Service		In June 2023, Nubank launched Precog, a real-time event AI that has <b>improved Nubank's ability to predict customer intent</b> in customer service interactions <b>by 50%</b> <sup>2</sup>
Customer Experience		In August 2023, launched Compr.Ai, an AI-powered chatbot allowing users to place orders and make purchases through WhatsApp <b>using text and voice commands</b> <sup>3</sup>
Sales & Marketing		AI-powered tools automate ad moderation by analyzing 5k variables in less than a second, resulting in <b>only 0.56% of over 563M ads needing manual moderation</b> in H2 2022 <sup>4</sup>
Sales & Marketing		In April 2023, NotCo launched a <b>campaign using AI-generated hyper-realistic images</b> to raise awareness about the shortened life-span of animals in the current food industry <sup>5</sup>

Sources: (1) MIT Technology Review Insights survey 2020; (2) Nubank Editorial "AI at Nubank: how one of the largest digital banks in the world uses artificial intelligence" (2023); (3) iFood Team; (4) Mercado Libre Transparency Report H2 2022; (5) NotCo

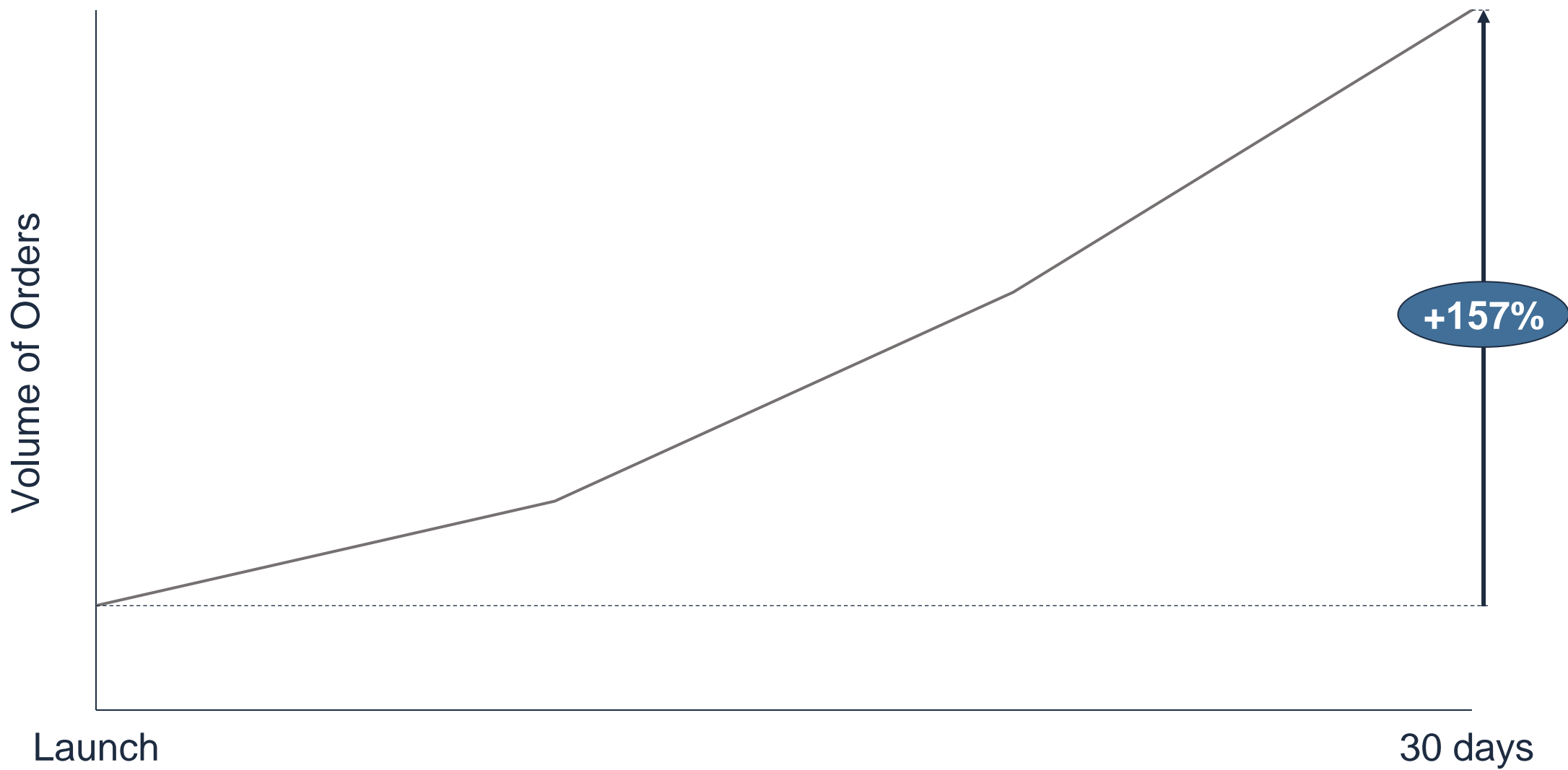
# iFood doubled order volume and tripled order conversion in its AI-powered chatbot pilot with supermarkets



iFood is Brazil’s leading delivery platform, handling ~25% of all food delivery orders with nearly 80% market share across online aggregators. Recently, it introduced **Compr.AI**, an AI-powered chatbot that leverages OpenAI’s technology to allow users to place orders and make purchase through WhatsApp using text and voice commands

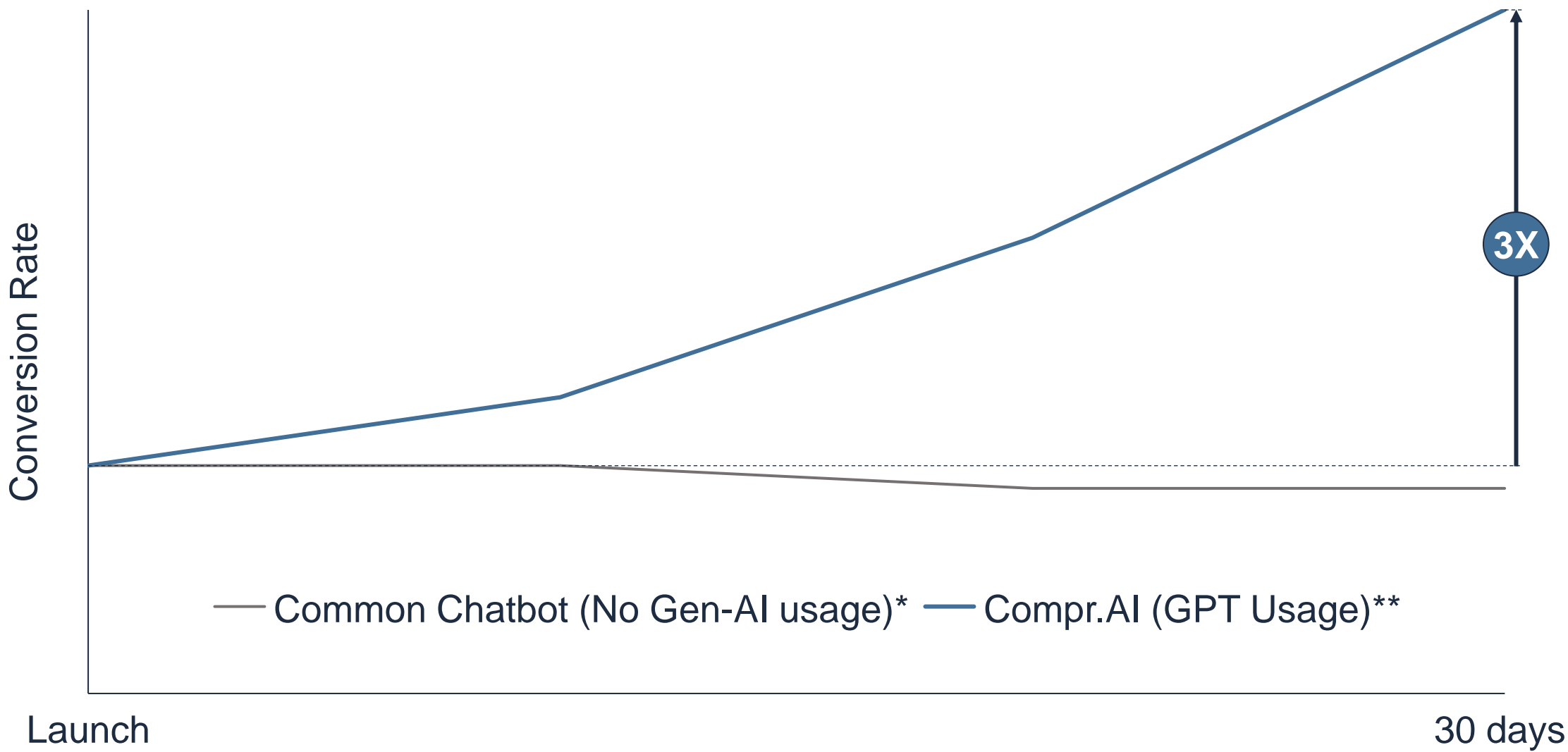
## Volume of orders in first 30 days of AI Chatbot

2023, volume of orders of pilot participants



## Conversion of orders in first 30 days of AI Chatbot

2023, % conversion of orders of pilot participants



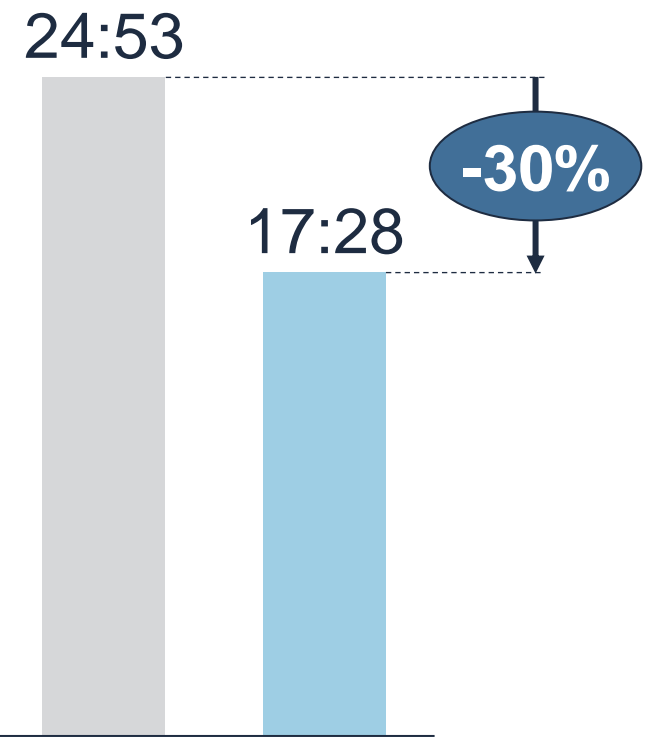
Notes: (\*) Common chatbot is a Whatsapp chatbot that does not use the GPT model to operate; (\*\*) Compr.AI is iFood’s new AI chatbot, that uses the GPT model to allow consumers to place grocery orders through Whatsapp, currently available for 20 partner establishments  
 Source: iFood internal data

# Blip Copilot, developed with Santander's Empréstimo Sim, improved productivity and quality of customer support

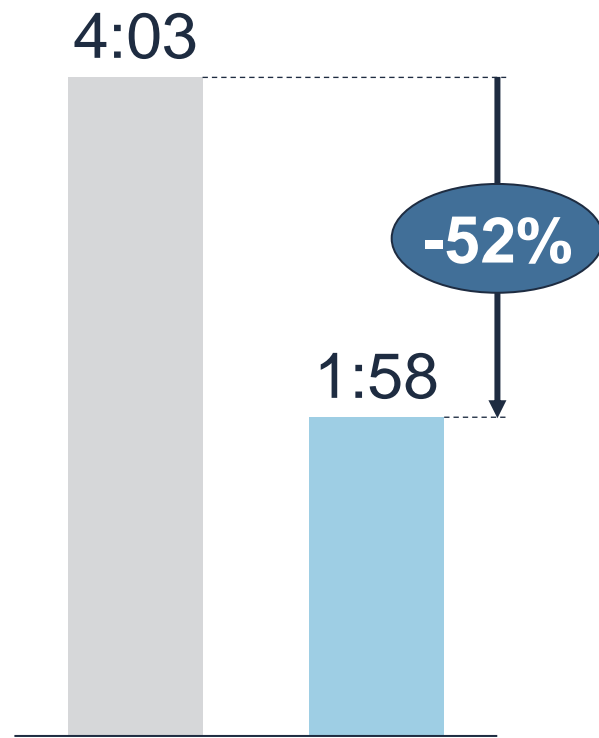


Blip, a Brazilian automated communications platform, has partnered with Empréstimo Sim to release Blip Copilot. The tool uses generative AI to enhance customer service by offering personalized suggestions to support agents.

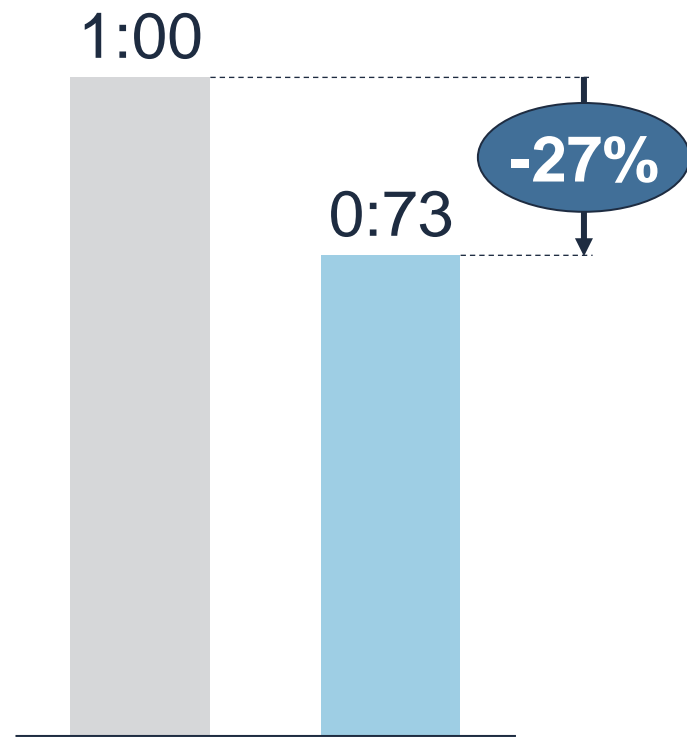
**Support time**  
Avg. minutes



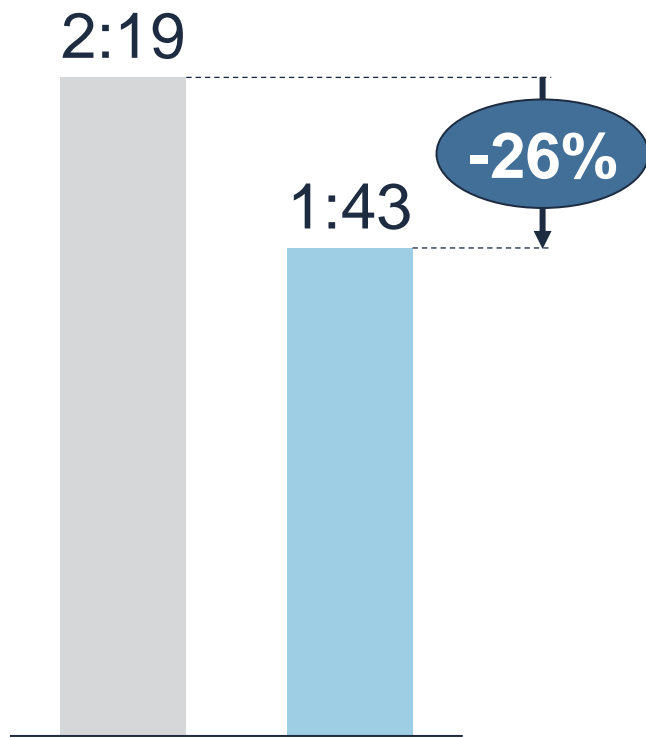
**Wait time**  
Avg. minutes



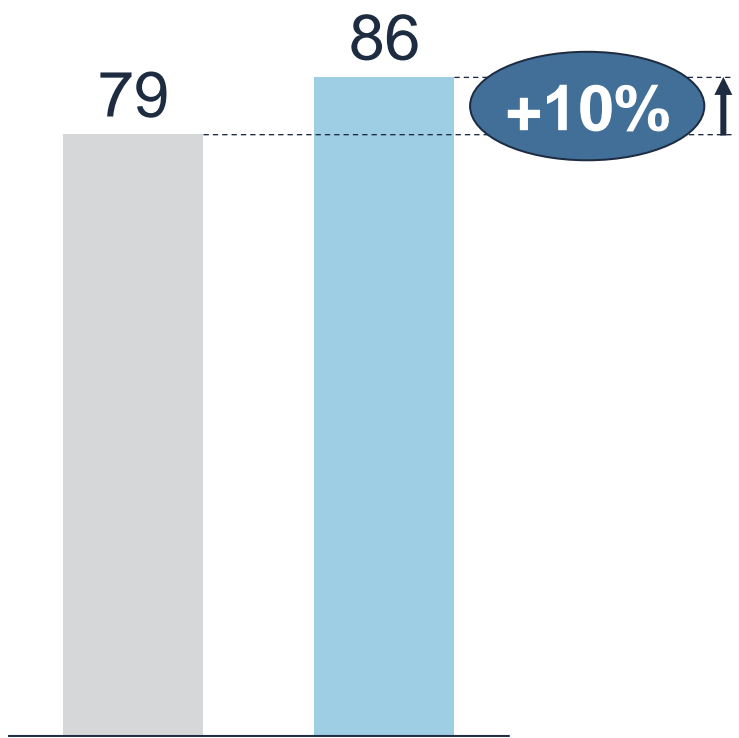
**1<sup>st</sup> response time**  
Avg. minutes



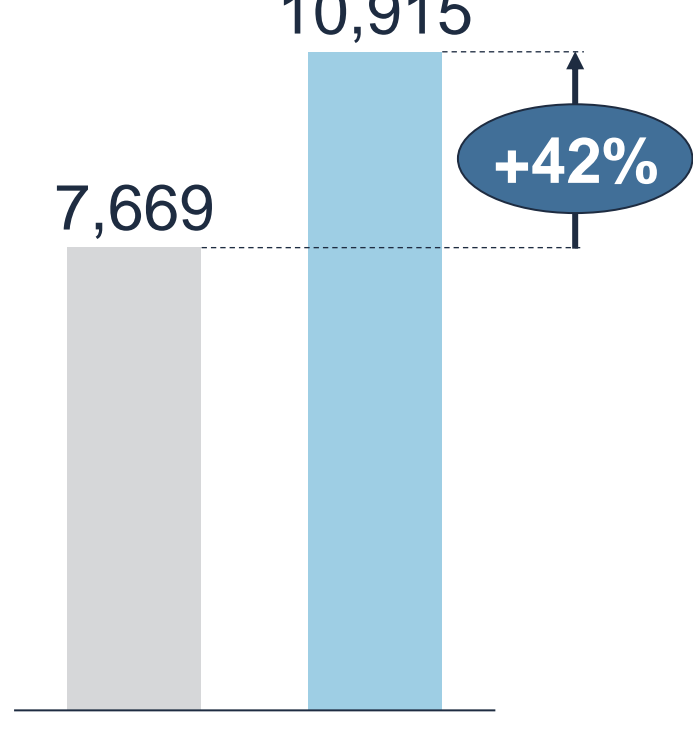
**Response time**  
Avg. minutes



**Customer satisfaction**  
%



**People served**  
# of tickets



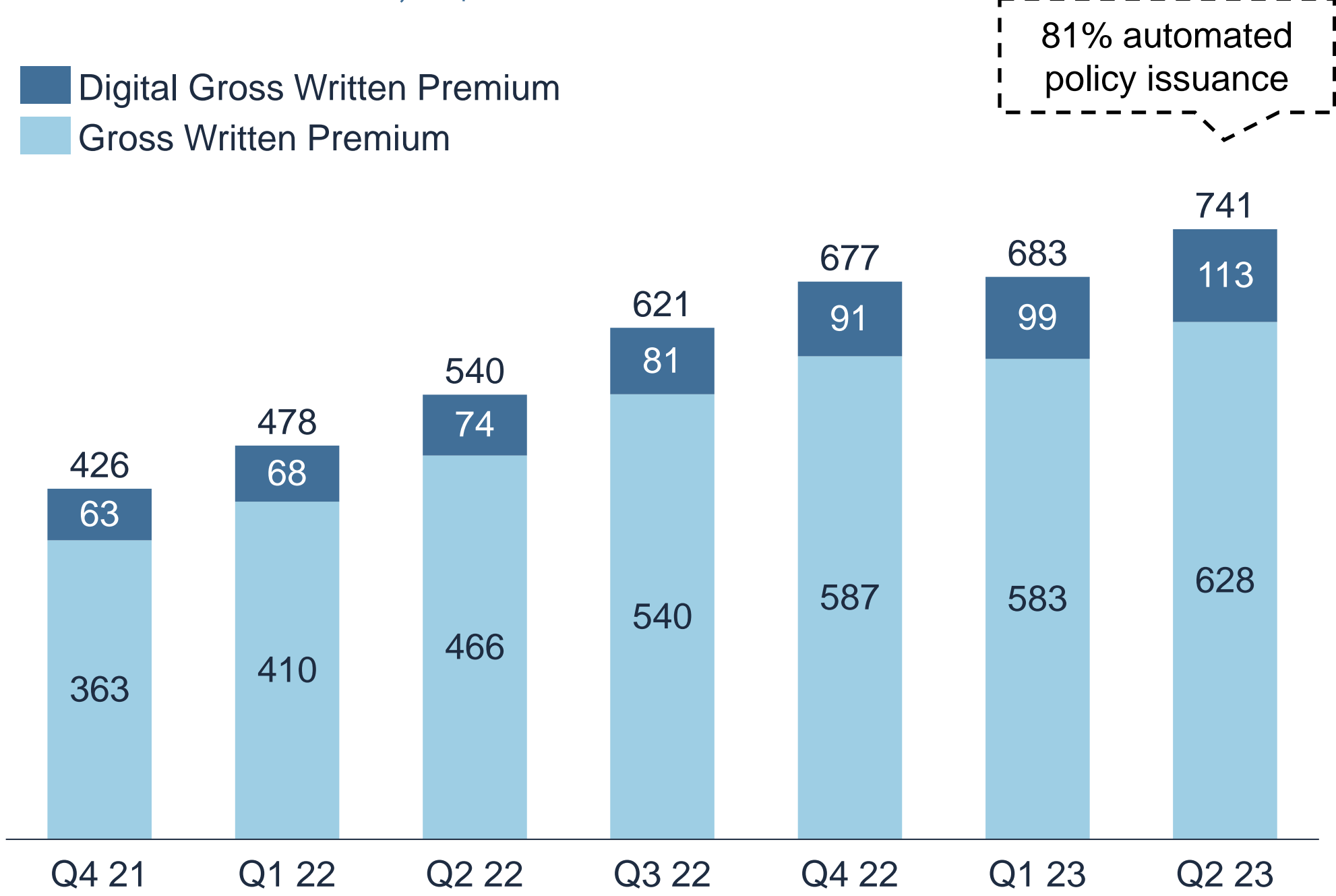


# Akad is a leading digital insurer in Brazil that uses AI to empower their brokers to deliver superior customer service

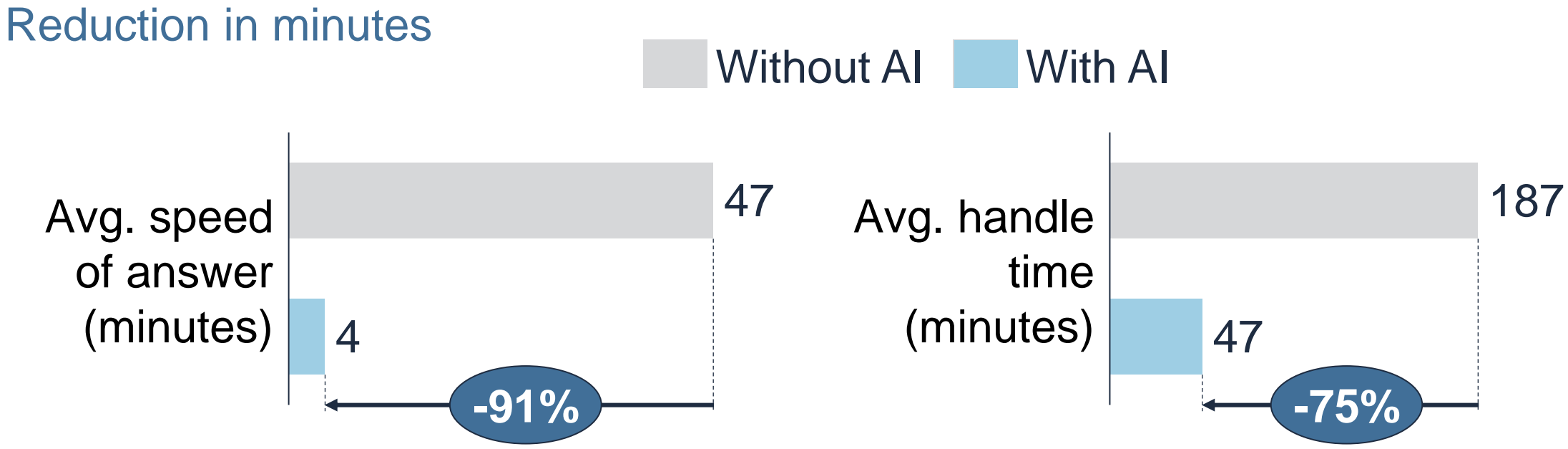


Akad Seguros provides business insurance to SMEs across diverse sectors, including cargo, professional liability, cybersecurity, and business property, leveraging Cyberlabs' cutting-edge technological expertise

## Akad's LTM revenue growth Q4 2021 to Q2 2023, R\$ M



## Impact of AI deployment in customer service



## Impact of "Brokers as Insurtechs" initiatives

- +5.6k** active brokers empowered with data tools and dashboards
- +1k** brokers utilizing **+7k** personalized websites with quotation capabilities to sell digital products

# AI optimizes ad spend, delivering improved campaign results for Brazilian companies

## Applications of AI in Ads

**25%+** of all YouTube video advertisers have automatically generated video assets in their campaigns

**79%** higher click through rate (CTR) for advertisers that use customer match (AI tool)

**67%** higher conversion rate (CVR) for advertisers that use customer match (AI tool)

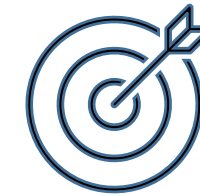
**18%** incremental conversions at comparable cost per acquisition with Performance Max (AI Tool)

## Digital maturity leads to enhanced results

A BCG-Google analysis shows that **63% of Brazilian companies** have achieved a **sophisticated level of digital maturity**, as measured through:



Agile organization culture



Aligning business & marketing goals

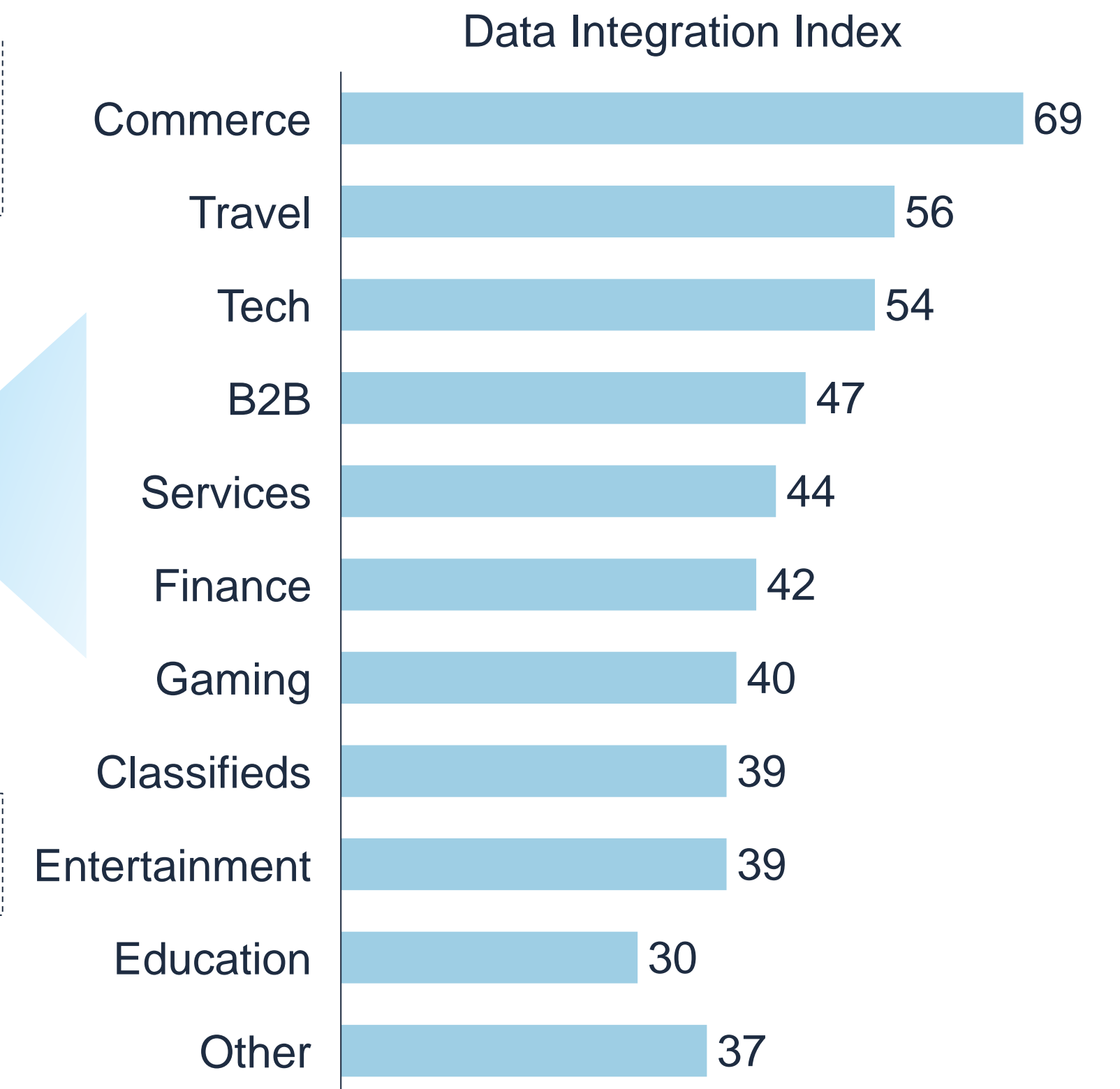


Data Integration

Localiza scores in the top 1% of companies in Brazil for digital maturity

**Localiza** +184% ROAS\*

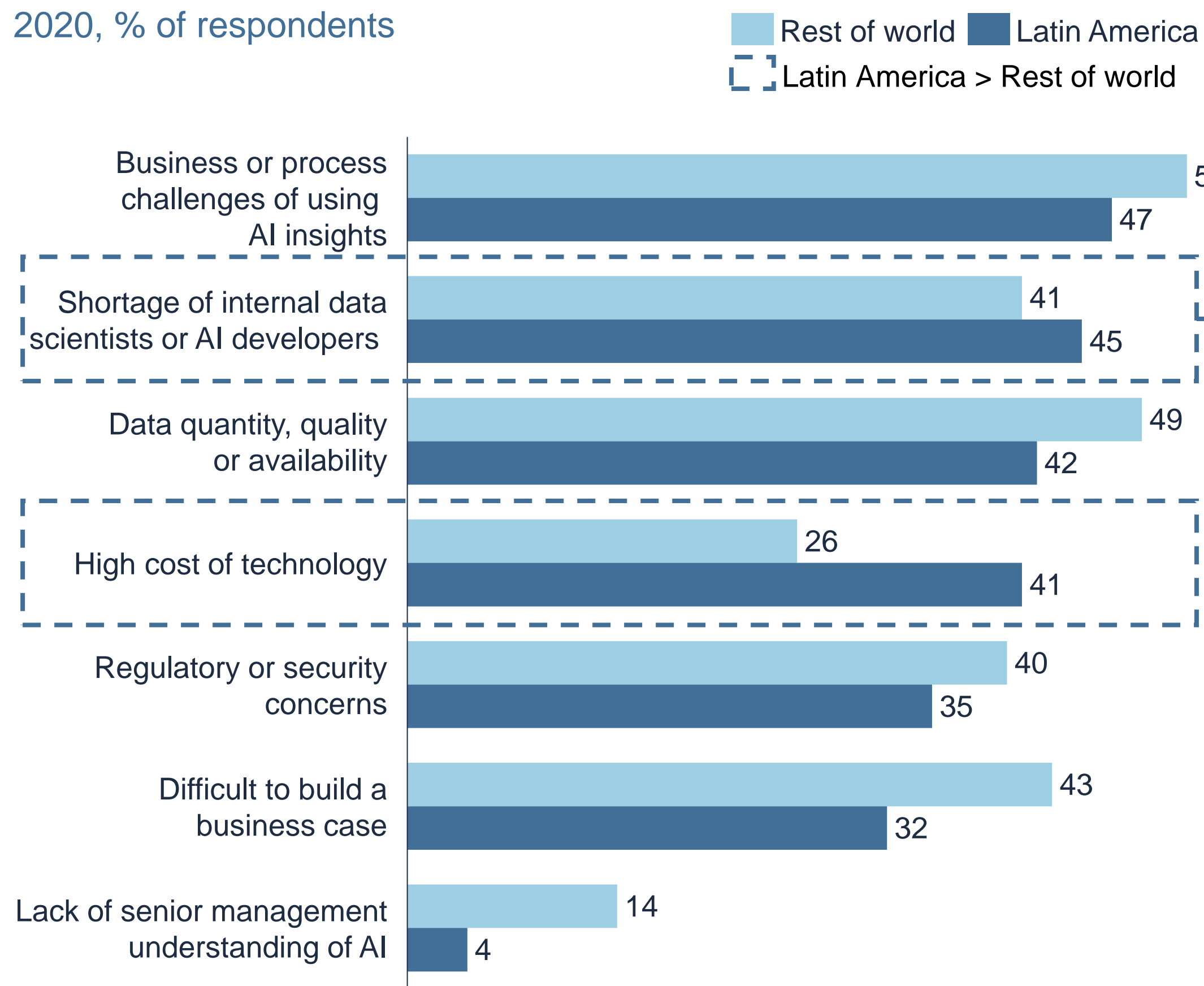
## Data integration by Industry in Brazil



# High cost of technology and a shortage of talent are challenges for companies to adopt AI in Latin America

## Greatest constraints of AI use<sup>1</sup>

2020, % of respondents



## Startups' sentiment on AI adoption<sup>2</sup>

2023, % of respondents\*



**57%** believe that the shortage of qualified labor is the main hindrance to the development of AI in Brazil



**49%** want their AI experts to graduate from courses better skilled to turn models into products



**41%** expect their applicants to develop more creative and out-of-the-box thinking and models

Note: (\*) n=49 startups

Sources: (1) MIT Technology Review Insights Survey 2020; (2) Google for Startups, "The Impact and Future of AI in Brazil" (2023)

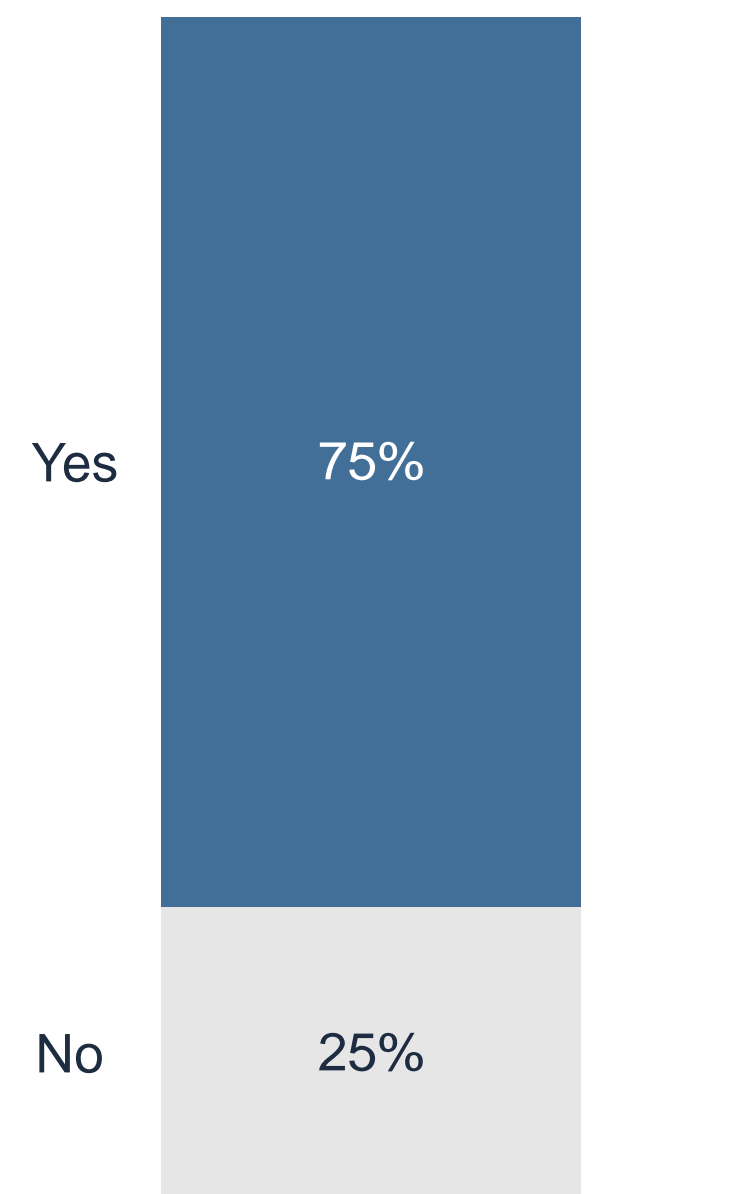
# Employers report a change in skills needed to work versus last year, placing the most value in hard skills and AI talent

## Employers' view on skills needed for hiring<sup>1</sup>

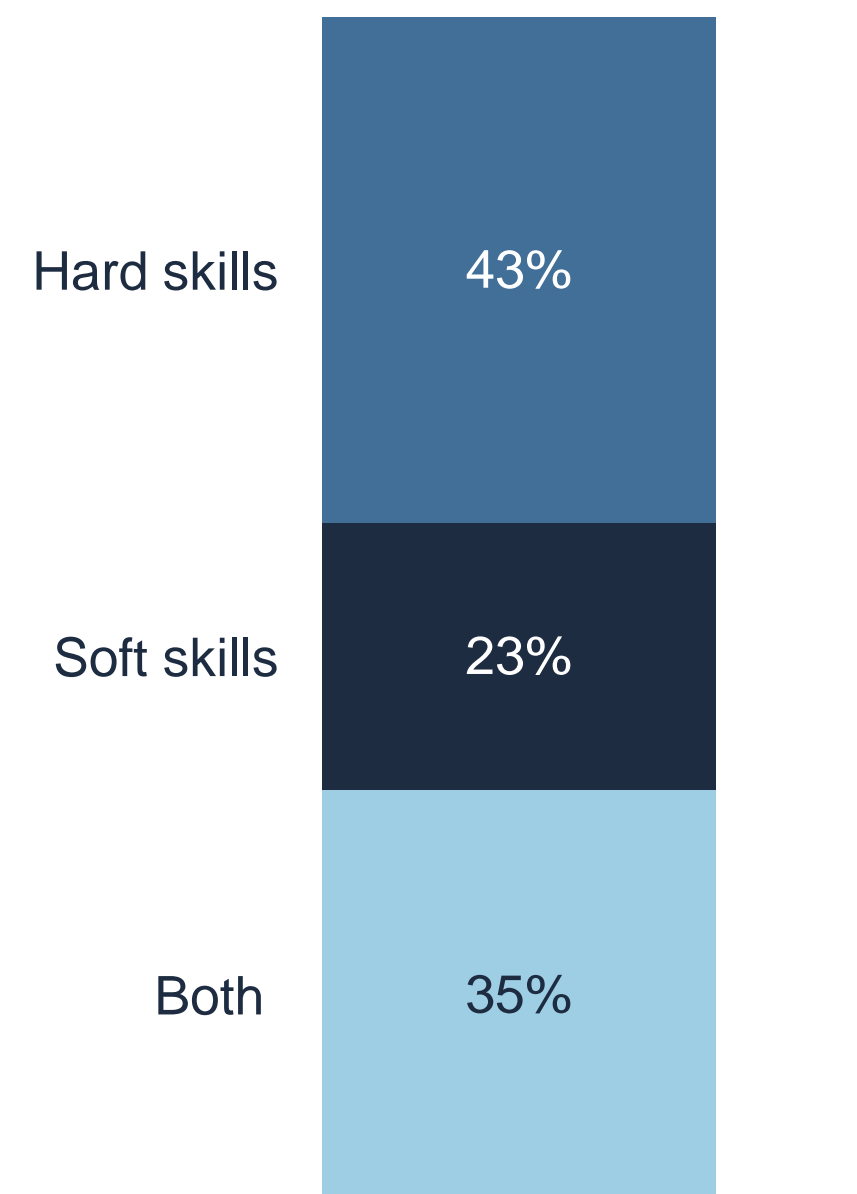
2023, % of respondents



Have the **skills that employees need at work** changed in the last 12 months?

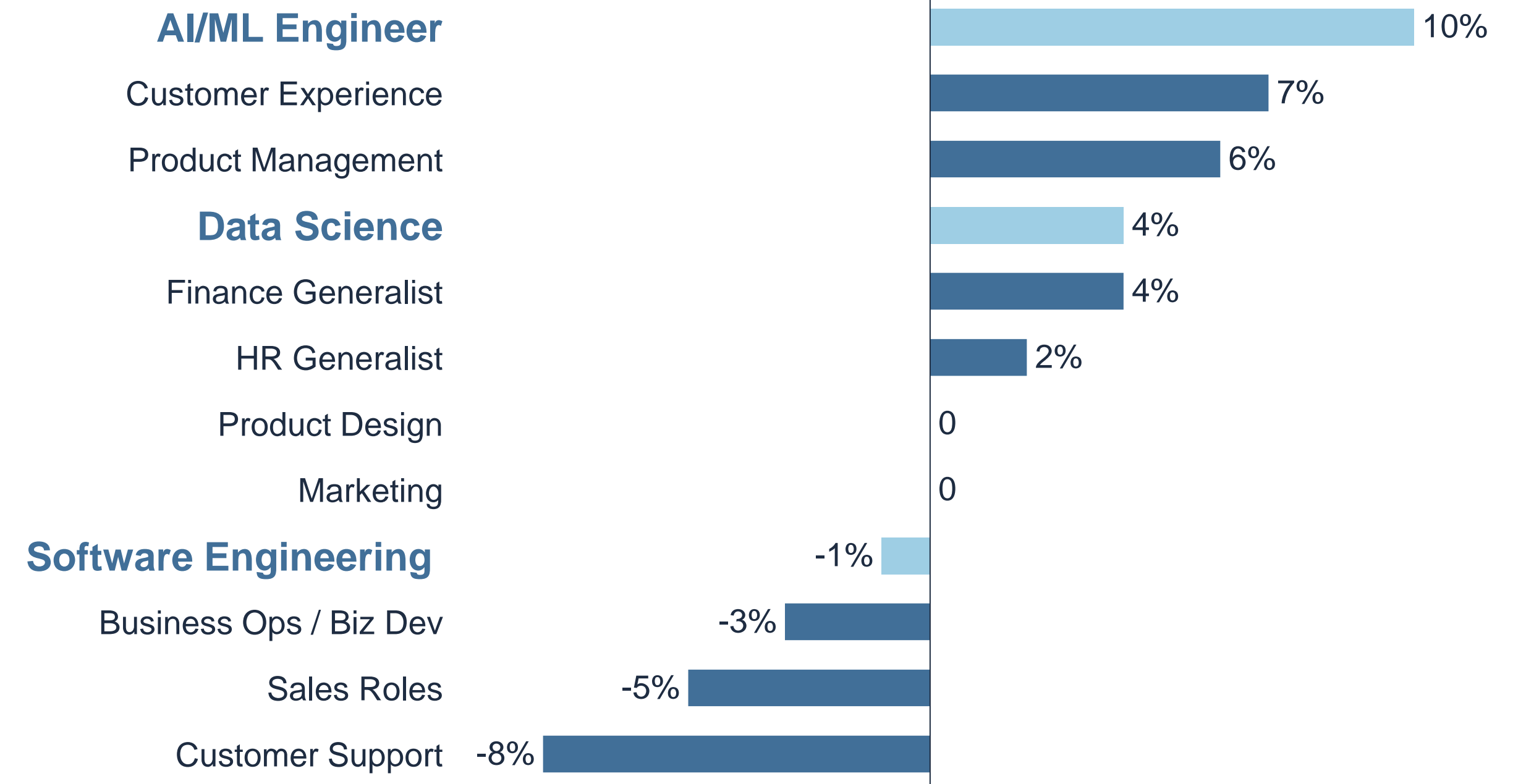
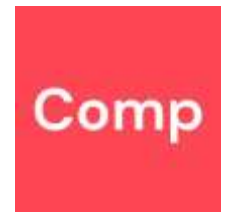


What is more important for employees today: **hard skills** or **soft skills**?



## Change in cash compensation over time<sup>2</sup>

Q4 2022 to Q2 2023\*



Note: (\*) Comp is a Brazil-based compensation startup that hosts the country's largest total compensation database (over 500 tech companies contributing their anonymized data)

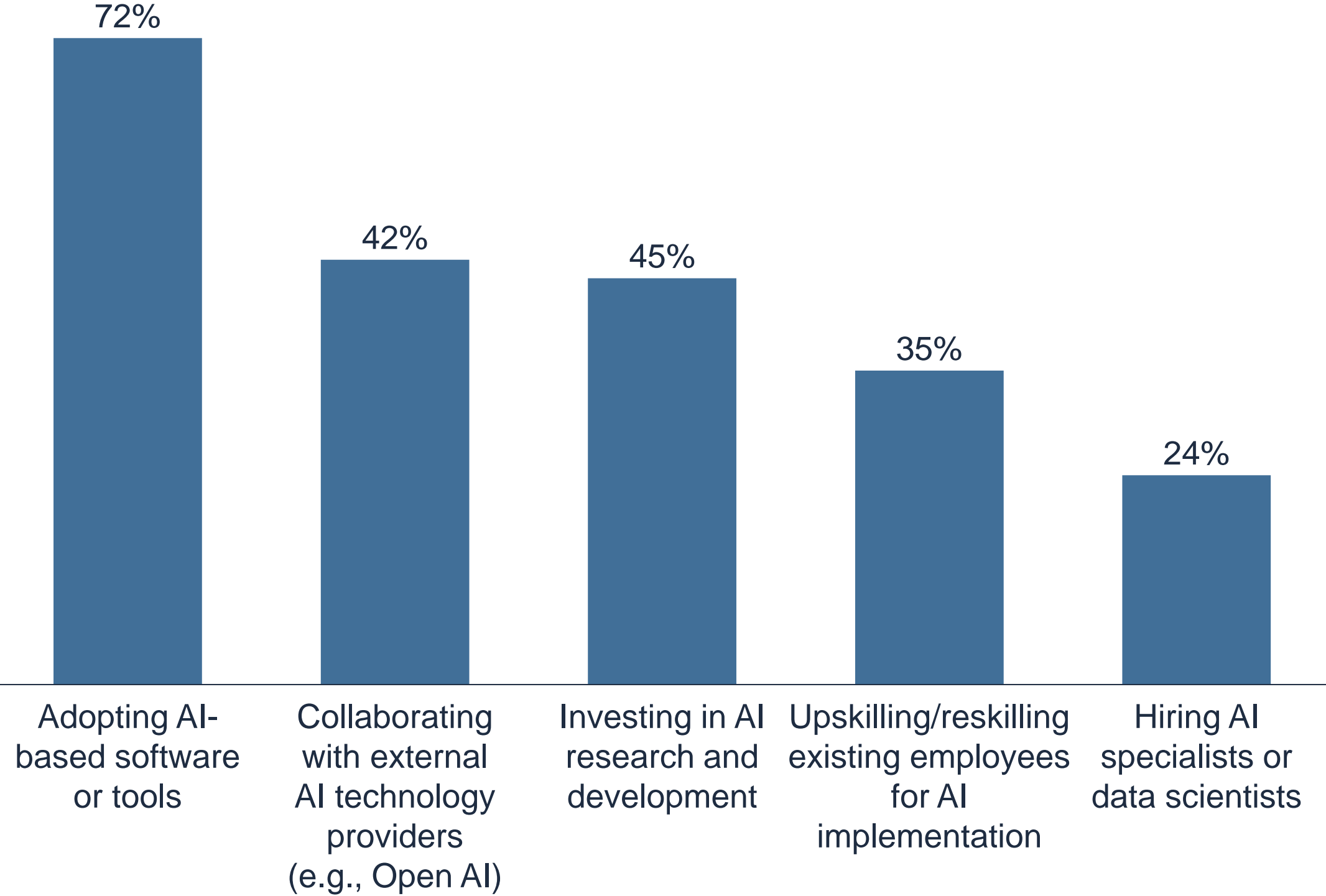
Sources: (1) Runa and Atlantico Survey 2023 (n=508); (2) Comp Internal Data

# Despite challenges, 72% of founders adopted AI initiatives while 69% of engineers leverage AI tools in their day-to-day

## AI implementation in startups<sup>1,3</sup>

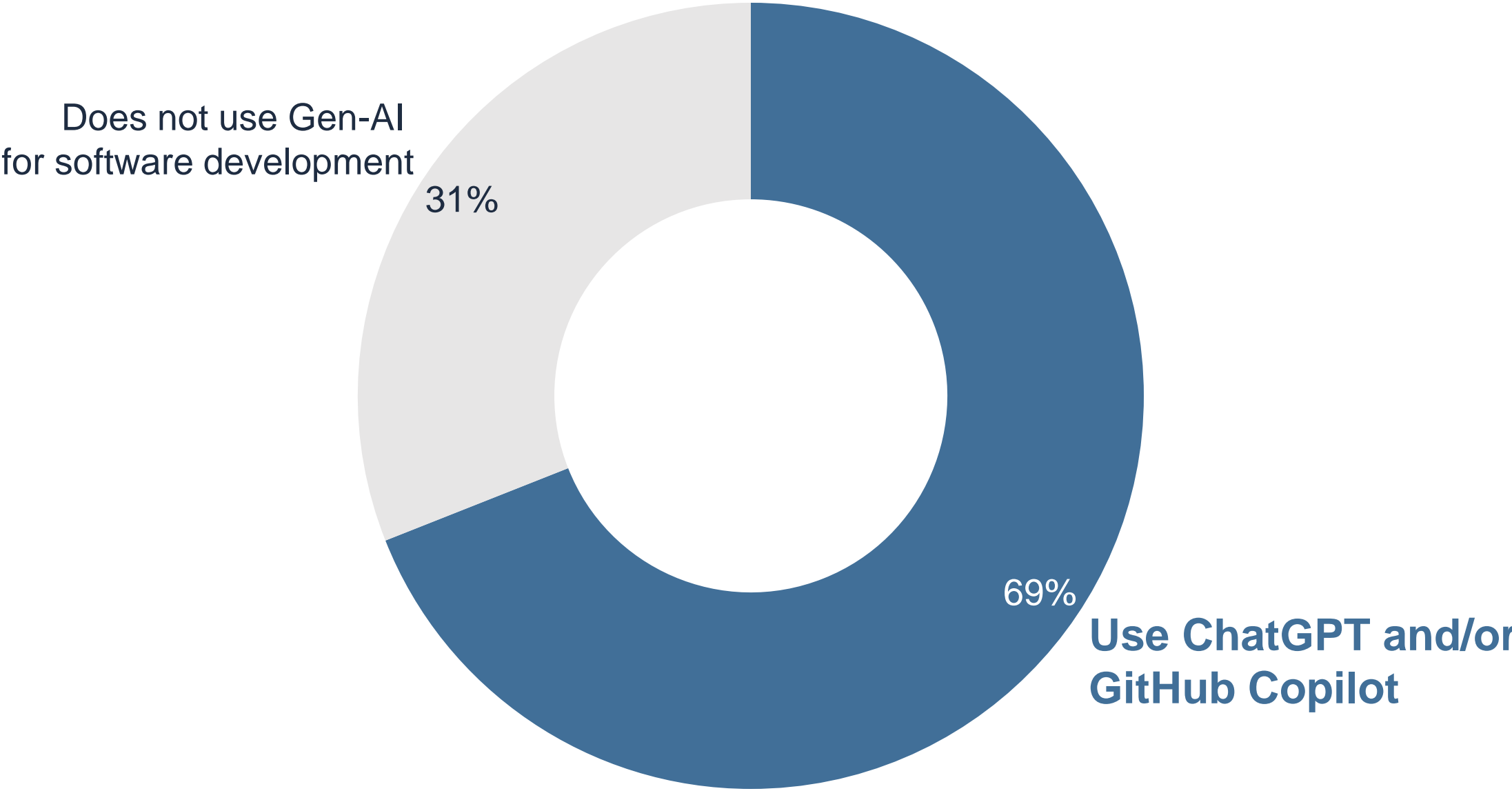
2023, % of respondents

*What measures has your company taken or is planning to take to leverage AI technologies? (Select all that apply)\**



## AI usage for software development across tech companies in Latin America<sup>2,3</sup>

2023, % of respondents



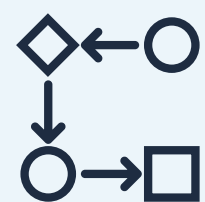
Note: (\*) Only 2% of respondents said they are not doing anything yet  
 Source: (1) Atlantico company survey 2023 (n=146); (2) Atlantico survey n=233 (Q1 2023); (3) Atlantico survey n=45 (Q2 2023)

# Nascent AI applications in Latin America benefit from local specificity in addressing the region's most pressing issues

## Potential advantages of local players



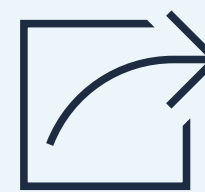
**Local data training:** AI models fine-tuned to specific languages can significantly outperform state-of-the-art models on several benchmarks<sup>1</sup>



**Complex workflows:** local players can more quickly adapt their models to suit the cultural nuances and real-time adaptations in workflows



**Regulatory complexity:** local players are more familiar with constantly changing laws and regulations that are crucial for AI applications



**Distribution nuances:** relationships with local partners combined with understanding of cultural nuances may affect ability to distribute

## Industries and challenges prime to benefit from local AI solutions

### 1. EDUCATION

**51%**

of students are behind on reading by age 10 in Latin America & the Caribbean<sup>2</sup>



### 2. HEALTHCARE

**2.2**

Doctors per 1000 people is the region's average, below the 2.5 WHO recommendation<sup>3</sup>



### 3. BUREAUCRACY

**~548h**

was the time spent in 2022 by small and micro businesses to comply with legal regulations<sup>4</sup>



5.2

# Education



/imagine education in the style of **Adriana Varejão**

**ATLANTICOS**

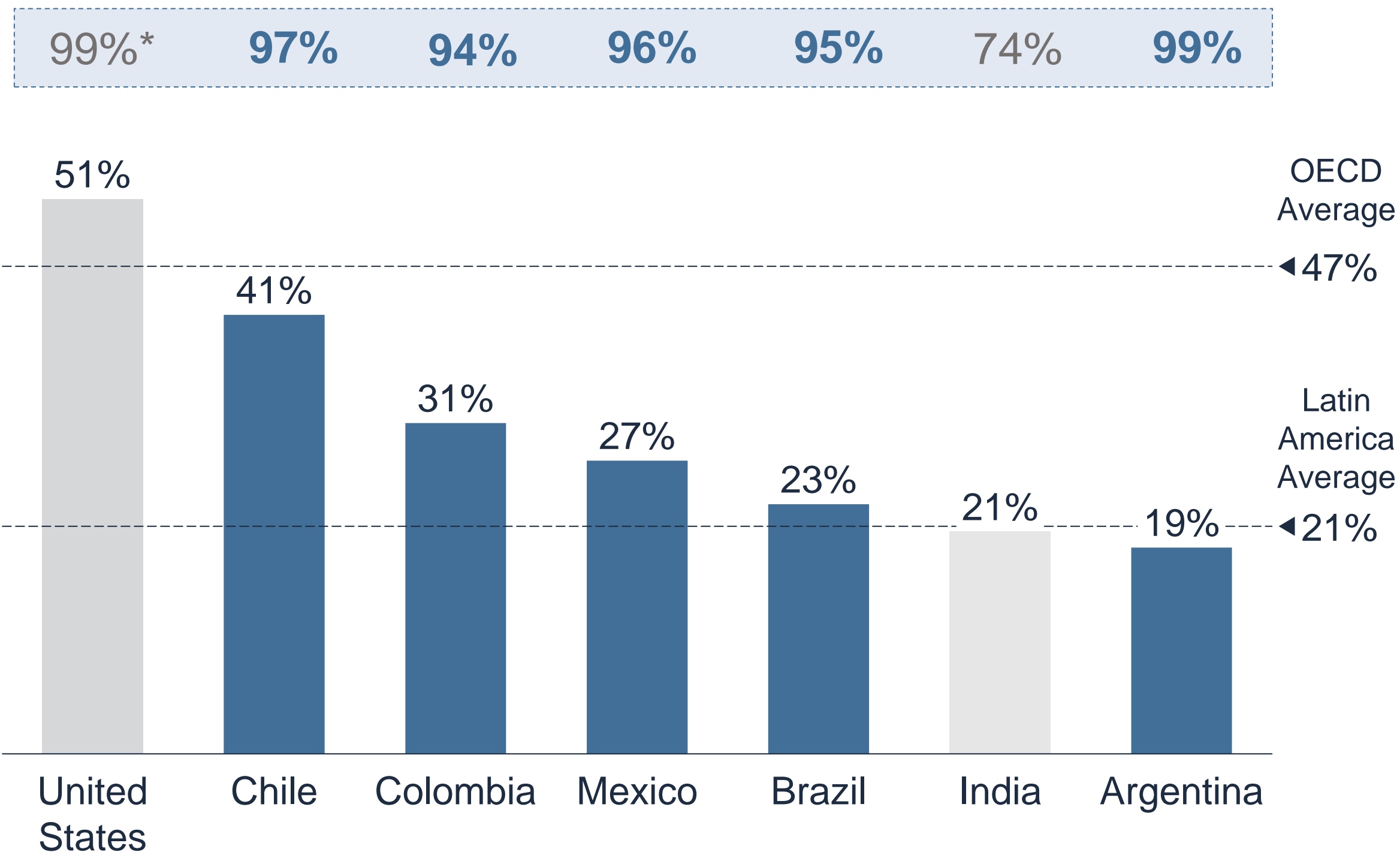


# Latin America lags in school achievement and children's reading abilities, despite posting high literacy rates

## School achievement by country<sup>1</sup>

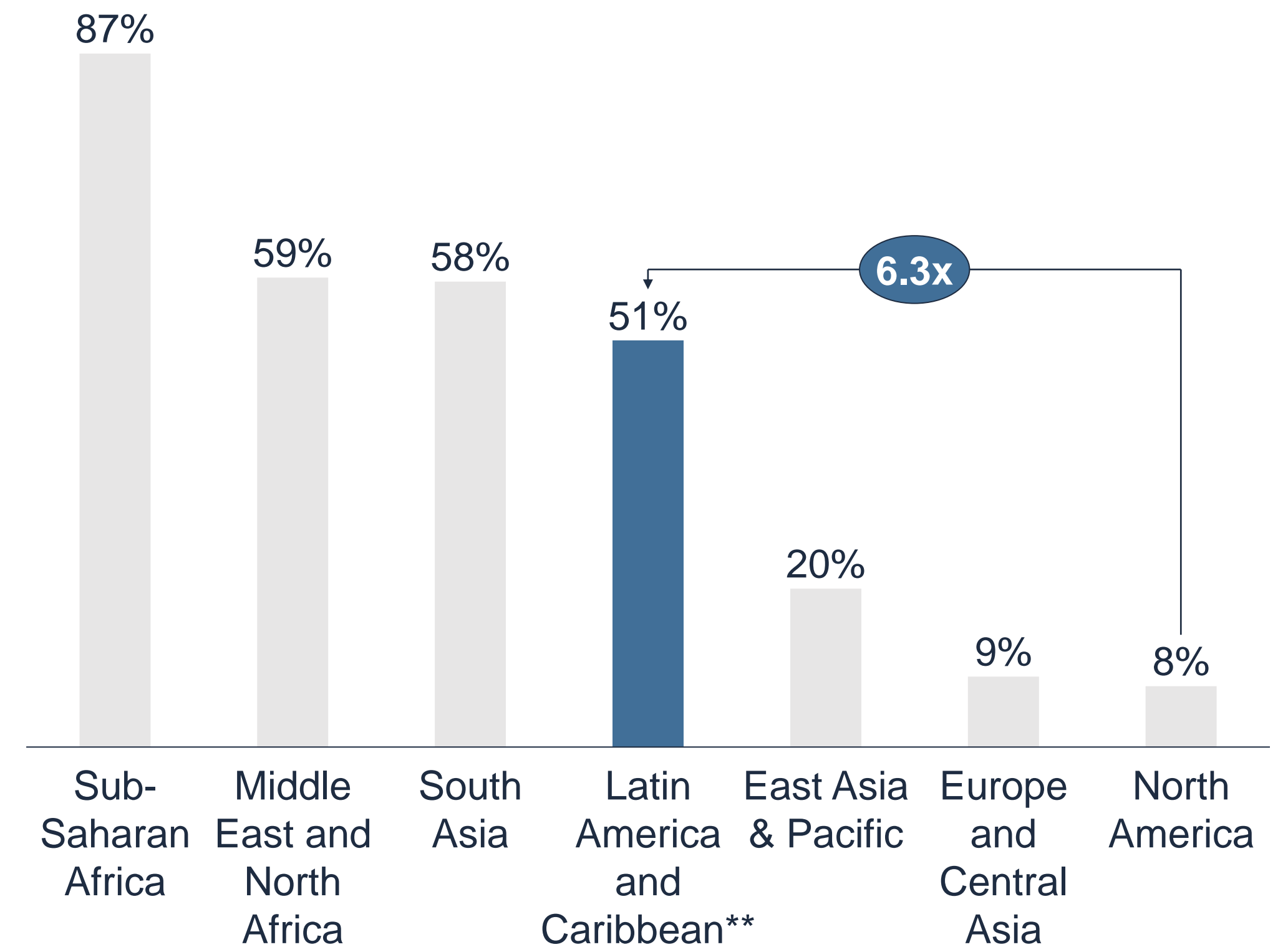
2021 or latest, % of students achieving tertiary degrees

Literacy Rate<sup>2</sup>



## Learning poverty by region<sup>3</sup>

2011-19, % of children unable to read/understand a simple passage at age 10



Notes: (\*) Data from Our World in Data; (\*\*) Learning poverty data includes Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, and Uruguay

Sources: (1) OECD; (2) World Bank (2021 or latest); (3) Azevedo et al. "Will Every Child be Able to Read by 2030?" (2021)



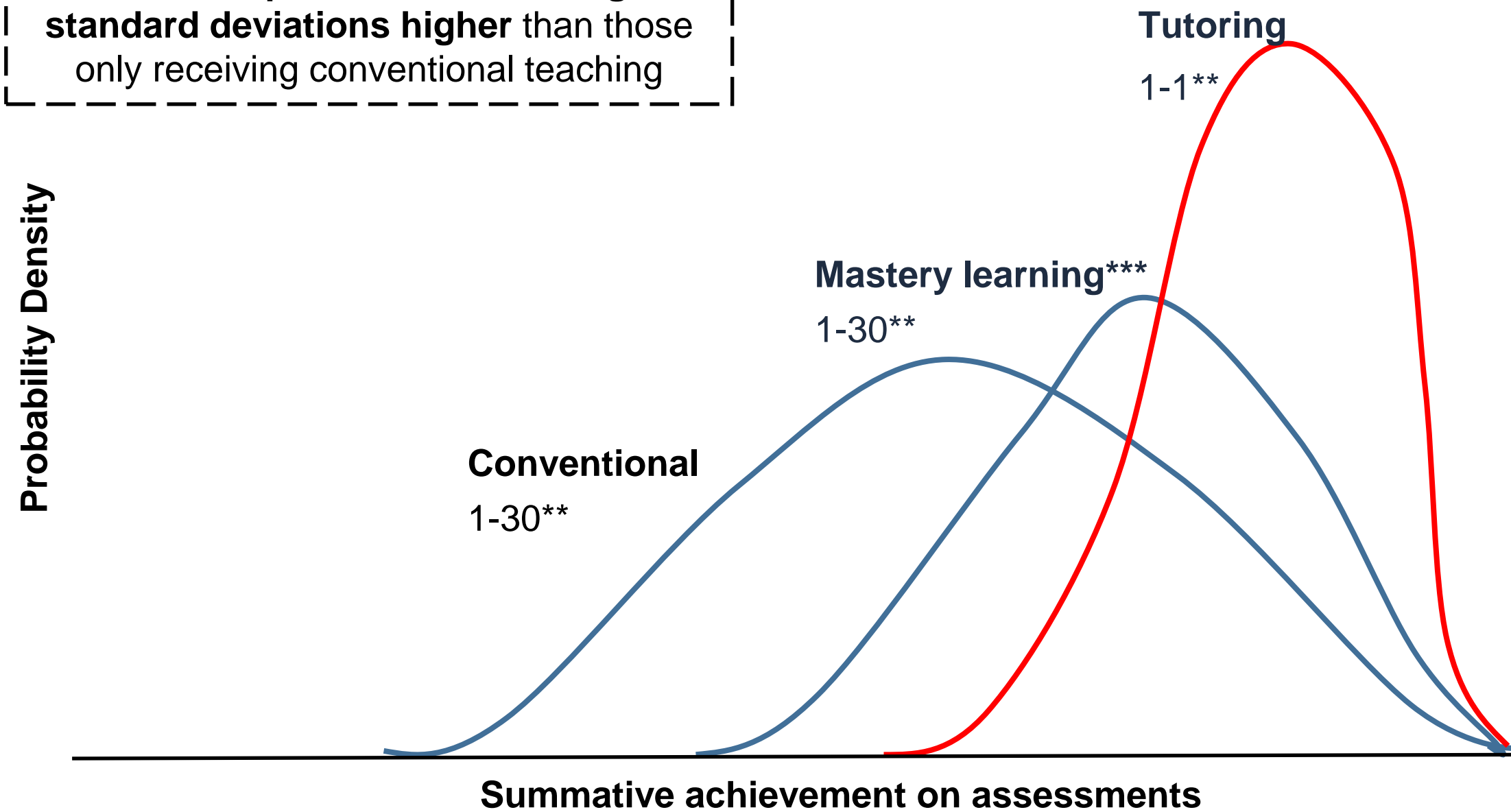


# A key factor in educational outcome, teacher-student ratio is 40% lower in Latin America than the OECD average

## Achievement of primary students by pedagogical treatment<sup>1</sup>

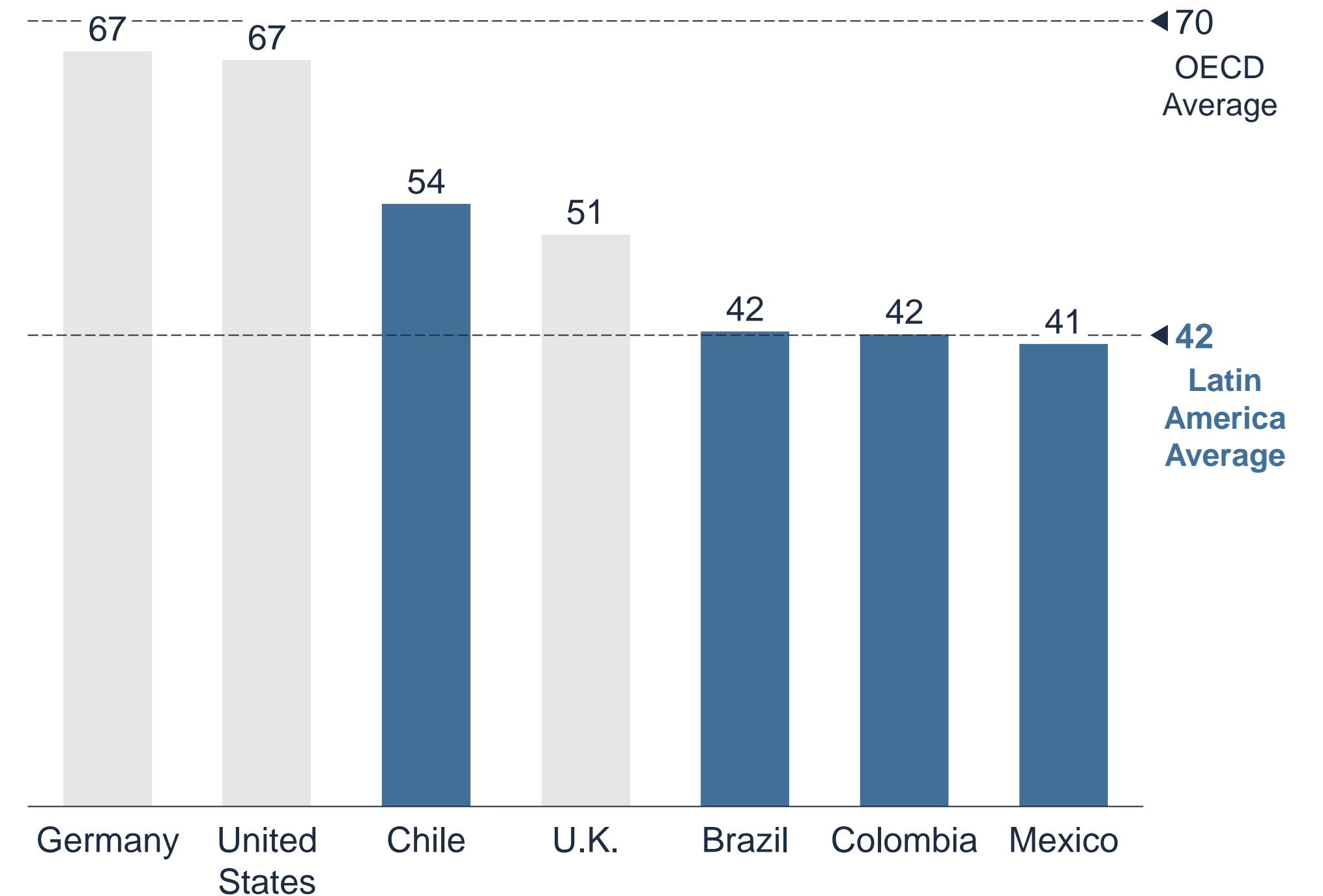
1984, summative achievement scores\*

According to the 1984 study by Benjamin S. Bloom, elementary **school-children with a tutor performed on average 2 standard deviations higher** than those only receiving conventional teaching



## Teachers per 1000 students by country<sup>2</sup>

2020, number of teachers



Notes: (\*) measured through periodic aptitude test scores; (\*\*) Teacher-student ratio; (\*\*\*) Mastery learning includes corrective exercises and parallel assessments in addition to conventional tests

Sources: (1) Bloom "The 2 Sigma Problem" (1984) ;(2) OECD



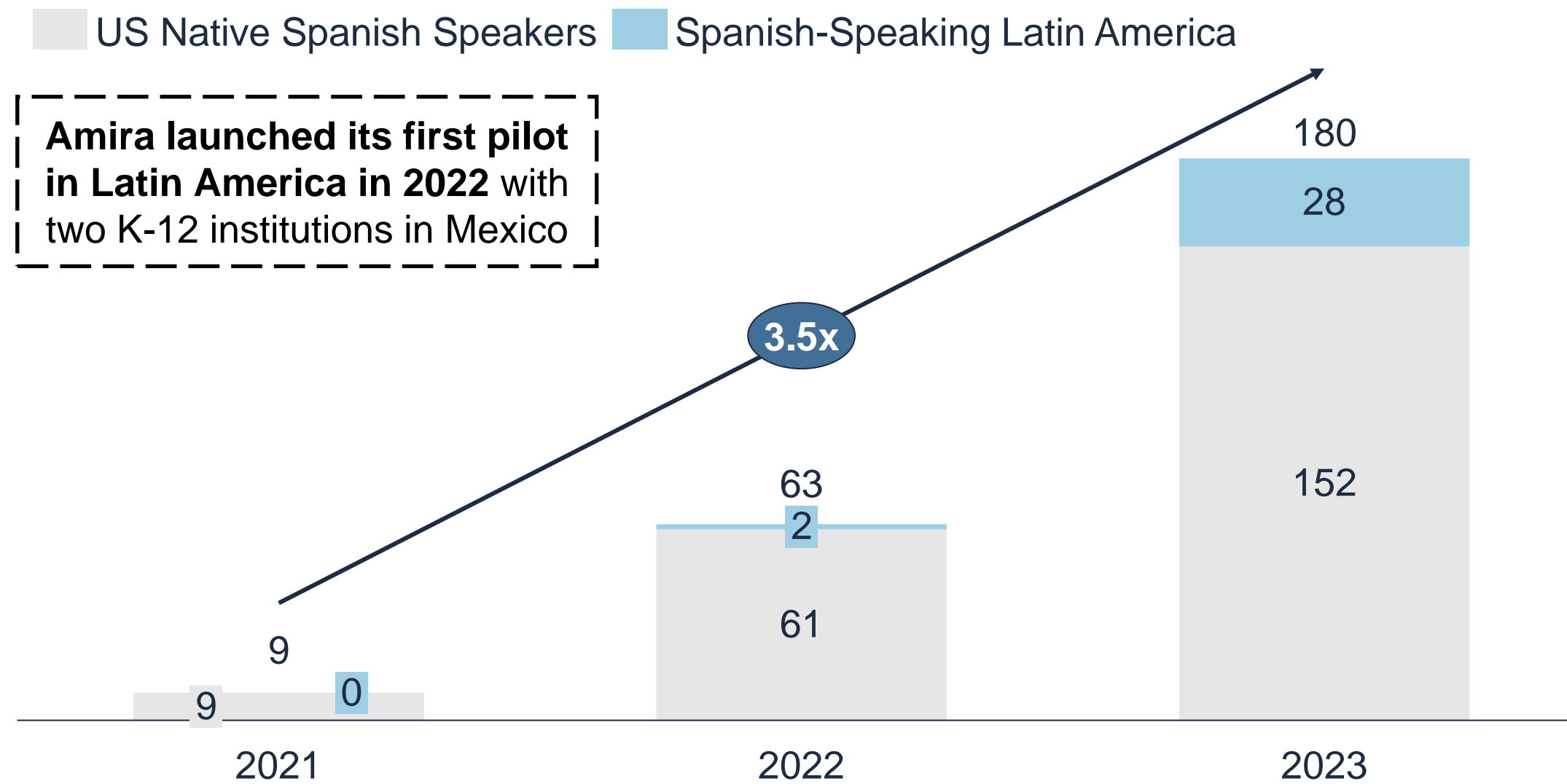
# Amira Learning accelerates reading growth through AI-powered interventions that mimic 1x1 tutoring



Amira's reading assistant for children provides appropriately challenging texts, utilizes speech recognition for feedback and support, and offers one out of sixty possible interventions when a struggle is detected

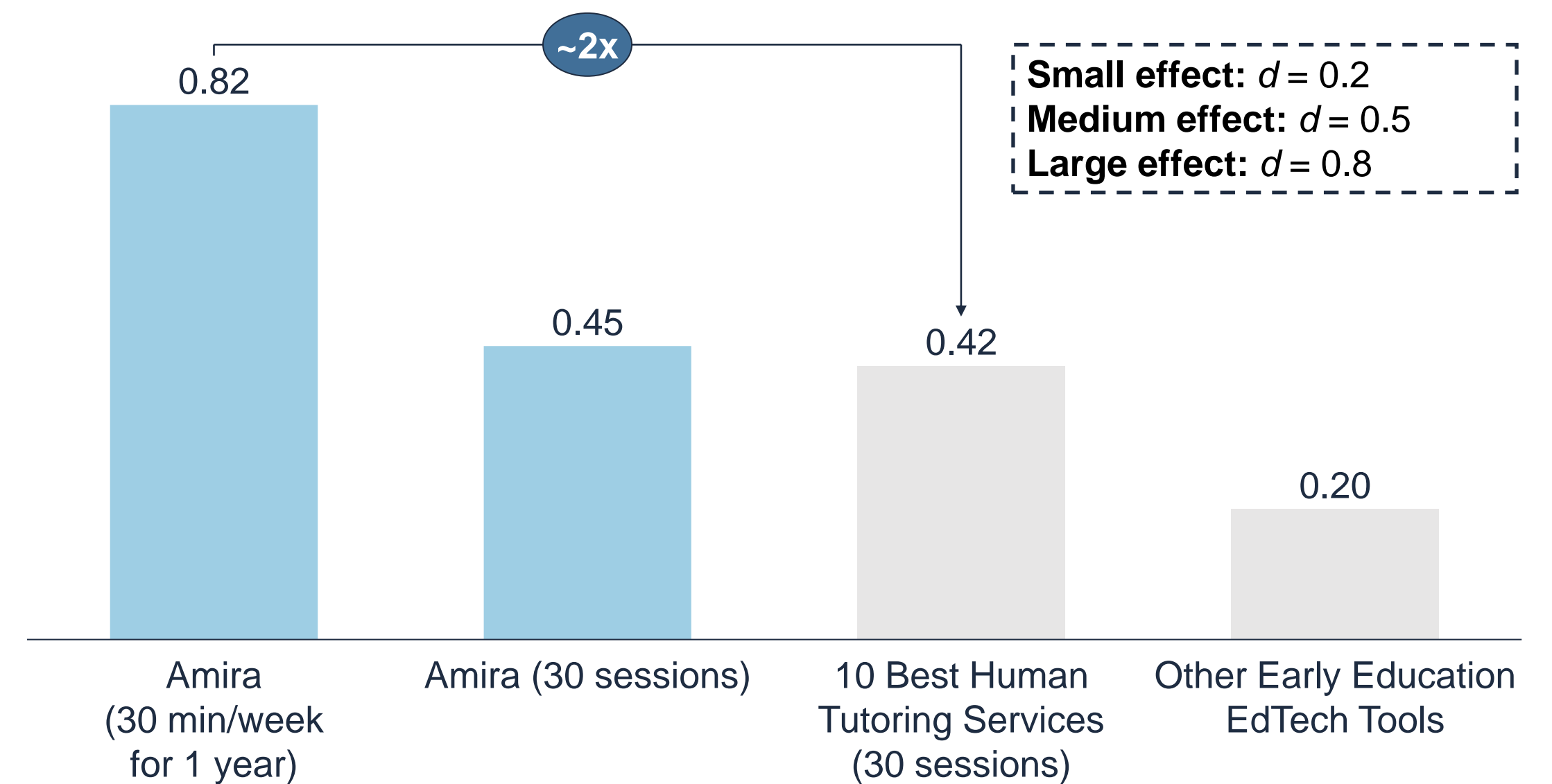
## Growth in paid licenses by spanish-speaking students<sup>1</sup>

2021-2023, thousands of licenses



## Efficacy of Amira on English reading comprehension<sup>2,3,\*</sup>

2021, effect size of intervention on reading<sup>\*\*</sup>



Notes: (\*) English by the Word Comprehension subsection of the Woodcock Reading Mastery Test; (\*\*) Effect size is calculated by using Cohen's  $d = (\text{mean of the treatment group} - \text{mean of the control group}) / \text{standard deviation of the data}$ .

Source: (1) Amira internal data; (2) CPRE "Amira Learning in Savannah-Chatham County Public Schools" (2021); (3) Mostow et al. "Computer-assisted oral reading helps third graders learn vocabulary better than a classroom control – about as well as one-on-one human-assisted oral reading" (2001)



# Letrus harnesses the power of AI tools to boost student performance and bridge socioeconomic gaps



Brazilian EdTech Letrus provides a 'Literacy Program' that engages students in writing tasks and **offers instant AI-driven feedback and corrections** and assist teachers in tailoring lessons to meet specific classroom needs

In 2019, Letrus' AI tool was piloted for 5 months in **54 municipalities in the state of Espírito Santo**, reaching 12k students and 400 teachers from 110 schools<sup>1,2</sup>

## Espírito Santo (ES)



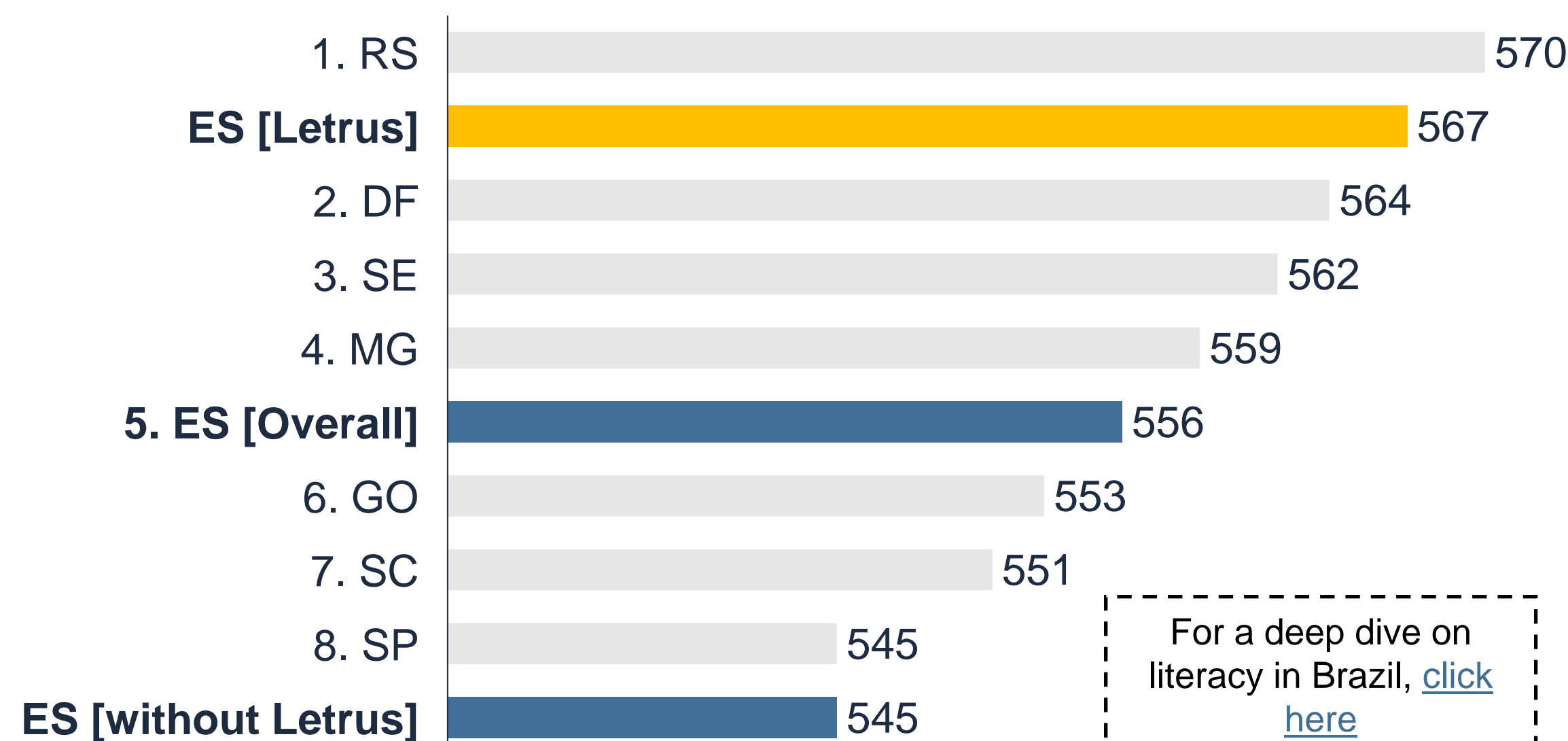
Grades and text indicator performance improved by **10% with Letrus**

Students using Letrus wrote **32% more essays** compared to the control group

Letrus has shown it can **reduce the performance gap in specific skills by up to 20% between students from public and private networks** in ENEM scores.

## Impact of Letrus' AI writing tool after five assignments<sup>2,3</sup>

2019, ENEM writing scores and rank by states\*



For a deep dive on literacy in Brazil, [click here](#)

Note: (\*) +0.094 standard deviations

Source: (1) Letrus internal data; (2) Experimental Evidence on Artificial Intelligence in the Classroom (J-PAL/FGV Letrus Impact Evaluation); (3) INEP Microdata ENEM 2019



# Platzi's AI-powered chatbot increased student engagement and completion rates on their online learning platform



Latin American startup Platzi is an online learning platform that offers courses in design, marketing, programming, and business. They've developed an in-house **student intent detector** and an **AI-powered chatbot** to customize study plans and assist students throughout their courses

When the **student asks the chatbot a question**, it comes back with **three options**

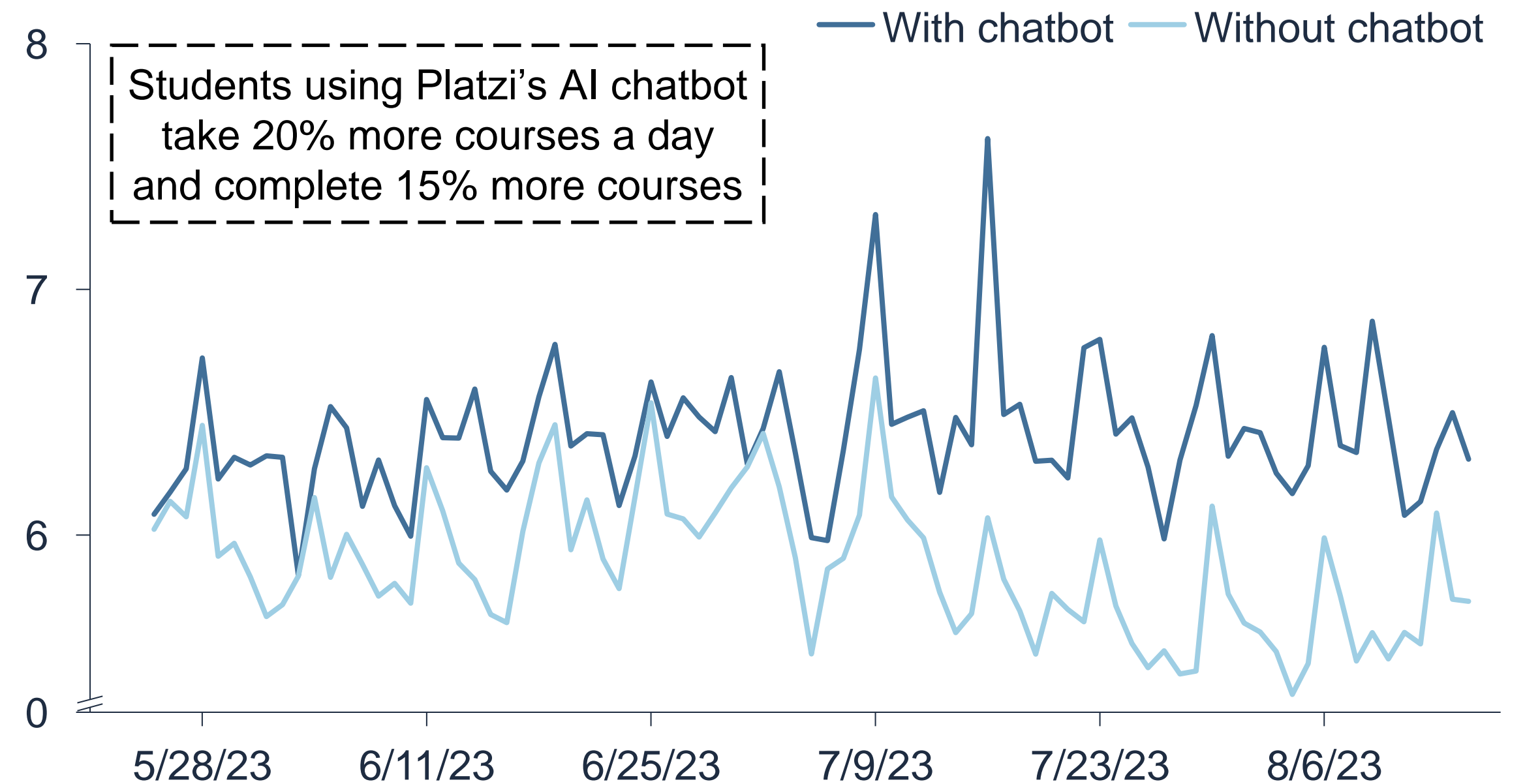
## Options



- 1** **Conversing** and mentoring with students
- 2** **Recommending** custom learning plans (among 5000 unique paths)
- 3** **Supporting** students with other issues (8500 successful non-human cases)

## Material completion rates<sup>1</sup>

2023, average materials completed



5.3

# Healthcare



**ATLANTICO**

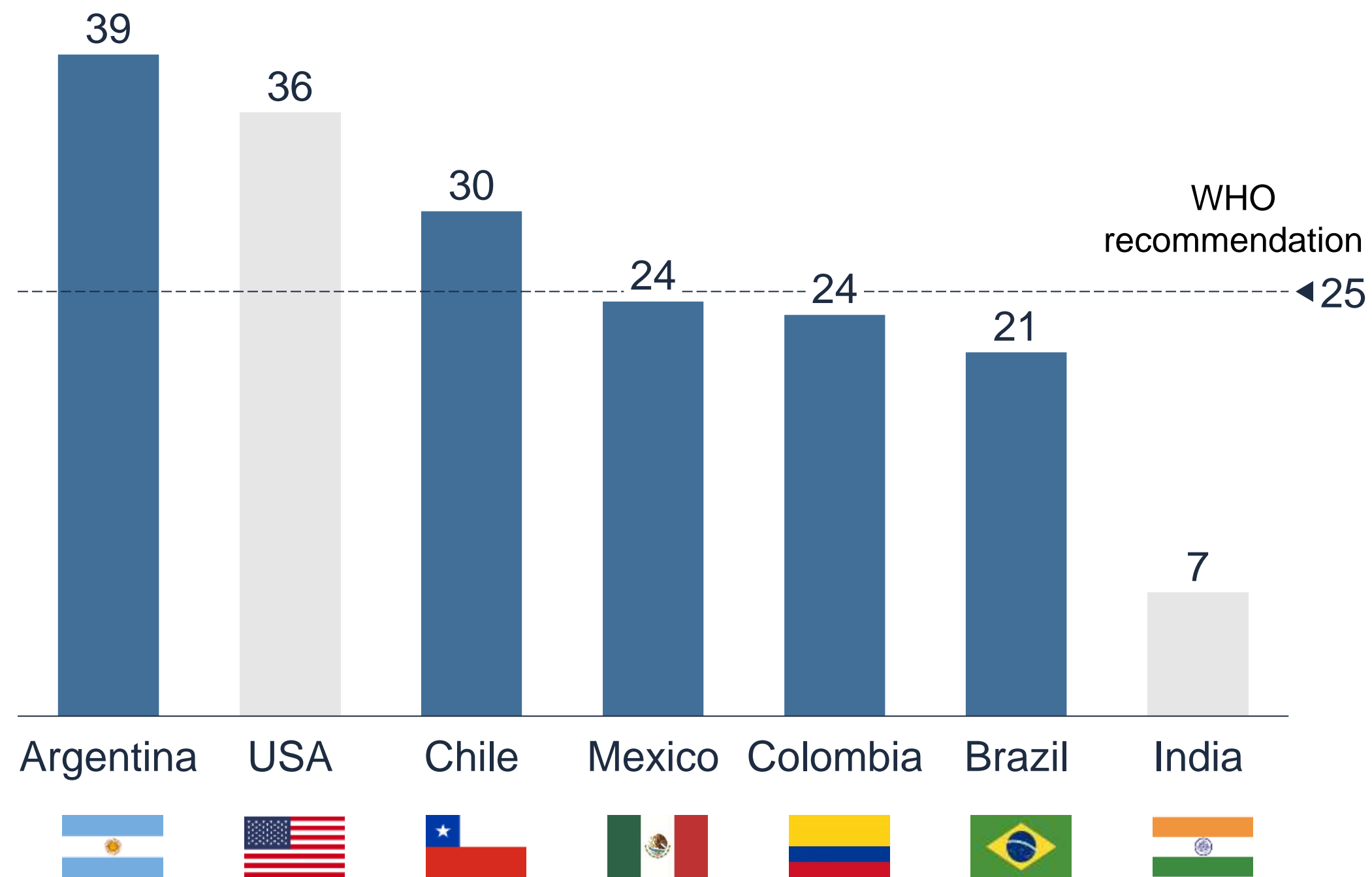
/imagine healthcare in the style of **Candido Portinari**



# Physician scarcity and out-of-pocket spending represent major challenges for healthcare in Latin America

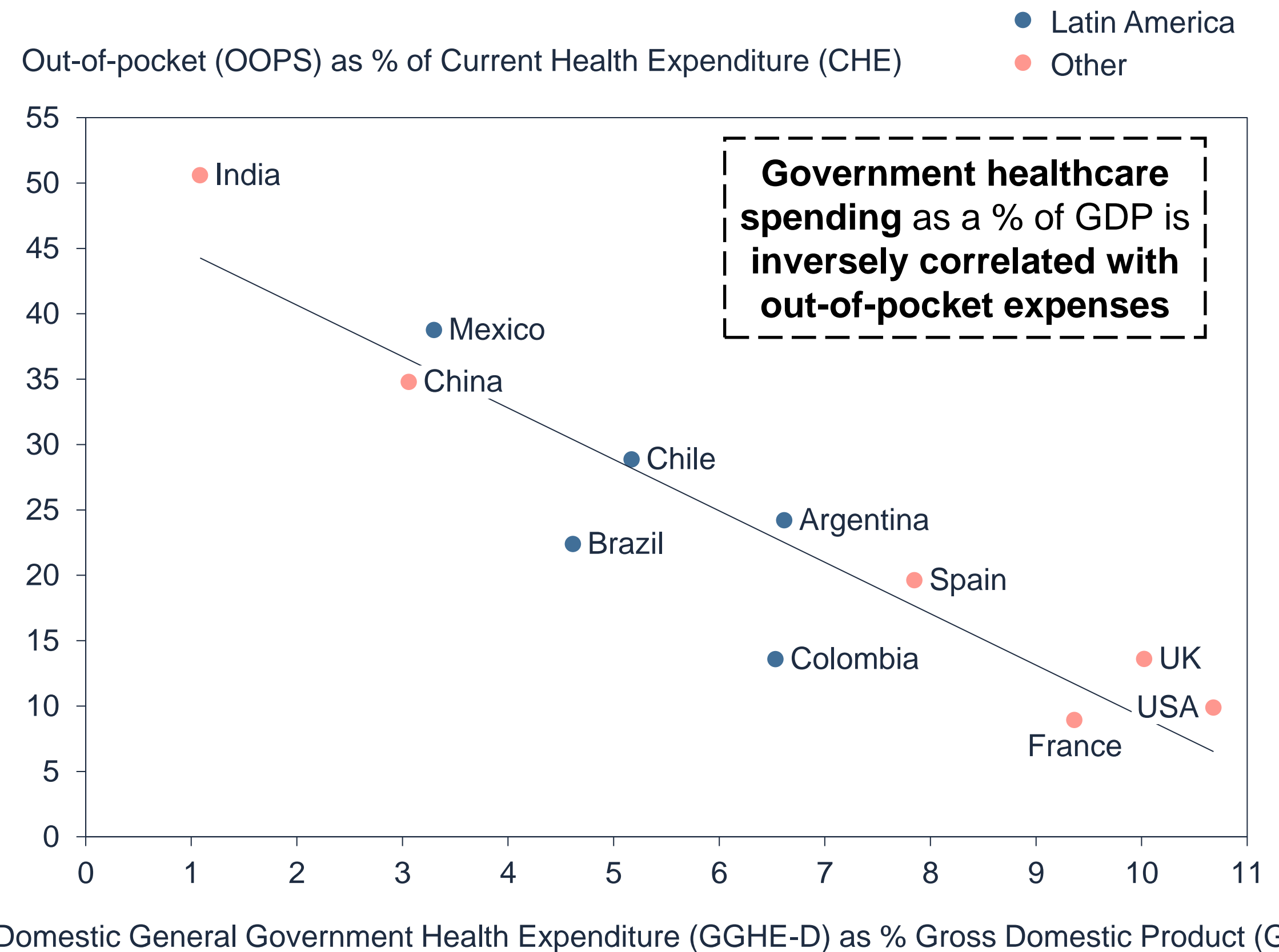
## Doctors per 10,000 people by country<sup>1</sup>

2020-2021\*, Number of doctors



## Government health expenditure vs. out-of-pocket expenses<sup>2</sup>

2020-2021\*, % of GDP, % of current health expenditure



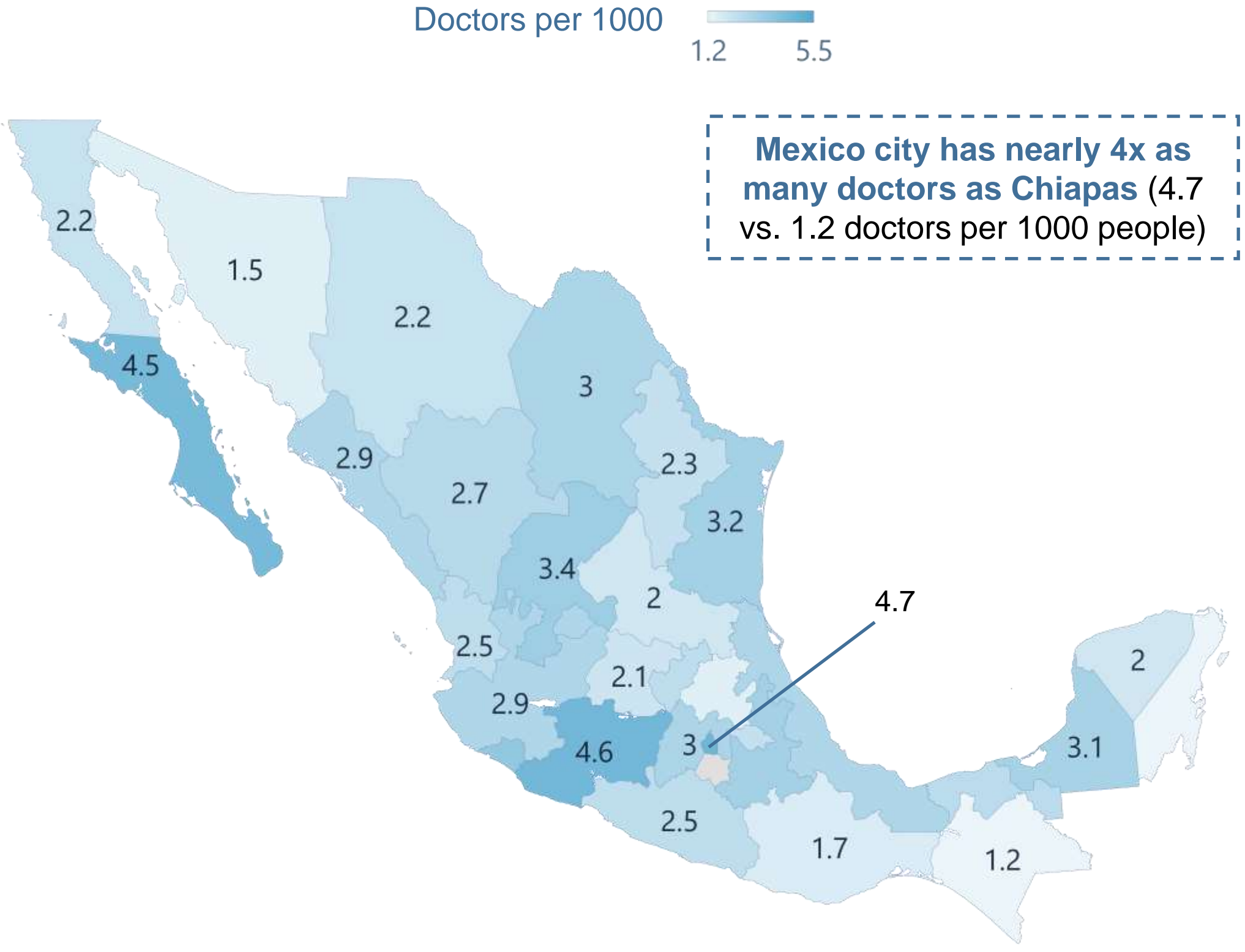
Note: (\*) Most recent data by each country (either 2020 or 2021)  
Source: (1) World Health Organization; (2) World Bank



# Unequal medical access: Rural areas face higher levels of scarcity when it comes to healthcare professionals

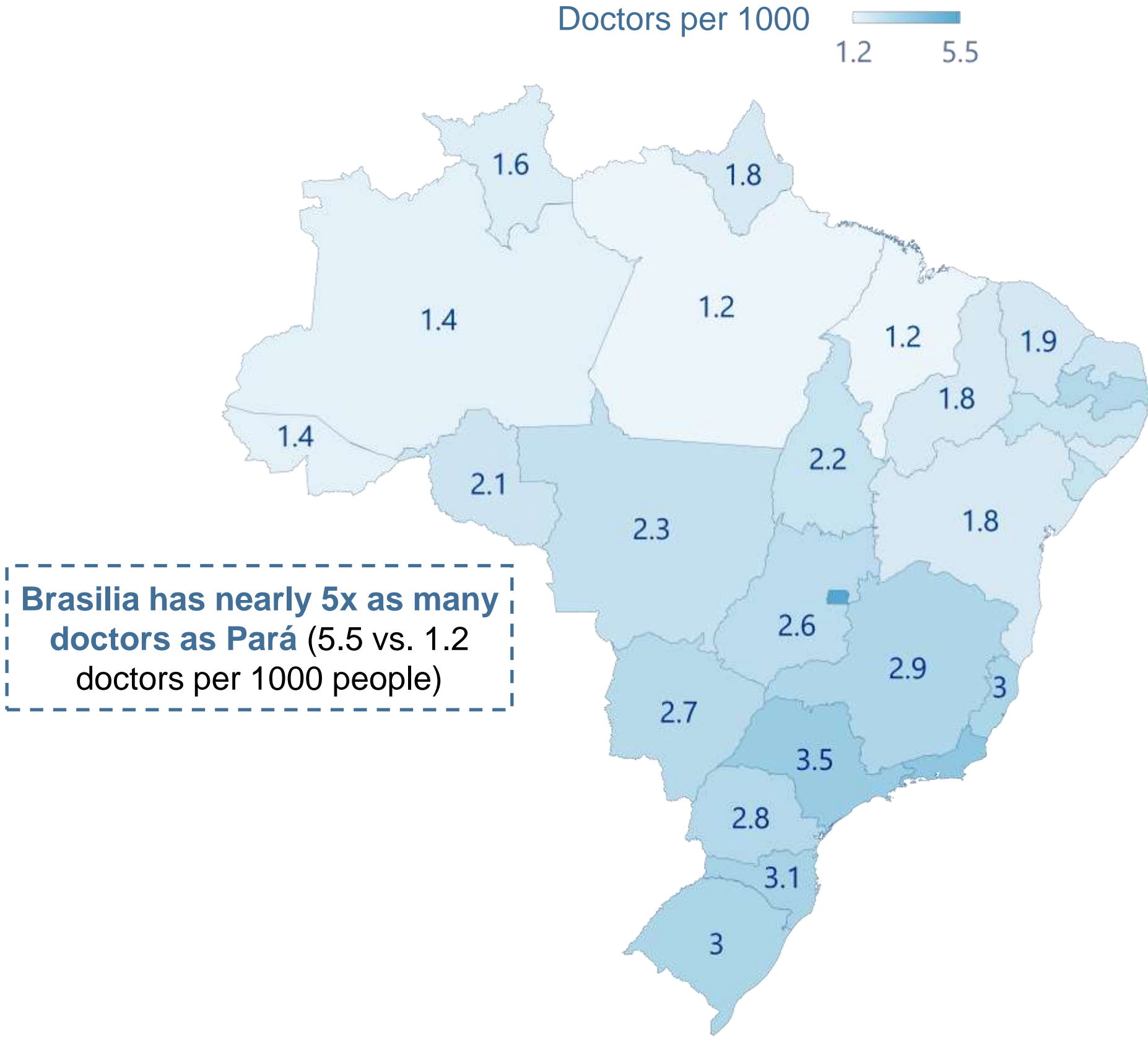
Doctors per 1000 people by Mexican state<sup>1</sup>

2021, number of doctors



Doctors per 1000 people by Brazilian state<sup>2</sup>

2022, number of doctors



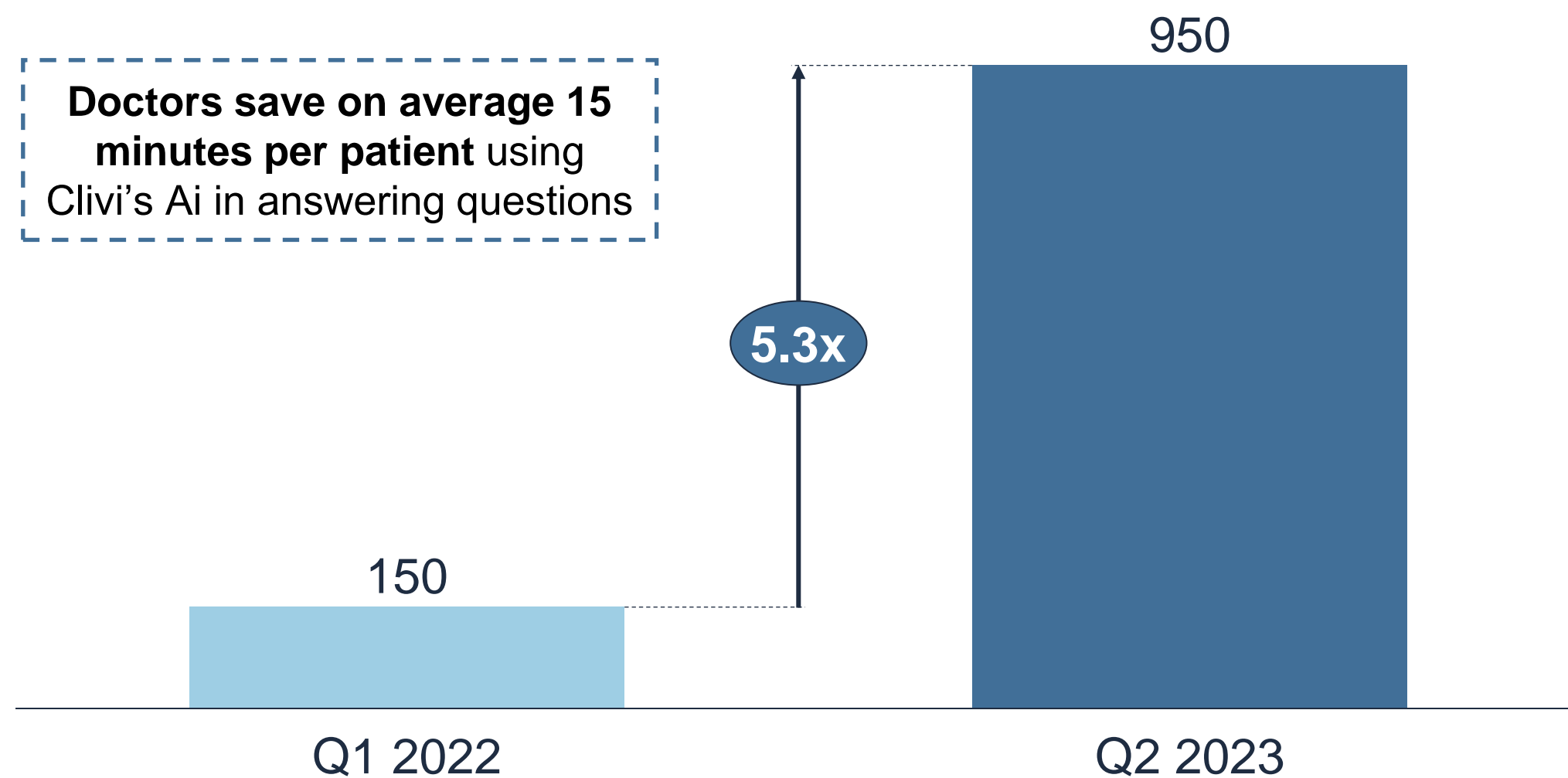


# Clivi leverages AI to enhance doctor capacity, expanding medical access for diabetes patients throughout Mexico

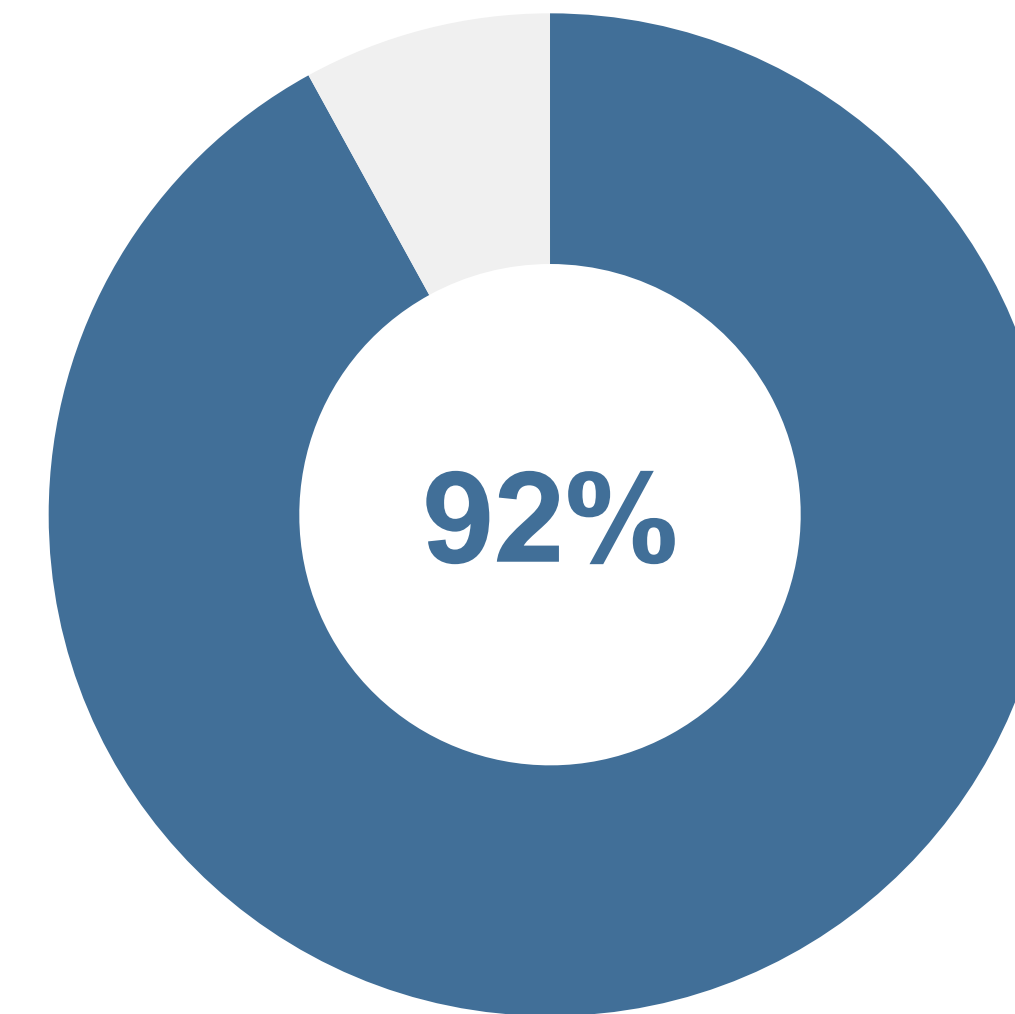


Mexico-based startup Clivi offers virtual diabetes treatment through personalized plans, regular consultations, and real-time glucose tracking. Clivi equips practitioners with AI tools for enhanced doctor capacity, including suggested responses to patient queries

**Growth in the number of patients a doctor can interact with per month using Clivi's AI to help answer questions 2022-2023, number of patients per doctor**



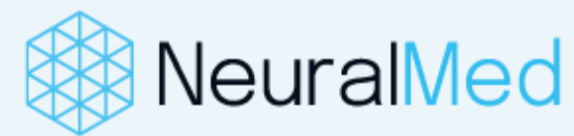
**Effectiveness of treatment with Clivi AI tool recommendations 2023, % of Clivi insulin suggestions accepted by endocrinologists**





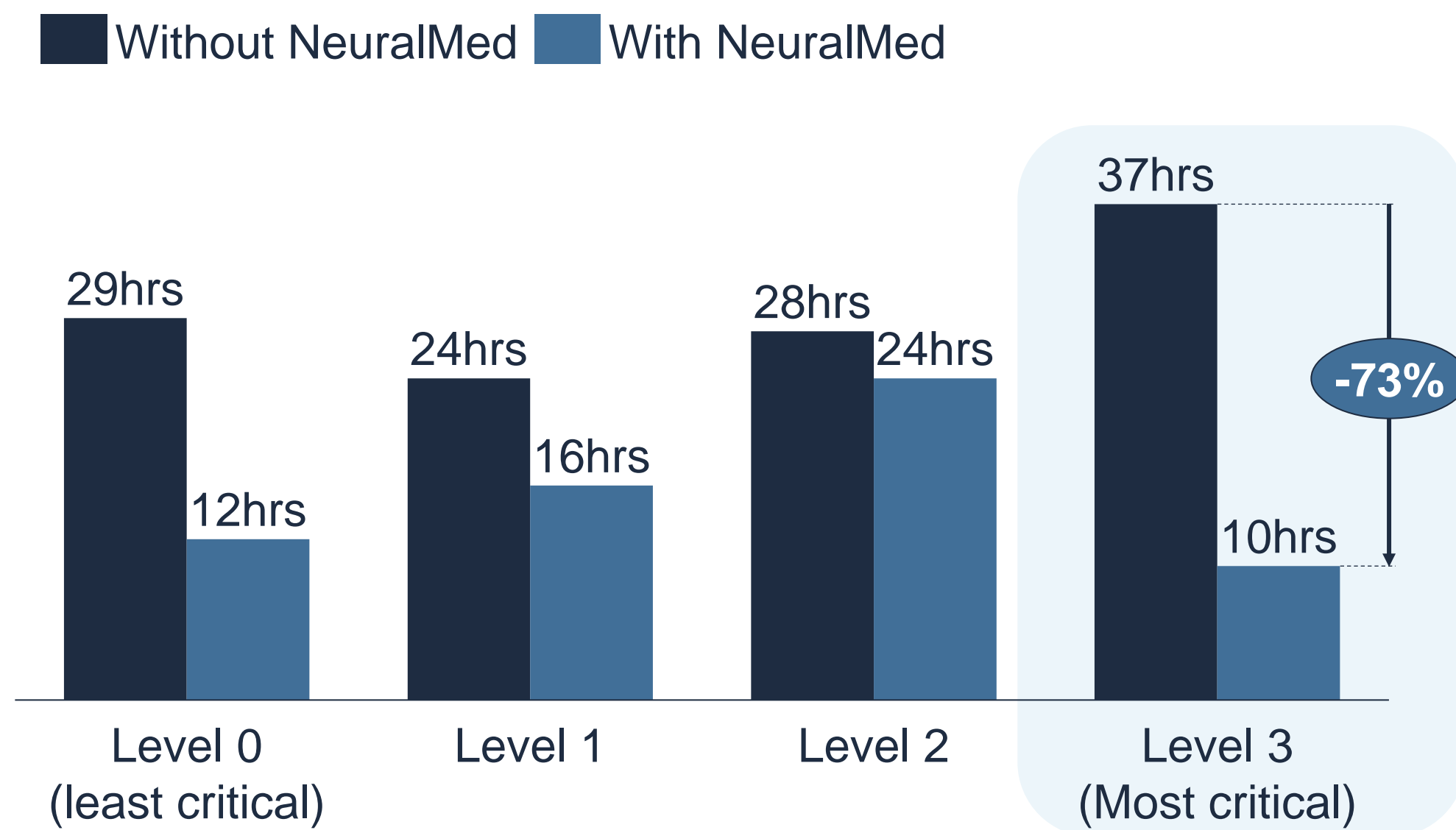


# NeuralMed uses AI to prioritize pathology workflow and coordinate care for chronic patients

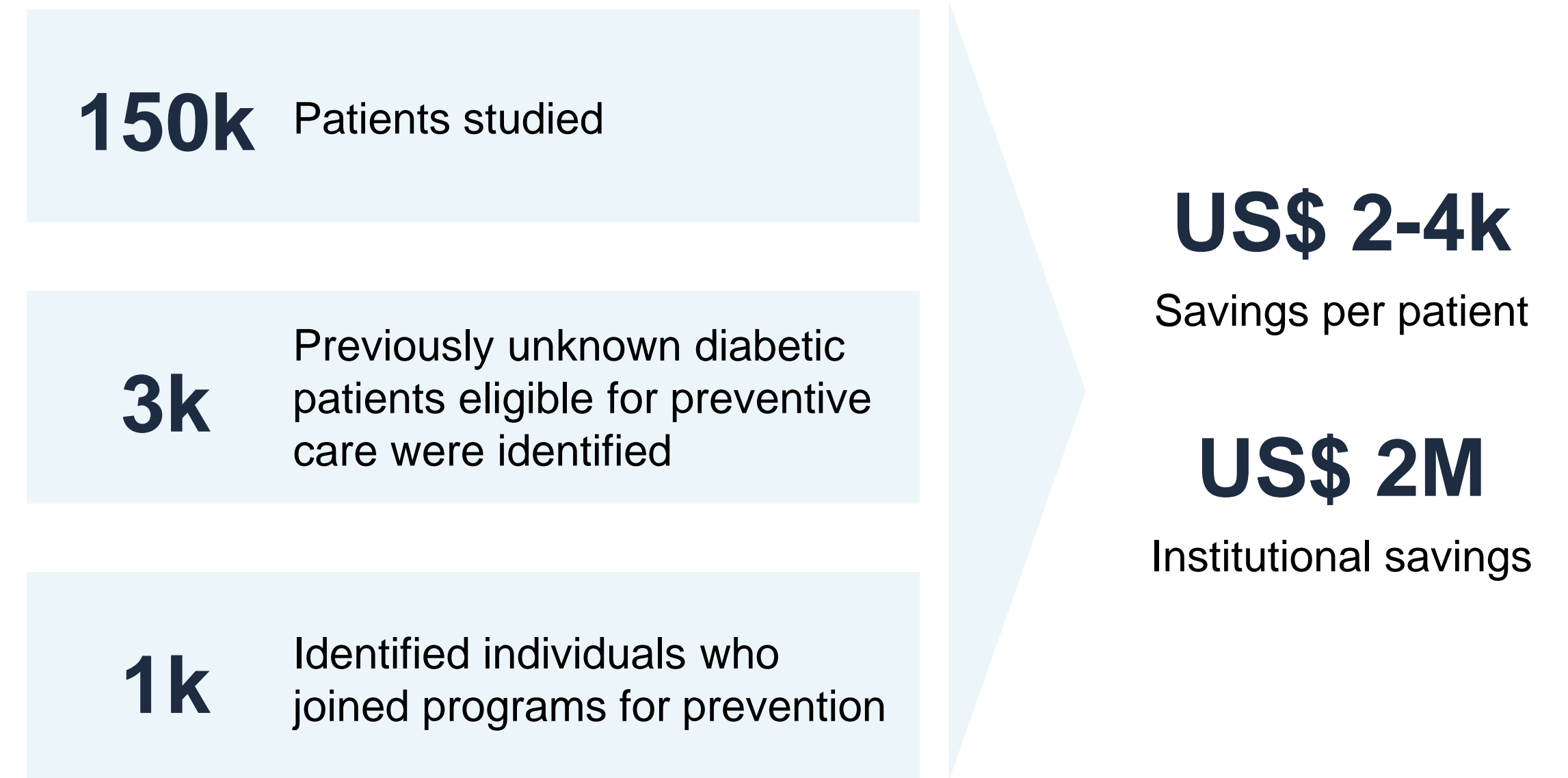


Brazilian startup NeuralMed specializes in AI healthcare solutions, analyzing real-time patient data from images and text using proprietary algorithms

NeuralMed's triA teleradiology solution **reduced time between image capture to report signing by up to 73%.**

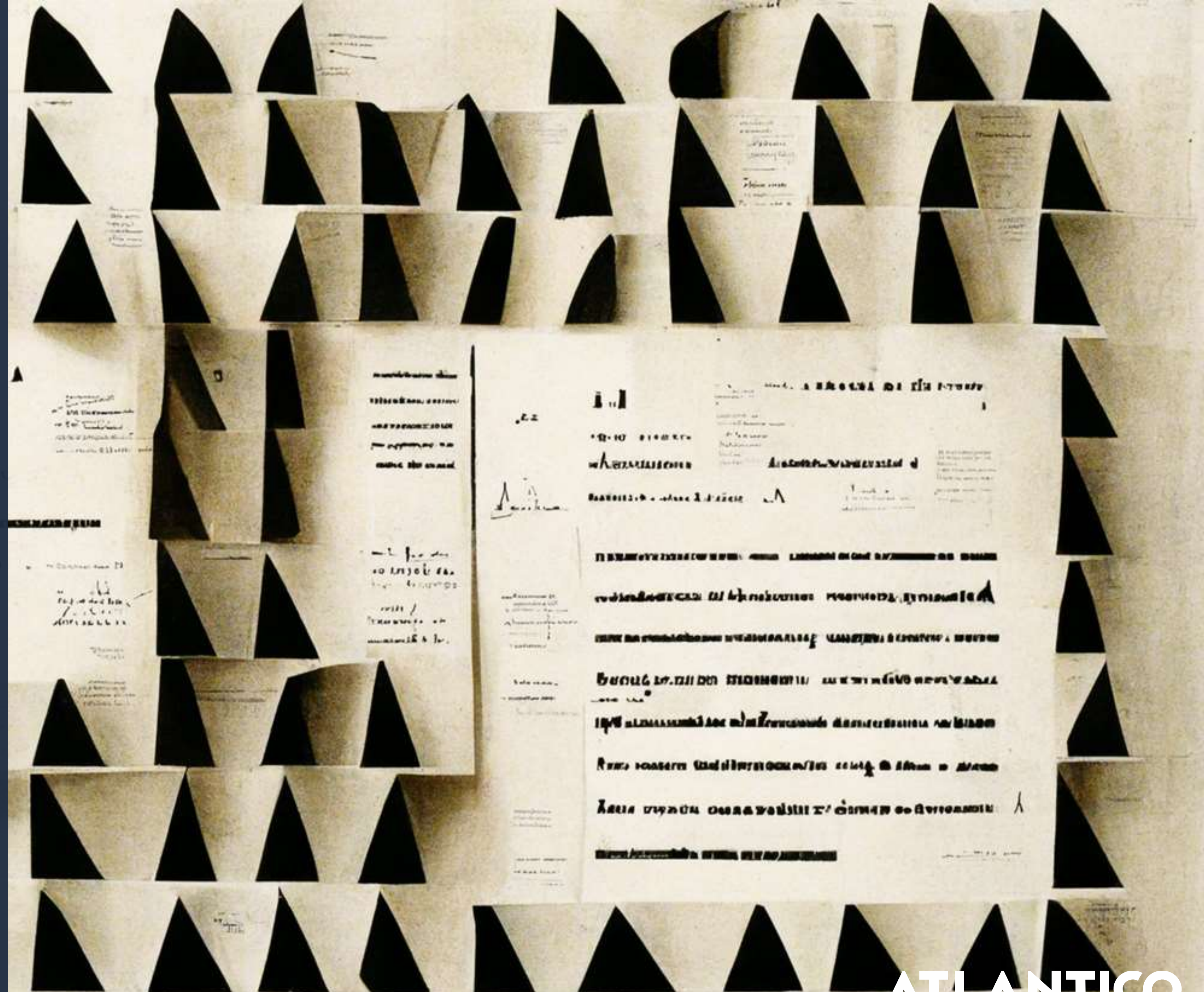


NeuralMed's Atlas Platform **identified, monitored, and coordinated care for previously undiagnosed diabetes cases**



5.4

# Bureaucracy



/imagine bureaucracy in the style of Lygia Clark

ATLANTIC



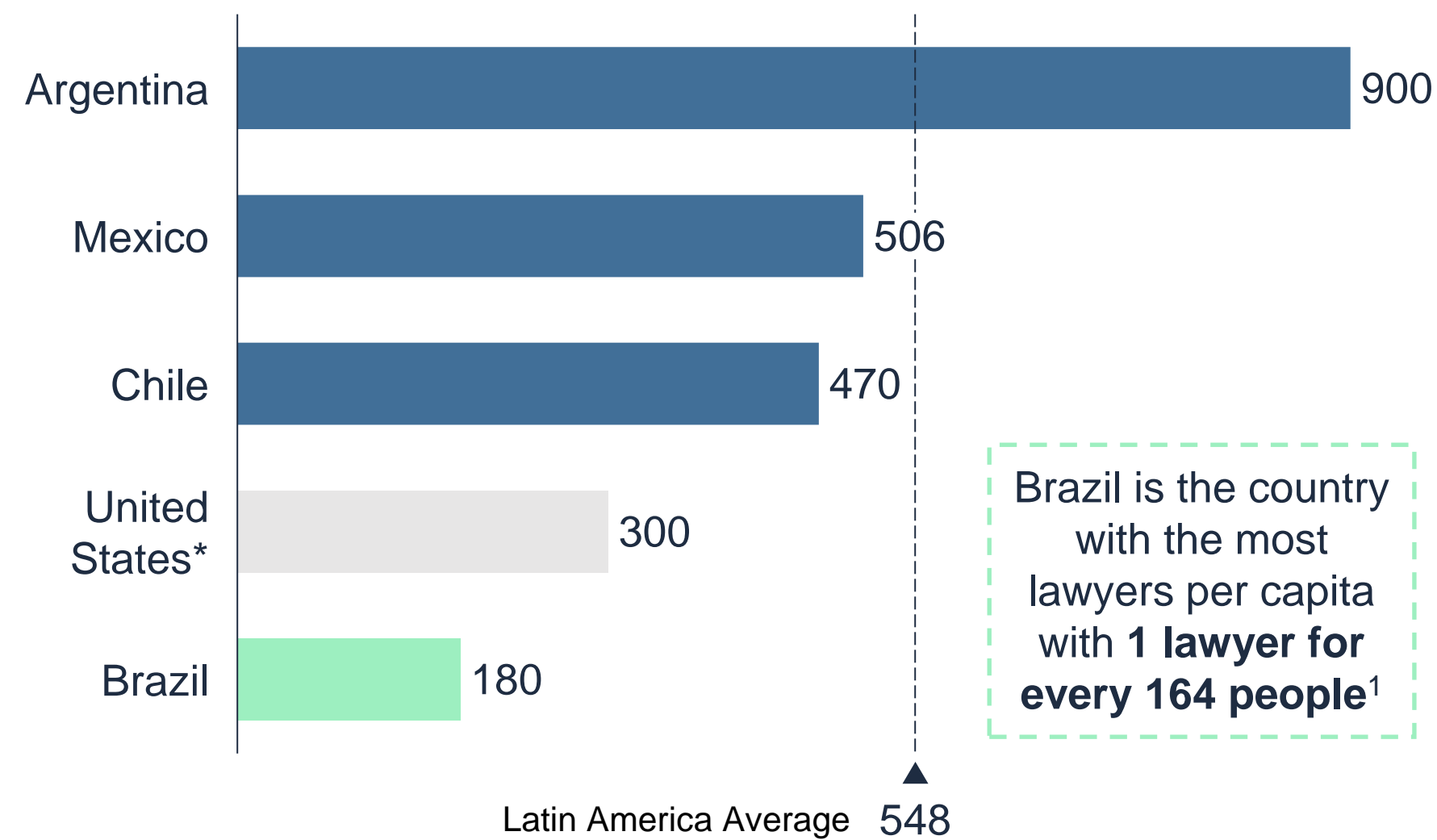
# AI is surfacing as a powerful ally for companies to fulfill legal requirements, powering legal reviews and analyses



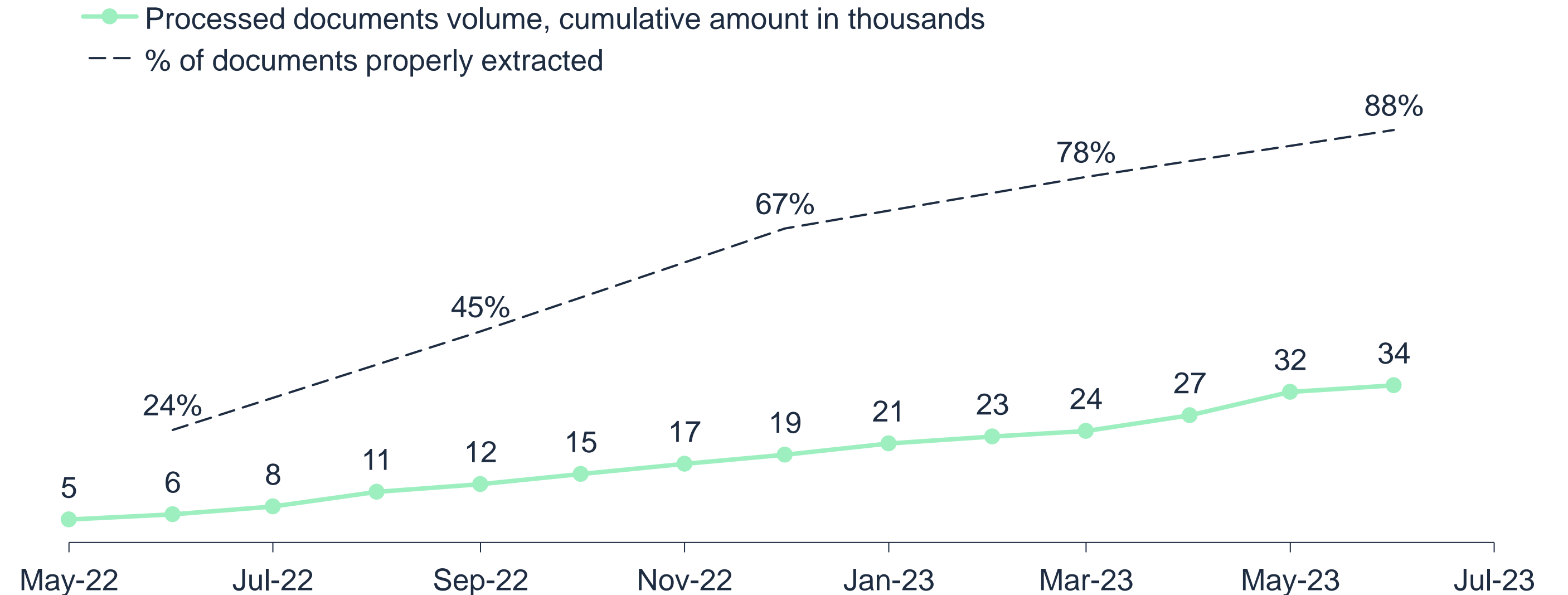
Lexter, a Brazilian legal-tech startup, streamlines legal document analysis by identifying unusual clauses, conducting risk assessments, and offering document improvements aligned with legal strategy

## Average time spent by businesses complying with legal regulations by country<sup>1,2</sup>

2022, hours per year (average)



## Processed documents volume process by Lexter for a single client<sup>3,\*</sup> 2023, % and cumulative value in thousands



Note: (\*) Client undisclosed for confidentiality

Sources: (1) Atlas Network Center for Latin America, "Index of Bureaucracy in Latin America" (2022); (2) Goldman Sachs, "Voice of Small Business in America: 2019 Insights Report"; (3) Lexter internal data



# Atlantico interviewed leading Brazilian legal experts and summarized the findings (using...you guessed it, ChatGPT)

If the entire report had been written by ChatGPT, it would look like this slide.

1

We held three roundtable discussions with top lawyers in BR

2

We recorded and transcribed the conversations into English using AI tools

3

We identified common topics and findings using ChatGPT

## AI's Influence on Legal Sector



**Opportunities:** Lawyers leveraging AI for **basic tasks such as legal research, content generation and contract review**. AI has the potential to execute more complex tasks such as **risk measurement and litigation prediction**



**Challenges:** **data quality, privacy and generation of false content**. There is still **resistance among lawyers** and discussions on whether to prohibit usage as well as **how usage could reflect on billing**



**Are lawyers being replaced?** AI can assist in legal work and in automating burdensome tasks, but it **cannot replace the critical thinking, judgement and ethical considerations lawyers bring to their work**.

## Regulation, Ethics, IP & Copyright



**Regulation in Brazil:** regulation likely to be **influenced by the European Union**, yet more stringent. Current proposal covers wide range of applications and **may stifle innovation**. ANPD\* expected to provide **guidelines for data use**



**Ethical frameworks:** Active discussions remain around the challenges of implementing AI in a way that **respects ethical principles and democratic values**. Main concerns center around data protection and civil responsibility.



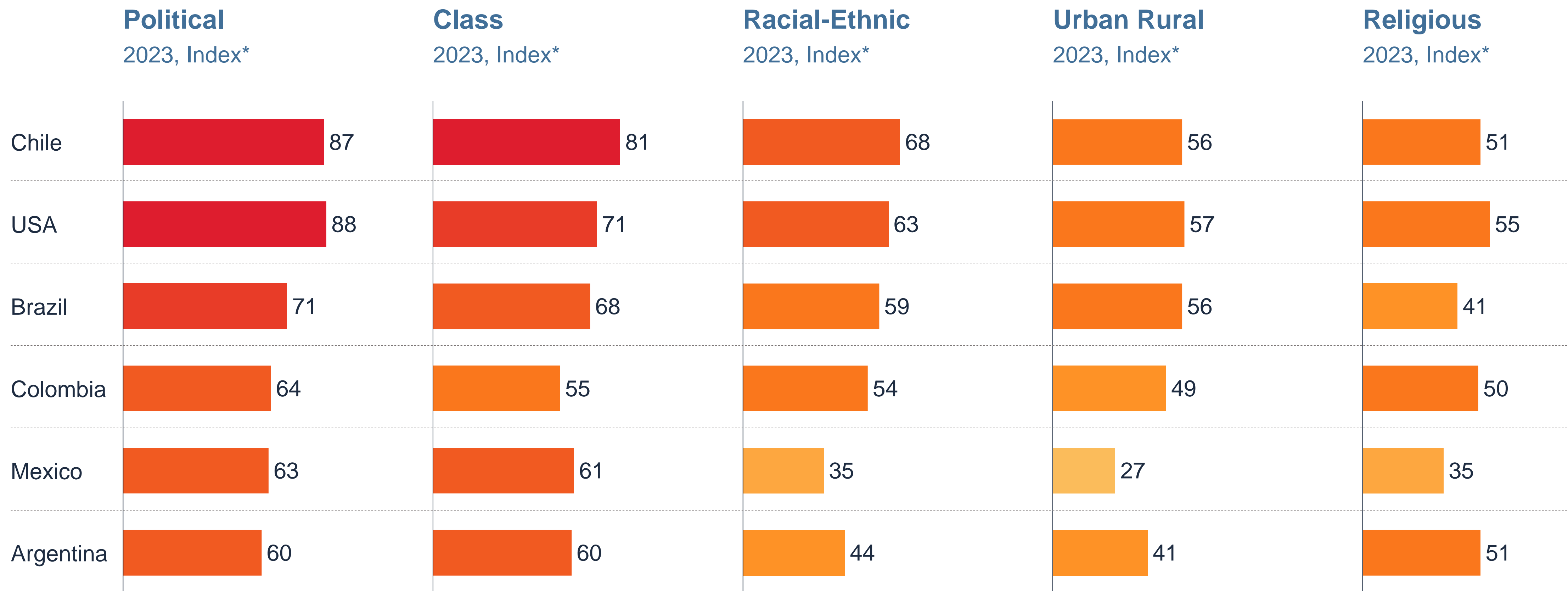
**Intellectual Property and Copyright:** Current laws **ill-equipped for AI-related challenges**; the original author remains primary defender of their work. **Diverging legal frameworks under discussion globally**.



# Appendix

/imagine Atlantic Ocean waves in the style of a watercolor by **Carybé**

# The predominant driver of polarization in the Americas is political views, followed closely by socioeconomic class



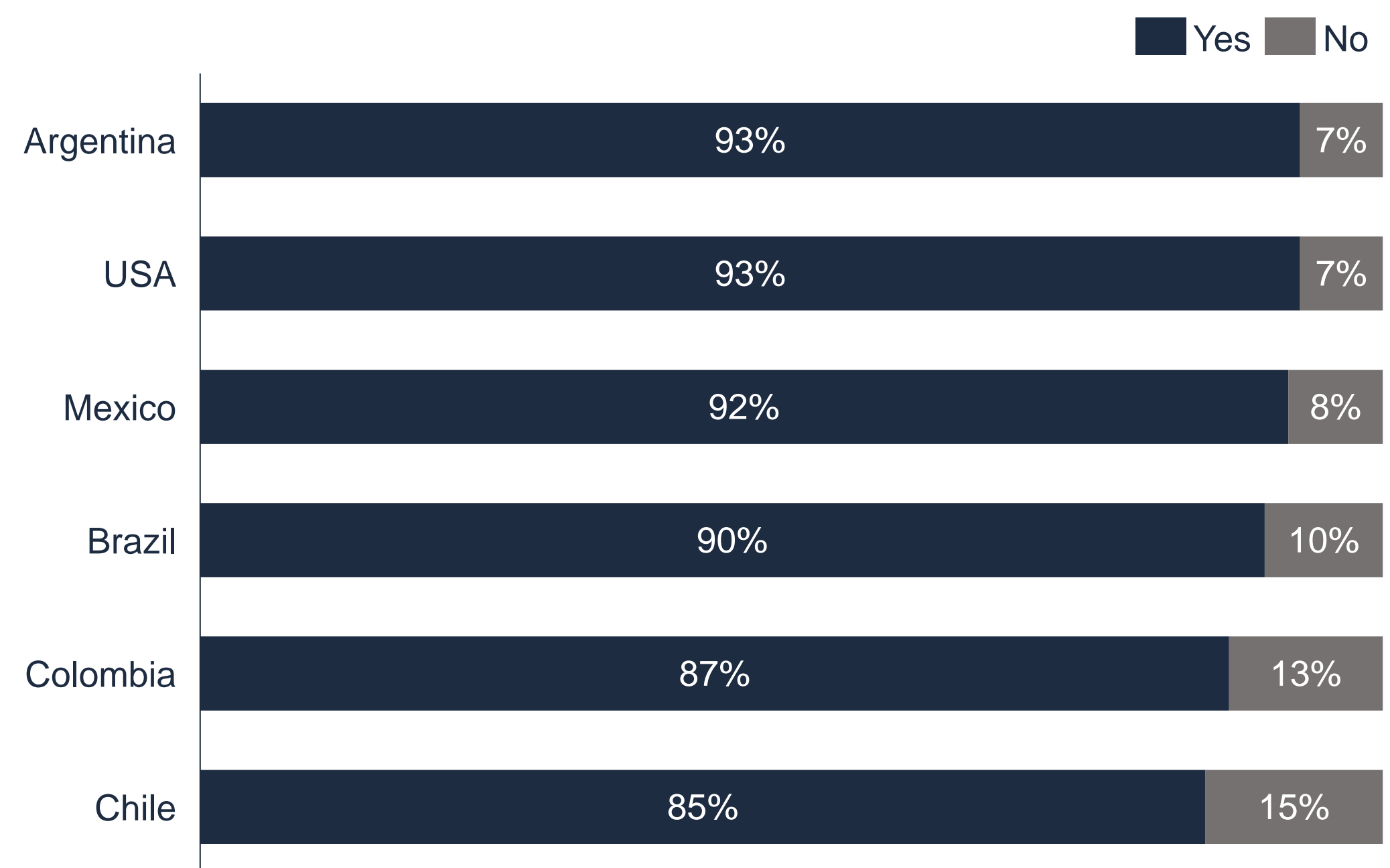
Note: (\*) The index has a scale of 0 to 100, in which the higher the score, the greater the degree of polarization  
Source: Atlantico and Atlas Survey 2023, margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08

# Democracy is widely supported in major economies of the Americas, but most feel the system is being threatened

## Support of democracy as a form of government

2023, % of respondents\*

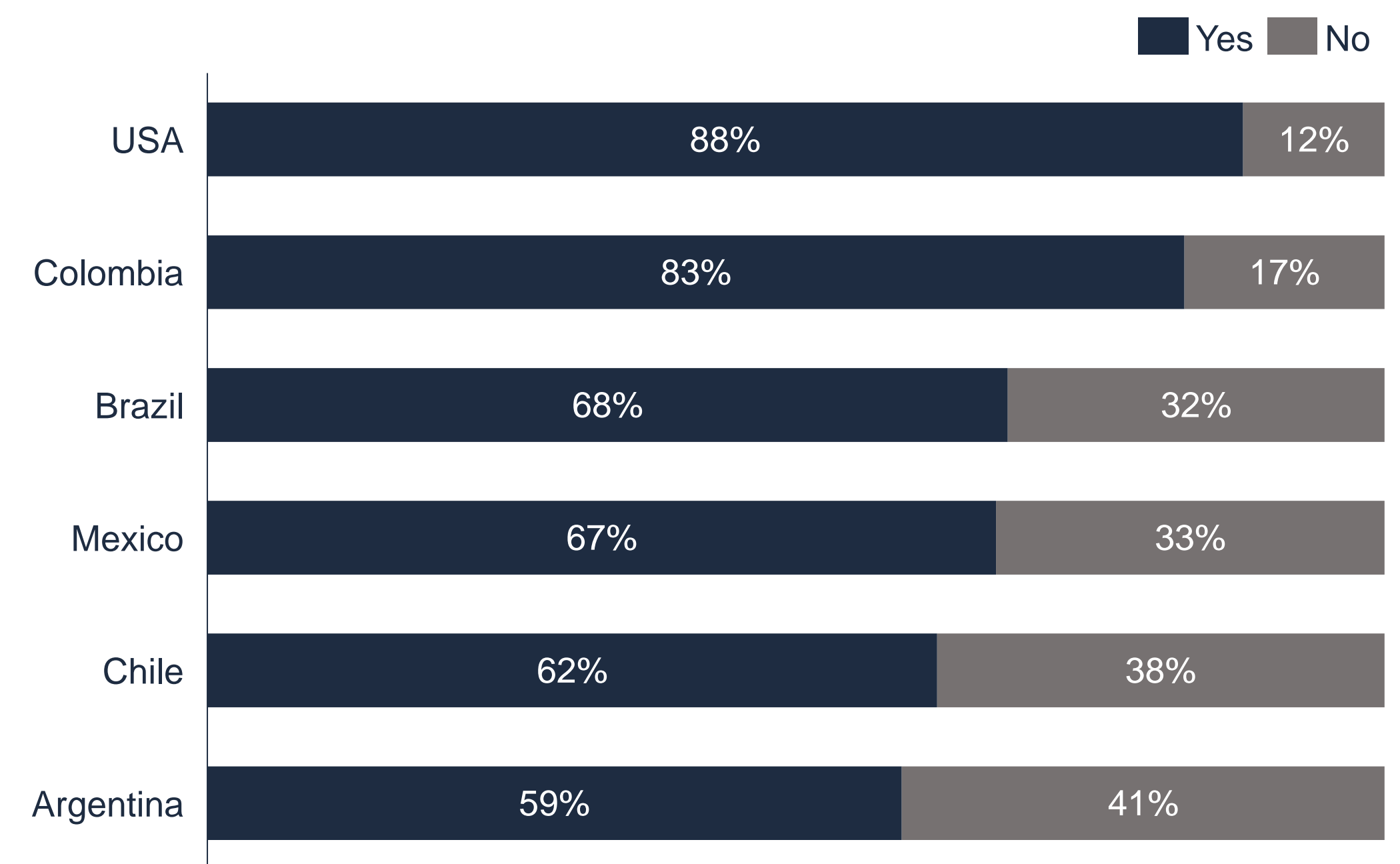
*Do you support democracy as a form of government for your country?*



## Perception of democracy as being at risk

2023, % of respondents\*

*In your opinion, is democracy currently at risk in your country?*



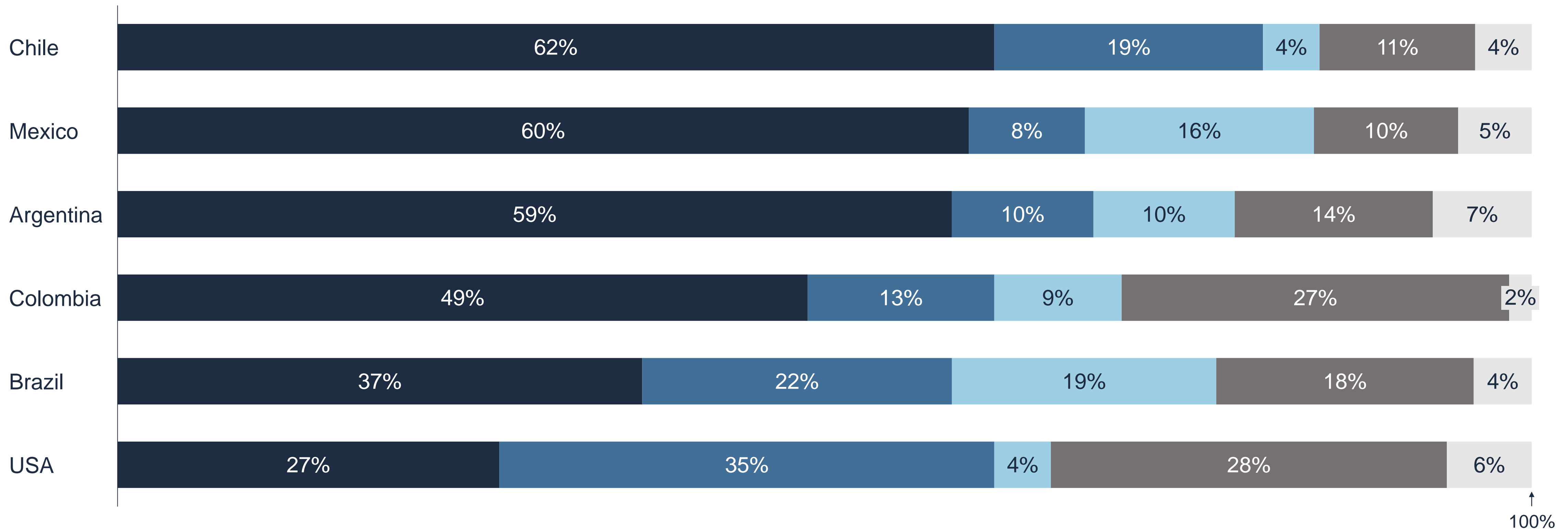
Note: (\*) Margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

# Latin Americans see climate change as the primary concern for our planet, followed by the erosion of democracy

**Greatest risks to our planet<sup>1</sup>** 2023, % of respondents

■ Climate Change ■ The collapse of democracy ■ New Pandemic / Diseases ■ Wars and Terrorism ■ Other

*Thinking about the future, what is the greatest risk for our planet?*



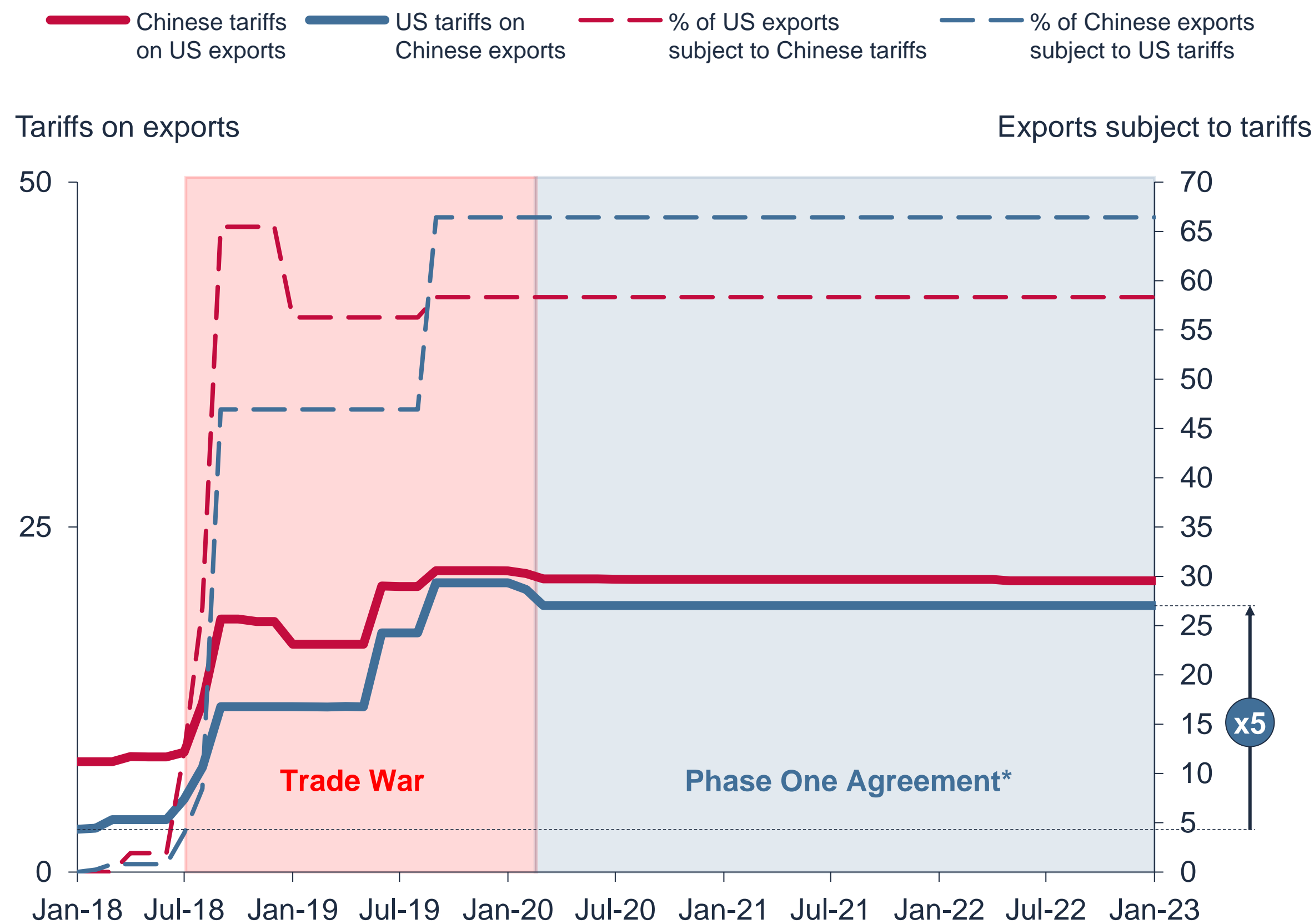
Notes: (\*), margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: (1) Atlantico and Atlas Survey 2023



# US-China trade war, along with rising lead times and rates in China, has pushed US companies towards nearshoring

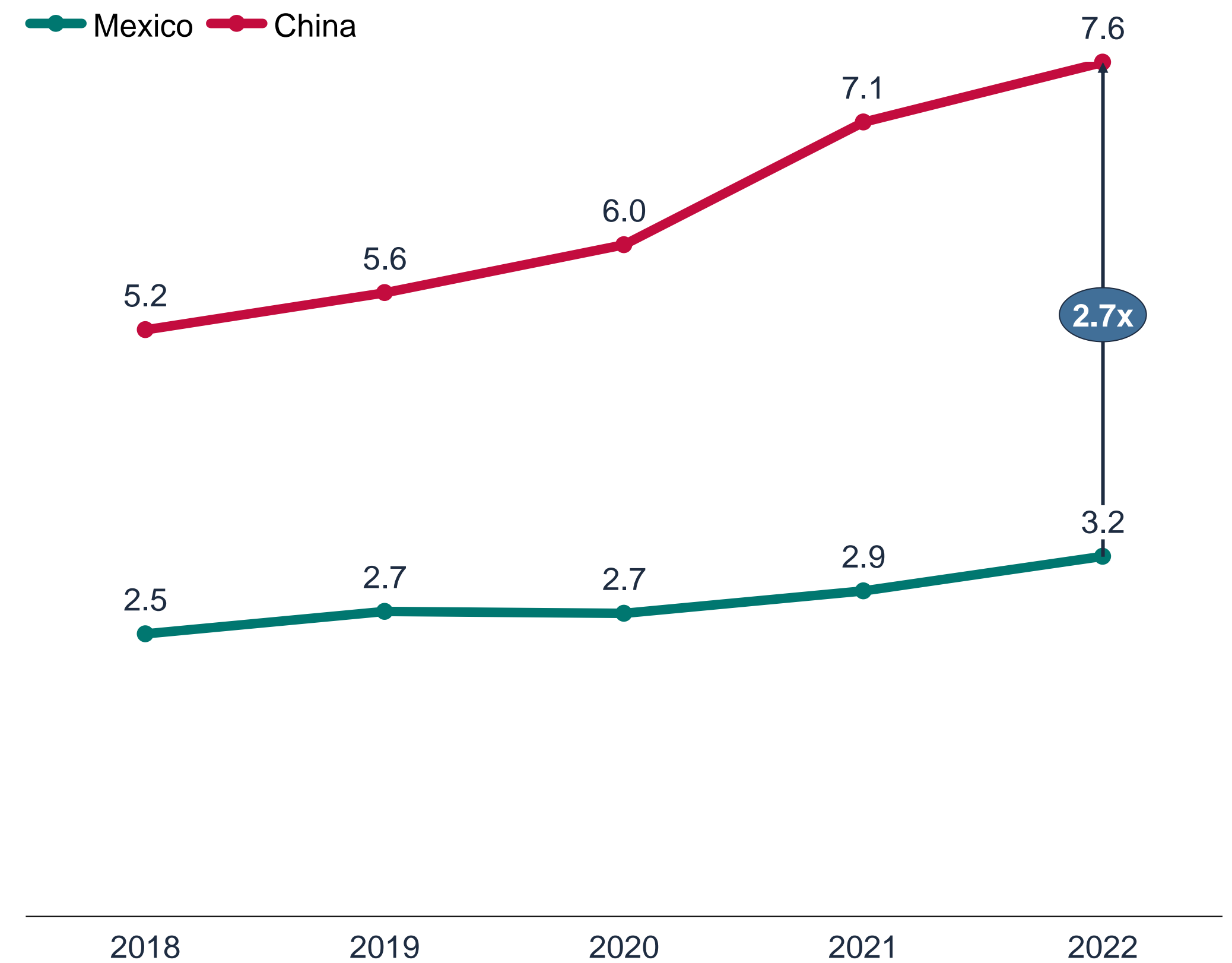
## US-China tariff rates<sup>1</sup>

2018-Jan 2023, %



## Average hourly rate for manufacturing workers<sup>2</sup>

2018-2022, US\$ per hour



Note: (\*) In 2020, the USA and China reached an agreement on a Phase One trade deal that requires structural reforms and other changes to China's economic and trade regime. It includes a commitment by China that it will make substantial additional purchases of U.S. goods and services in coming years

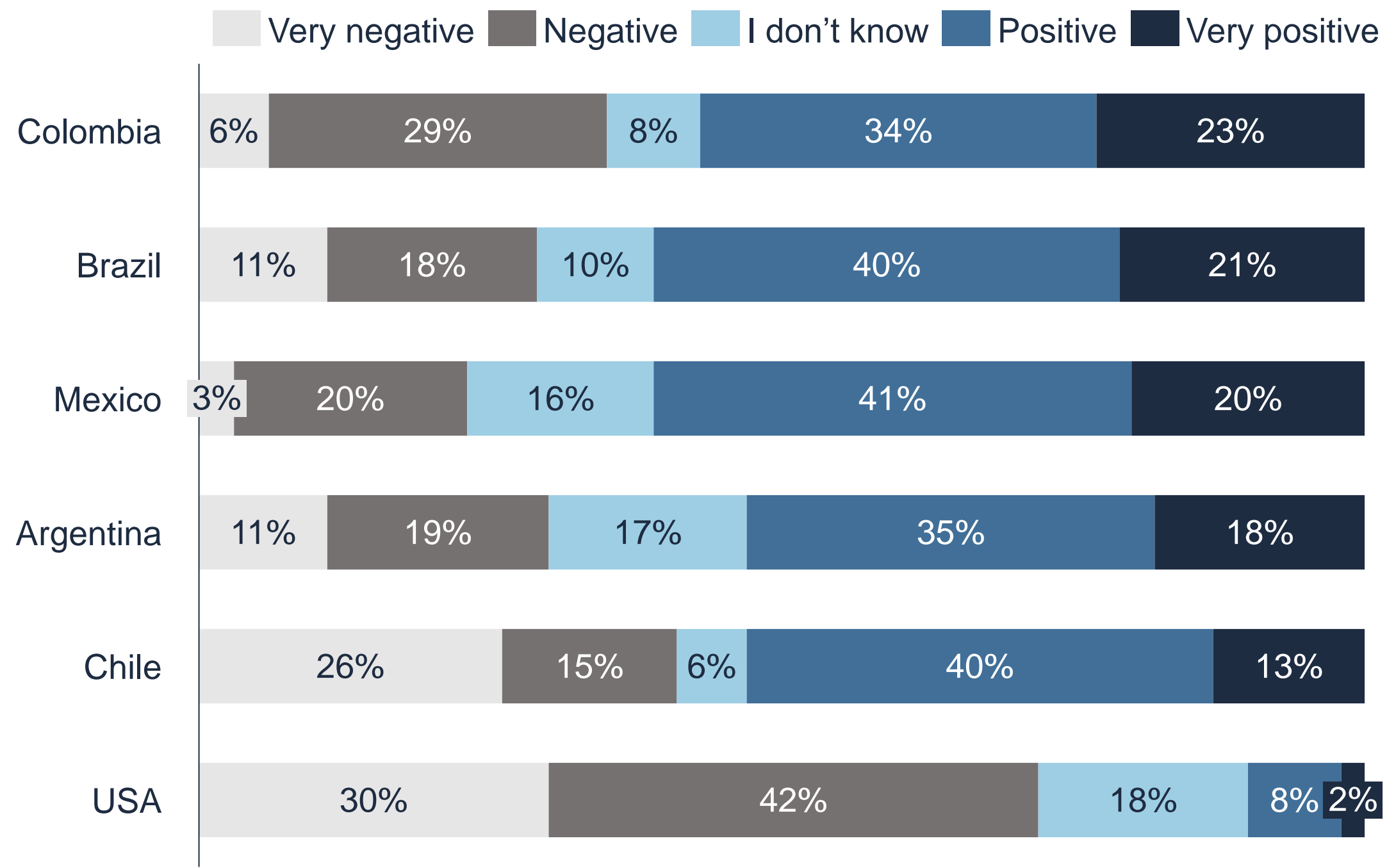
Source: (1) Peterson Institute for International Economics; (2) Trading Economics

# China's increasing influence is well-received in the region; most Brazilians consider China an important trade partner

## Latin America's view on China's regional influence

2023, % of respondents\*

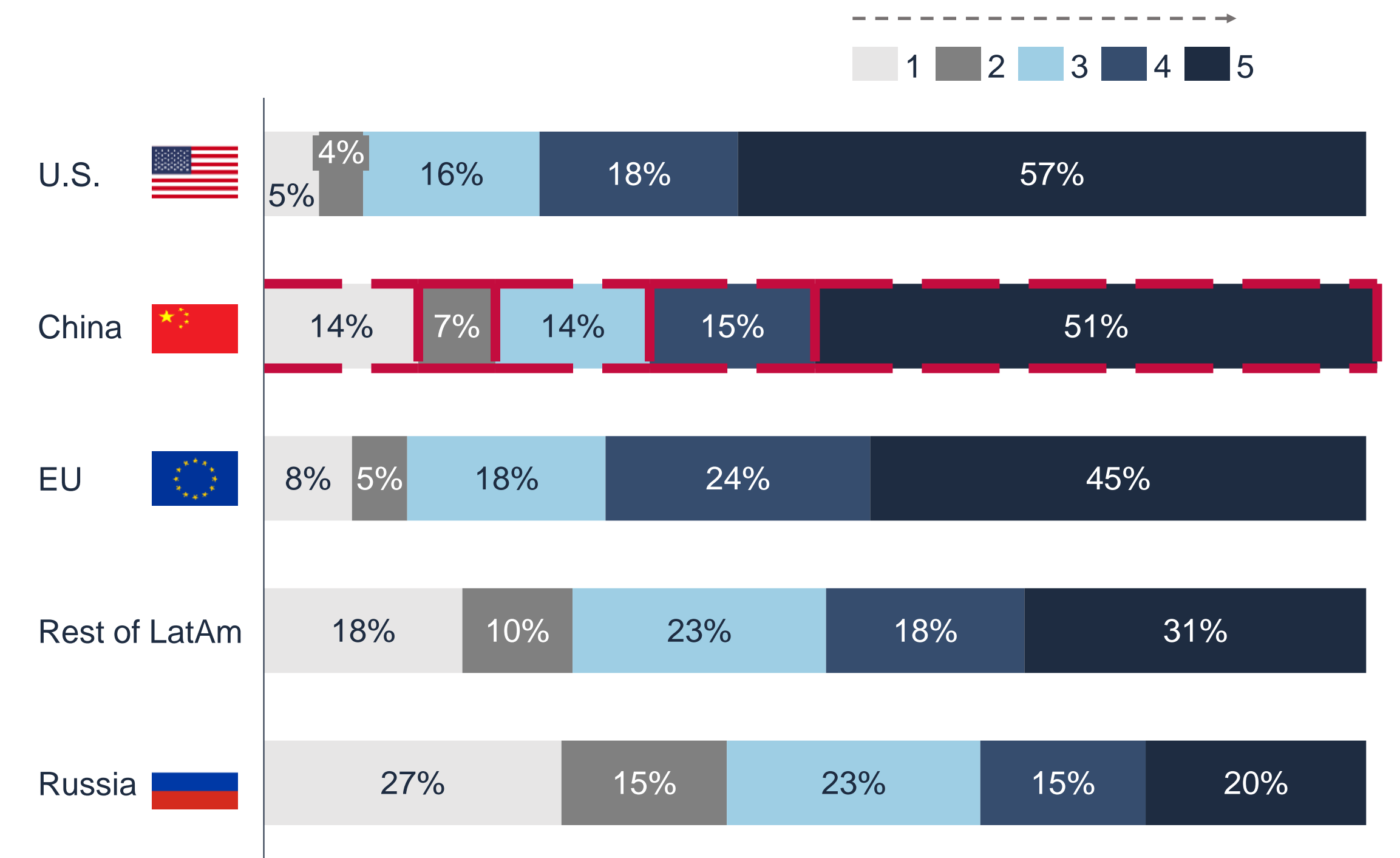
Do you see the growing influence of China in Latin America (through investments and commerce) in a positive (opportunistic) or negative (threat) way?



## Importance of different trade partners to Brazil

2023, % of respondents\*

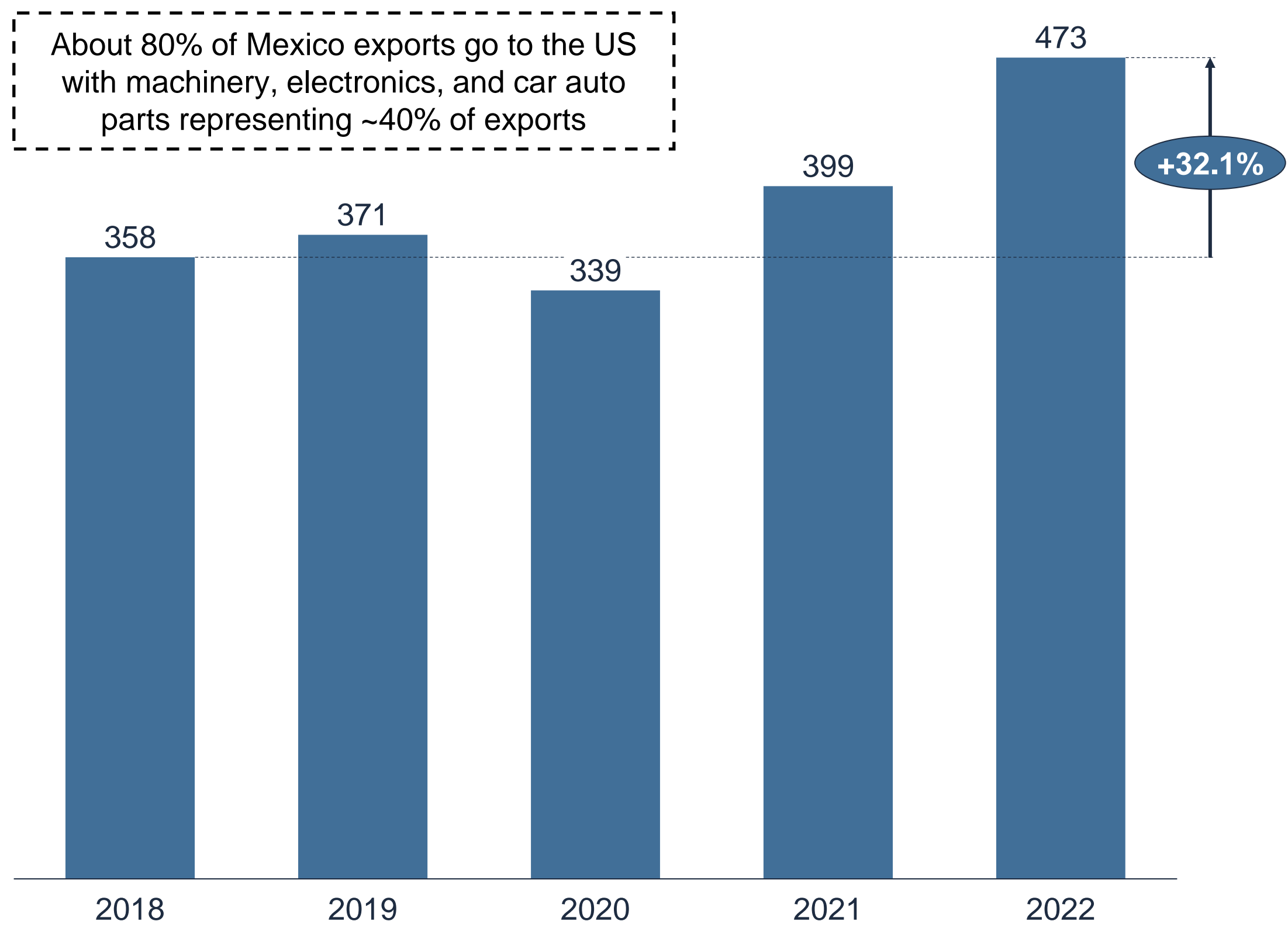
From 1 to 5, what is the importance of each of the following trade partners to Brazil? (1 being not important at all and 5 being very important)



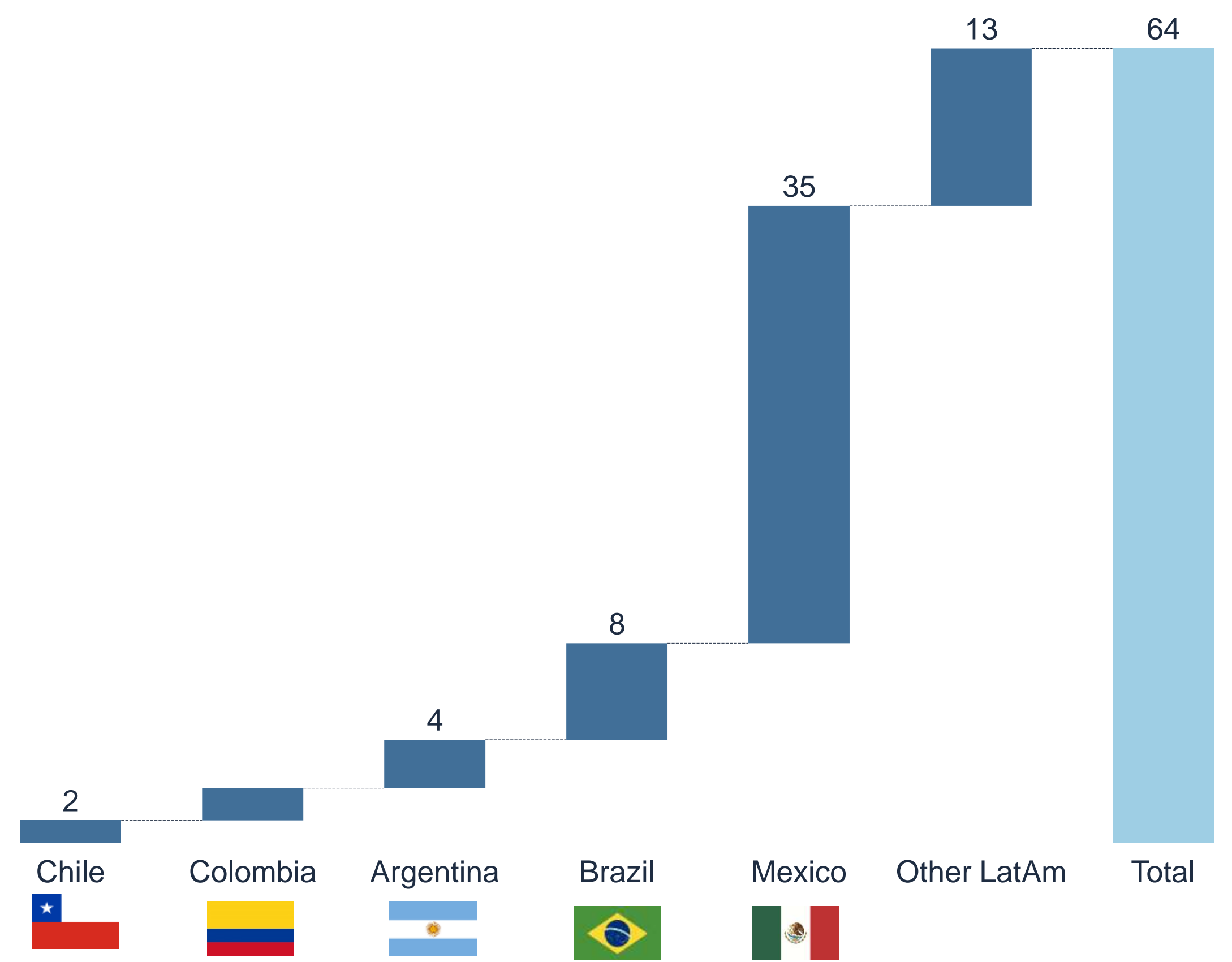
Note: (\*) sample size: 801, margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

# While Mexico is already benefiting from nearshoring, the rest of Latin America is also expected to benefit

**Total value of yearly exports Mexico-US<sup>1,2</sup>**  
2018-2022, US\$ B



**Total nearshoring opportunity by country<sup>3</sup>**  
2025 forecast, US\$ B

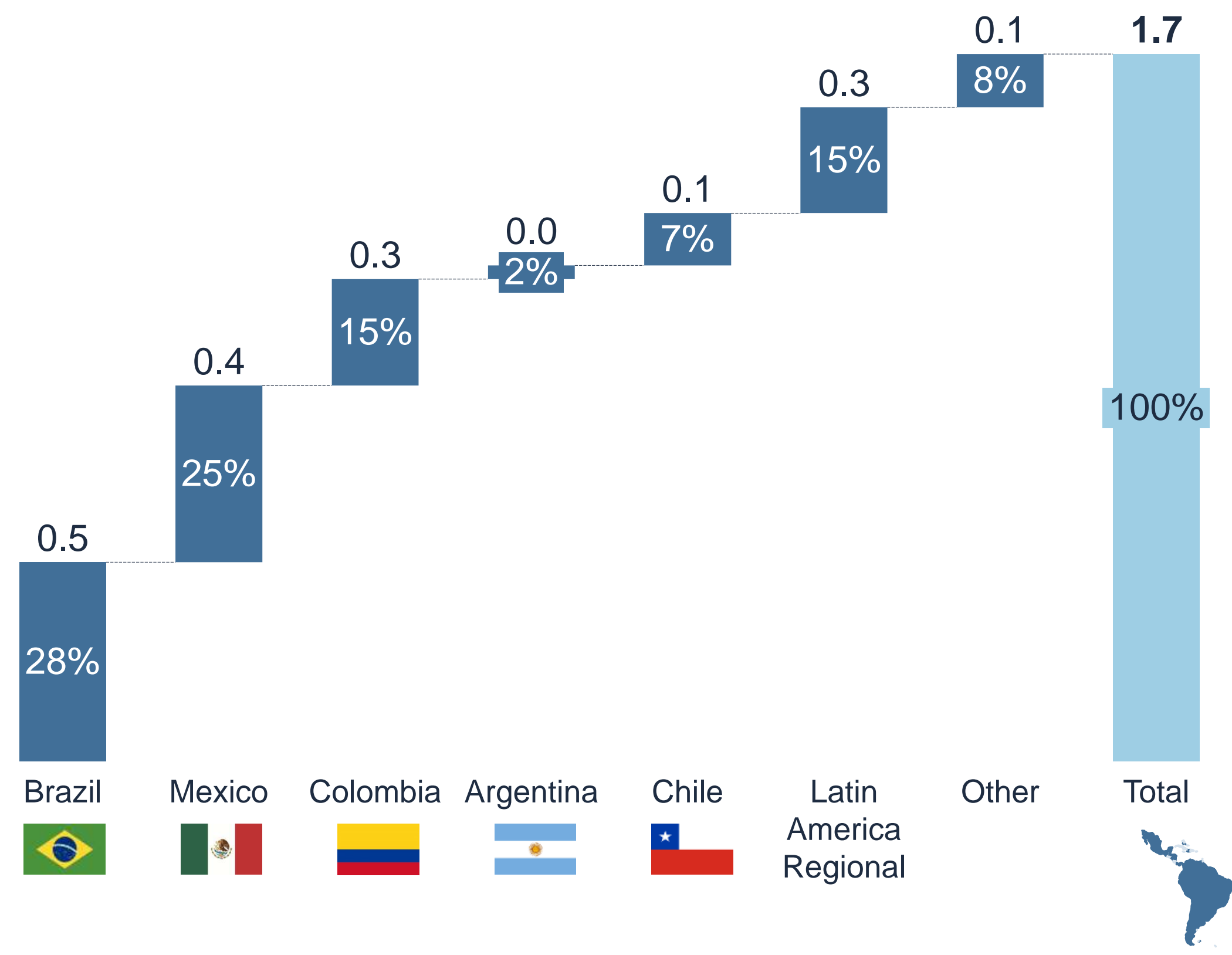


Source: (1) International Monetary Fund (IMF); (2) World Bank Manufacturing Value Added; (3) International Trade Administration

# Brazil represents 28% of venture dollars among the top 5 Latin American markets; fintech takes 45% of all funding

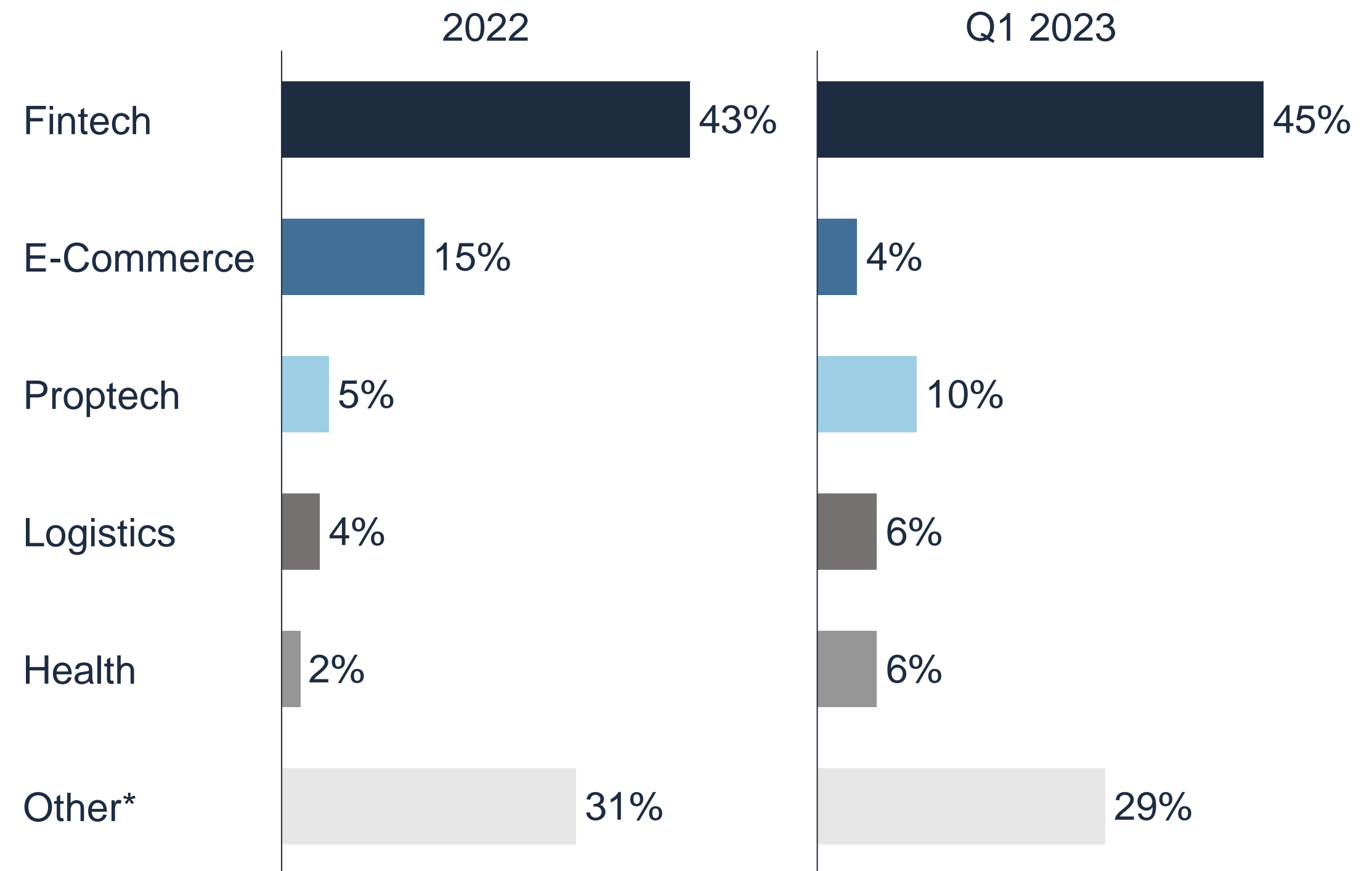
Venture Investment by country in Latin America<sup>1</sup>

H1 2023, US\$ B, % of total capital invested



Venture Investment by Industry in Latin America<sup>1</sup>

2022-Q1 2023, % of total capital invested



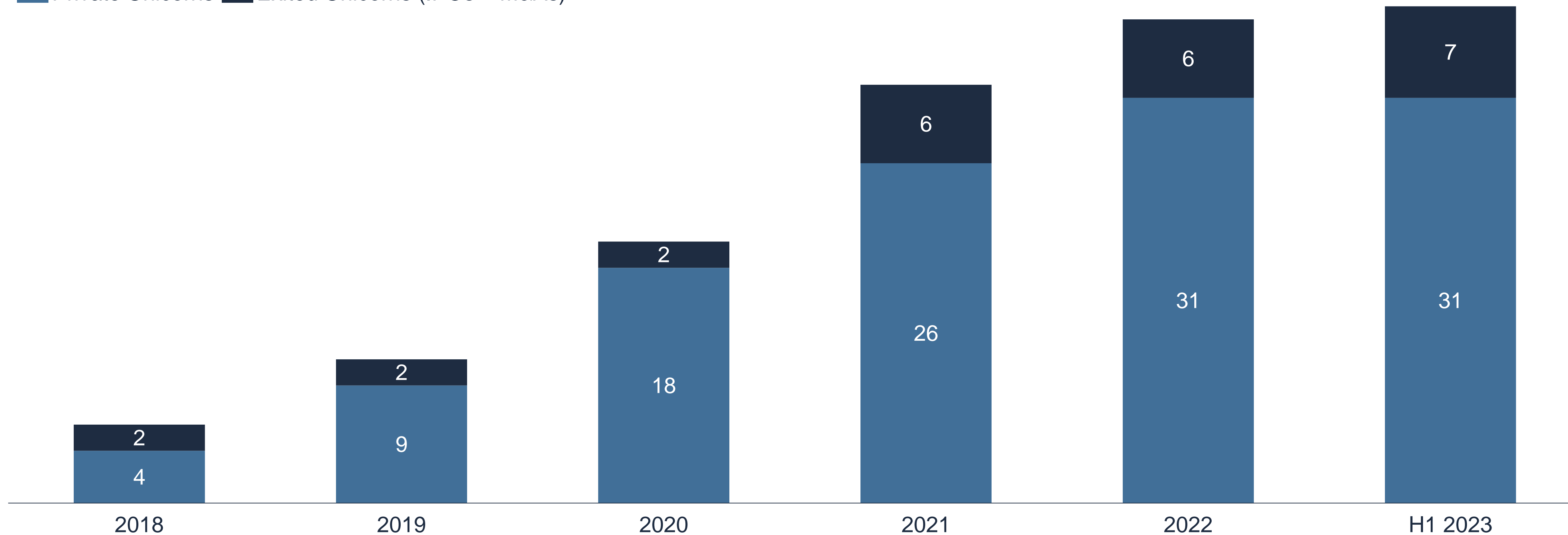
Note: (\*) Other includes: Biotech, Medical Devices, CRM/Sales Management, Digital Media & Electronic Games  
 Source: (1) LAVCA

# The number of unicorns in Latin America peaked in 2022 but it has mostly plateaued since then

## Number of Latin America unicorns<sup>1,2</sup>

Cumulative number of companies with valuation greater than US\$1B

■ Private Unicorns ■ Exited Unicorns (IPOs + M&As)

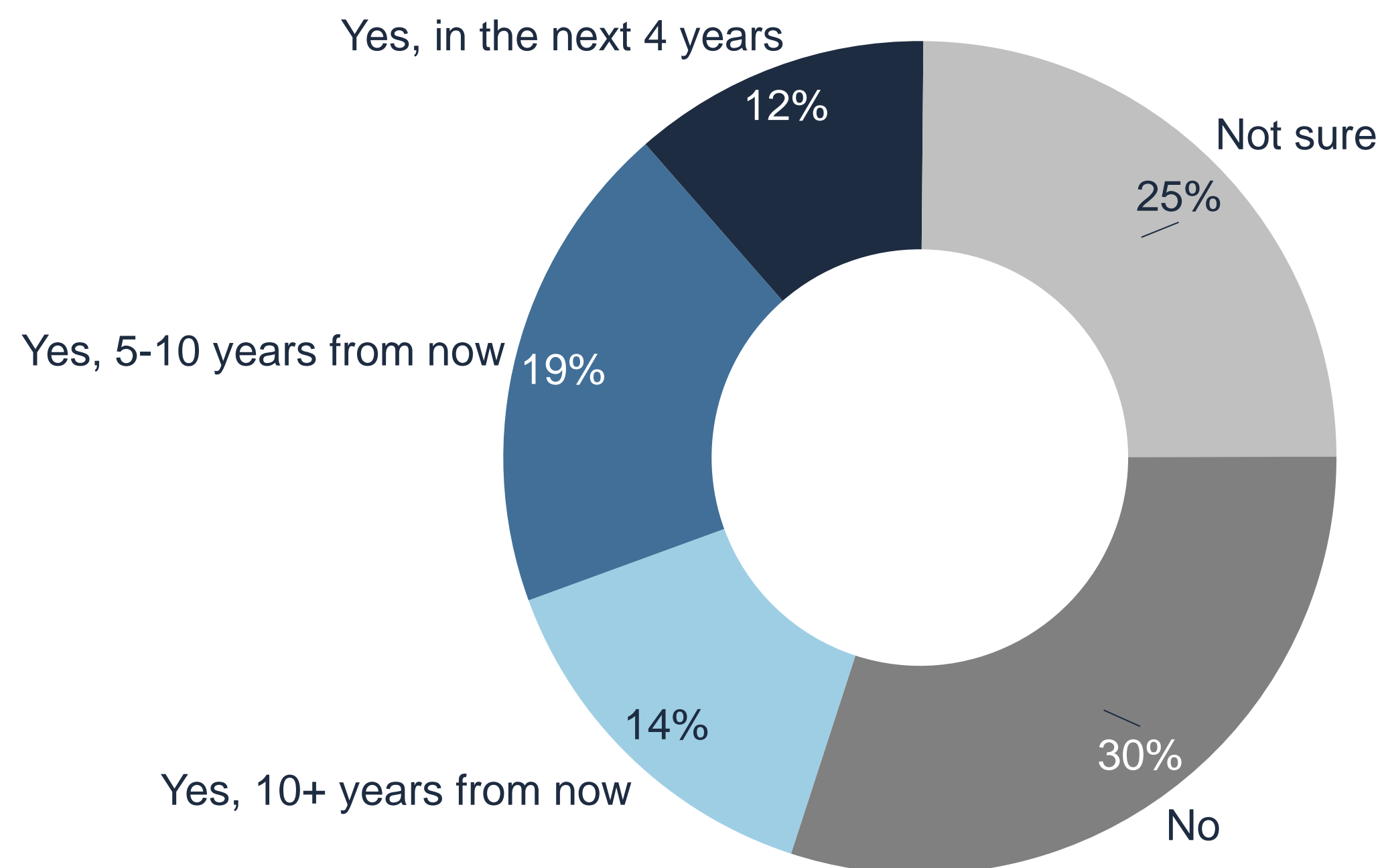


# Nearly half of top university talent aspires to start a tech company at some point in their careers

## Student desire to found startups in the future

2023, % of students surveyed

*Do you have plans to found a startup in the future?*

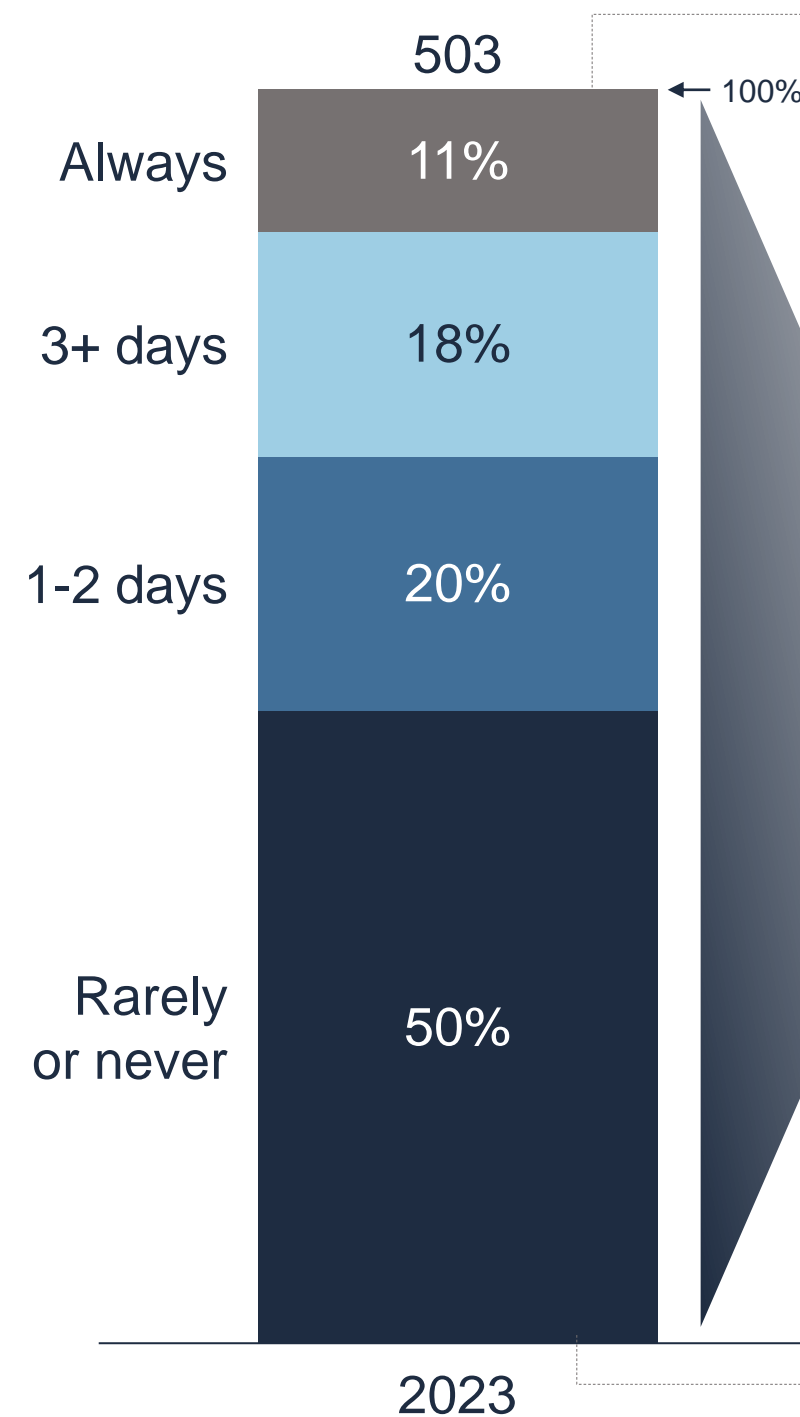


# Most companies remain mostly remote, with employees who work from home reporting greater productivity

## Company in-person requirements<sup>1</sup>

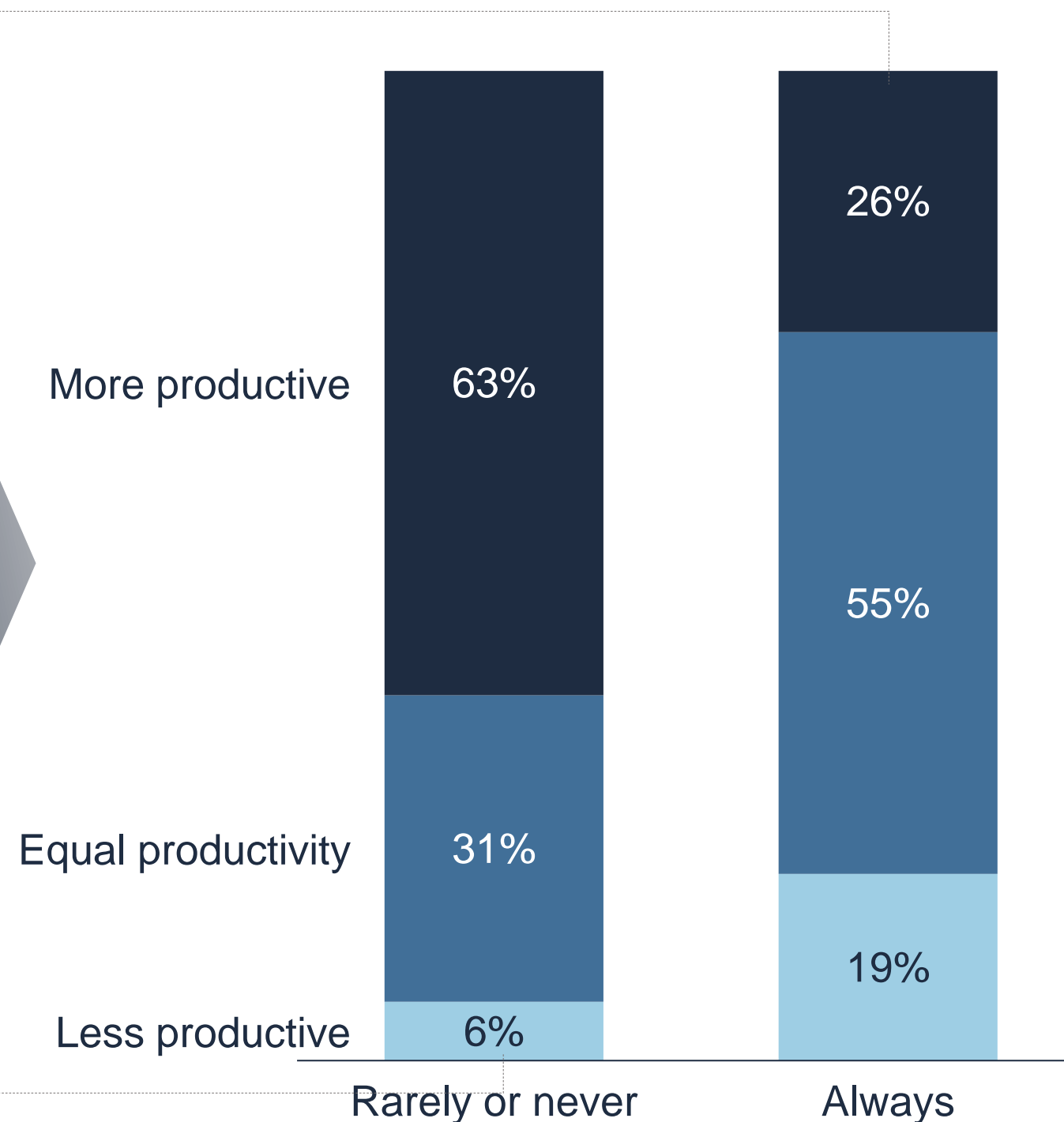
2023, % of respondents, days/week

*How often are employees required to be in the office?*



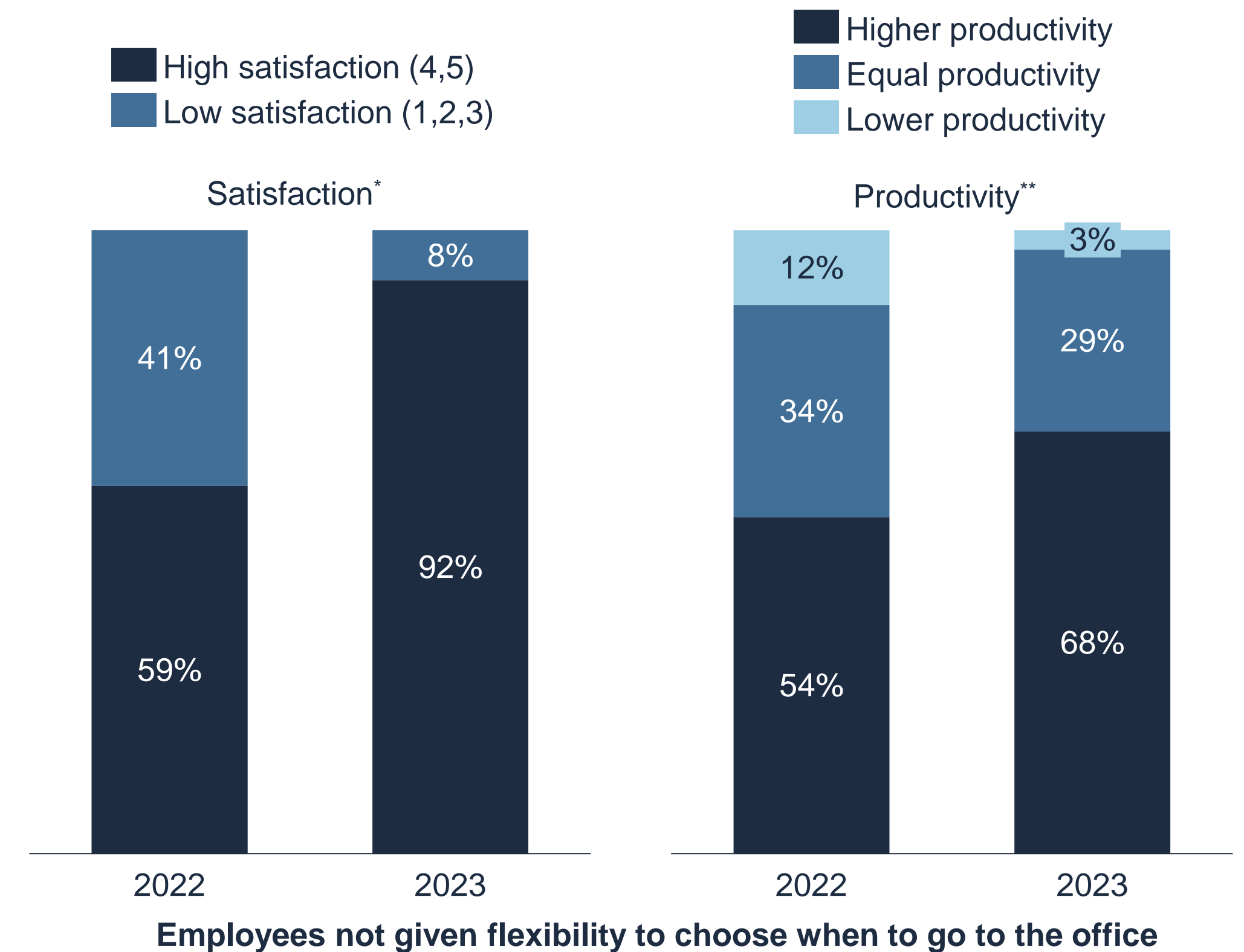
## Employee productivity perception with remote work<sup>1</sup>

2023, % of respondents



## Employees not given the flexibility to choose when to go to the office are less dissatisfied than a year ago<sup>1,2</sup>

2022-2023, % of respondents reporting levels from 1-5



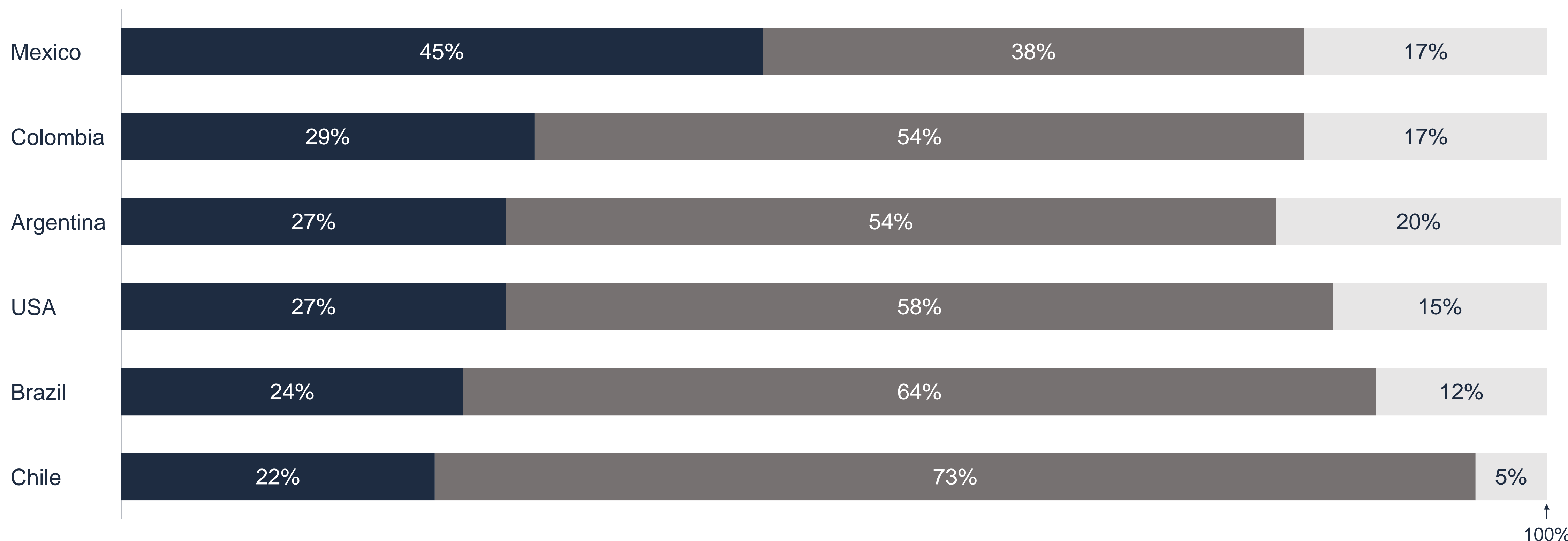
# Latin Americans, excluding Mexicans, show high levels of dissatisfaction with their ability to access to credit

## Loan acquisition satisfaction

2023, % of respondents\*

Very satisfied or satisfied    Unsatisfied or very unsatisfied    I don't know

*How satisfied are you with possibilities of obtaining a loan for personal or business reasons?*



Notes: (\*) margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: (1) Atlantico and Atlas Survey 2023



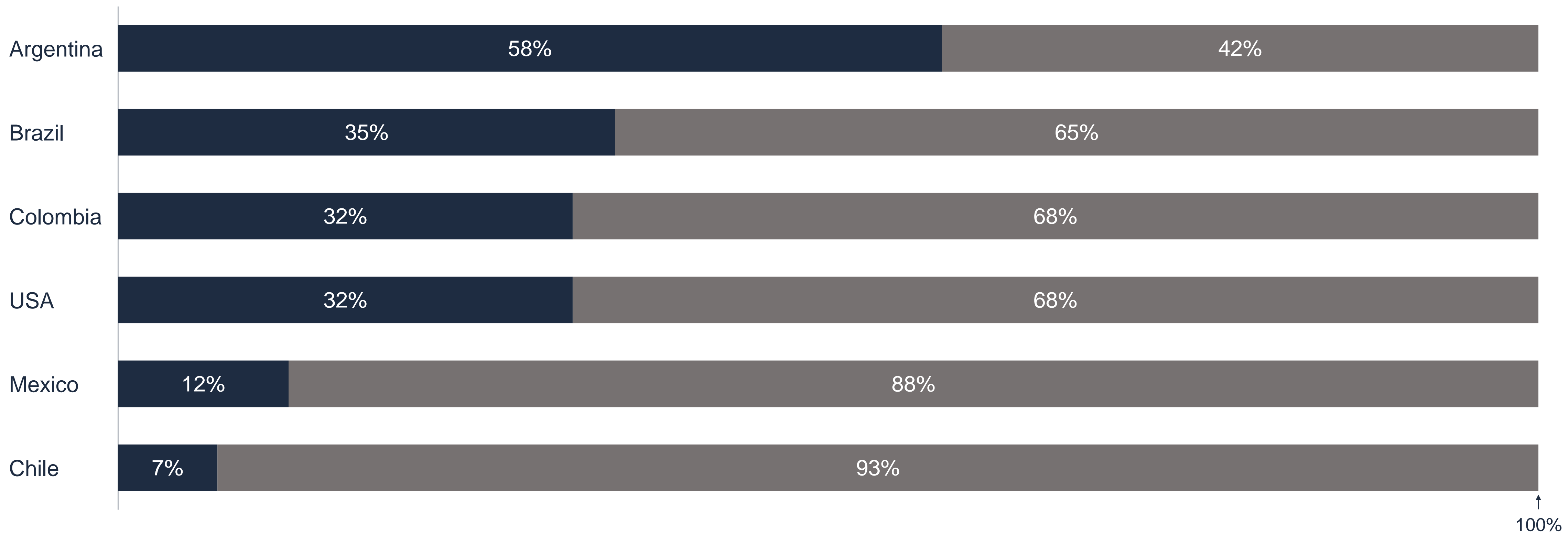
# Argentina and Brazil lead in consumer adoption of fintech services, followed closely by Colombia

## Use of fintech services<sup>1</sup>

2023, % of respondents

Yes No

Do you use fintech services (financial services provided by technology companies, such as digital payment apps)?



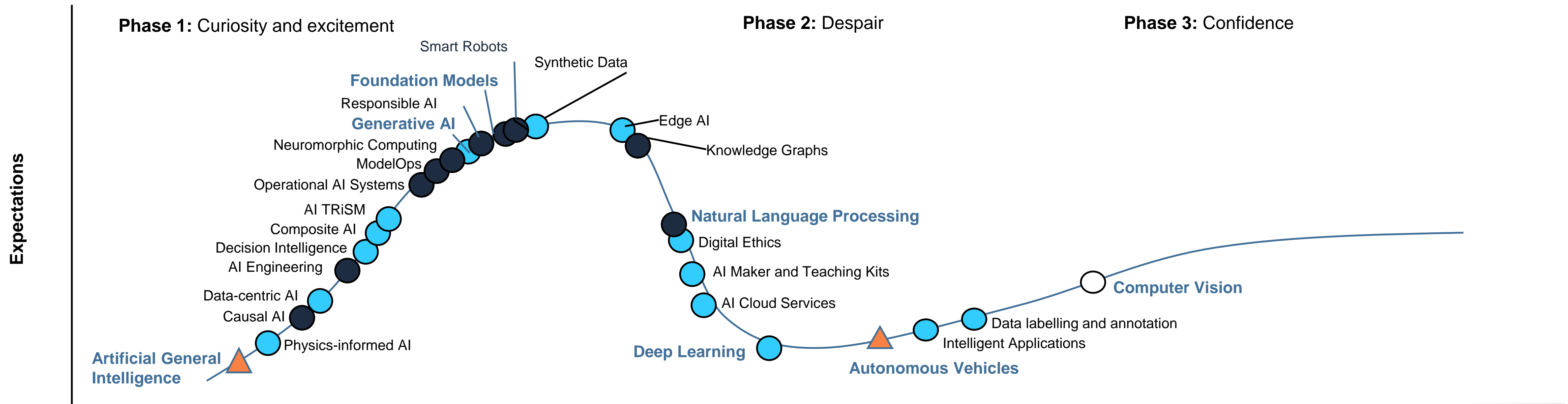
Notes: (\*), margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

# Artificial Intelligence has been researched since the 1970s, yet many use of its cases are still in development

## AI development cycle

Phase of lifecycle by AI application

Plateau will be reached in: ○ Less than 2 years ● 2 to 5 years ● 5 to 10 years ▲ More than 10 years



**Innovation trigger:** Tech breakthrough; no product exists for the general public

**Peak of inflated expectations:** Publicity on success stories but not the many failures

**Through of disillusionment:** Experiments and implementations fail. Investment for companies with product innovation and customer satisfaction.

**Slope of enlightenment:** Tech improves and its benefits become clearer. Enterprises begin adopting the technology as pilots.

**Plateau of profitability:** Adoption becomes widespread, product pays off due to its reach and utility

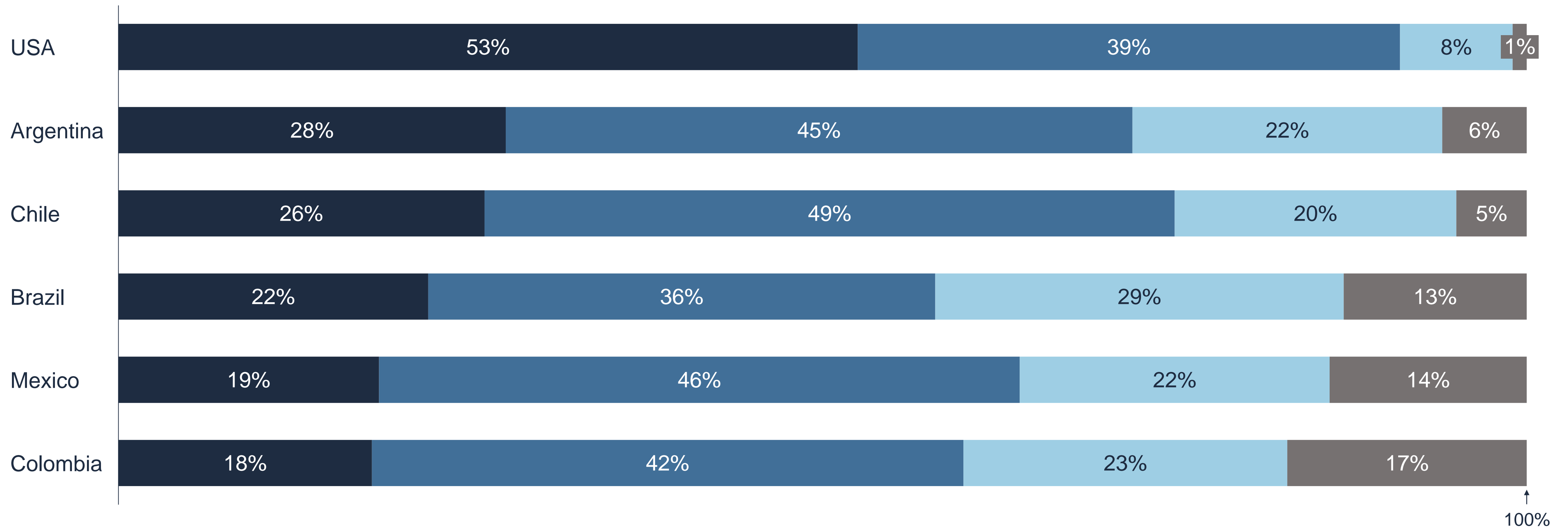
# While in the United States most are very familiar with the term Artificial Intelligence, awareness lags in Latin America

## Familiarity with the term Artificial Intelligence

2023, % of respondents\*

Very Familiar Somewhat familiar Not very familiar I do not know the term

*How familiar are you with the term "Artificial Intelligence"?*

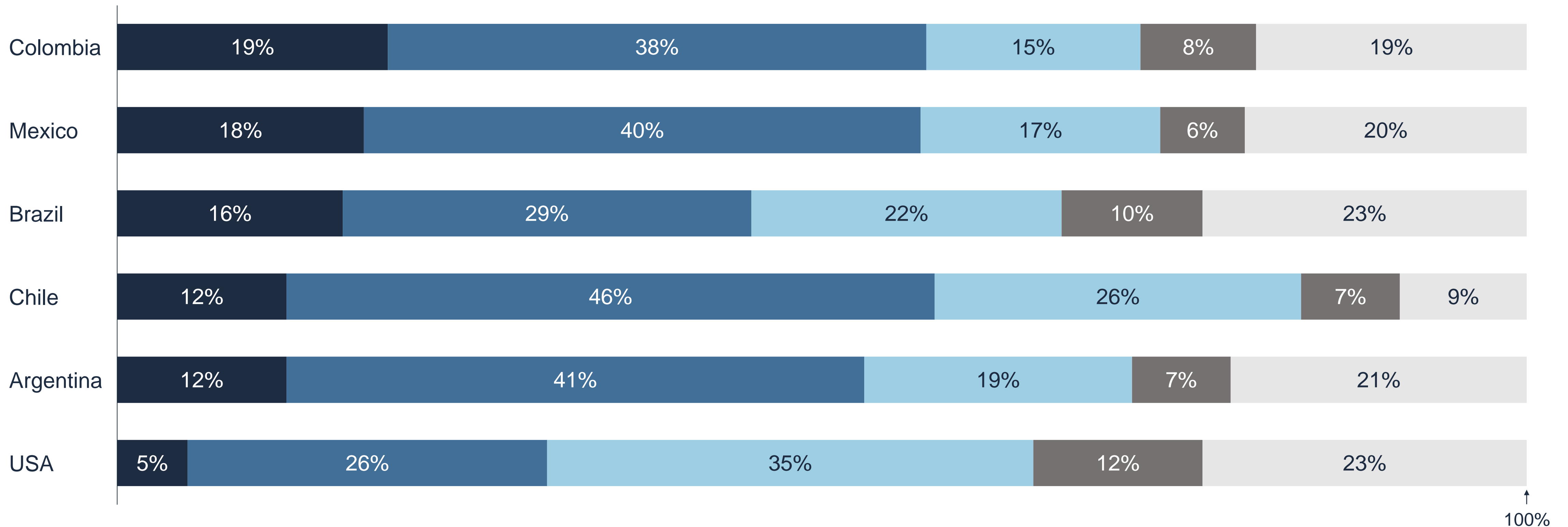


Notes: (\*), margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

# In most Latin American countries, the potential impact of AI in society is viewed through a positive lens

**Expected impact of Artificial Intelligence on society** 2023, % of respondents\*  
Legend: Very positive (dark blue), Mostly positive (medium blue), Mostly negative (light blue), Very negative (dark grey), I don't know (light grey)

*Do you expect the impact of Artificial Intelligence on our society to be positive or negative?*



Notes: (\*), margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

# Yet, most Latin Americans feel threatened by AI, believing the technology could perform some or all of their jobs

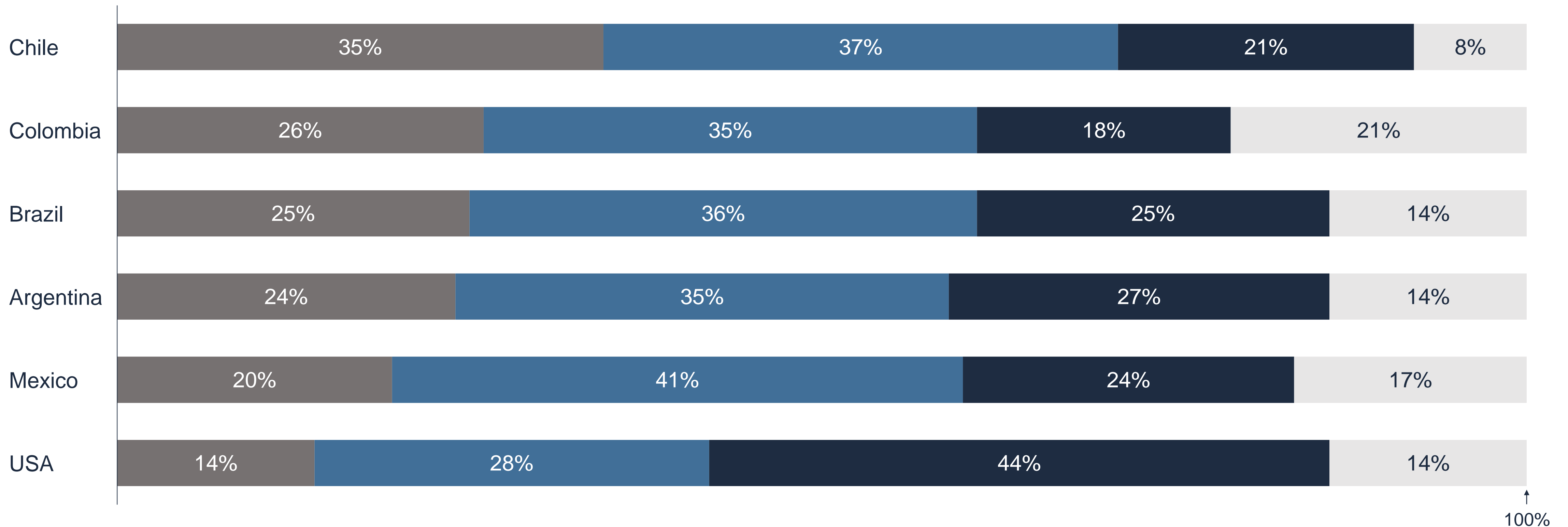
## How AI is expected to threaten jobs

2023, % of respondents\*

I believe AI could perform:

All of my job Most of my job None of my job I don't know

*Do you believe your job may be threatened by AI in the near future?*



Note: (\*), margin of error: +3p.p., confidence level: 95%, data collection period: 15/07-15/08  
Source: Atlantico and Atlas Survey 2023

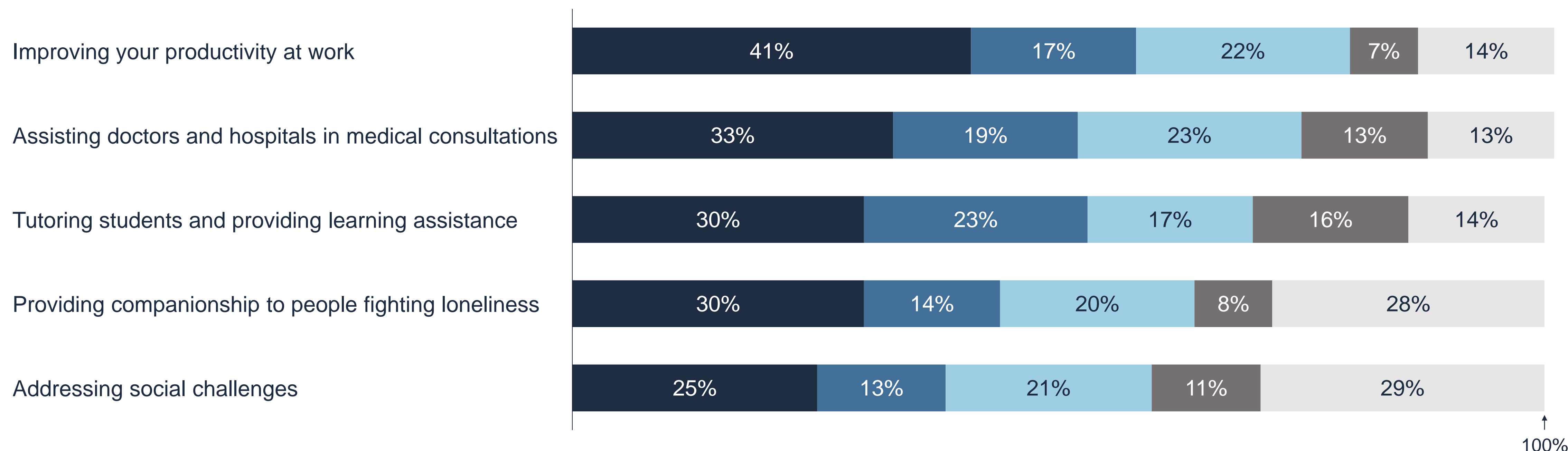
# Brazilians believe productivity will be the most valuable impact of AI, followed by improving health and education

## Potential uses of AI

2023, % of respondents\*

Extreme value Considerable value Some value Little value No value

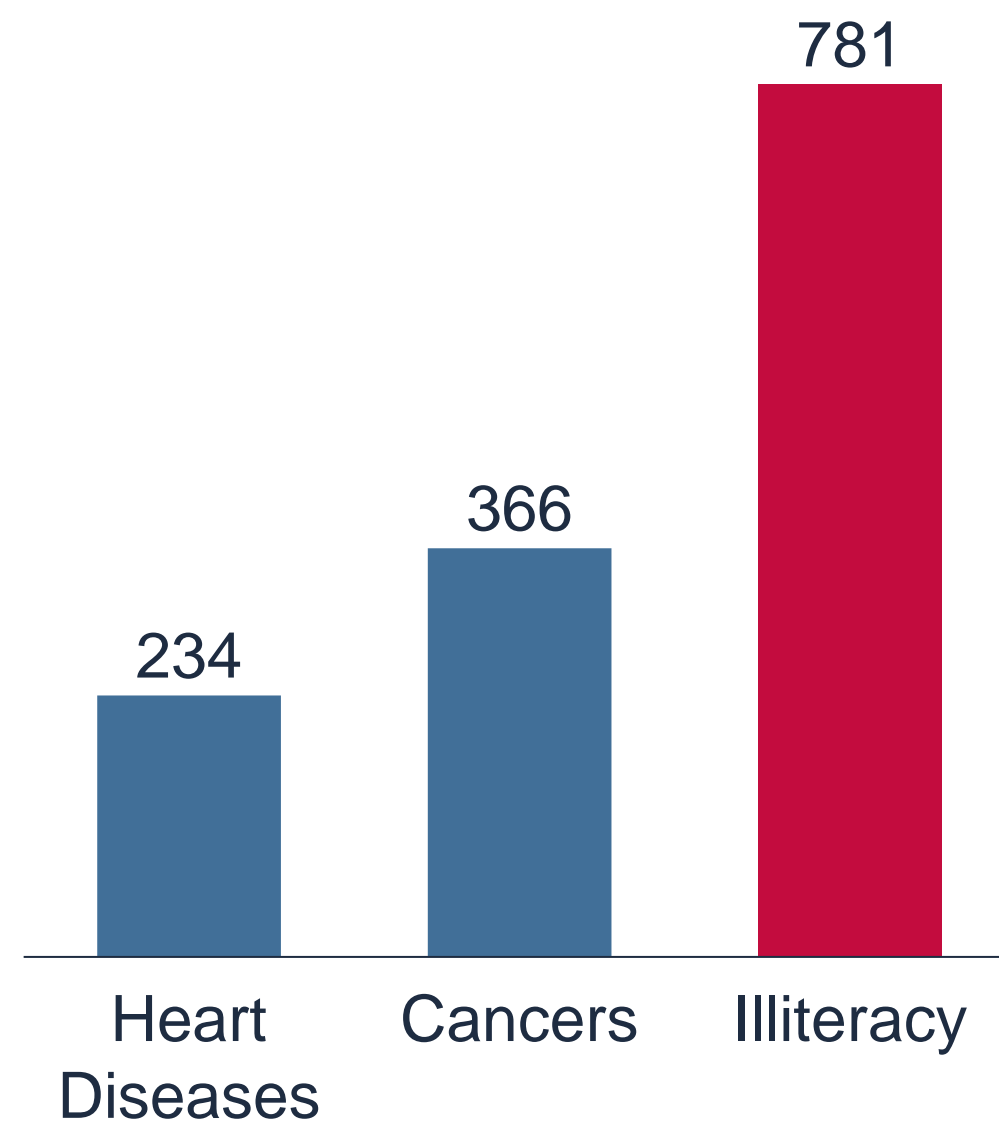
From 1-5 (1 being no value at all and 5 being extremely valuable), how much value do you believe AI could have in the following functions?



# Literacy is a main catalyzer to students' development but a big challenge in reducing educational inequality in Brazil

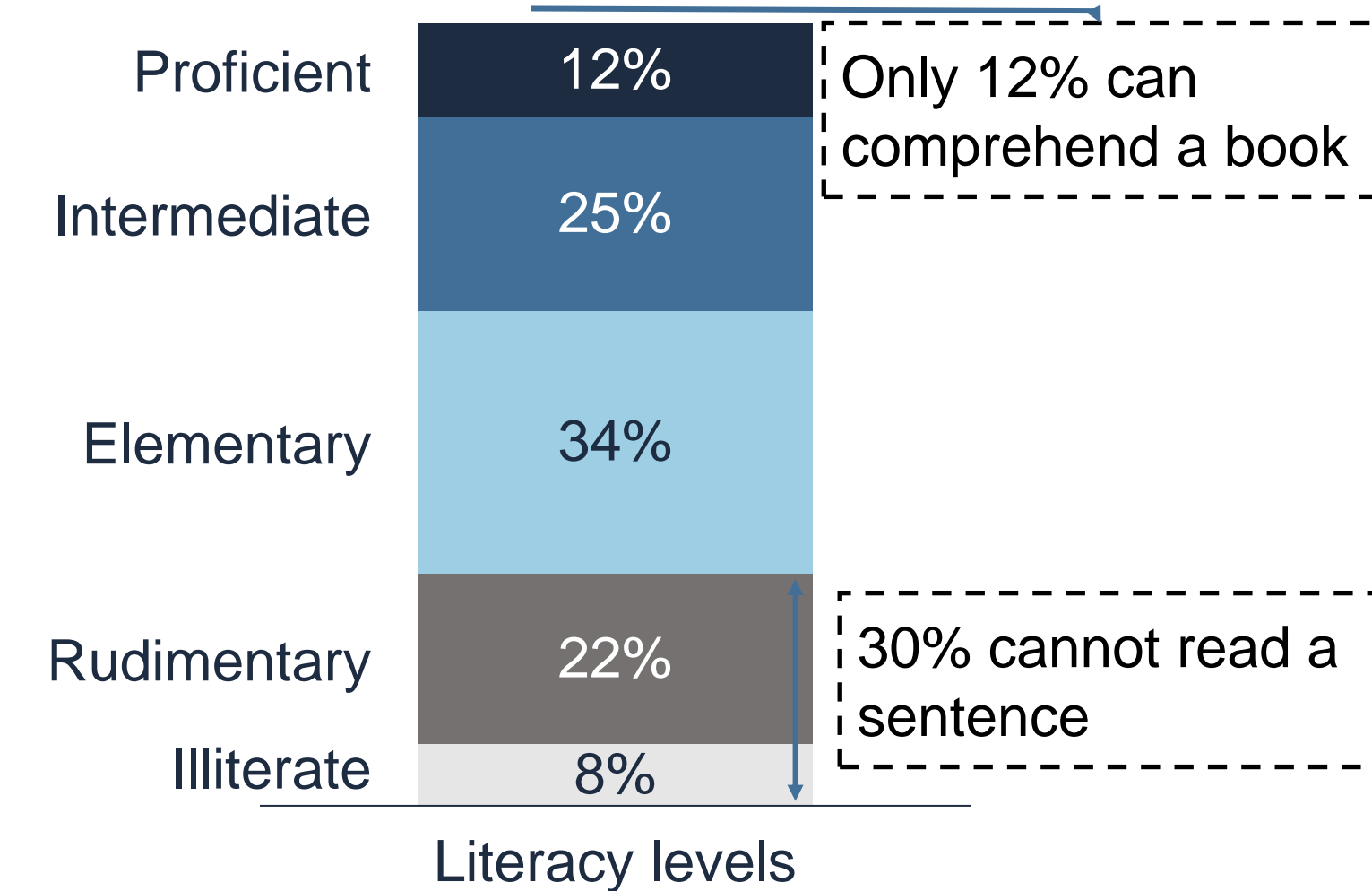
## Major global issues<sup>1,2</sup>

2019, millions of people



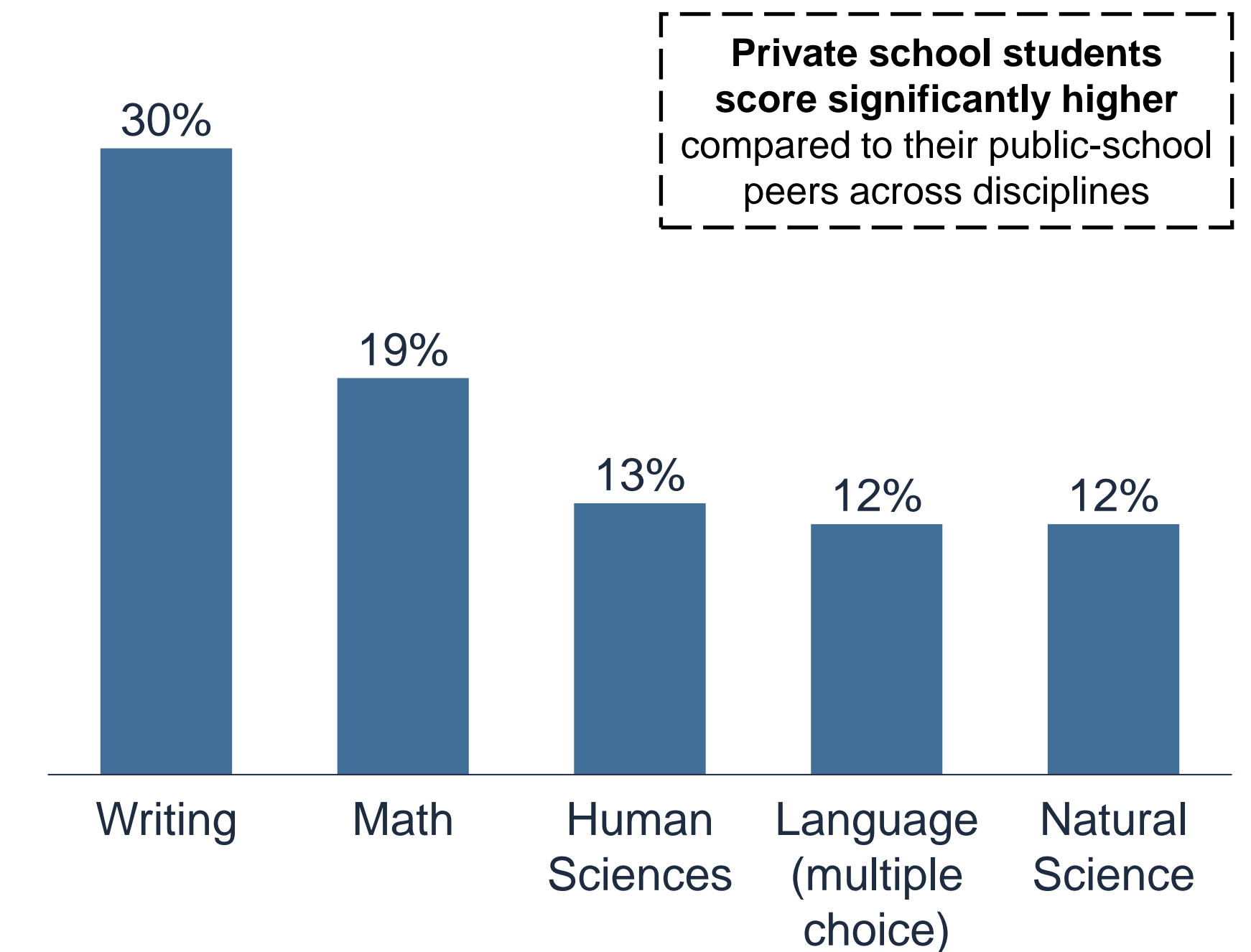
## Literacy levels in Brazil<sup>3</sup>

2018, % of people 15-64 years old



## Educational gap in Brazil<sup>4</sup>

2022, ENEM score difference between Public and Private school students

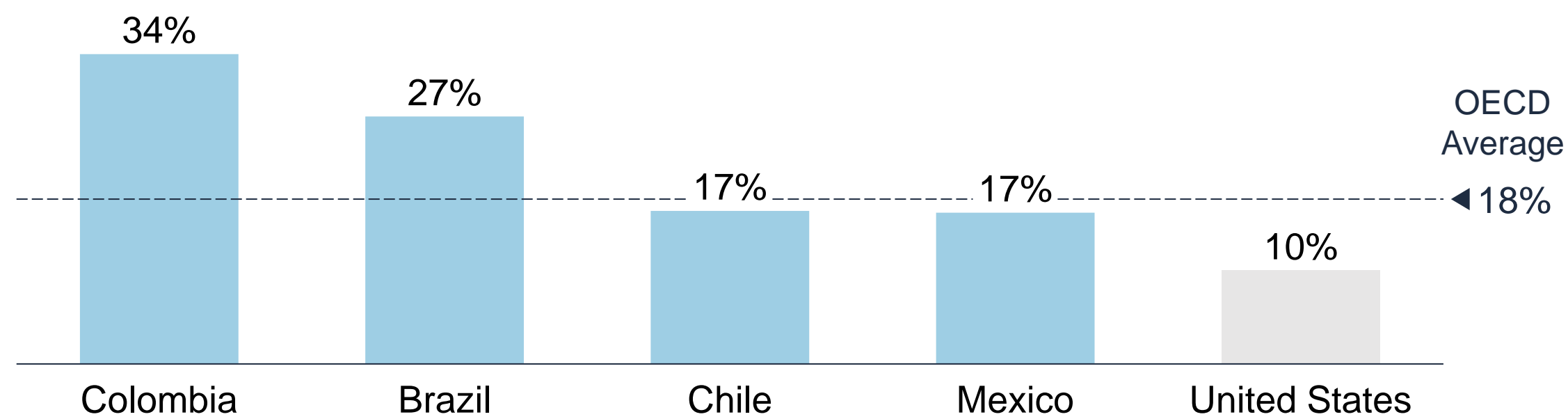


Source: (1) IMHE World Burden of Diseases; (2) International Literacy Association (number refers to totally illiterate or functionally illiterate population); (3) Inaf (Functional Literacy Indicator) 2018; (4) Educational entrance examination *Exame Nacional do Ensino Médio* (ENEM) 2018

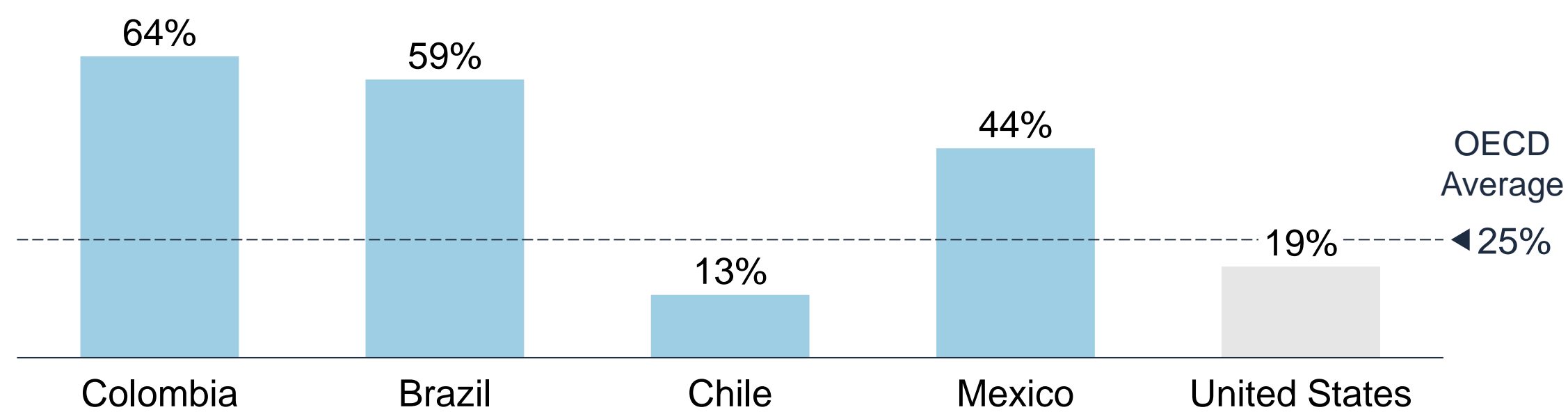
# Despite a lack of resources, schools and teachers in Latin America are eager and ready to implement technology

## Gap in ICT\* skills and infrastructure by country

2018, % of teachers reporting a high need for professional development in ICT skills for teaching

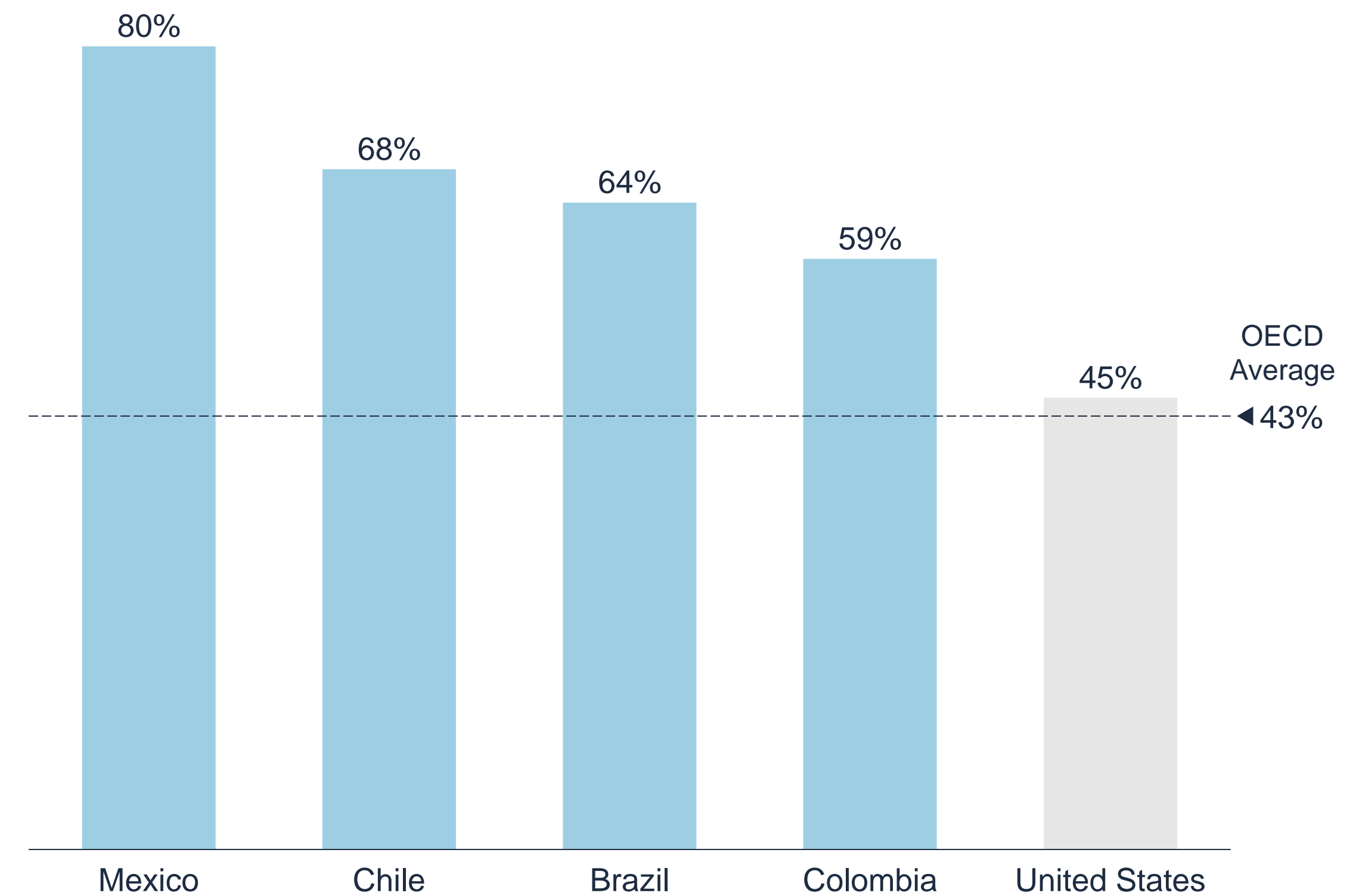


2018, % of principals reporting a shortage or inadequate amount of digital technology for instruction



## Teacher preparedness for using information and communication technology in teaching, by country

2018, % of teachers



Note: (\*) Information and Communication Technology (ICT)  
Source: OECD



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/imagine Atlantic Ocean waves in watercolor in the style of **Carybé**