



McKinsey
& Company

brazil 
at silicon valley

Brazil Digital Report

1st Edition

April 2019

About this report

The Objective

This report presents an overview of Brazil's economy, including its innovation, digital and entrepreneurial landscape. The facts show that Brazil offers many exciting opportunities and has many challenges – opportunities for innovation – to drive productivity, growth and social advances.

The Audience

This report is intended for all those who can play a part in driving the innovation agenda in the country – entrepreneurs, investors, public and private institutions and business leaders around the world, and digitally savvy, intellectually curious Brazilians.

The methodology

This is a curated compilation of public information and selected proprietary McKinsey data. It can be revised annually, and we hope it will generate many years of editions that will tell the ongoing story of Brazil's digital and innovation evolution.

Acknowledgments:

McKinsey thanks the support it has received from Brazil at Silicon Valley, a student-led movement that started at Stanford University and whose mission is to improve Brazil's competitiveness and global relevance through technology and innovation. More information at www.brazilatsiliconvalley.com. “

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support of



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Orleans



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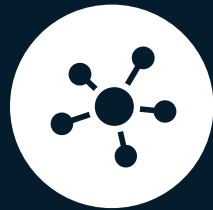
Chapters



Macroeconomics



Digital
Perspective



Entrepreneurship
Ecosystem

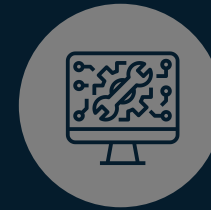


Sector Deep
Dives

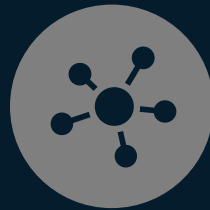
Chapters



Macroeconomics



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Sector Deep
Dives

Macroeconomics

The Brazilian economy has reached a **tipping point**

- GDP growth **has returned**
- Consumer and industry confidence are high
- Inflation and interest rates are at all-decade lows
- Country risk is on the decline
- Capital markets are active as ever...
- ...and BOVESPA is at its highest point to date.

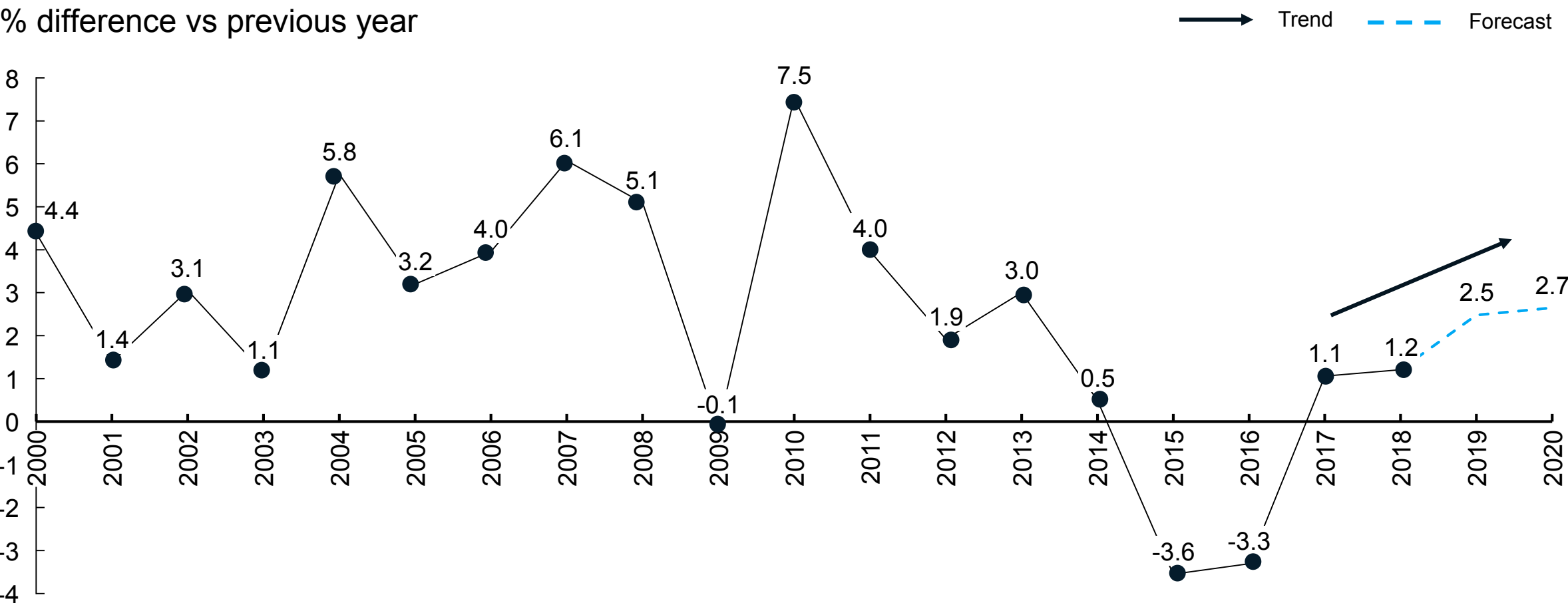
But to expand growth and make other advances, the country will need to close gaps with developed and emerging economies:

- Productivity has grown very little over the last decade
- The demographic and workforce boom is over, meaning that productivity gains will be needed to drive growth
- We lack innovation, patents, and a skilled workforce...
- ... and we have not seen any sign of home-grown tech or innovation giants among our top-performing companies.

Brazil's economy seems to have reached an tipping point; after a recent economic slowdown, GDP is rising again

Real GDP Growth

% difference vs previous year

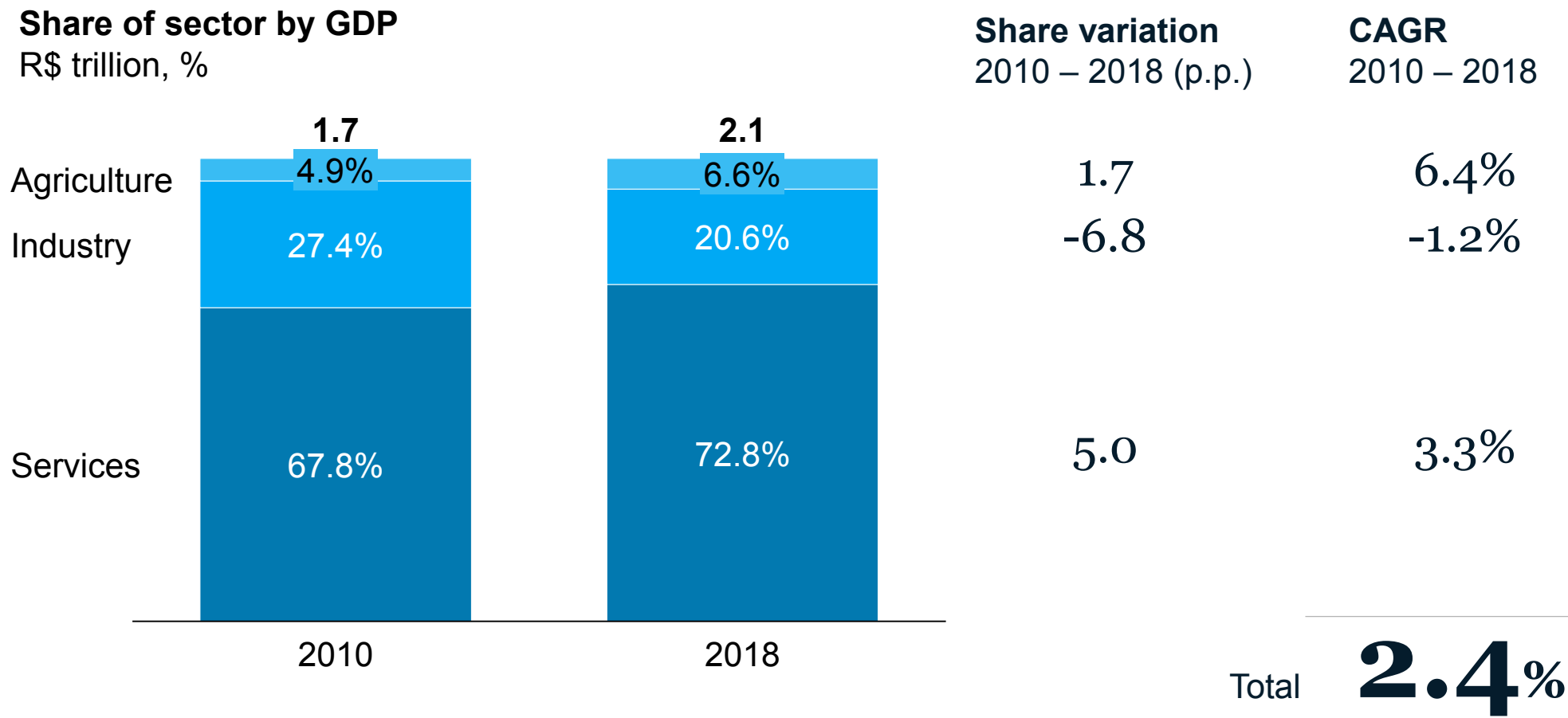


Private consumption is the main driver of this growth

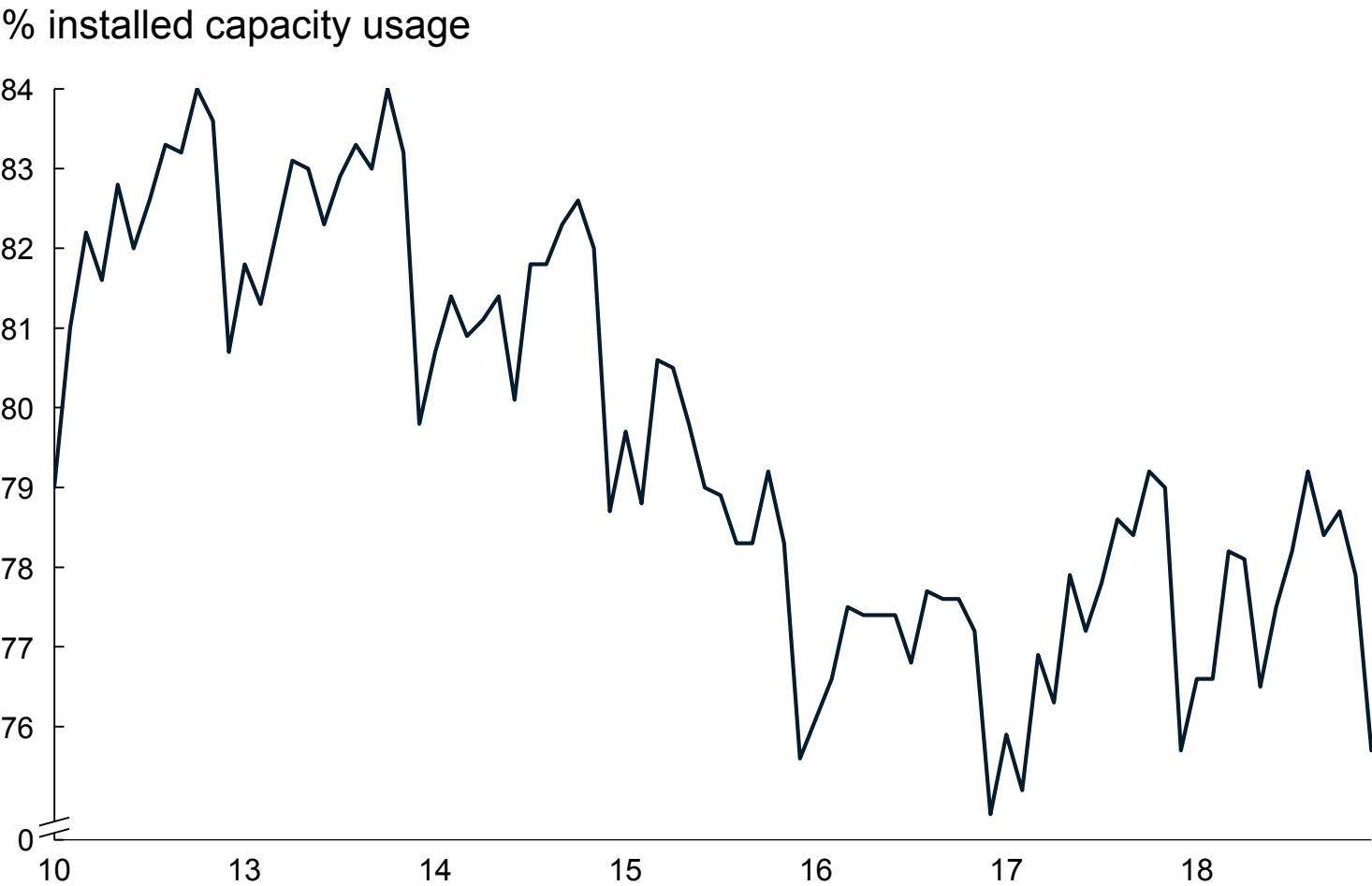
GDP					
% of growth by component					
	2014	2015	2016	2017	2018
GDP growth	0.5	-3.6	-3.3	1.1	1.2
Private consumption	1.5	-2.2	-2.6	1.0	1.4
Government consumption	0.1	-0.3	0	-0.2	0
Gross fixed investment	-1.0	-3.0	-2.3	-0.4	0.8
External balance	0.2	3.0	1.5	0.1	-1.0
Stock building	-0.3	-1.0	0.1	0.7	0

Main driver of growth

Agriculture and services account for significant economic growth



Industry can tap its significant capacity to boost production in the short term

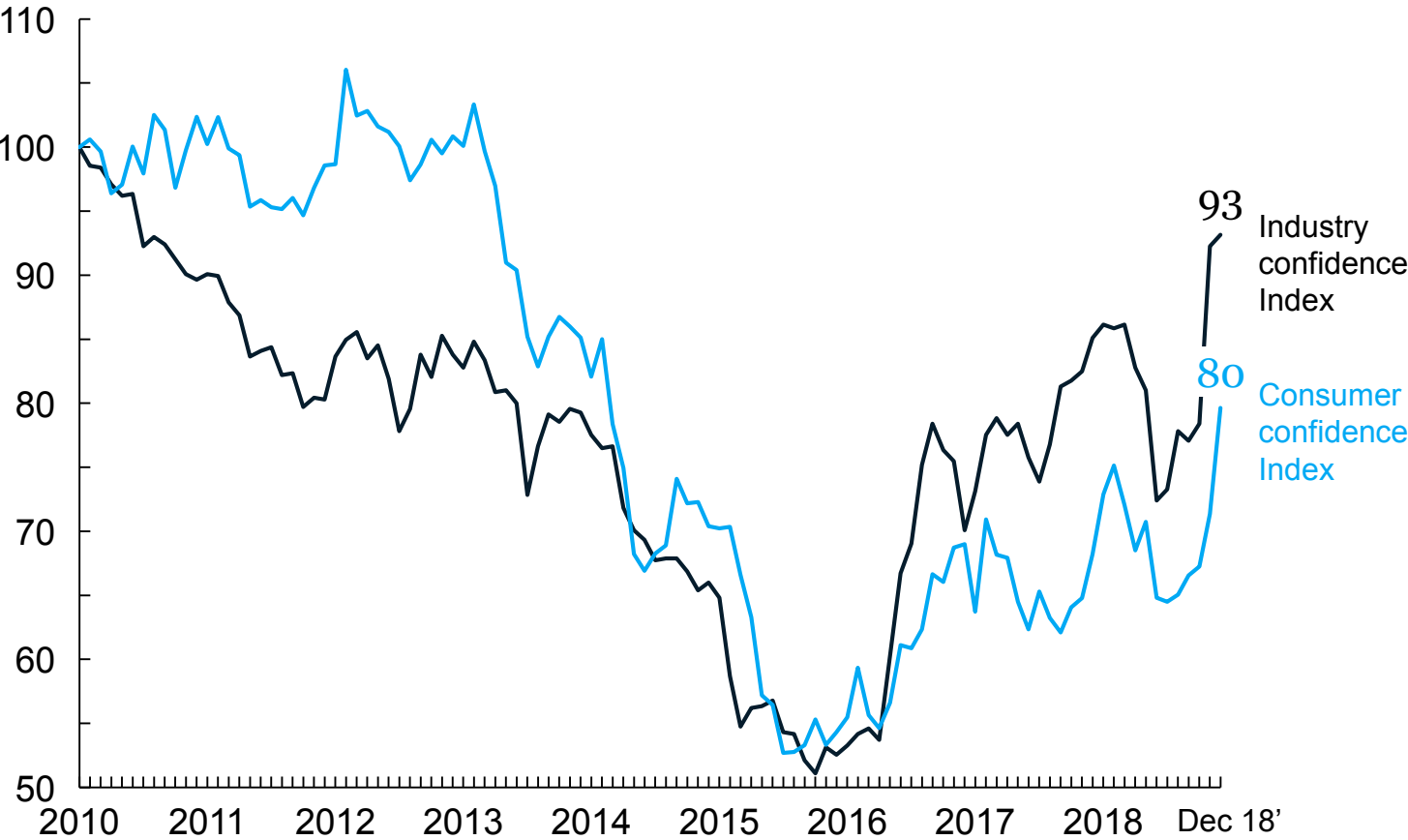


Source: CNI



Consumer and industry confidence have reached their highest point since 2014

Industry and Consumer Confidence Index
Index, Jan/2010 = 100

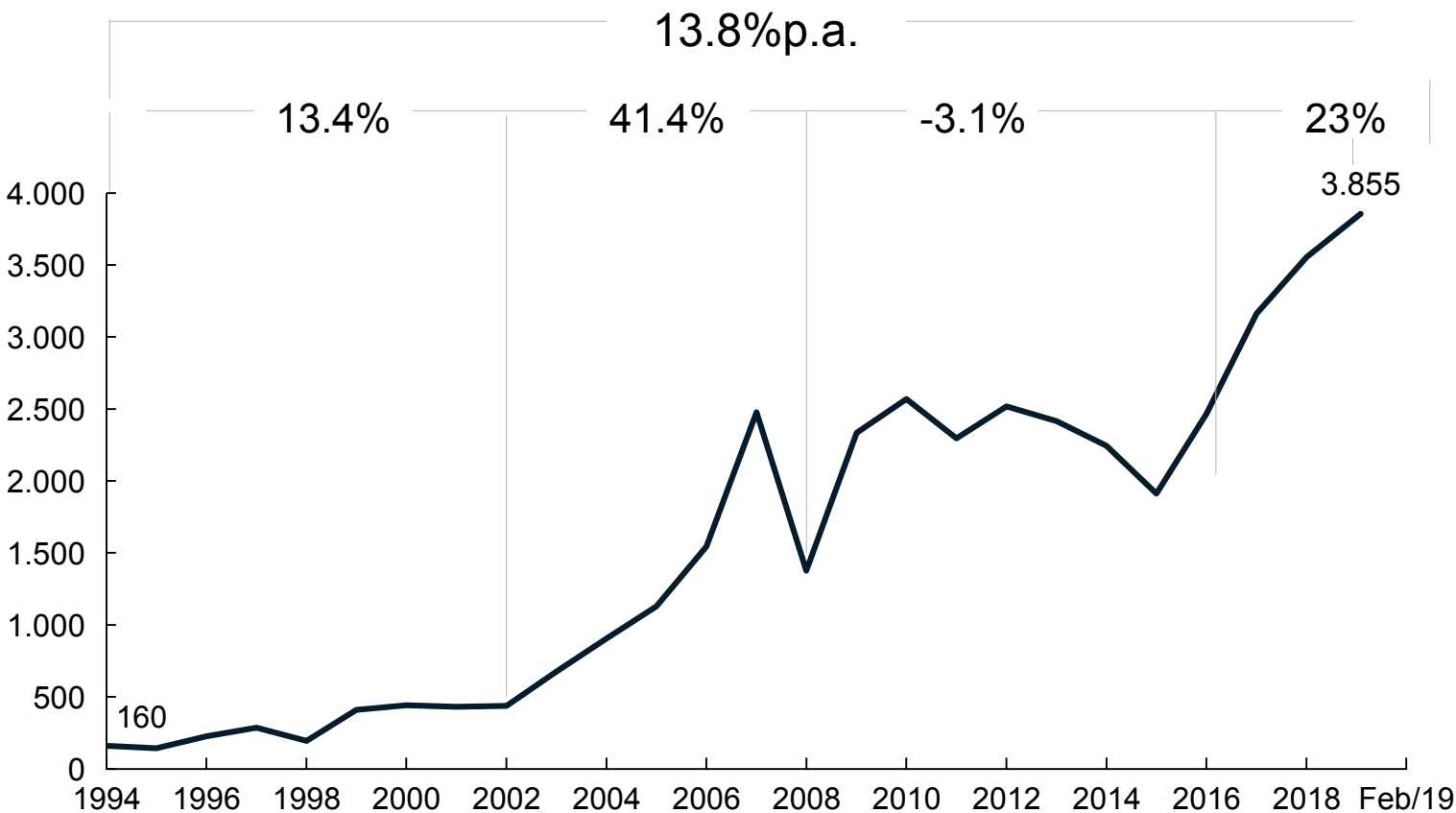


Source: FGV, IBRE



In 2018, Bovespa reached its highest ever market cap of R\$3.8 trillion...

Bovespa Market Value
R\$ billion

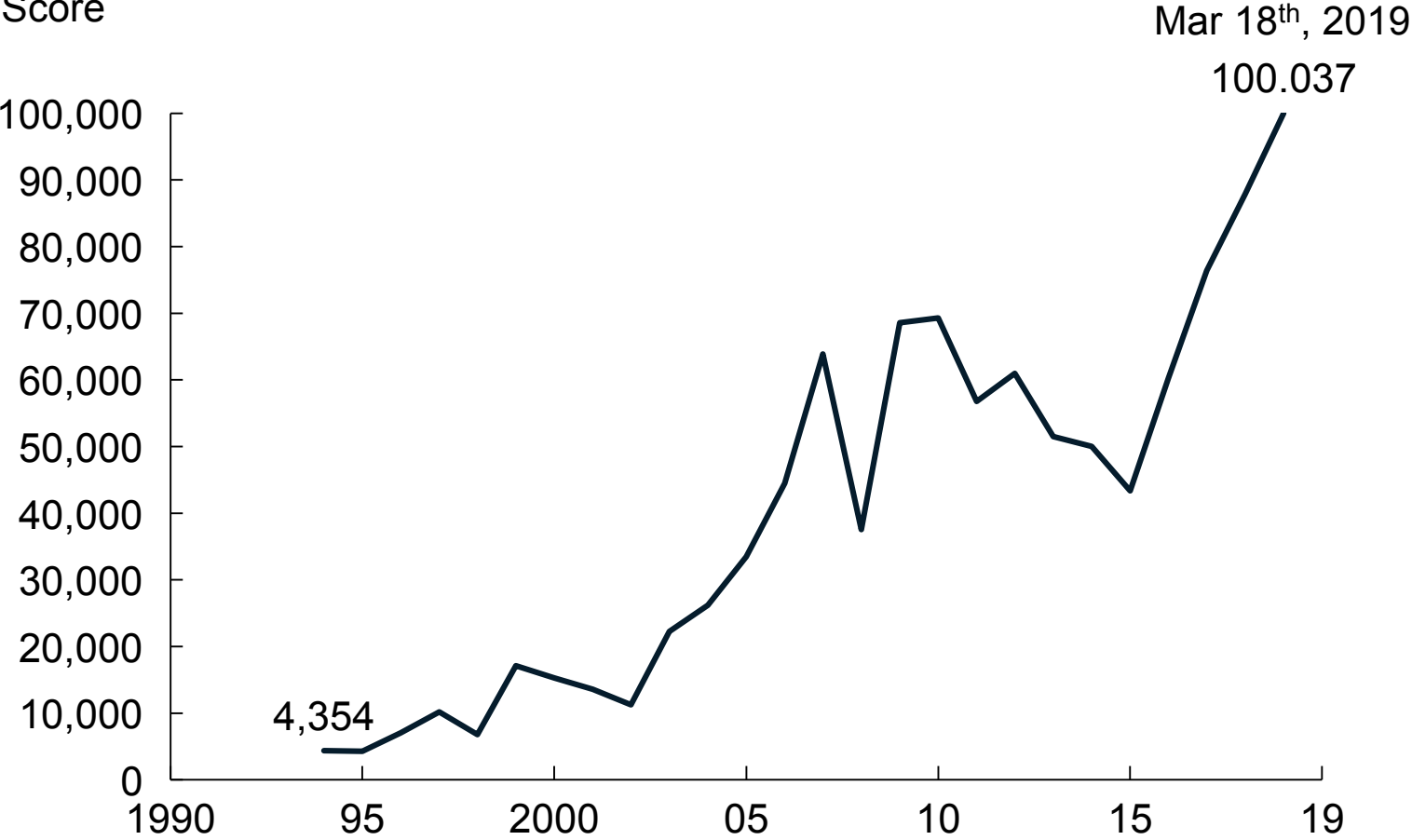


Source: B3



... and its highest score

Bovespa Index
Score



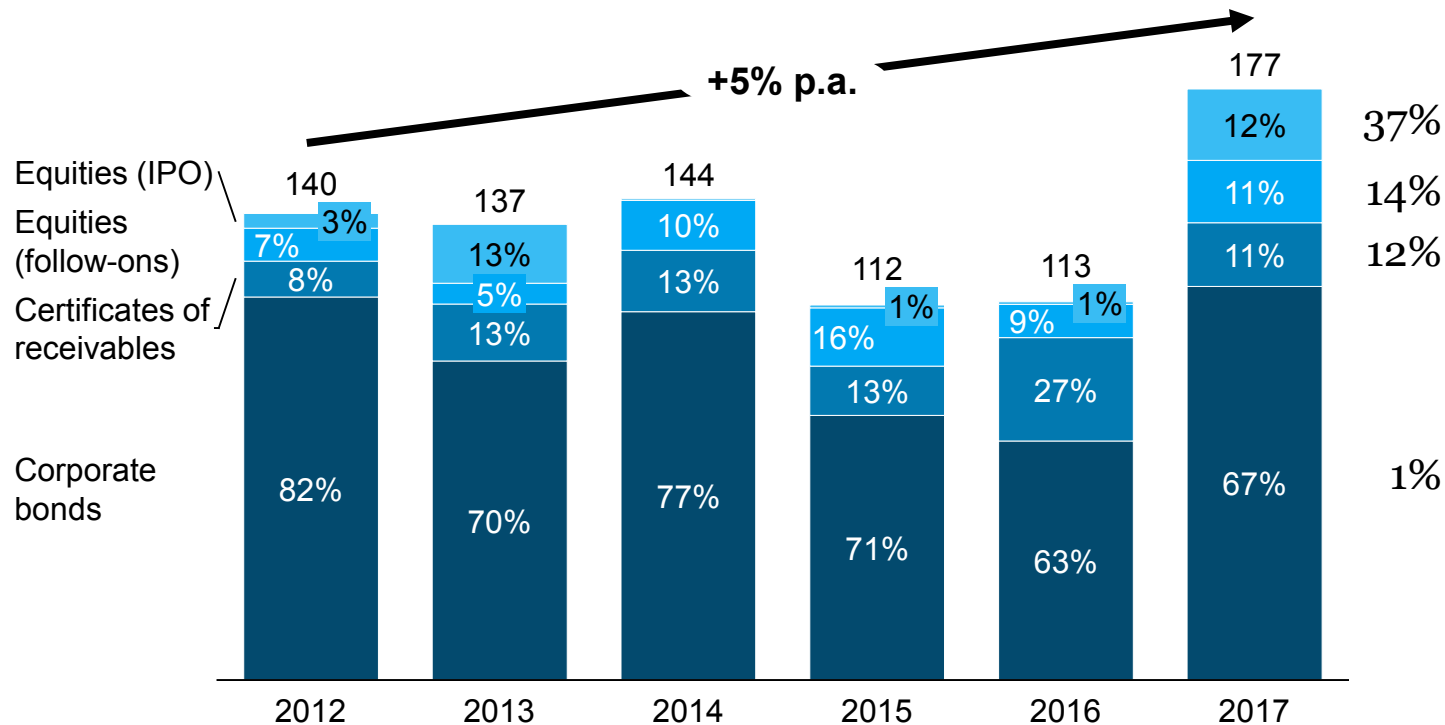
Source: B3



Brazil's capital markets are developing and diversifying funding for companies

Capital markets¹ – domestic issuance
R\$ billion

CAGR
2012-2017



¹ Excluding FIDCs and real estate funds

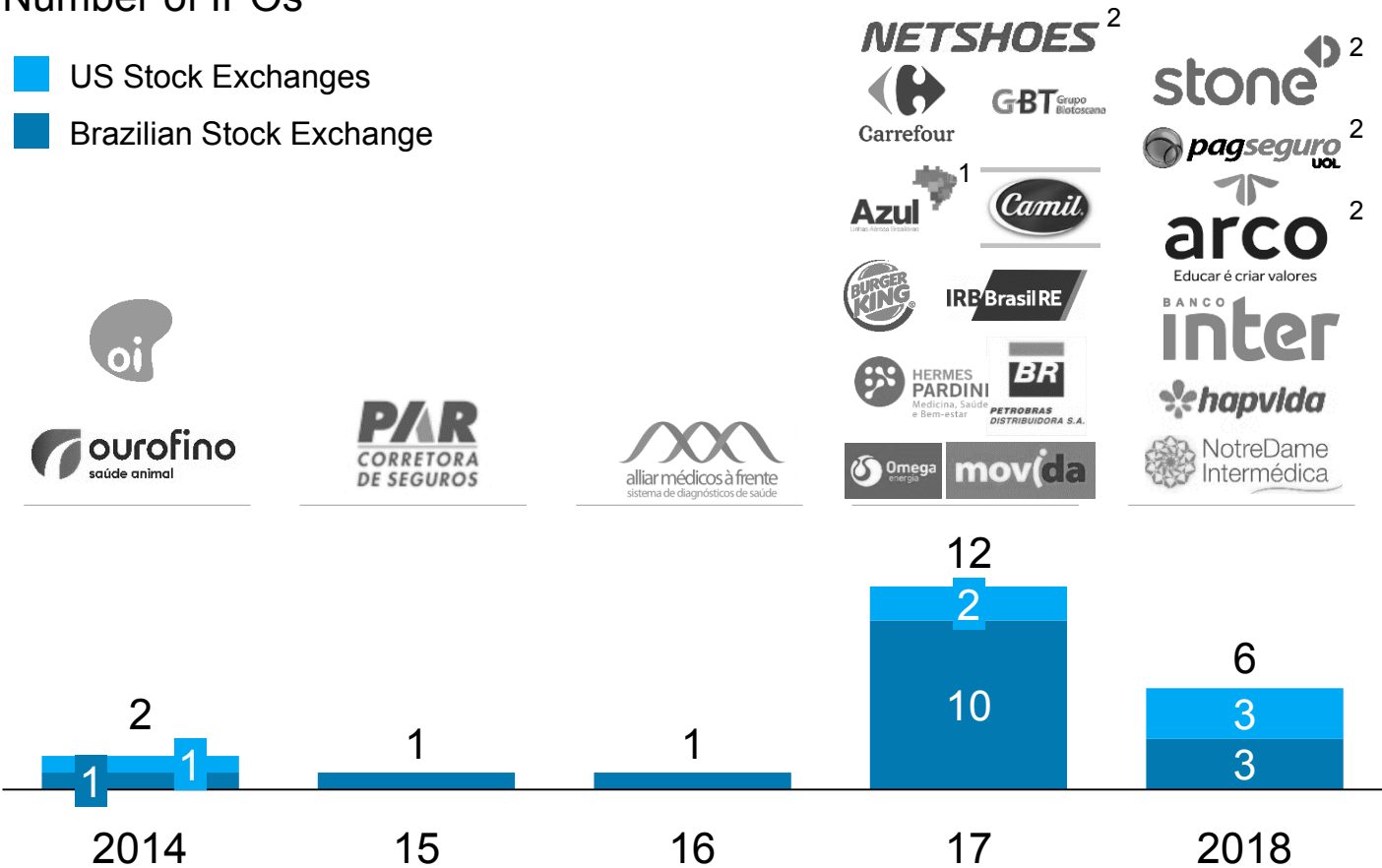
Source: BCB; ANBIMA; press clippings; McKinsey analysis



IPOs have been on the rise

IPOs Number of IPOs

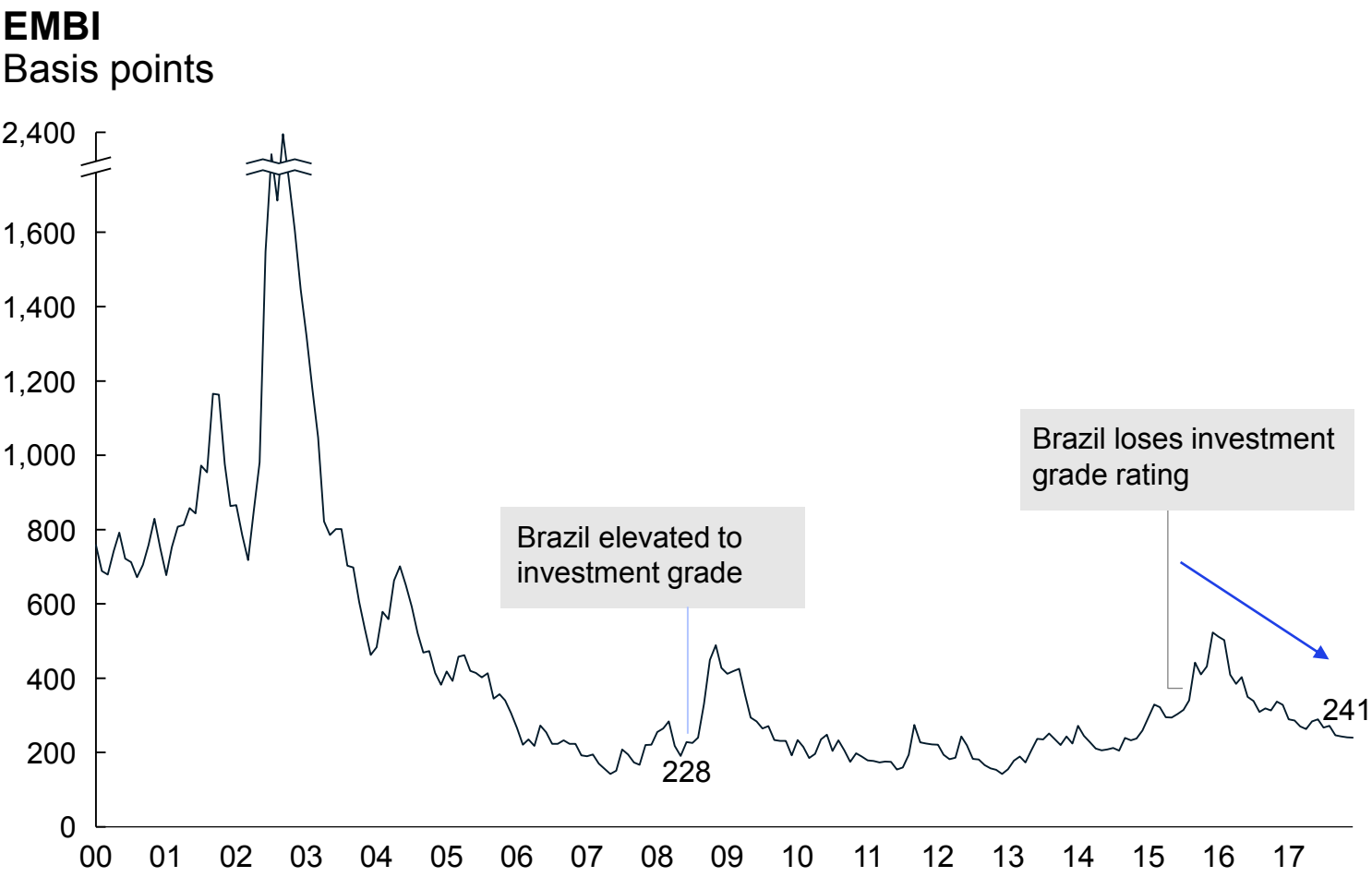
- US Stock Exchanges
- Brazilian Stock Exchange



1 Azul has had an IPO on both B3 (Brazil) and NYSE (US). 2 Companies have had an IPO on US Stock Exchanges



The “Brazil-risk” rate has fallen significantly since 2016

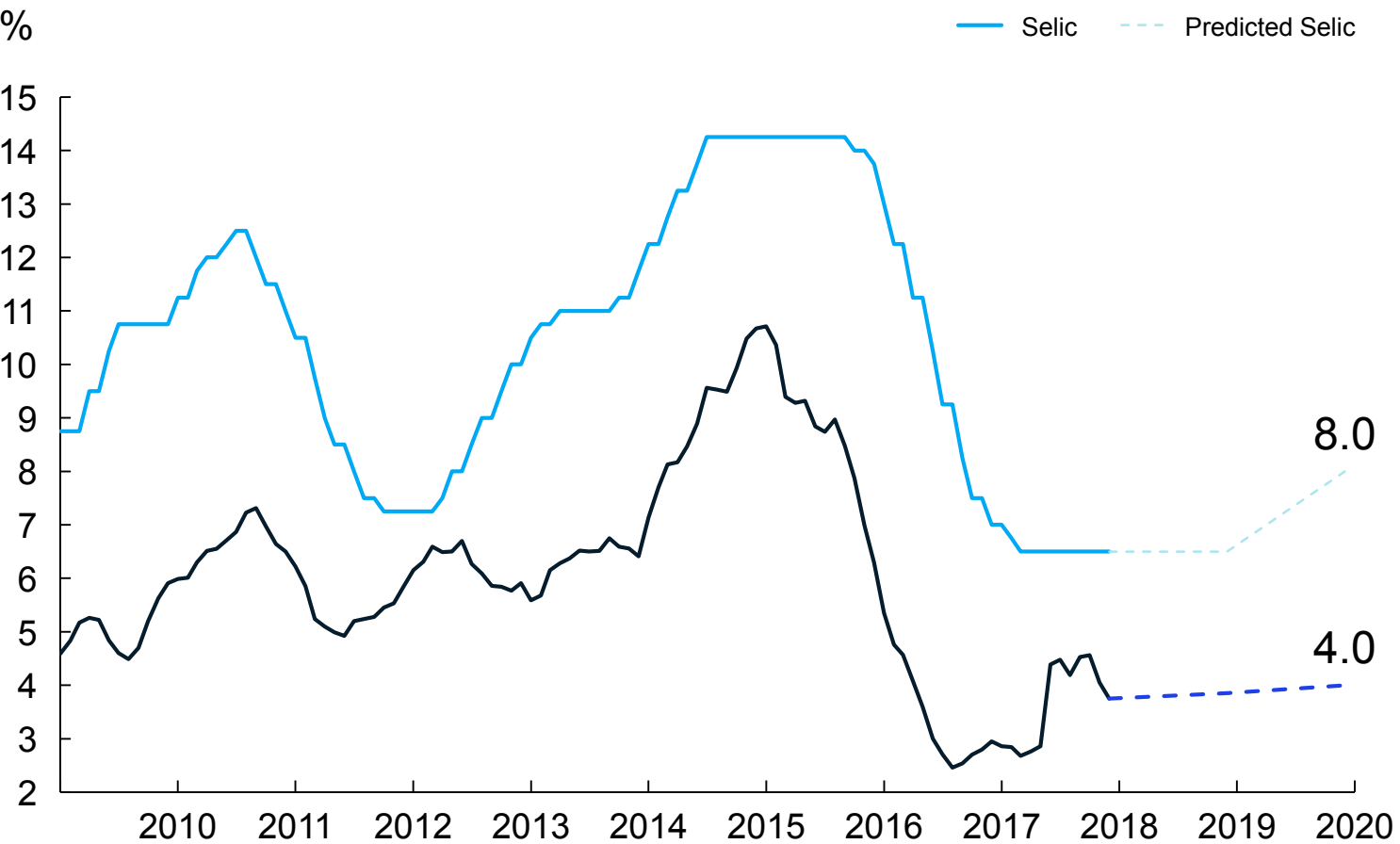


Source: IPEA



Interest rates and inflation are low

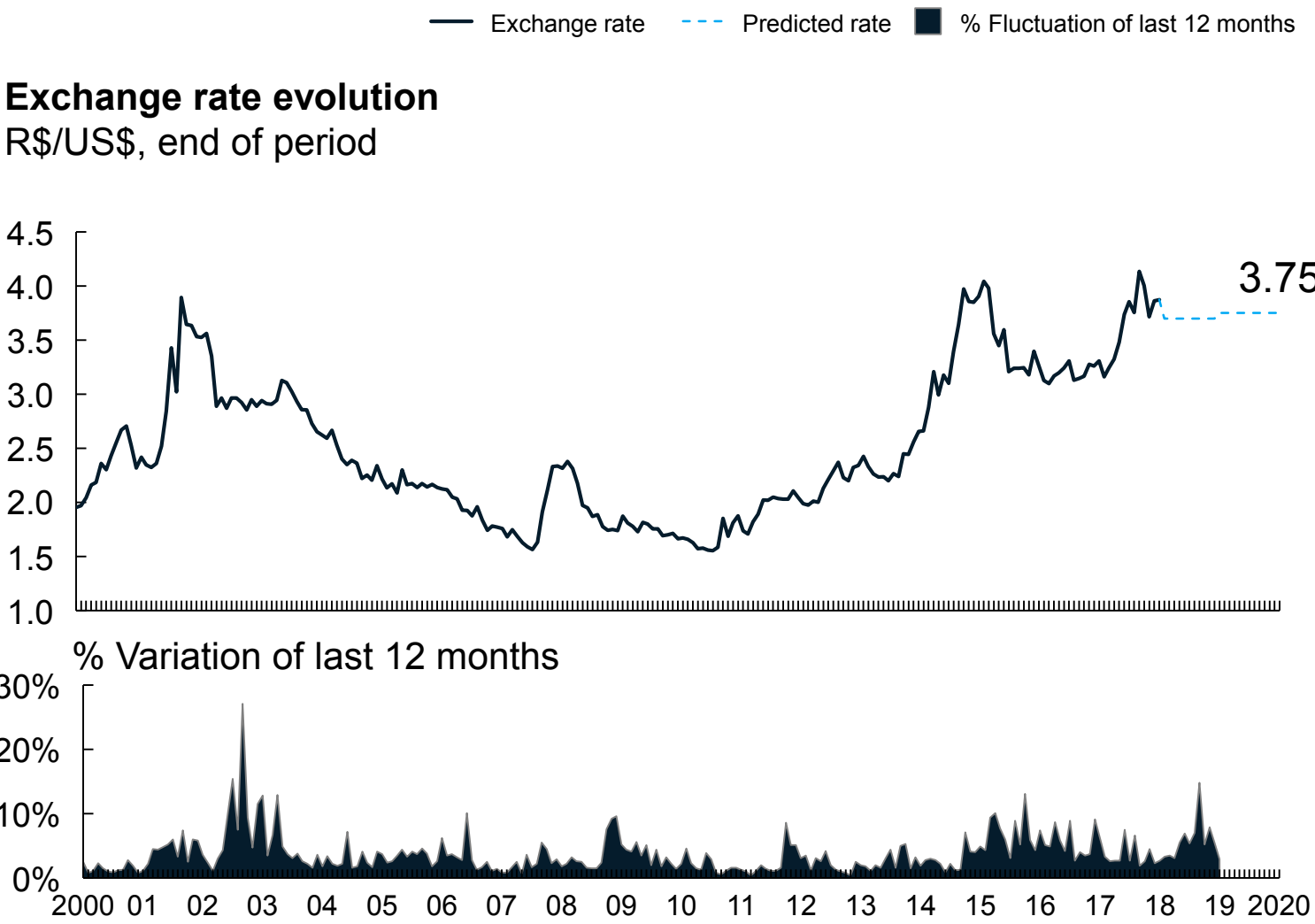
Selic & IPCA



Source: BCB



Exchange rates have been volatile in the short term...

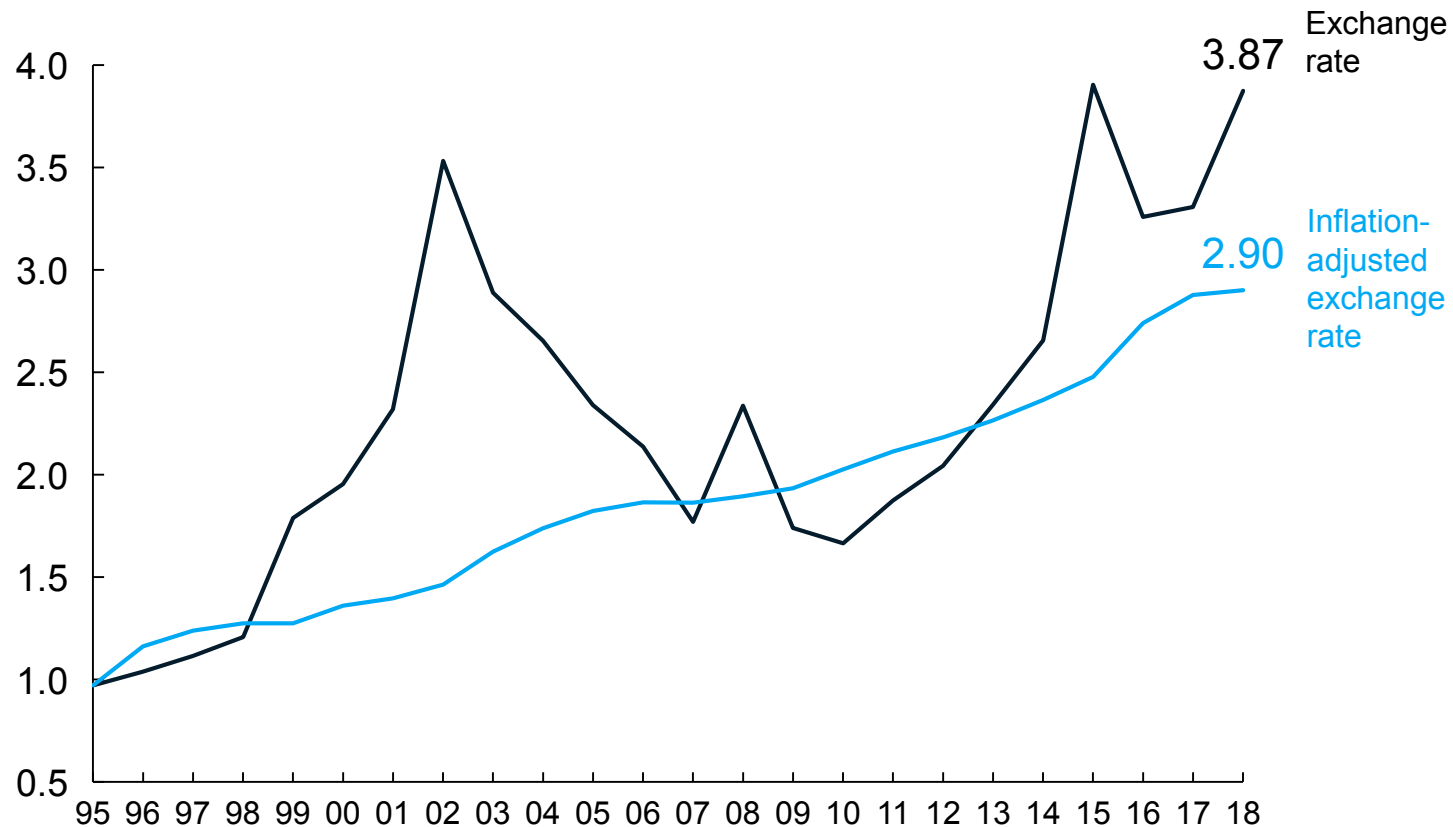


Source: EIU, BCB

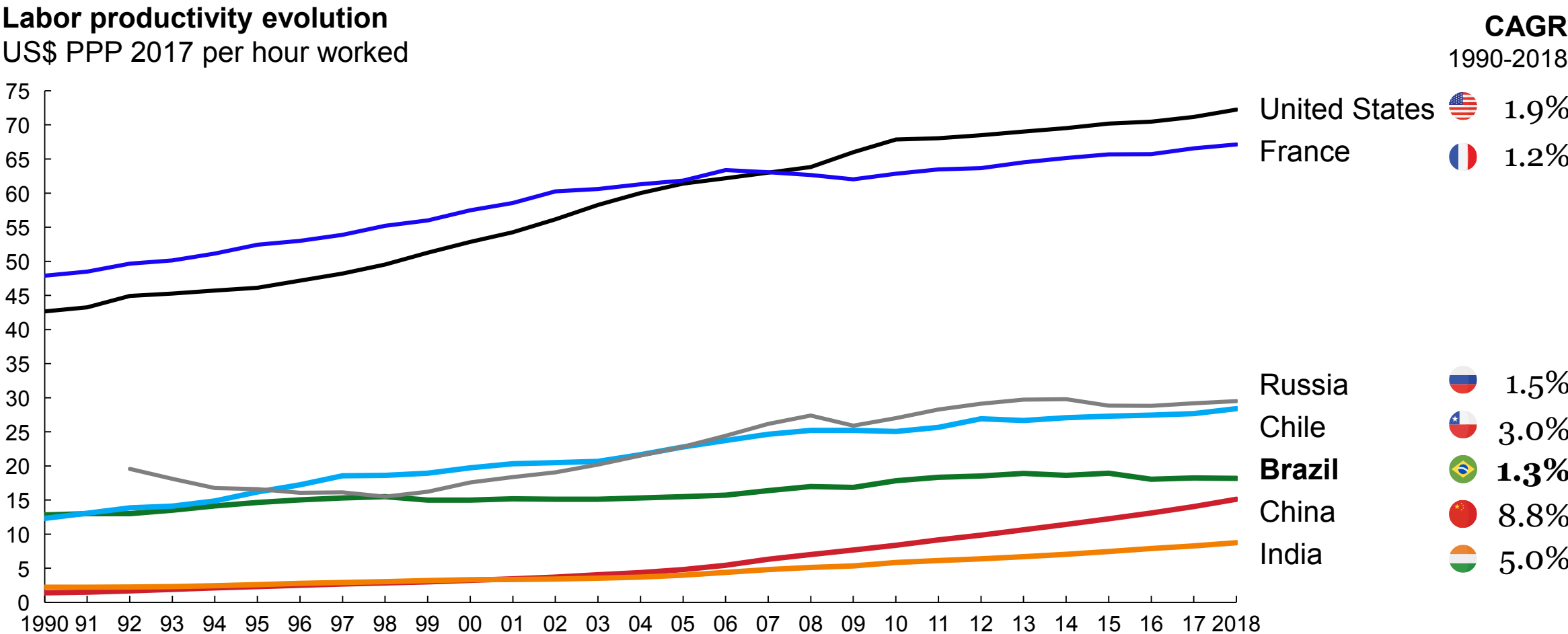


... but in the long term, R\$ has shown relatively low depreciation when adjusted for inflation

Exchange rate evolution
R\$/US\$, end of period

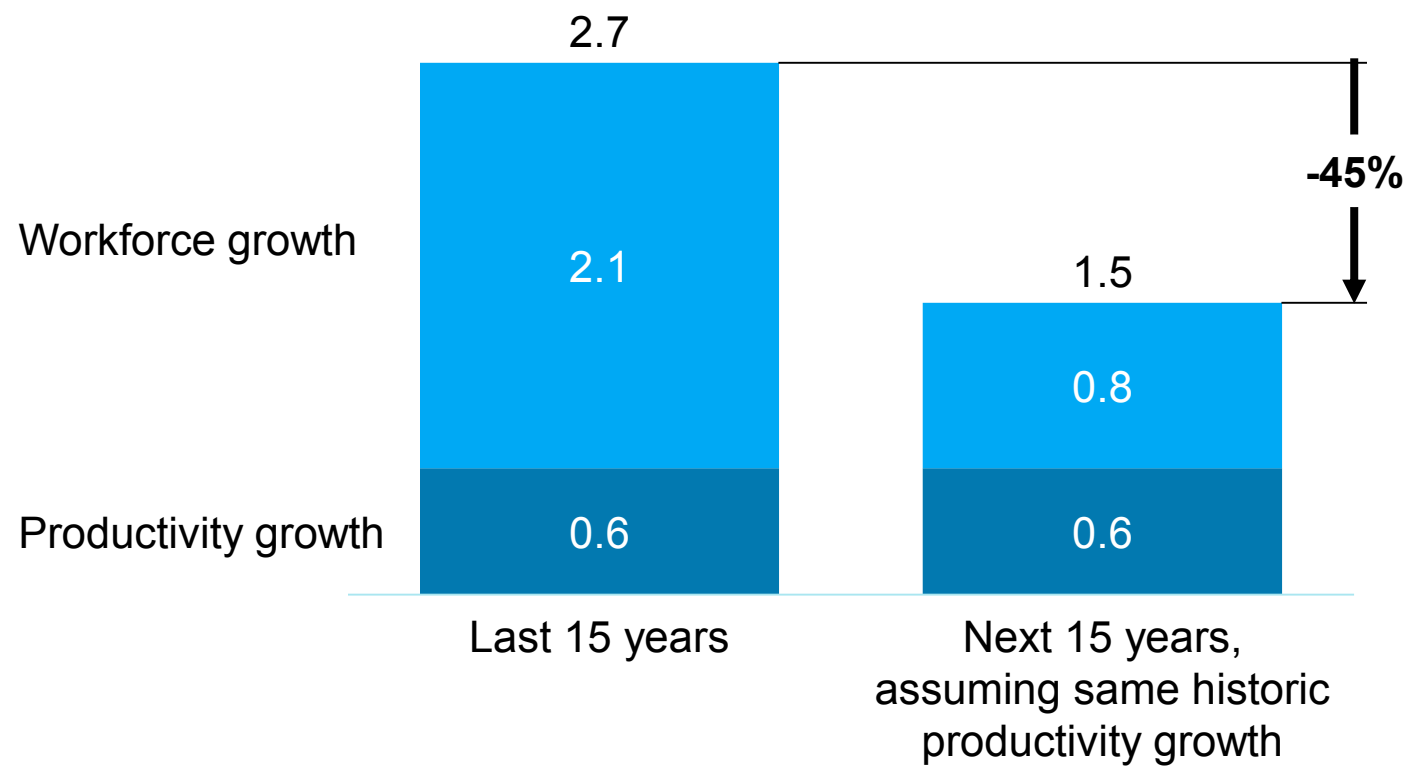


Brazil needs to address major productivity and innovation challenges; productivity has improved little in recent years



The country can no longer rely on demographics for economic expansion

Annual growth
%

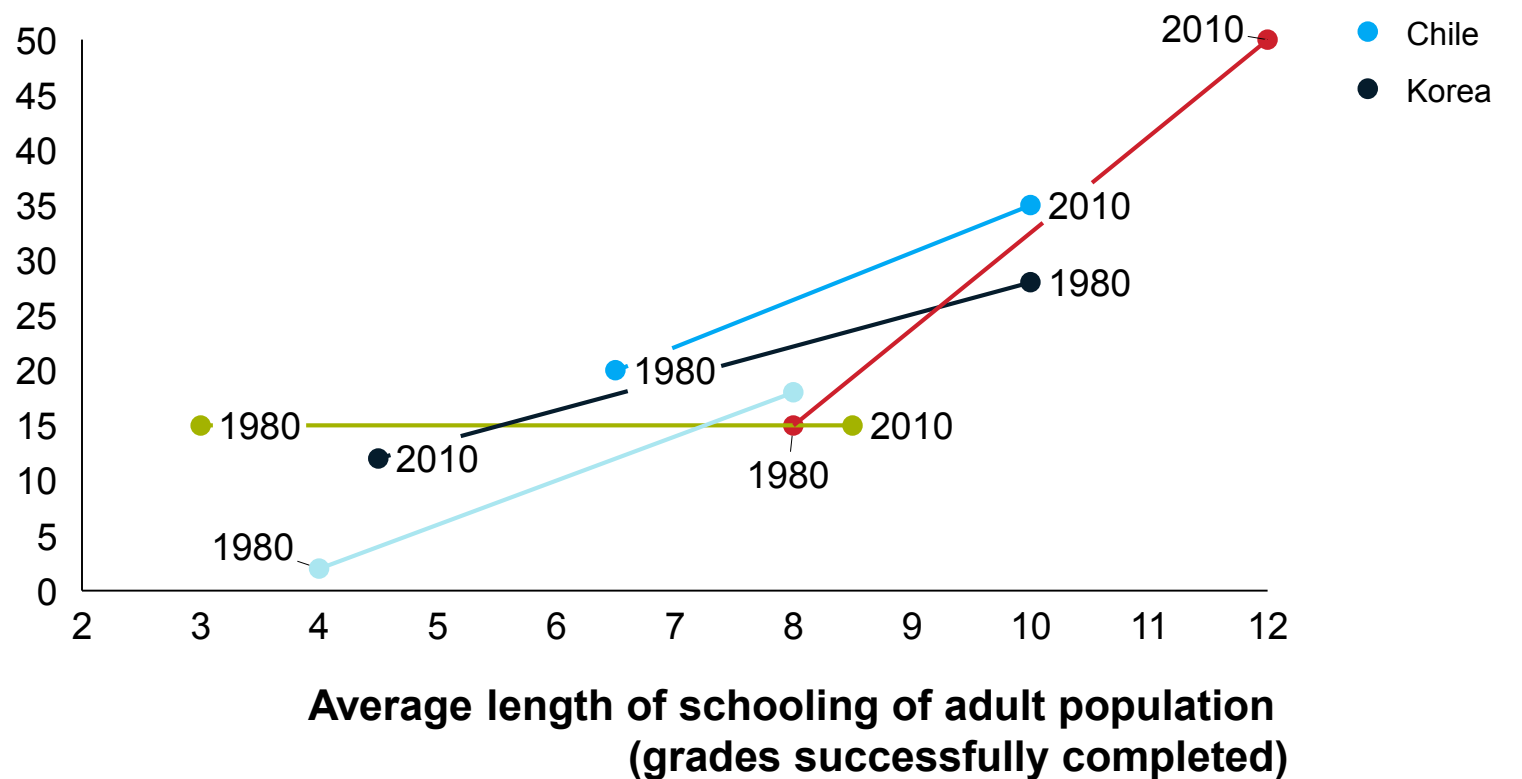


Source: McKinsey Analysis



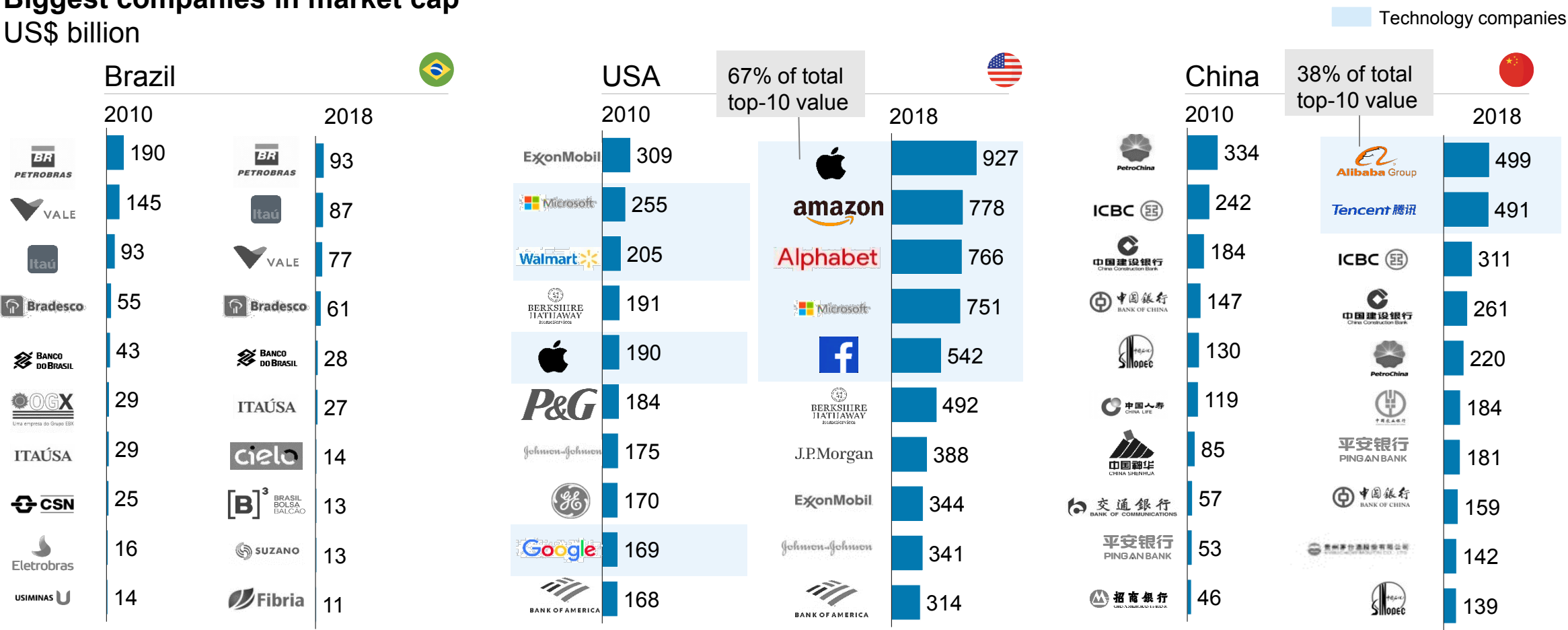
More years of schooling have not improved productivity

Average labor productivity - GDP per worker
US\$ thousands



Brazil's top companies are similar, with no significant technology players like those in the US and China

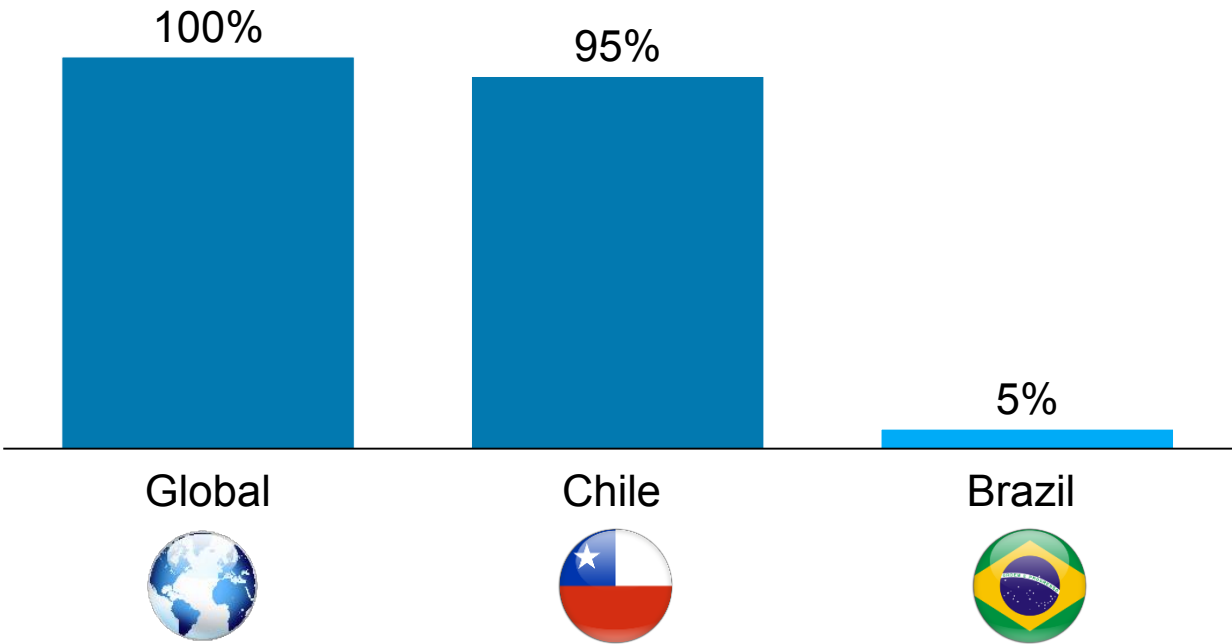
Biggest companies in market cap
US\$ billion



Brazil participates in only a few global commercial trade agreements

Access to consumers worldwide¹

%



Number of commercial agreements

400

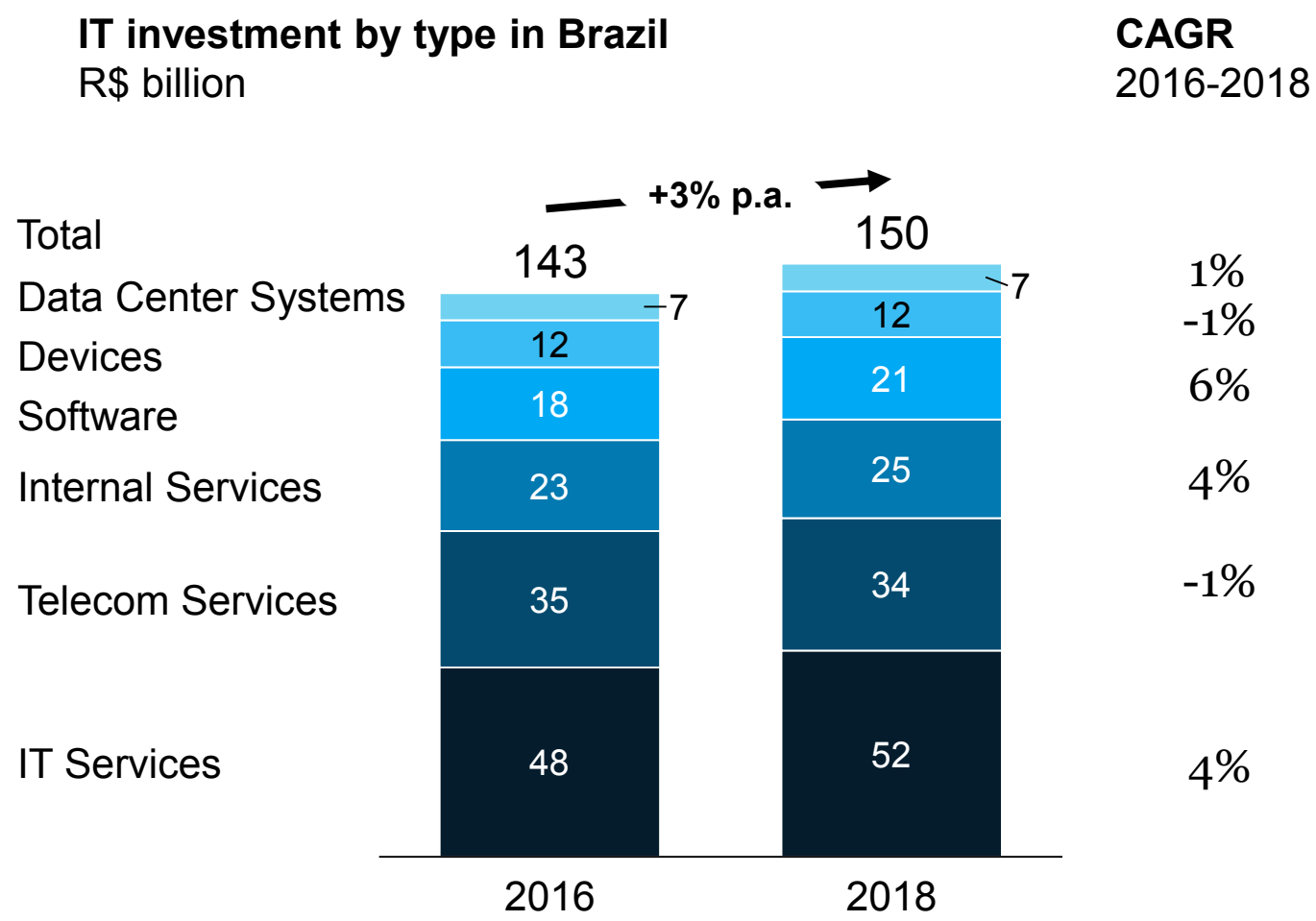
27

9

¹ Access to customer defined as population of countries which are part of the commercial agreements



IT investment continues to grow faster than GDP but at a slow and steady pace, with software and IT services growing fastest



Established tech company examples

Brazil



International



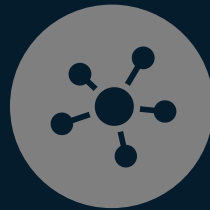
Chapters



Macroeconomics



Digital
Perspective



Entrepreneurship
Ecosystem



Sector Deep
Dives

Digital perspective

The Brazilian consumer is ready for **digital disruption**. In many ways, it has begun:

- More than two out of three Brazilians have access to smart-phones and the internet
- Brazilians spend more than 9 hours per day connected (among the highest rates in the world)
- They rank #2 or 3 in the world in using leading social media platforms including Facebook, Instagram, YouTube, Netflix, WhatsApp and Pinterest
- Digital advertising continues to grow in double digits...
- ... as does e-commerce, the shared economy, and home delivery services.

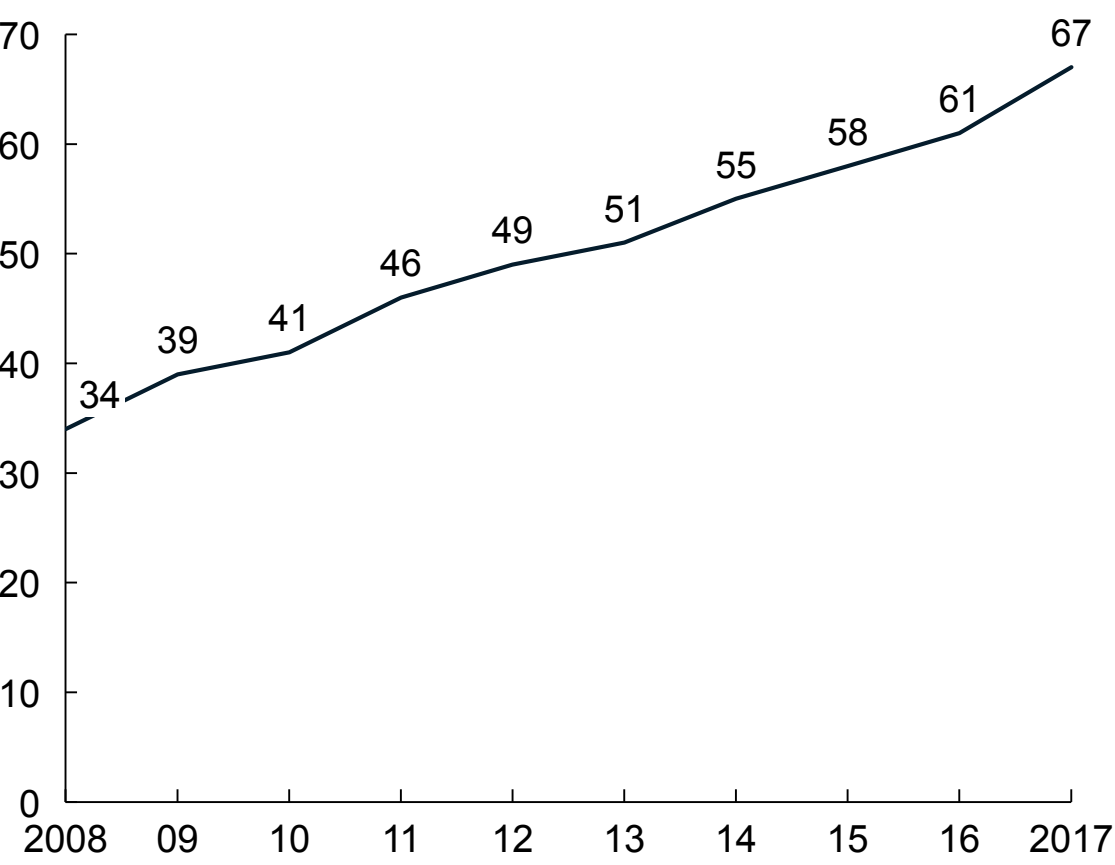


But digital inclusion has only just begun:

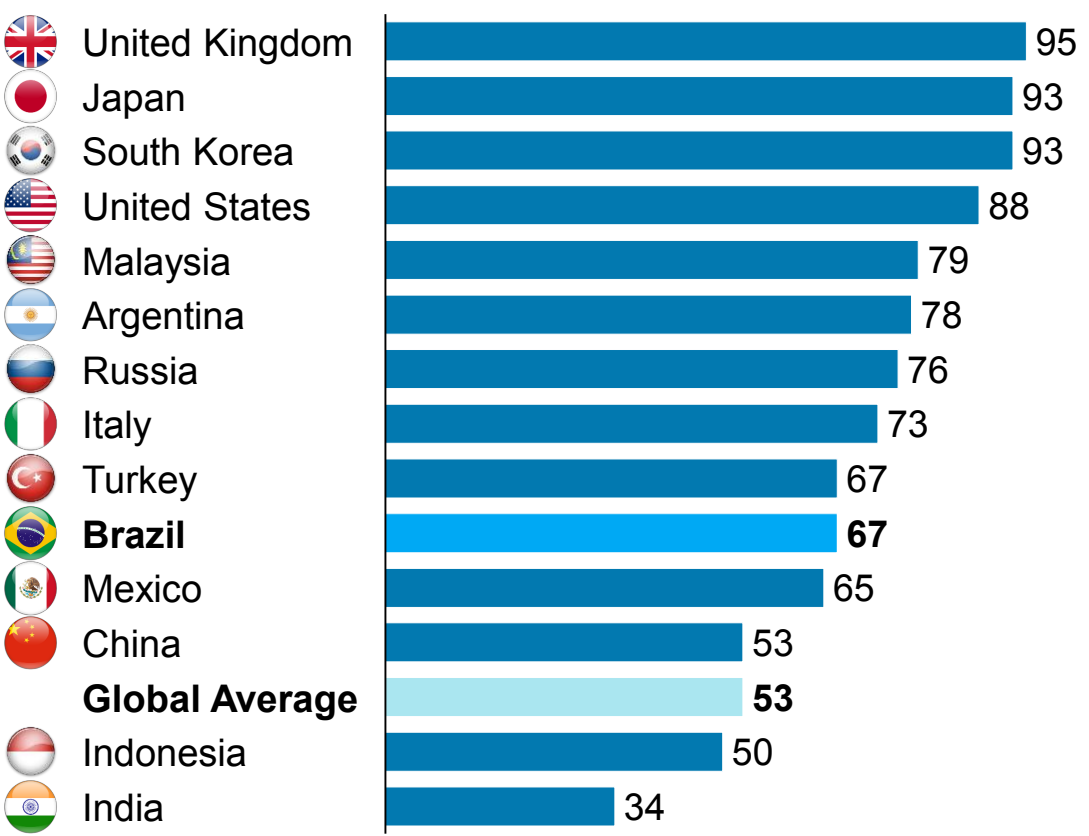
- Access and proficiency vary widely across regions, social classes and age groups
- Internet speeds are slower than in many developed and emerging economies
- E-commerce penetration is still low –entire categories are still in their infancy
- While Brazilians are avid consumers of digital media, they are not yet making many transactions or spending money online.

Two out of three Brazilians have access to the internet, more than the global average...

Internet users
% of total population

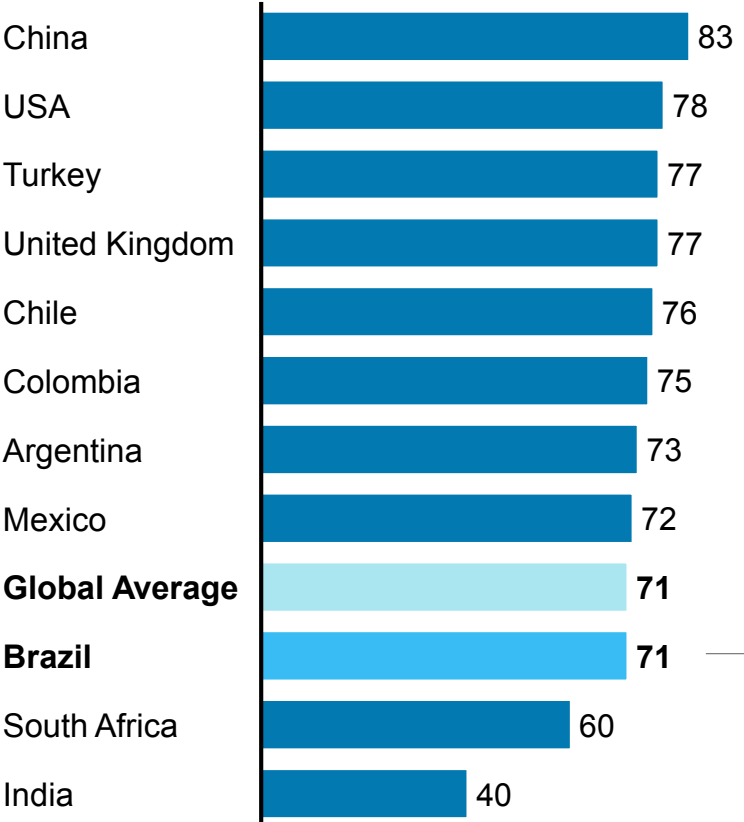


Internet penetration by country
% of population aged 16-64, 2017

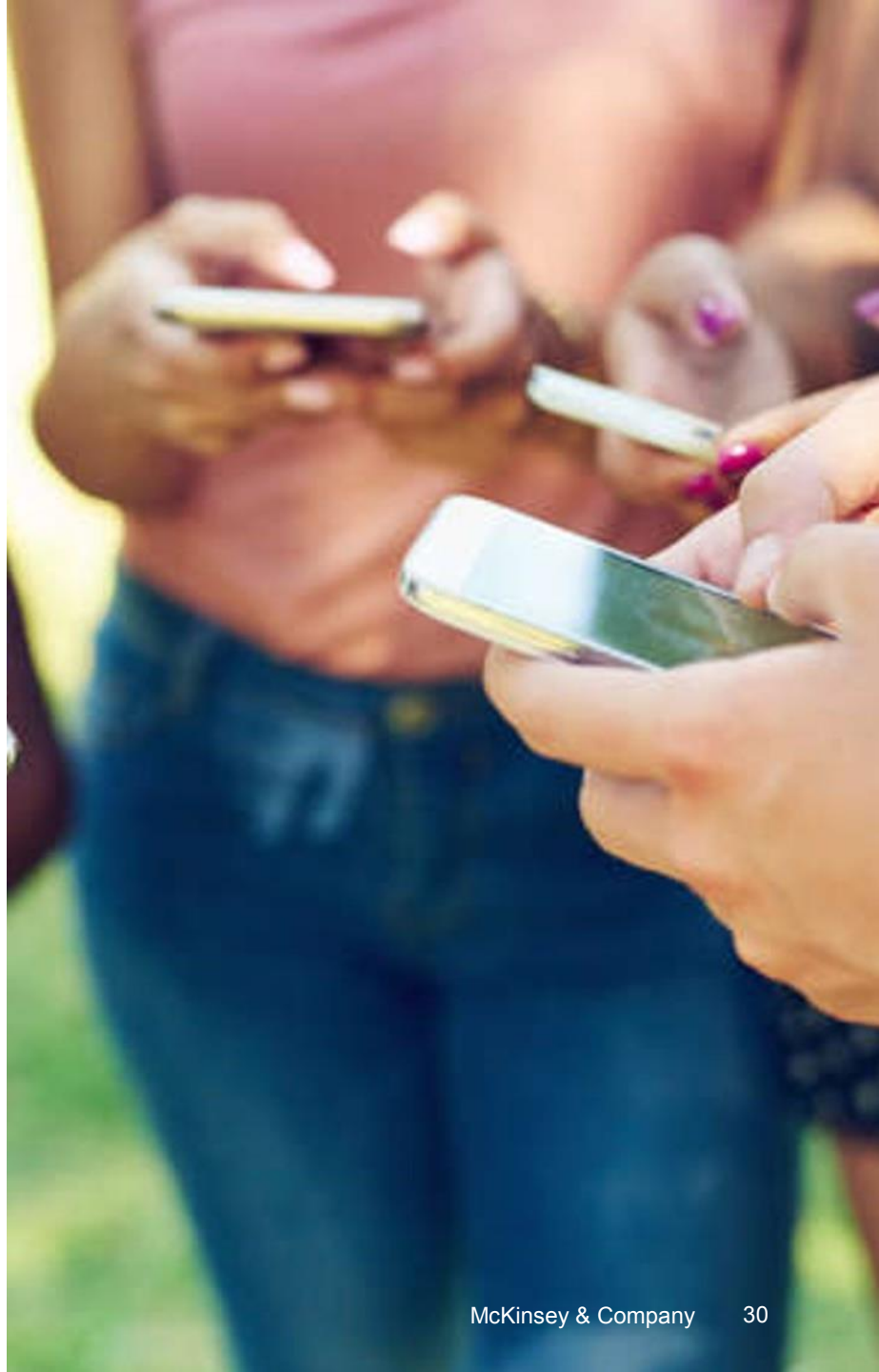
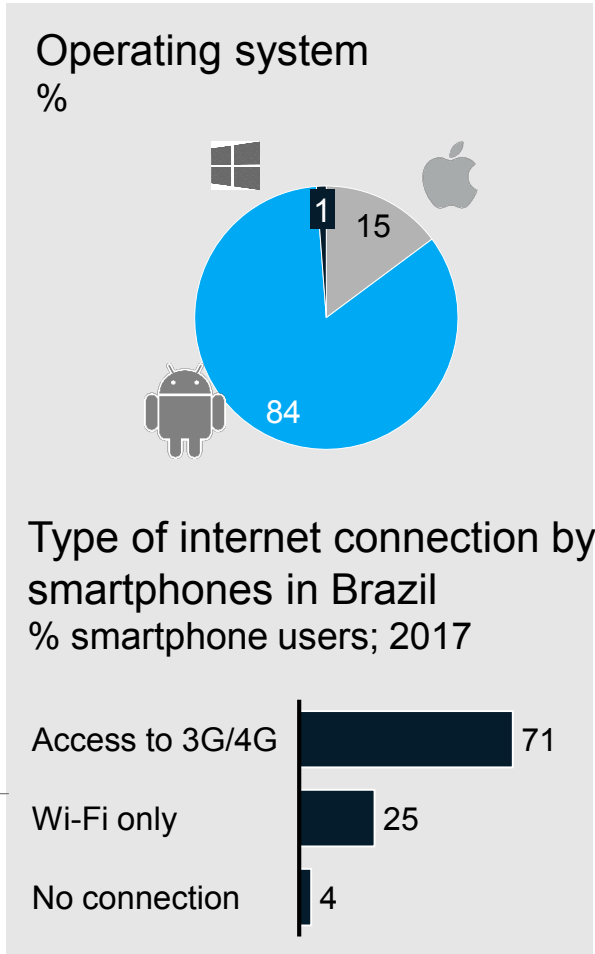


Smartphone penetration is already high and in line with global and developed economy averages

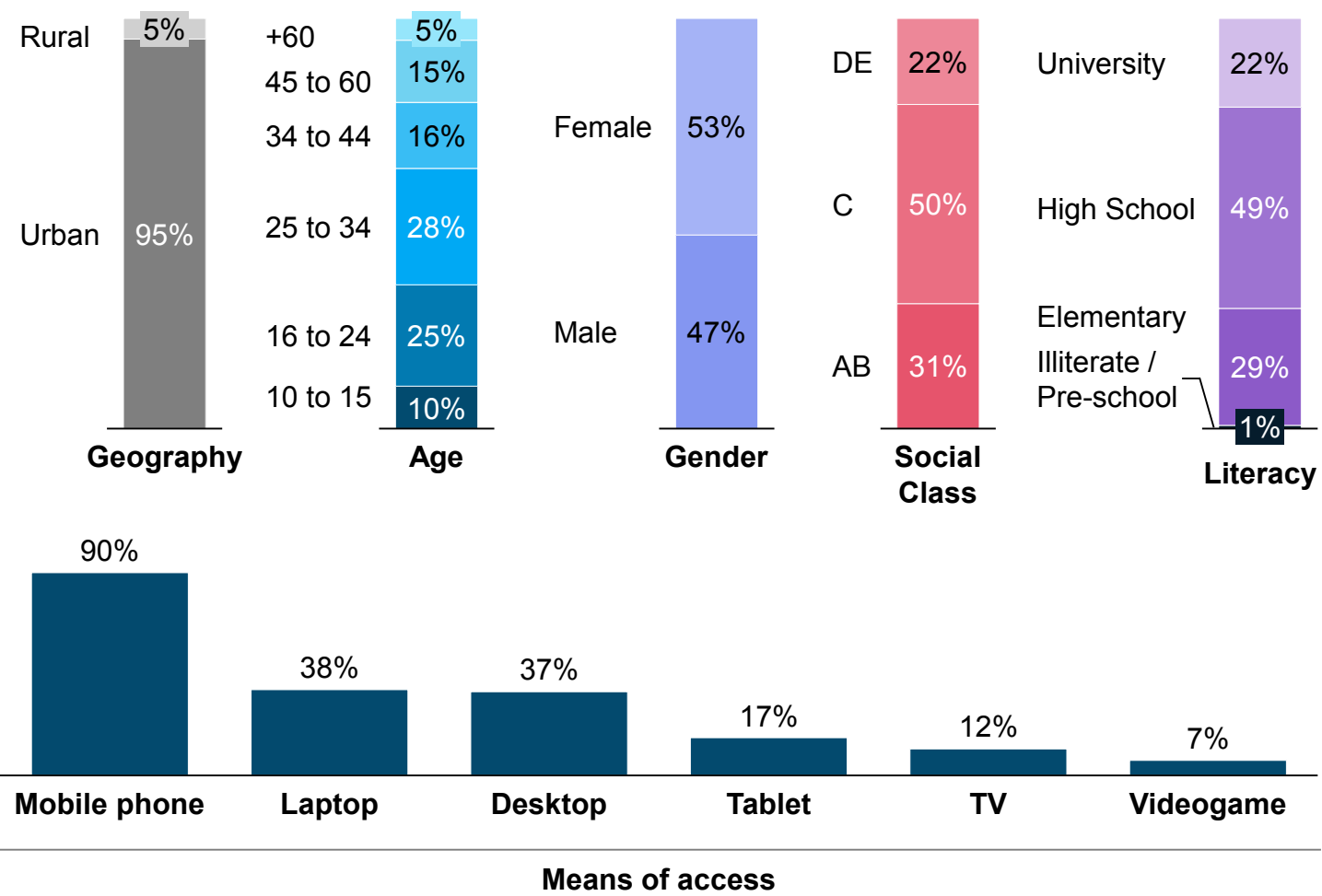
Smartphone penetration % population that uses a smartphone¹



¹ For Brazil, the CETIC.br value was used (most updated value)



The typical internet user in Brazil is urban, under 45 years old, class A-C and accesses the internet via mobile devices



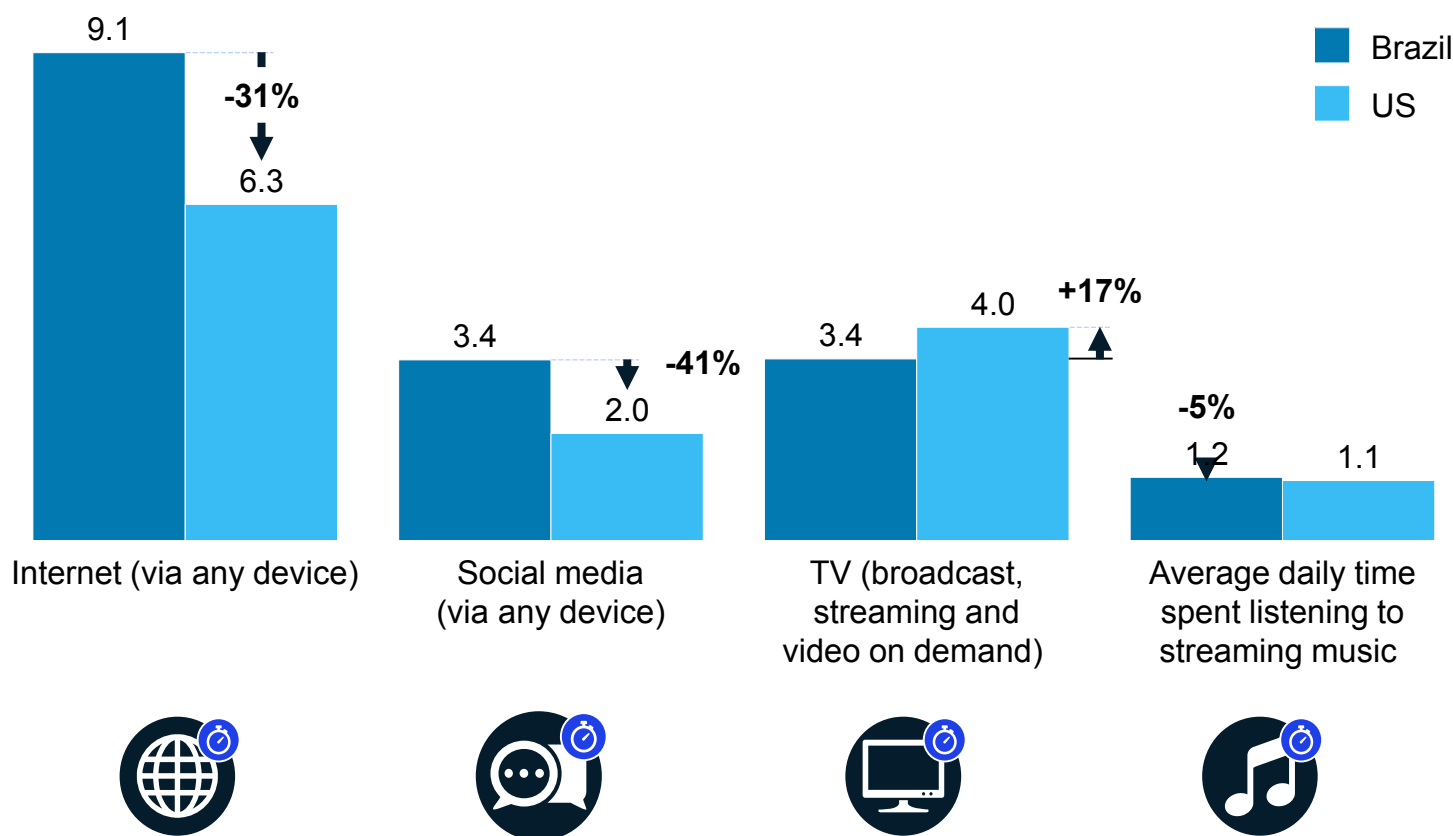
Source: CETIC.br (2017)



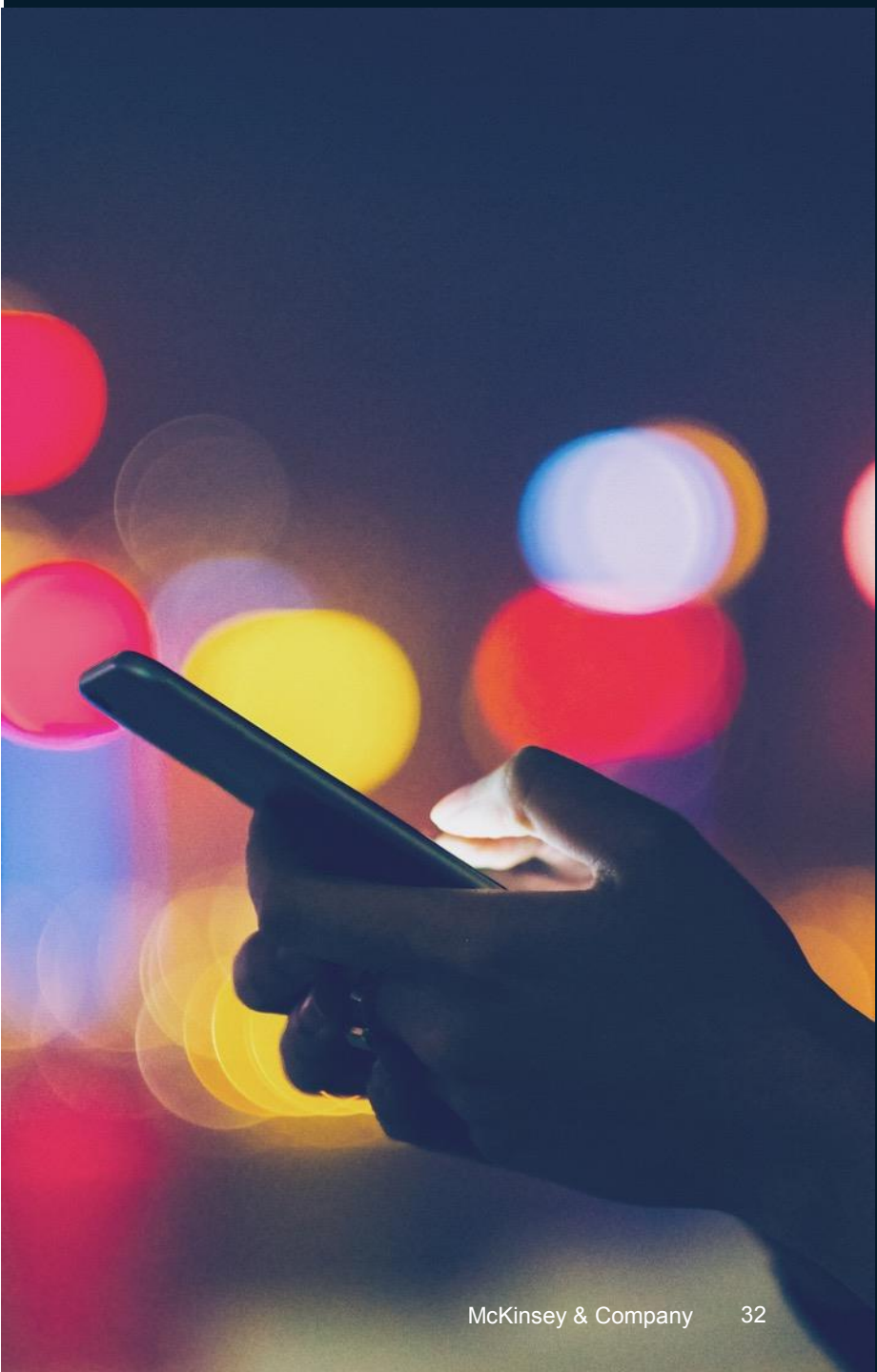
Brazilians spend more time using internet-based services than their US counterparts

Time spent on digital/broadcast media¹

Hours per day

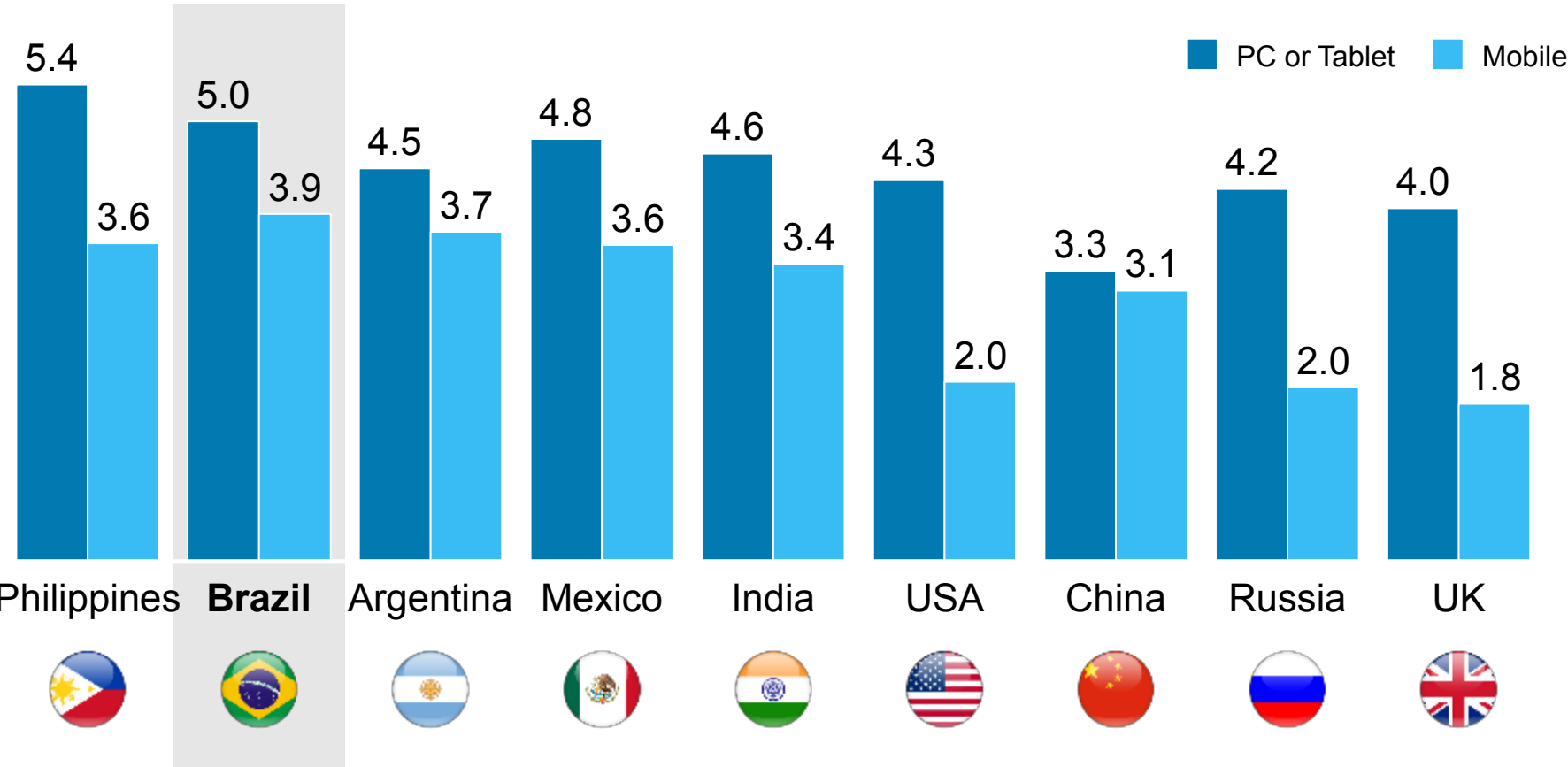


¹ Data represents adult respondents only; Survey-based data: Figures represent respondents' self-reported activity



Connected Brazilians are among the most avid internet users

Time spent on internet
Hours¹



9
h/ Day

44%
Mobile

¹ Survey-based data: figures represent users' own reported activity

Brazilian's internet usage is highly concentrated on social and content-related apps and sites

Rank ¹	Website	Category
1	 google.com	Search Engine
2	 youtube.com	TV and Video
3	 facebook.com	Social Network
4	 globo.com	News and Media
5	 uol.com.br	News and Media
6	 mercadolivres.com.br	General Merchandise
7	 instagram.com	Social Network
8	 live.com	Email
9	 twitter.com	Social Network
10	 WhatsApp.com ²	Social Network

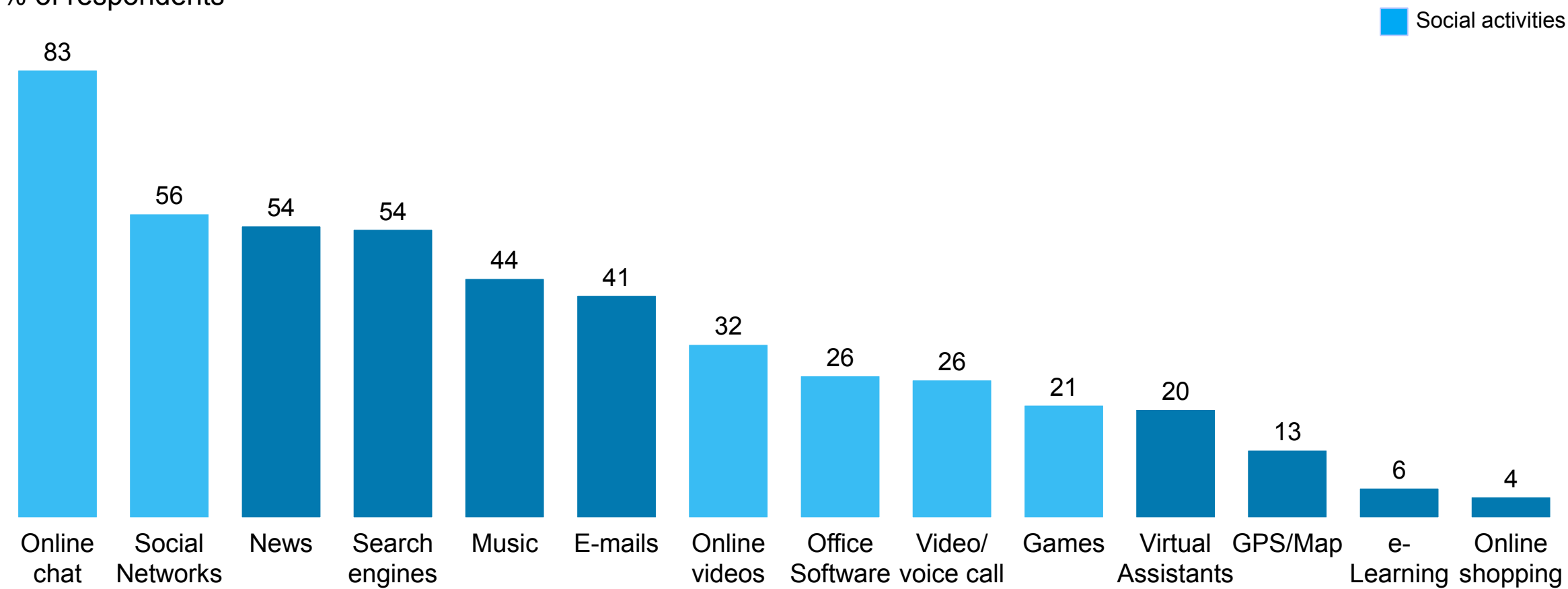
1 By monthly number of visitors, not considering adult websites
2 Considering only computer access



App usage is high across multiple categories

(detailed below)

Daily activities done on computers or smartphones
% of respondents¹



¹ Based on a November 2018 survey of an stratified sample of 2,477 individuals from urban areas between the ages of 15 and 60, from Class A to D in Brazil

Video streaming

NETFLIX

More than 7.5 million users - more users than NET (Pay TV player)

Most active non-English speaking country in the world for the platform

Larger revenues than SBT (TV channel)

You 

More than 69 million viewers per month (#2 in the world)

Many Brazilian channels lead global subscriber rankings:

- #4 Kondzilla – 46 million
- #14 Whinderson Nunes – 34 million
- #24 Felipe Neto – 30 million

Mobility



More than 20 million users

- +500K drivers
- +100 cities in Brazil
- +1 billion trips



More than 18 million users

- +600K taxi drivers
- + 1K cities in Brazil



More than 3.8 million users in São Paulo (global leader)
Rio de Janeiro the **first partner¹** city in the **world**

1 First city to join the Connected Citizens Program, a platform for information exchange aiming to help cities solve mobility issues

Social network (Facebook applications)



More than 130 million users

Third-largest user base in the world

Brazil is a **pilot country** for new products (e.g. Stories for Events, Facebook Gaming creator)



More than 50 million users

Second-largest user base in the world



More than 120 million users

Most widely used communication app in Brazil

91% penetration among internet users

Social network *(other selected applications)*



More than 30 million users
Sixth-largest user base in the world



More than 29 million users
Third-largest user base in the world



More than 19 million users
Second-largest user base in the world
Country with the highest growth

Food delivery



+390K deliveries daily

+50K restaurants

+120K deliverers

+480 cities in Brazil

109% growth in deliveries in 2018

Investment in 2018: US\$ 500 million



+800K users

+15 cities

Investment in 2018: US\$ 220 million



+1.7K restaurants

+30 cities

+200% annual growth since launching (2017)

Strategic partnerships: McDonald's, Subway, Ipiranga, etc.

Investment in 2018: US\$ 480 million (global)

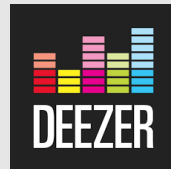
Audio streaming



Spotify More than 13 million subscribers

#5 “Radio station” in São Paulo

Largest audio streaming service in Brazil



More than 3 million subscribers

Partnership with TIM, creating the TimMusic cobrand platform

Gaming



More than a billion downloads

#19 on App Store publisher ranking



Brazilian game market:

More than 60 million gamers (#3 in the world)

375 game studios

+1,700 games produced in 2018

+US\$ 1.3 billion annual market revenue

Coworking

1,196 Coworking spaces

169 cities

R\$ 127 million in revenues

+214K users

+88K workstations

+7K direct employees

Examples:

wework



**CAMPUS
SÃO PAULO**
A Google SPACE

Google environment



97% of search engine market share

Most visited website

#5 in global online visitors

Only country apart from US with a complete Google ecosystem infrastructure

Mobile app creation/usage

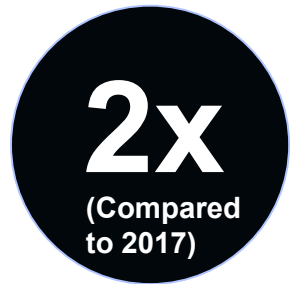


More than 6 billion app downloads per year

#4 in the world in app downloads

Average of 83 installed apps and usage of 12 apps per day

#4 largest app producer in the world



**Increase in number of
app developer startups
with revenue above
R\$1 million**

Examples of leading Brazilian apps



More than 180 countries

5 million subscribers

3 international recognitions



20 million downloads

**15,300 visits per day on
website**

Translated into 4 languages



90 million users

**In 2015, Colorfy was the
second most downloaded
free app on the App Store**



10 million downloads

**Most downloaded
shooting game in Apple
Store in 2016**



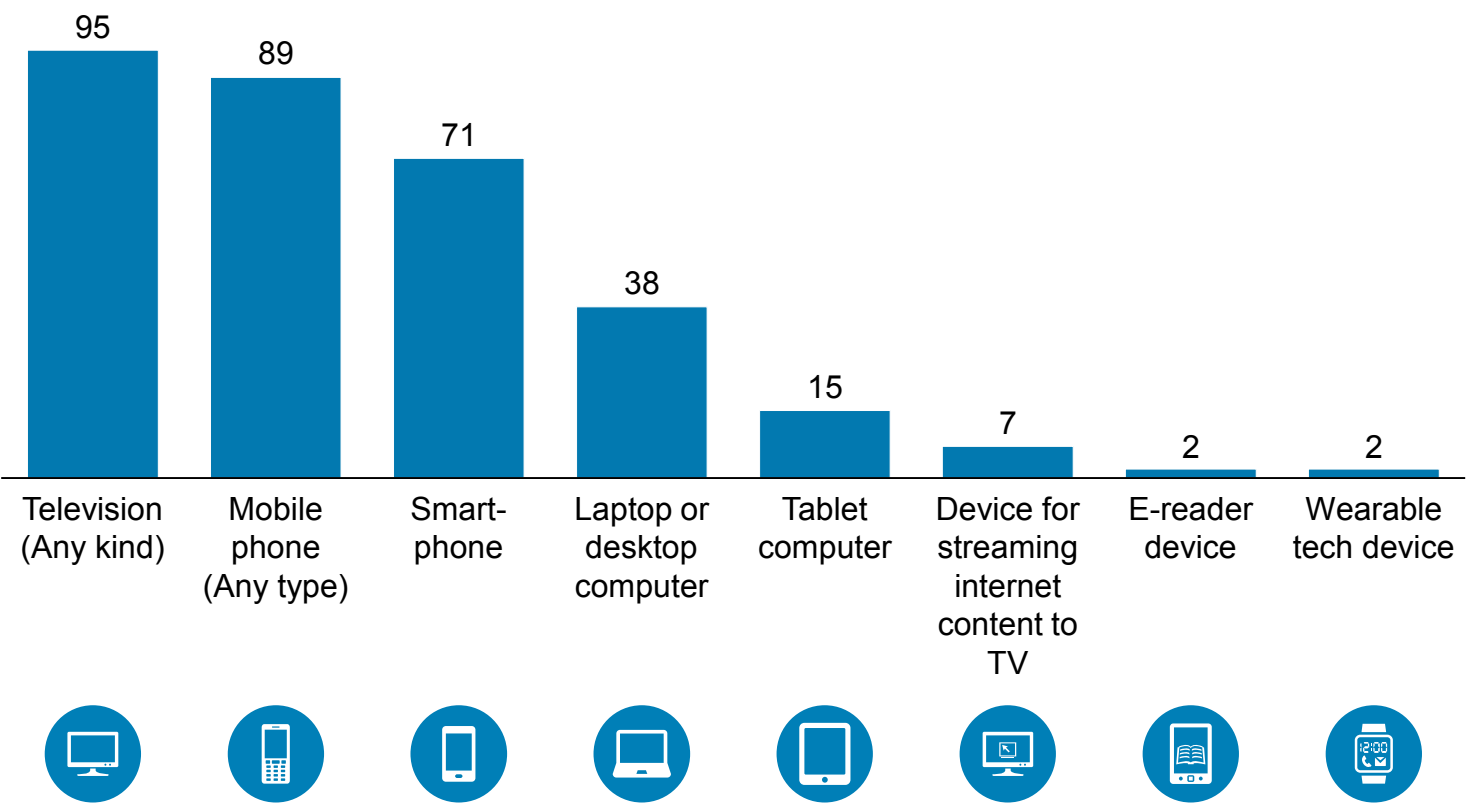
**Duke's Choice Award
Winners in Latin America
in 2016**

**25th Cosmetic Current
Award: Digital Point of
Sale of the Year.**

Smartphones are among the devices with the highest penetration in Brazil ...

Device penetration in Brazil

Percentage of population¹ who use each kind of device



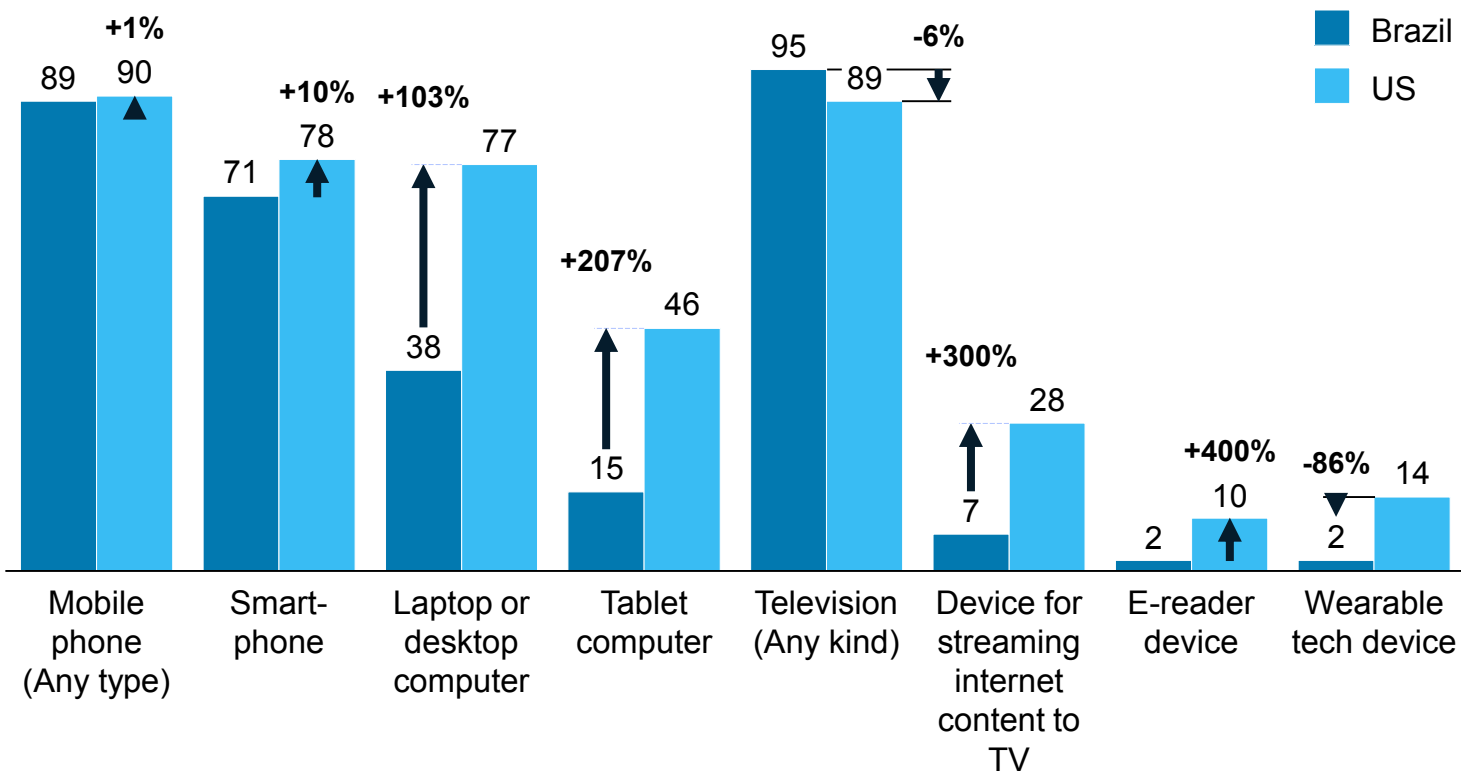
¹ Survey based; Data represents adult respondents only

Source: CETIC.br; Google consumer barometer (2018)



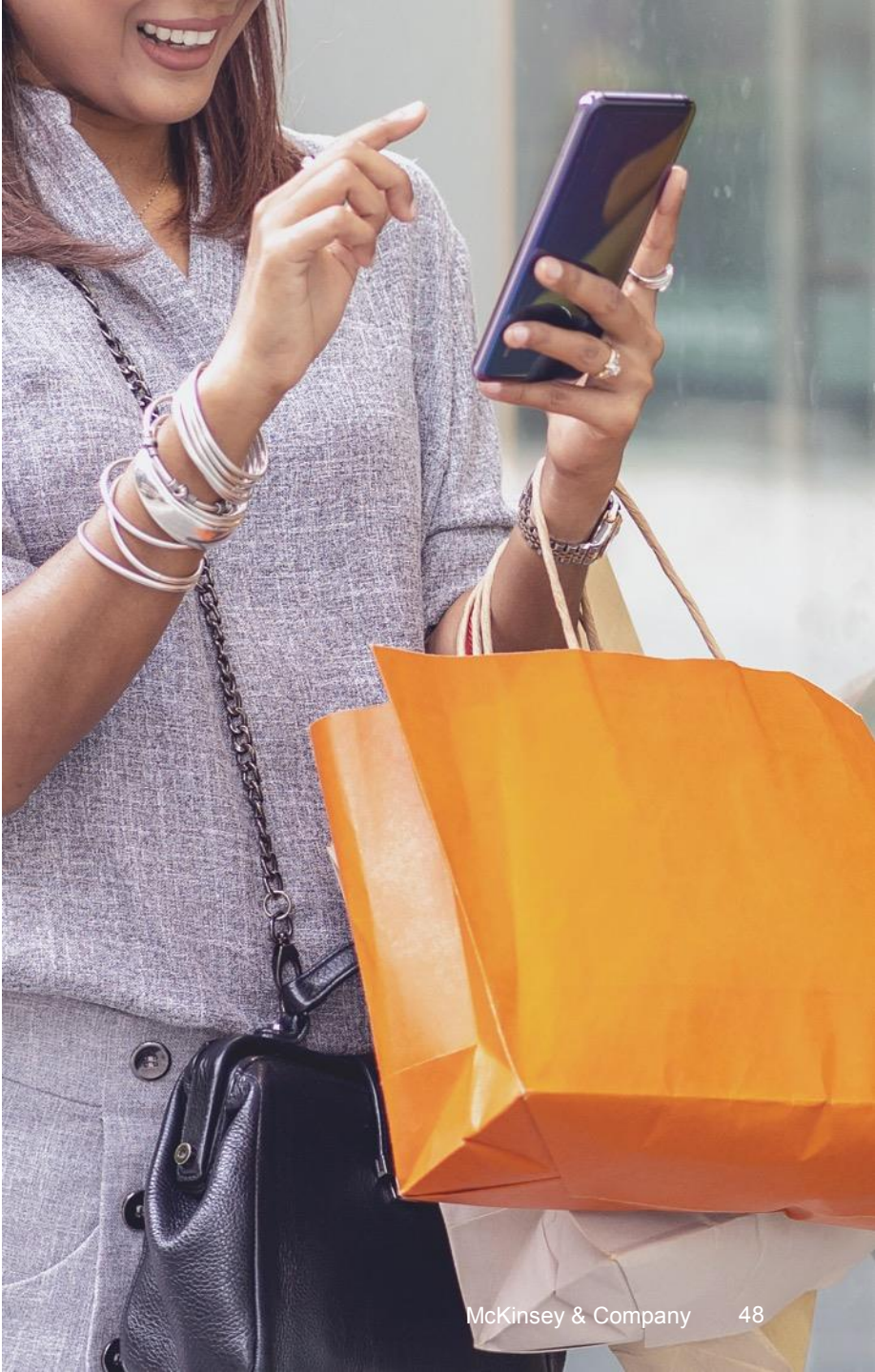
...but there's still room to increase penetration across devices

Device penetration in Brazil and US
Percentage of population¹ who use each kind of device



¹ Survey based; Data represents adult respondents only

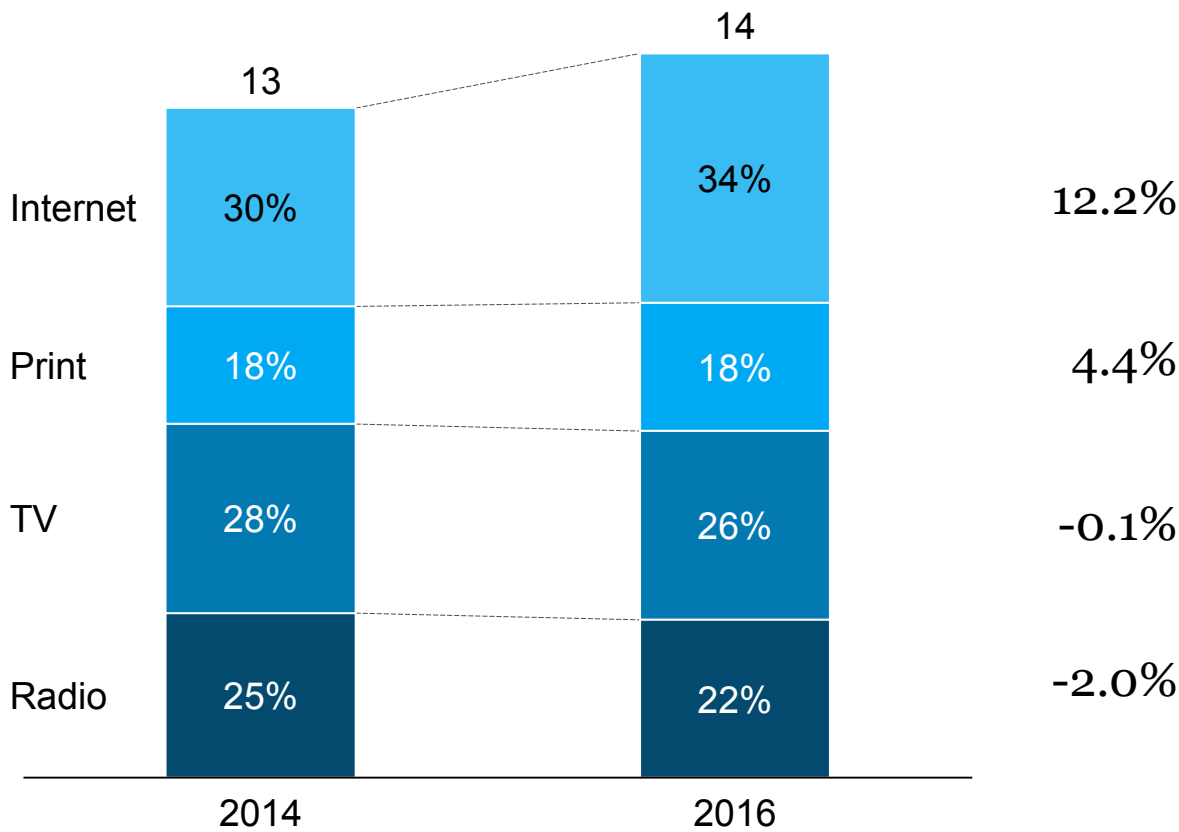
Source: CETIC.br; Google consumer barometer (2018)



Brazilians are spending much more time on internet

Time spent on media
Hours per day

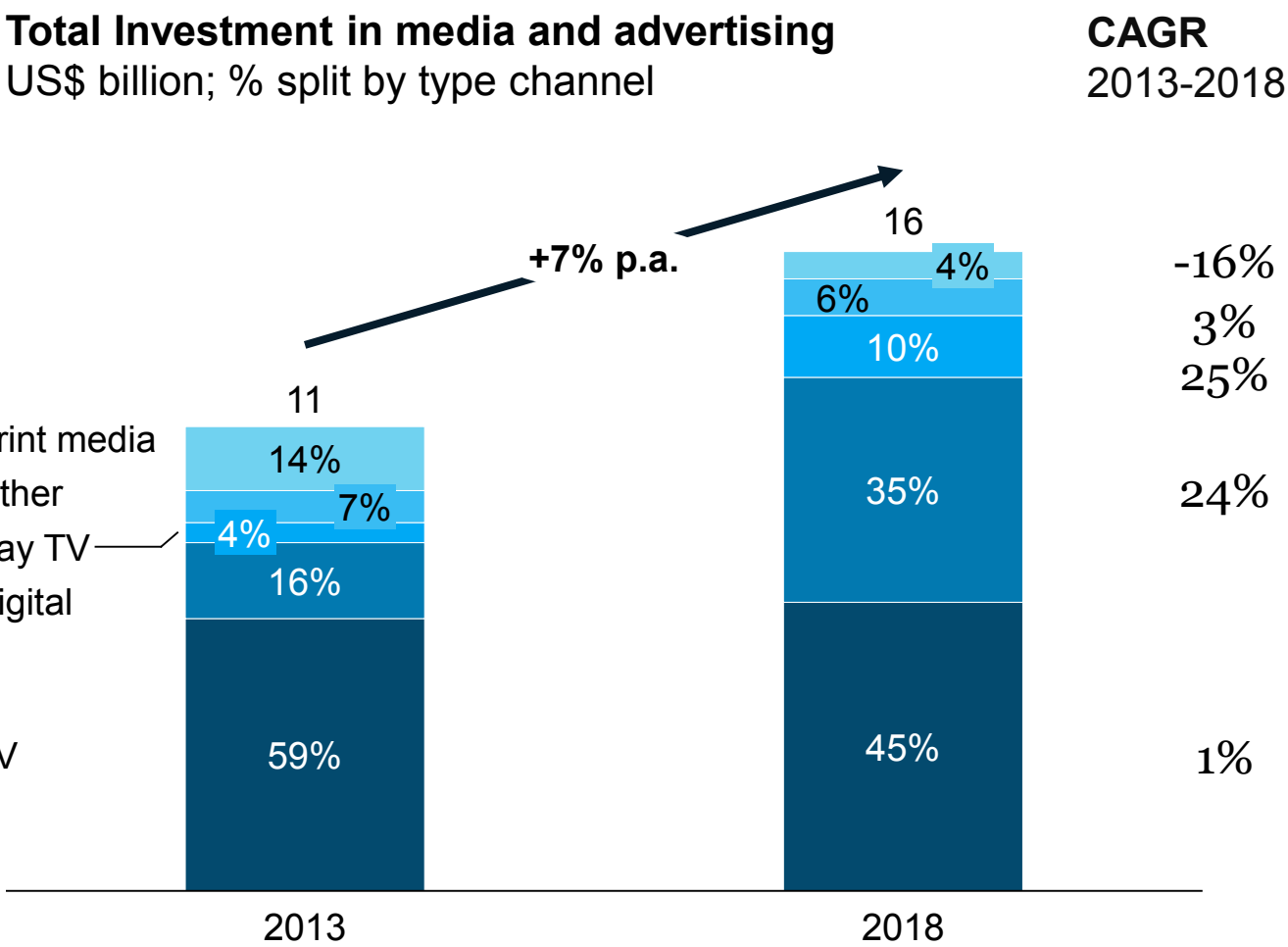
CAGR
2014 - 2016



Source: Brazil Media Survey

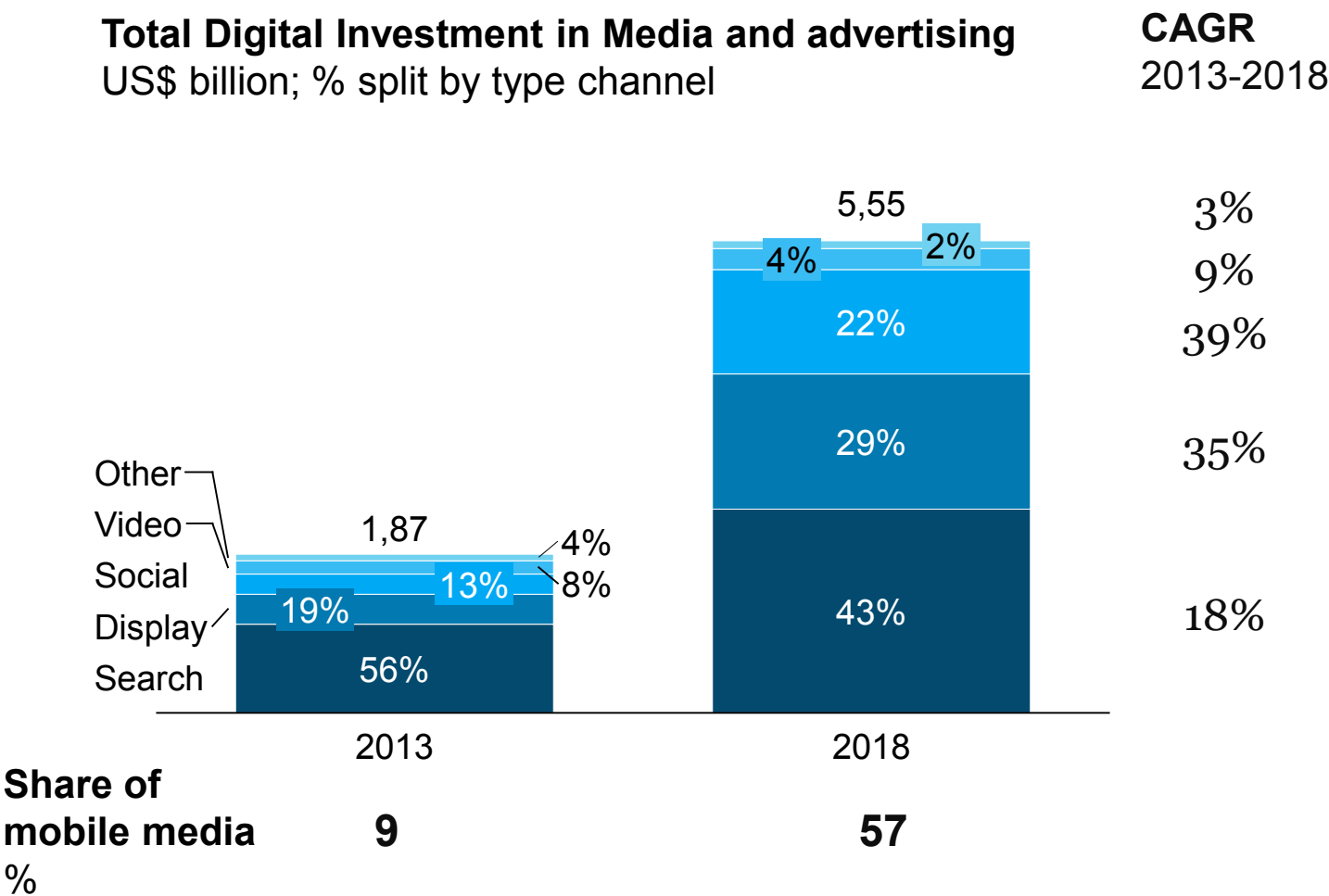


Pay TV and digital are the fastest-growing channels for media investments

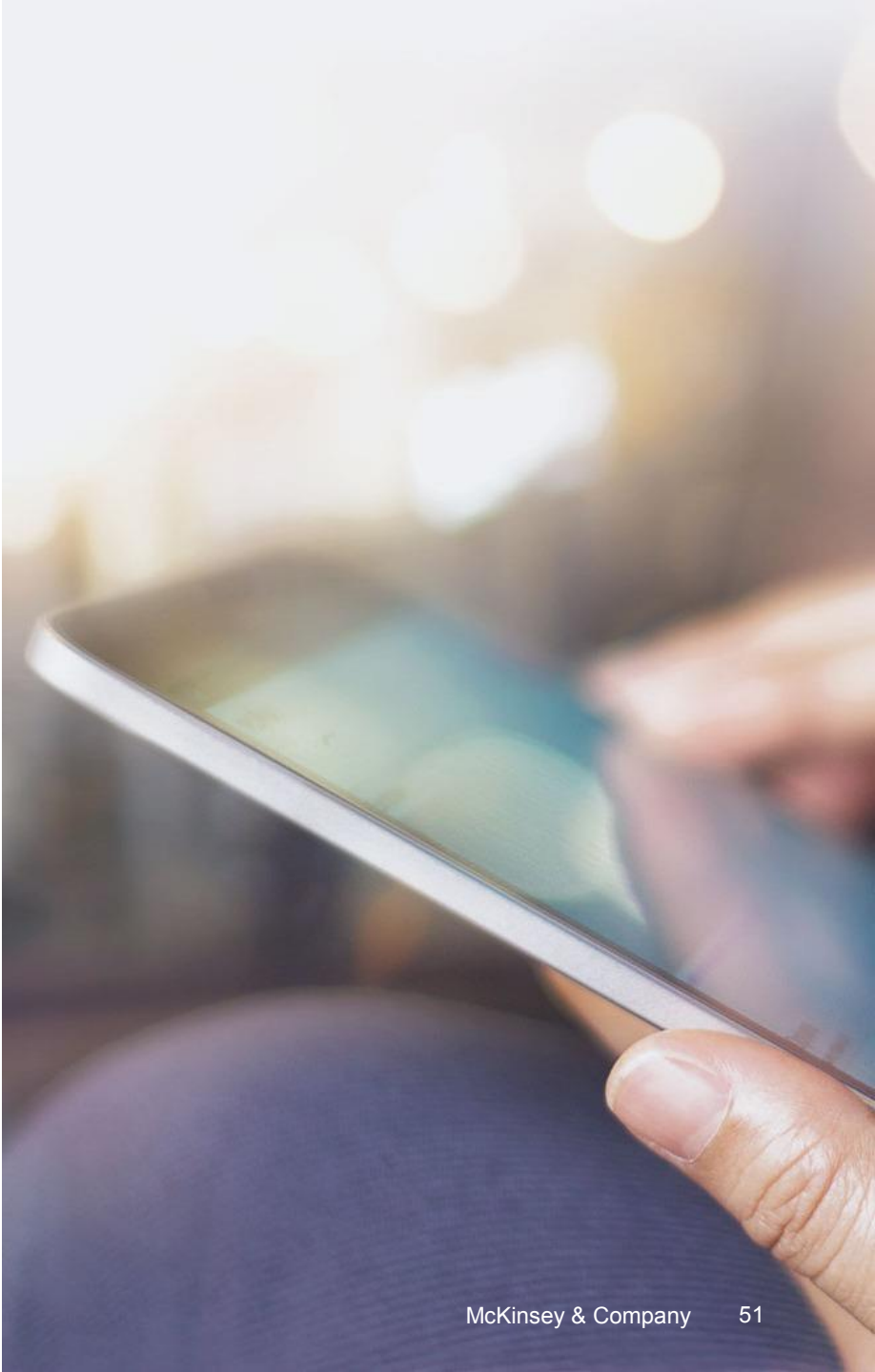


Source: Magna Global; 1 US\$ = 3,192 RS\$

In digital marketing, video and social segments show the highest levels of growth

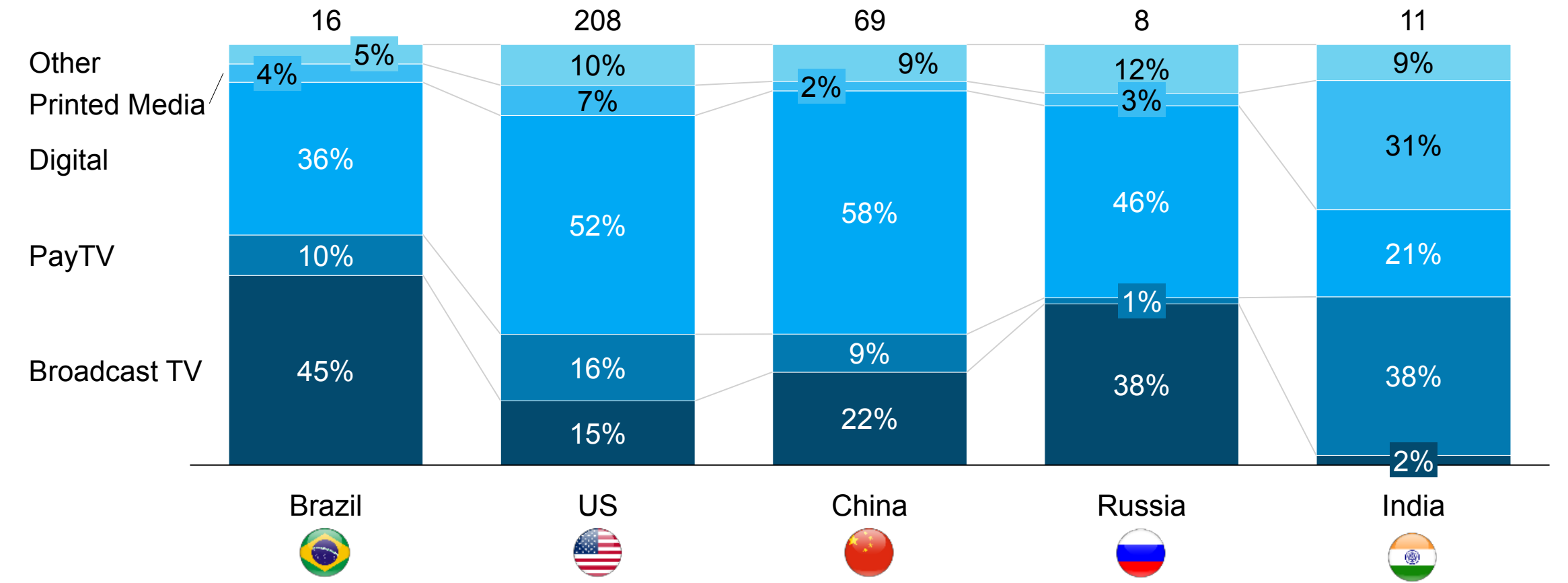


Source: Magna Global; 1 US\$ = 3,192 RS\$



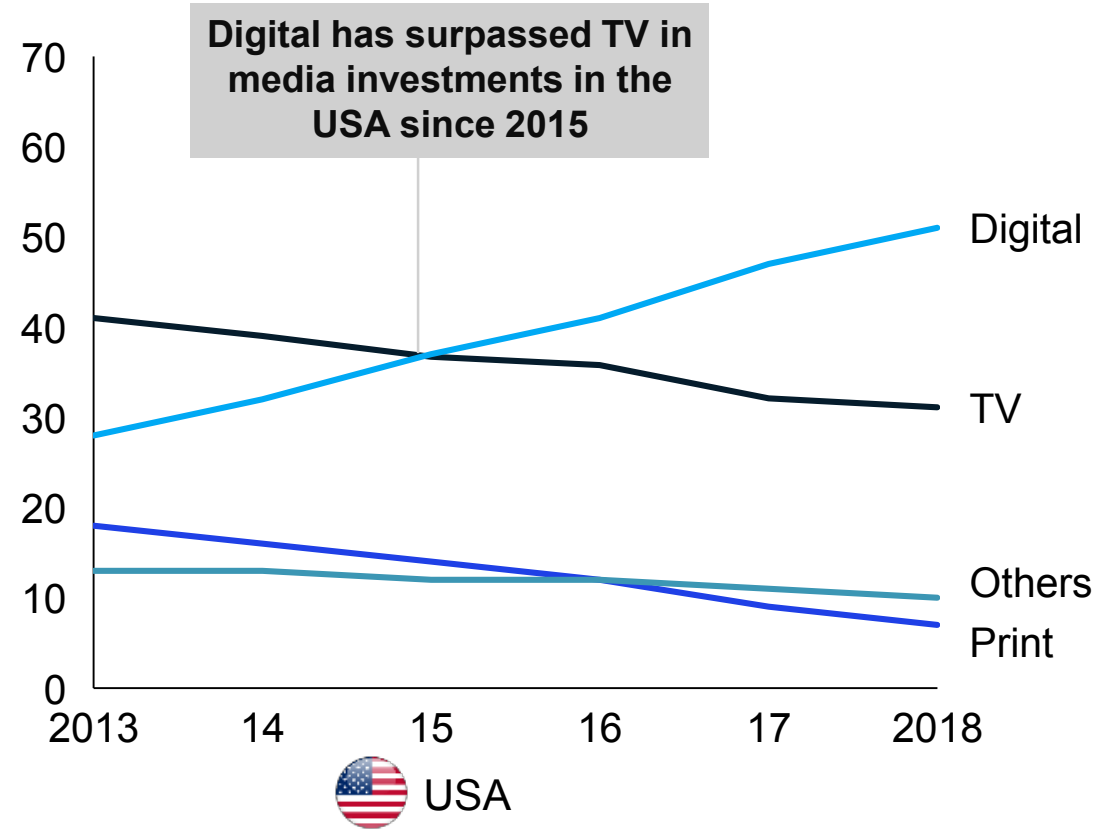
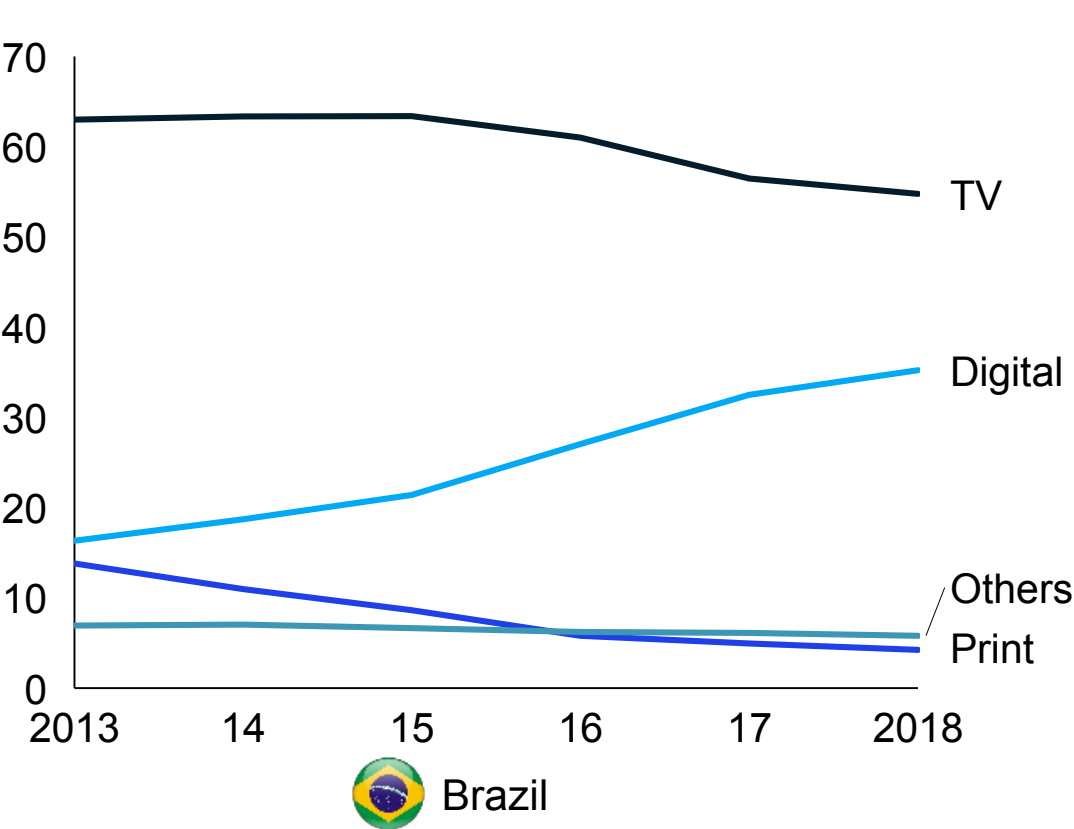
But there is still room for growth and penetration in digital advertising

Total investment in media and advertising
US\$ billions; % split by type channel



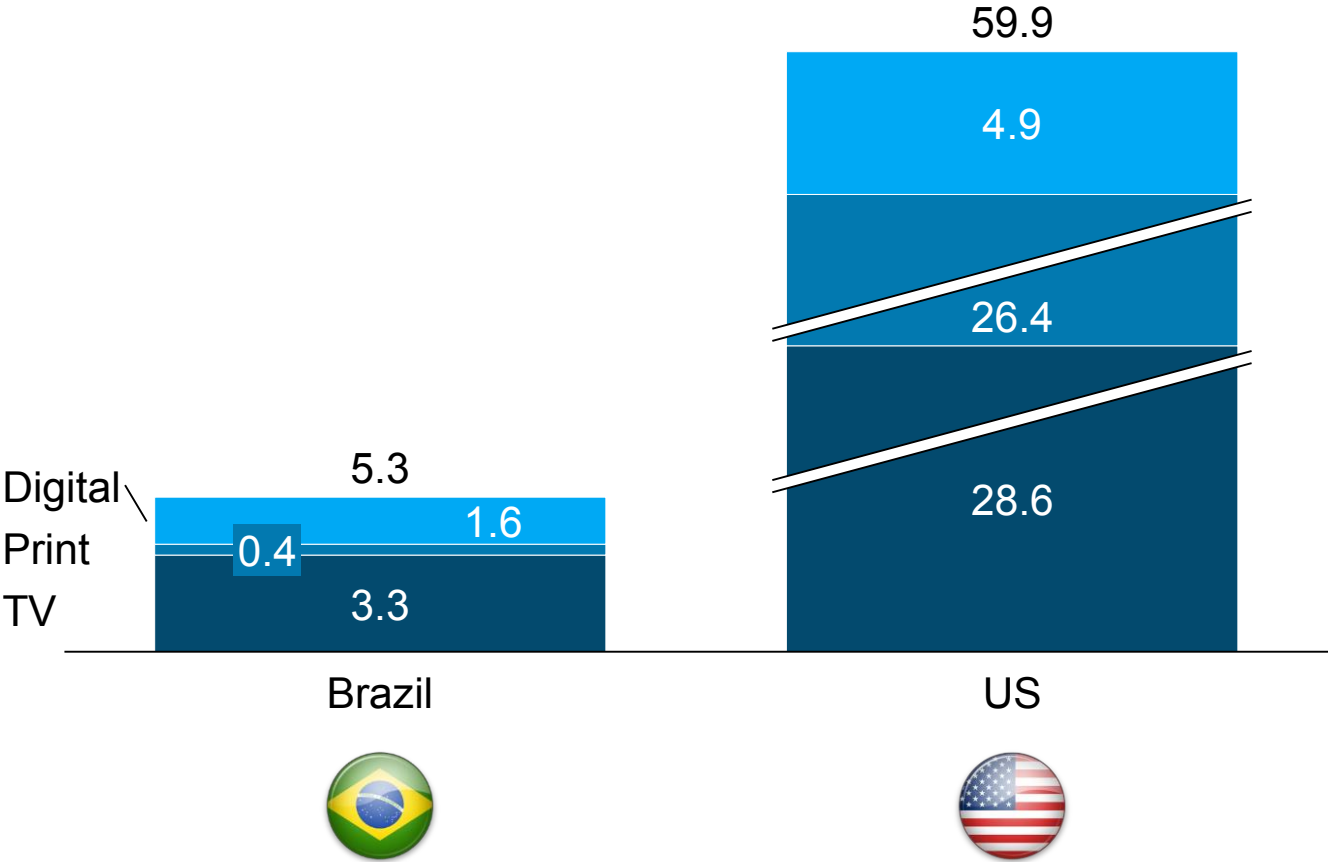
Brazil is a few years behind US in terms of digital media investments...

Total investment in media and advertising
% split by channel



... not only in the total investment amount but also in dollars per hour of user

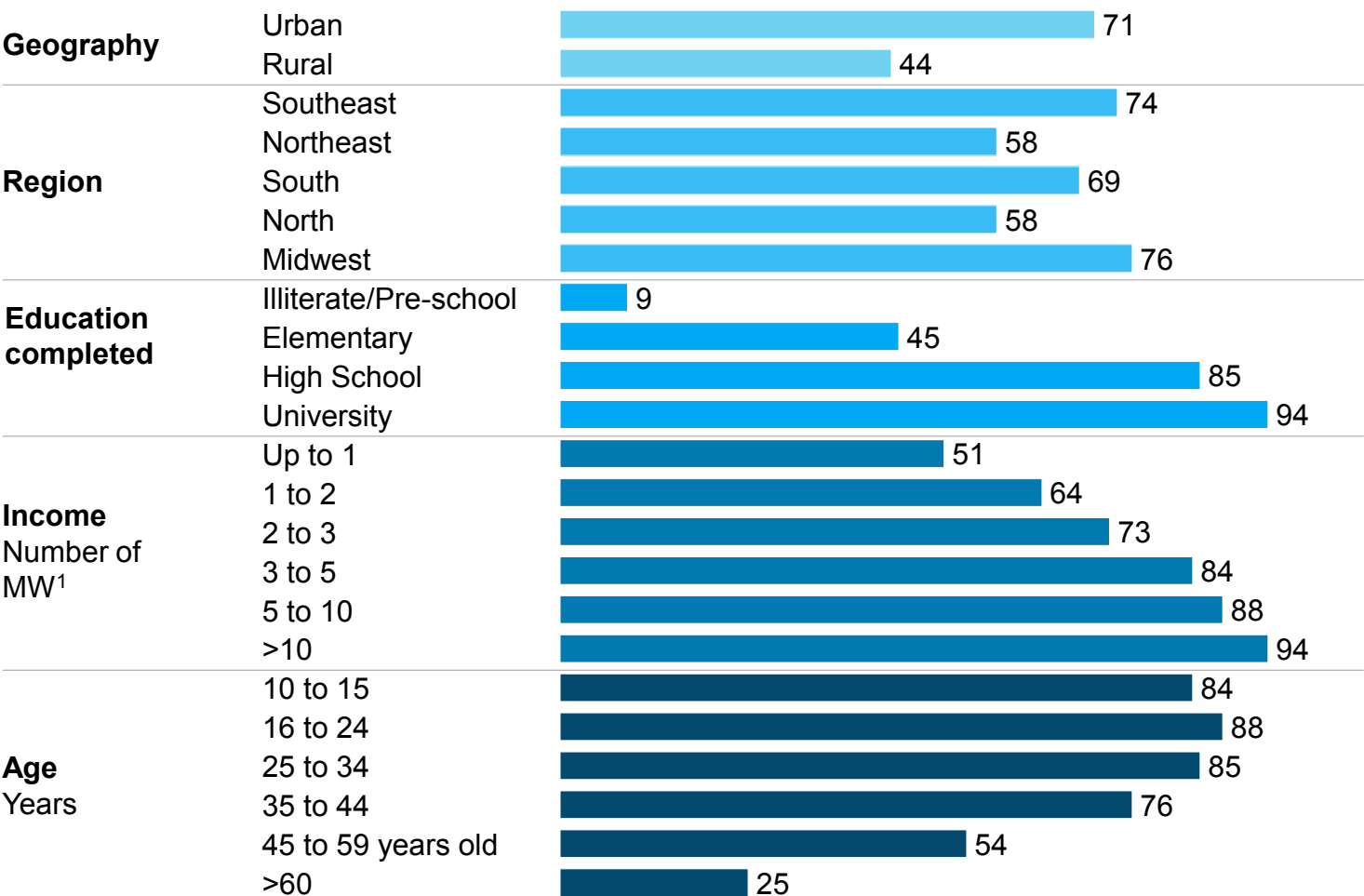
Digital investment in media and advertising
US\$ cent/hour of user



Digital inclusion has only just begun: Digital access varies across geography and demographics

Internet access per segment

% of respondents who have accessed internet in the past three months

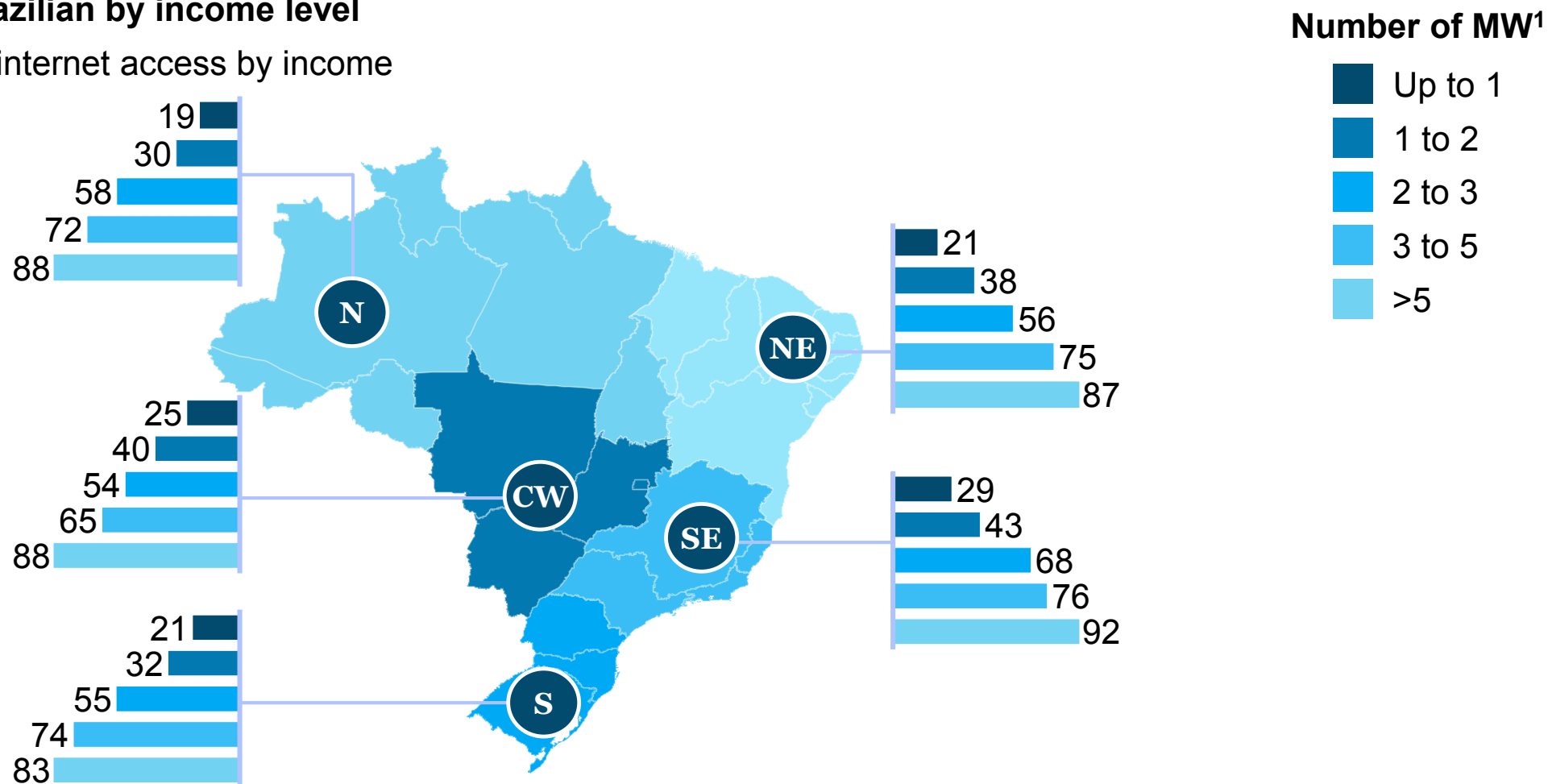


1 MW: Minimum Wage (monthly)

67%
of overall respondents have
accessed internet in the past
three months

Across regions, households with the highest incomes are almost four times more likely to have internet access than those with the lowest incomes

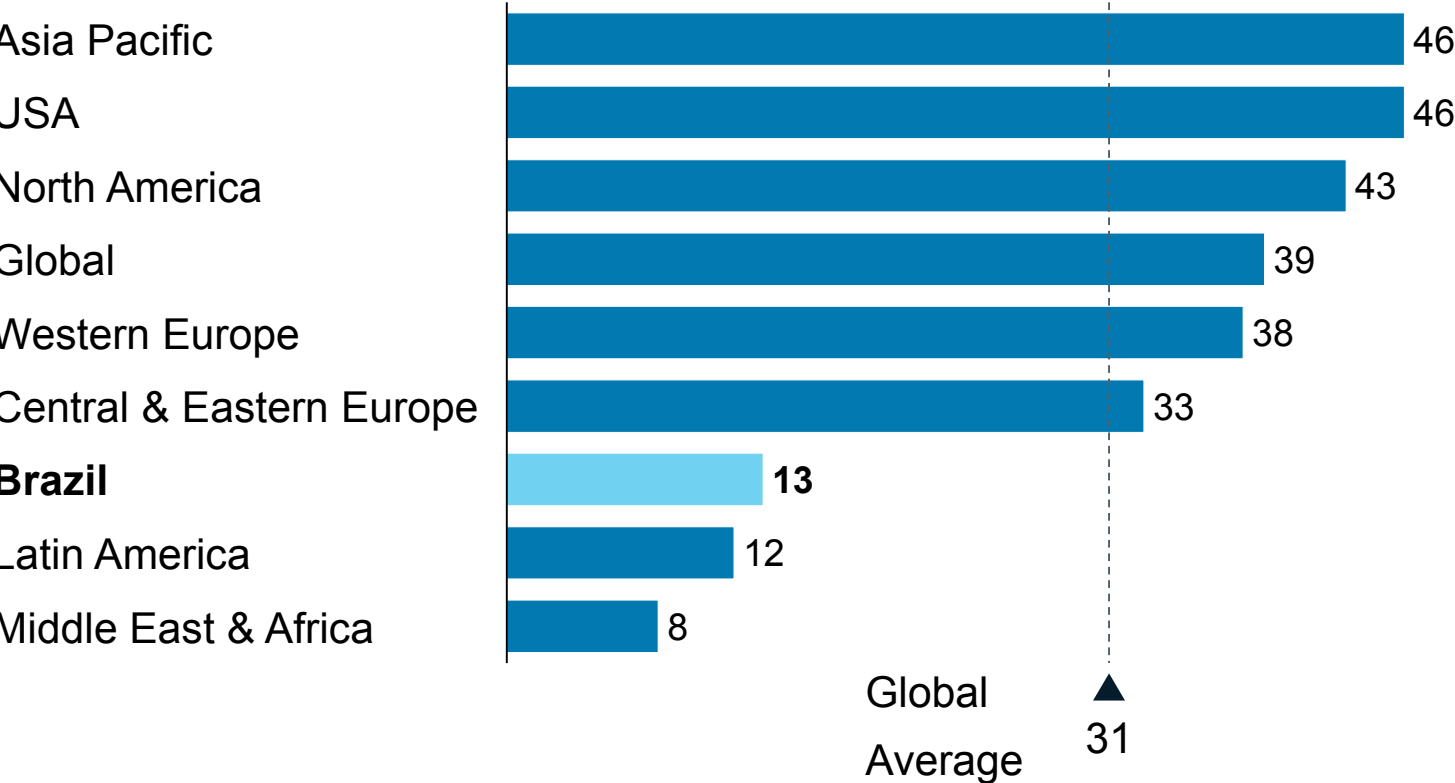
Internet access in Brazilian by income level
% of households with internet access by income



1 MW: Minimum Wage (monthly)
Source: ICT households Survey (2017)

Internet speeds are still lower than in many developed economies

Internet speed on fixed broadbands
Mbps, 2017



Average Speed for Mobile
Mbps, 2018

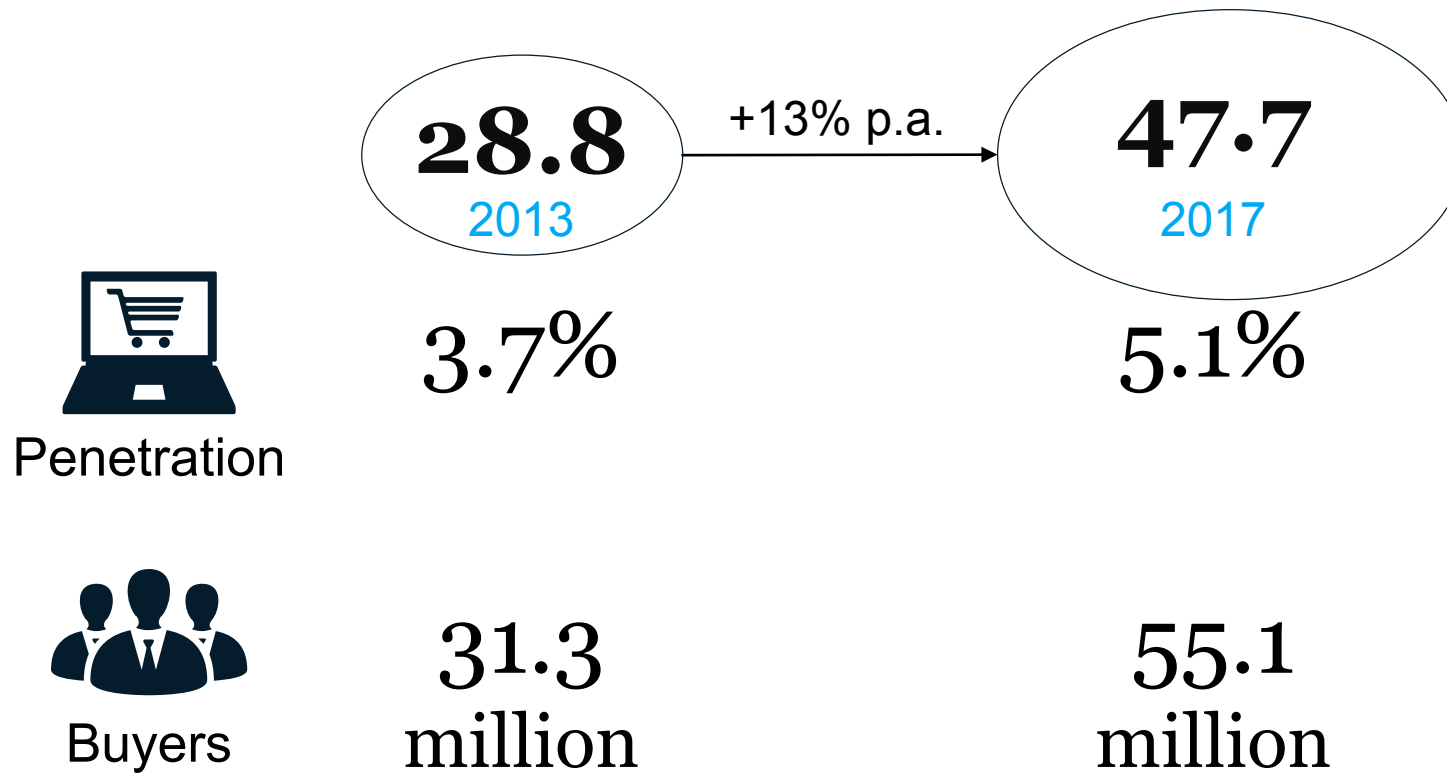
11.29 22.72



Source: Cisco VNI (2017), OOKLA – SpeedTest (2018)

E-commerce has grown quickly in the last five years...

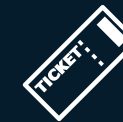
e-commerce market size
R\$ billion



Source: Webshoppers e-Bit; Euromonitor; Press clippings; E-bit/Nielsen (2017/2018)

Highlights

Average Spending



R\$429

of orders



111.2

million

Black Friday (2018)

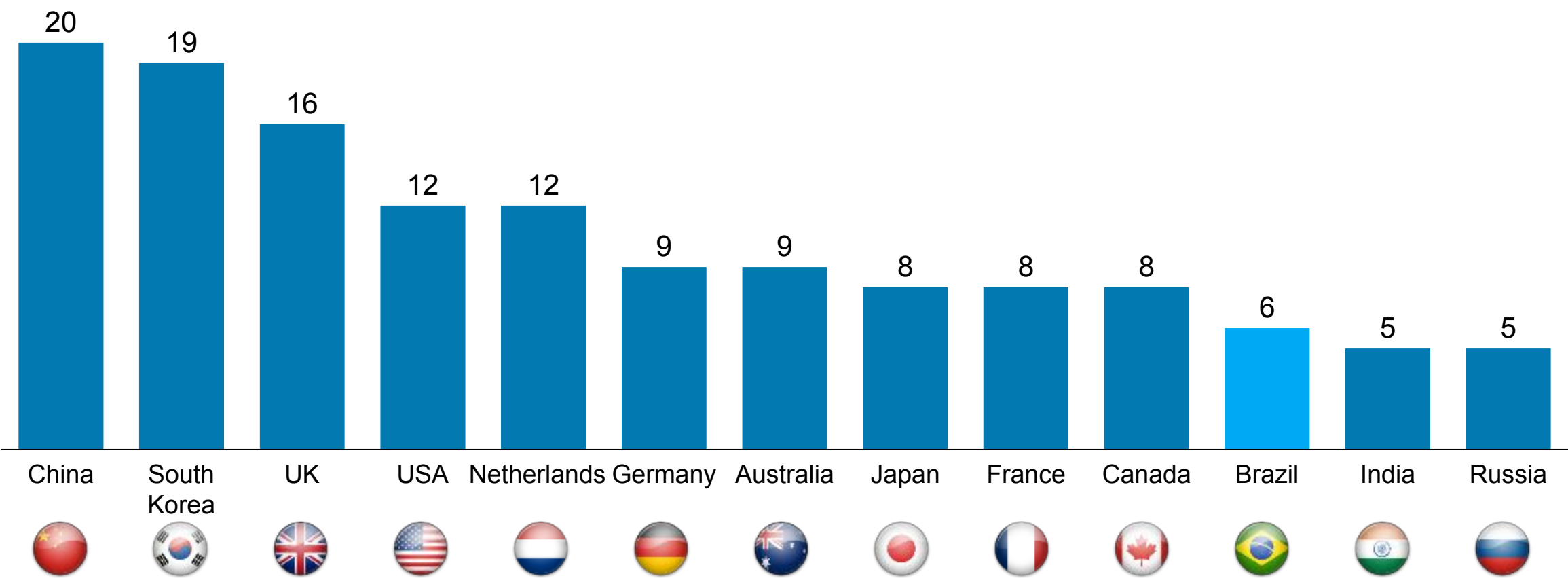


R\$2.6Bn

(+23% more than in 2017)

... but e-commerce penetration in Brazil still lags that of China and developed nations...

e-Commerce penetration
%¹



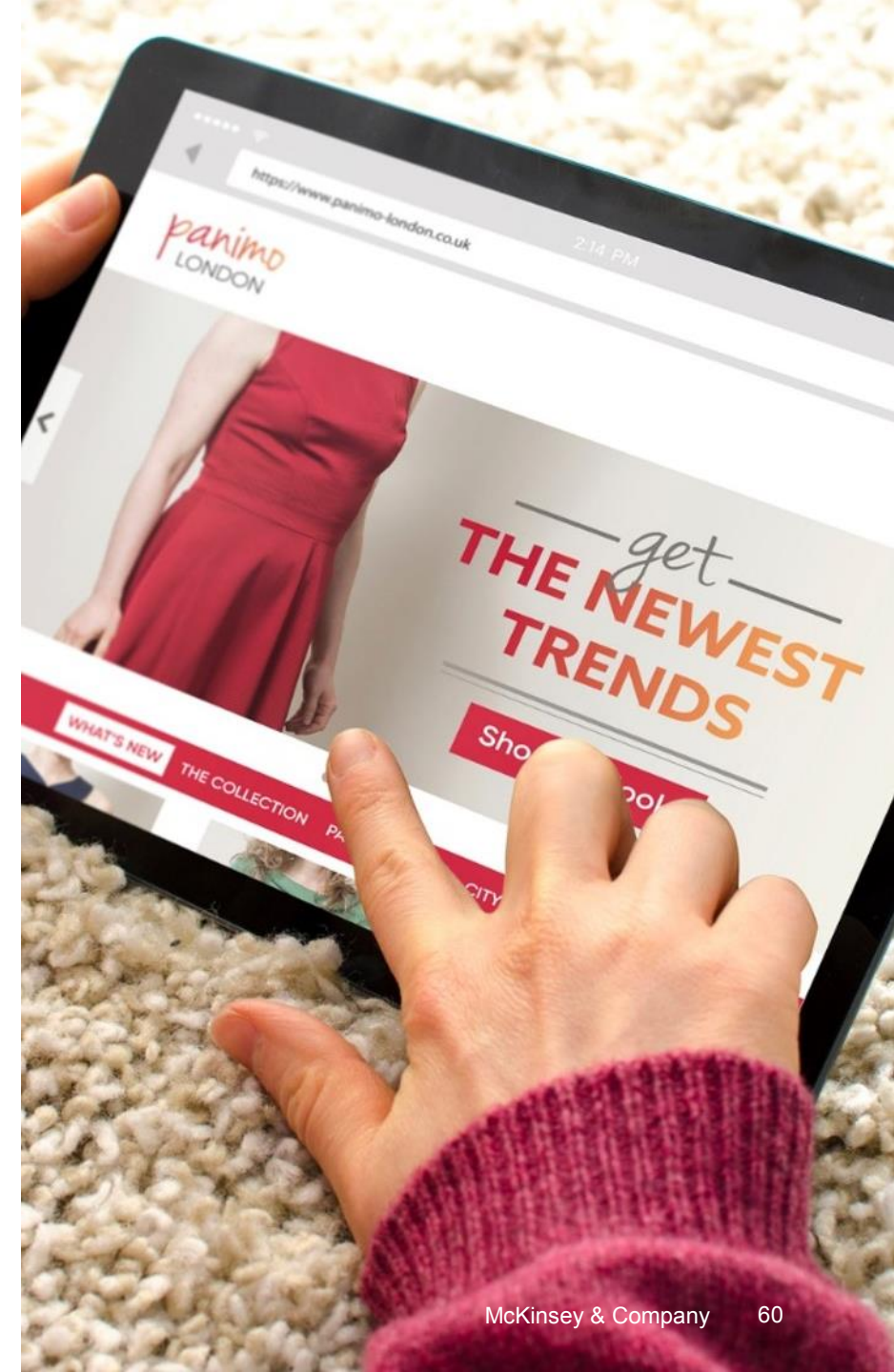
¹ e-Commerce sales over total retail sales

...with considerable variation in penetration across product categories

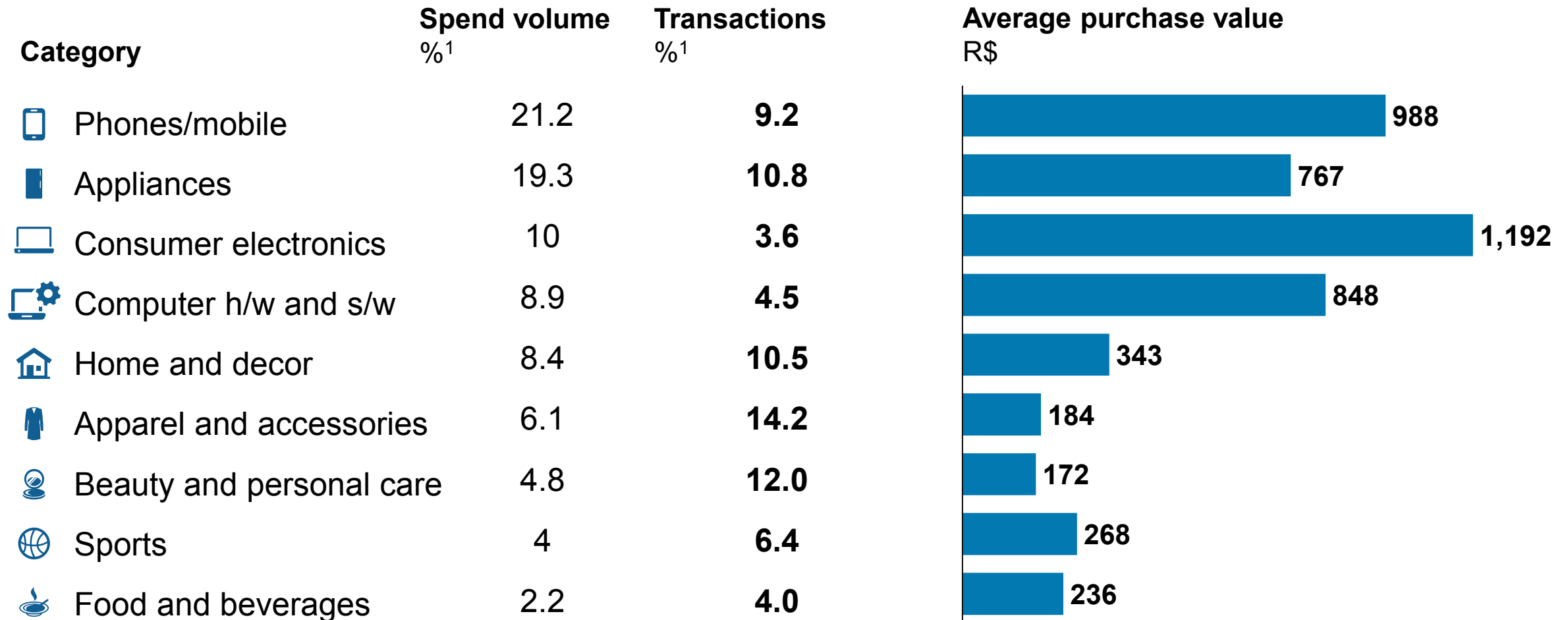
Category	Penetration % ¹	Leader penetration % ¹
 Toys and games	29	 72
 Electronics	20	 44
 Appliances	10	 37
 Apparel	4	 29
 Beauty/ personal care	3	 23
 Home and garden	1	 17
 Alcoholic beverages	<1	 8
 Packaged food	<1	 10
 Home care	<1	 13

¹ e-Commerce sales over total retail sales

Source: Euromonitor (2017)



Online shopping is split across sectors, but phones and appliances account for most of the spending



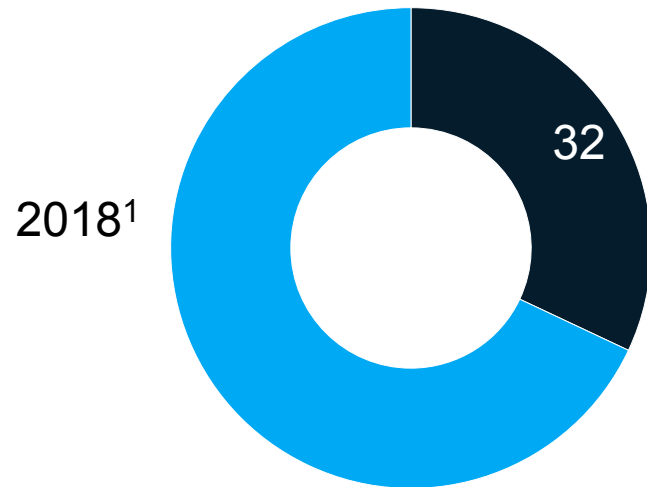
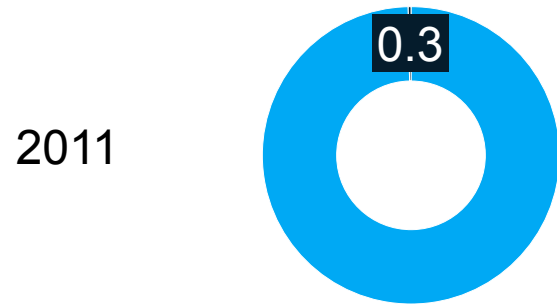
¹ Category share of total e-Commerce

Source: Webshoppers e-Bit (2017), McKinsey analysis

Today, 32% of e-commerce purchases are via mobile phones

e-Commerce purchases

Share of mobile in online buying, %



71% of Brazilians use mobile phones to access the internet

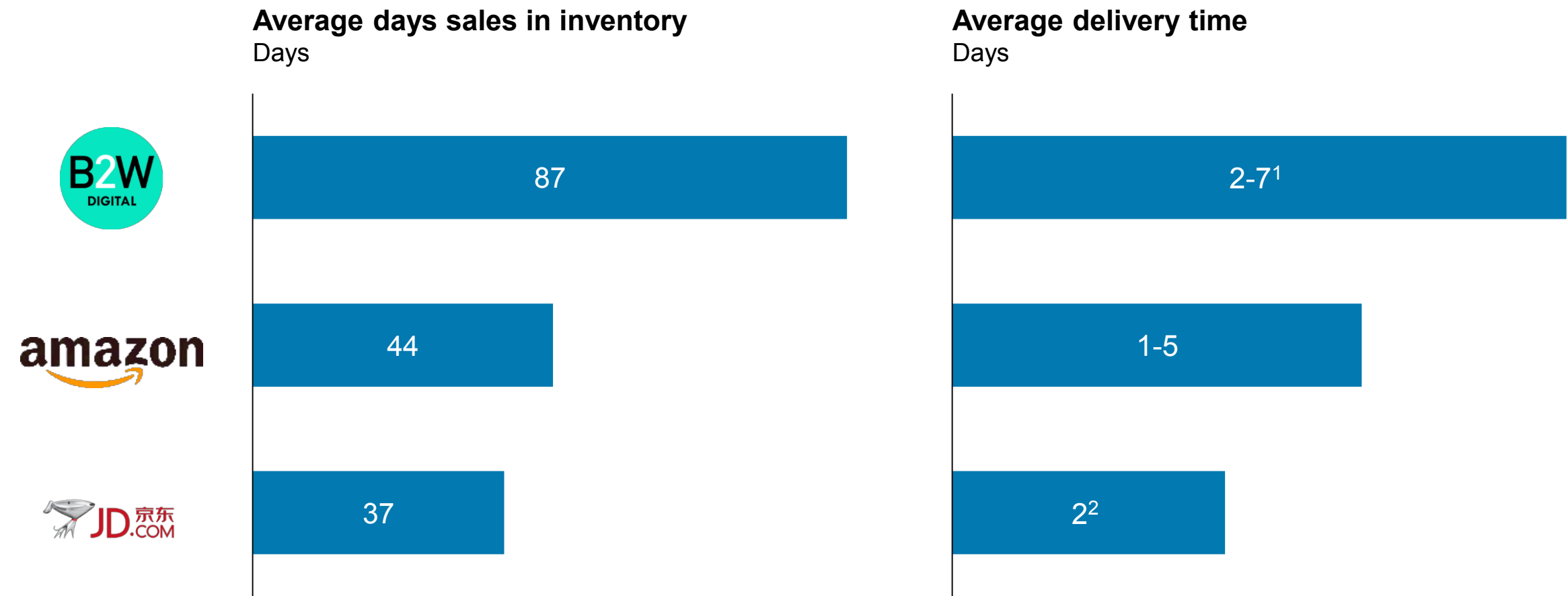
Major retailers report 60% - 75% of traffic from mobile devices and 35% - 45% of total e-commerce sales

¹ Estimate for the first semester 2018

“Brazilian consumers adopt new technologies early. As a result, companies, especially retailers, have taken advantage of apps as extensions of their digital operations. When we see the different market segments, retail is the one with the highest penetration of apps.”

Felipe Almeida – Manager of ad products for apps at Google

E-commerce players have greater inventory periods and longer delivery times than those in the US and China

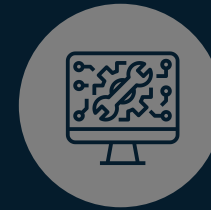


1 The cities of São Paulo and Rio de Janeiro have special transport systems for products that offer "2-hour", "Same-day" or "next-day" delivery
2 90% of deliveries are due in two days

Chapters



Macroeconomics



Digital
Perspective



Entrepreneurship
Ecosystem



Sector Deep
Dives

Entrepreneurship ecosystem

Brazilians tend to be entrepreneurial: More than 39% of economically active people work in entrepreneurial endeavors. But only a small share of those efforts are channeled towards innovation.

That said, more startups are pushing the digital and innovation:

- Entrepreneurial ecosystems are vibrant across the country
- Investments by angel investors and VC continue to grow at high double-digit rates year on year, surpassing the US\$ 1 billion mark in 2018;
- The country's first eight unicorns were nominated in the past two years
- More unicorns are on the horizon.

Barriers to growth remain, however:

- VC investment as a share of GDP is still way behind other economies
- Brazil remains one of the hardest places in the world to open, run and particularly close a business, raising the cost of failure
- Despite the growing number of STEM and engineering graduates, recruiting and developing digital talent remains a major challenge.

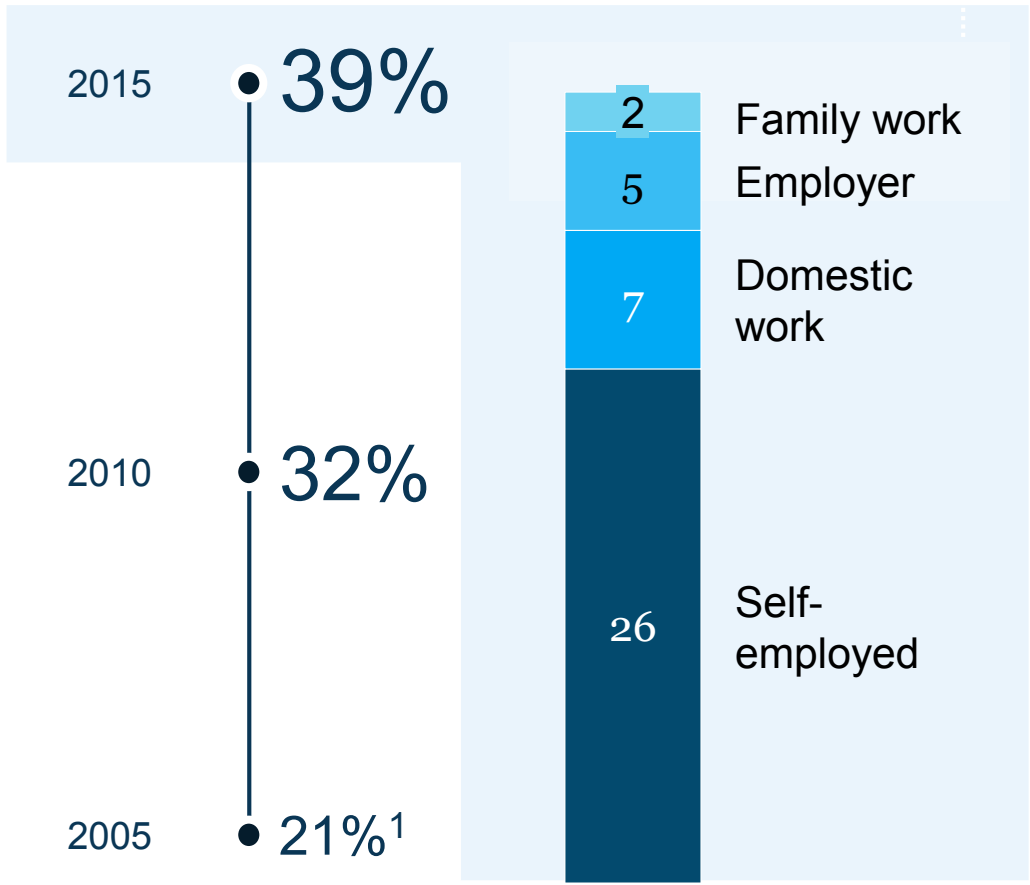


Using the broader definition of the word, Brazil is a country of entrepreneurs

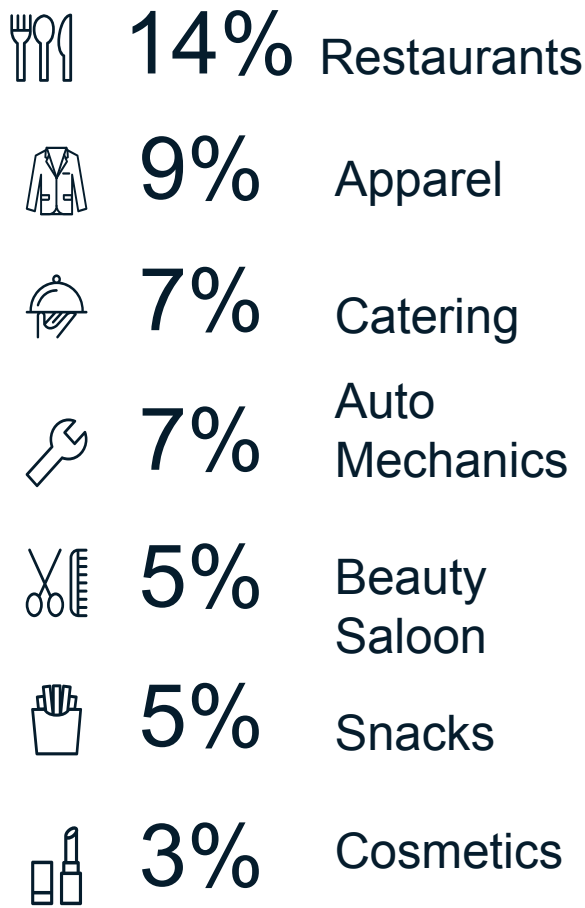
Entrepreneur
en·tre·pre·neur/
,äntɹəprə'nər
noun

An entrepreneur is someone who, rather than working as an employee, founds and runs his or her own business, assuming all the risks and rewards.

% of workforce ages 18-64 who are entrepreneurs

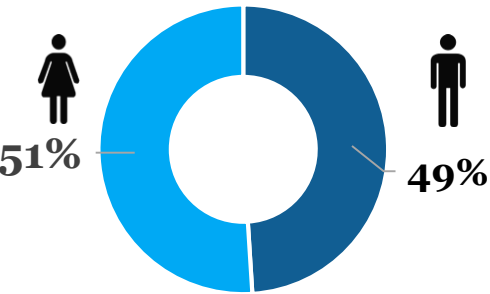


Most common activities

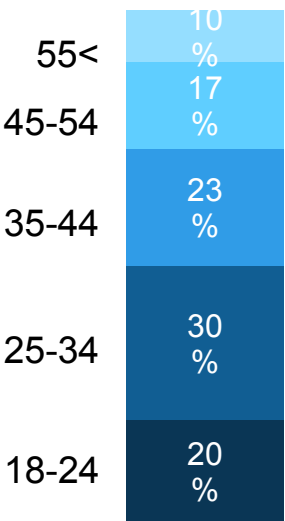


The typical entrepreneur is female, under 34, lower-middle class and with a high school education at best

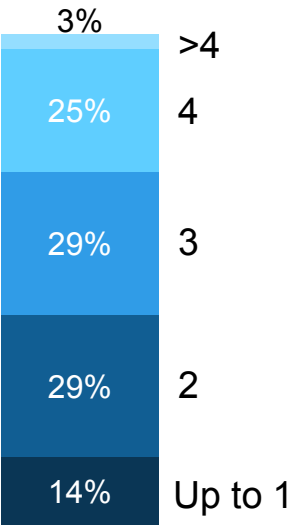
Gender



Age Years



Income Number of minimum wages

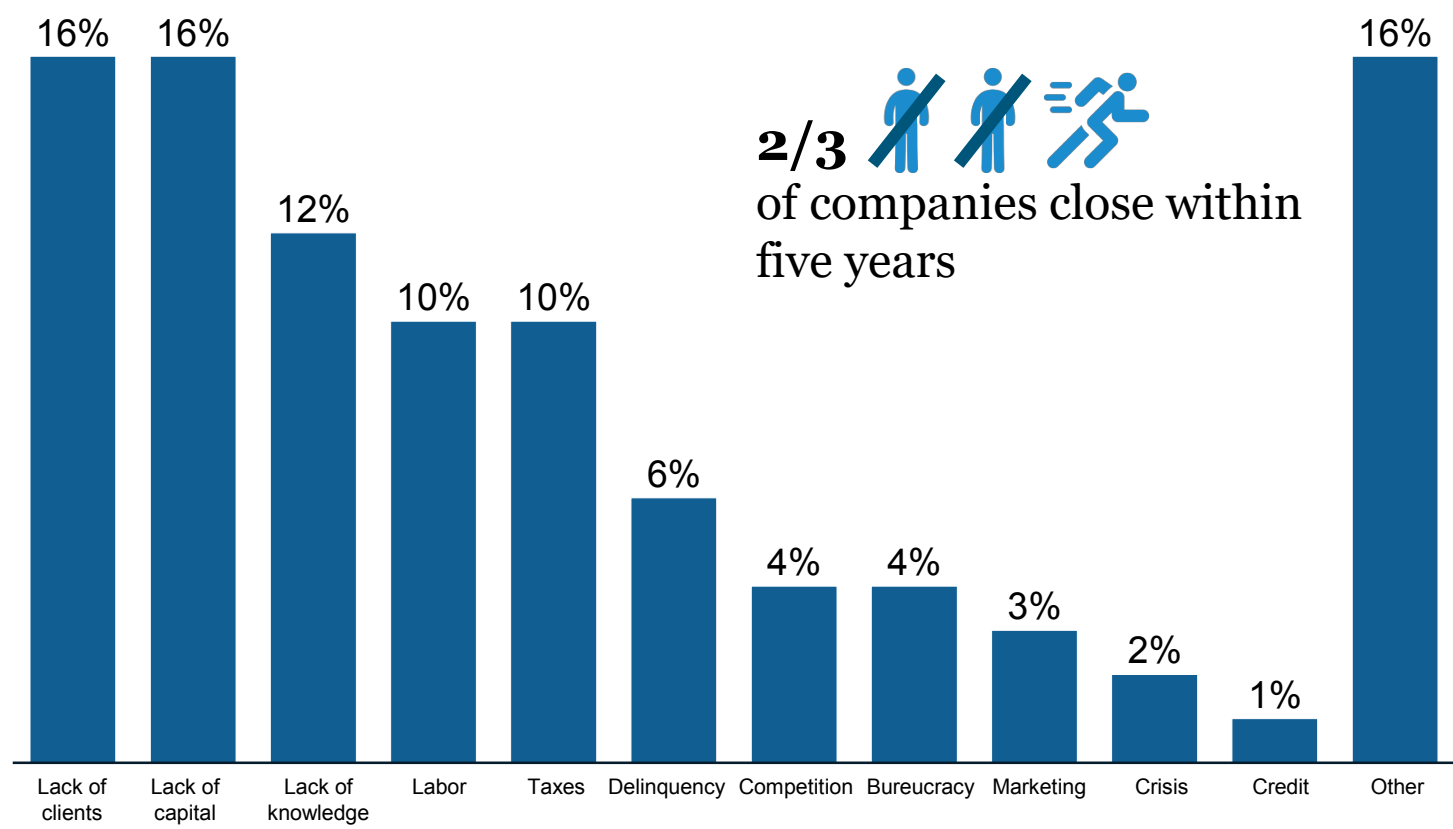


Education



Company mortality rates are high: two-thirds go out of business within five years

Main reasons for closing



Source: GEM; Sebrae (2016)



Brazilian market is less favorable to new businesses than many other markets

Ease of Doing Business Index

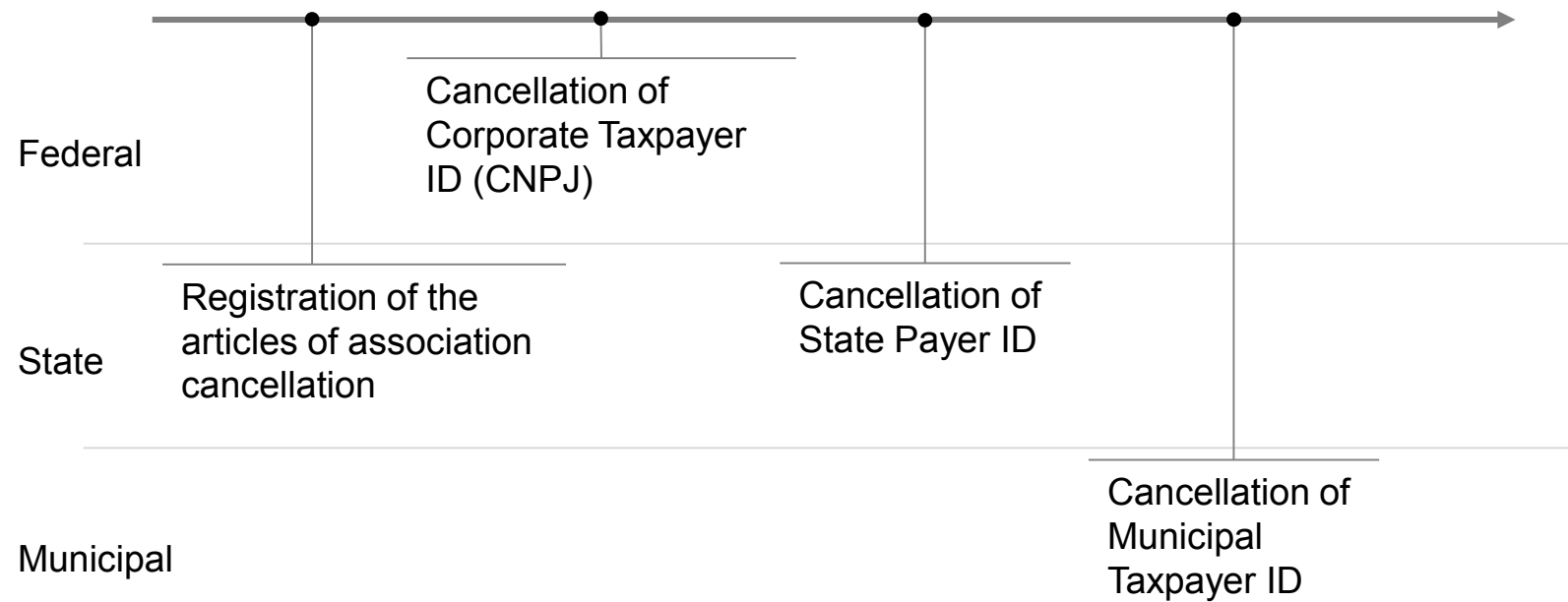
Variables

	Country	Rank	
		2010	2018
 Starting a business			
 Dealing with construction permits	 United States	04	08
 Getting electricity	 Russia	120	31
 Registering property	 France	31	32
 Getting credit	 China	86	46
 Protecting investors	 Chile	40	56
 Paying taxes	 India	132	77
 Trading across borders	 Brazil	127	109
 Enforcing contracts			
 Resolving insolvency			

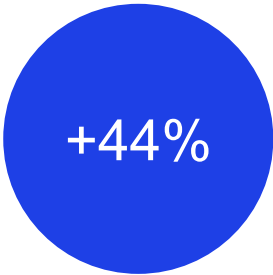


The cost of failure is high and closing a company in Brazil is bureaucratic and expensive

Stages in closing a company in Brazil



The cost of closing down a company can be

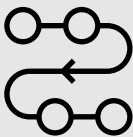


higher than the cost of opening a company

Main challenges



Business owners must provide documentation for the company's last **five years of activity**



Further steps vary according to the type of company; it is mandatory to have certificates in **every area requested for the business activity of the company**



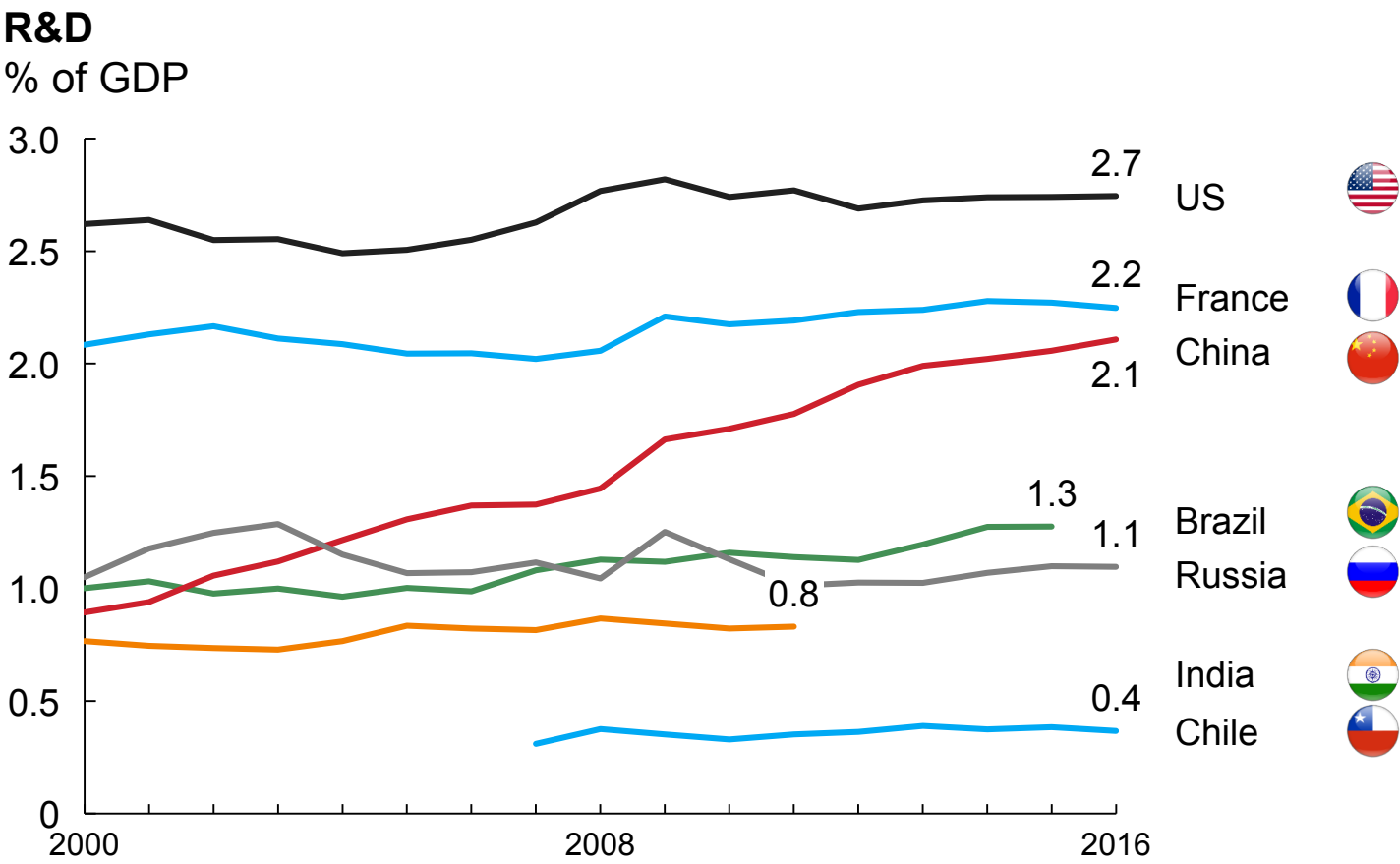
Documents provided often **expire before the end of the closure process** and need to **be updated**

Despite Brazilian entrepreneurism, the country ranks at the bottom of the innovation index compared to developed and other BRIC economies ...

Global Innovation Index Rank

	Global Innovation Index	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
 United States	6	13	21	24	1	8	6	14
 France	16	21	11	10	11	19	19	12
 China	17	70	23	29	25	9	5	21
 Russia	46	74	22	63	56	33	47	72
 Chile	47	37	61	53	54	48	48	58
 India	57	80	56	77	36	64	43	75
 Brazil	64	82	52	64	82	38	64	78
			Ease of starting a business and business environment		Credit and tariff rate applied pulling the variable down			

The Brazilian government and private enterprises spend 1.3% of GDP in R&D...



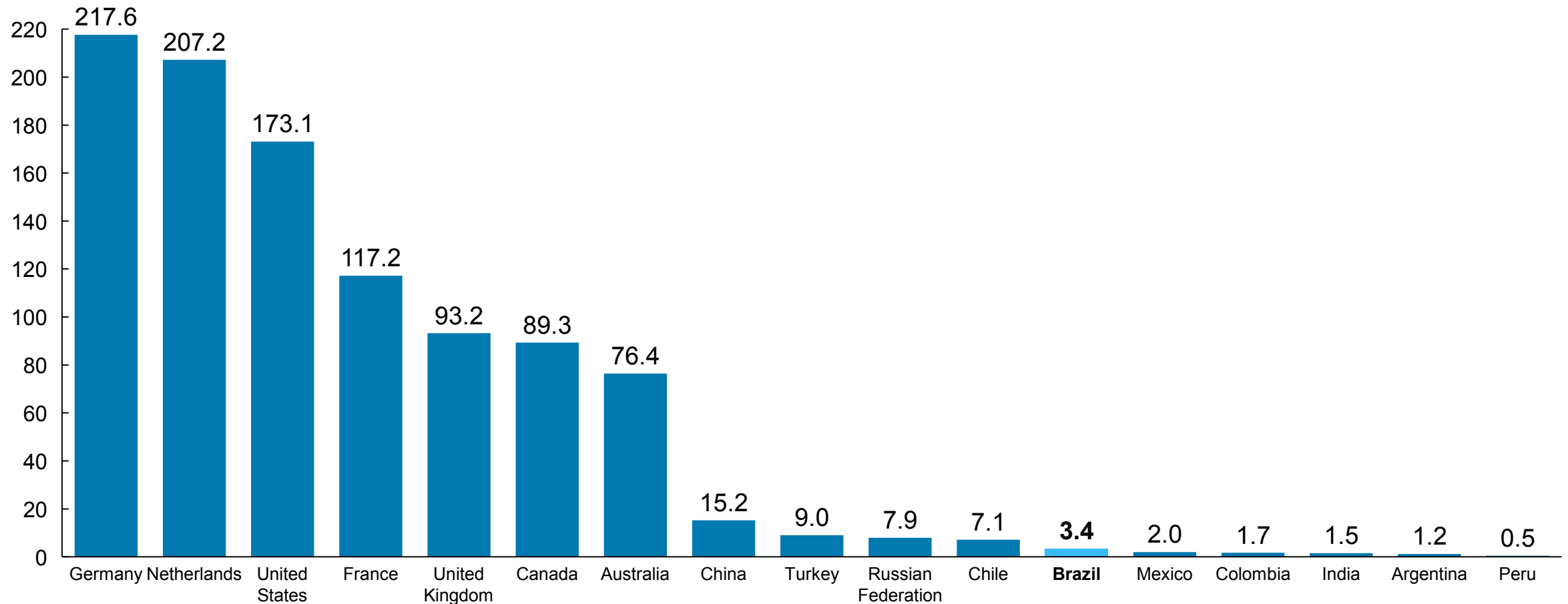
Source: WorldBank



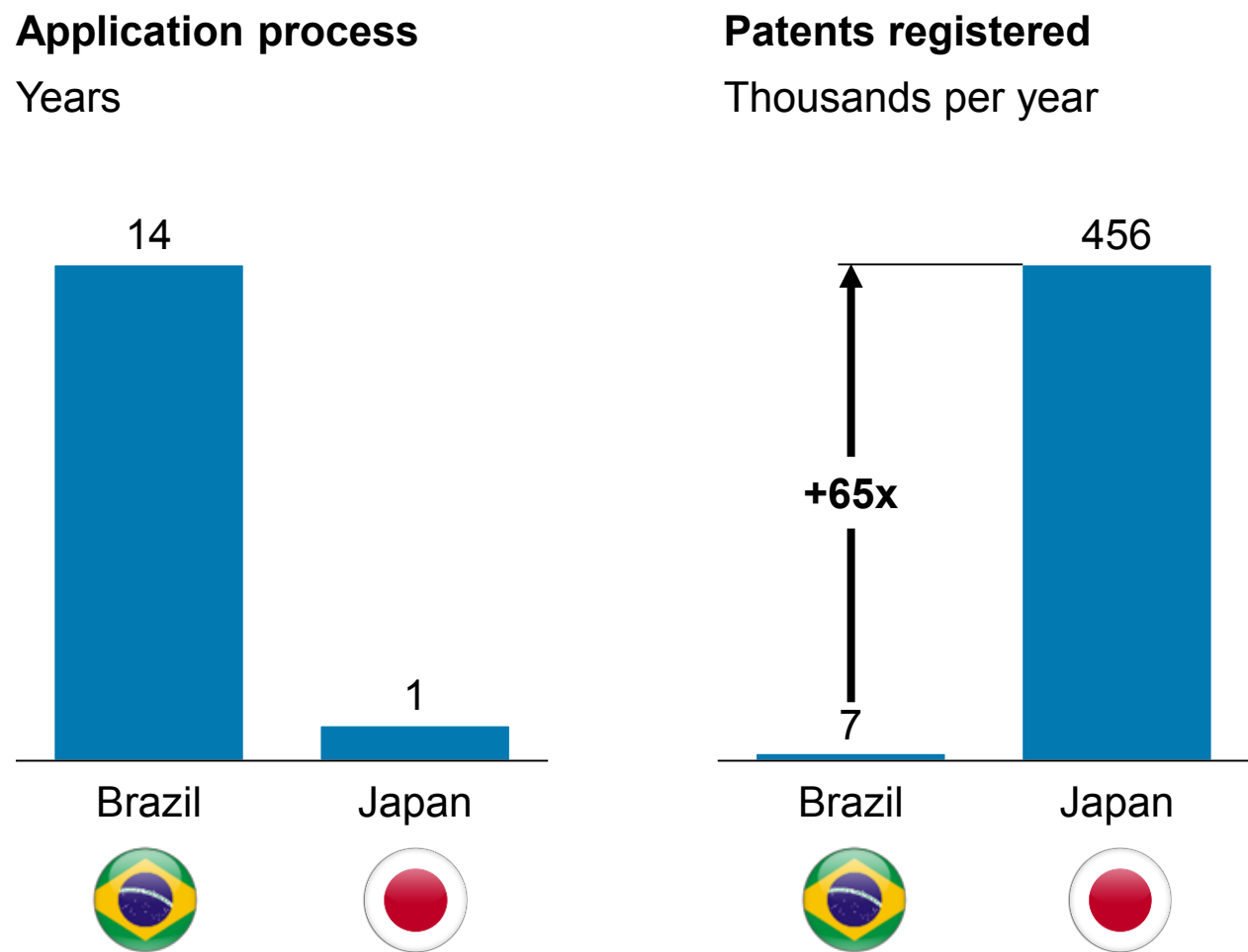
...But Brazil still punches significantly below its weight in the number of patents

Patents by country

Patent applications / million inhabitants



Brazil lags in the efficiency of patent registration, especially compared to countries like Japan

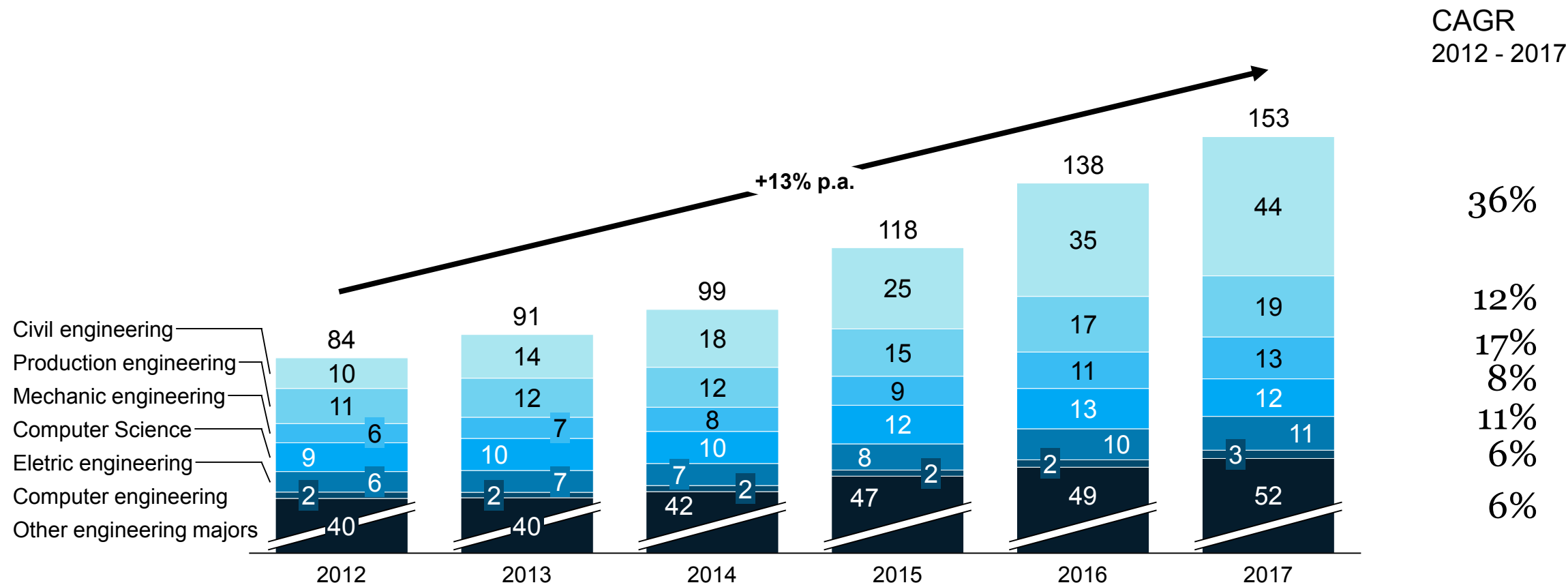


Source: WIPO (2016)



Although there is an increasing number of engineering & computer science graduates...

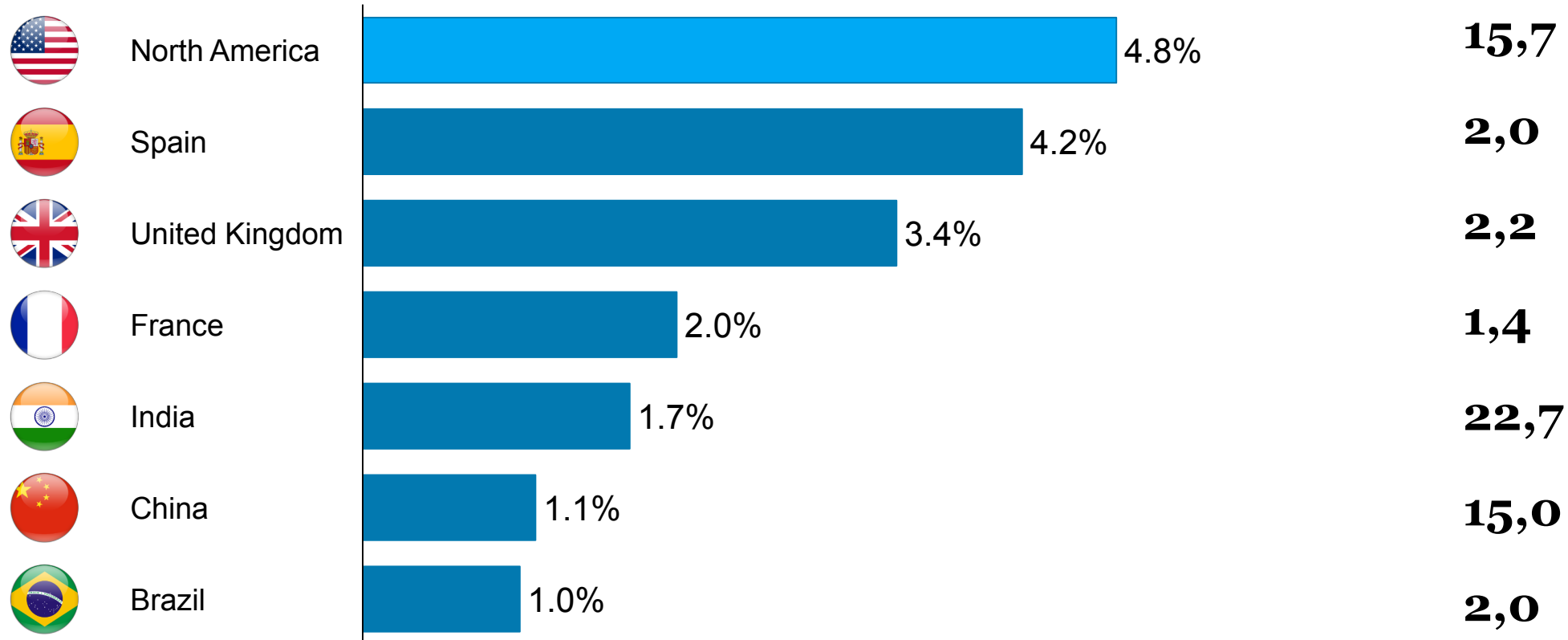
Engineering and Computer Science degrees
Thousands



...Brazil still lags in absolute numbers of STEM graduates...

Graduates in STEM¹
% of total population

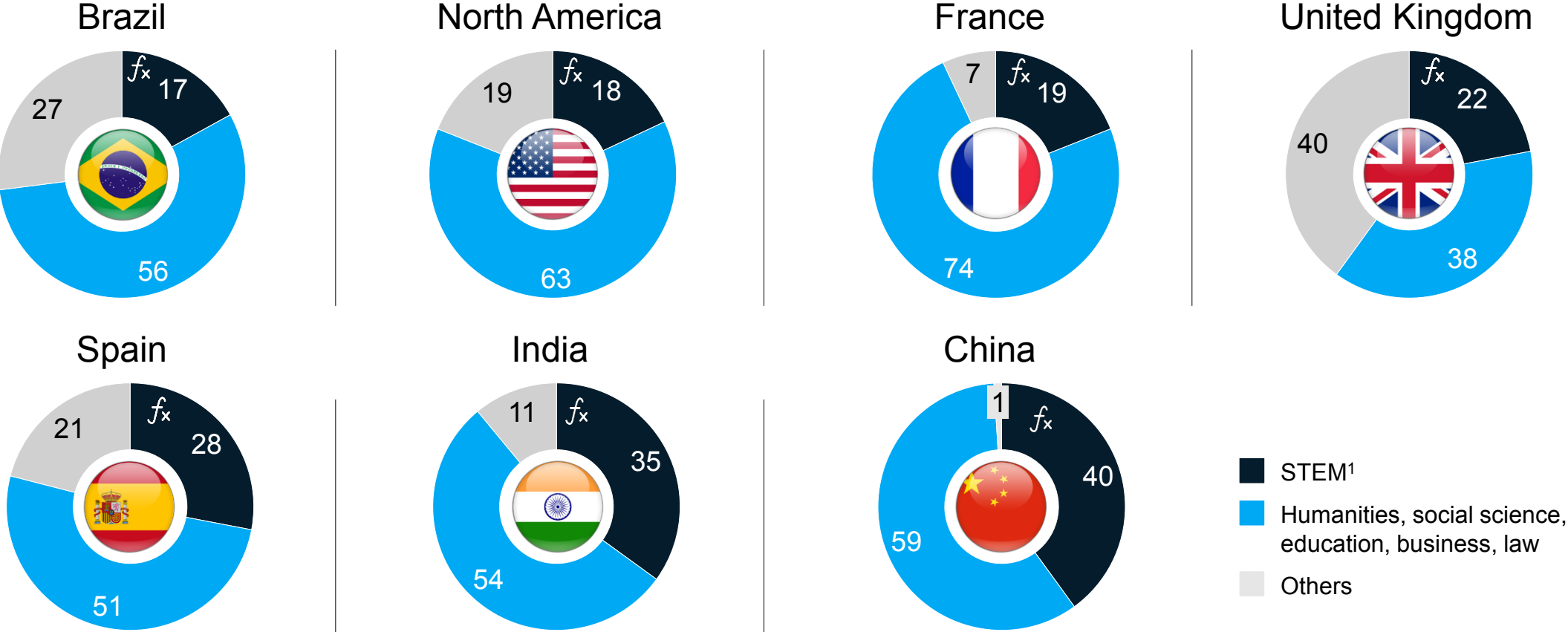
Absolute number of graduates
Millions



¹ Science, Technology, Engineering, Mathematics

... and current enrollment status suggests that this will not change in the short term

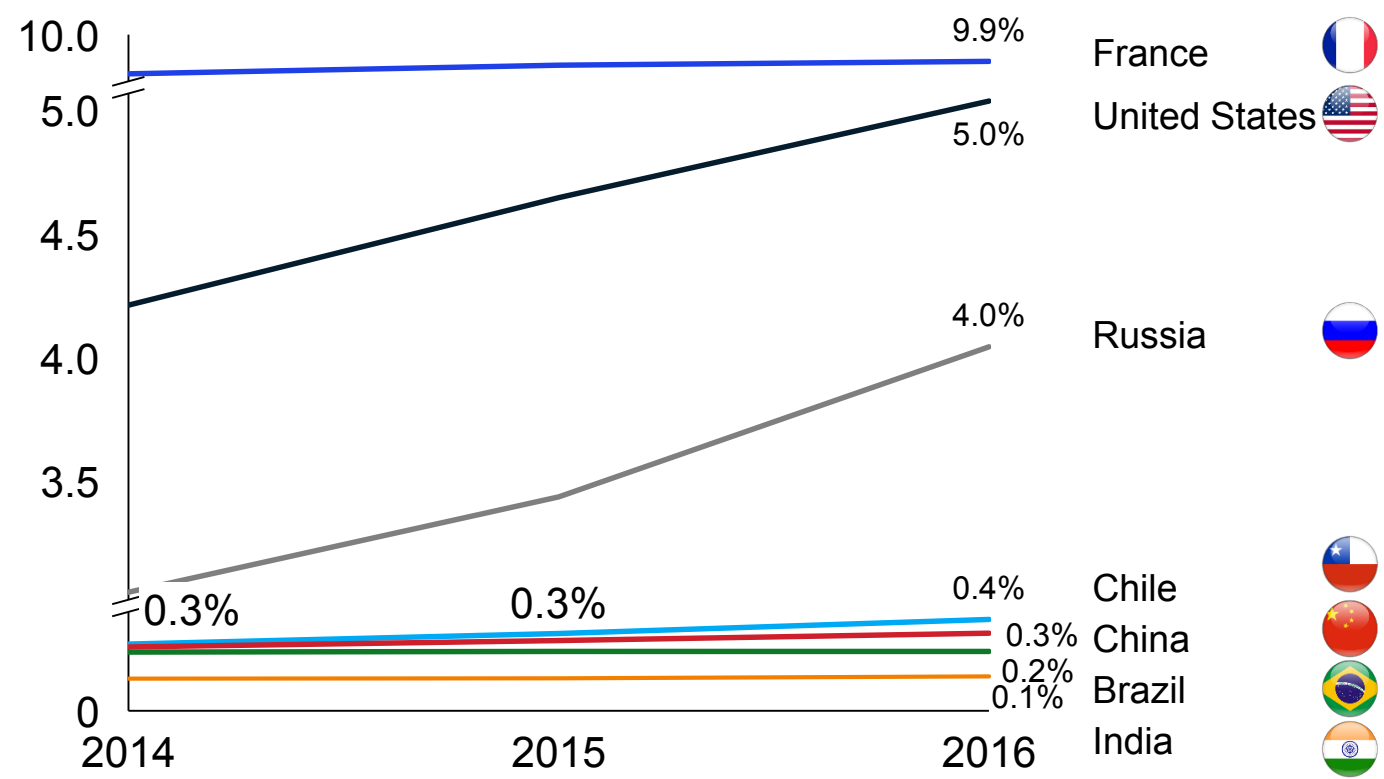
Distribution of tertiary students among areas of study
%



¹ Science, Technology, Engineering, Mathematics

Only a small share of students and the overall population go abroad for higher education

Share of students studying abroad
% of the total tertiary enrollment



Source: OECD



Startup start·up· *noun*

New venture that aims to develop a viable business model usually based on innovative technology. Founders design startups to develop and validate a scalable business model to meet a marketplace need or solve a problem.

The Brazilian startup scenario



>10,000
startups



>30k+
jobs created



USD 1 billion+
investments in 2018



3
IPOs



8
Unicorns

Most startups are less than two years old, have fewer than six employees and no revenue



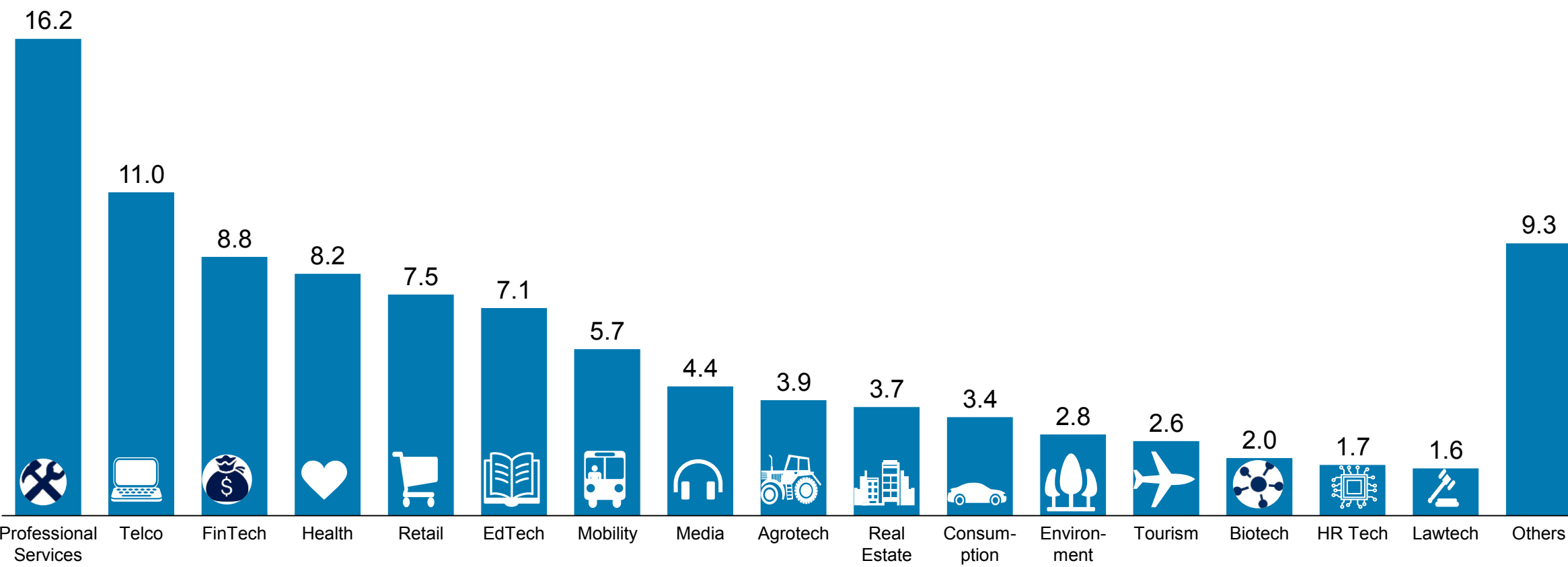
**Age** **46%** are less than 2 years old

**Team Size** **63%** have less than 6 members

**Revenues** **69%** have an annual revenues of less than R\$50K

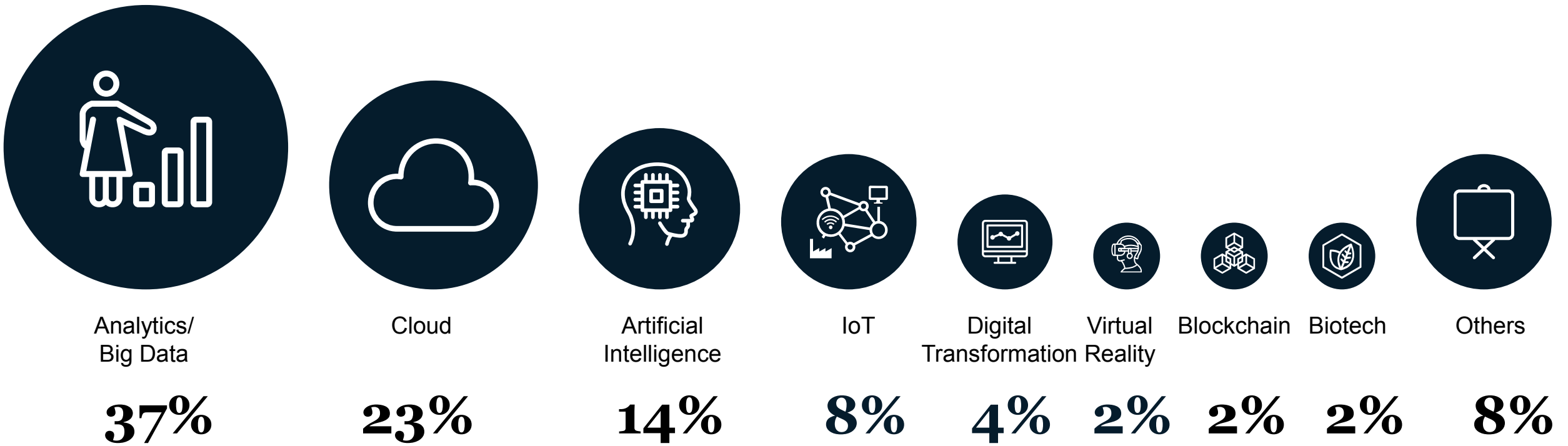
Most startups are in professional services, technology, media and telecom, and financial technology

Industry focus
%



Most startups build business models or differentiate using advanced analytics and big data

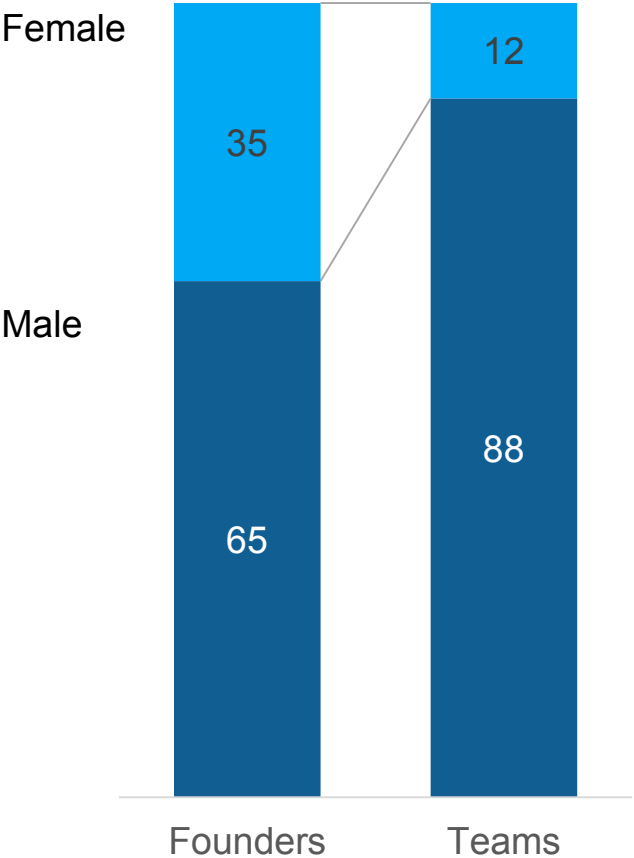
Most used technologies provided by startups
%



Most startup founders are men with technical backgrounds

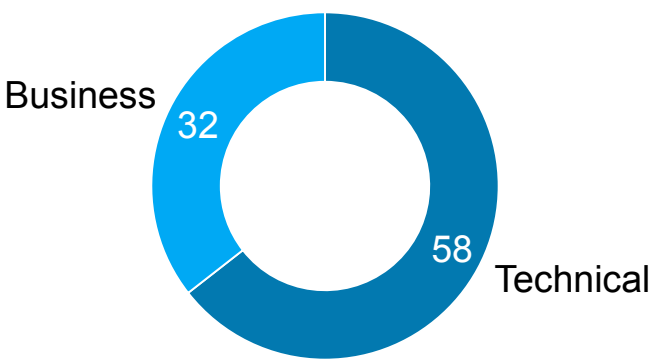
Gender

%



Background

%



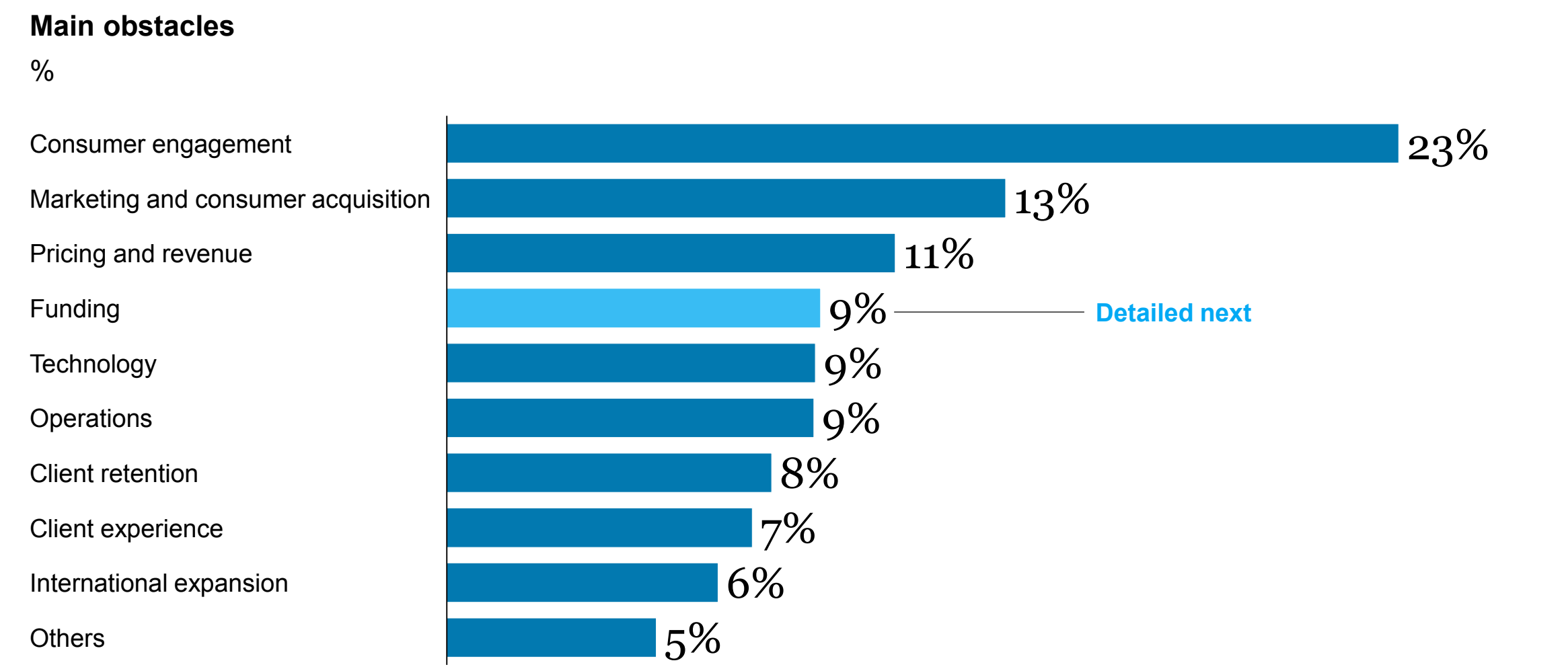
Age

33 years old on average

Source: Startse (2017), Technical Background = graduated in STEM fields



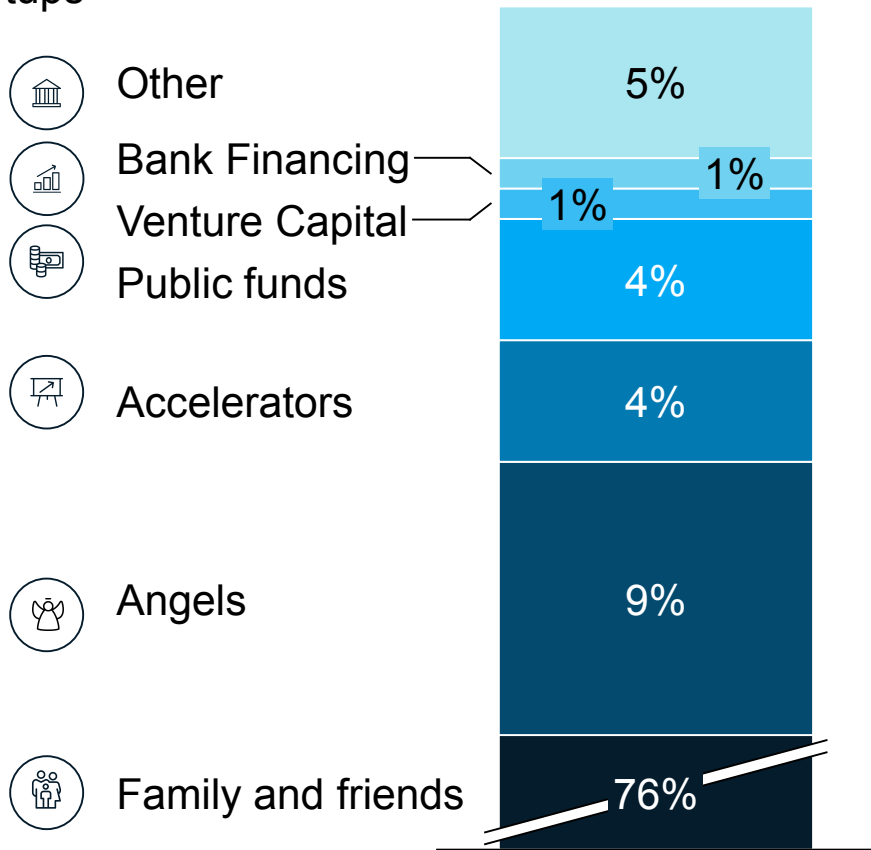
Founders say that the main obstacles to growth in the first three years are consumer engagement, cost of acquisition, revenue and funding



Most startups are still in their early stages and rely on funding from family, friends and angels

Main sources of funding

% of startups

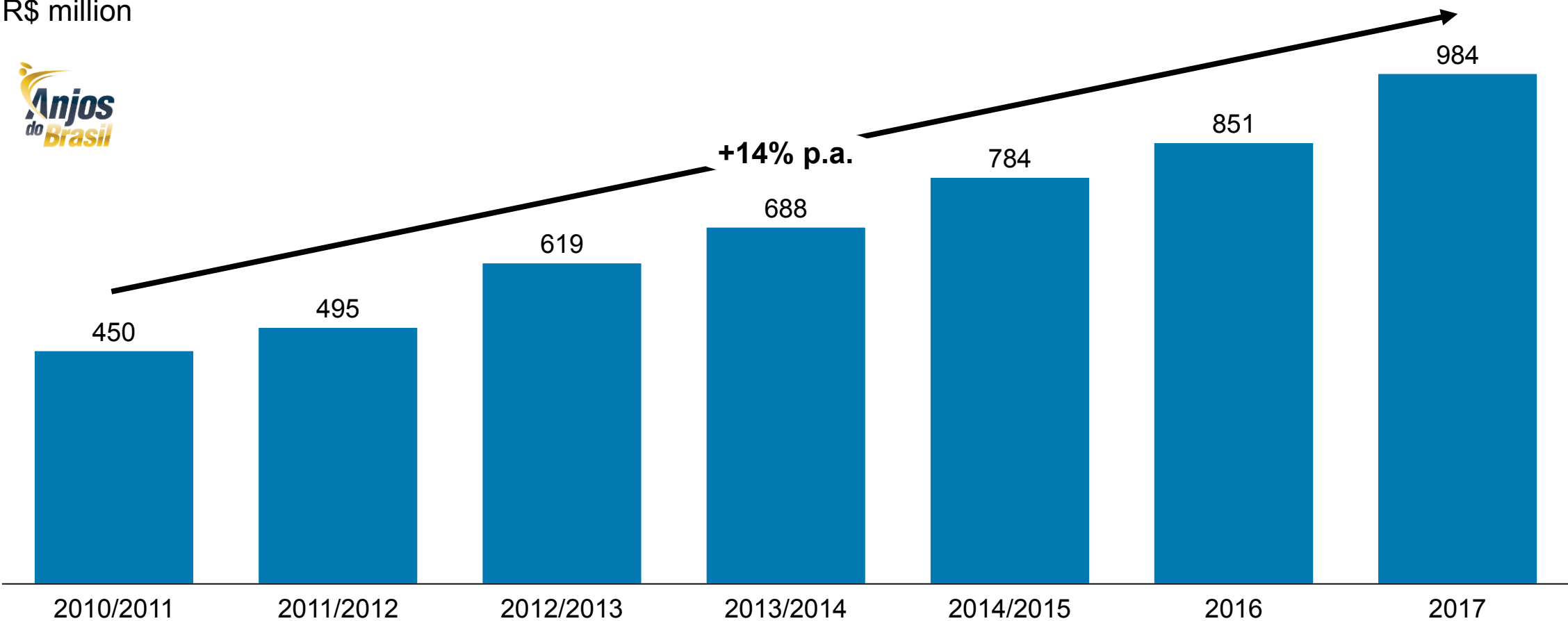


Source: ABStartups "Radiografia Startups Brasileiras" (2017)



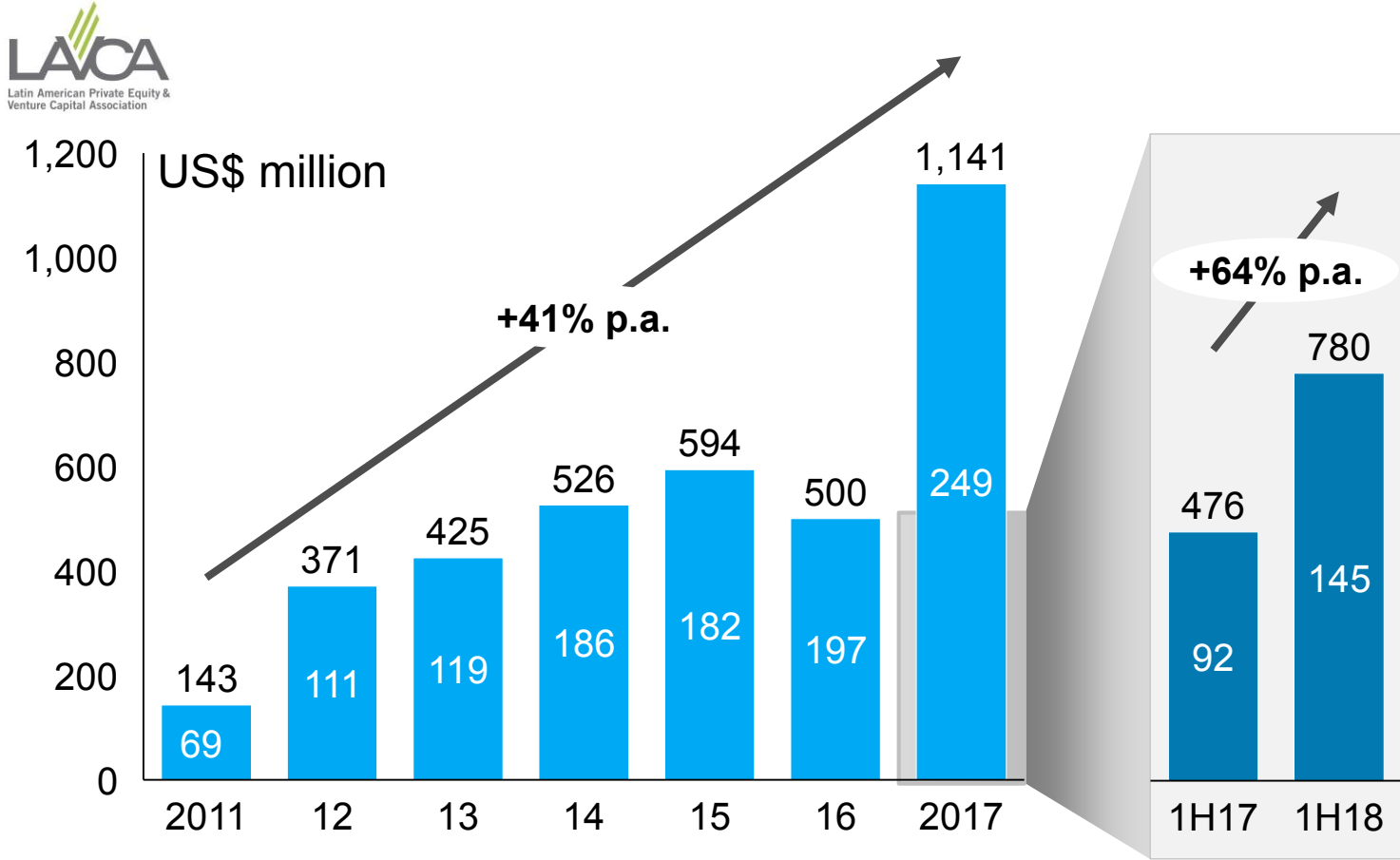
Angel investment is growing quickly in Brazil

Angel investment evolution
R\$ million



Brazil accounts for 70% of the VC, private equity and private investment activity in Latin America, totaling US\$ 546 million in deals in just the first half of 2018

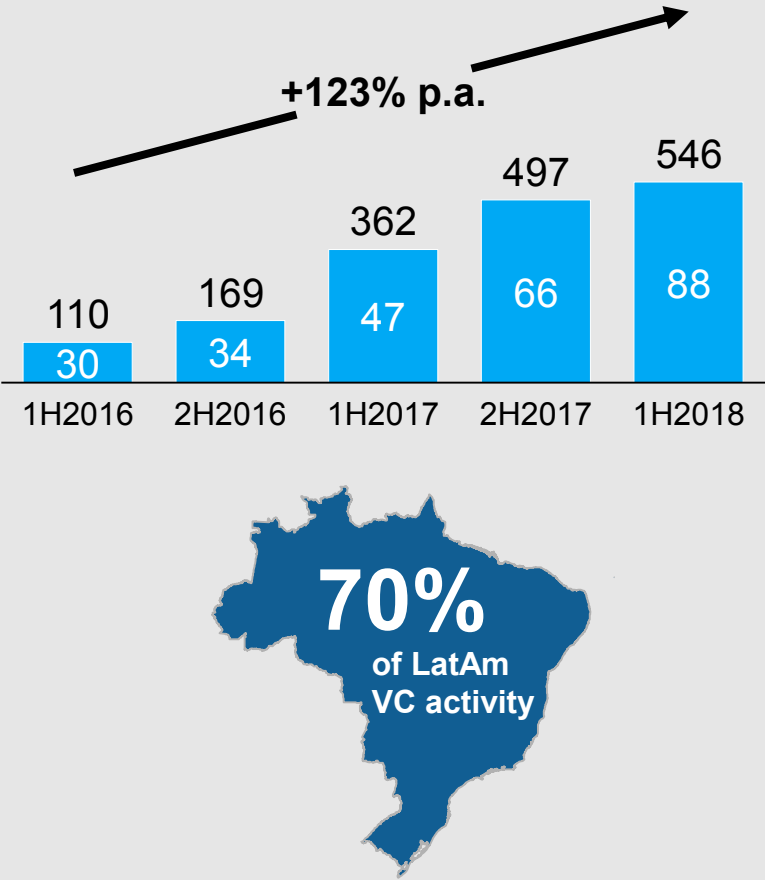
Investment in LatAm VC deals
US\$ million, number of deals



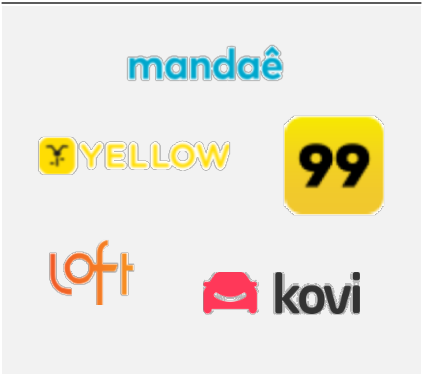
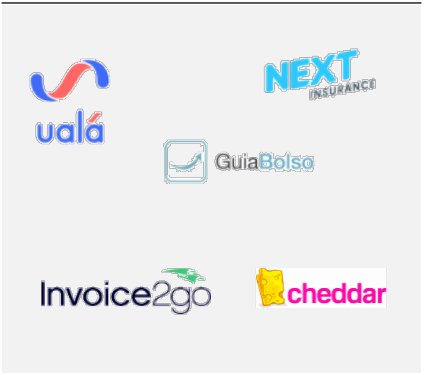
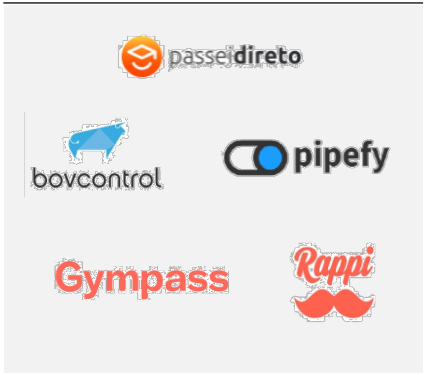
Source: LAVCA

Brazil

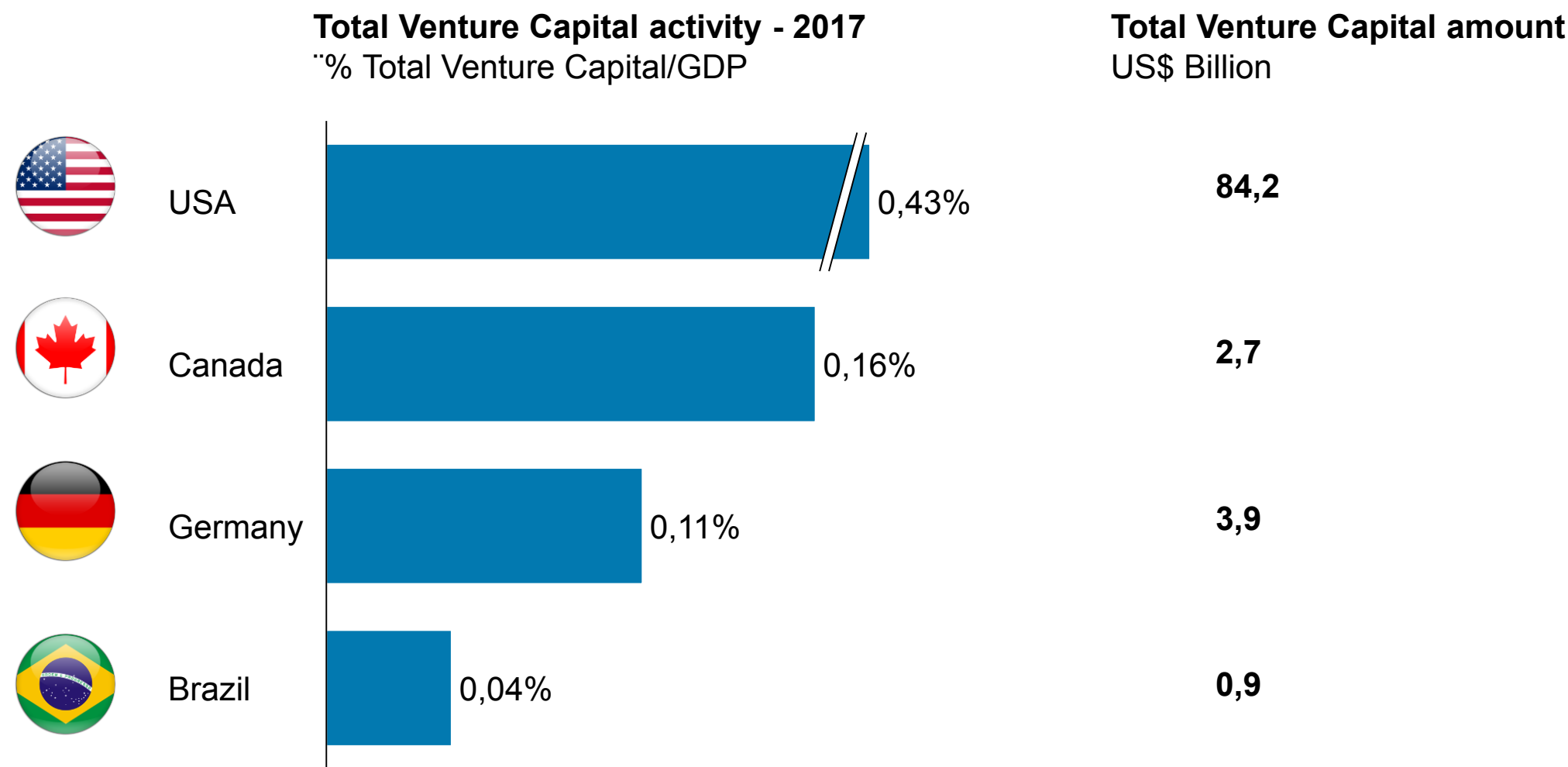
Investment in Brazil VC deals
US\$ million, number of deals



Examples of Brazilian VCs

Kaszek KaszeK 	Monashees  	Valor VALOR 	Inseed  	Redpoint  
Canary  	Ribbit  	QED Investors  	Endeavor Catalyst  	Redpoint eVentures  

In terms of venture capital as a share of GDP, Brazil lags mature nations



Many interesting deals were made in 2017...

Company	Sector	Amount invested US\$ million
 99	Transportation Tech	200
 movile we think mobile	Marketplace	135
 credits	FinTech	61
 dr.consulta o meu médico	Heathcare/Life Sciences	50
 Neoway	Big Data	45
 ifood	Food delivery	500
 GuiaBolso	FinTech	39
 Gympass	Marketplace	Private
 NETSHOES	Marketplace	Private

Source: LAVCA; Crunchbase



And Brazil's first unicorns were nominated in 2018, followed by IPOs and exits

Company	Sector	Amount invested US\$ million	 ¹	
 pagseguro uol	FinTech	2,300		
 Ascenty	IT (Data center)	1,800		
 stone ¹	FinTech	1,100		
 99	Transportation Tech	1,000		
 Gympass ²	Marketplace	500		
 ifood	Food delivery	500		
 ny bank	FinTech	330		
 arco Educar é criar valores	Education	194		
 mobile Sua empresa em movimento	Marketplace	124		
 Loggi	Transportation Tech	100		
 YELLOW	Transportation Tech	75		
 CX	Transportation Tech	60		
 descomplica	Education	17		
 conductor [*]	FinTech	Private		

¹ Considers disclosed private investments over US\$1bn, recently IPOs from companies with market cap over US\$1bn, and non-disclosed investments with market perspective over US\$1bn ² Deal executed in 2019

Source: Crunchbase; Startupi



With its first unicorns, Brazil joined the ranks of some leading countries



Startup ¹	Latest market cap ² US\$ billion
 pagseguro uol	8.8
 stone	8.4
 nu bank	4.0
 Ascenty	1.8
 arco Educar é criar valores	1.3
 Gympass	1.1
 99	Private
 ifood	Private

1 Considers disclosed private investments over US\$1bn, recently IPOs from companies with market cap over US\$1bn, and non-disclosed investments with market perspective over US\$1bn
 2 For public companies, reference value on Mar 8th, 2014
 3 CB Insights criteria

Global unicorns³



**Brazil has
many
innovation
hubs, with
most startups
in eight states
and Distrito
Federal**

Source: ABStartup, Press clipping (2019)



■ Detailed next

São Paulo startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

1 São Paulo



2 Campinas



5 Piracicaba



3 Ribeirão Preto



6 Sorocaba



4 São Jose dos Campos

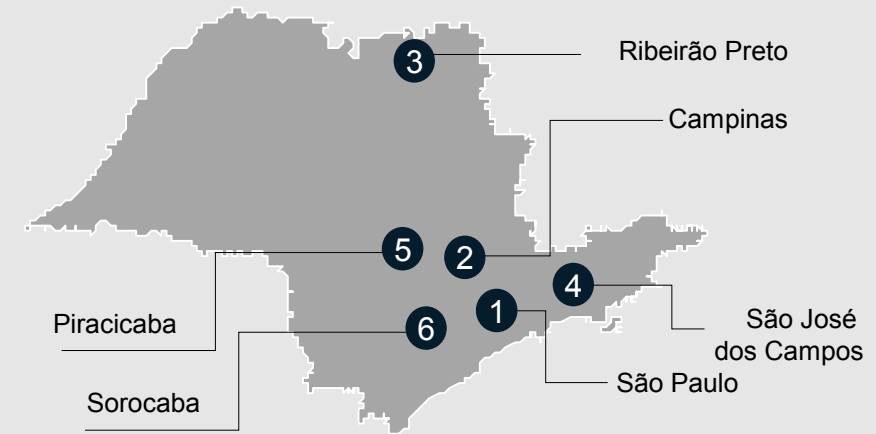


3,300+
startups

25+
incubators

15+
accelerators

600+
higher education
institutions



Santa Catarina startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

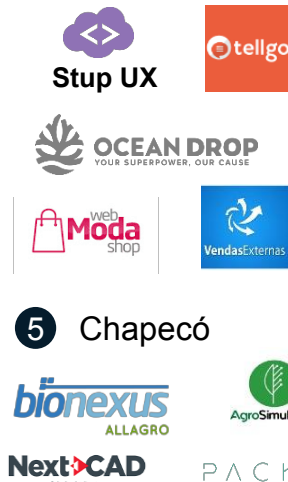
1 Florianópolis (Startups SC)



2 Joinville



3 Balneário Camboriú



4 Blumenau



5 Chapecó

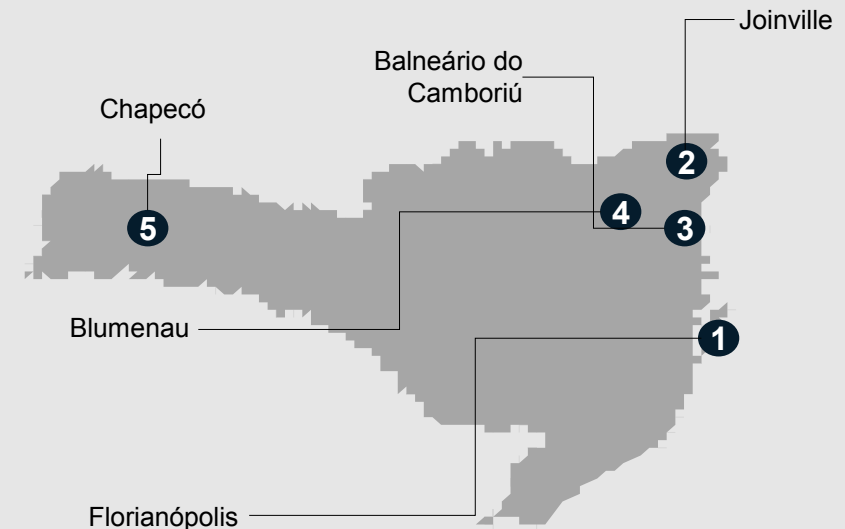


550+
startups

20+
incubators

5+
accelerators

90+
higher education
institutions



Minas Gerais ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



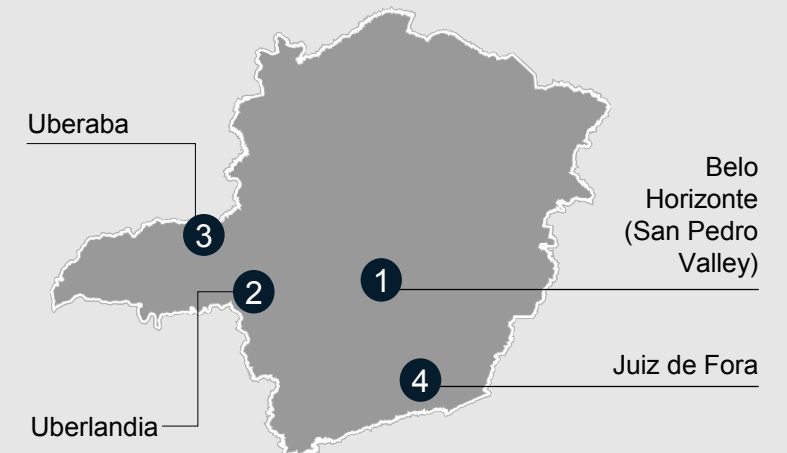
890+
startups

15+
incubators

10+
accelerators

290+
higher education
institutions

Startups



Rio de Janeiro startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



750+
startups

25+
incubators

10+
accelerators

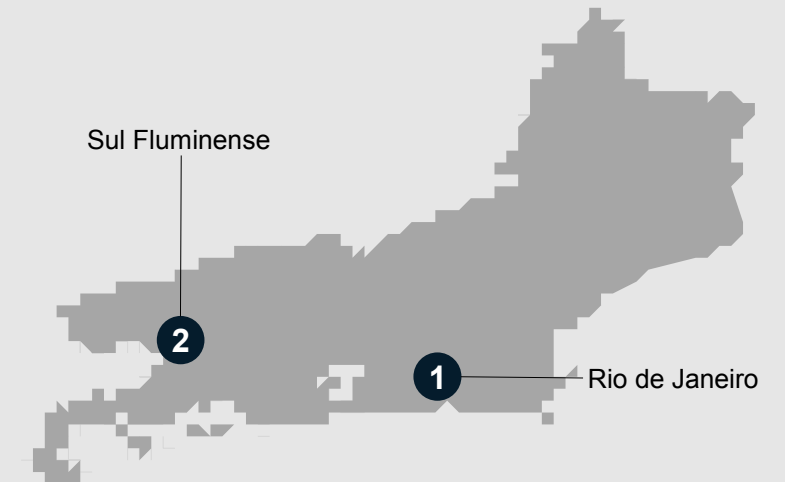
130+
higher education
institutions

Startups

1 Rio de Janeiro



2 Sul Fluminense



Paraná startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

1 Curitiba



2 Ponta Grossa



3 Londrina



4 Maringá

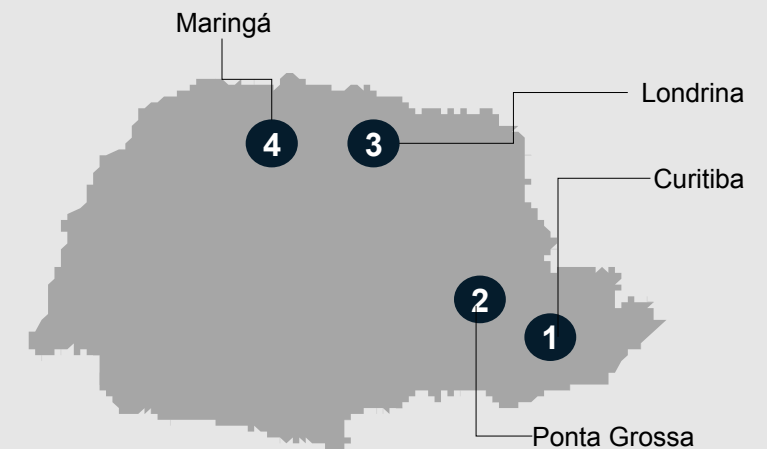


580+
startups

7+ incubators

9+
accelerators

180+
higher education
institutions



Rio Grande do Sul startup ecosystem

Highlights

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

1 Porto Alegre



2 Santa Maria



3 Caxias do Sul



4 Canoas



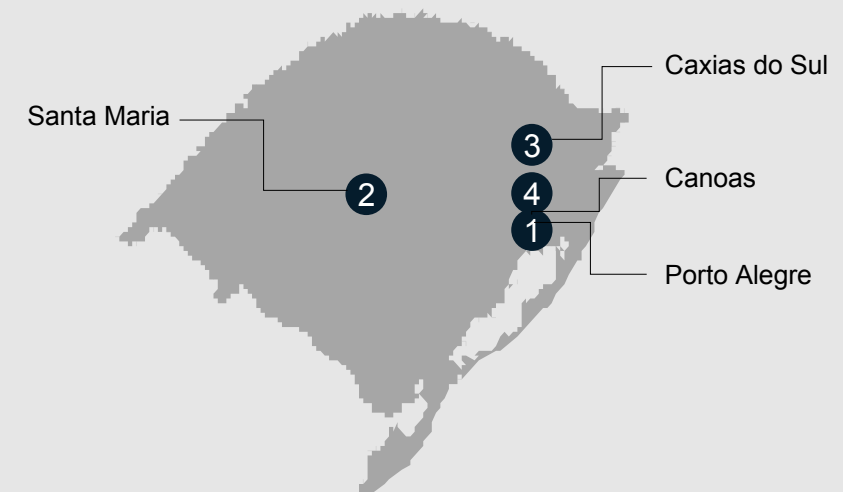
2017

915+
startups

8+ incubators

5+
accelerators

120+
higher education
institutions



Pernambuco startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions

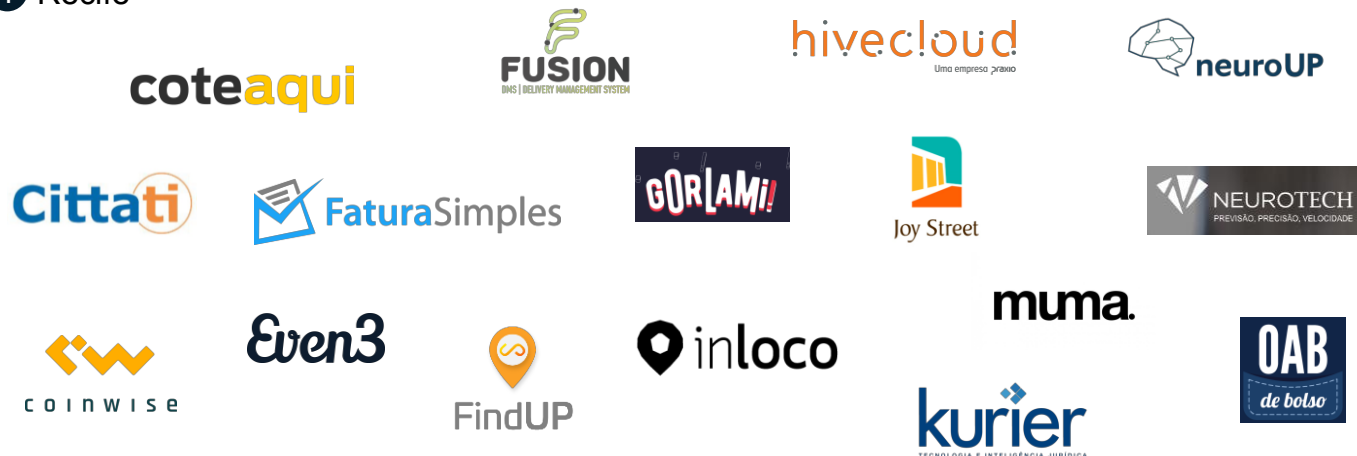


Investment / Support institutions



Startups

1 Recife



185+
startups

3+ incubators

4+
accelerators

105+
higher education
institutions



Bahia startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

1 Salvador



2 Feira de Santana

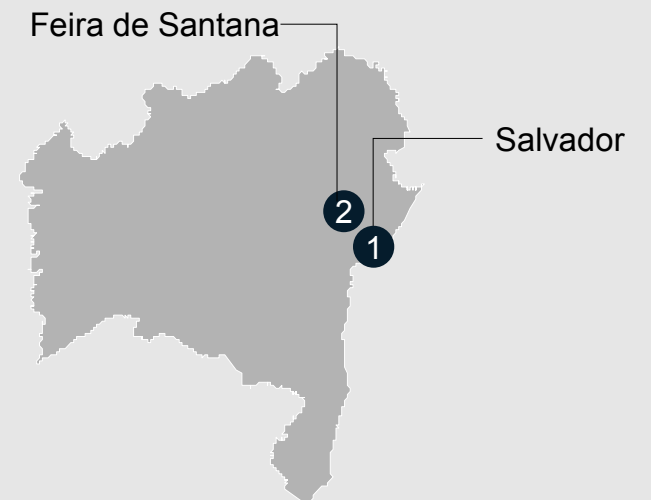


240+
startups

4+ incubators

4+
accelerators

105+
higher education
institutions



Distrito Federal startup ecosystem

Highlights

2017

Incubators/Accelerators



Education institutions



Investment / Support institutions



Startups

1 Brasília

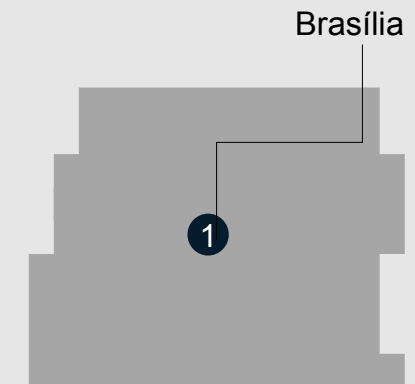


180+
startups

5+ incubators

6+
accelerators

60+
higher education
institutions



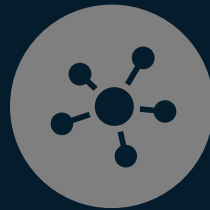
Chapters



Macroeconomics



Digital
Perspective



Entrepreneurship
Ecosystem

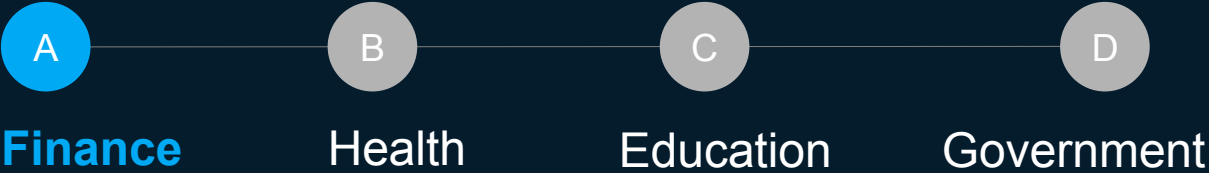


Sector Deep
Dives

Chapter



Sector Deep
Dives



Finance

State of the industry

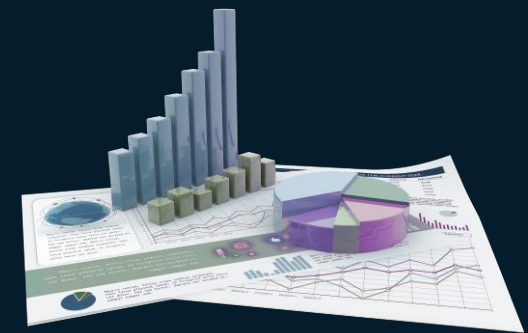
- The **financial services industry continues to be attractive in Brazil**, with assets growing faster than GDP, controlled delinquency, reduction in cost to income, steady profit growth and ROE of 14%.
- **The industry is highly concentrated, however, with plenty of room for financial inclusion.** Compared to developed countries, Brazil has low penetration of nearly all financial products, including bank accounts, credit – particularly long-term credit – investments and insurance.

Digital trends

- **Brazilian banking customers have gone digital** – more than half are active online or mobile banking users, and more than half of banking transactions are electronic.

Startup environment

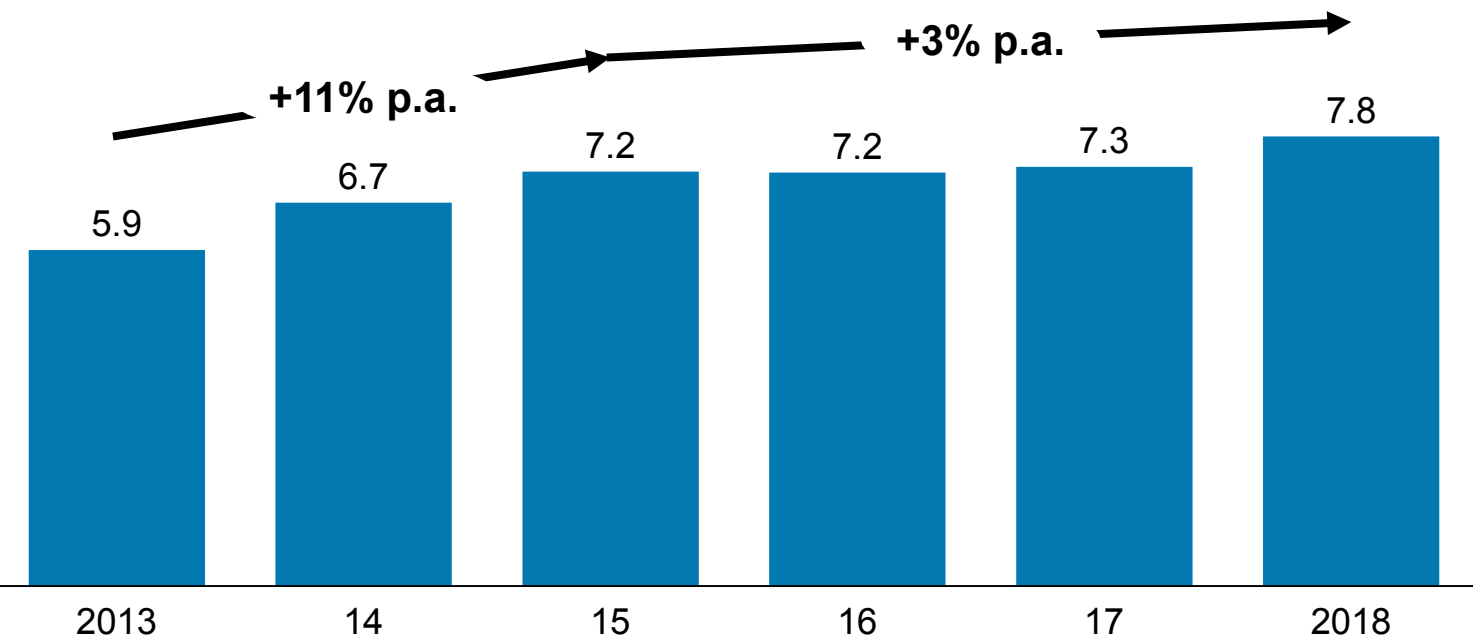
- Around **400 FinTechs are active in Brazil**, innovating and fighting for share across segments and products but particularly in payments, where two to four unicorns have emerged, depending on how you count them: Stone, Nubank, PagSegundo and XP.
- Disruption continues in this volatile market. Digital wallets have emerged, some credit- based FinTechs have gone through several funding rounds, and digital banks are acquiring new clients by the millions.
- Some of this disruption is being led by incumbents, such as Bradesco/Next, Banco Original, Caixa/Youse, SafraPay, BB/Cliclic, Santander/Openbank.



Total banking assets in Brazil continues to grow, but at a slower rate

 State of the Industry

Total banking assets
R\$ trillion



Source: BCB



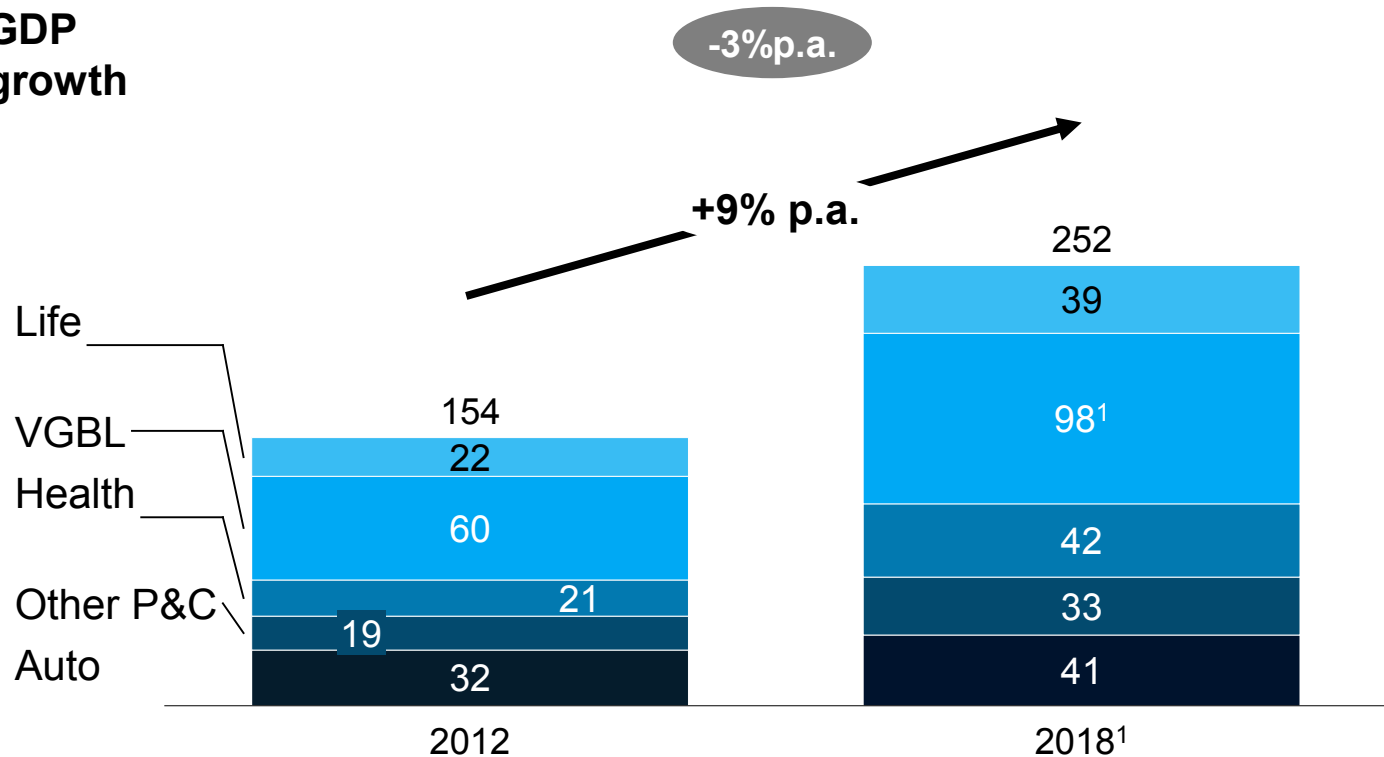
The insurance sector is growing faster across lines

State of the Industry

Premium evolution

R\$ billion

GDP growth



¹ 3Q2018 annualized

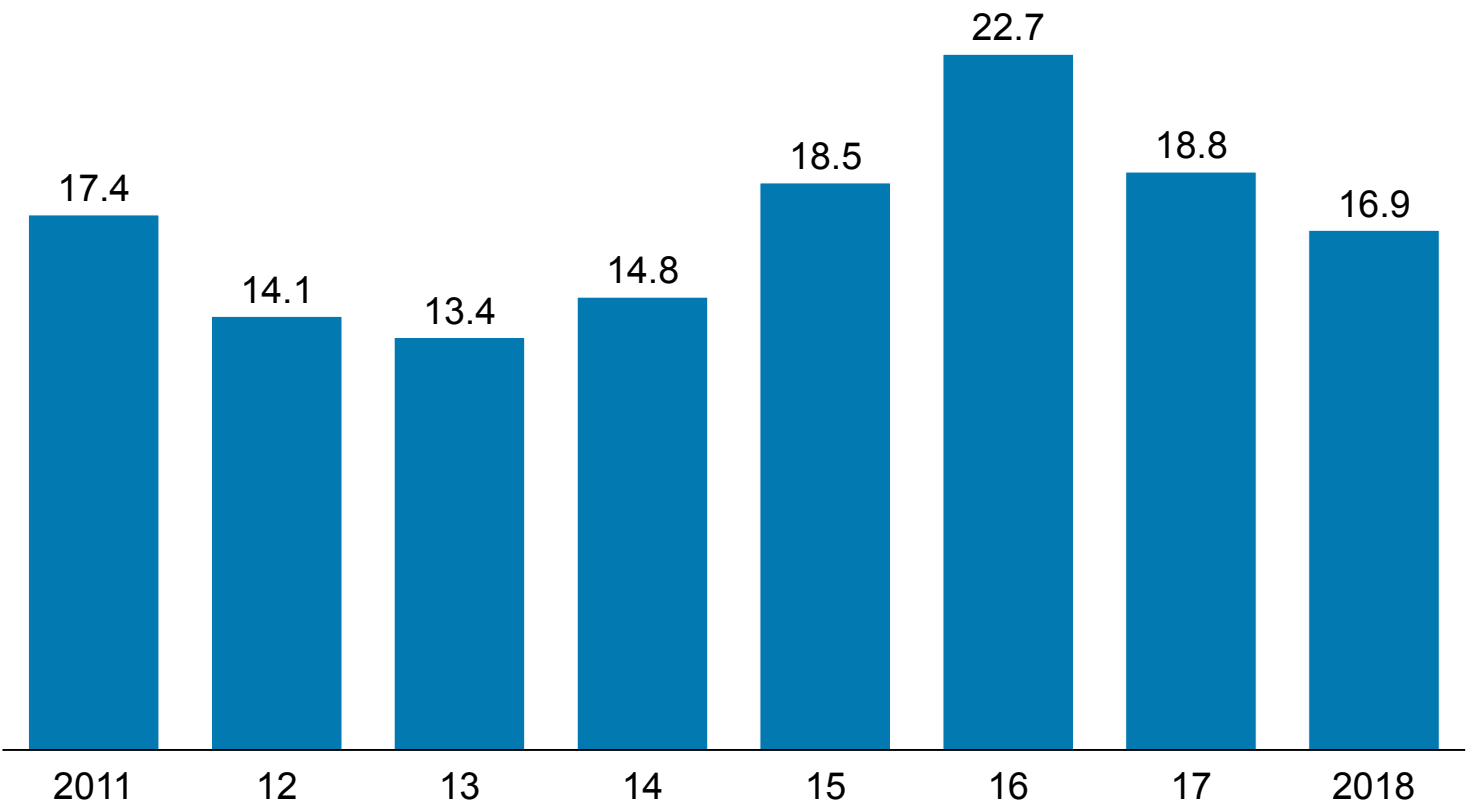
Source: SUSEP; McKinsey Global Insurance Pools; press clippings, McKinsey analysis



Financial services revenues have been under pressure due to spread compression

State of the Industry

Average spread of new credit transactions
%, end of period



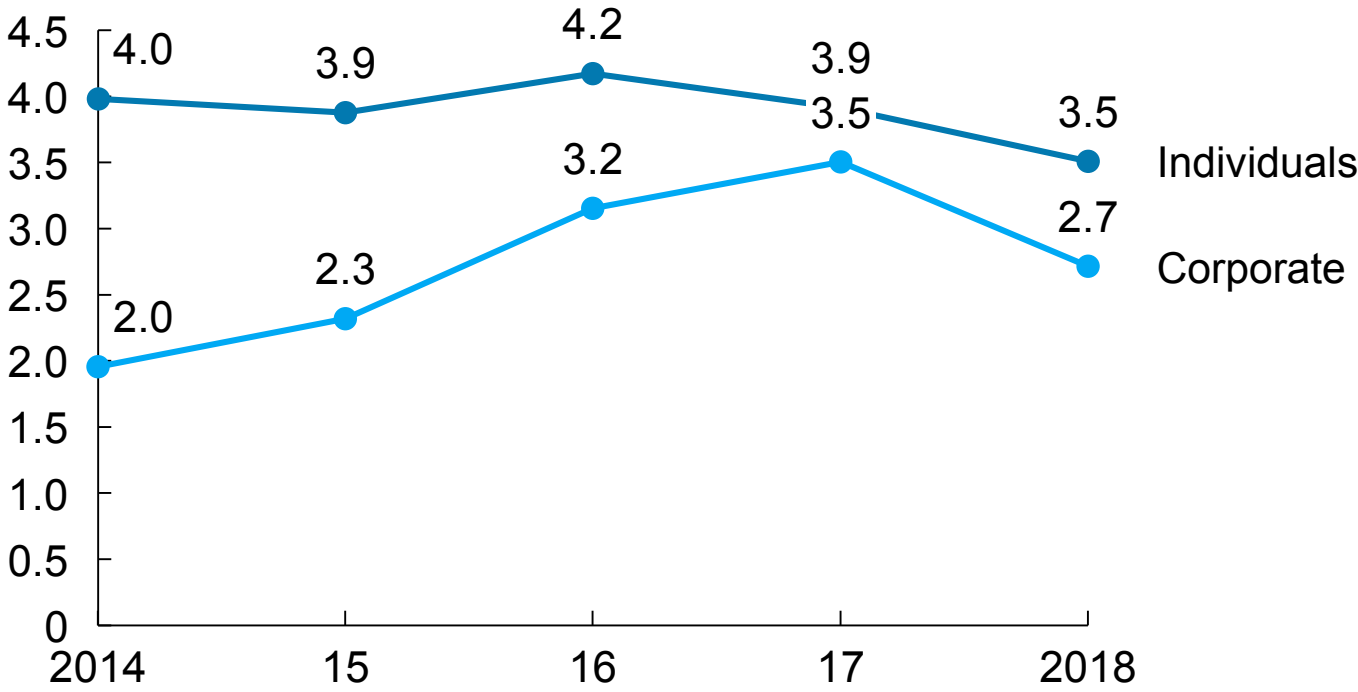
Source: BCB



Since highs in 2016 and 2017, delinquency rates have declined

State of the Industry

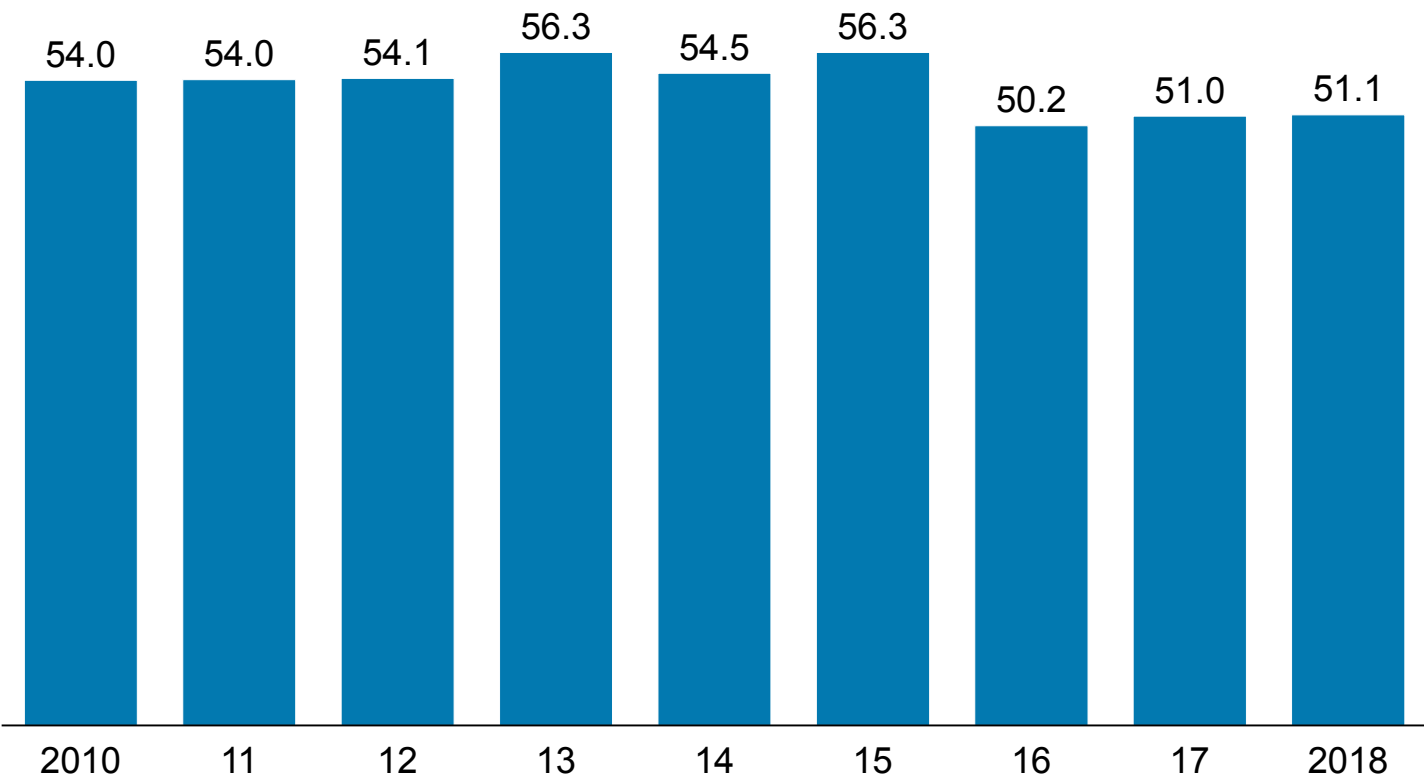
Delinquency rate – corporate and individual
%, more than 90 days



The industry has focused mostly on efficiency, significantly improving cost-to-income ratios

State of the Industry

Brazilian banking system cost-to-income ratios
%

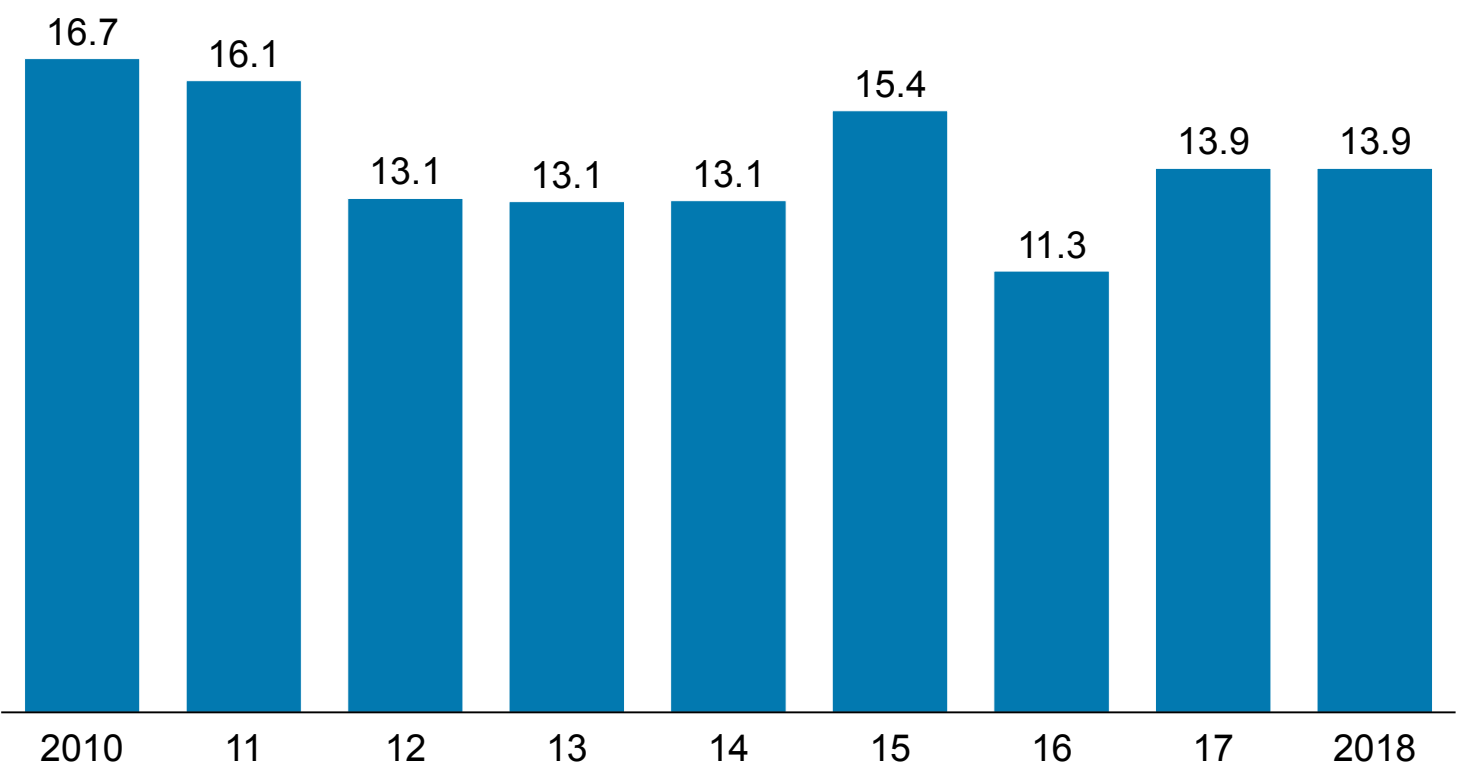


Source: BCB, McKinsey analysis

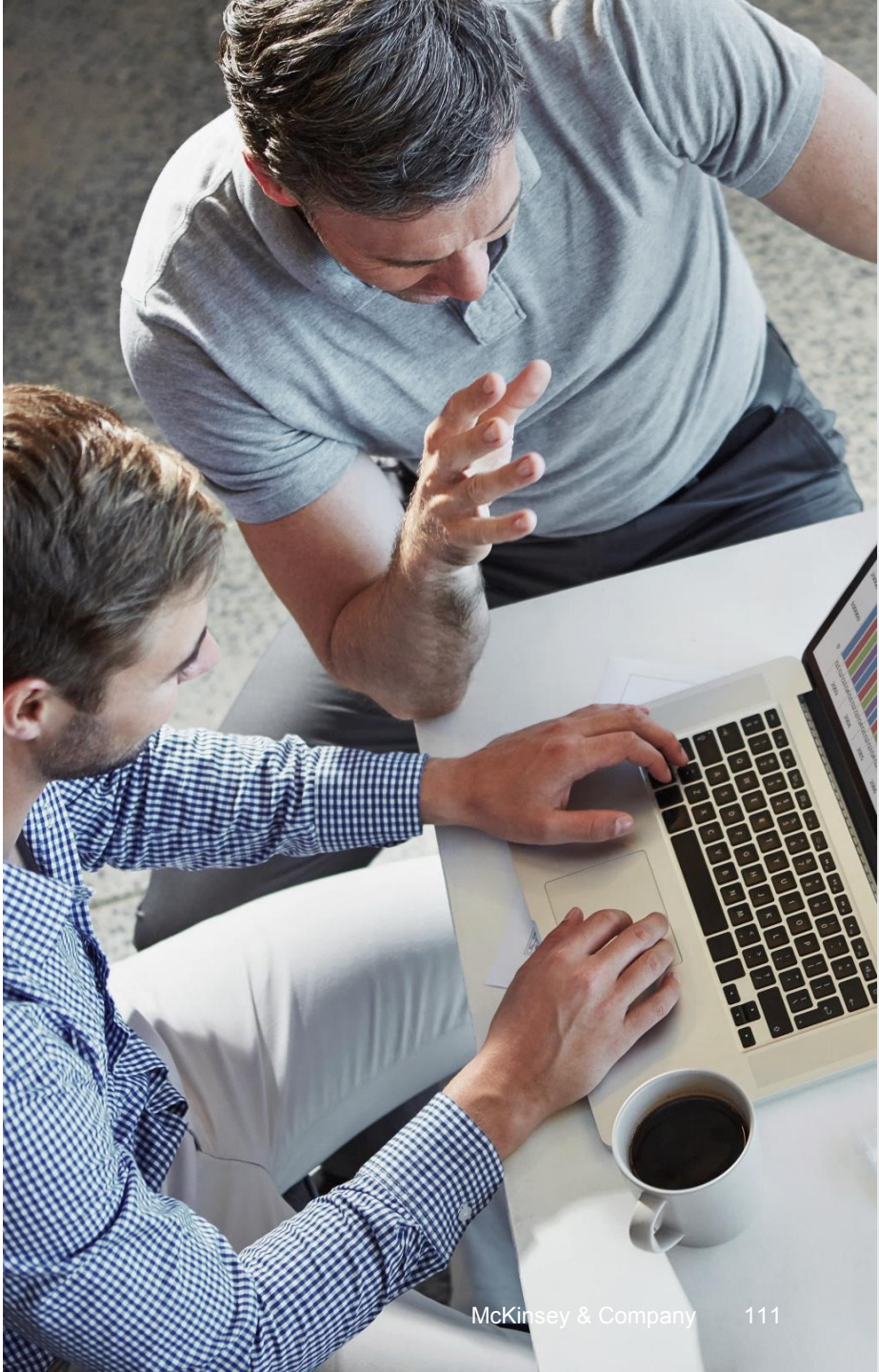
These trends have helped the financial sector become highly profitable, with ROEs of 11-17%

State of the Industry

Brazilian banking system ROE %



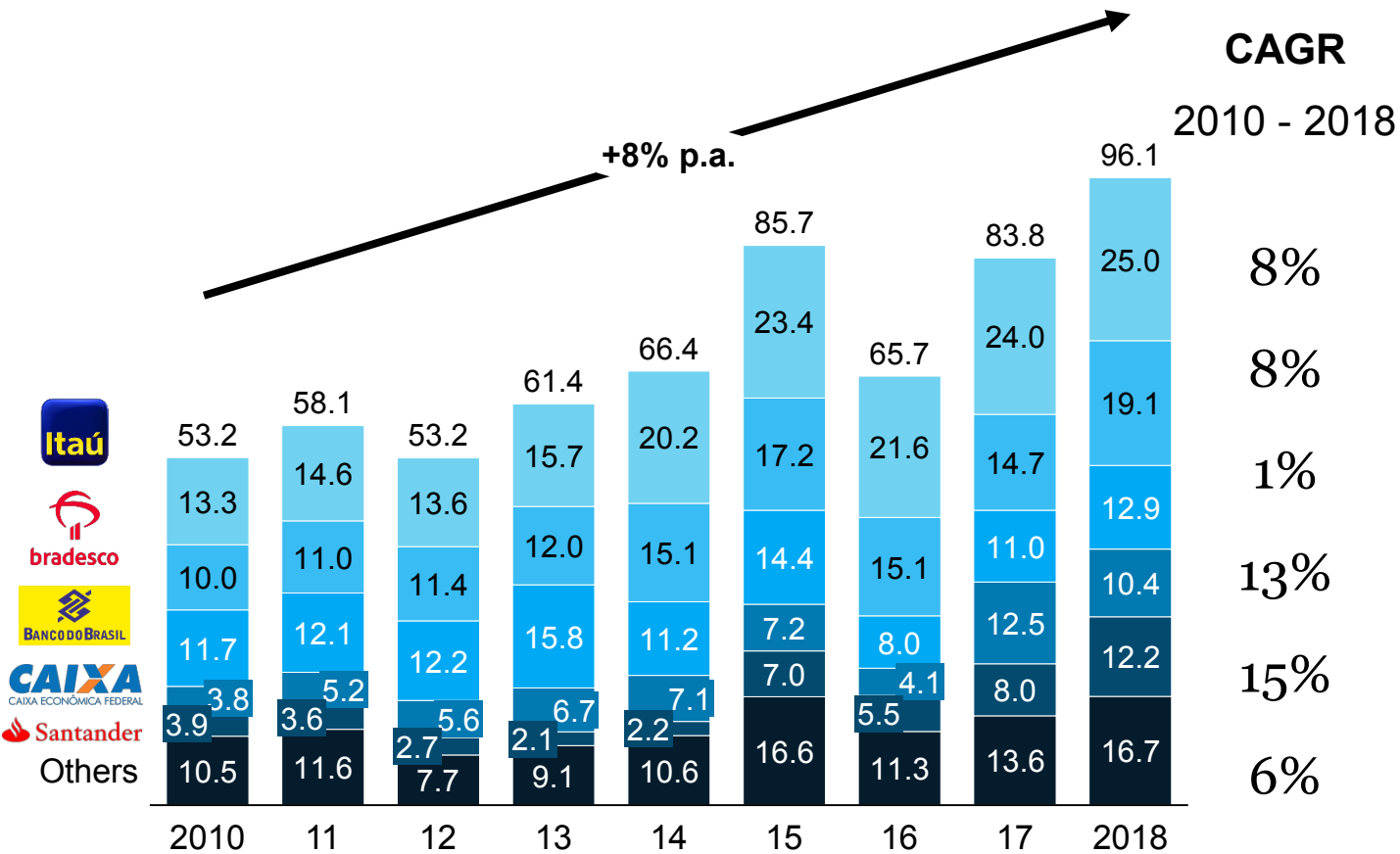
Source: BCB



This particularly impacts Brazil’s biggest banks, which have seen earnings rise significantly over the past decade

State of the Industry

Annual profit of Brazilian banks
R\$ billion

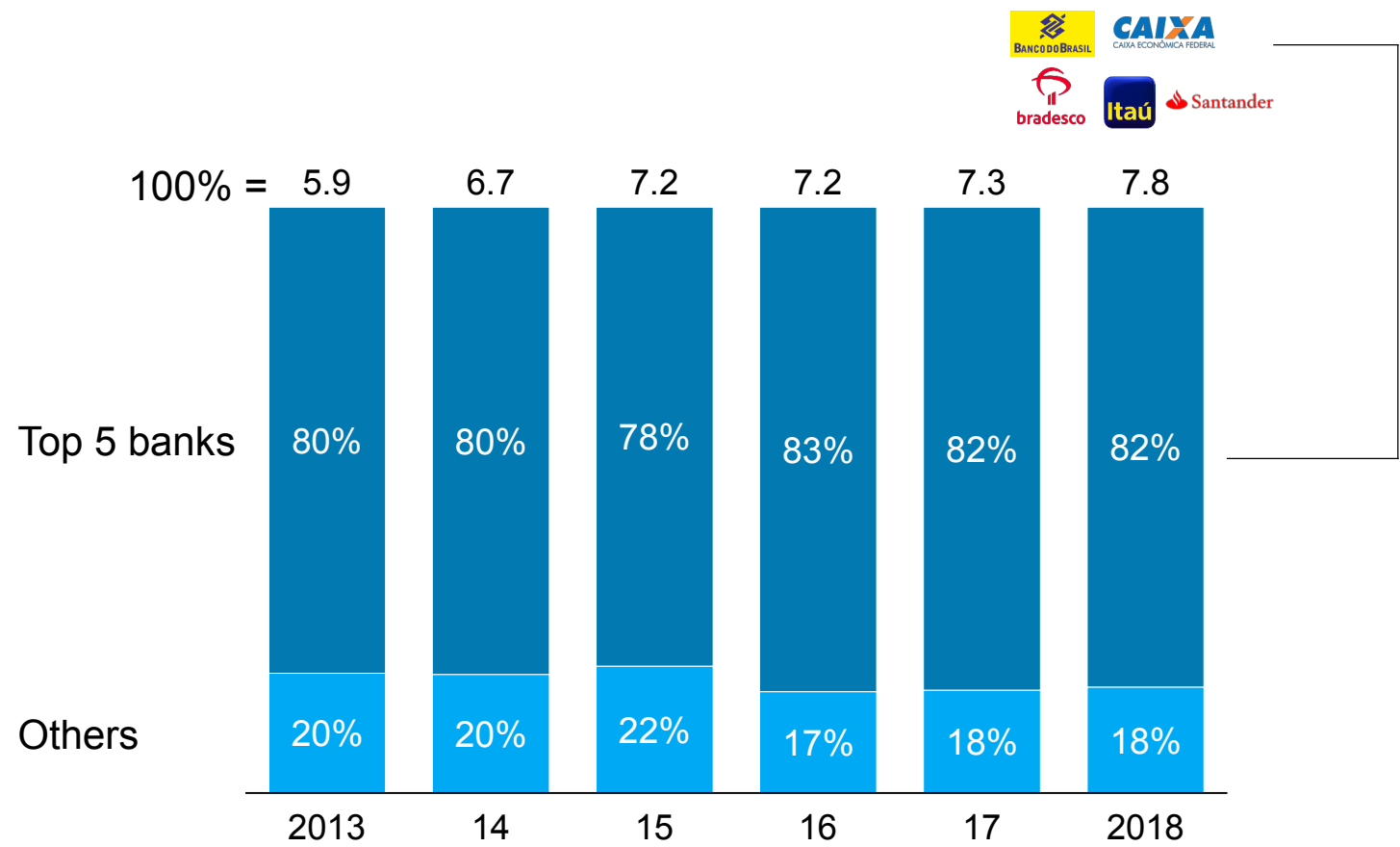


Source: BCB

Industry concentration is high and increasing

State of the Industry

Banking industry concentration
Share of total assets, R\$ trillion



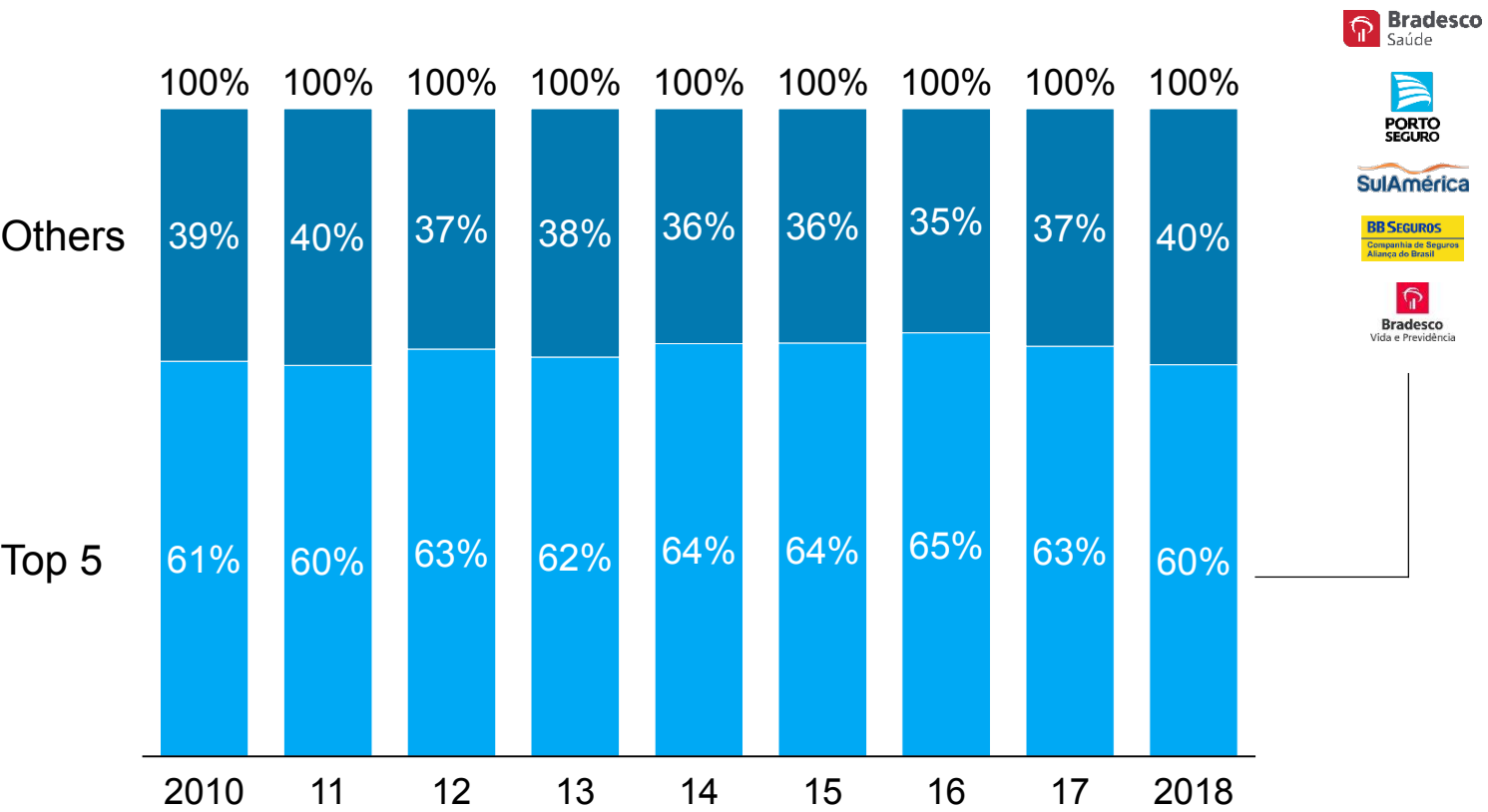
Source: BCB



The insurance market also shows high level of concentration

State of the Industry

Insurance concentration by GWP¹
%



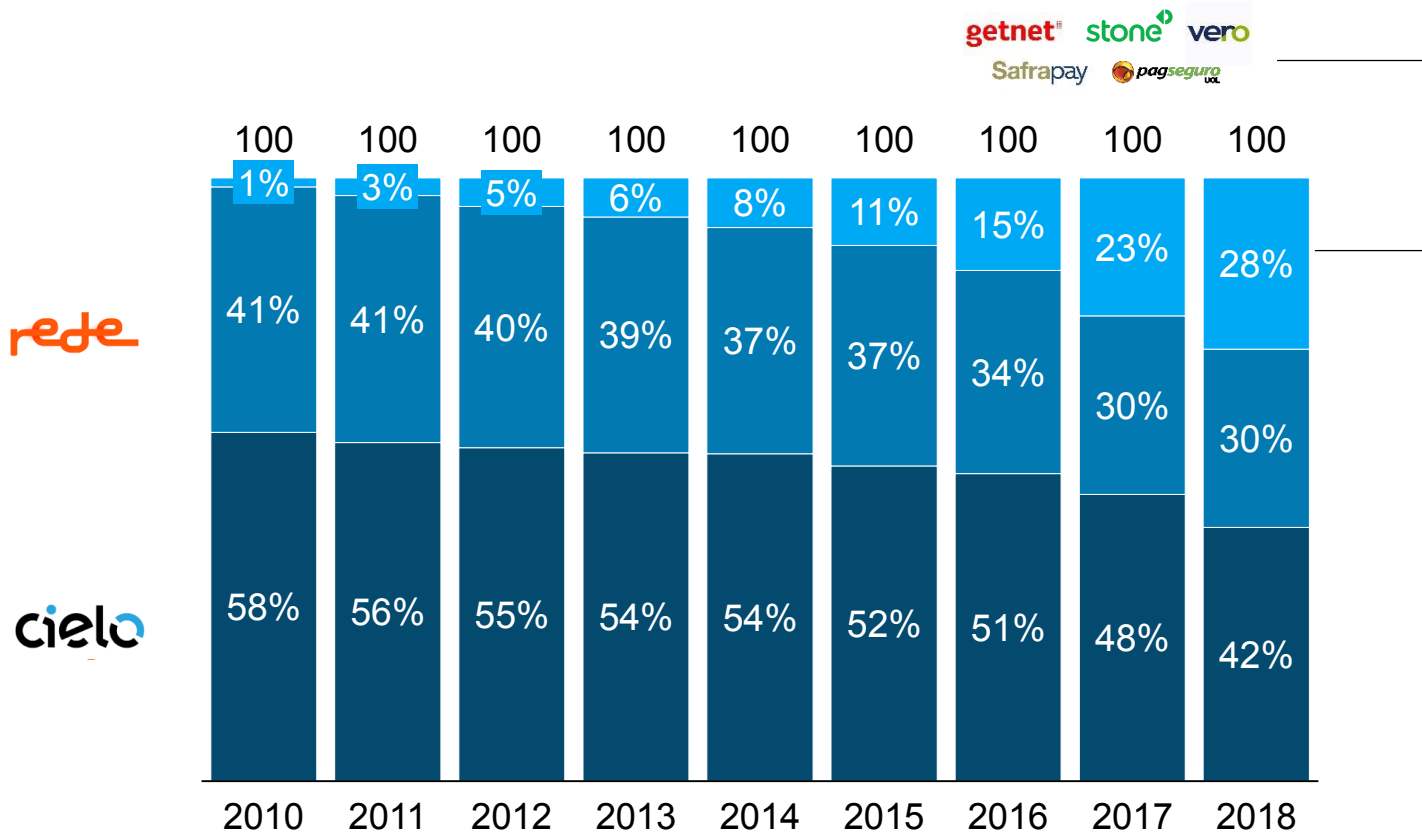
¹ Gross Written Premium



The payment industry has become much less concentrated with new entrants and FinTechs like Stone and Pagseguro

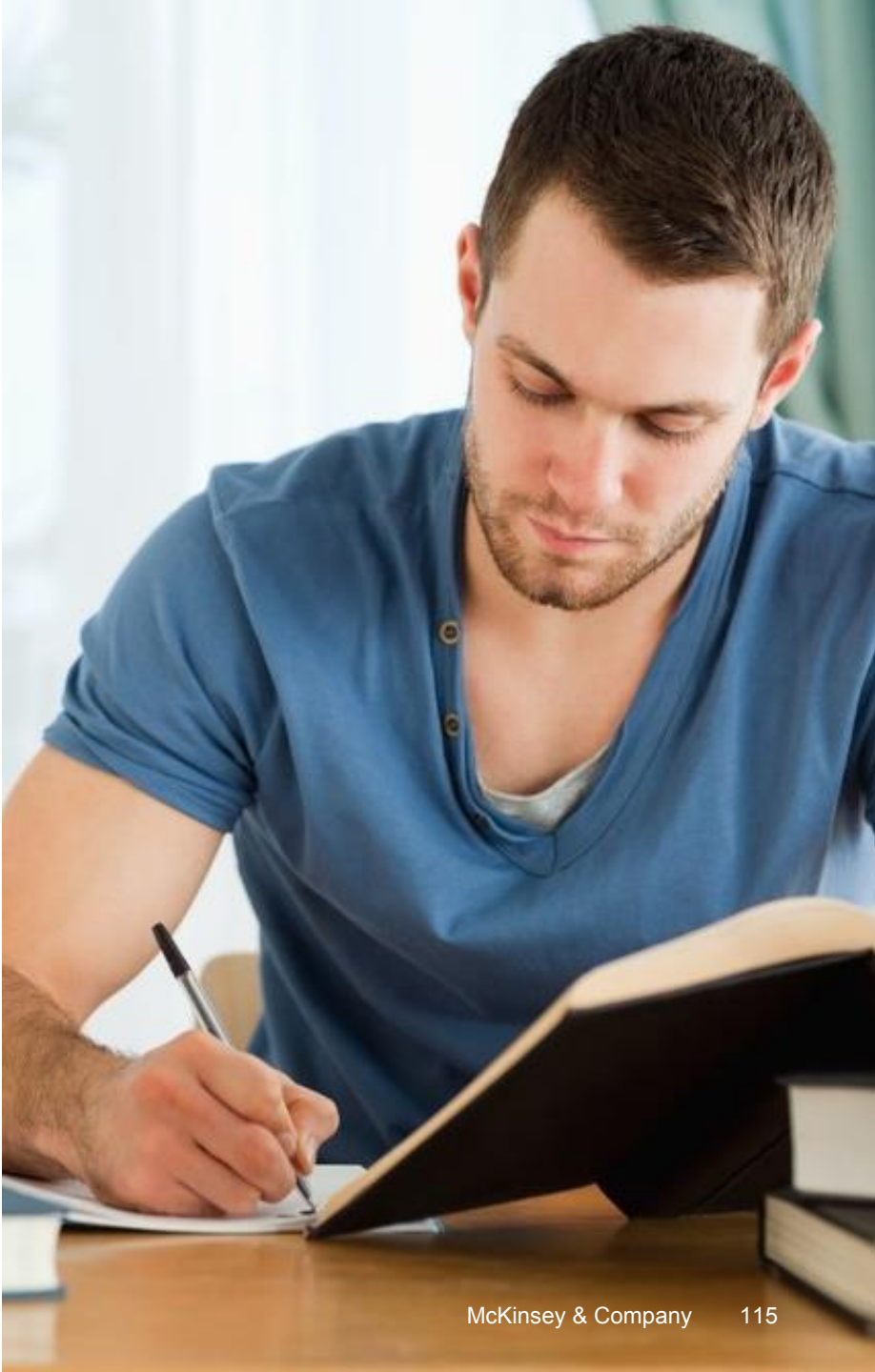
State of the Industry

Acquiring transaction volume market share %¹



¹ Specifically Acquiring

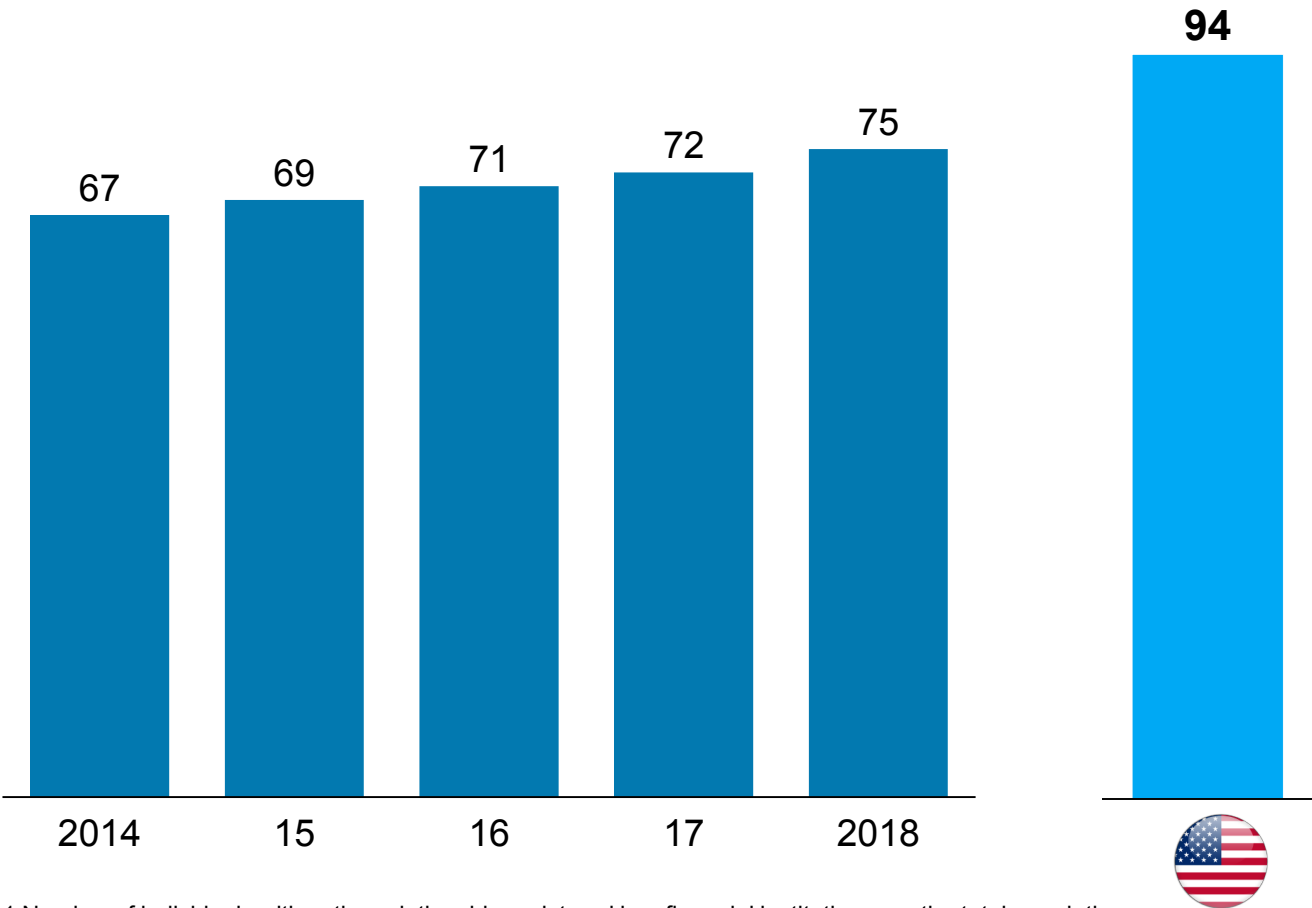
Source: ABECS, BCB, Companies' reports, McKinsey analysis



Financial inclusion remains a big opportunity: 25% of economically active people do not have a bank account

State of the Industry

Brazilian bank account holders¹
%

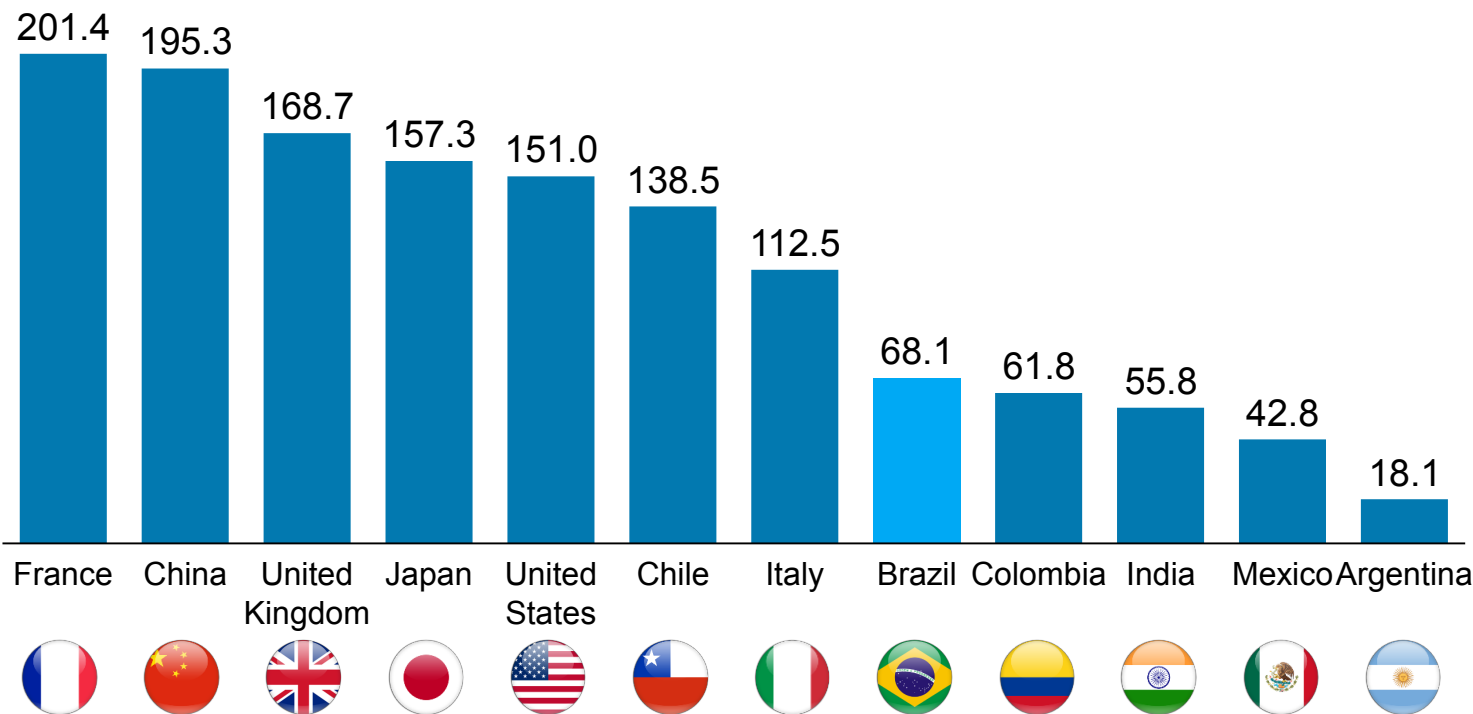


¹ Number of individuals with active relationship registered in a financial institution over the total population

Credit penetration, for example, is less than half that of developed nations

State of the Industry

Consumer Credit Penetration
% of GDP



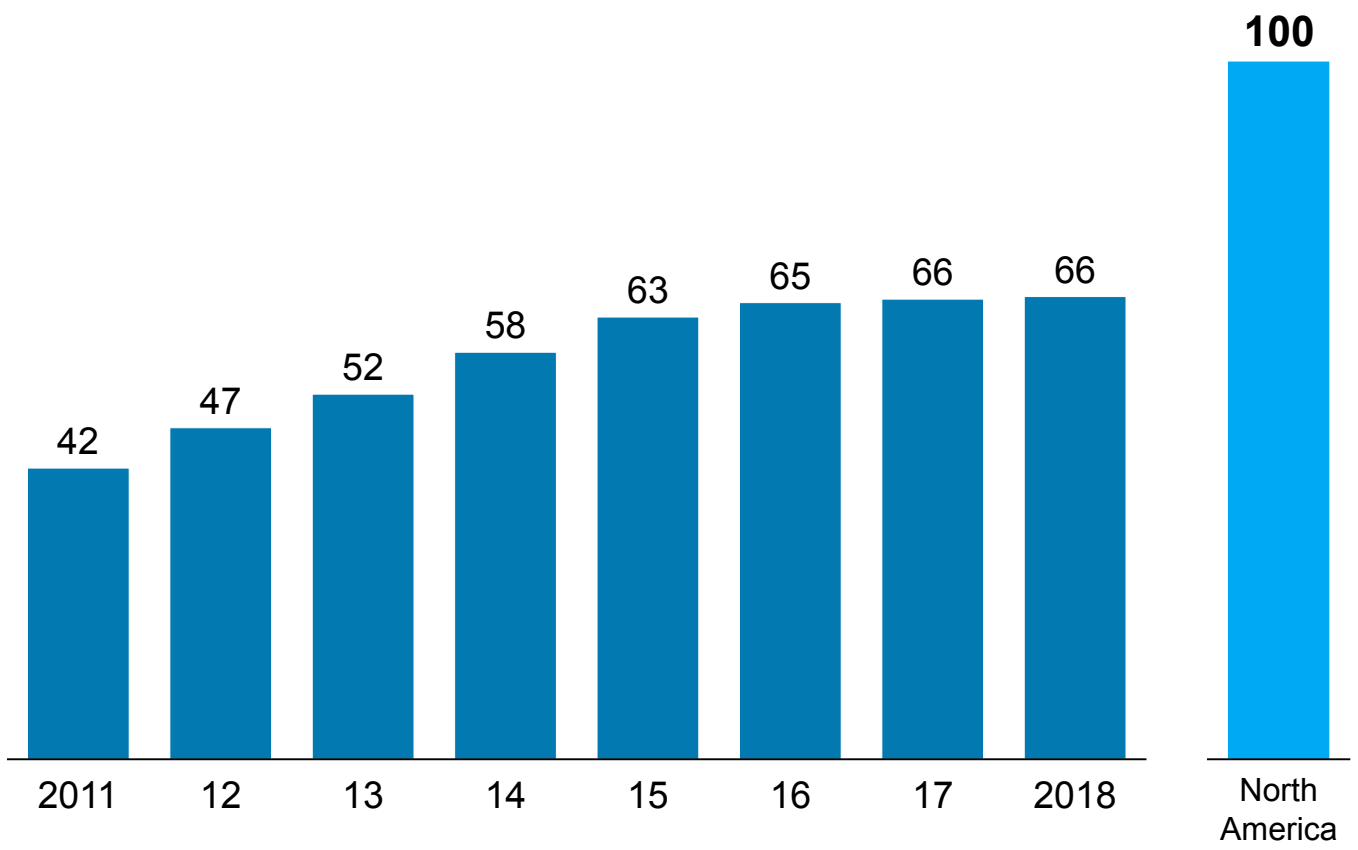
Source: BIS (3Q18)



Furthermore, Brazilians have a higher ratio of short-term vs. long-term debt compared to developed nations

State of the Industry

Credit portfolio average maturity - individuals
Months, end of period



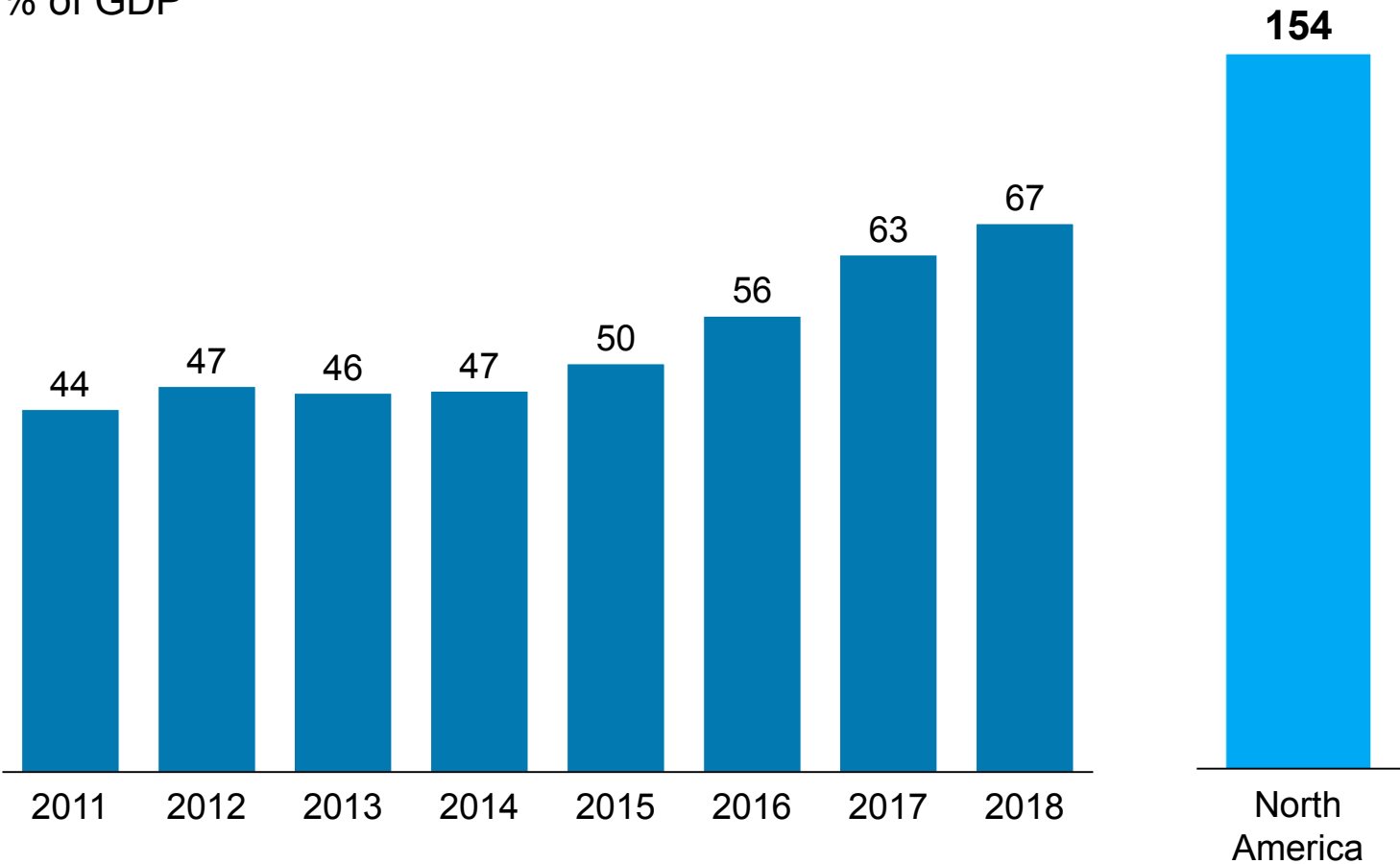
Source: BCB



The penetration of investment products is rising quickly but still lags the US and other developed countries by wide margins

State of the Industry

Assets under management
% of GDP



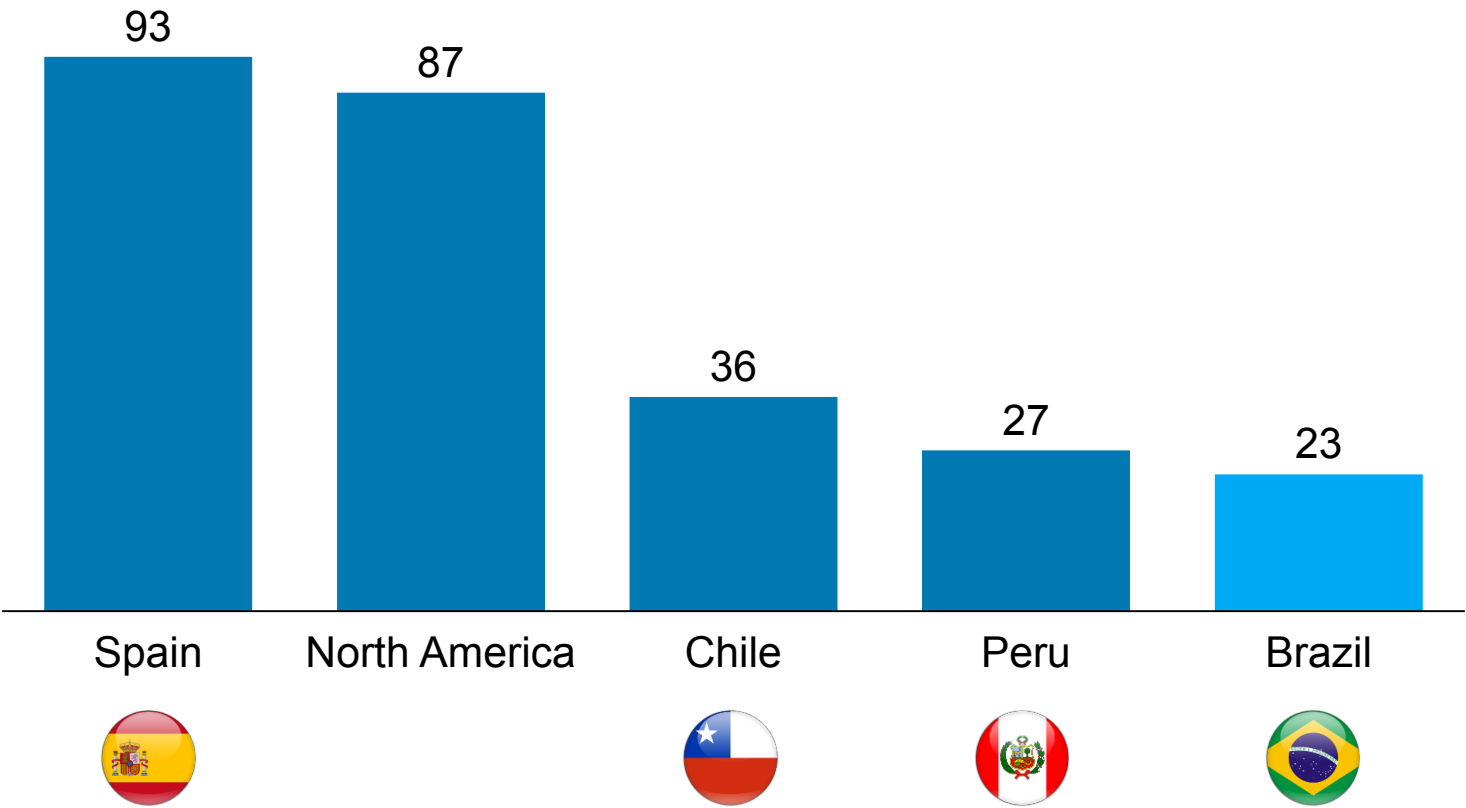
Source: ANBIMA, McKinsey “North American asset management in 2018: The New Great Game” (2018)



Insurance penetration is also low, with significant room for growth via customer education and product innovation

State of the Industry

Auto insurance penetration
% of total fleet



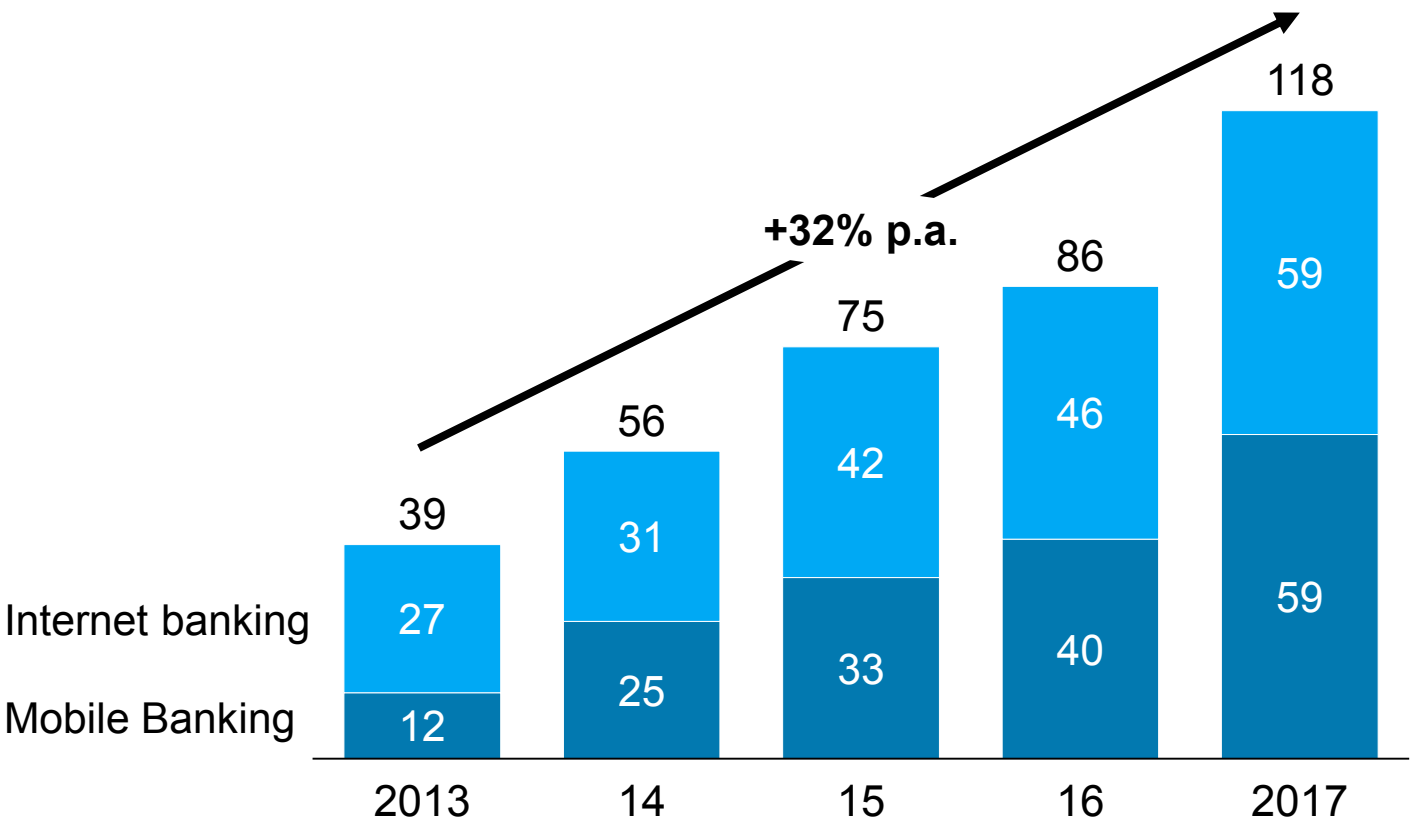
Source: McKinsey analysis; SUSEP; Companies' reports; press clippings (2017)



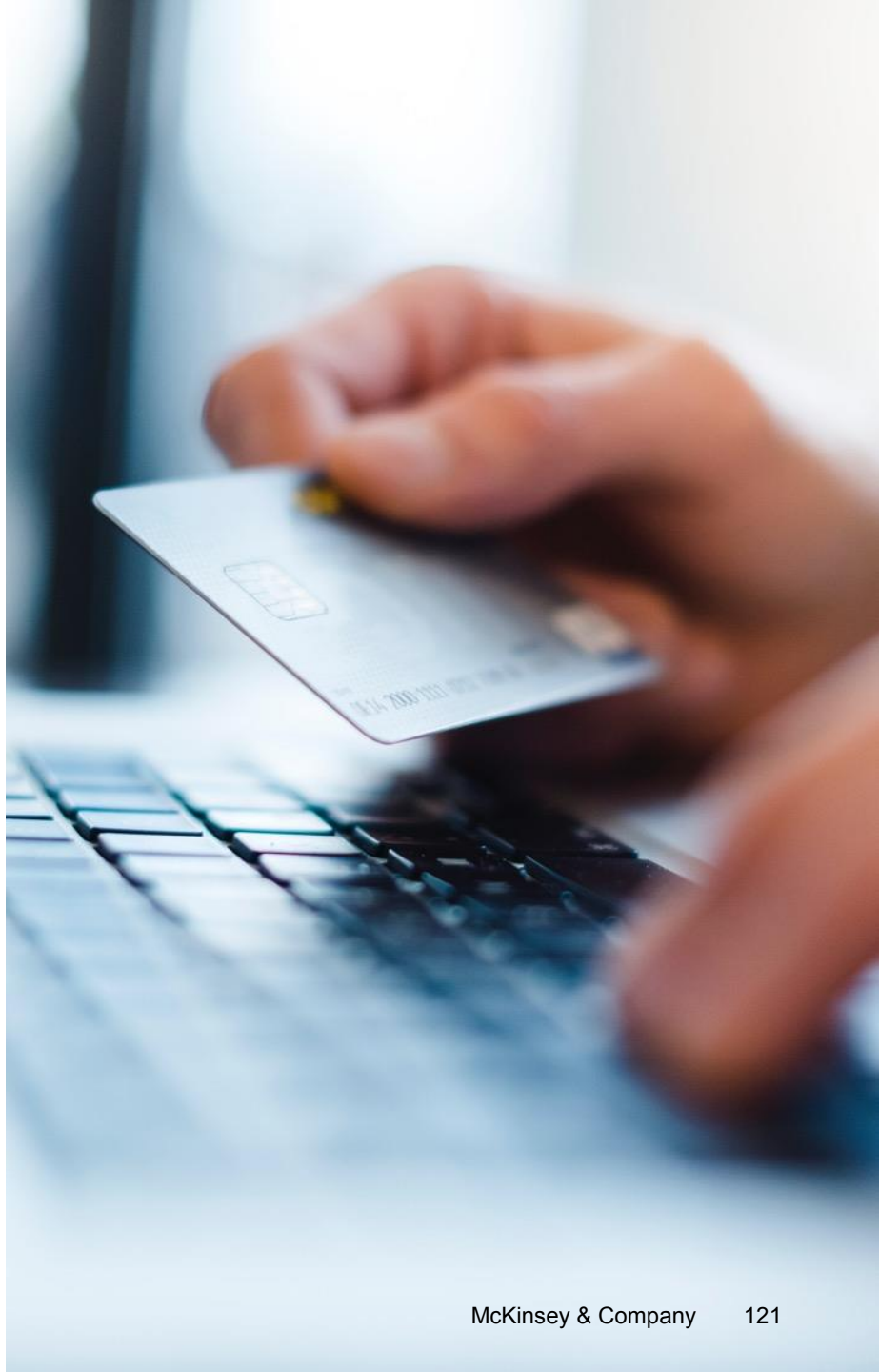
The number of internet banking users has increased dramatically, driven by mobile banking

 Digital trends

Number of internet and mobile banking users
Millions

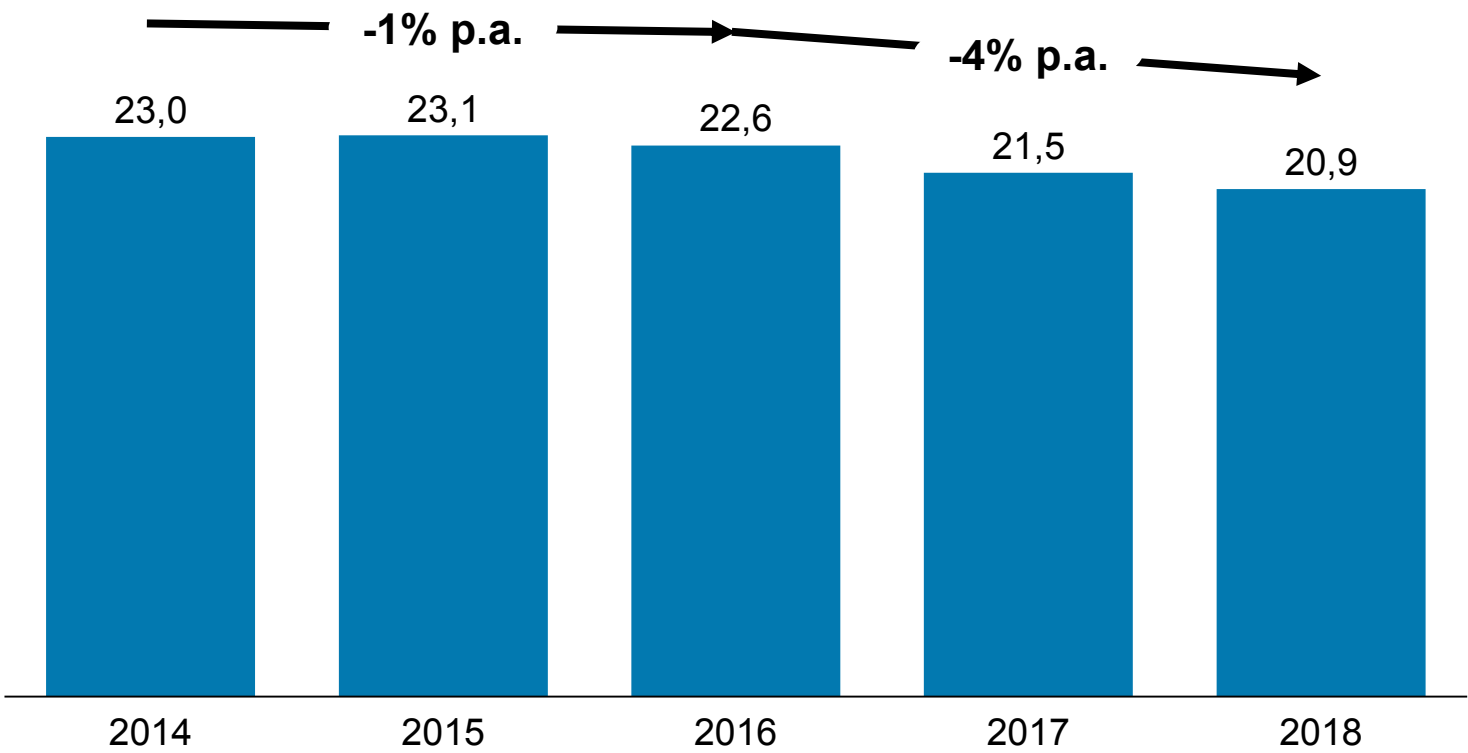


Source: Febraban



As a result, the number of bank branches is declining – a trend that is accelerating

 Digital trends
Number of bank branches
Thousands of branches

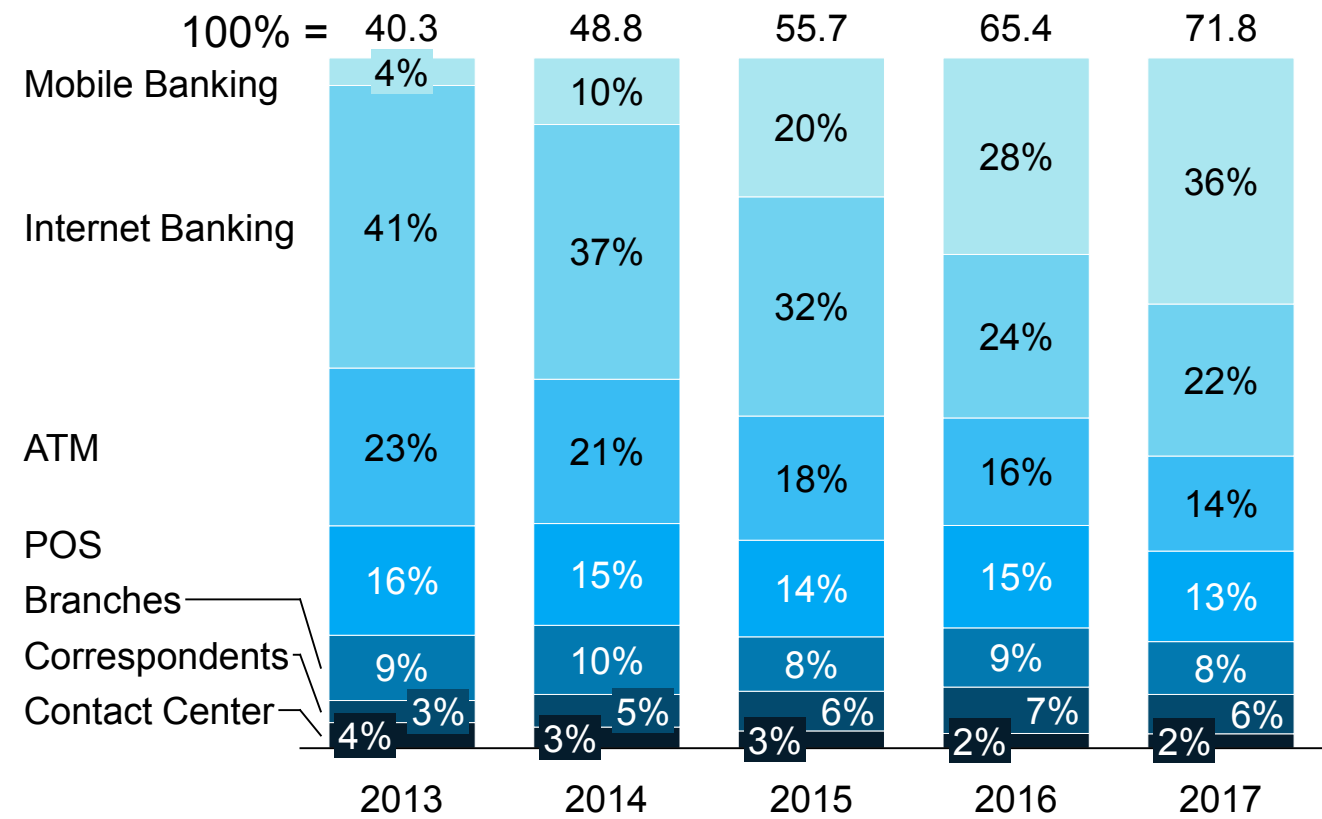


Mobile and internet already account for more than half of all banking transactions in Brazil

   Digital trends

Transactions by channel

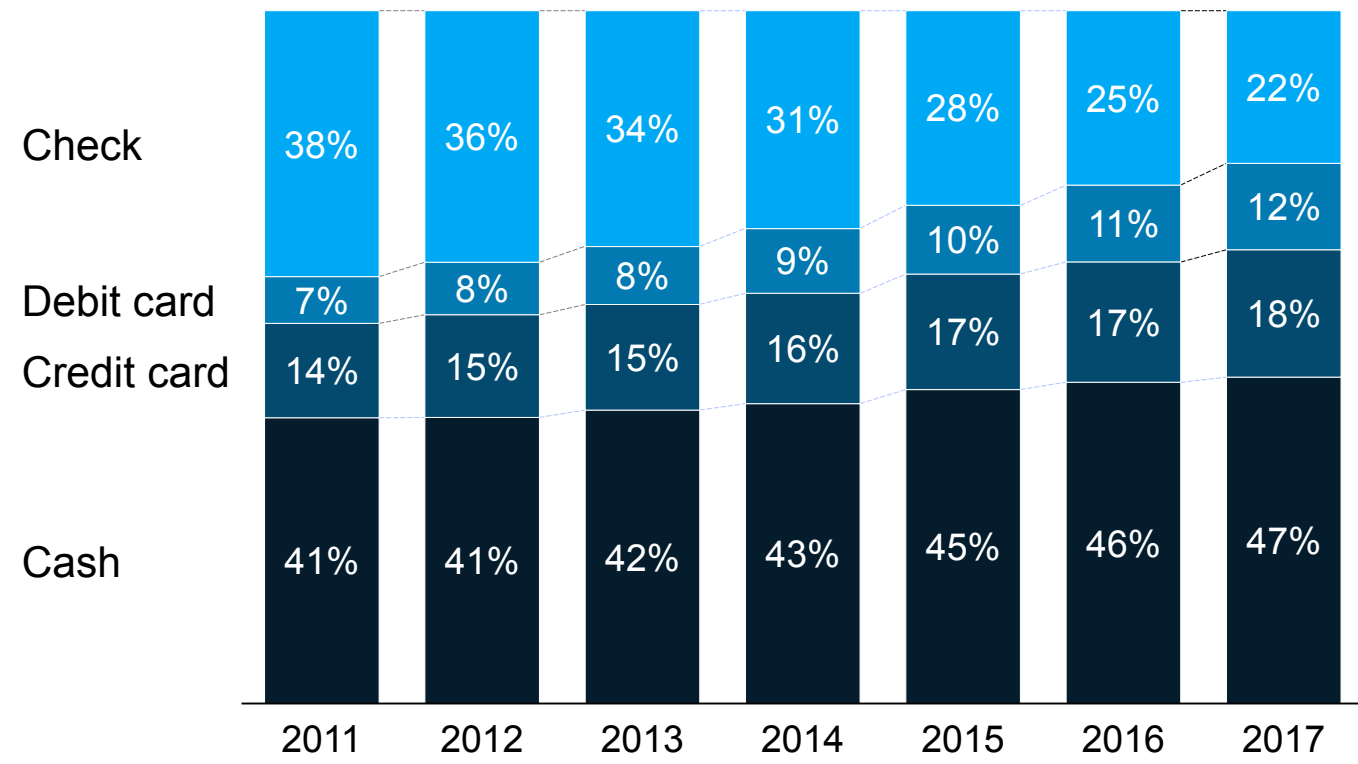
Billions of transactions, % of total transactions



Most payments are still made in cash, with a growing share of credit and debit card transactions

 Digital trends

Breakdown of payment transactions
% of transacted volume

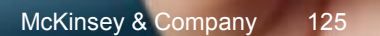


Source: BCB, McKinsey analysis, Euromonitor



FinTechs

Number of FinTechs

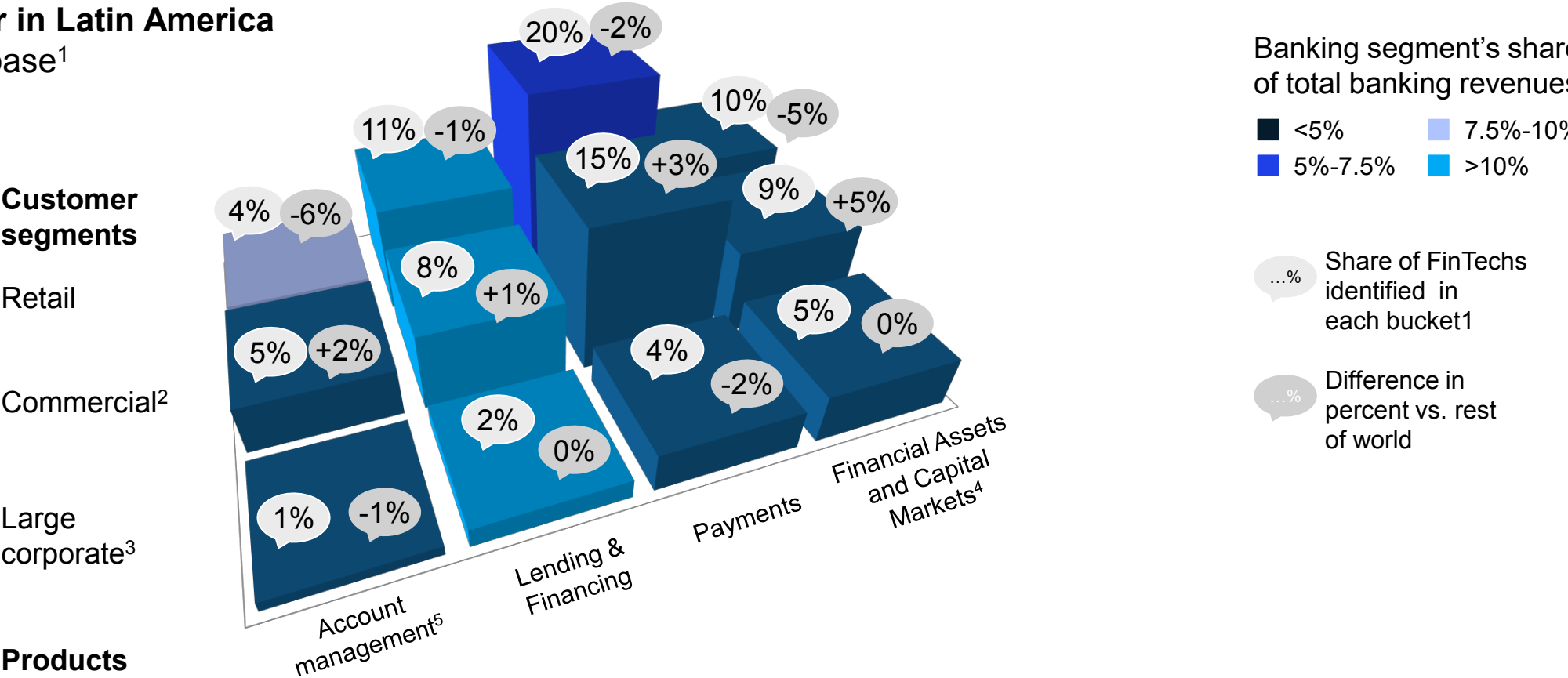


Payment-focused FinTechs represent the bulk of this growth but lending and financing are also important

Estimates

FinTechs

Share of number in Latin America
FinTechs in database¹



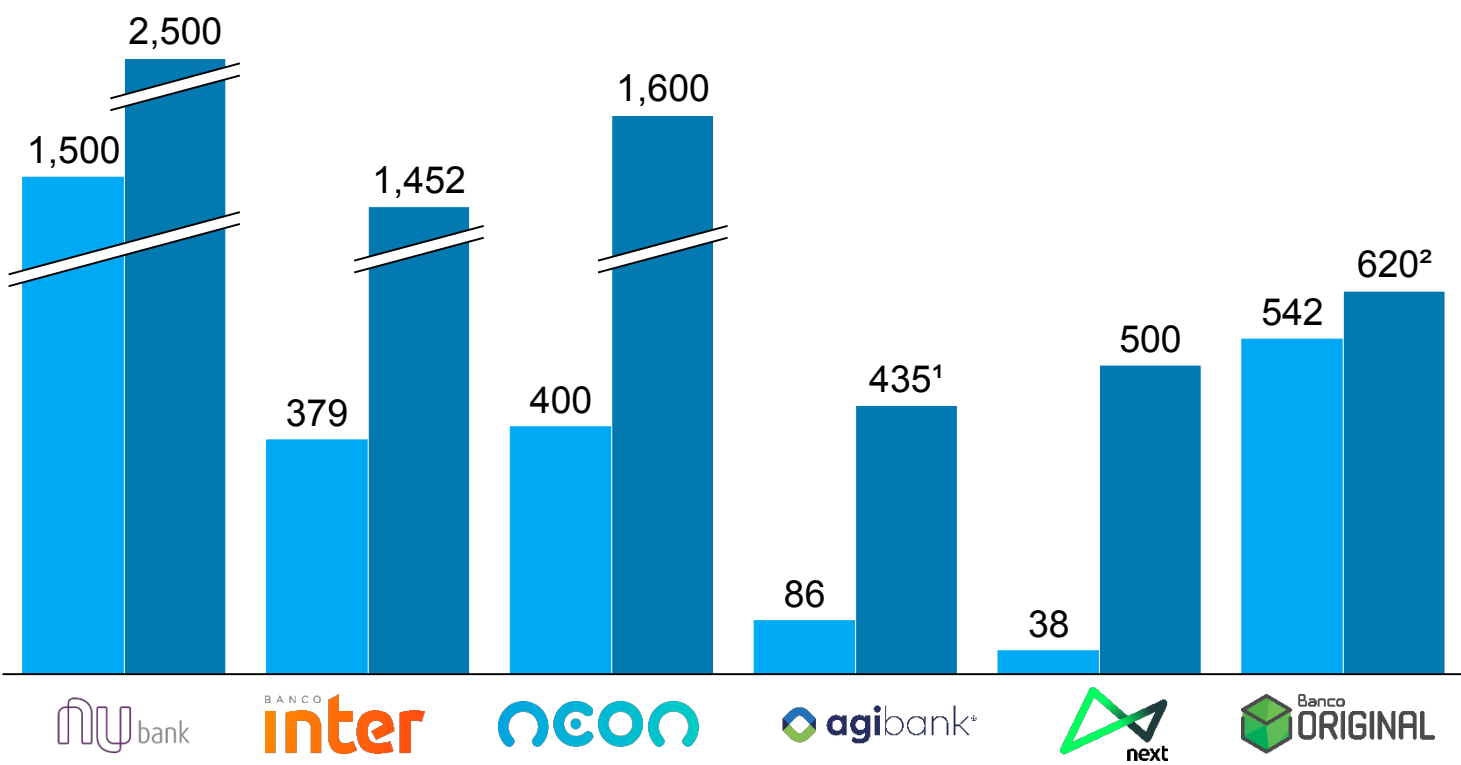
¹ 153 LATAM FinTech companies in our database; includes double counting as FinTechs present in more than one segment or product are counted twice
² Includes Small and Medium Enterprises
³ Includes Investment Banking, Sales and Trading, Securities services, retail investment, Non-CA deposits and asset management factory
⁴ Revenue share includes C/A deposit revenue
⁵ Includes Small and Medium Enterprises

Moreover, in the last few years, we have seen the birth and rise of a number of digital banks

FinTechs

Number of digital accounts
Thousands

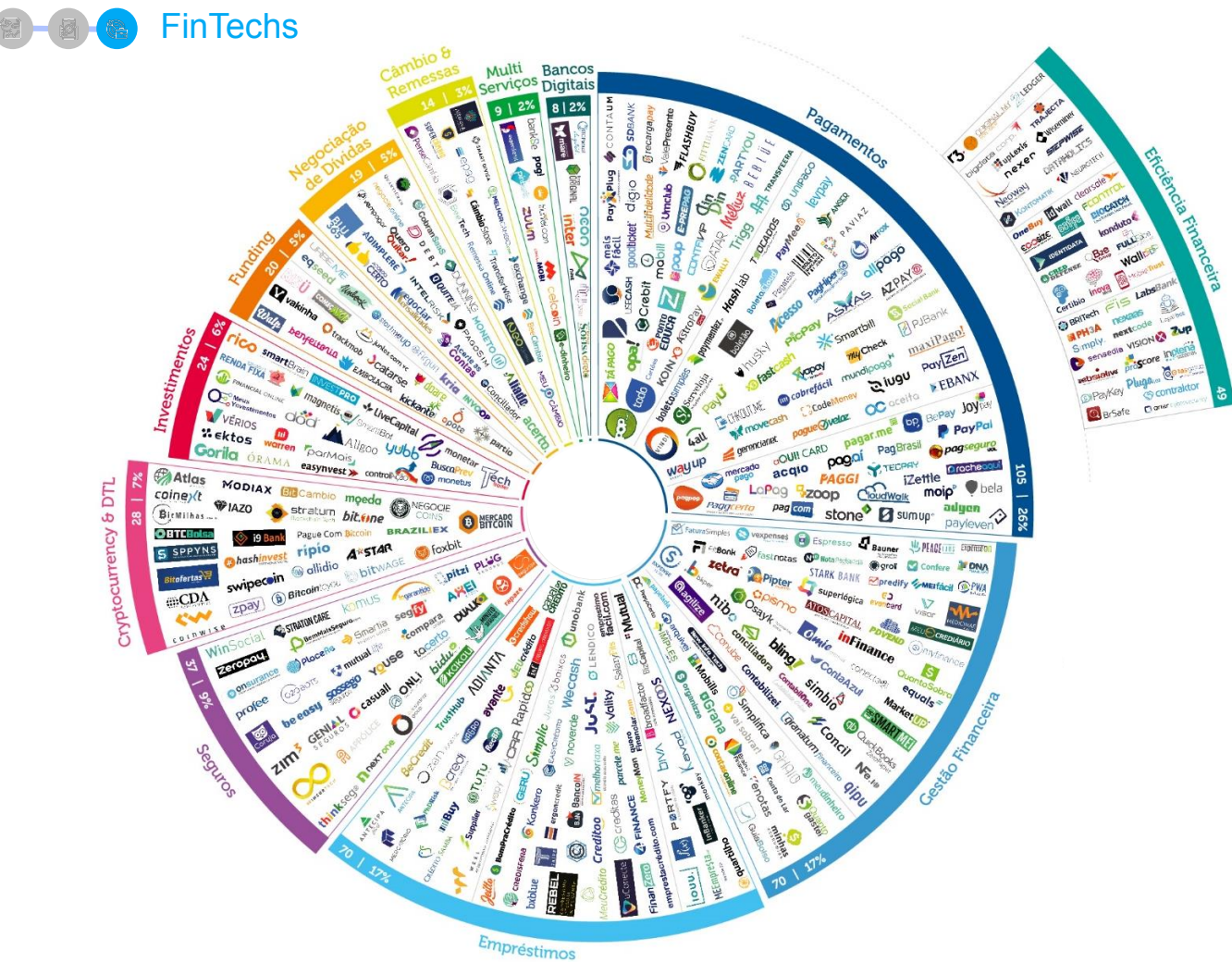
2017 2018



1 Considering 3Q2018 numbers for 2018
2 Considering 1H2018 numbers for 2018



Map of the Brazilian FinTech ecosystem



The three biggest unicorns and recent success stories belong to FinTechs

 FinTechs

	<u>Founded</u>	<u>Valuation US\$ billions</u>	<u>Funding US\$ billions</u>	<u>IPO Date</u>
	2013	4.0	0,7	N/A
	2006	8.8	2,3	Jan 18
	2013	8.4	1,1	Oct 18

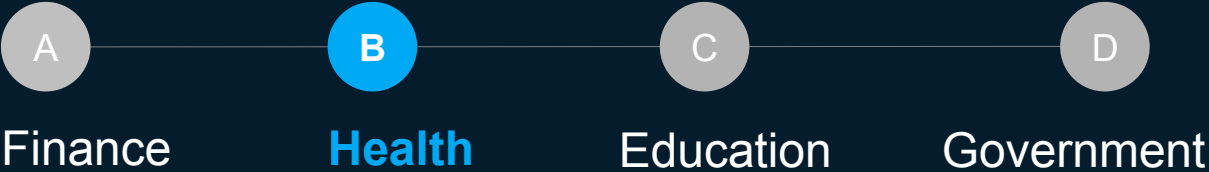
Source: Crunchbase



Chapter



Sector Deep
Dives



Health

State of the industry

Brazil, the home of SUS, one of the most inclusive public health care systems in the world, has seen major changes in the health sector in the last decade:

- Significant improvements in key indicators such as mother and infant mortality rates
- Double-digit growth in per capita spending driven by the private sector
- The growth, consolidation and profitability of the main insurance providers.

Brazil's healthcare does not yet meet WHO standards, however, and quality is far from universal:

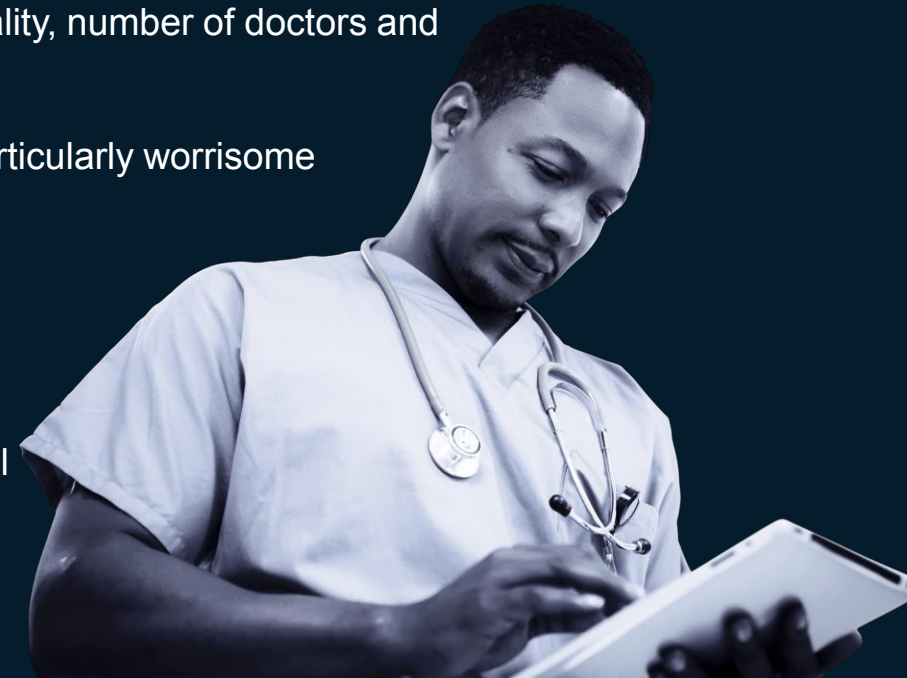
- Brazil still lags some countries and WHO minimums in infant mortality, number of doctors and hospital beds per capita and other important metrics
- Standards vary widely across regions, states and cities
- Healthcare costs have risen much faster than inflation, which is particularly worrisome in a population that is aging fast.

Digital trends

Brazil's health industry is falling significantly behind in the adoption of digital technologies such as electronic patient charts, electronic health care records and online consultations.

Startup environment

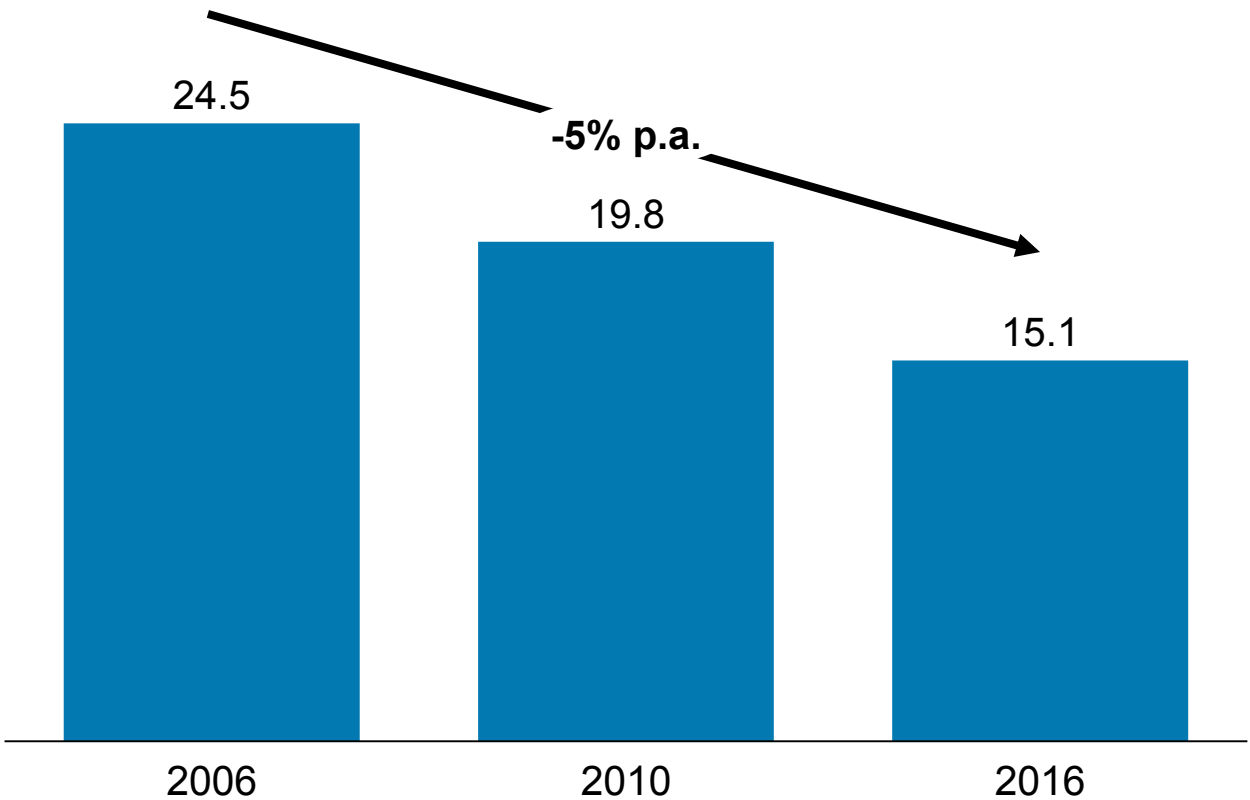
More than 200 startups have risen to this challenge, pushing the digital innovation agenda with new business models around big data, IoT medical devices, health marketplaces, and health education, among others.



Infant mortality rates have declined

State of the Industry

Infant mortality in Brazil
Per thousand live births

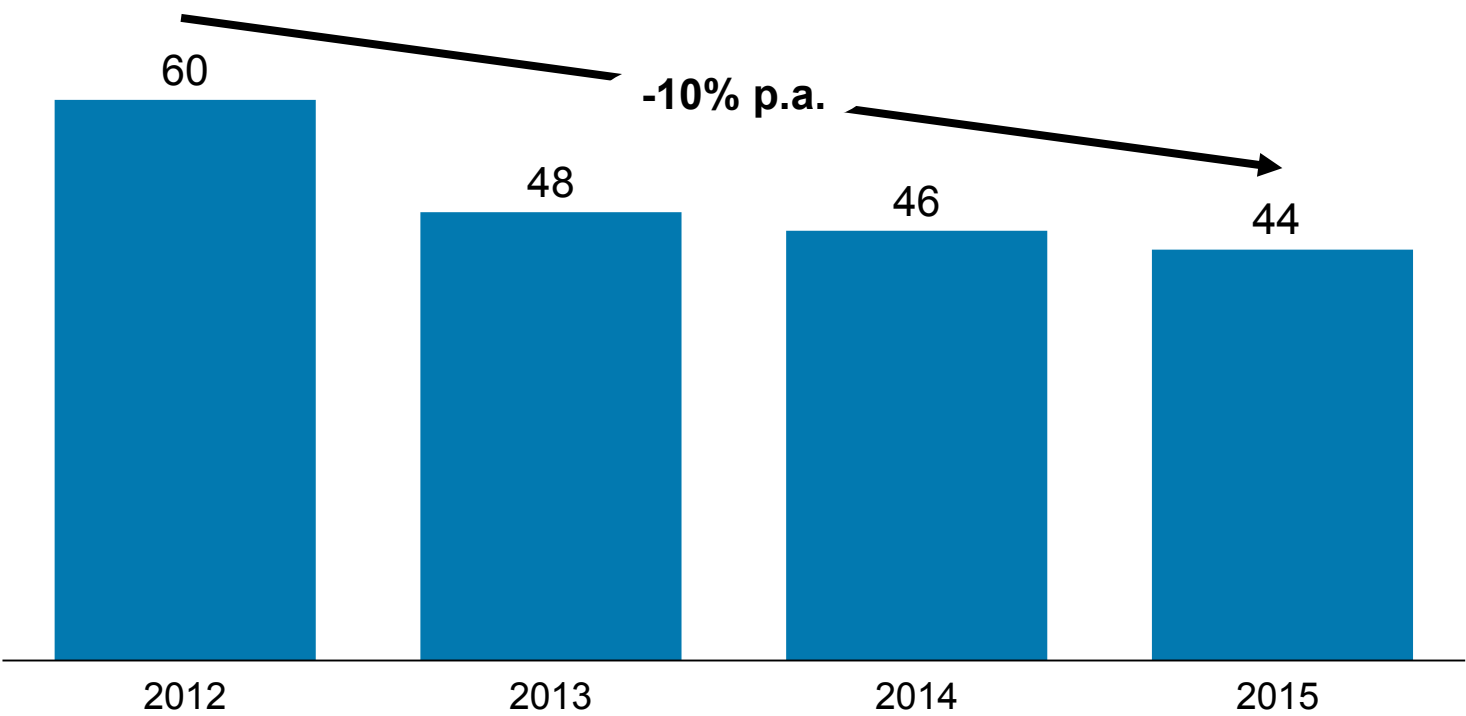


Source: WHO; World Bank



Maternal mortality has also declined sharply

State of the Industry
Maternal mortality
Per 100 thousand live births



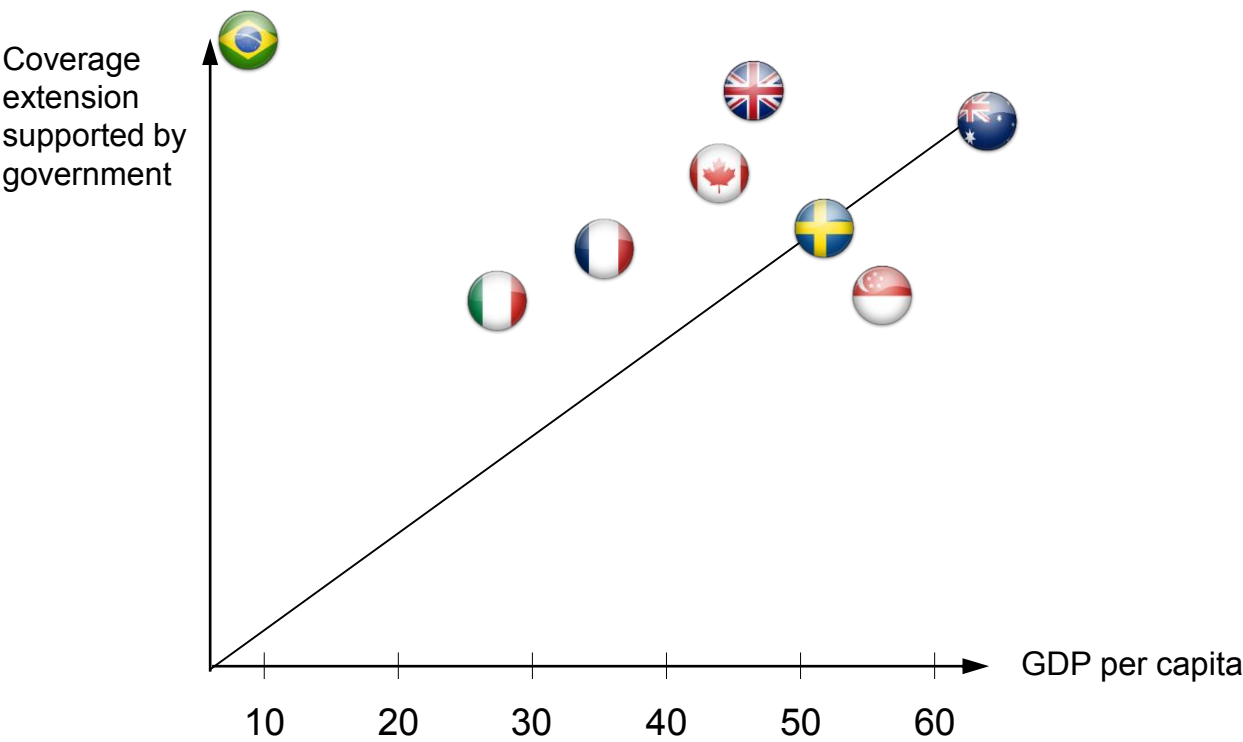
Source: WHO; World Bank



The Unified Health System (SUS) is one of the most inclusive health models in the world

State of the Industry

Coverage extension supported by government vs. GDP per capita (2017)



Source: McKinsey analysis; Instituto Coalizão Saúde referencing the World Bank; London School of Economics study and Commonwealth Fund (2017)

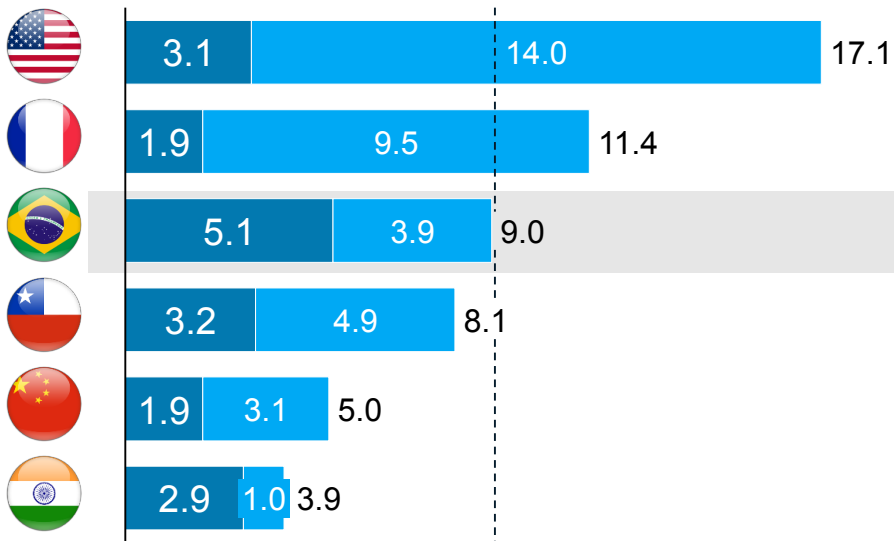


Health spending as a share of GDP is in line with OECD, but spending per capita is still lower than developed countries

State of the Industry

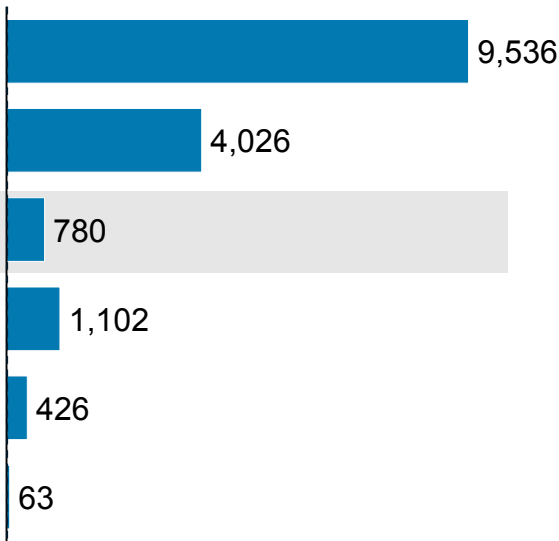
Total spend on health
% of GDP

Private Public



OECD average 9%

Spending per capita
US\$

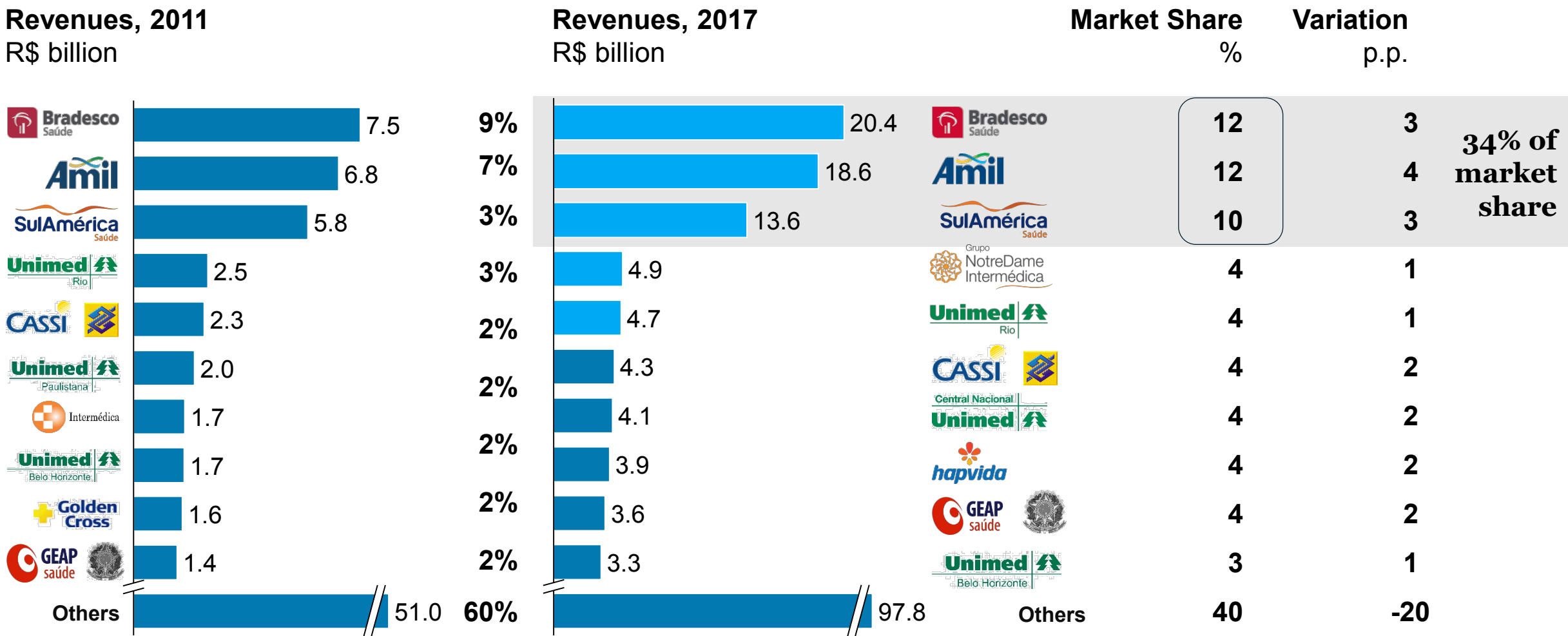


9



The private sector has grown and consolidated. In health and insurance plans, the three largest players increased their market share to 34%

State of the Industry

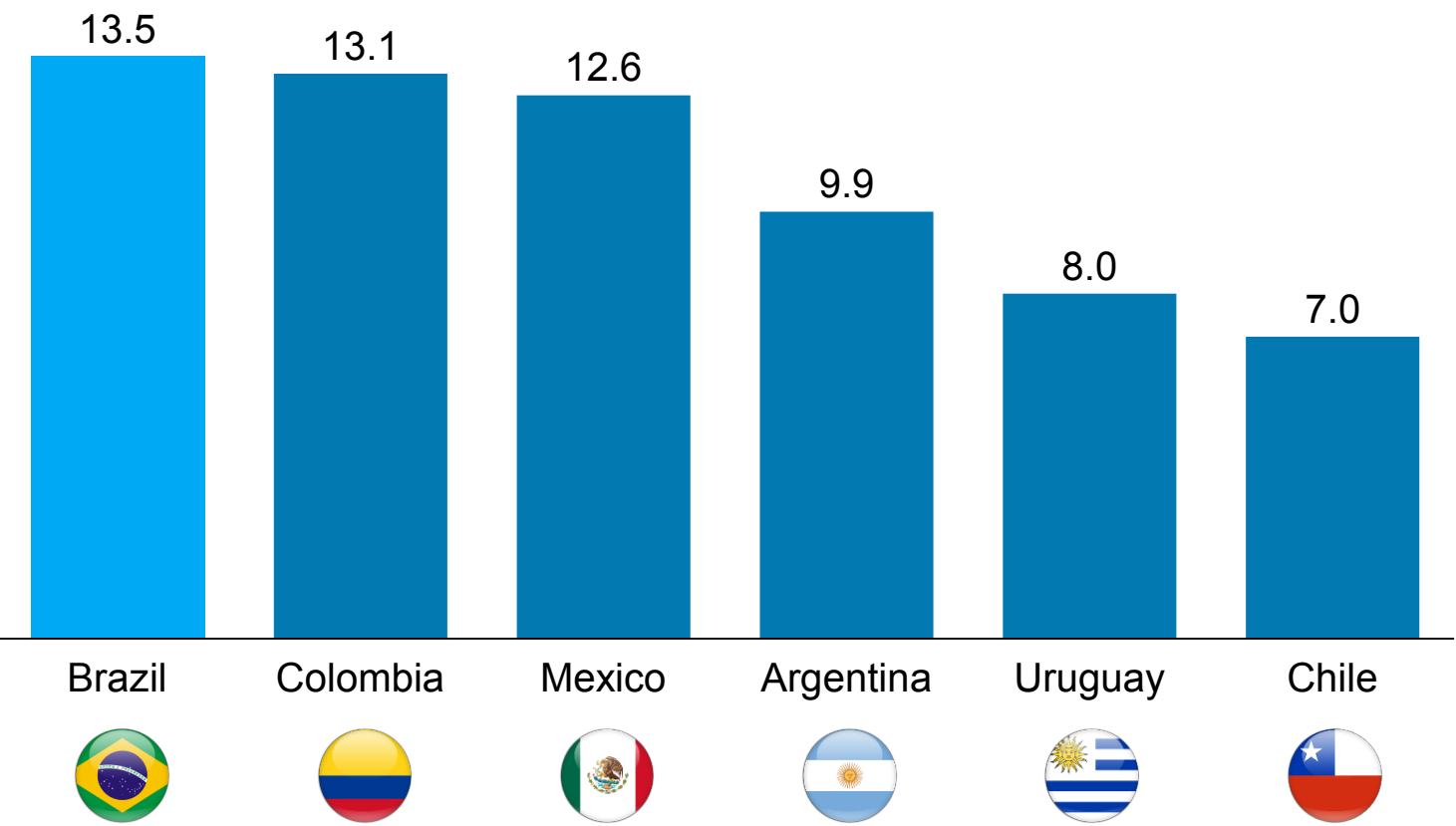


There is considerable room for improvement. For example, infant mortality is still high for Latin America

State of the Industry

Infant mortality

Per thousand live births, under 1 year

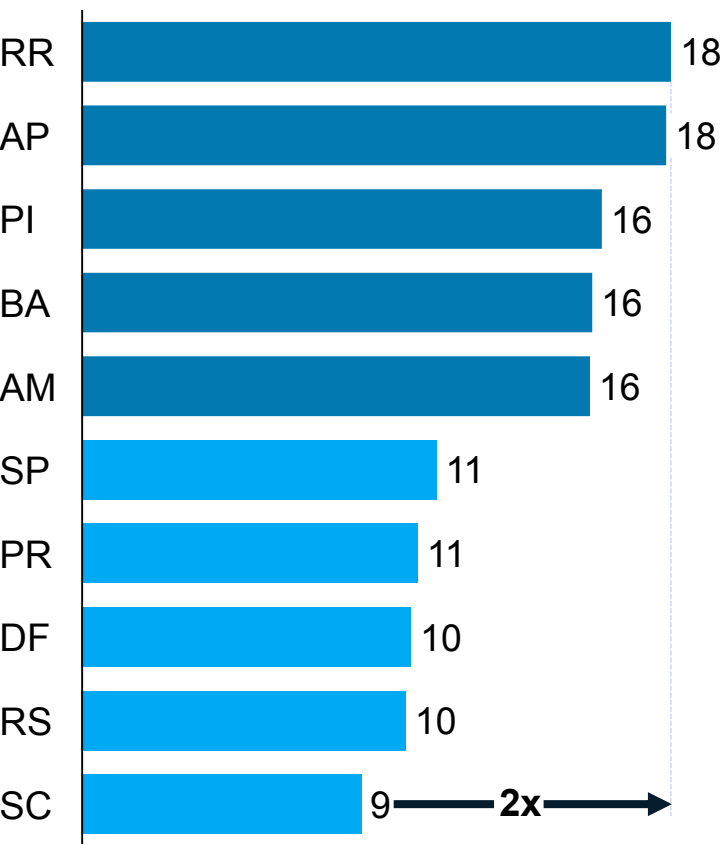


Source: WHO; World Bank (2017)



Infant mortality varies widely across regions and states: twice as many children die in Roraima as in Santa Catarina

State of the Industry
Infant mortality rate by state
%



Infant mortality (under 1 year) per thousand live births

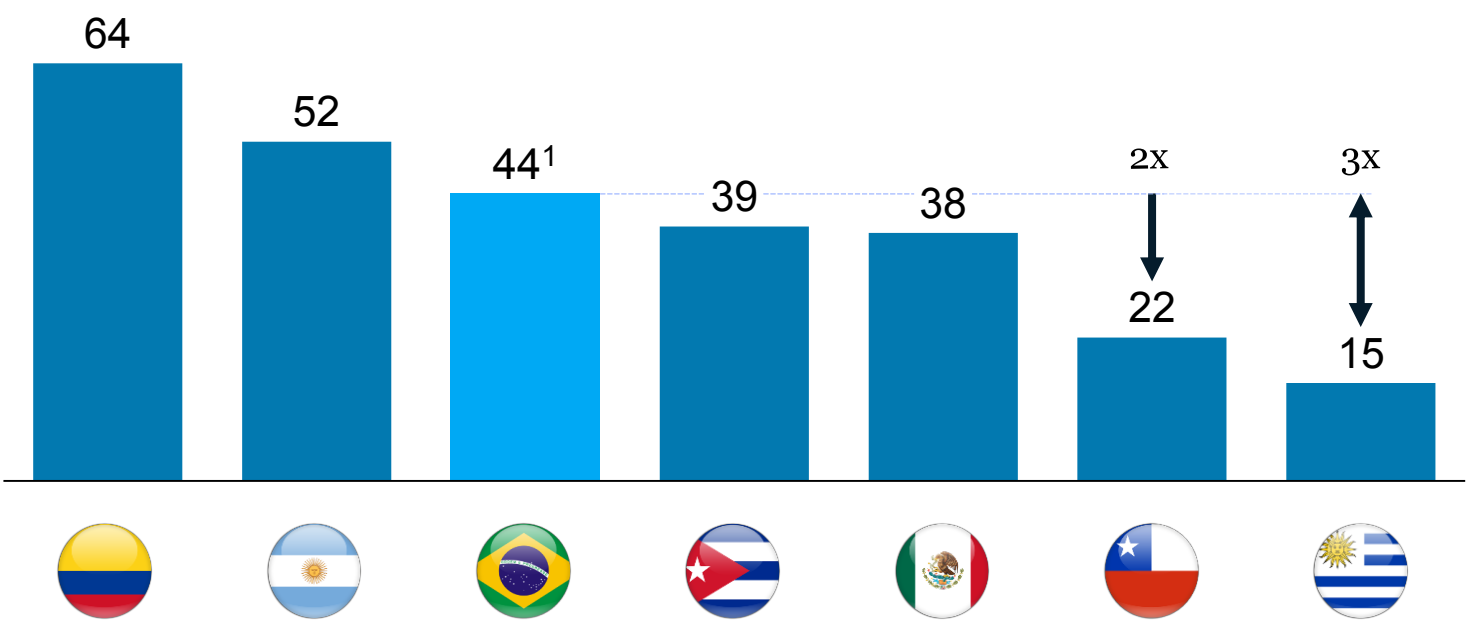
Color	Range
Black	> 15
Light Blue	12 - 14.9
Dark Blue	< 11.9



Source: Datasus (2017)

The maternity mortality rate is also higher than in peer countries

State of the Industry
Maternal mortality
Per 100 thousand live births



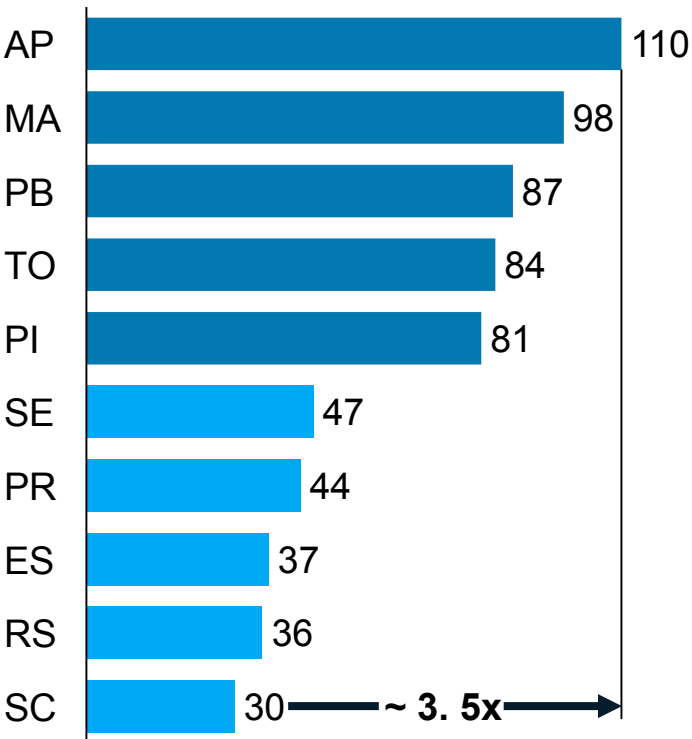
Source: WHO; World Bank (2017)



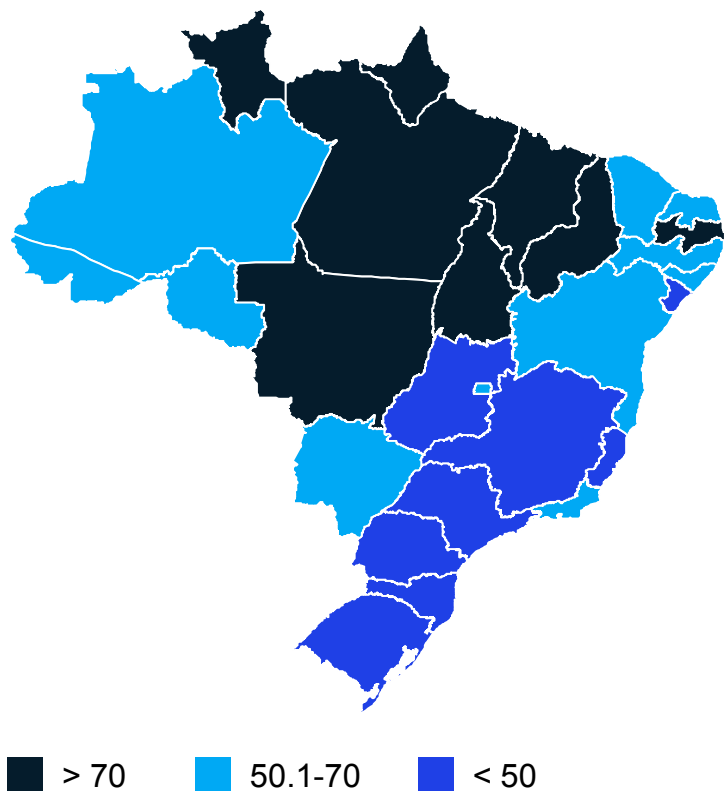
And the maternity mortality rate varies widely across the country

State of the Industry

Maternal mortality rate by state
Per 100 thousand live births



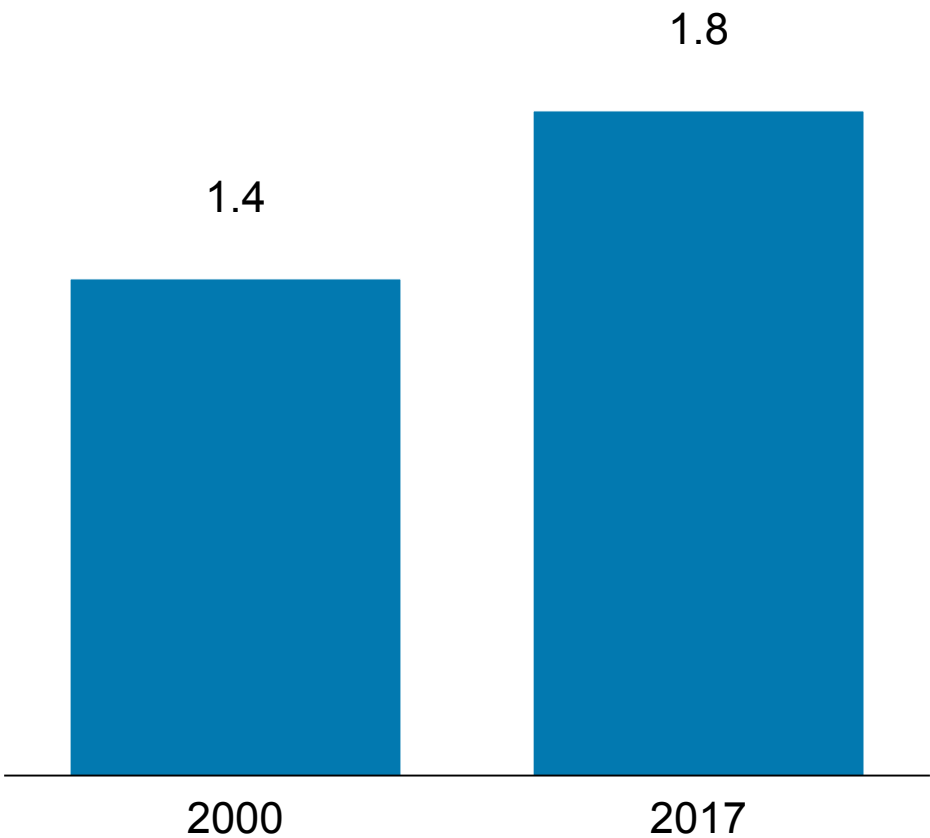
Maternal mortality
Per 100 thousand live births



Brazil has fewer physicians per person than most developed countries

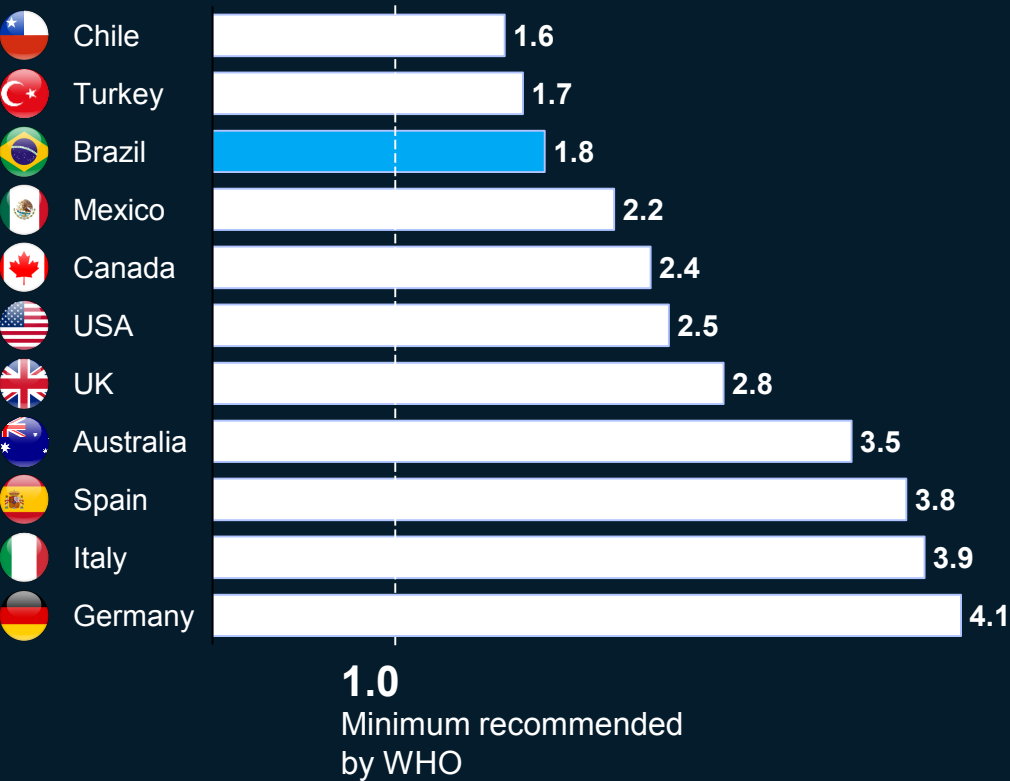
State of the Industry

Physicians
Per thousand inhabitants



Source: OECD (2017)

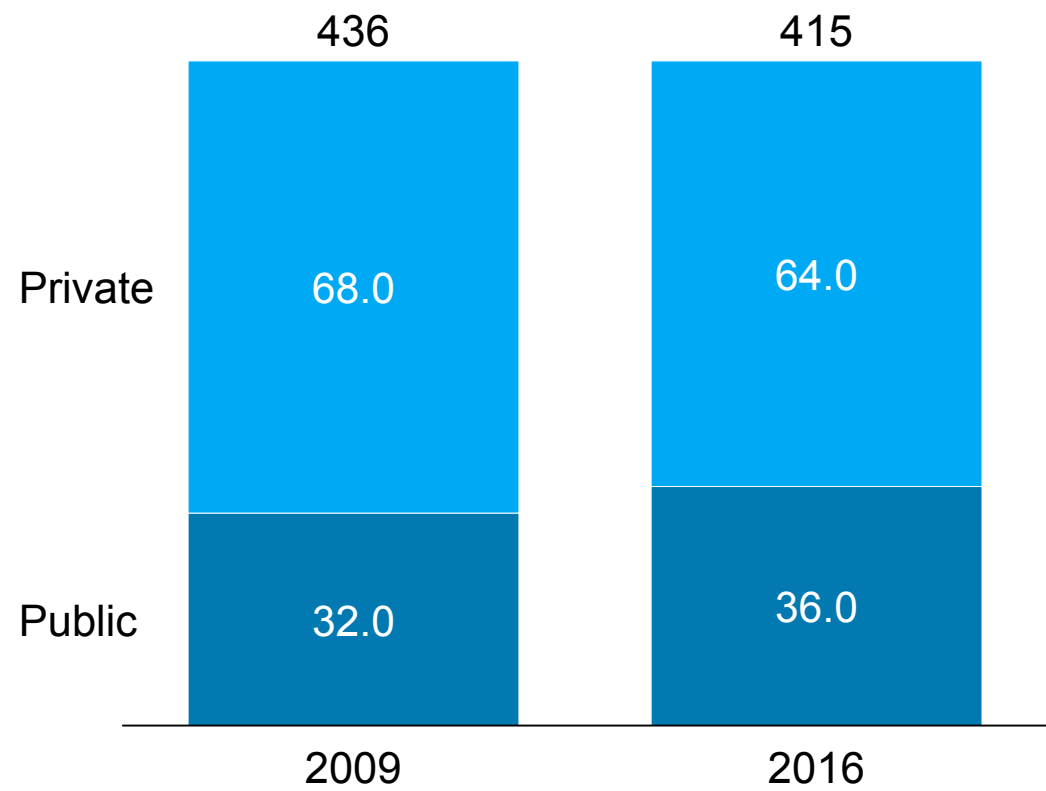
Physicians
Per thousand inhabitants



Brazil also has fewer hospital beds per person

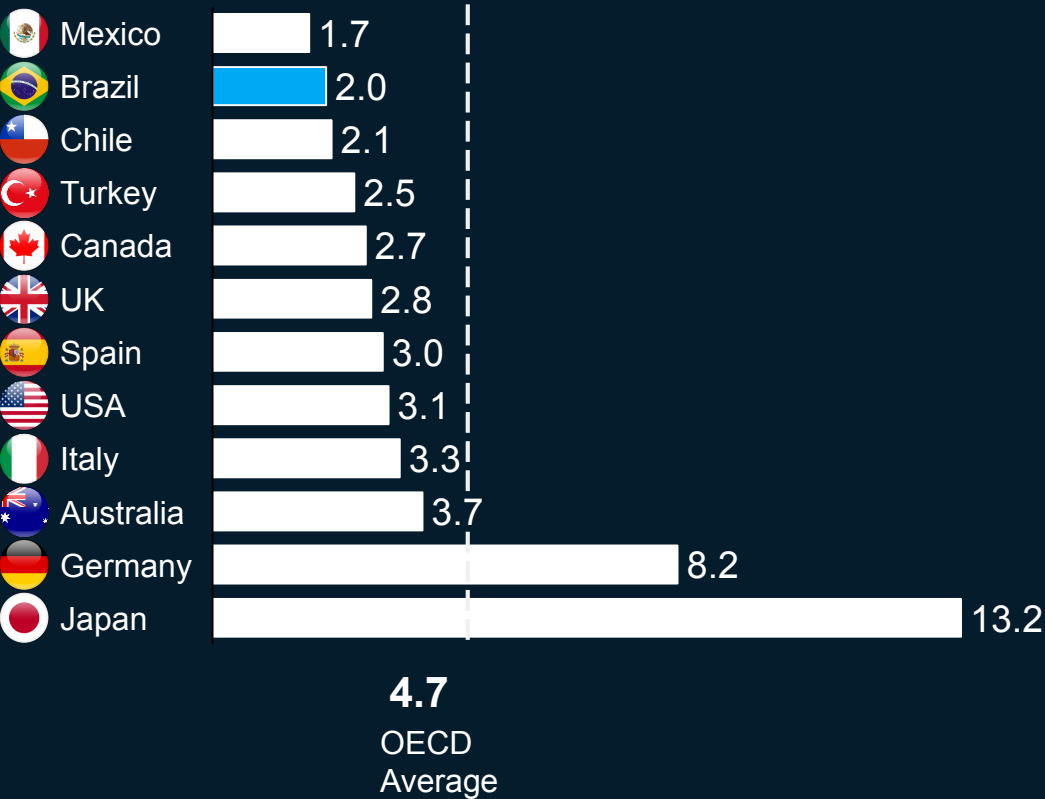
State of the industry

Number of hospital beds
Thousand, %



Source: OECD; SUS (2016)

Hospital beds Per thousand inhabitants

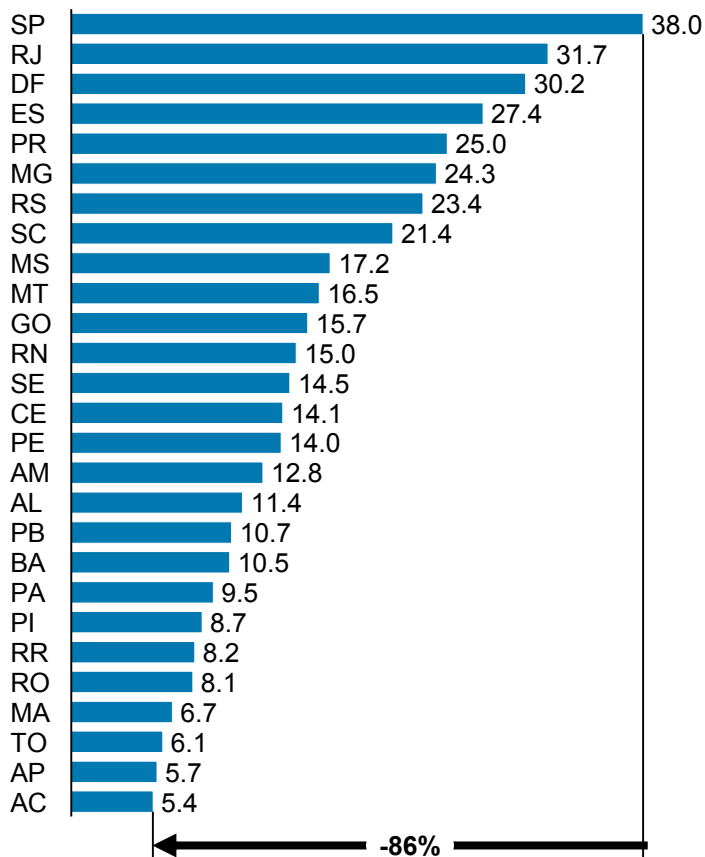


Access to private health plans and beds varies widely across the country

State of the Industry

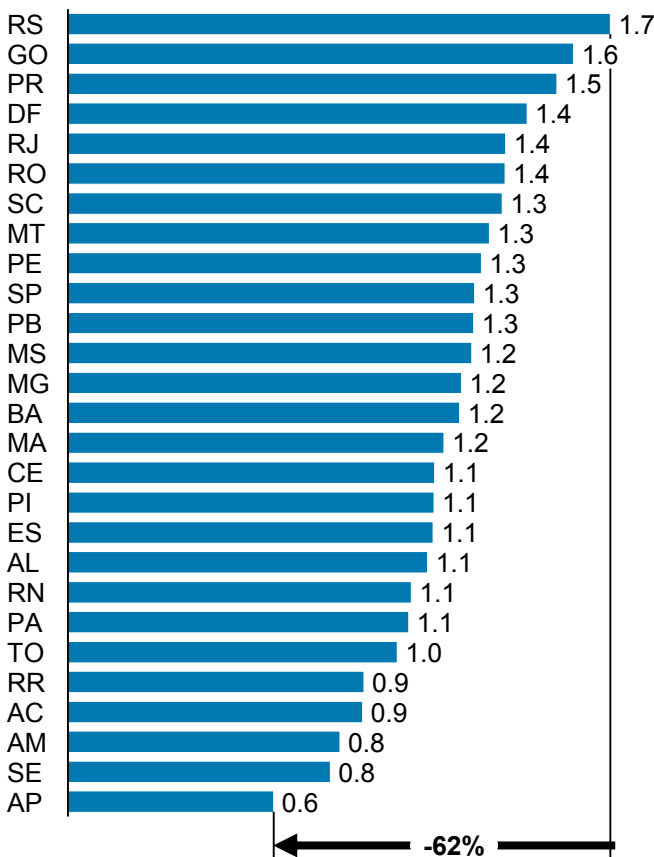
Private plan beneficiaries

For every 100,000 inhabitants



Private bed beneficiaries

For every 100,000 inhabitants



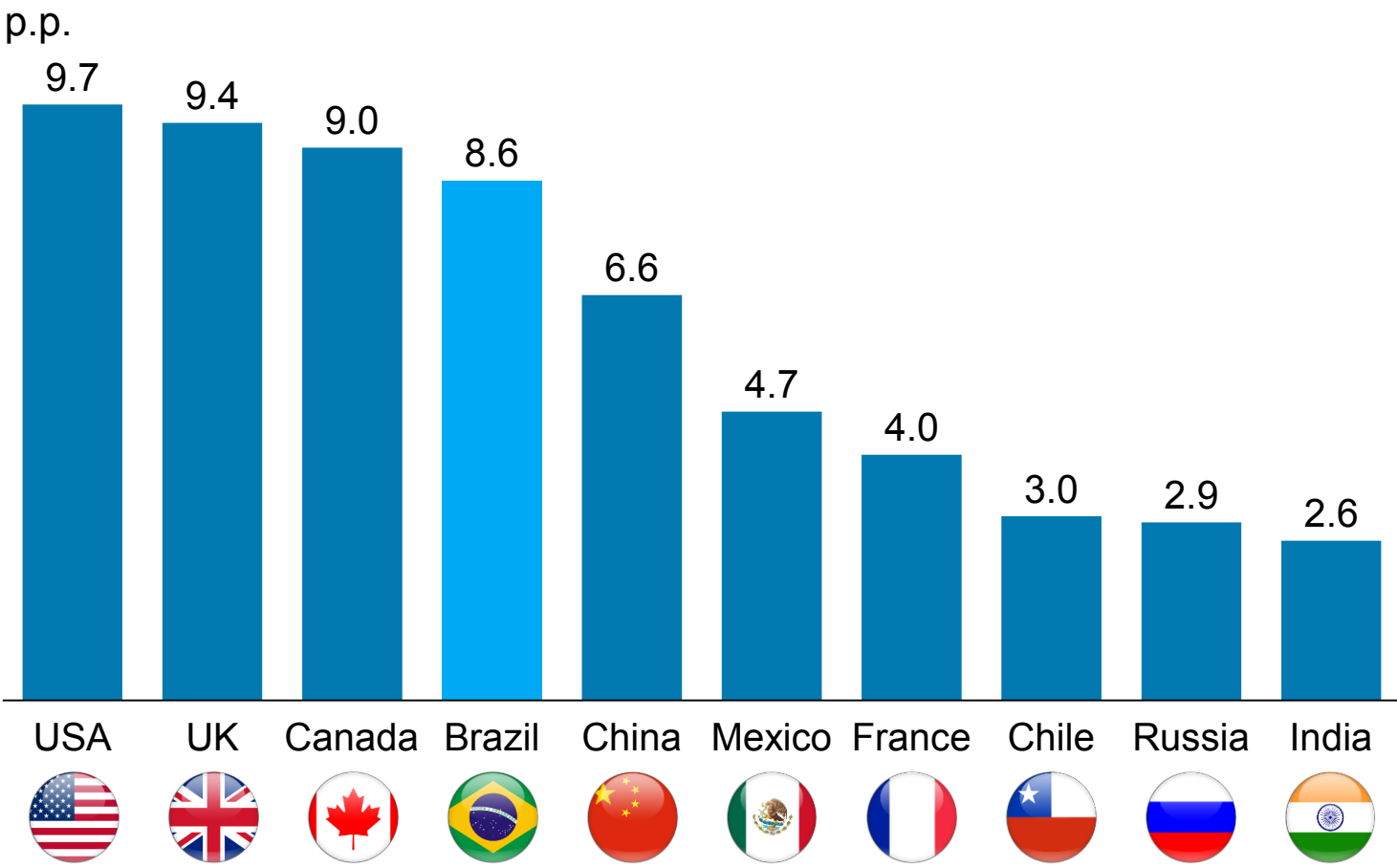
Source: FBH and CNSaúde "Hospital Overview in Brazil" (2018)



Medical inflation far exceeds baseline inflation and rates in many other economies

 State of the Industry

Difference between medical and general inflation



Source: McKinsey; IESS, Viewswire (2012 – 2017)

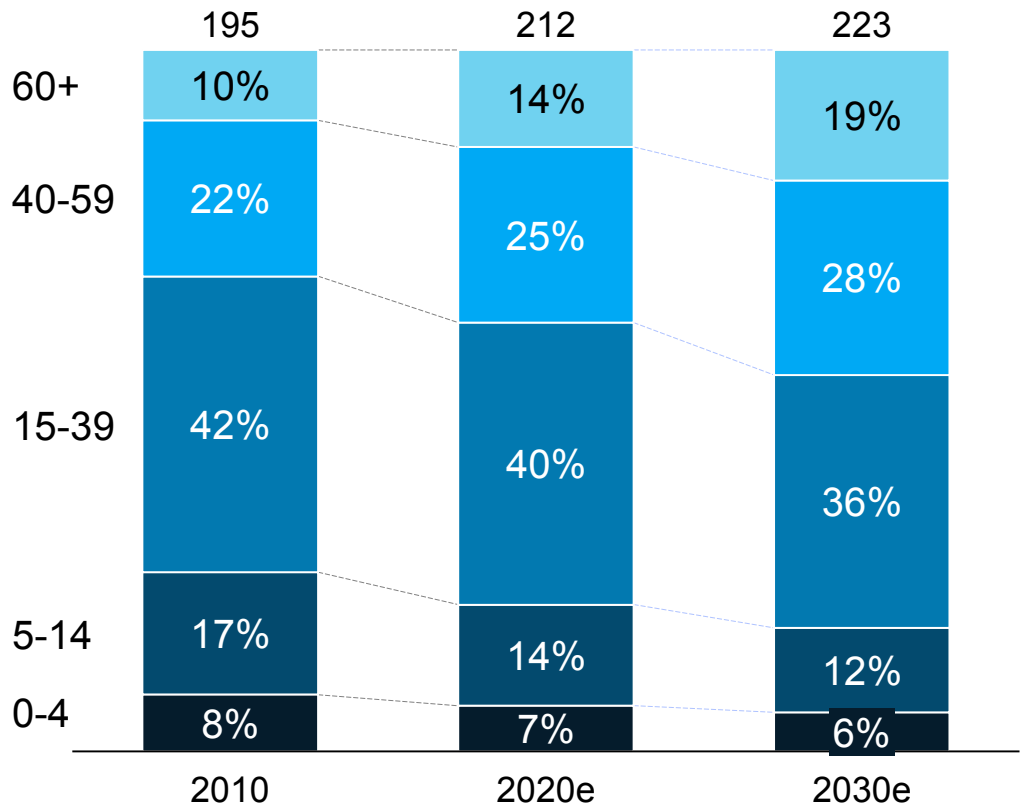


Demographic pressures will raise health care demand and spend: people over 60 will account for 20% of the population by 2030

State of the Industry

Population by age

Millions,%



Average cost of public hospital treatment

R\$

1,786

1,522

840

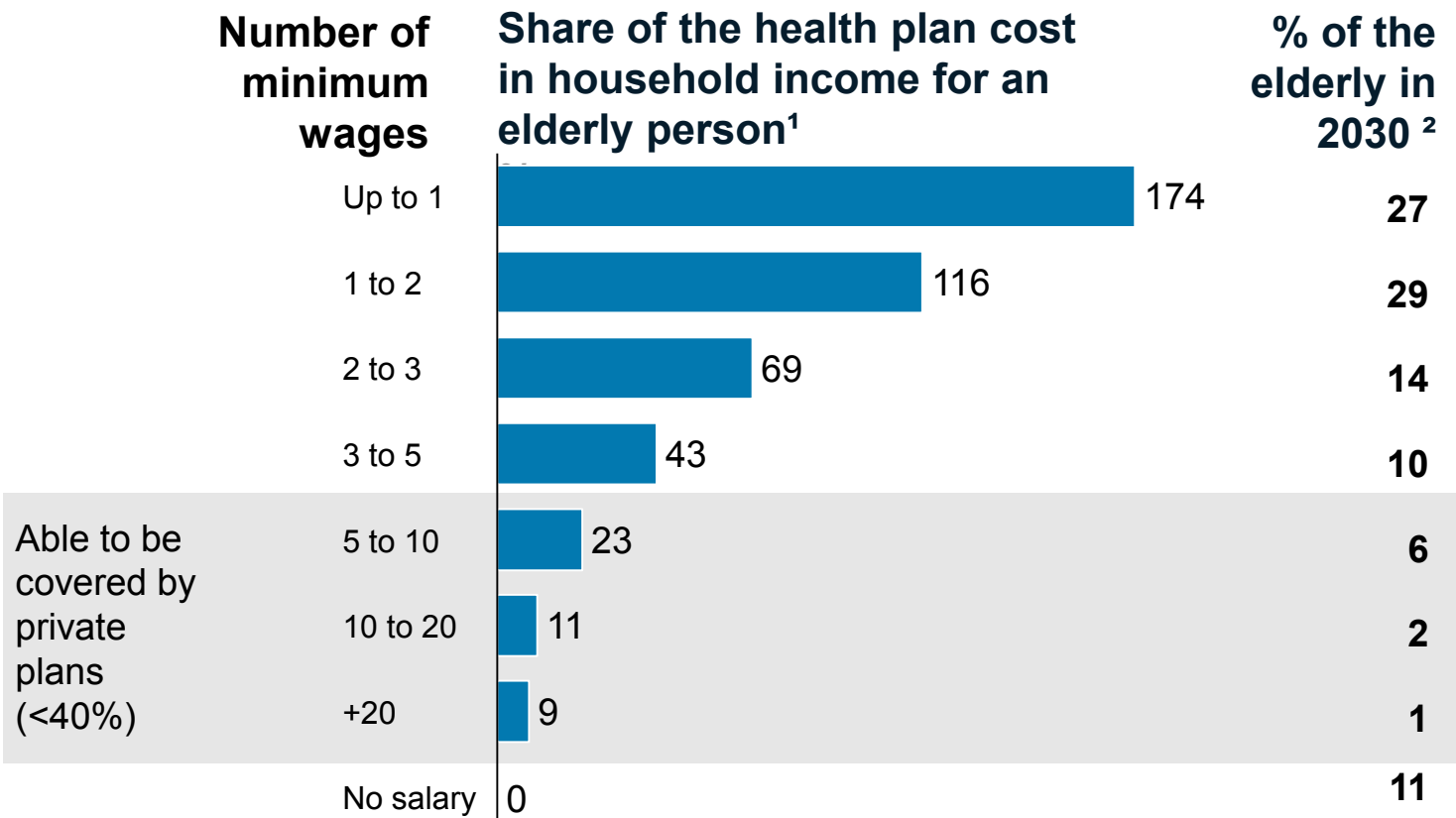
824

1,677



Will the private sector reinvent itself in time? In 2030, only about 10% of the elderly will be able to afford private plans


 State of the Industry



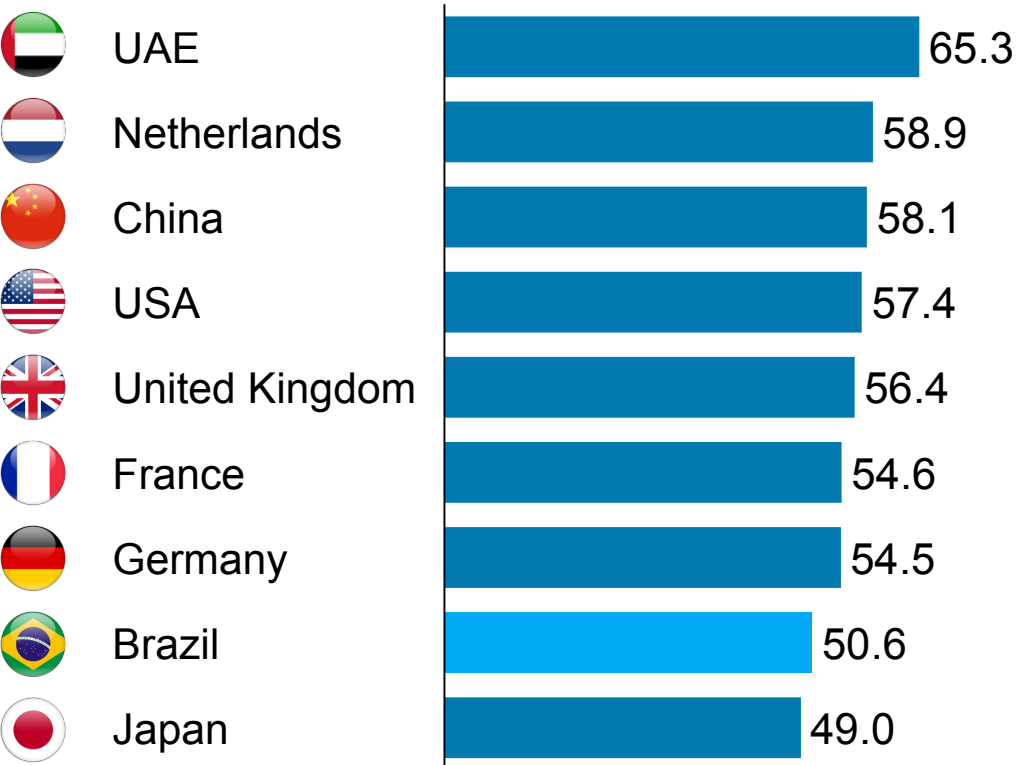
1 Recital: only 1 elderly person in the family; Midpoint within the income range; Same proportion of households in each income range and same average real price of health plans in 2030; R\$1,233 as the average monthly price for health plans for people over 60 years; 40% of family income for payment of health plans
 2 Considers the same distribution of elderly in all income ranges. Proportion of people 60+ years of age in the Brazilian population in 2014 was ~11%



Brazil has a long way to go in health innovation and a digital future

   Digital trends

Future Index
Score



24%
of health units use
electronic medical
records

85%
of cities do not have the
necessary equipment to
implement electronic
medical records

1 The Future Health Index (FHI) measures the perception of readiness of 13 key countries to realize the benefits of connected and integrated medical care

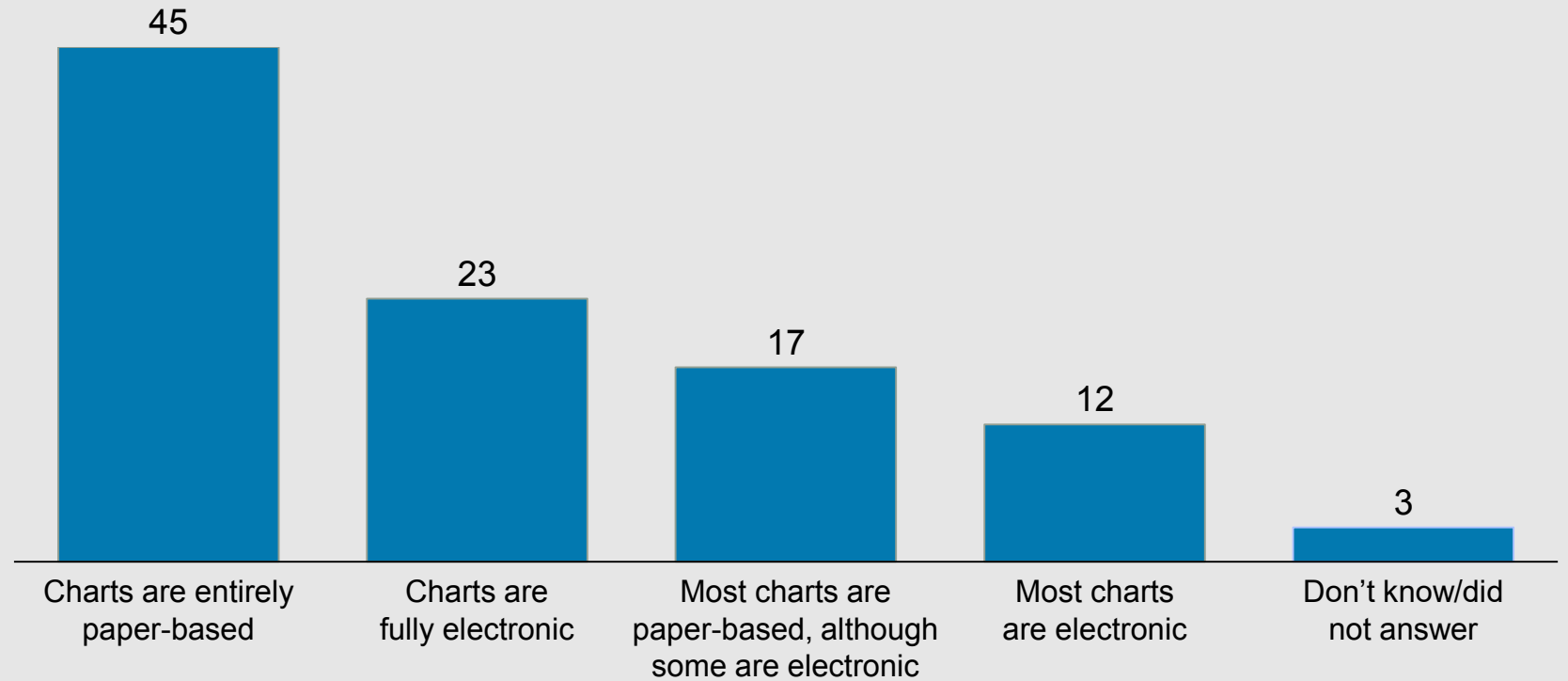
Source: Future Health Index Philips (2016)



For example, only 23% of healthcare establishments have fully electronic charts – 45% are still entirely paper-based

 Digital trends

Type of patient chart used¹
% of healthcare establishments



¹ How records are kept according to the answers provided by the healthcare facilities visited

Source: TIC Health Survey; Regional Center for Studies to Develop Information Society (2017)

Brazil is home to more than 200 HealthTech startups across hubs



+263
startups

17%

Management Systems

15%

Hard Sciences

are the sectors with the most startups

Source: Liga Insights Health Tech (2017)

2017



São Paulo
39%



Belo Horizonte
9%

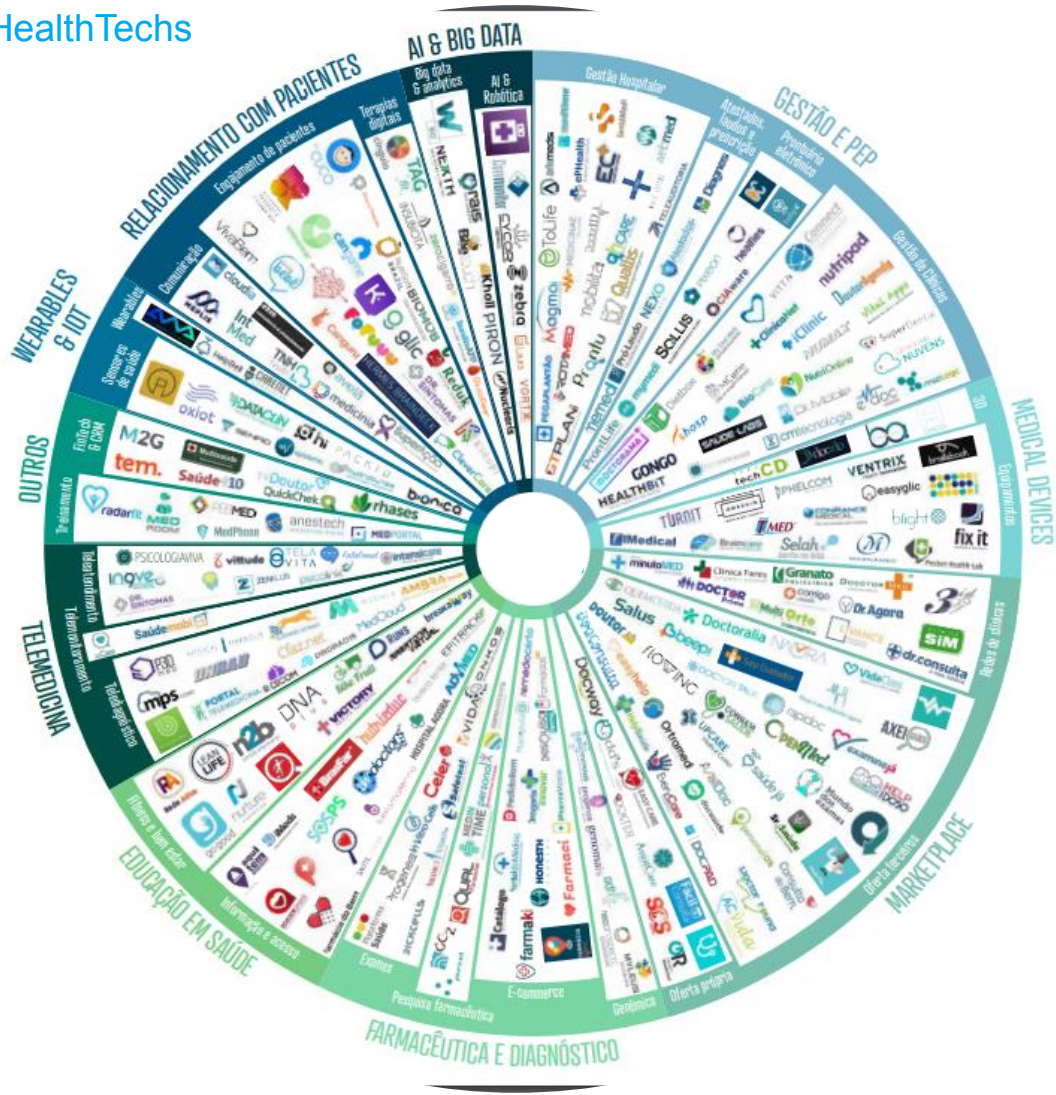


Recife
7%

**...are the cities with
the most HealthTechs**

Map of the Brazilian HealthTech ecosystem

HealthTechs



Chapter



Sector Deep Dives



Finance



Health



Education



Government

Education

State of the industry

The recent history of education in Brazil is one of quantity more than quality.

- Despite a record high number of high school and college graduates, fewer than 40% of the population has completed high school, and more than 10% are illiterate.
- Moreover, the dramatic increase in years spent in education has had little effect on average hourly earnings.
- Although private and public investments in education – absolutely and as a share of GDP – have risen significantly, Brazil is performing worse in international education scores and rankings.

Digital trends

Digital technology can help achieve scale inside and outside of classrooms.

- Distance learning is leading the way, with strong growth. Up to 25% of applications to higher education institutions are for distance learning.

Startup environment

More than 350 startups are driving innovation.

- They focus mostly on content management, education management systems, educational games, and adaptive learning platforms.



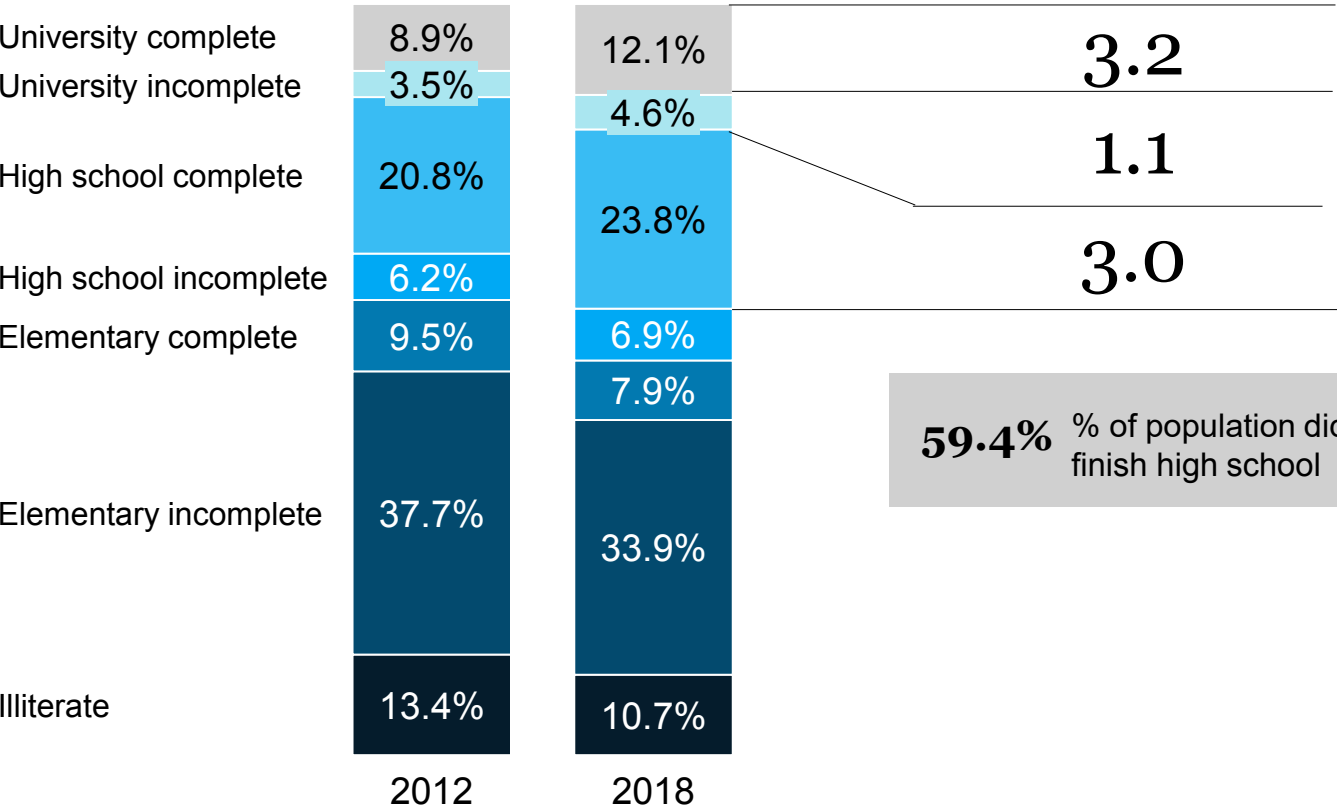
Education is evolving quickly, but most people have not finished high school

State of the Industry

Education profile

Share of total population

Variation
p.p.



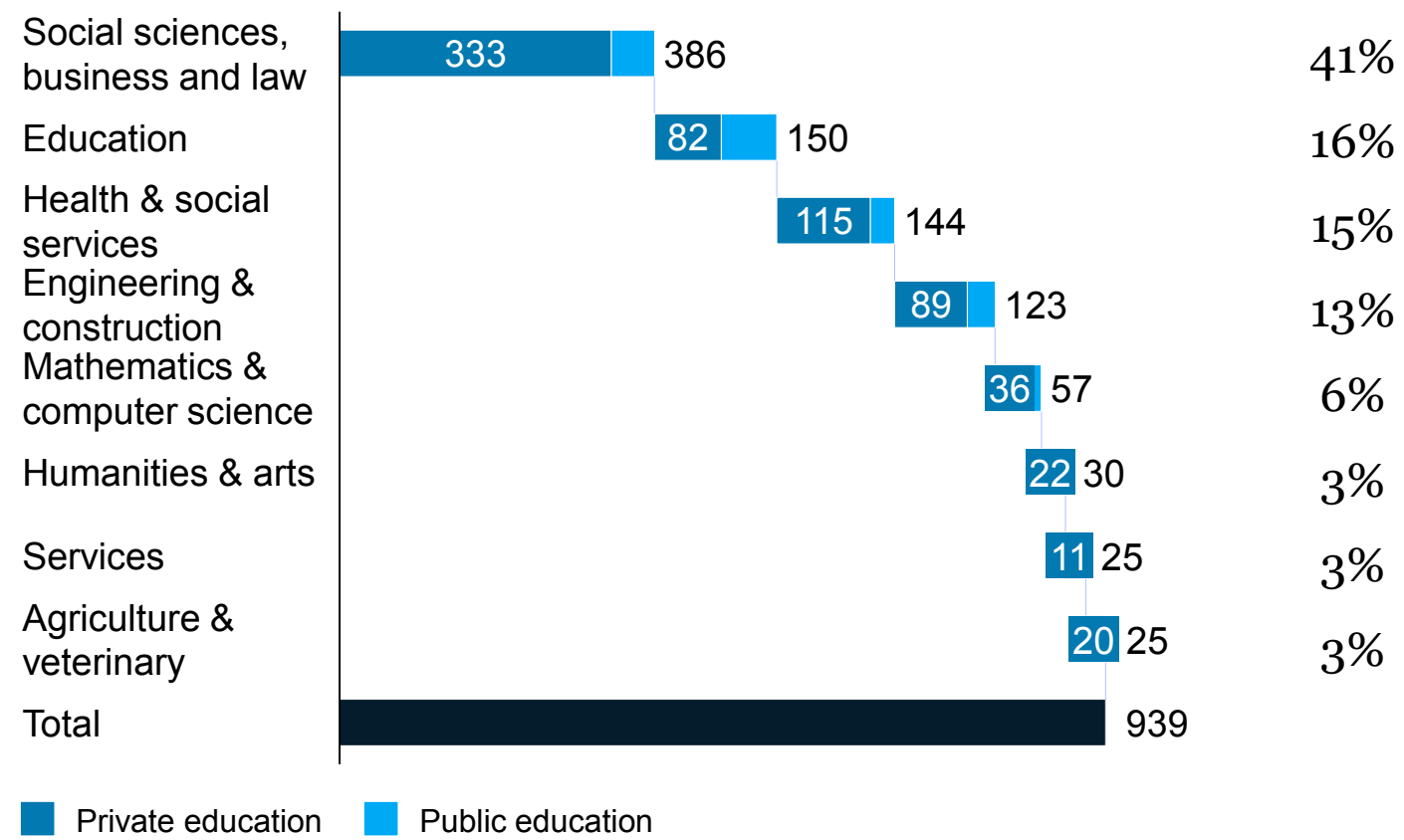
59.4% % of population didn't finish high school

More than 40% of undergrads major in social sciences, business and law

State of the Industry

Breakdown of higher education majors

Thousands



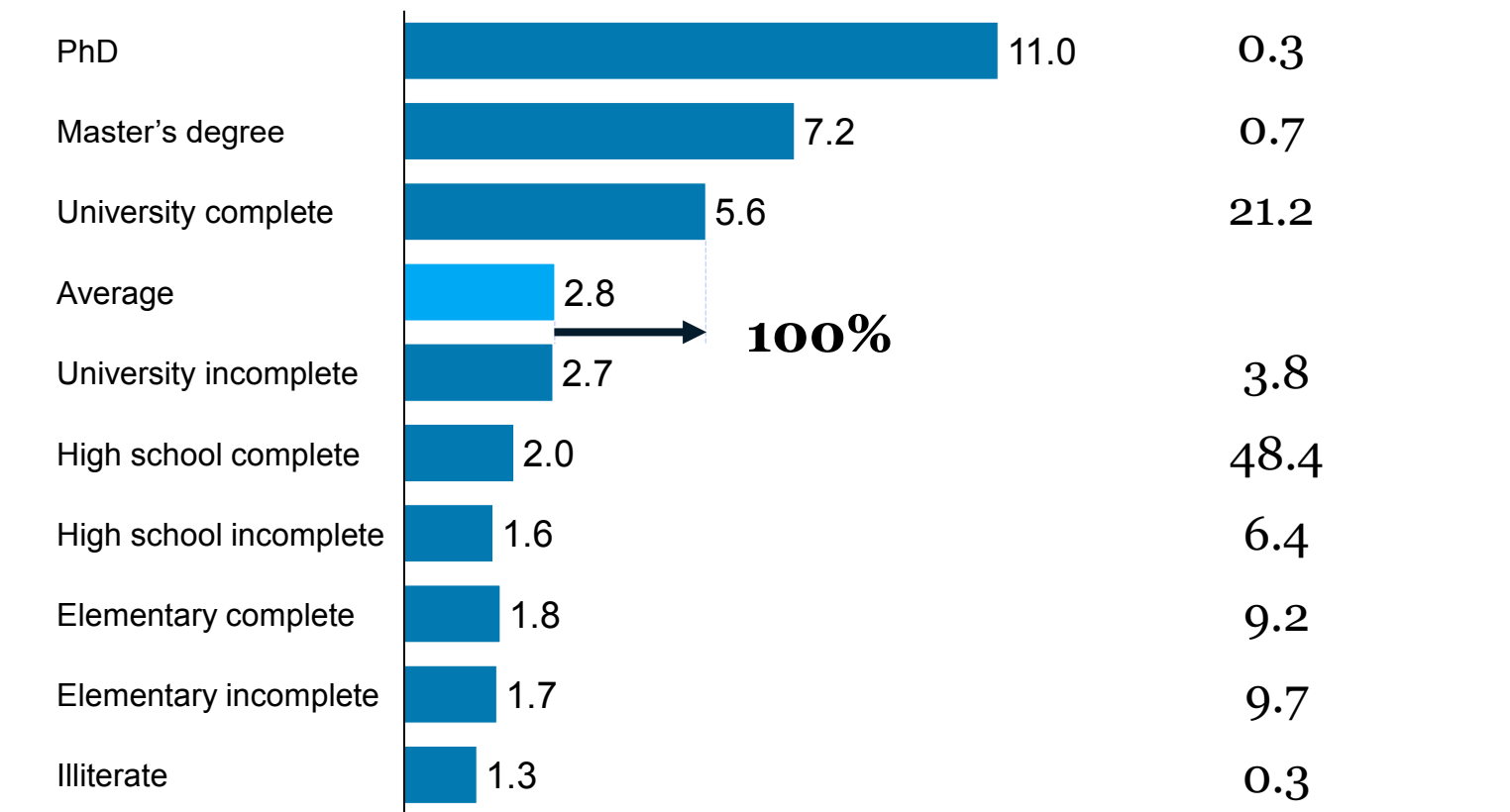
Source: "Evolution of the Brazilian education sector" from Falke empowered by EMIS (www.emis.com) (2018)

Employees with university degrees earn twice the national average – the highest salary increase across levels

 State of the Industry

Average monthly salary per educational level
R\$/month, only includes registered employees

Registered employees
%



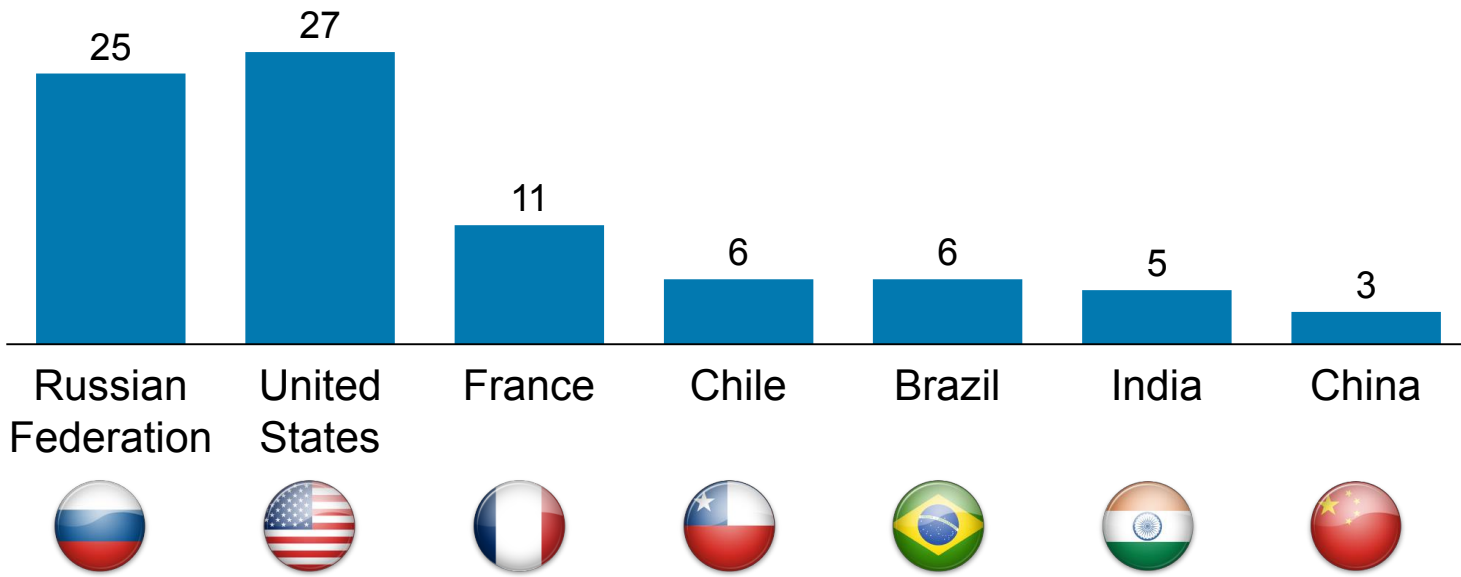
Source: MTE-RAIS (2018)



The penetration of higher education is much higher in developed countries

 State of the Industry

Share of total population
%



Population with tertiary degree
Million



Source: OECD; Our World in Data (2017)



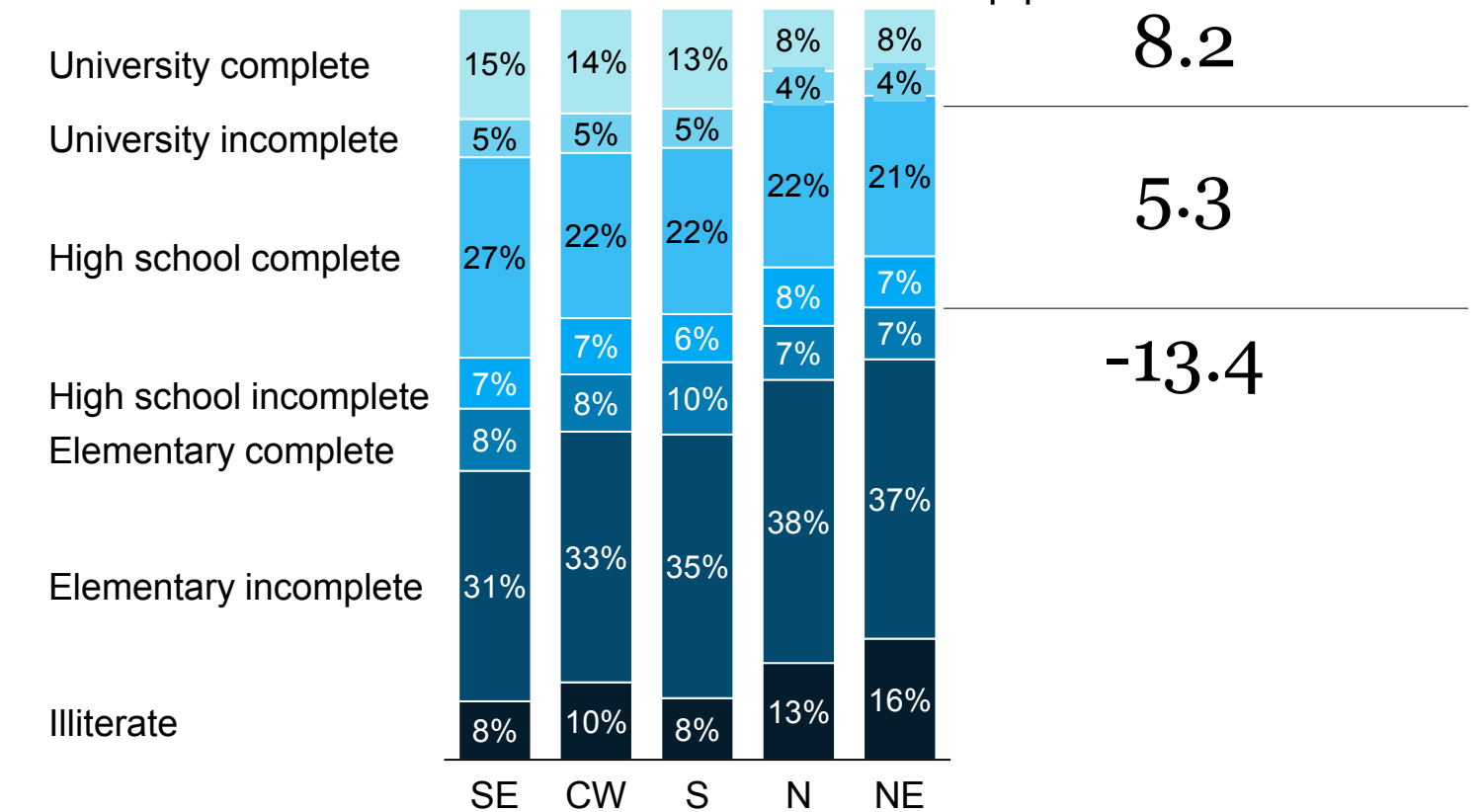
Education in Brazil is unevenly distributed

 State of the Industry

Education profile per region

Share of population at each level

Difference between SE
and NE educational level
p.p.



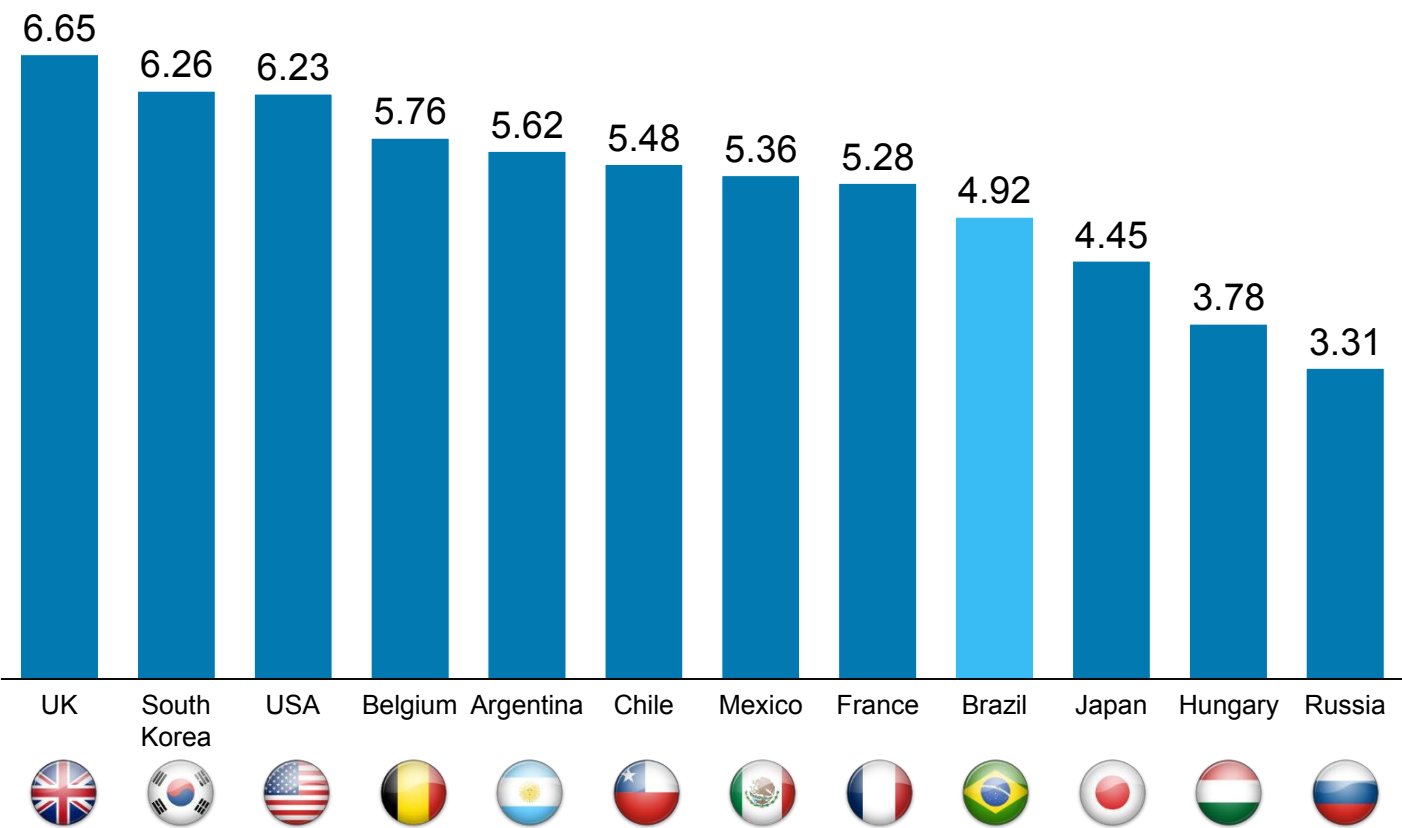
Source: The Economist Intelligence Unit (2017)



Educational spending is low compared to developed economies and even within Latin America

State of the Industry

Spending on education
% of GDP



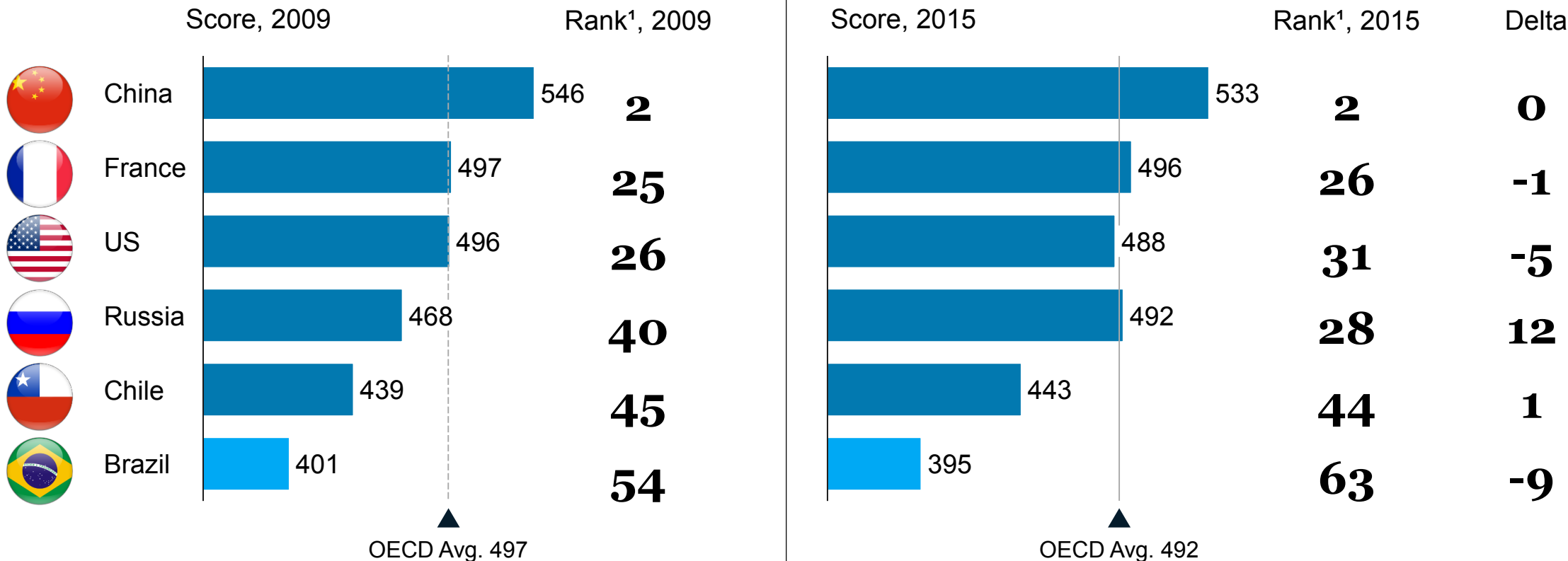
Source: World Bank (2017)



Despite improvements, the quality of education is still among the worst in the world, ranking #63 out of 70 countries

PISA - Student performance

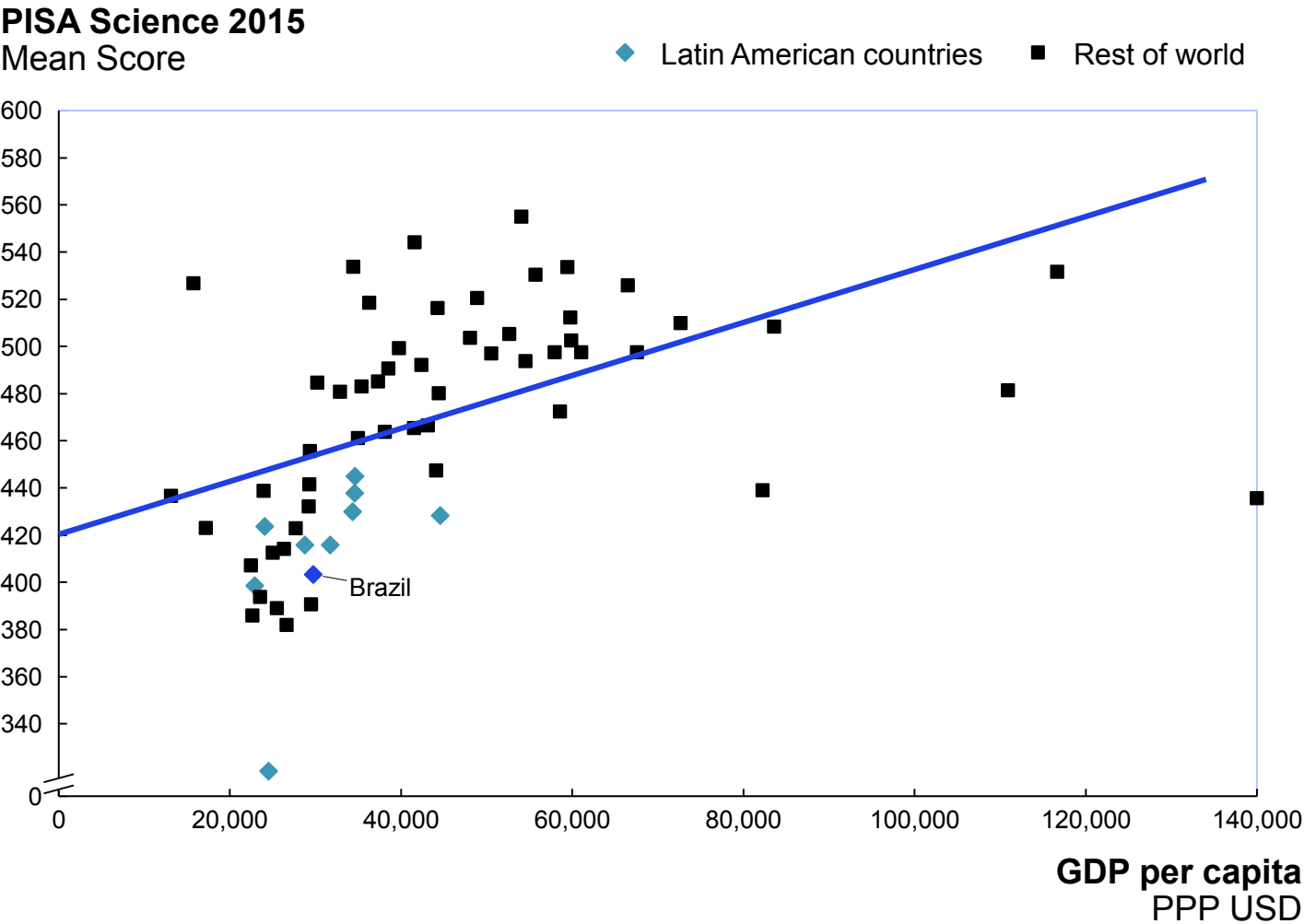
Average score in mathematics, reading and science



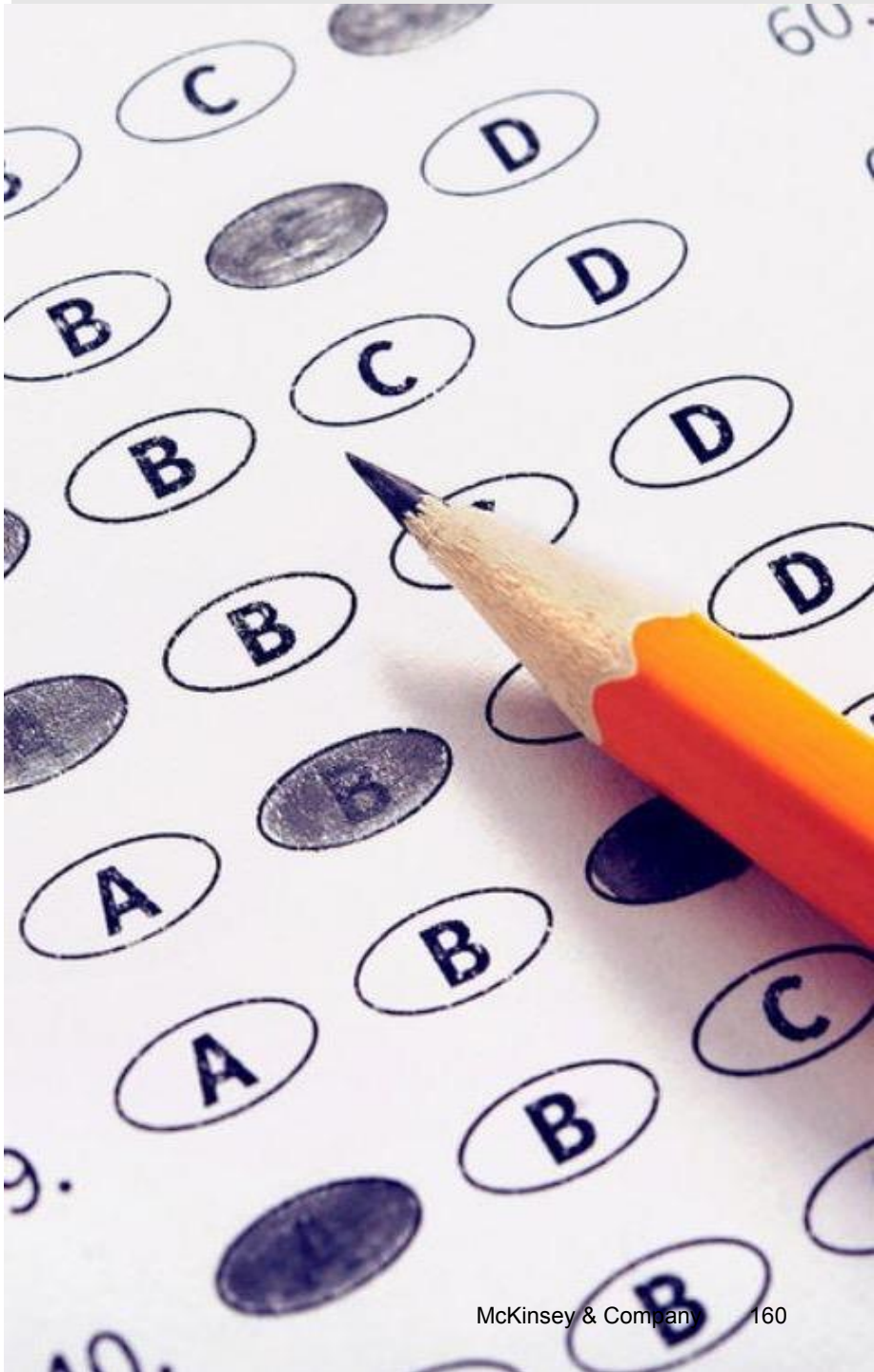
1. 65 participating countries in 2009; 2. 70 participating countries in 2015

Even compared to countries with the same GDP per capita, Brazil's PISA results are below average

State of the Industry



Source: PISA (2015)



Across the world, educational institutions are using a variety of delivery formats to boost flexibility

 Digital trends

Format

Description

Distance learning



Technology-based

Courses **delivered online**

Timeline **decided by the university**

Often includes **interactive elements**



Non-tech-based

Courses delivered in any format, such as on different campuses or without attendance requirements

Students can complete modules at their own pace

No admission requirements



Flexible timing

Part-time courses, e.g., 1-year degree completed in 2 years

Compressed degrees, e.g., 3-year degree completed in 2 years

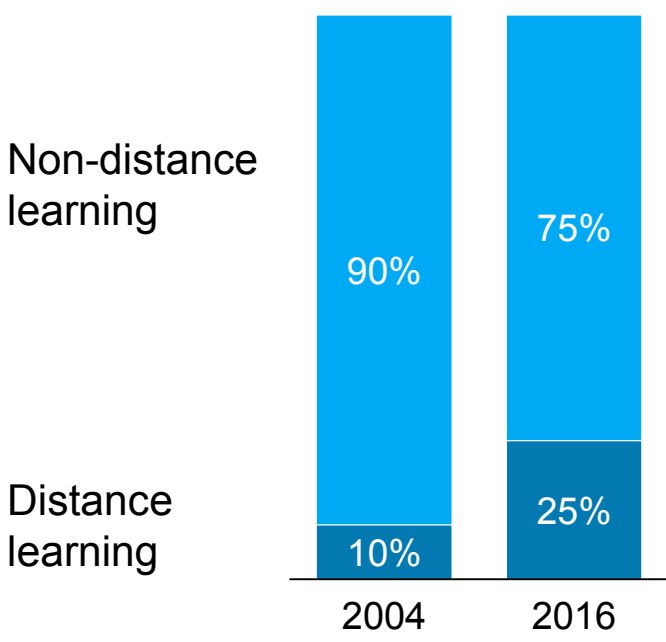
Modularization – in credit-based systems, students choose how many courses to take each term, with a certain number of credits required for a degree



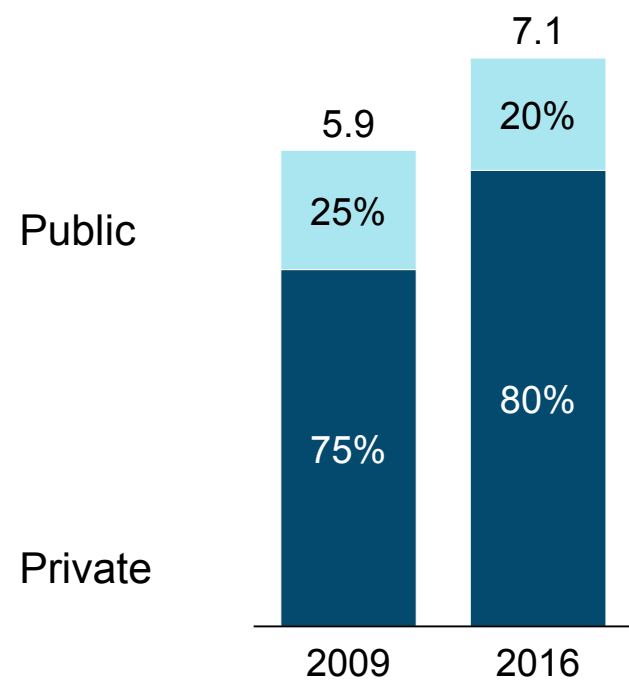
Penetration of distance learning courses is increasing, reaching 25% of total higher education applications in 2017

 Digital trends

Applications for distance learning higher education courses
% of total applicants



Institutions that offer distance learning higher education courses
000



Source: INEP (2017)



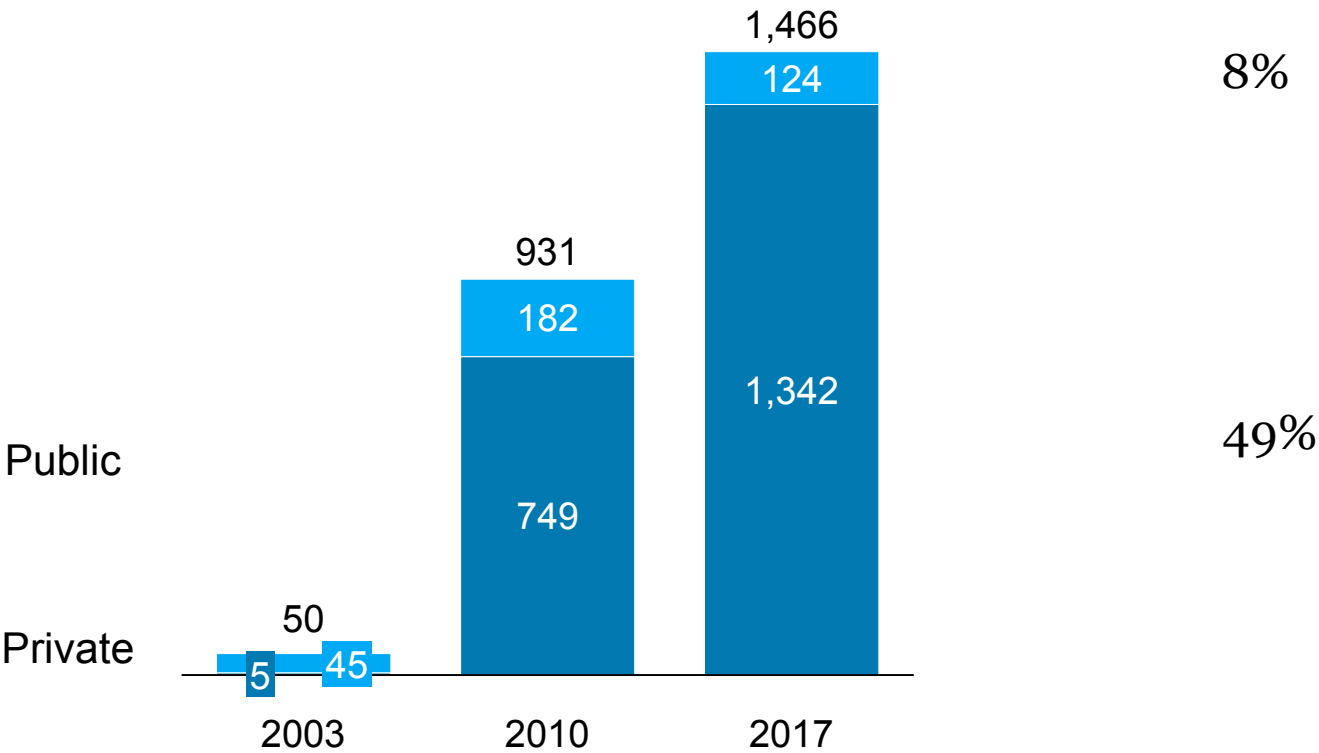
The private sector is largely responsible for the evolution of distance learning in Brazil

 Digital trends

Evolution of distance education in Brazil

Thousands of enrollments

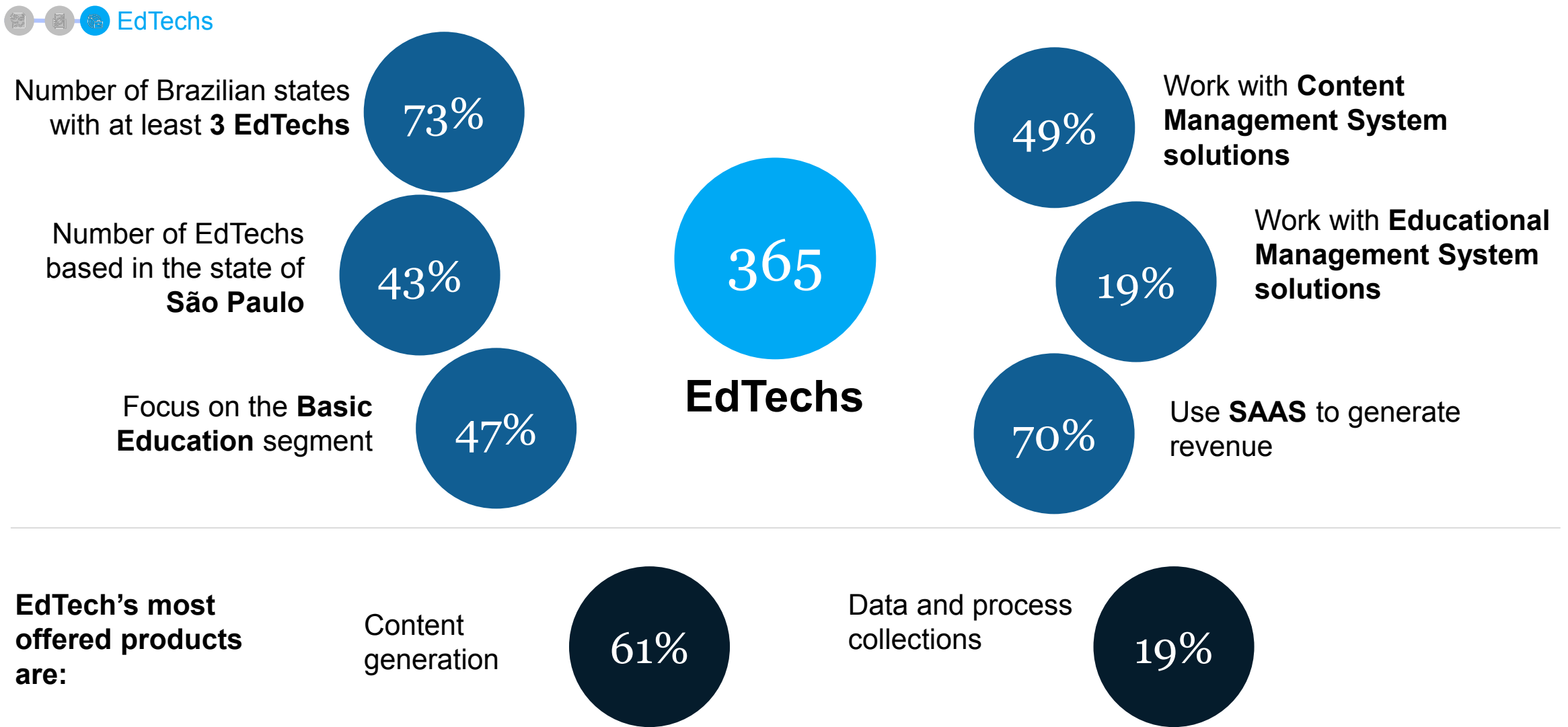
CAGR
2003 - 2017



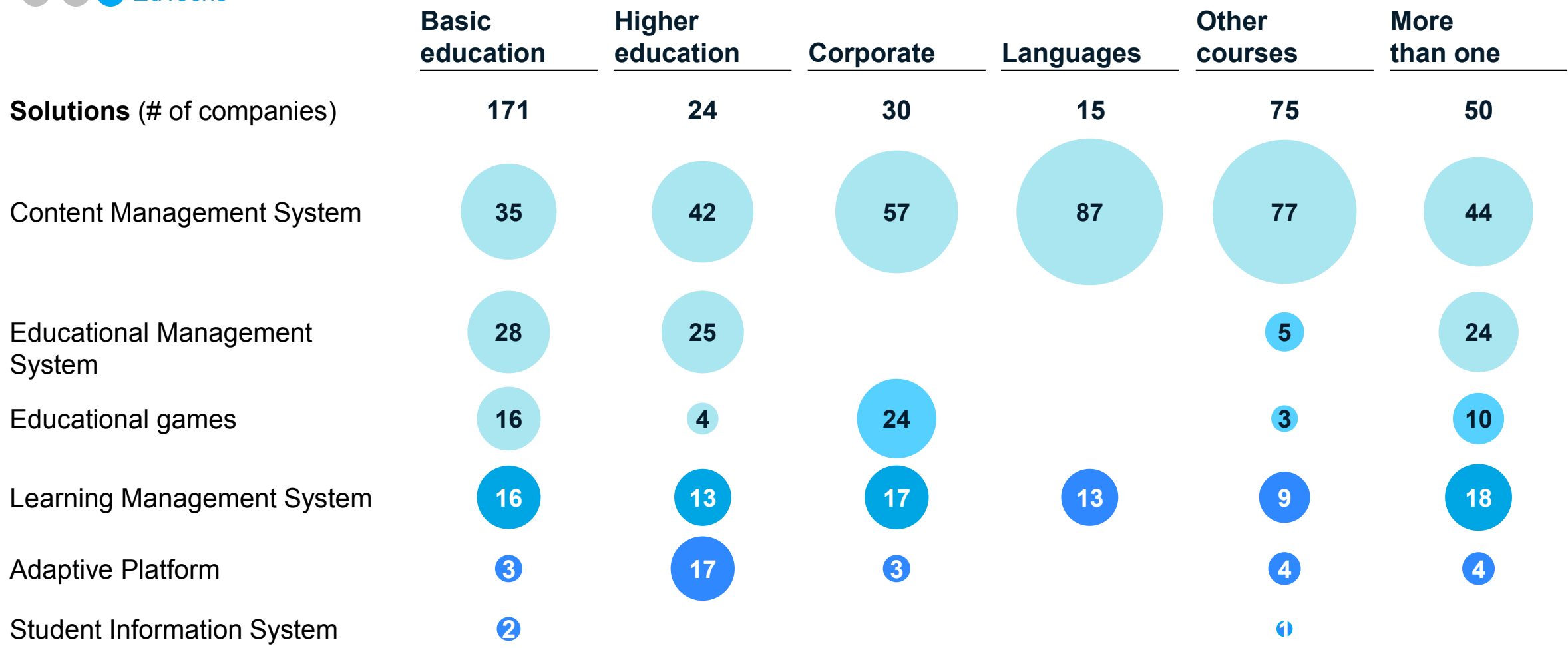
Source: "Evolution of the Brazilian education sector" from Falke empowered by EMIS (www.emis.com) (2018)

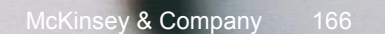


Brazil's many education startups aim to address a wide range of topics, mostly in content management (1/2)



Brazil’s many education startups aim to address a wide range of topics, mostly in content management (2/2)

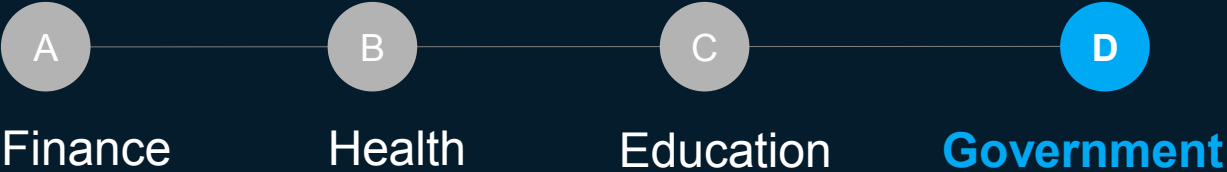


 EdTechs

Chapter



Sector Deep
Dives



Innovations have transformed public services in the last two decades



1996

Electronic voting

Election results are available in just a few hours after voting ends



1997

Income tax

Digital income tax returns and electronic filing have been available since 1997. By 2011, all filings were digital.



2009

Law of Transparency

The law obliges the union, states and municipalities to make all their spending publicly accessible on the internet

The public sector is driving innovation and creating apps for citizens

Public initiatives to foster innovation



The **Colab-i** initiative is part of the Audit Court’s Research and Innovation Center, which supports innovative projects through cooperation and skill-building



iGovLab seeks solutions to increase efficiency and scope of state management policies. It is linked administratively to the São Paulo state government.



Inovagov seeks to foster creative solutions, promote a more humane focus on user experience and integrate the efforts of different sectors, resulting in better processes and services in the public sector’s innovation culture.

Government apps



In the **e-Proinfo** app, students can view their courses and detailed information on institutions, courses and classes, as well as participate in discussion forums



The **CAIXA Bolsa Família** app shows payment dates for state welfare and lets citizens see what payments have been made

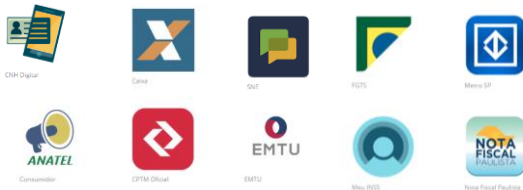


In the **Educação Conectada** app, users can see a school’s technology adoption on a scale of emergent, basic, intermediate or advanced



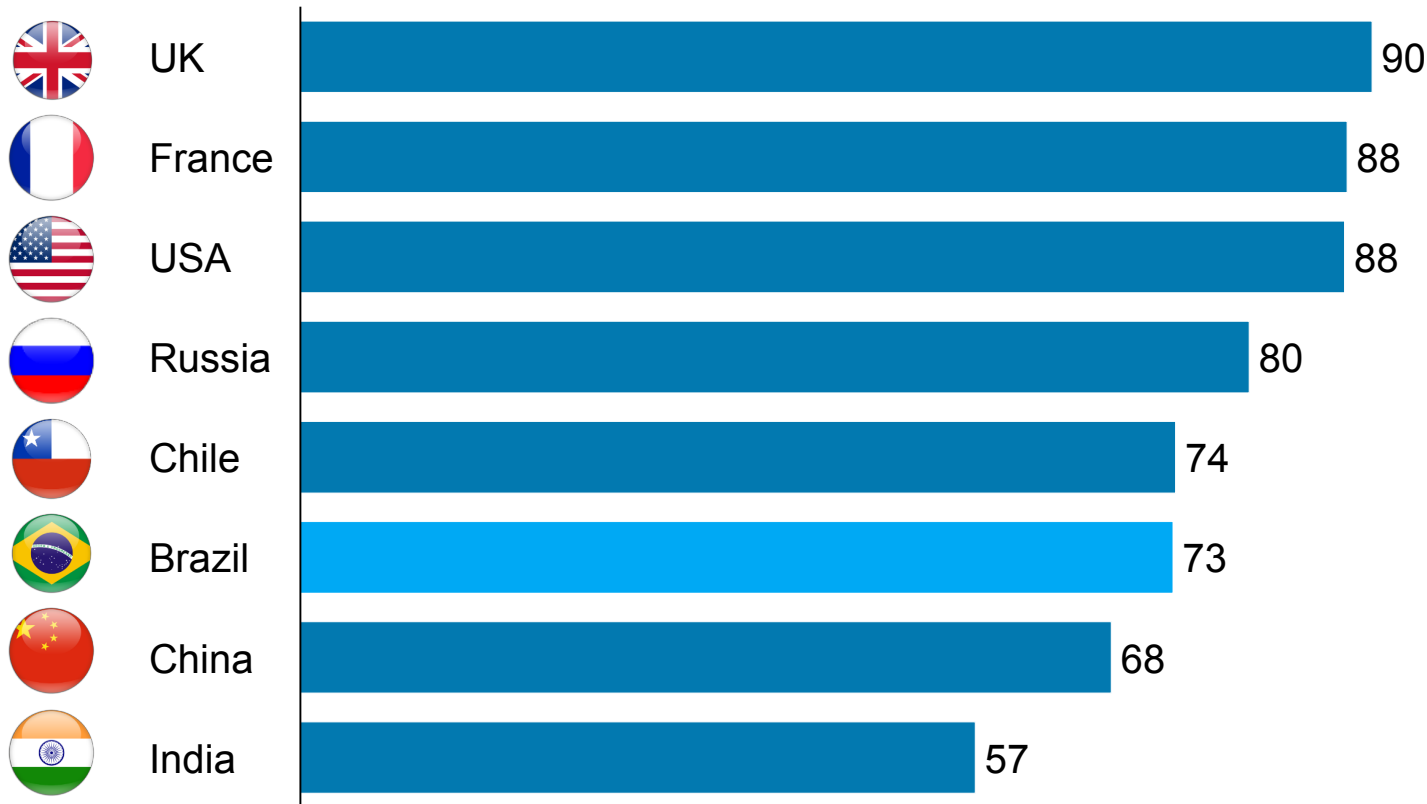
The **Receita Federal** app helps people file income tax returns. The free platform automatically stores user data and allows forms to be filled out in stages

Others



Brazil lags global leaders in digital government

e-Government Development Index
Composite index (x100)

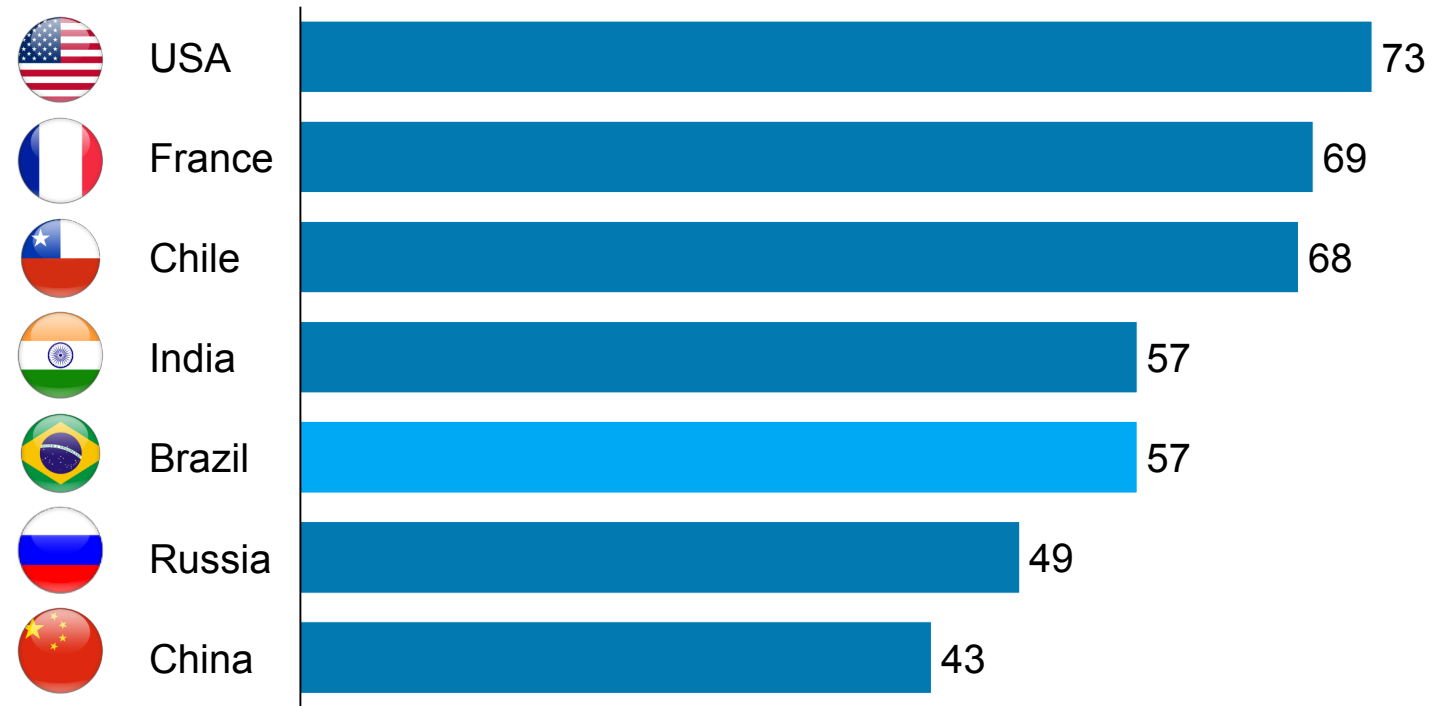


Source: UN (2017)



Brazil also trails on the Open Government index, which includes civic participation and the right to government information

Open Government Index
Composite index (x100)



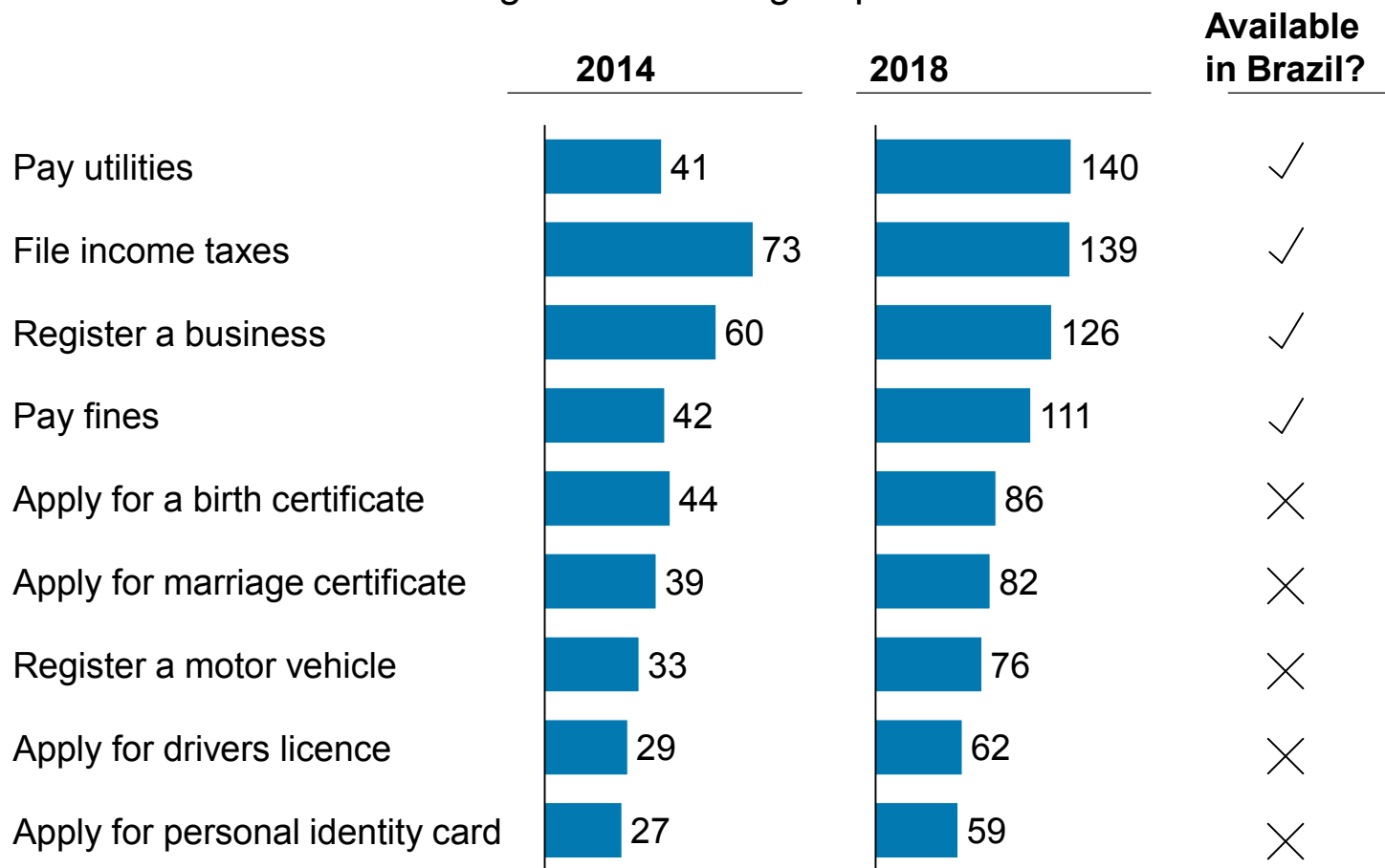
Source : World Justice Project (2015)



Brazil has many opportunities to improve digital services for citizens

Digital transactions for citizens

Number of countries offering service via digital platform



Source: Press clippings



How can Brazil improve its government services?

Days to...			Benchmark
Open a company	79		0.5
Obtain a construction permit	425		93
Obtain electricity	64		18
Fulfill an average company's tax obligation	85		3

Source: World Bank, Ease of Doing Business (2017)



Many countries invest in digital innovation to improve citizen satisfaction (1/2)

Examples



Digital interaction with citizens and companies



Convenience and customization

Citizens and companies use the same **safe login on both bank and government platforms**



Single point of contact

Single point of contact for residents and companies for more than **800 transactions** – including driver's license, birth certificate, etc.



End-to-end digital processes



Shared services model

The **State's Shared Services** Model currently provides **financial accounting, HR and payroll services** on a national level to the majority of government sector agencies



Automation of back-end payments

All citizens and companies utilize a **bank account designated for public payments**

Many countries invest in digital innovation to improve citizen satisfaction (2/2)

Examples



Decisions based on data



Data analysis reSources

Saudi Arabia monitored the MERS crisis in real time by consolidating data from all relevant points of contact to support decisions



Data analysis reSources

The job agency platform uses data analysis to segment candidates and make customized recommendations for potential positions



Sharing and publication of data



Strong top-down policies

The platform removes technological barriers that inhibit the sharing of data without errors between government agencies



Data accessibility and interactivity

An M.I.T. Media Lab project aims to be the most comprehensive visualization of US government data, "transforming data into stories"

GovTech startups are flourishing across areas and types of problems

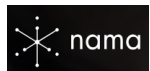
Transparency



Statistics and data analysis



Communication



Transportation



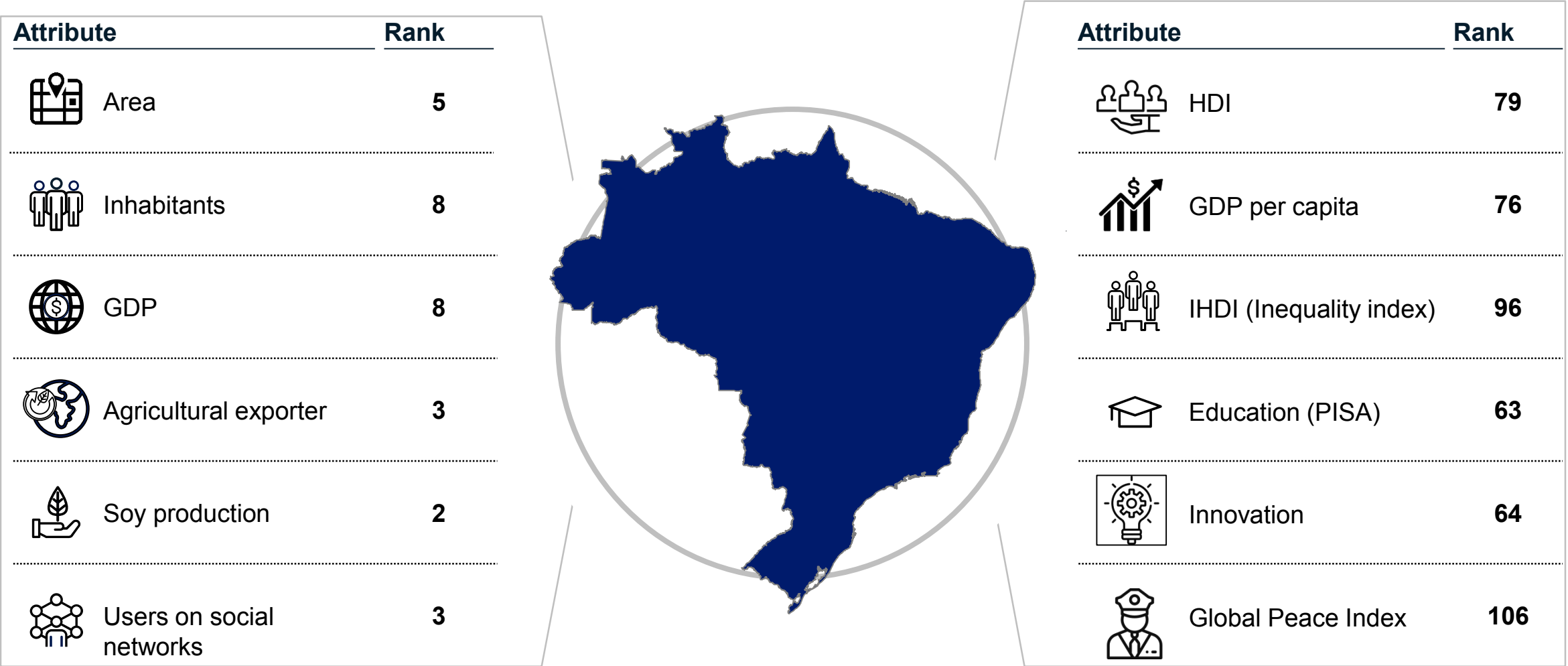
Efficiency / Operations



Appendix

Social perspective and other selected metrics

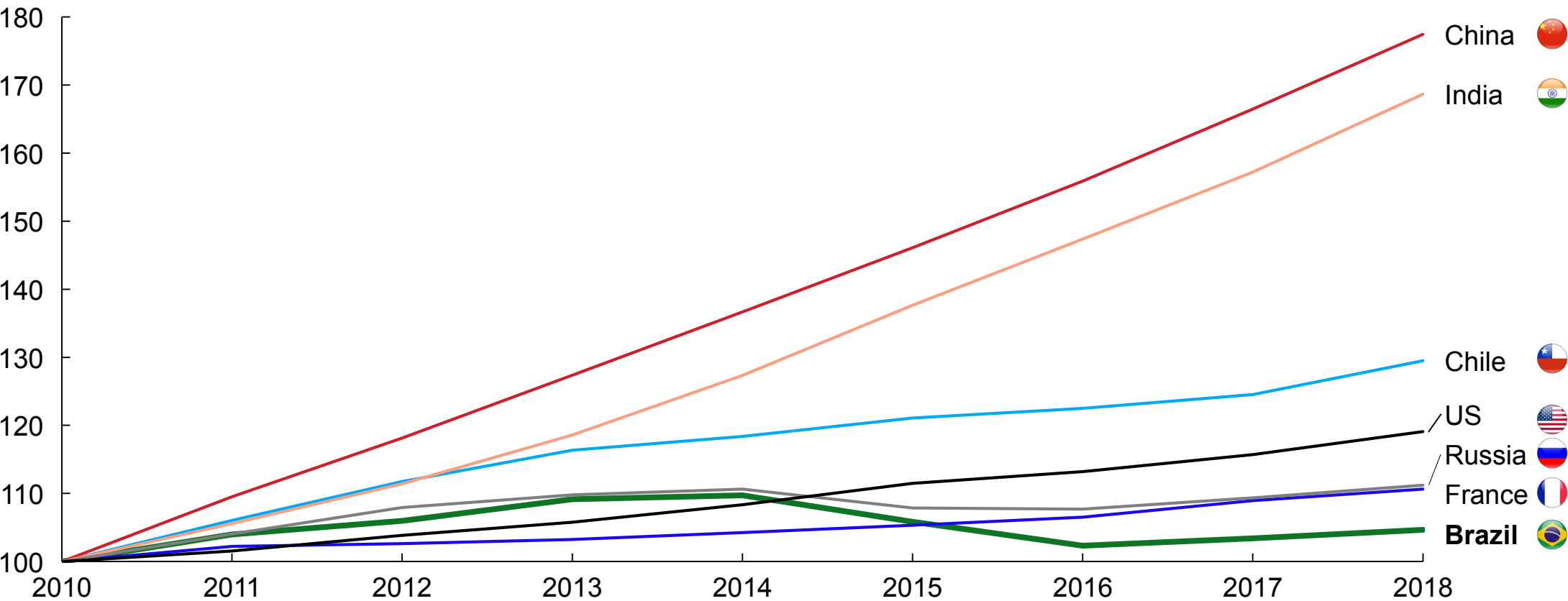
Although it is one of the largest countries and economies, Brazil still struggles to convert its potential into wealth and welfare for everyone



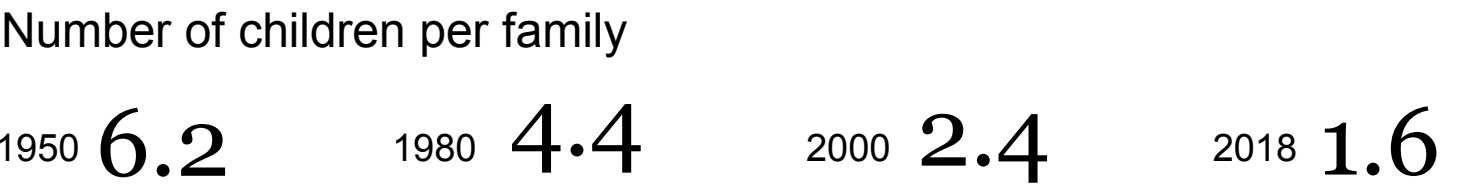
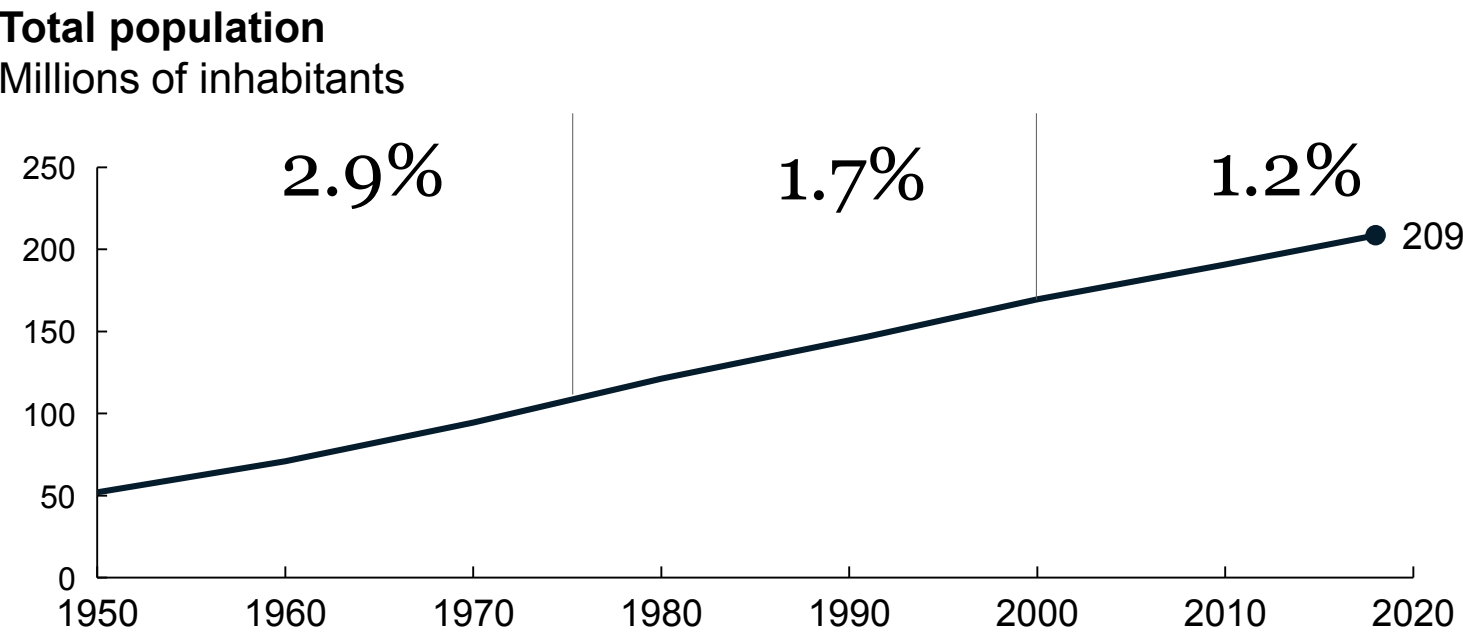
Brazil's growth has lagged that of most developed and BRIC economies

Real GDP Evolution

Index, 2010 = 100



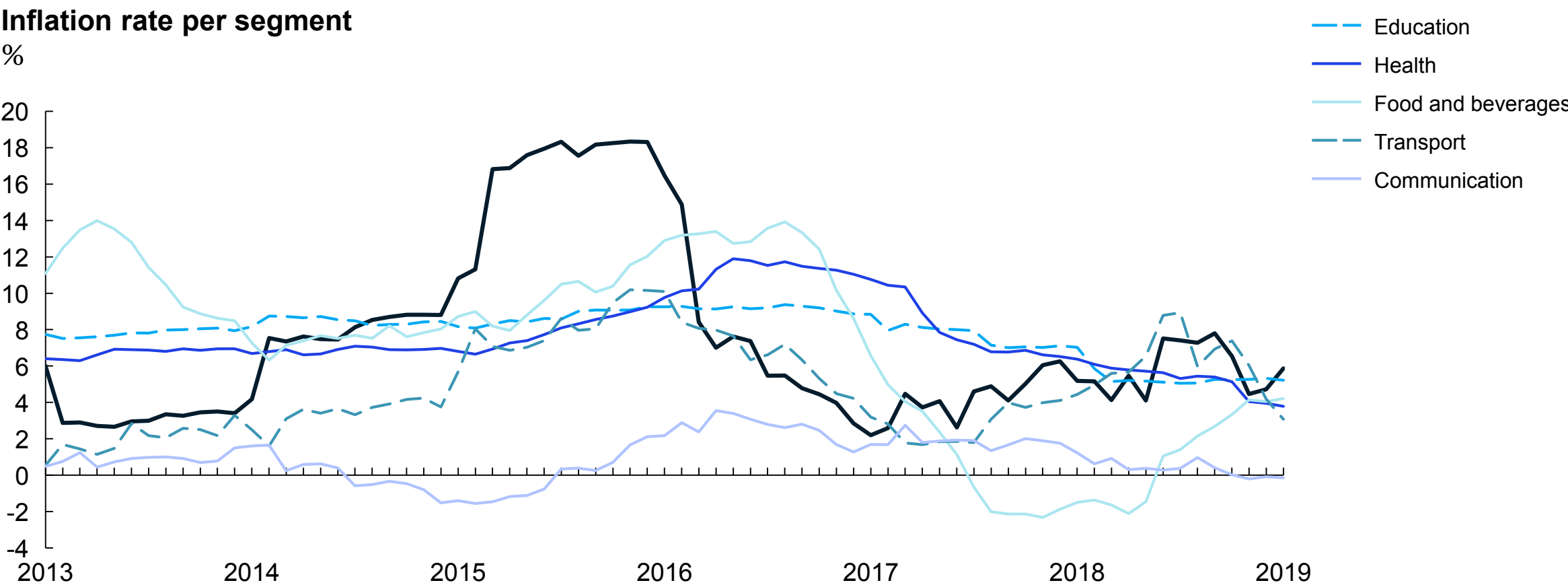
The population is growing steadily, but the number of births has dropped almost three-fold in the last 40 years



Source: IBGE

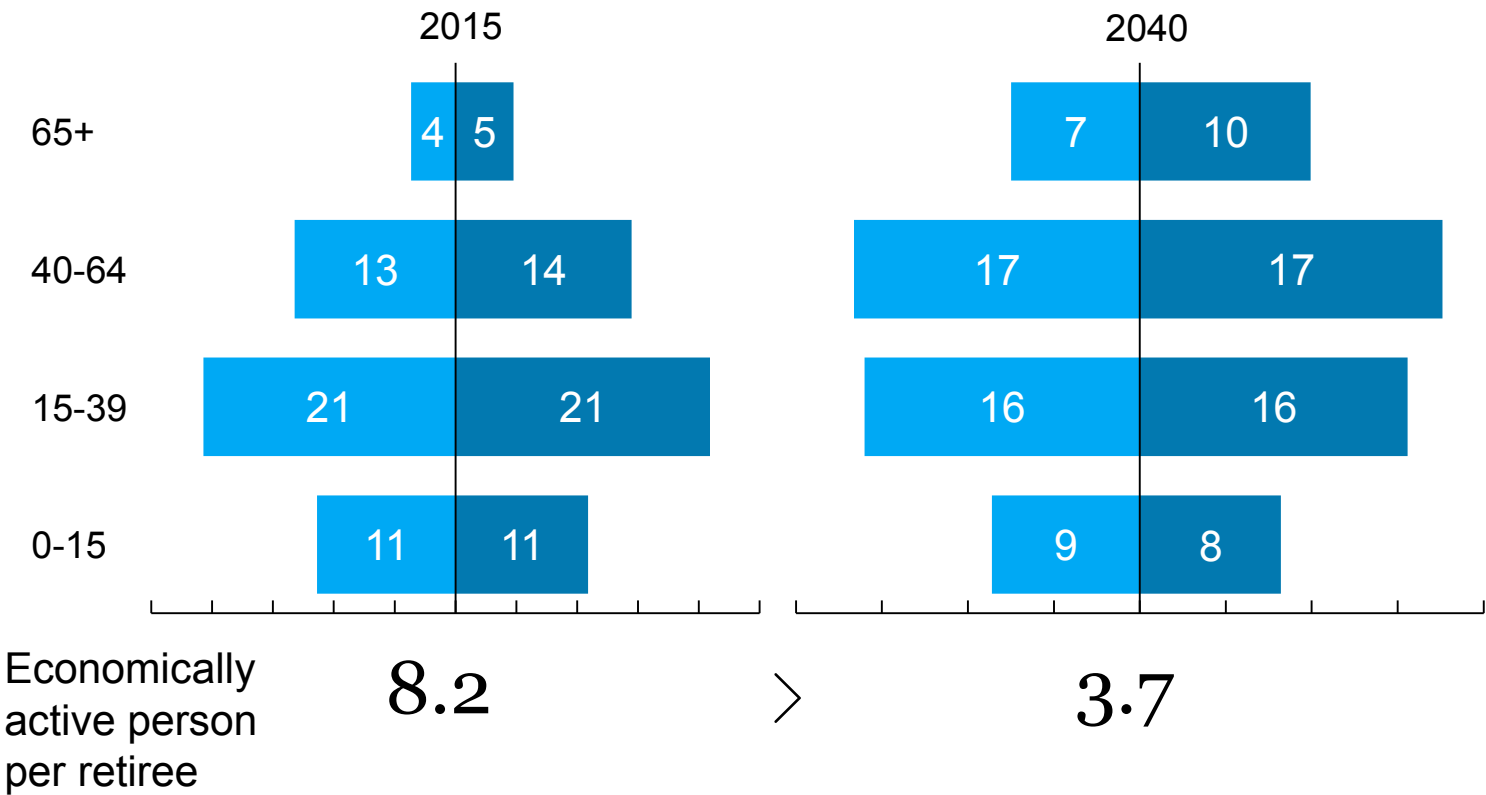


Inflation varies by type of product and service; the costs of housing, health and education are rising faster than average



Brazil's population is aging; the ratio of workers to retired people could decline to 60% by 2040

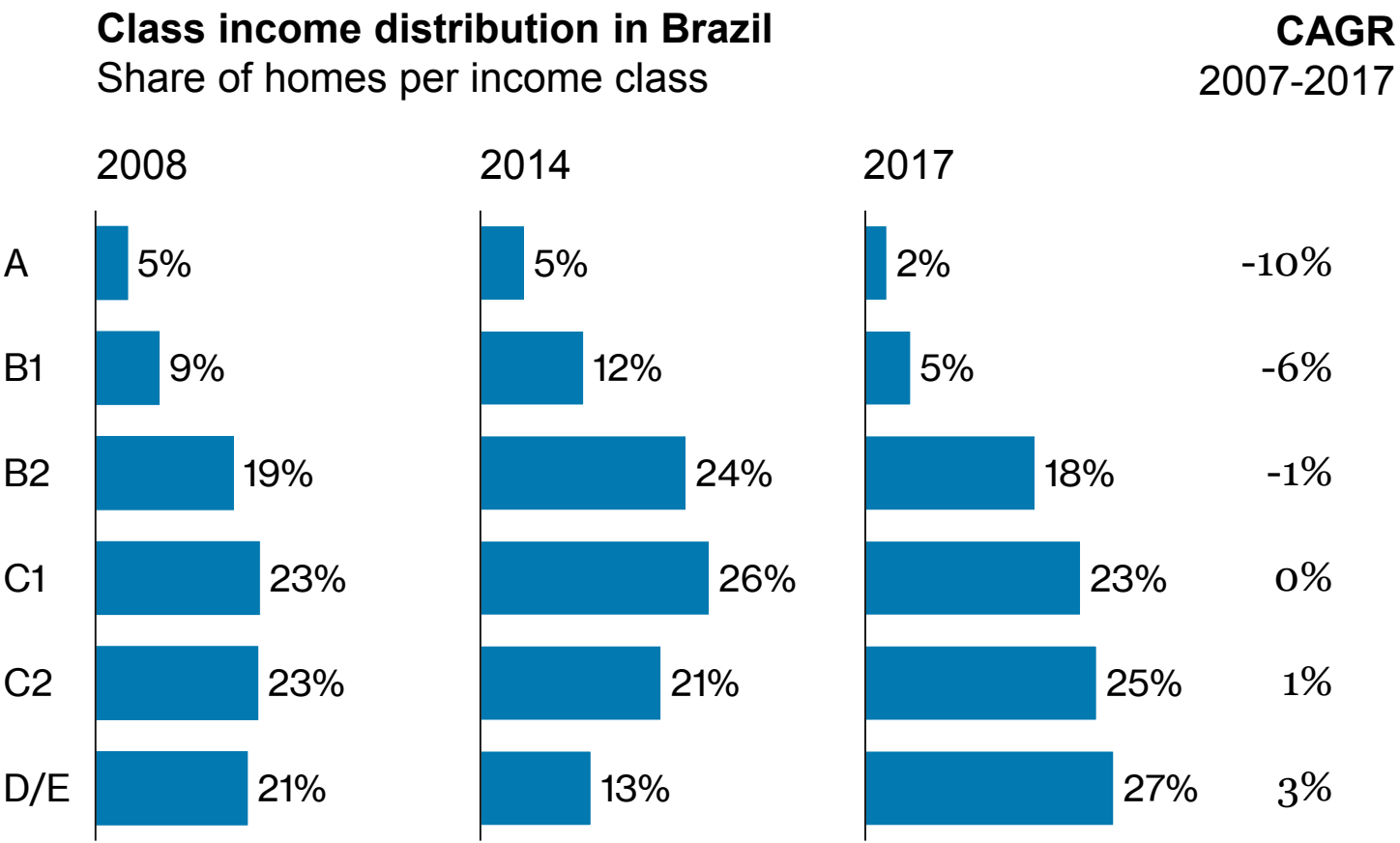
Predictive demographic profile for 2040
% of population per age bracket



Source: IBGE (2018)

CAGR 2015-2040	Variation p.p.
2.6%	8
1.0%	7
-1.2%	-10
-1.0%	-5

Most Brazilians are in lower-income economic classes – a share that has increased in recent years



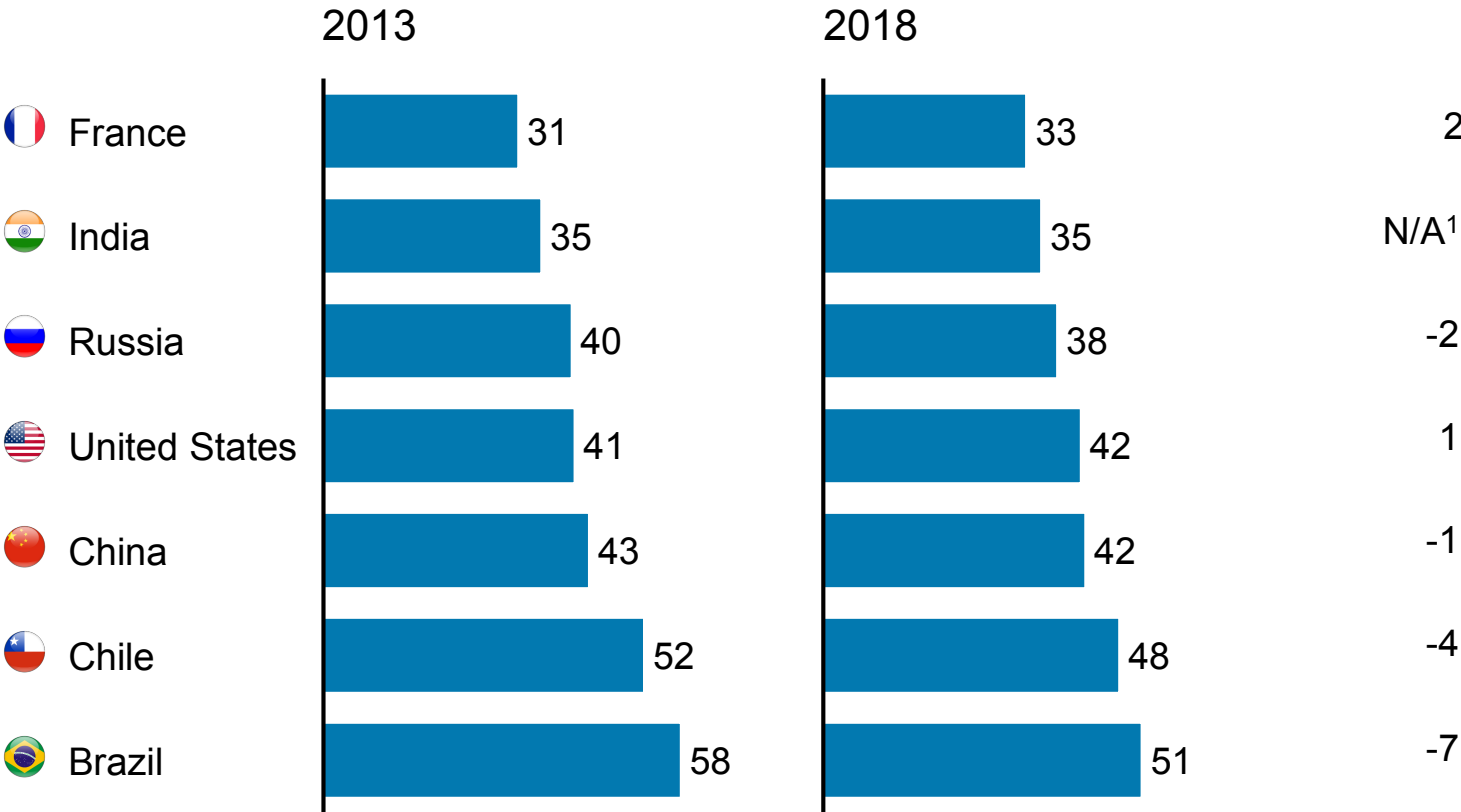
1 Note: households were classified according to the Critério de Classificação Econômica Brasil, defined by ABEP. According to ABEP, the average household gross monthly income per social class is: Class A: R\$ 20.272,56, Class B1: R\$ 8.695,88, Class B2: R\$ 4.427,36, Class C1: R\$ 2.409,01, Class C2: R\$ 1.446,24, Class D/E: R\$ 639,78



Income inequality has declined but the country is still among the most unequal in the world

Income distribution inequality – Gini Index
Index, 0 - 100

Variance
2013-2018, p.p.

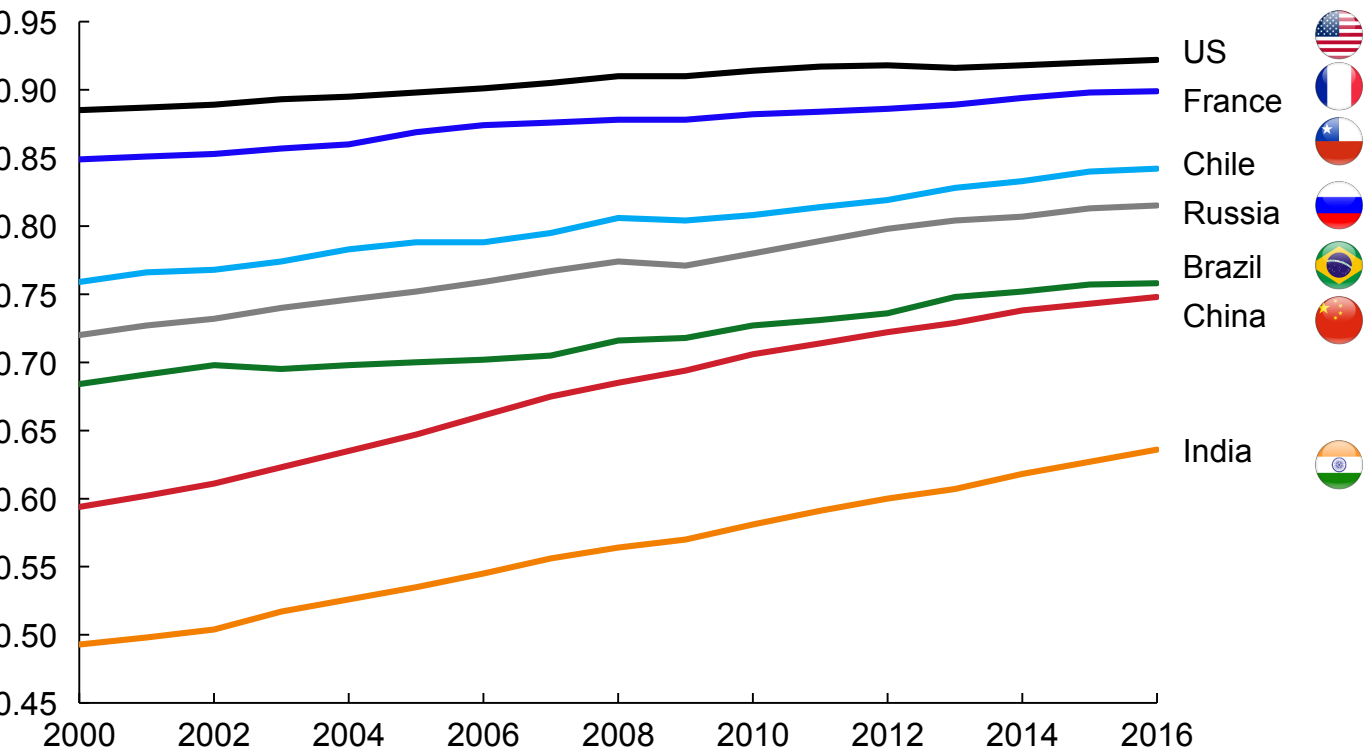


¹ Not possible to calculate since there is just one data point in the interval

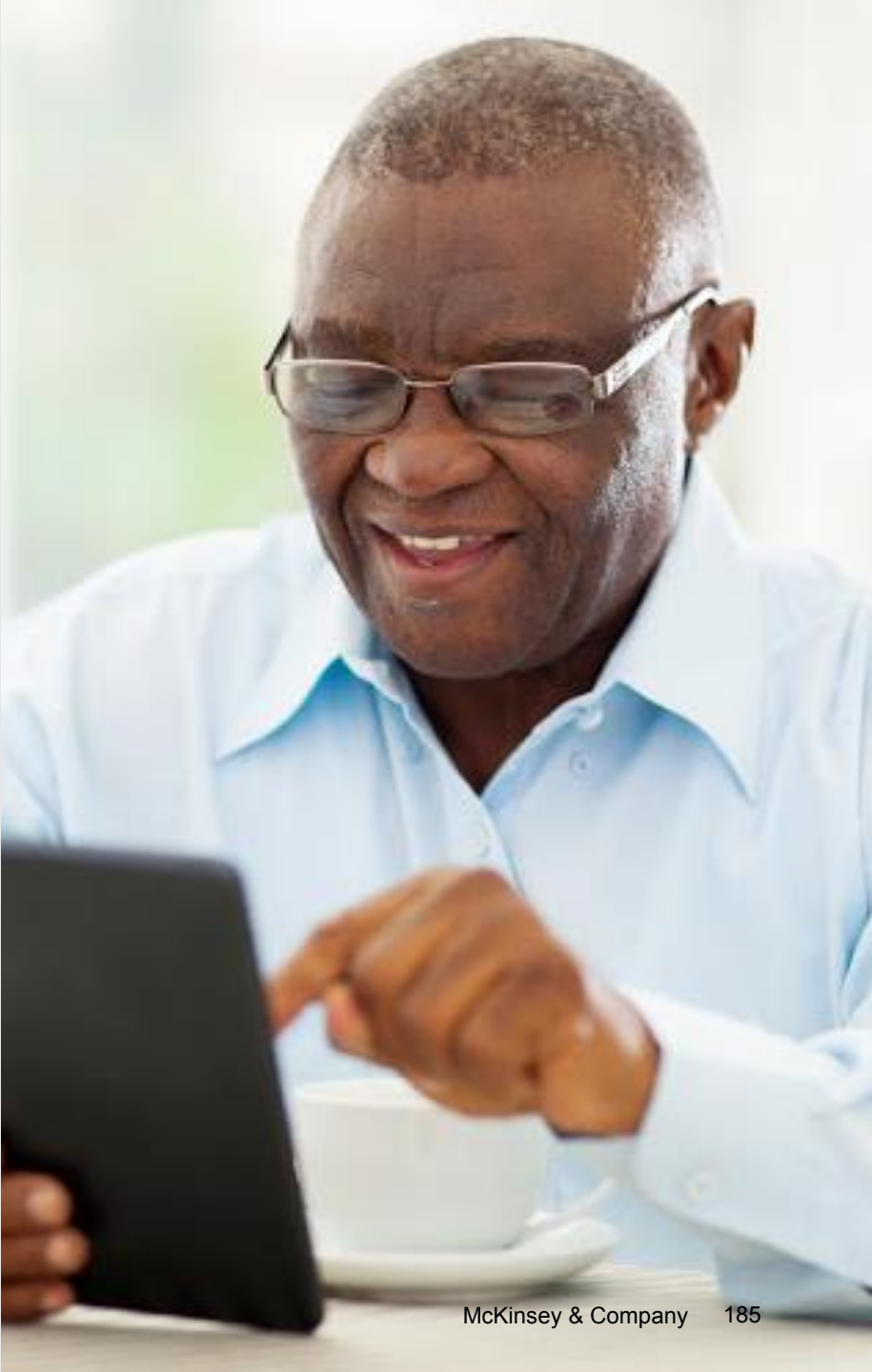


Brazil has lagged on the Human Development Index

HDI (Human Development Index)
Index value



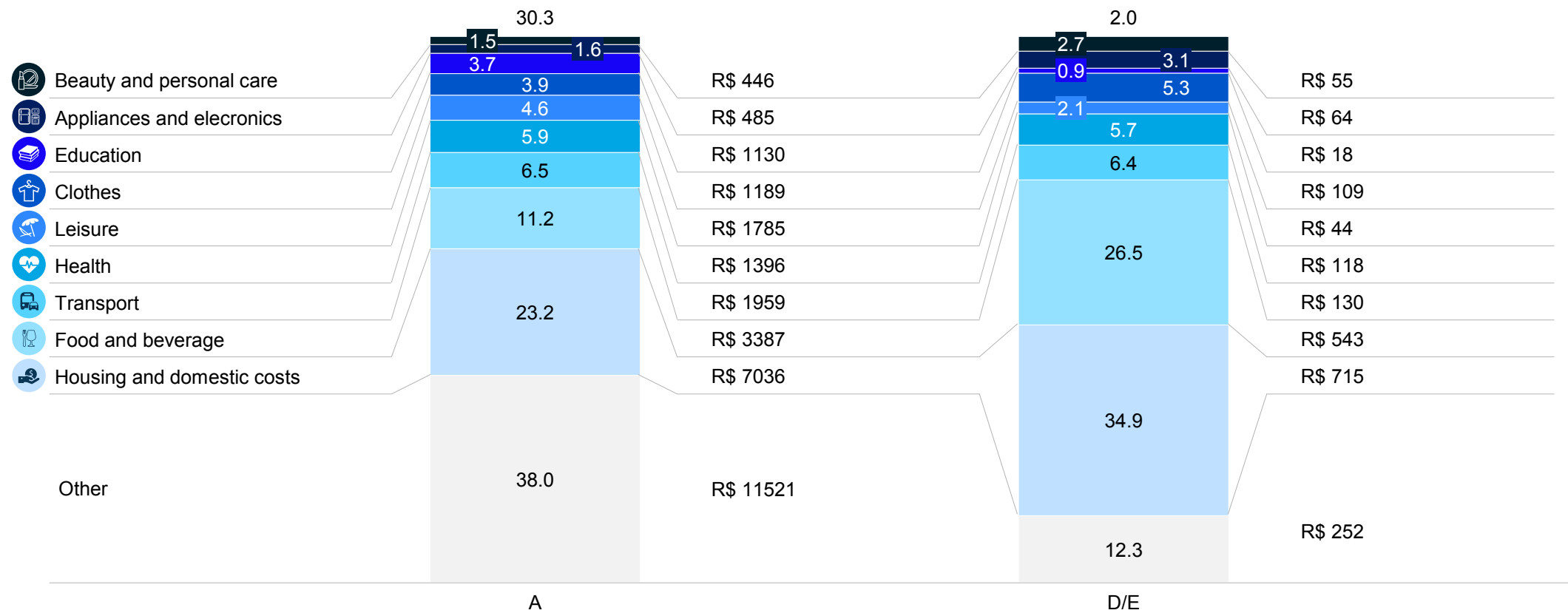
Source: World Bank, UN



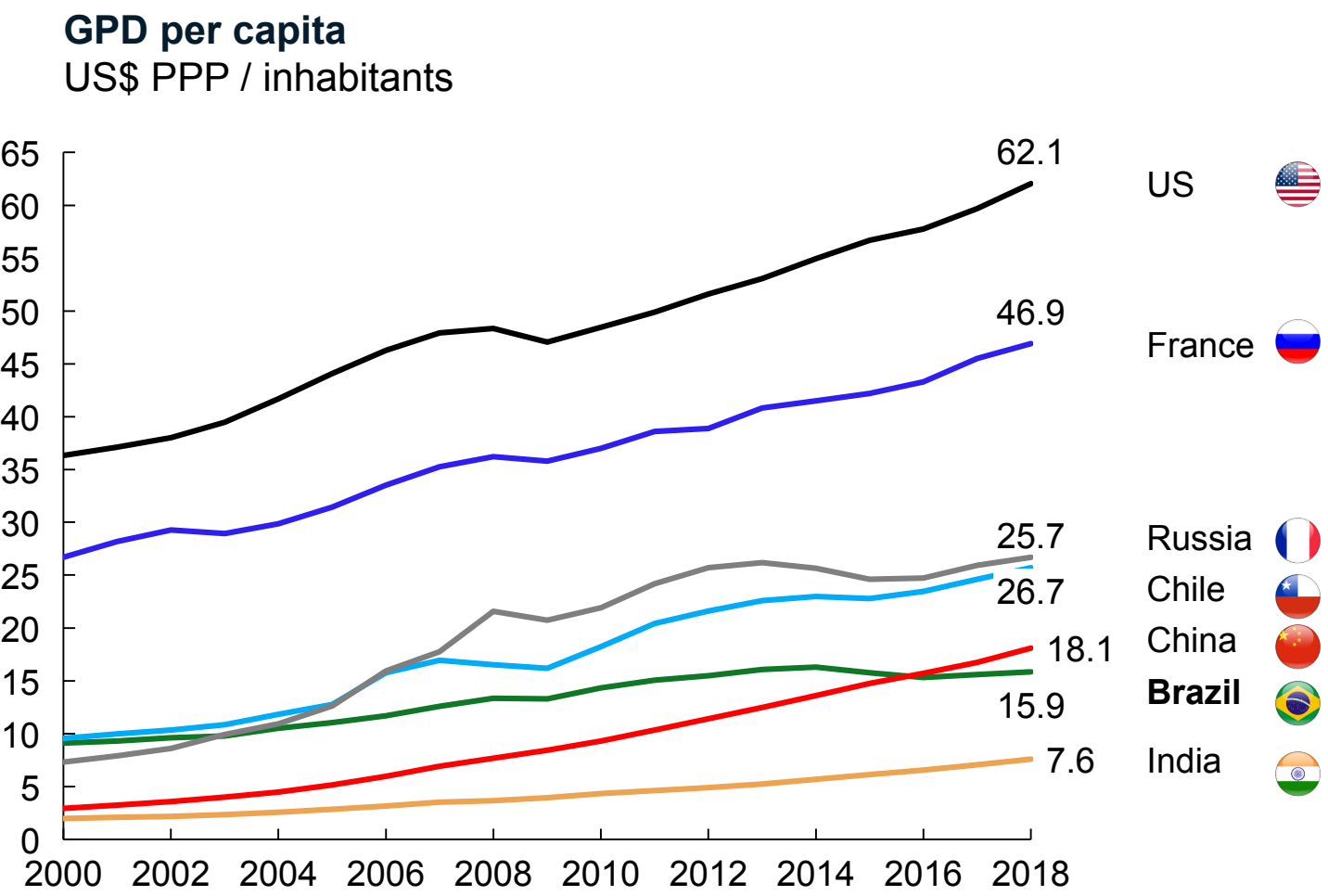
Housing and food represent the biggest share of spending for most households

Consumption profile per income class

% of monthly income, total income (R\$ Thousands), average monthly spending per category



Brazil grew GDP per capita more slowly than other BRICS and recently was surpassed by China

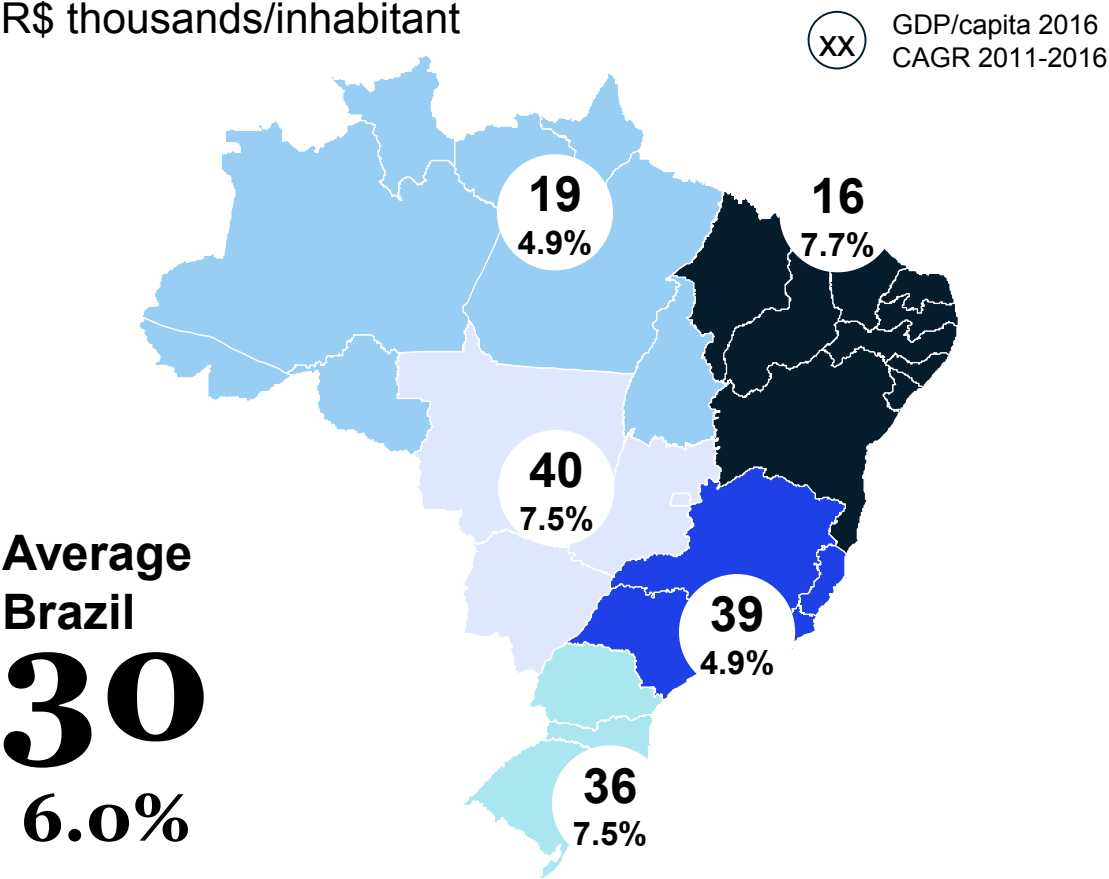


Source: The EIU



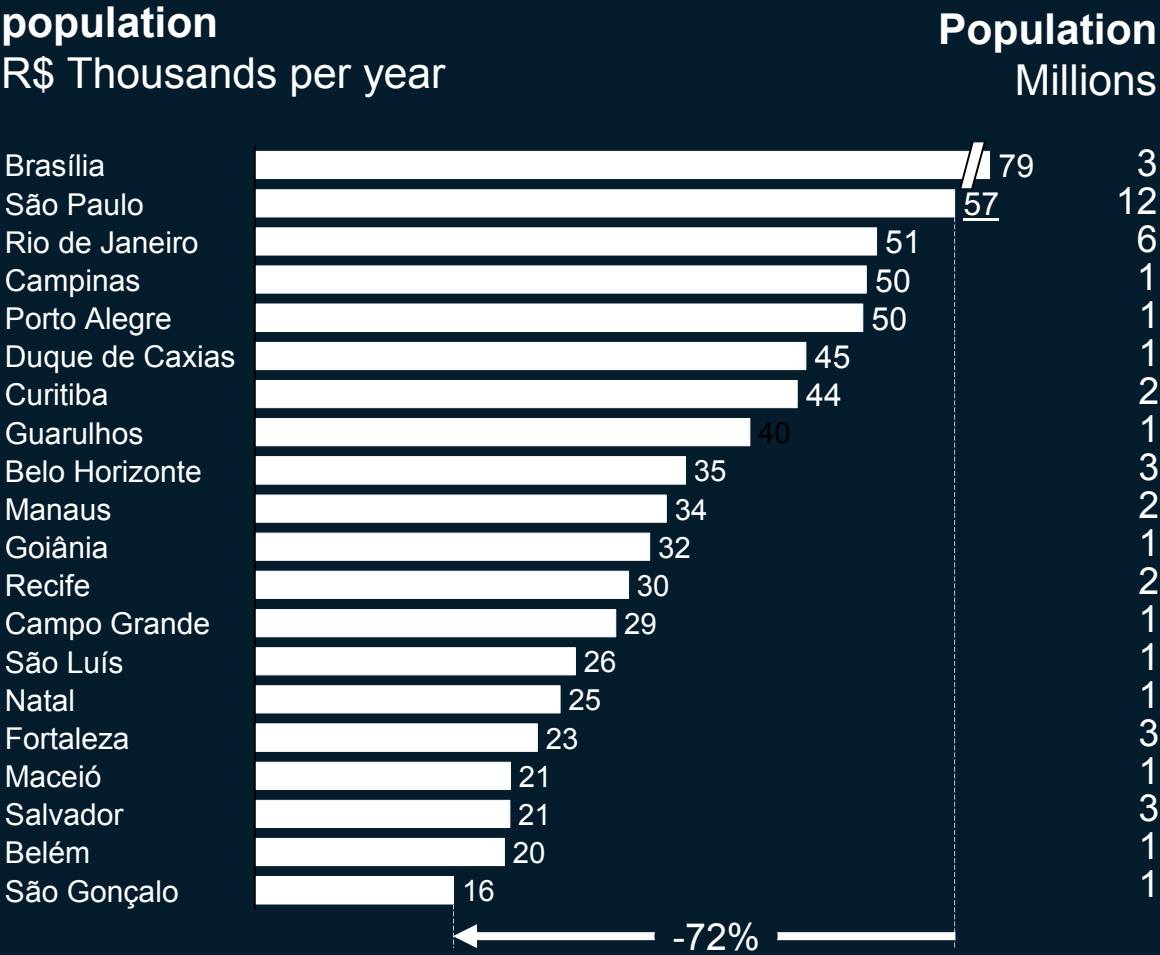
GDP per capita varies significantly among the largest cities in Brazil

GDP per capita per region
R\$ thousands/inhabitant



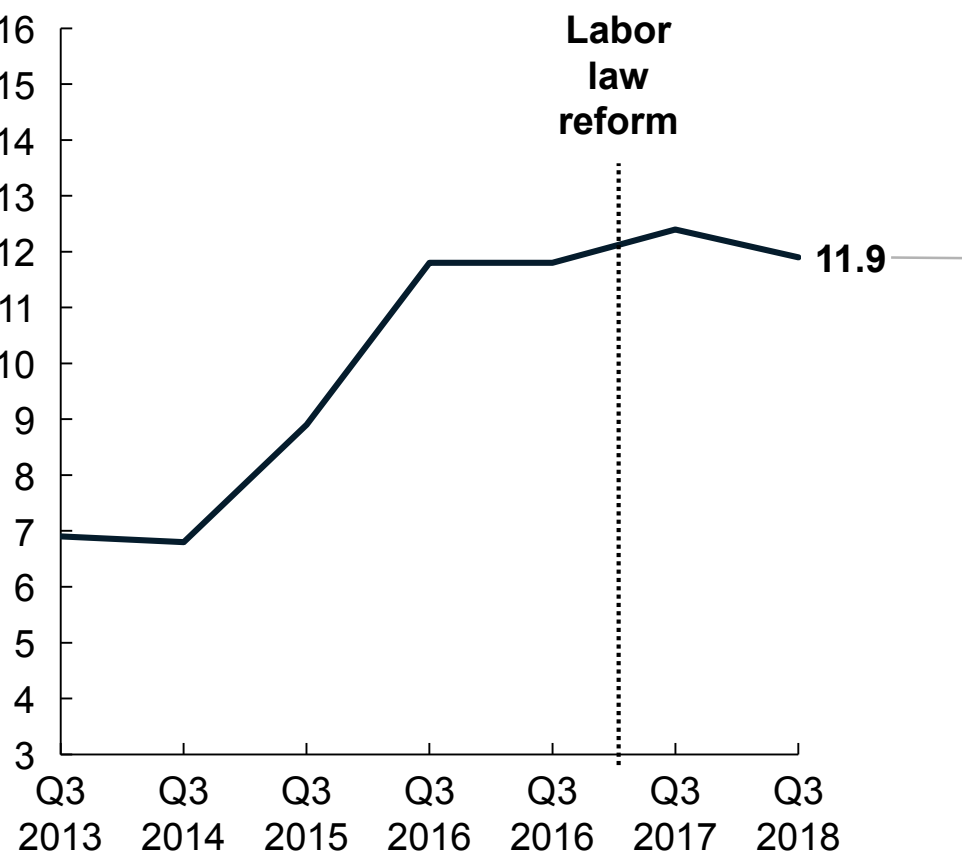
Source: IBGE

GDP per capita for the top 20 cities by population
R\$ Thousands per year



Unemployment varies widely across regions

Unemployment rate
% of total economically active population

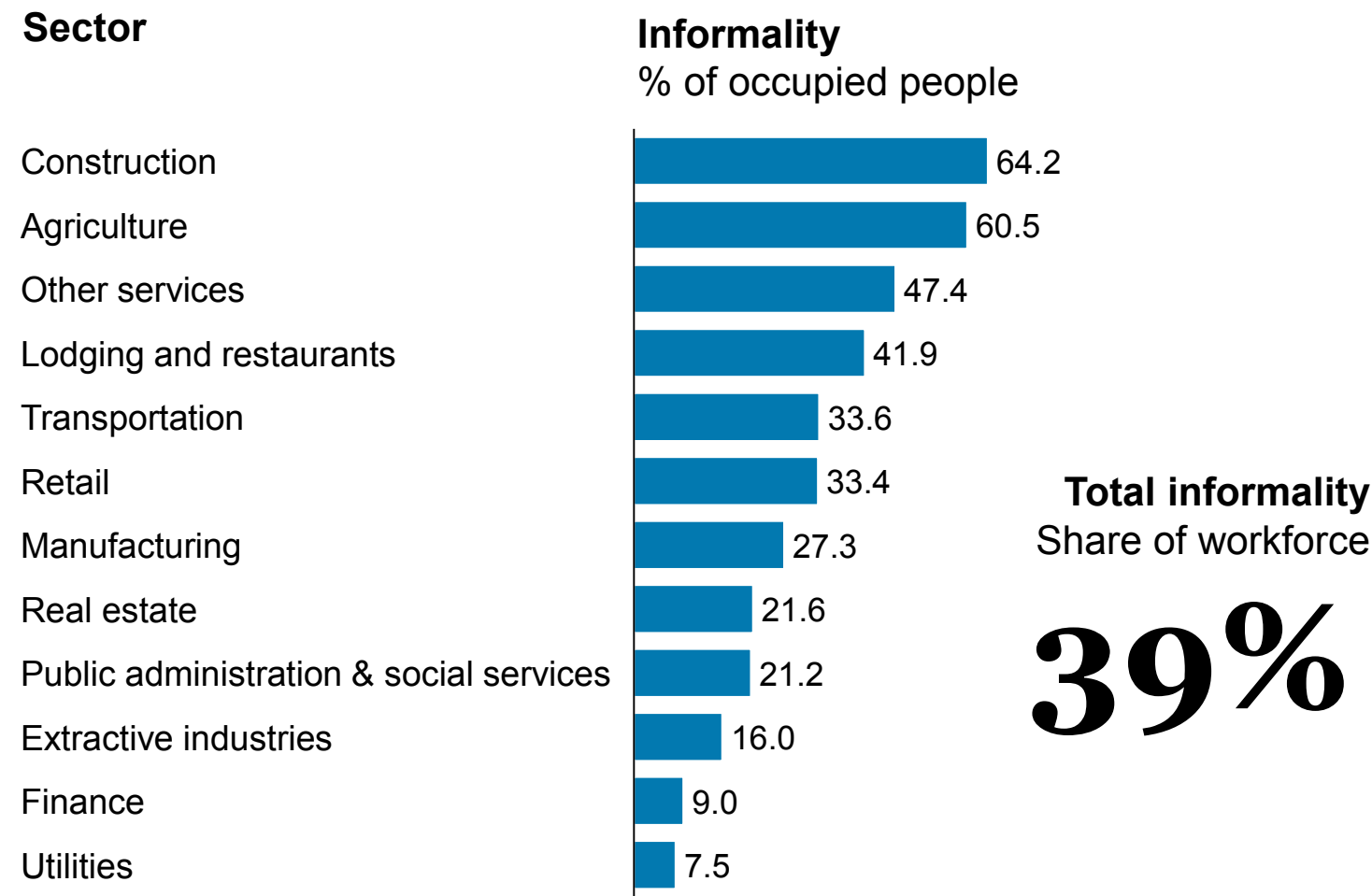


Region	Unemployment rate
Northeast	14.4
North	11.5
Southeast	12.5
Southt	7.9
Center-west	8.9

Source: IBGE



Informality is high in many sectors of the economy



Source: PNAD (2015)



Brazilian worker profiles

Position (2015)



Industry



Company size

