

### **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 <a href="https://www.brazilatsiliconvalley.com">www.brazilatsiliconvalley.com</a>

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### Chapters



Macroeconomics



Digital Perspective



Entrepreneurship Ecosystem



**Sector Deep** Dives

### Chapters



Macroeconomics



Digital Perspective



Entrepreneurship Ecosystem



Sector Deep Dives

#### **Macroeconomics**

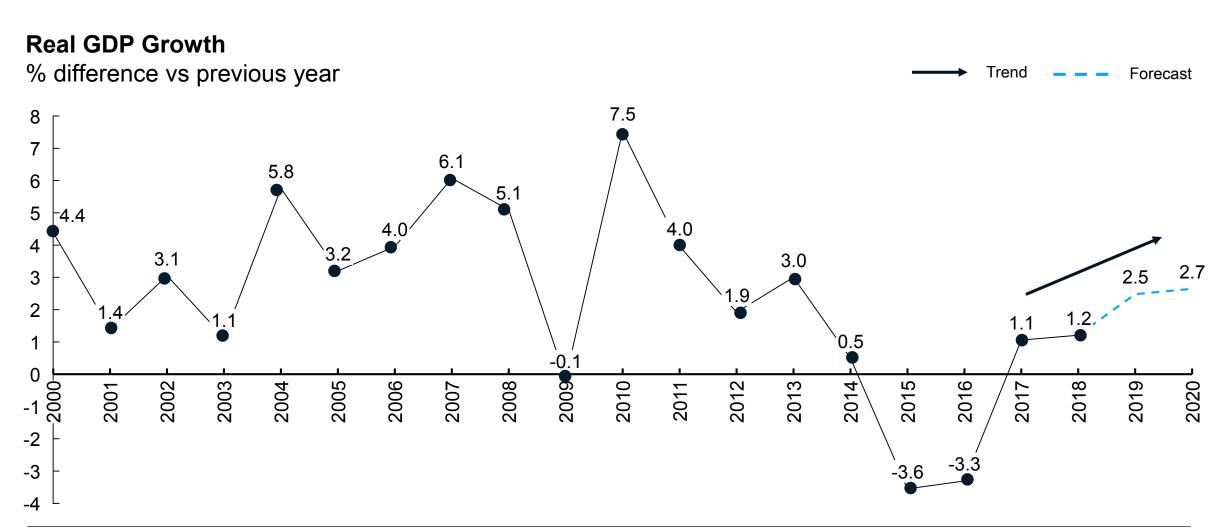
The Brazilian economy has reached a **tipping** point

- 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 homegrown 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



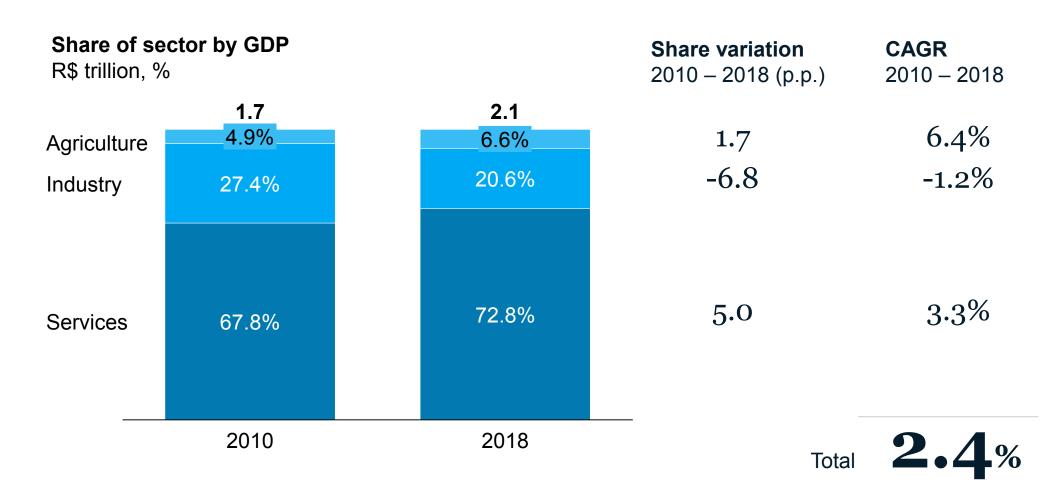
Private consumption is the main driver of this growth

### GDP% of growth by component

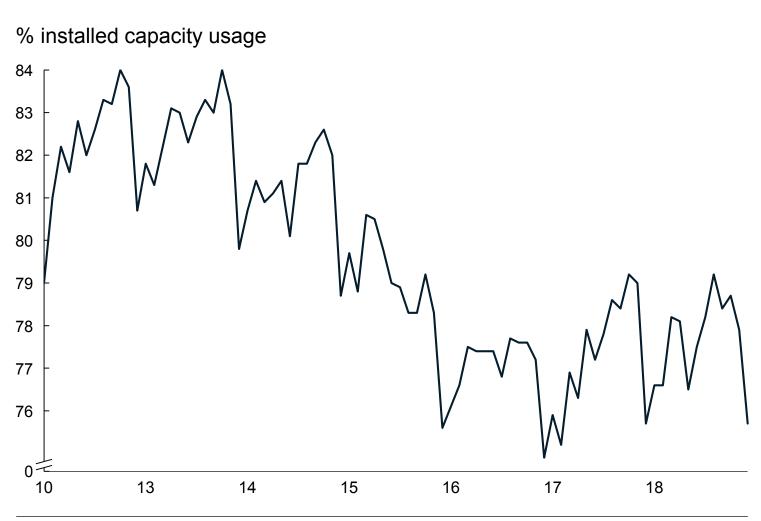
GDP growth	2014 O.5	2015 -3.6	2016 -3.3	2017 1.1	2018 1.2
Private consumption	1.5	-2.2	-2.6	1.0	1.4
Government consumption	0.1	-0.3	0	-0.2	0
Gross fixed investment	-1.0	-3.0	-2.3	-0.4	0.8
External balance	0.2	3.0	1.5	0.1	-1.0
Stock building	-0.3	-1.0	0.1	0.7	0

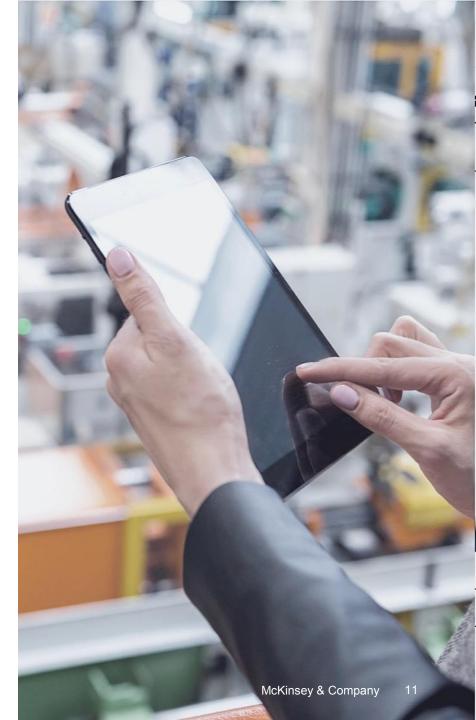
Main driver of growth

### Agriculture and services account for significant economic growth



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

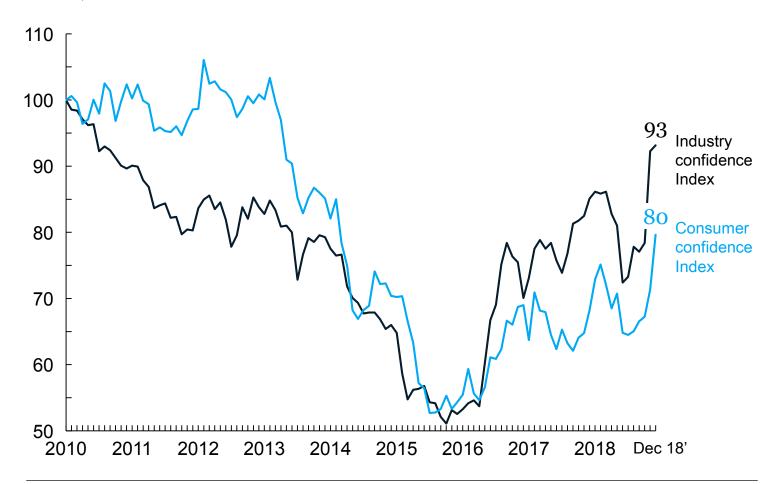




## Consumer and industry confidence have reached their highest point since 2014

#### **Industry and Consumer Confidence Index**

Index, Jan/2010 = 100

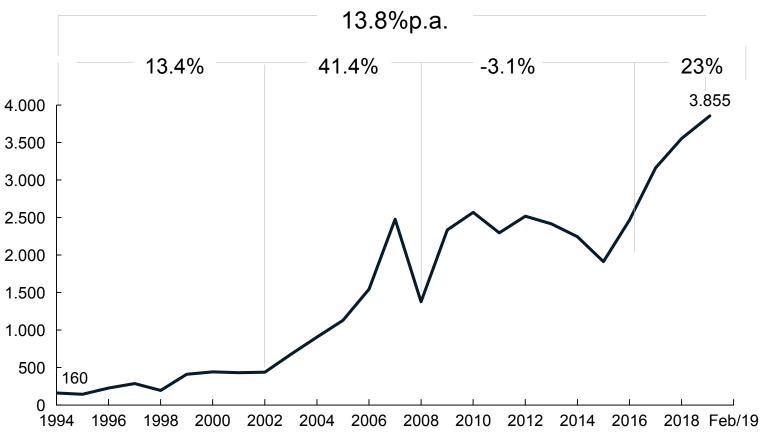




## In 2018, Bovespa reached its highest ever market cap of R\$3.8 trillion...

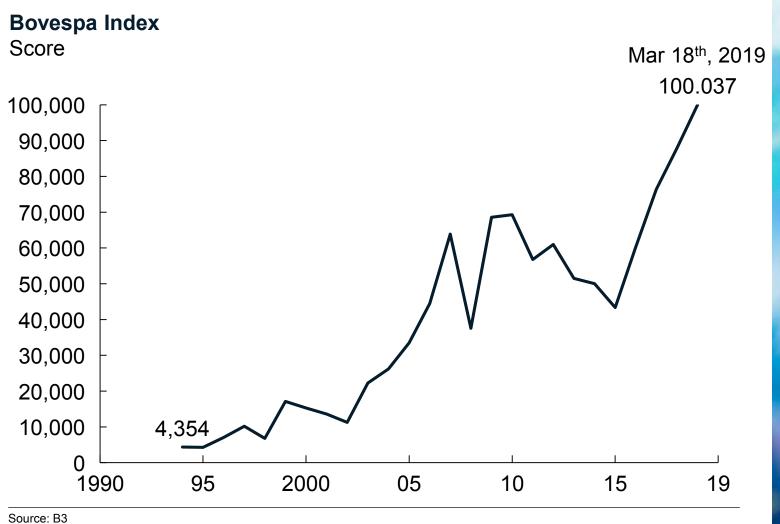
#### **Bovespa Market Value**

R\$ billion





### ... and its highest score

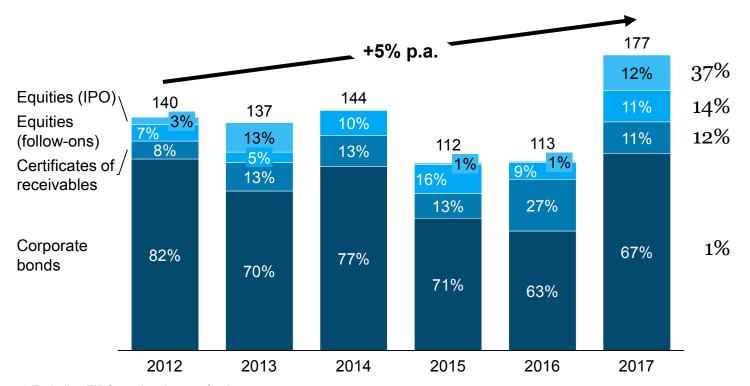




## Brazil's capital markets are developing and diversifying funding for companies

Capital markets<sup>1</sup> – domestic issuance R\$ billion

**CAGR** 2012-2017



<sup>1</sup> 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

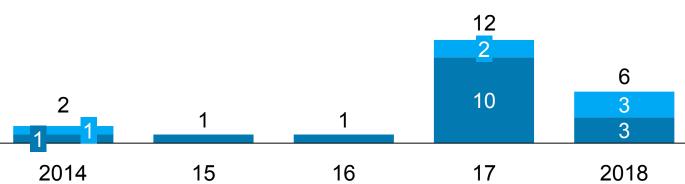










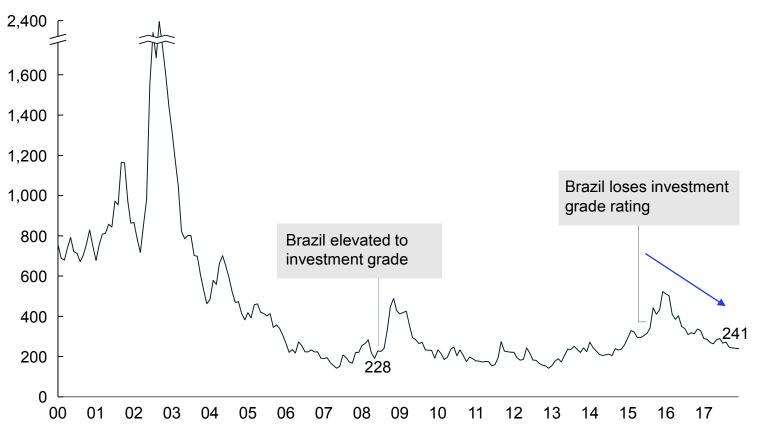


1 Azul has had an IPO on both B3 (Brazil) and NYSE (US). 2 Companies have had an IPO on US Stock Exchanges



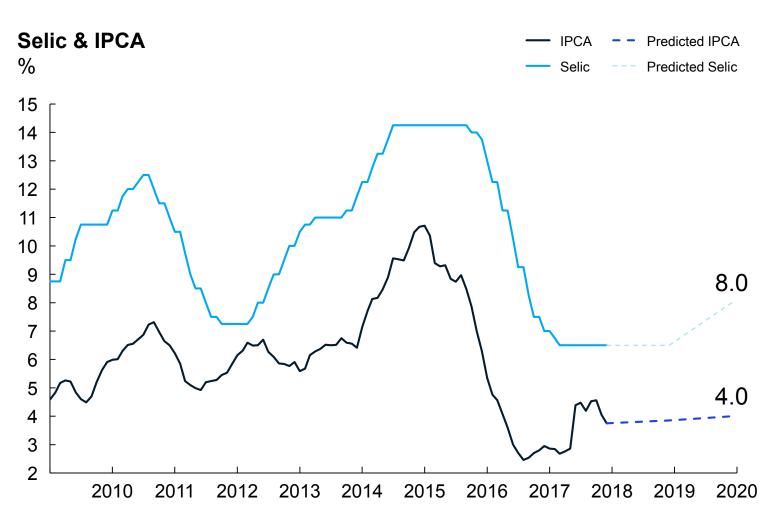
### The "Brazil-risk" rate has fallen significantly since 2016





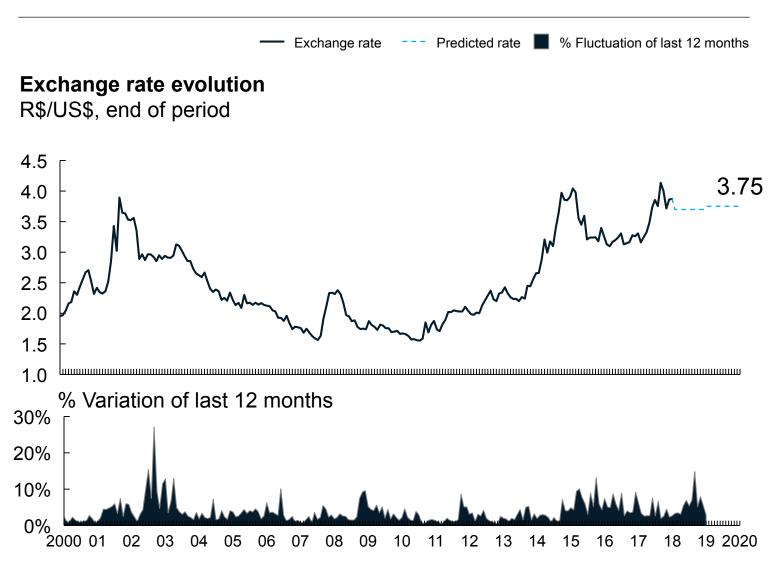


### Interest rates and inflation are low





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



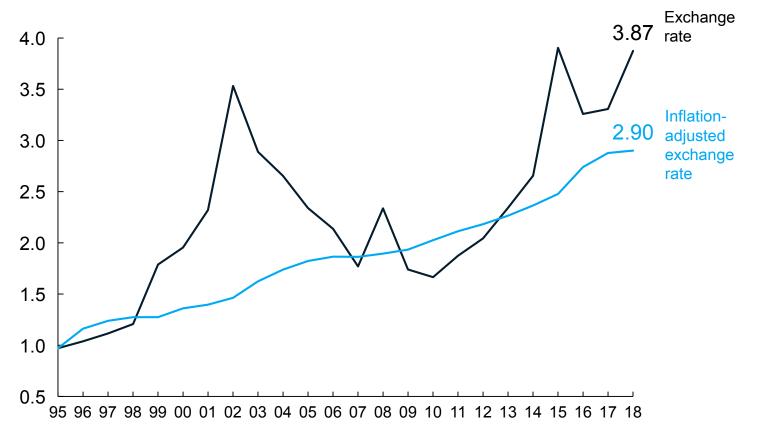
Source: EIU, BCB

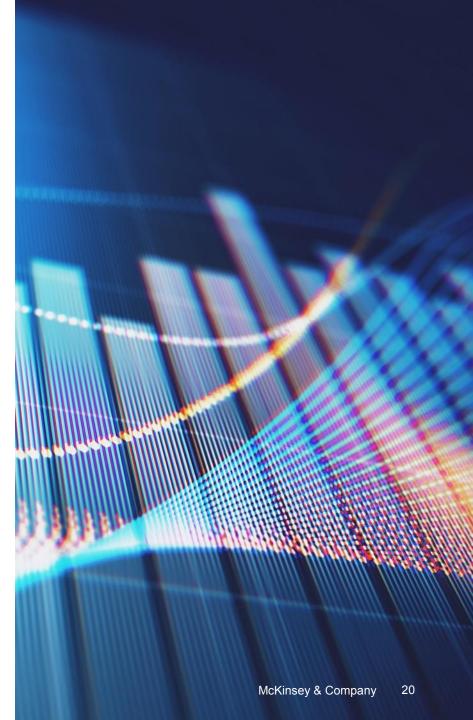


### ... but in the long term, R\$ has shown relatively low depreciation when adjusted for inflation

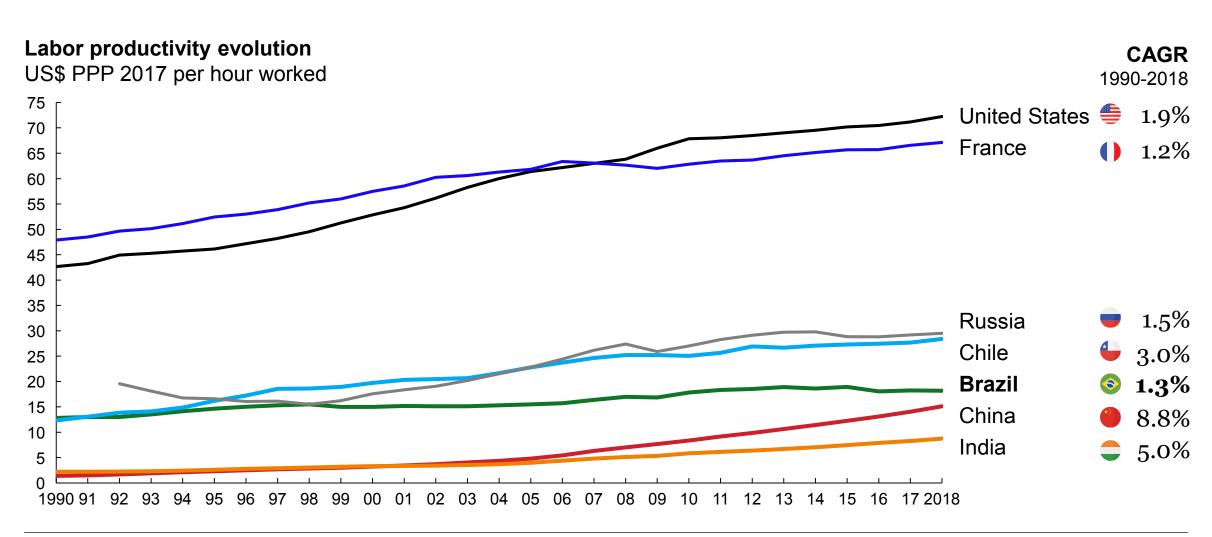
#### **Exchange rate evolution**

R\$/US\$, end of period





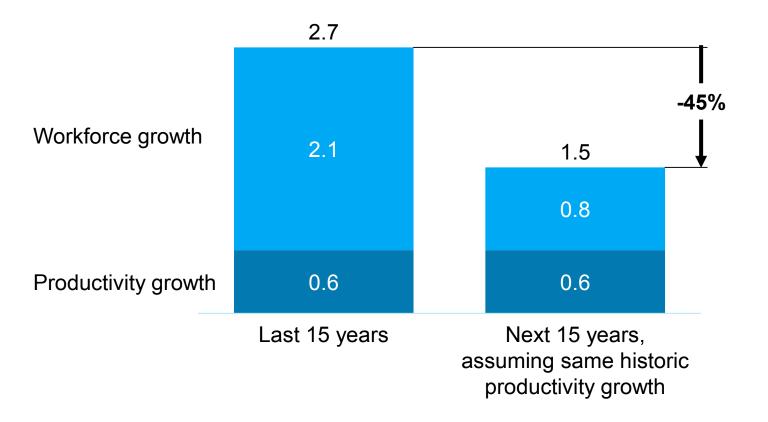
### Brazil needs to address major productivity and innovation challenges; productivity has improved little in recent years



## The country can no longer rely on demographics for economic expansion

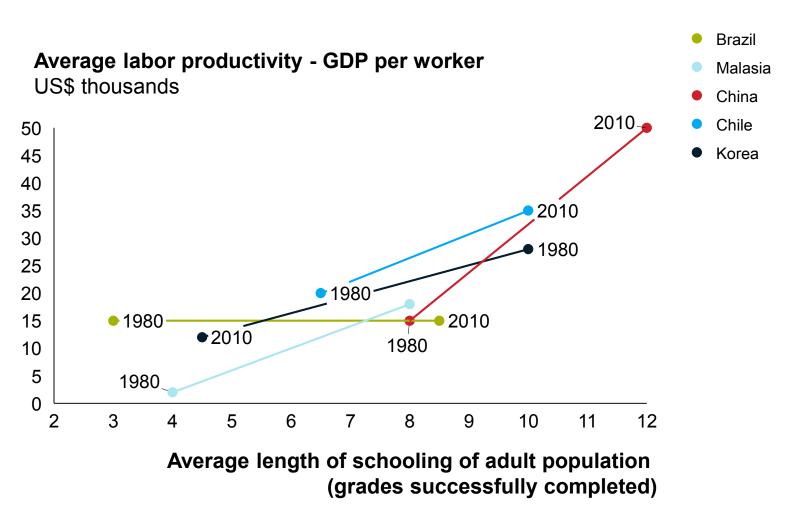
**Annual growth** 

%



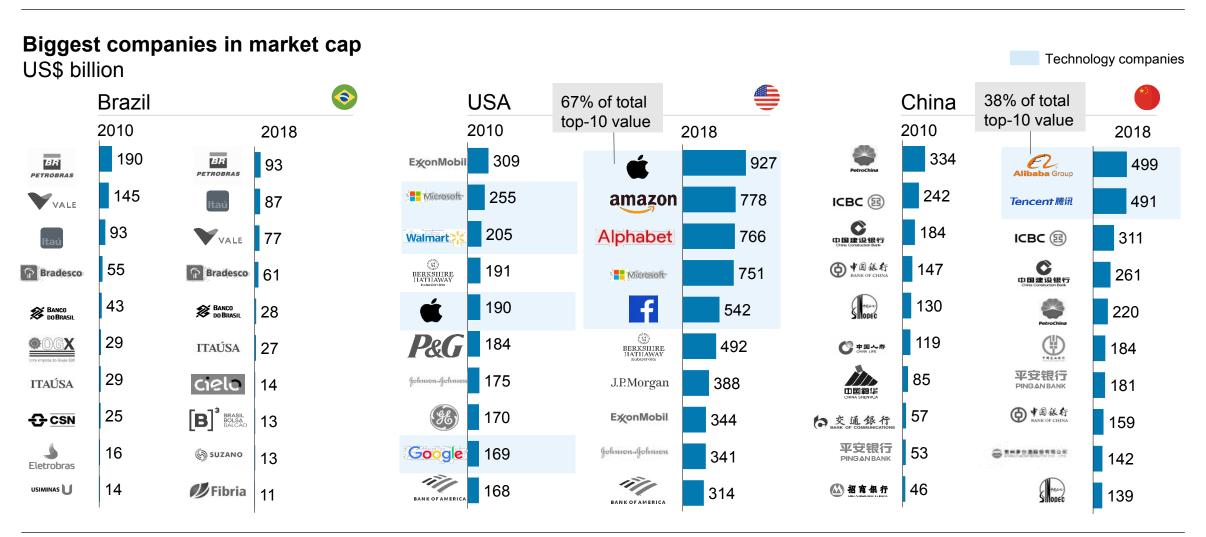


## More years of schooling have not improved productivity





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



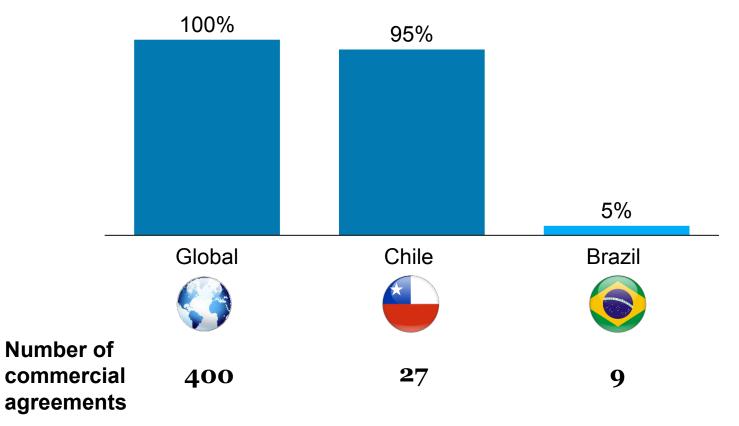
Source: Forbes 2000; Capital IQ McKinsey & Company

24

### Brazil participates in only a few global commercial trade agreements

#### Access to consumers worldwide<sup>1</sup>

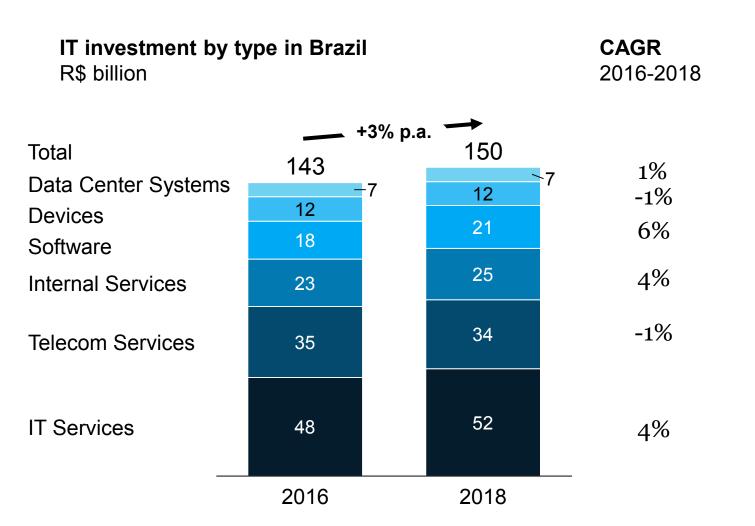
%



<sup>1</sup> 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





### 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:

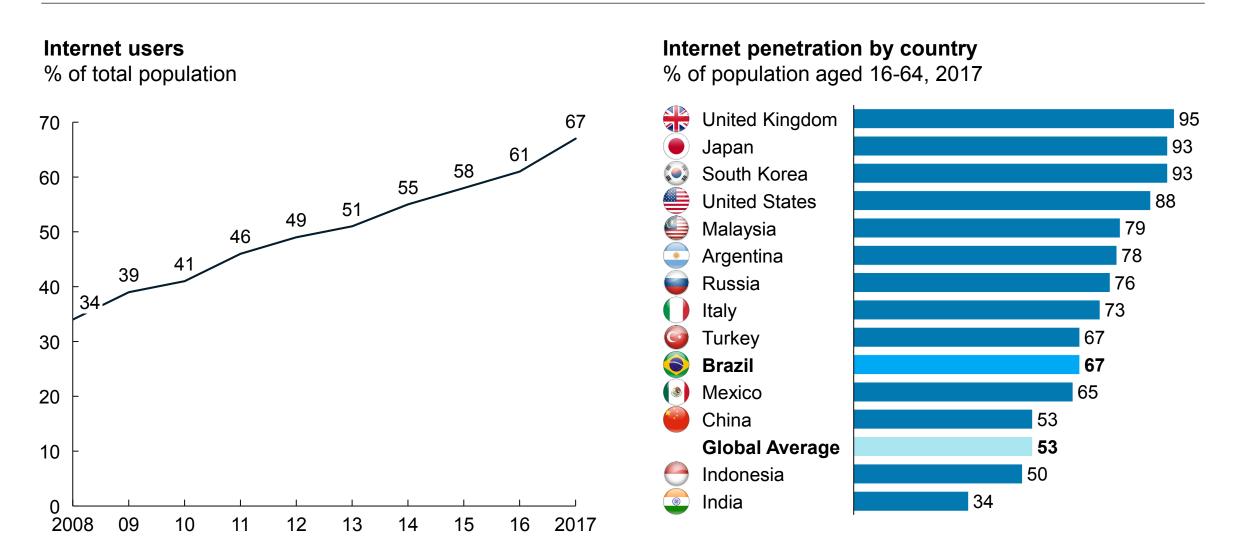
- More than two out of three Brazilians have access to smart-phones and the internet
- Brazilians spend more than 9 hours per day connected (among the highest rates in the world)
- They rank #2 or 3 in the world in using leading social media platforms including Facebook, Instagram, YouTube, Netflix,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



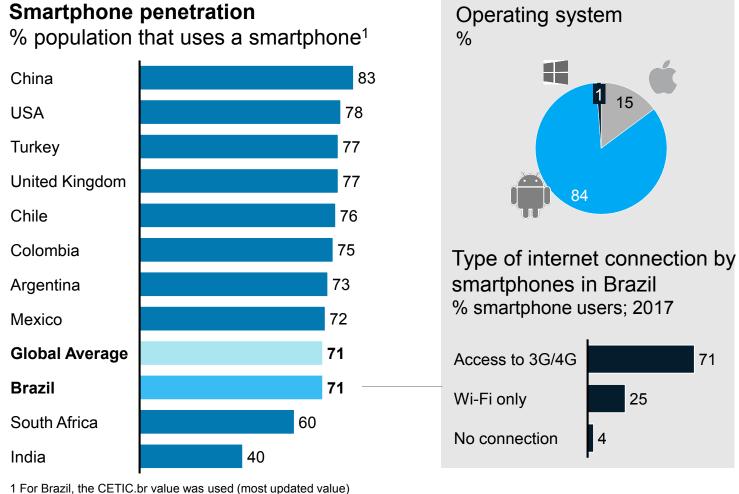
#### But digital inclusion has only just begun:

- 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.

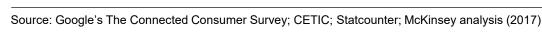
### Two out of three Brazilians have access to the internet, more than the global average...



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

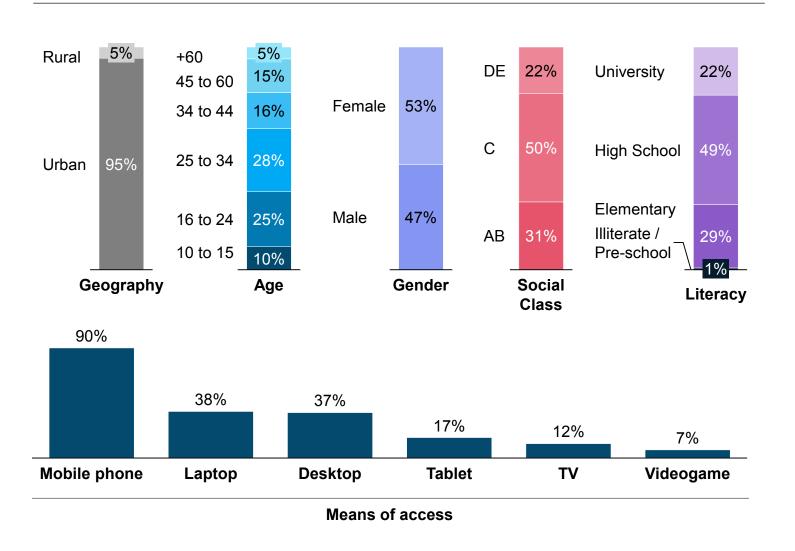








# The typical internet user in Brazil is urban, under 45 years old, class A-C and accesses the internet via mobile devices

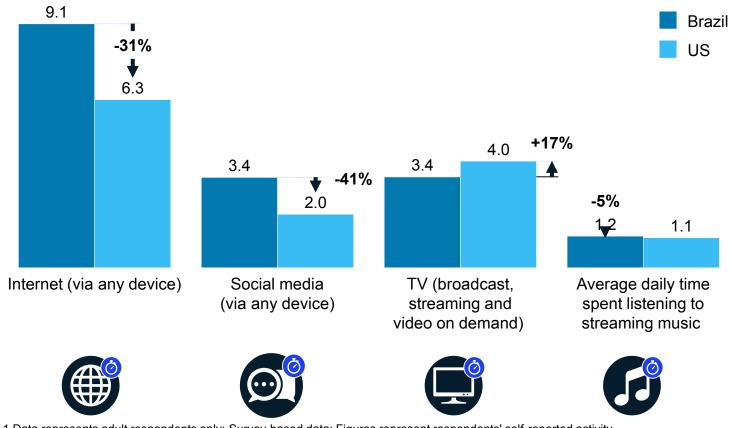


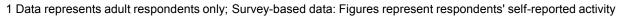


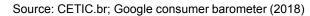
Source: CETIC.br (2017)

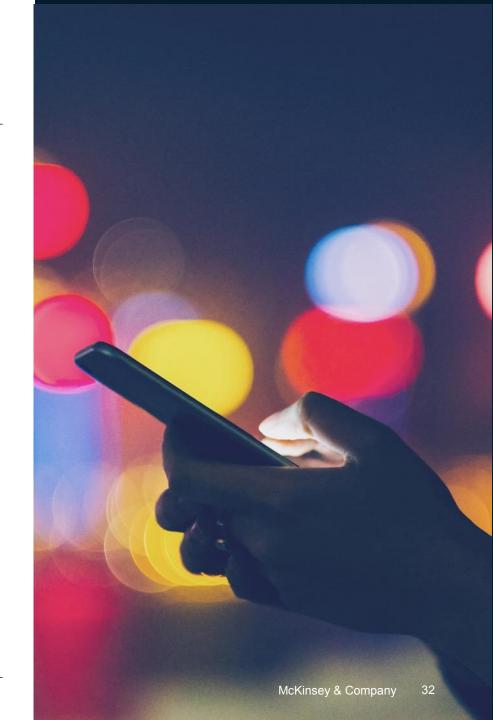
### Brazilians spend more time using internet-based services than their US counterparts

### Time spent on digital/broadcast media<sup>1</sup> Hours per day

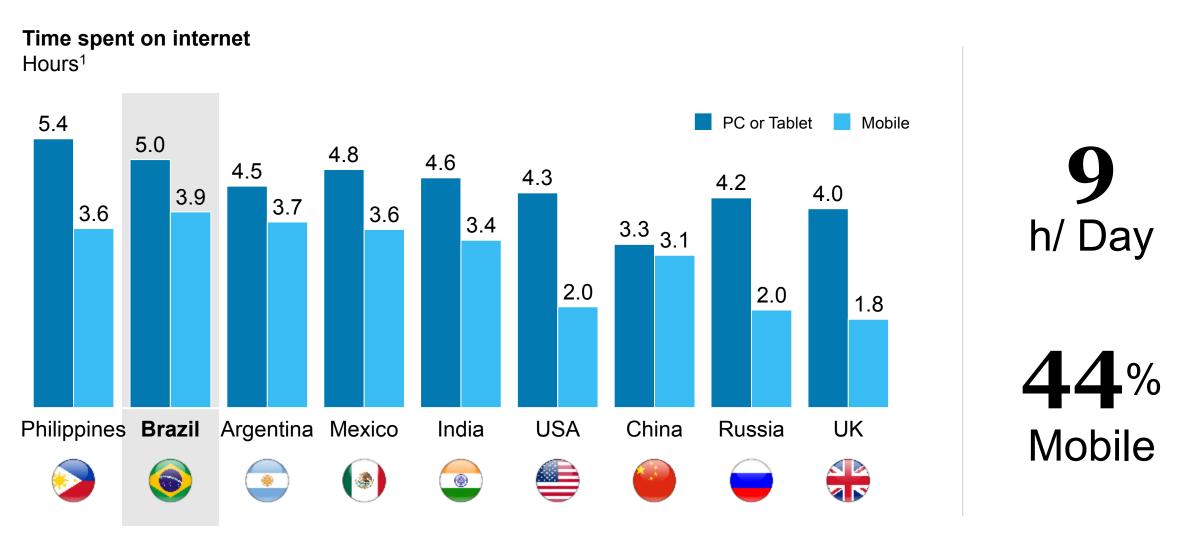








#### Connected Brazilians are among the most avid internet users



<sup>1</sup> 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 <sup>1</sup>	Website		Category		
1	G	google.com	Search Engine		
2		youtube.com	TV and Video		
3	f	facebook.com	Social Network		
4	globo .com	globo.com	News and Media		
5		uol.com.br	News and Media		
6		mercadolivre.com.br	General Merchandise		
7	O	instagrarn.com	Social Network		
8	0	live.com	Email		
9	y	twitter.com	Social Network		
10	D	WhatsApp.com <sup>2</sup>	Social Network		

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

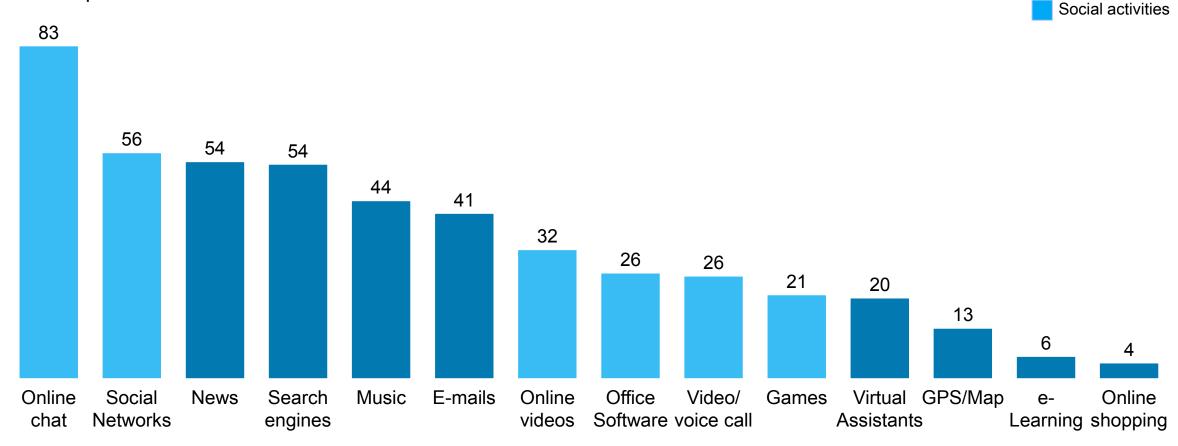


### App usage is high across multiple categories

(detailed below)

#### Daily activities done on computers or smartphones





<sup>1</sup> 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



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)



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

Source: Press clippings, 2017/2018 data

McKinsey & Company

### **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 partner<sup>1</sup> city in the world

Source: Press clippings, 2017/2018 data

<sup>1</sup> 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

Source: Press clippings, 2017/2018 data

McKinsey & Company

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

Source: Press clippings, 2017/2018 data McKinsey & Company

# 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)

Source: Press clippings, 2017/2018 data McKinsey & Company





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

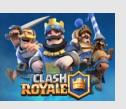
McKinsey & Company Source: Press clippings, 2017/2018 data



### More than a billion downloads

#19 on App Store publisher ranking

### Gaming



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

Source: Press clippings, 2017/2018 data McKinsey & Company

### **Coworking**

### 1,196 Coworking spaces

169 cities

R\$ 127 million in revenues

+214K users

+88K workstations

+7K direct employees

Examples:







Source: Censo Coworking Brasil (2018)

McKinsey & Company



97% of search engine market share

Google environment

Most visited website

**#5** in global online visitors

Only country apart from US with a complete Google ecosystem infrastructure

Source: Press clippings, 2017/2018 data McKinsey & Company

# Mobile app creation/usage



More than 6 billion app downloads per year

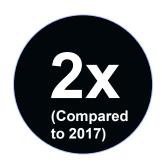
#4 in the world in app downloads

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

#4 largest app producer in the world

Source: Press clippings McKinsey & Company

### **Examples of leading Brazilian apps**



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



#### More than 180 countries

5 million subscribers3 international recognitions



10 million downloads

Most downloaded shooting game in Apple Store in 2016



20 million downloads
15,300 visits per day on website

Translated into 4 languages



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

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



#### 90 million users

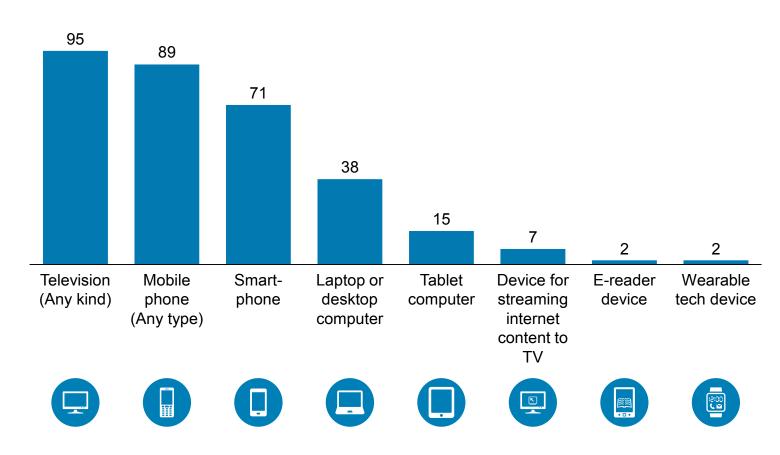
In 2015, Colorfy was the second most downloaded free app on the App Store

Source: Press clippings McKinsey & Company

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

#### **Device penetration in Brazil**

Percentage of population<sup>1</sup> who use each kind of device



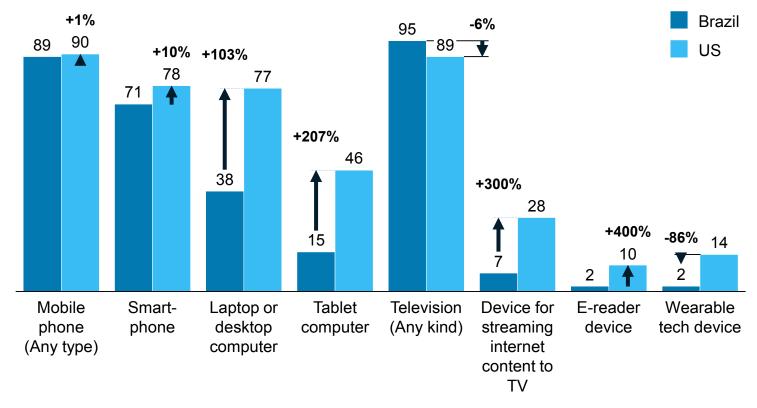
<sup>1</sup> Survey based; Data represents adult respondents only



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

#### **Device penetration in Brazil and US**

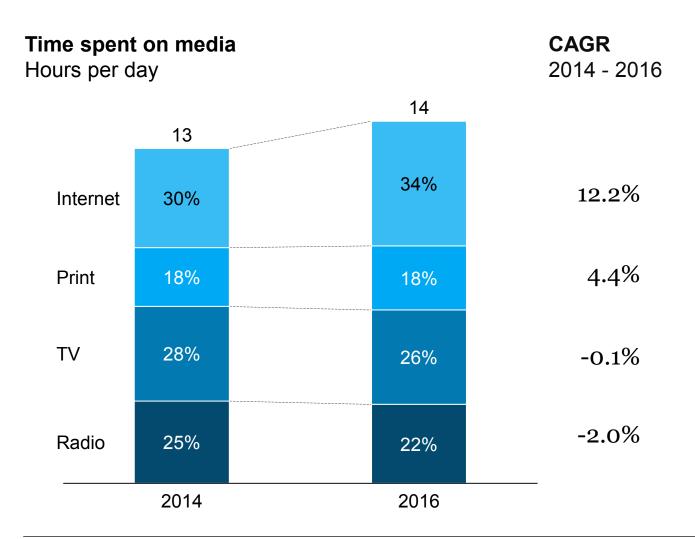
Percentage of population<sup>1</sup> who use each kind of device



<sup>1</sup> Survey based; Data represents adult respondents only

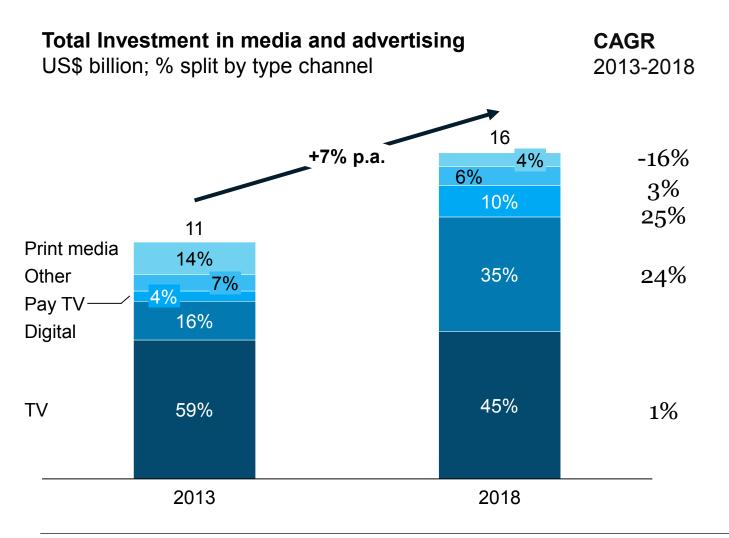


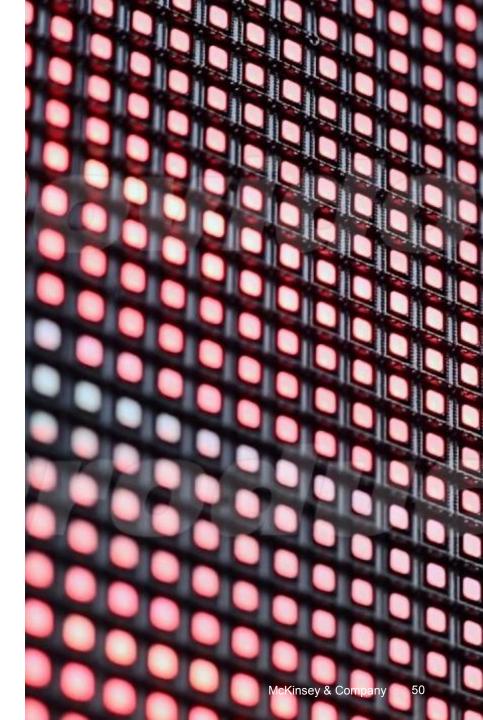
### Brazilians are spending much more time on internet



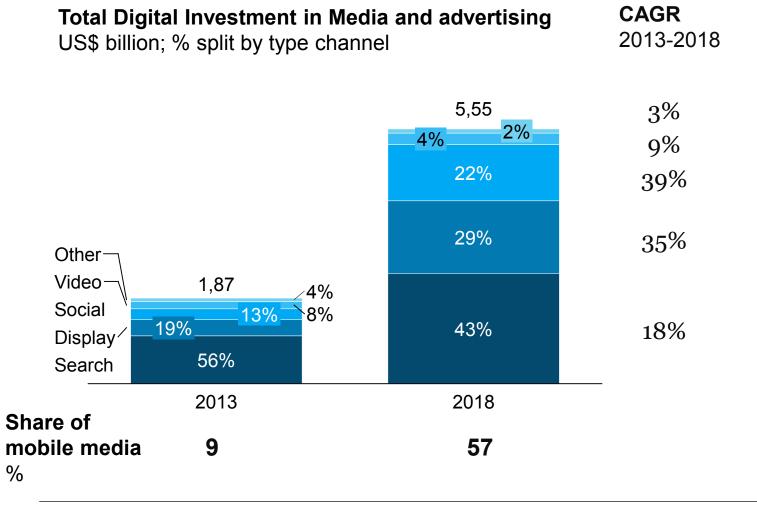


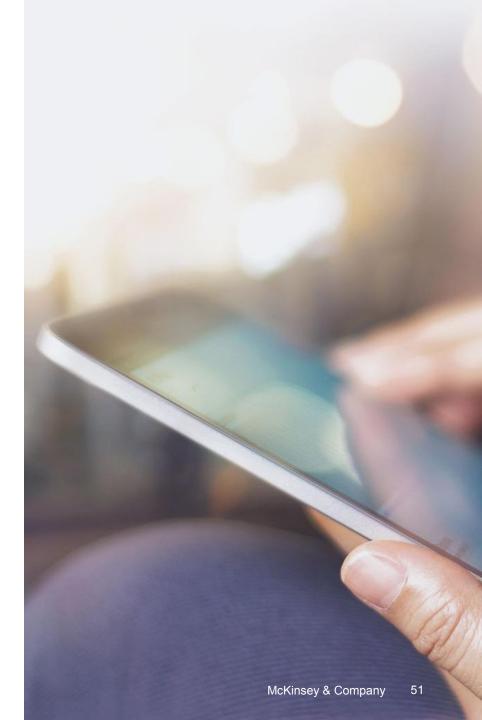
### Pay TV and digital are the fastest-growing channels for media investments





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

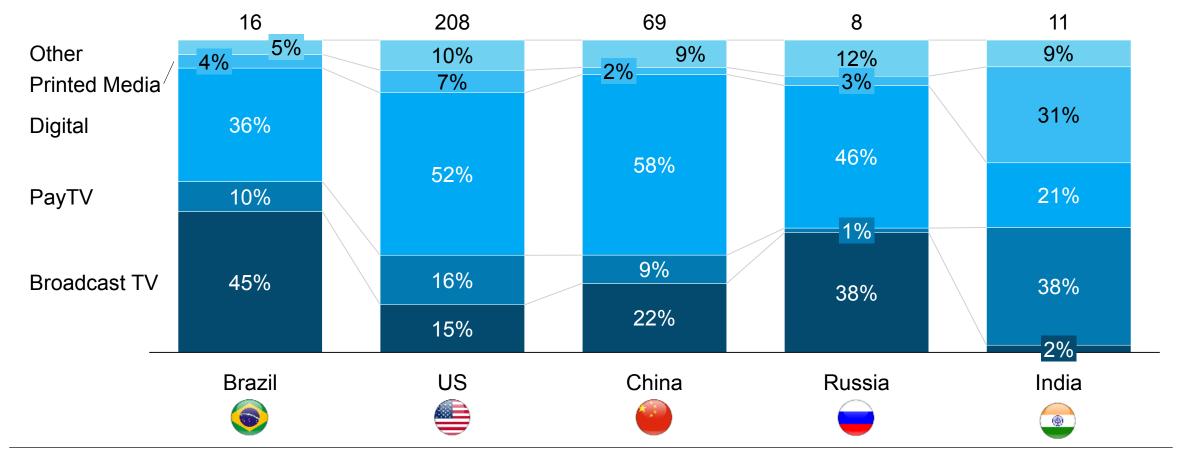




### But there is still room for growth and penetration in digital advertising

#### Total investment in media and advertising

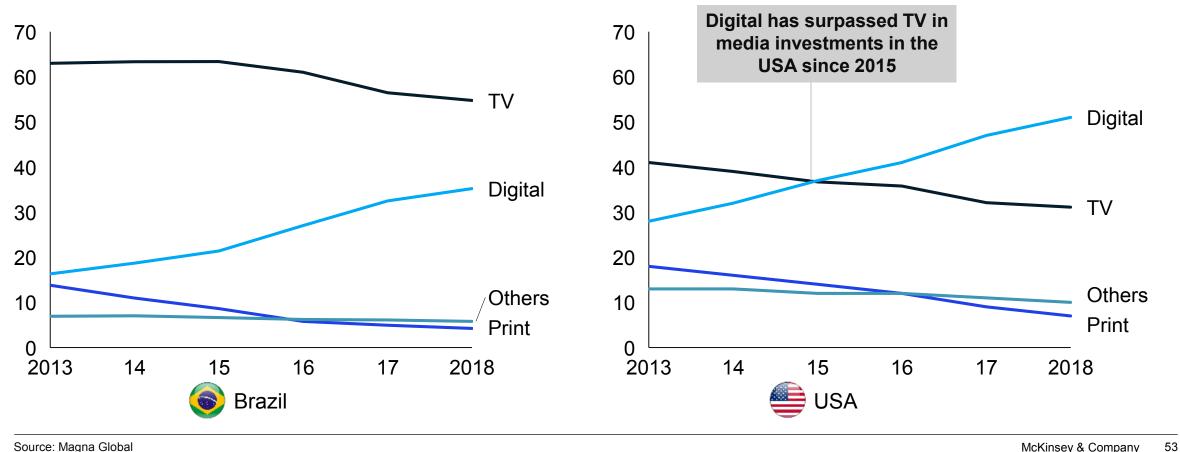
US\$ billions; % split by type channel



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

#### Total investment in media and advertising

% split by channel

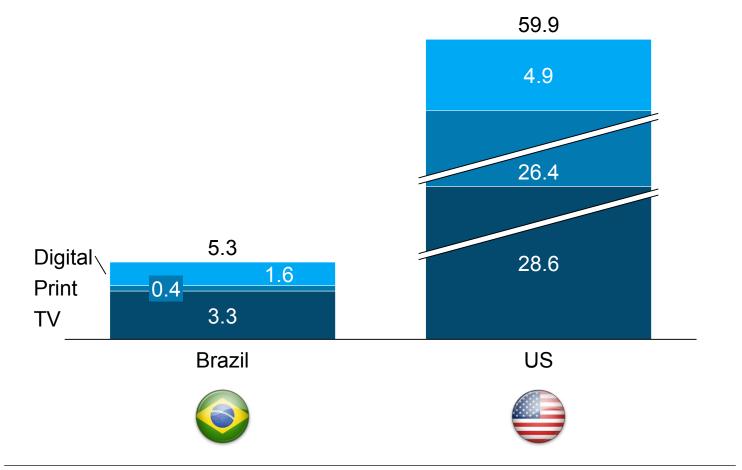


Source: Magna Global McKinsey & Company

## ... 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

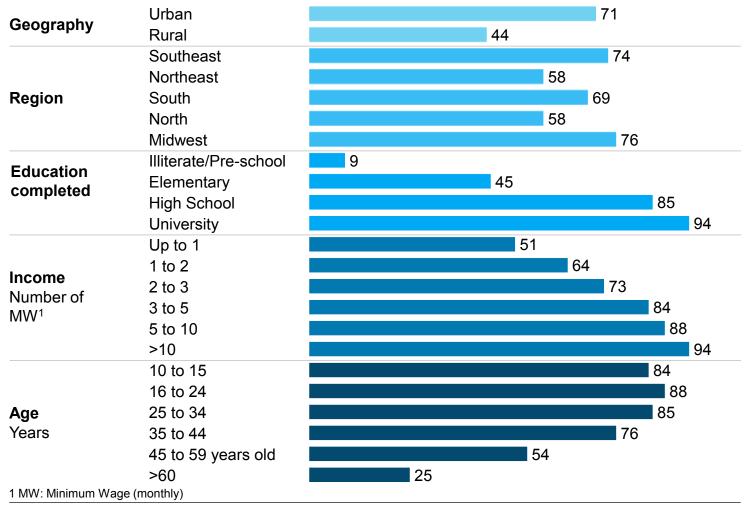




### Digital inclusion has only just begun: Digital access varies across geography and demographics

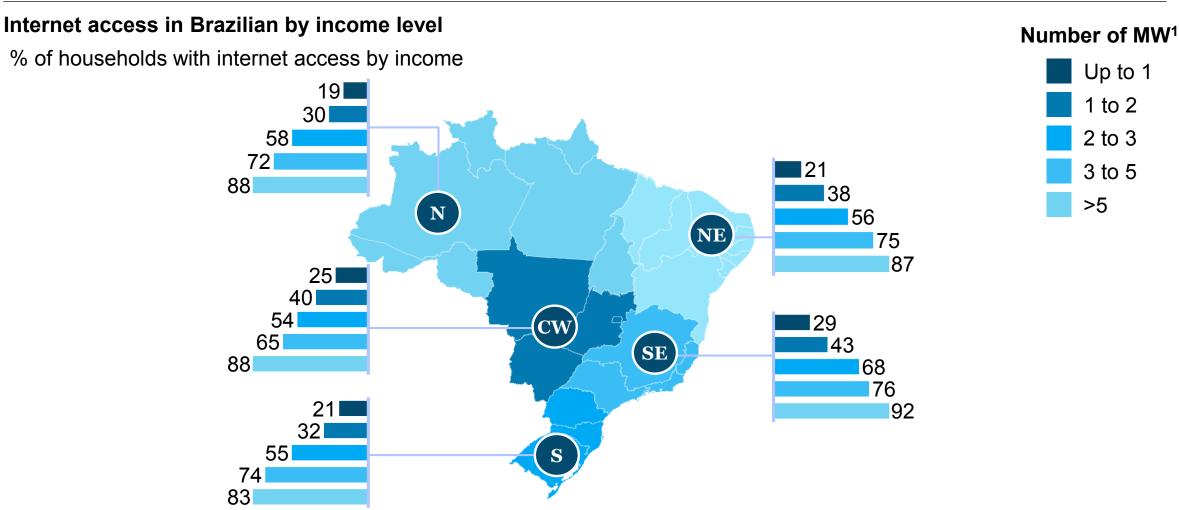


% of respondents who have accessed internet in the past three months



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

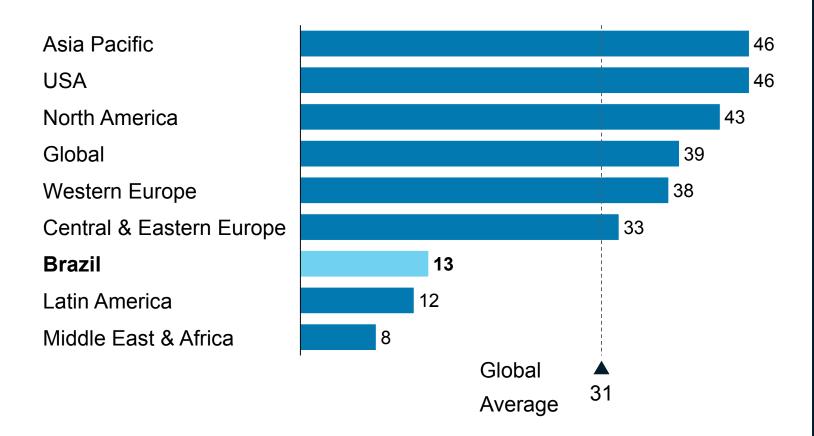


1 MW: Minimum Wage (monthly)

## Internet speeds are still lower than in many developed economies

Internet speed on fixed broadbands

Mbps, 2017





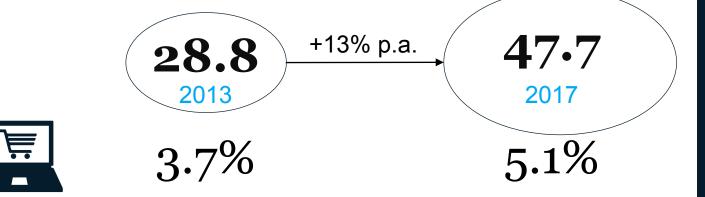
11.29 22.72



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

#### e-commerce market size

R\$ billion





Penetration

31.3 million

55.1 million

### Highlights

**Average Spending** 



R\$429

# of orders



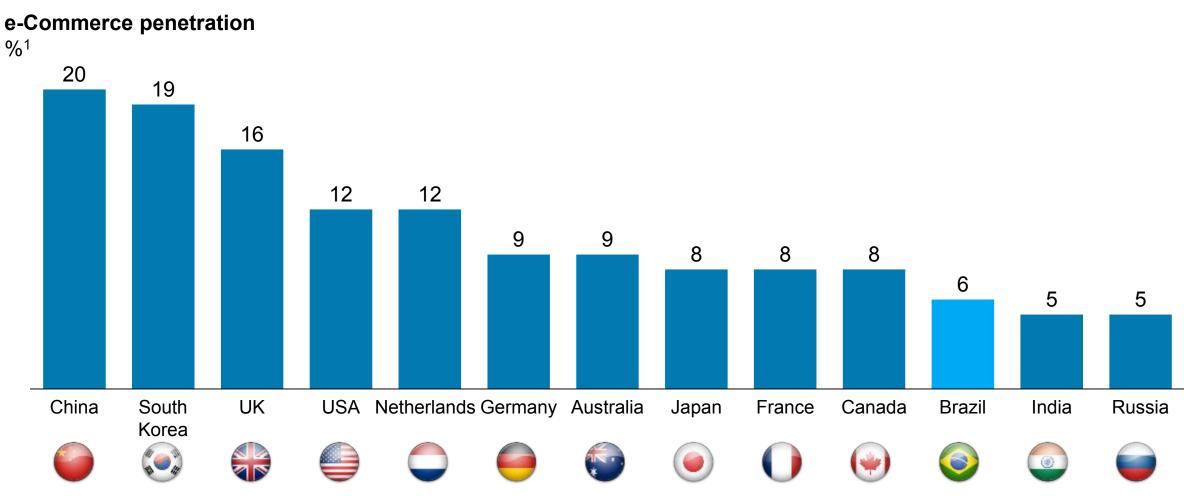
111.2 million

Black Friday (2018)



(+23% more than in 2017)

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

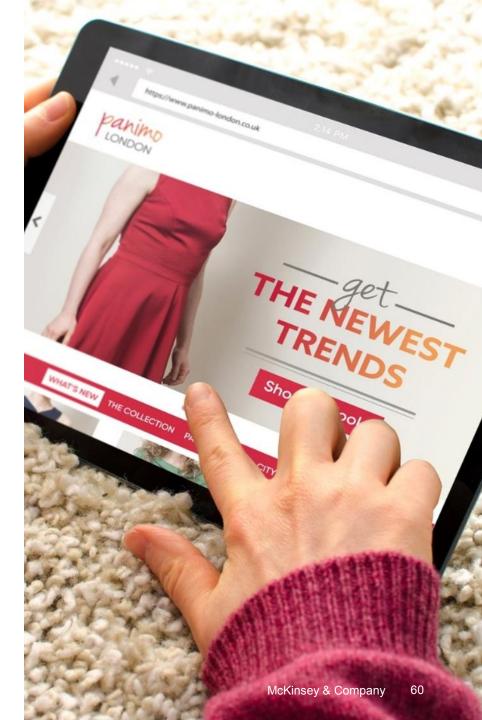


1 e-Commerce sales over total retail sales

Source: Euromonitor (2017) McKinsey & Company

## ...with considerable variation in penetration across product categories

	Category	Penetration %1	Leader penetration %1
	Toys and games	29	<b>**</b> 72
	Electronics	20	44
	Appliances	10	37
	Apparel	4	29
<b>@</b>	Beauty/ personal care	3	<b>2</b> 3
	Home and garden	1	<b>(**)</b> 17
Ā	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

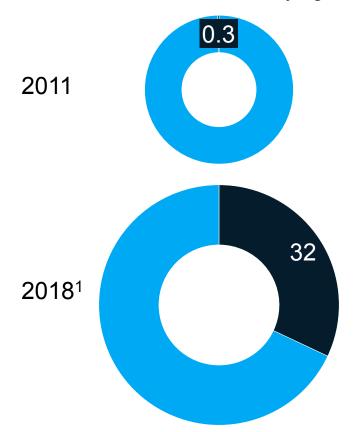
Cat	egory	Spend volume %1	Transactions %1	Average purchase value R\$	
	Phones/mobile	21.2	9.2		988
	Appliances	19.3	10.8	767	
	Consumer electronics	10	3.6		1,192
	Computer h/w and s/w	8.9	4.5	848	}
	Home and decor	8.4	10.5	343	
	Apparel and accessorie	es 6.1	14.2	184	
	Beauty and personal ca	are 4.8	12.0	172	
	Sports	4	6.4	268	
	Food and beverages	2.2	4.0	236	

<sup>1</sup> Category share of total e-Commerce

## 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

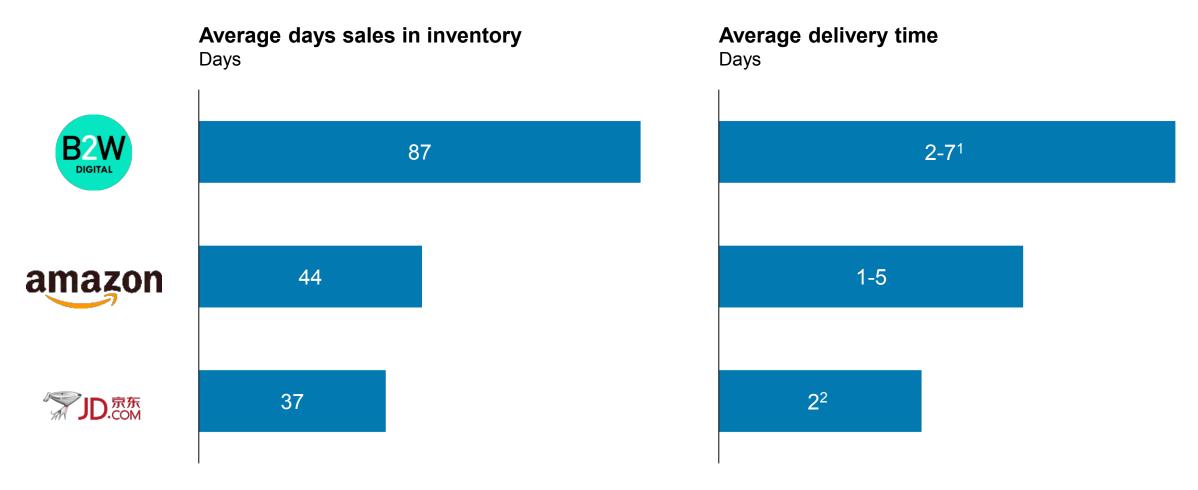
Major retailers report 60% - 75% of traffic from mobile devices and 35% - 45% of total e-commerce sales

"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

<sup>1</sup> Estimate for the first semester 2018

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



<sup>1</sup> 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.

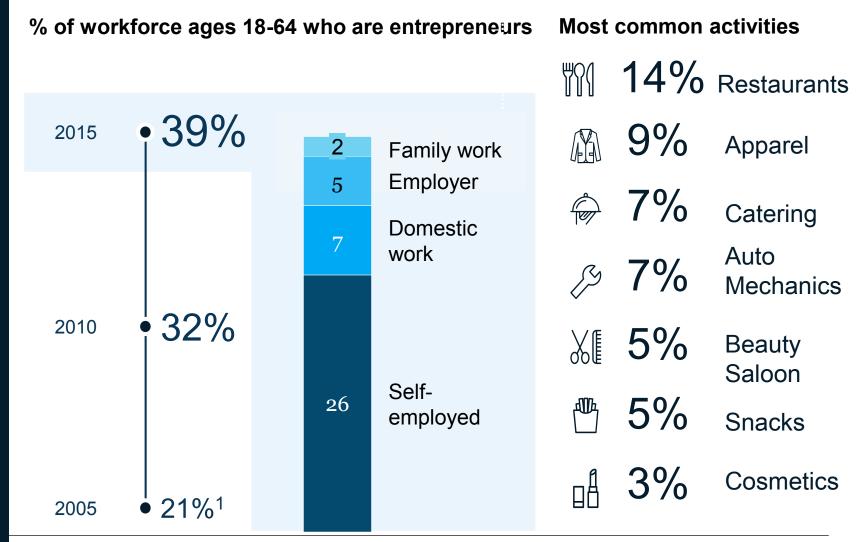


### Using the broader definition of the word, Brazil is a country of entrepreneurs

### Entrepreneur

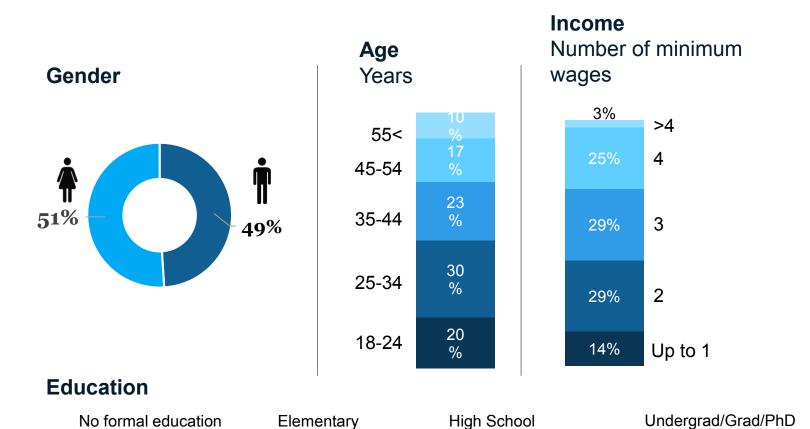
en·tre·pre·neur/ ¡äntrəprəˈnər noun

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.



Source: GEM (2016)

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



46%

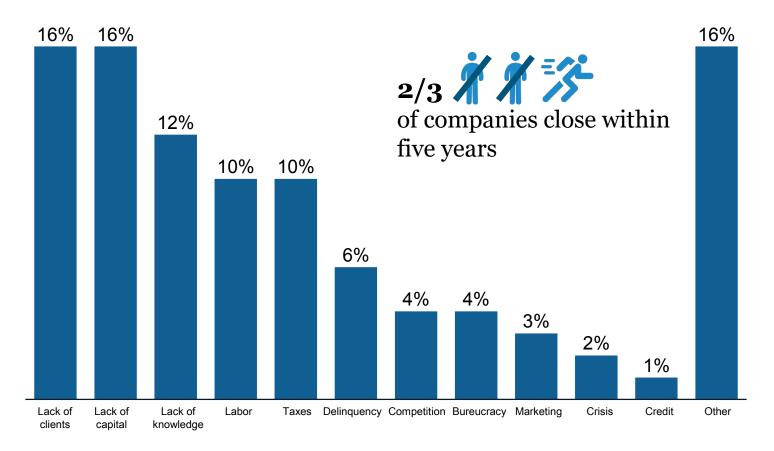
20%



27%

## 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



Starting a business



**Dealing with construction permits** 



**Getting electricity** 



**Registering property** 



**Getting credit** 



**Protecting investors** 



**Paying taxes** 



**Trading across borders** 



**Enforcing contracts** 



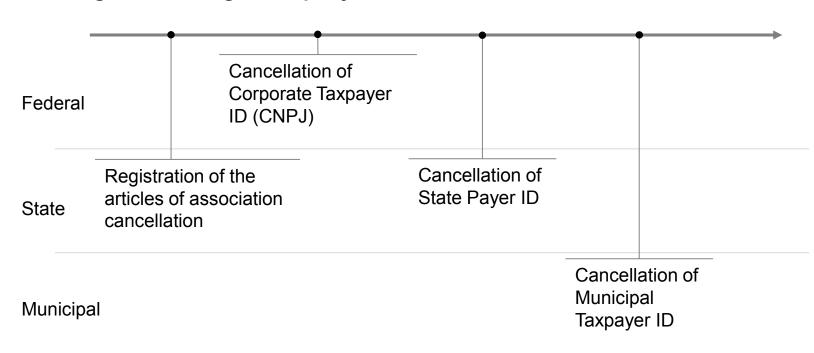
**Resolving insolvency** 

Cou	ıntry	Rank			
		2010	2018		
	United States	04	80		
	Russia	120	31		
	France	31	32		
	China	86	46		
	Chile	40	56		
	India	132	77		
	Brazil	127	109		



## 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**

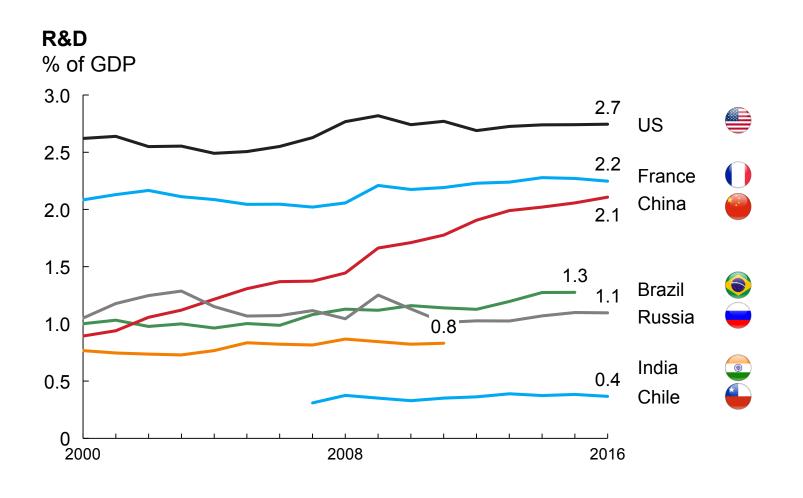
Rank

	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
<b>Brazil</b>	64	82	52	64	82	38	64	78
		Fa	se of starting a b	ousiness and	Cre	edit and tariff rate a	applied pulling	

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...

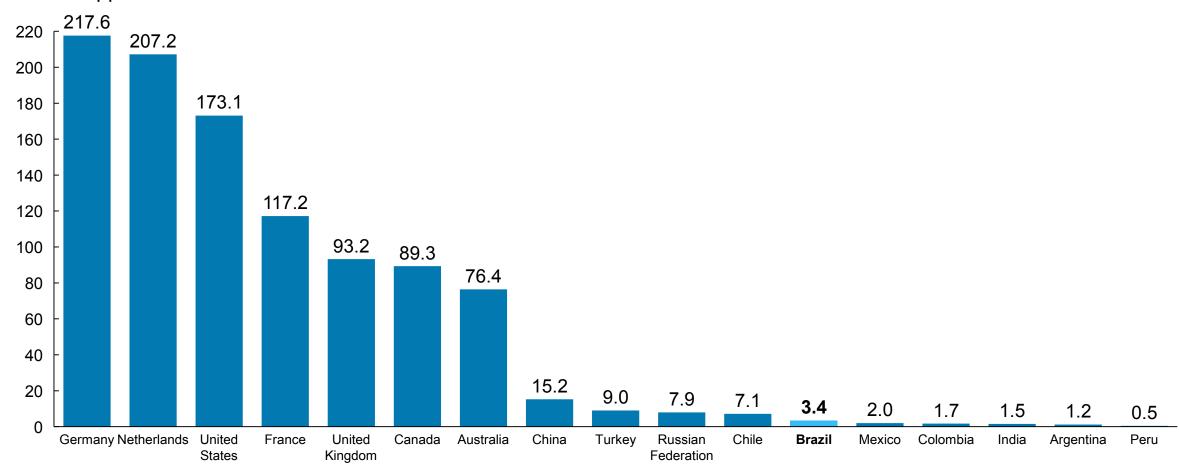




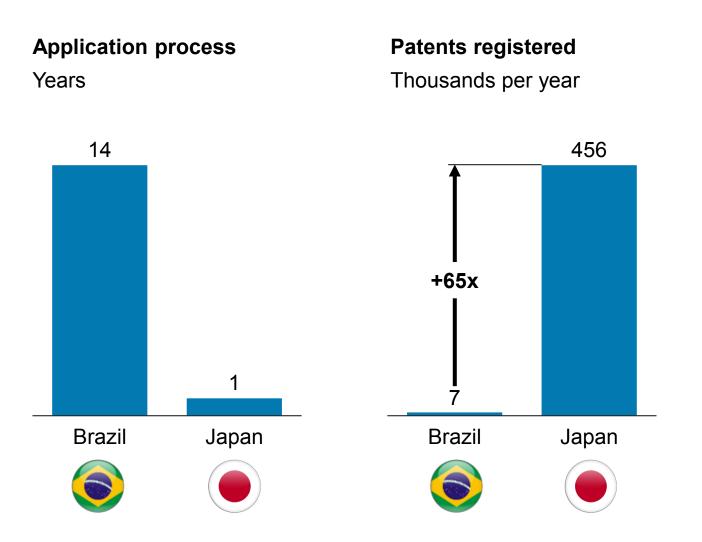
### ...But Brazil still punches significantly below its weight in the number of patents



Patent applications / million inhabitants



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

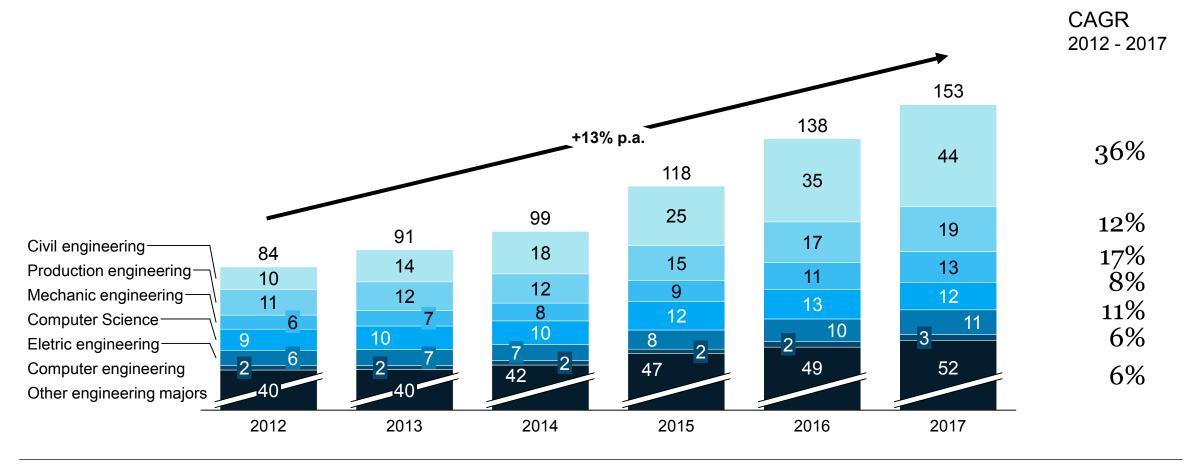




## Although there is an increasing number of engineering & computer science graduates...

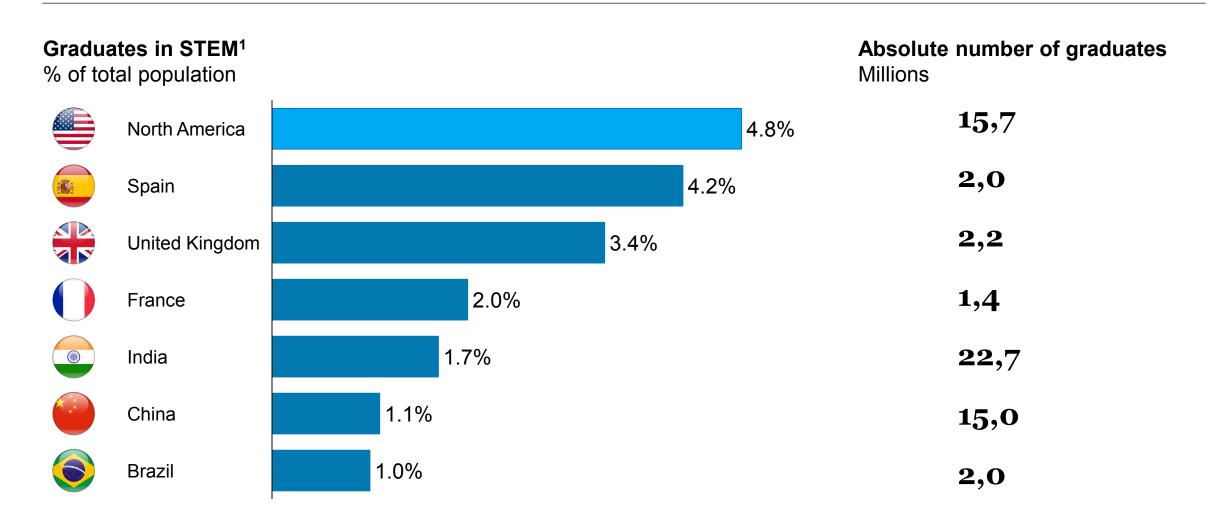
#### **Engineering and Computer Science degrees**

Thousands



Source: INEP "Censo de Educação Superior"

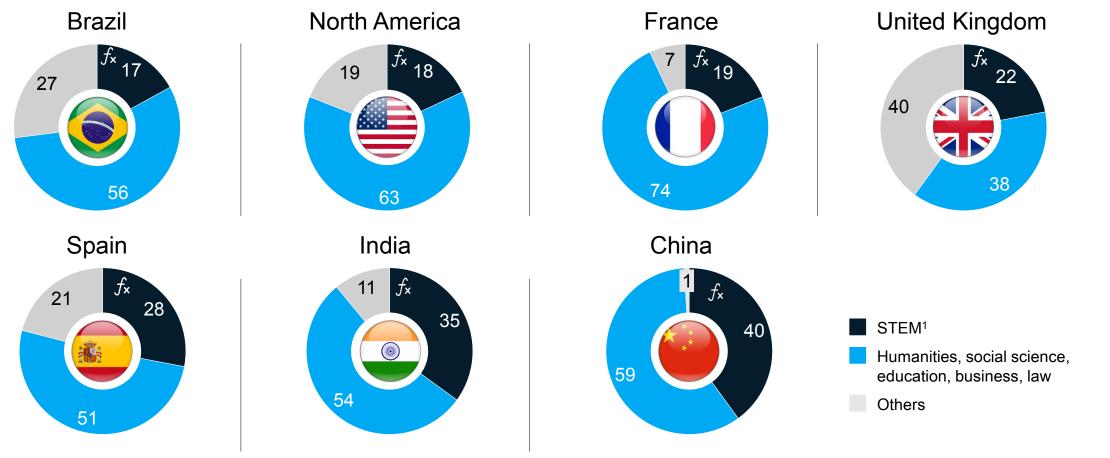
## ...Brazil still lags in absolute numbers of STEM graduates...



<sup>1</sup> 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 %

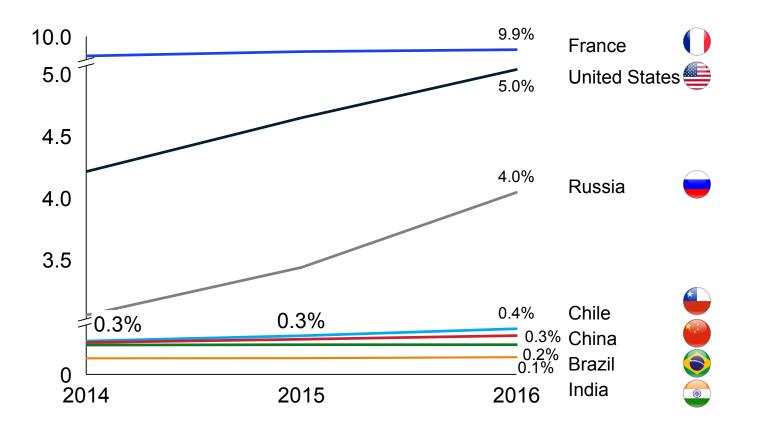


<sup>1</sup> Science, Technology, Engineering, Mathematics

## 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





## The Brazilian startup scenario

# Startup start·up·

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.



>10,000 startups



>30k+ jobs created



USD 1 billion+
investments in 2018

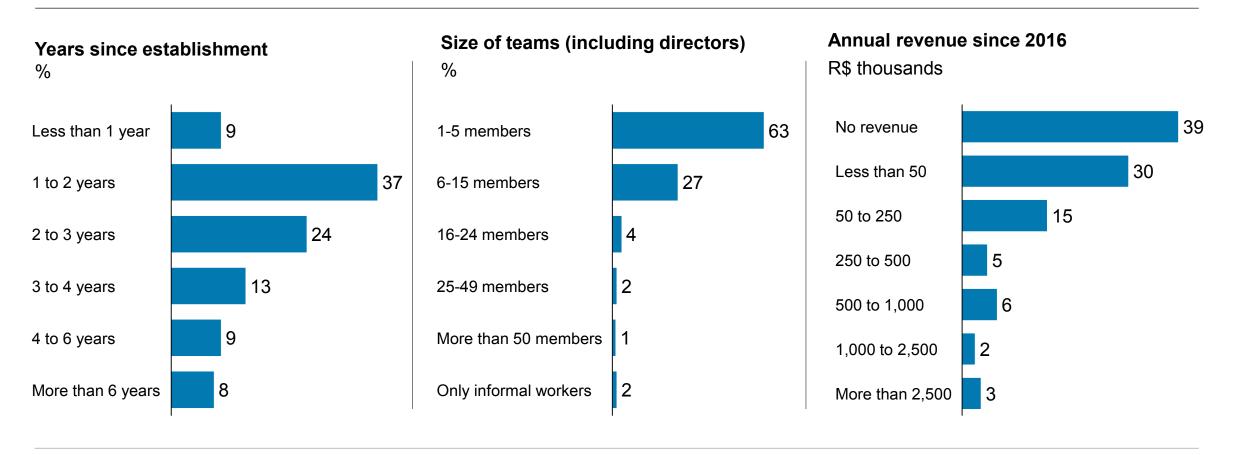


J IPOs



Unicorns

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





ge 46% are less than 2 years old



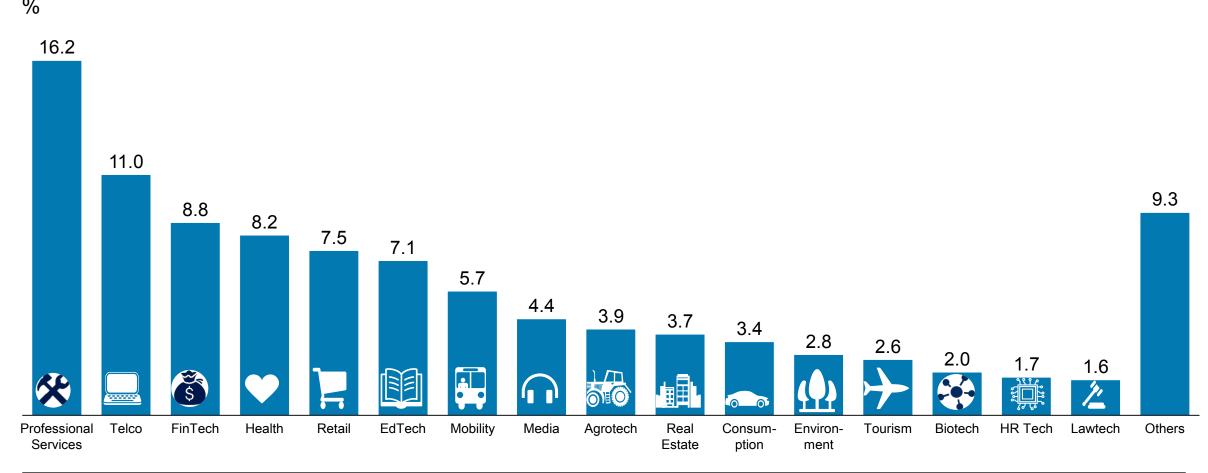
**63%** have less than 6 members



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

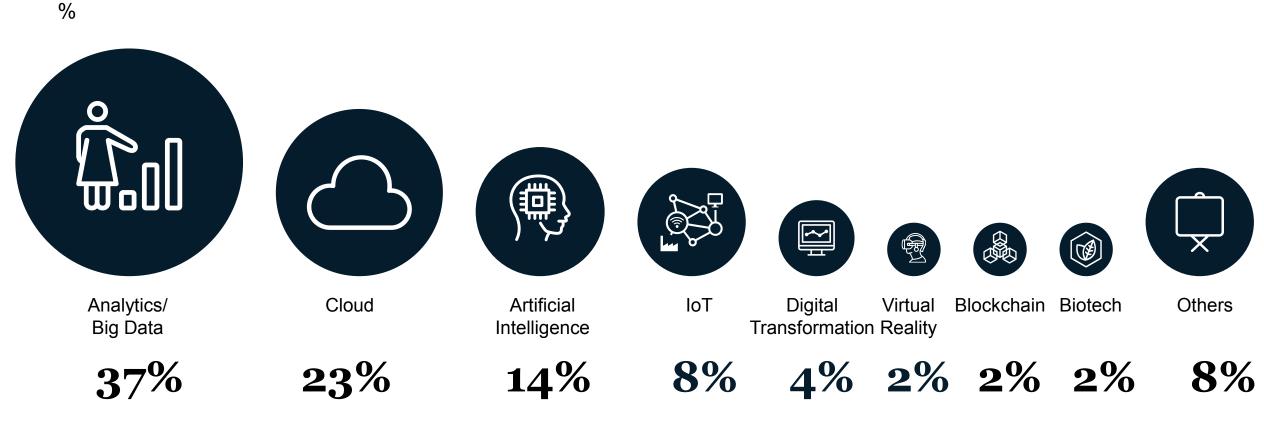
## Most startups are in professional services, technology, media and telecom, and financial technology



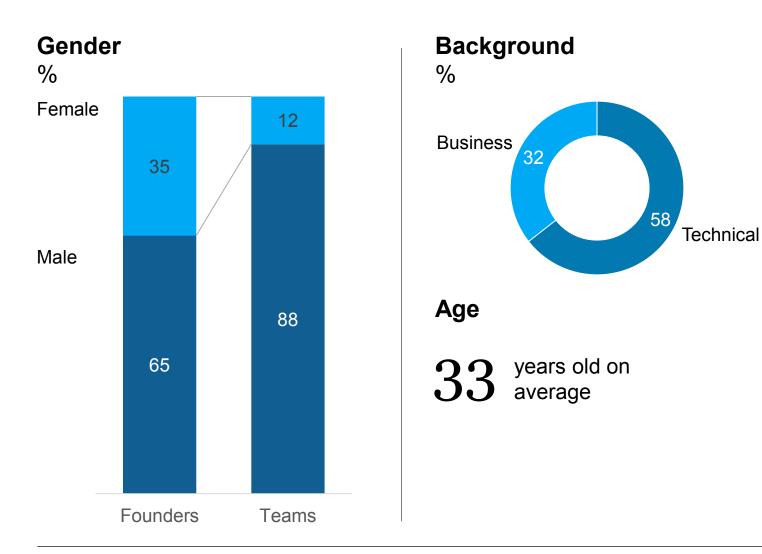


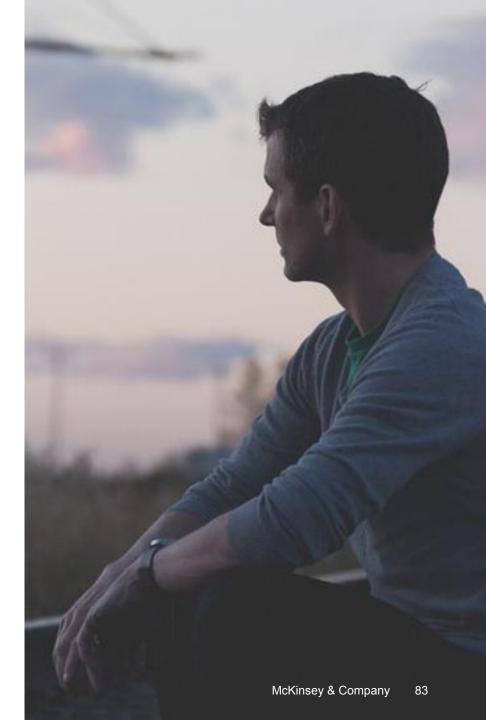
## Most startups build business models or differentiate using advanced analytics and big data

## Most used technologies provided by startups



## Most startup founders are men with technical backgrounds

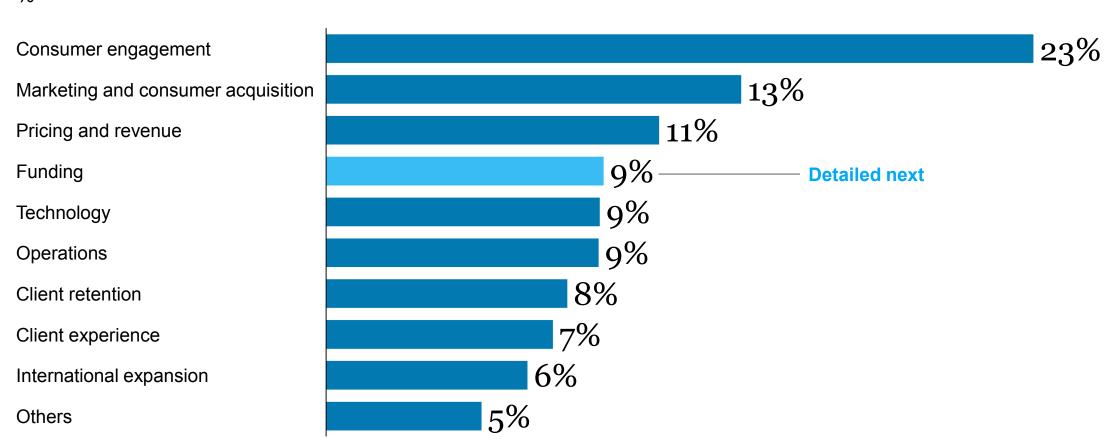




## Founders say that the main obstacles to growth in the first three years are consumer engagement, cost of acquisition, revenue and funding



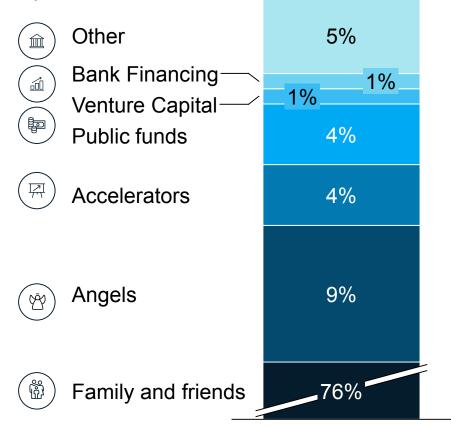
%



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

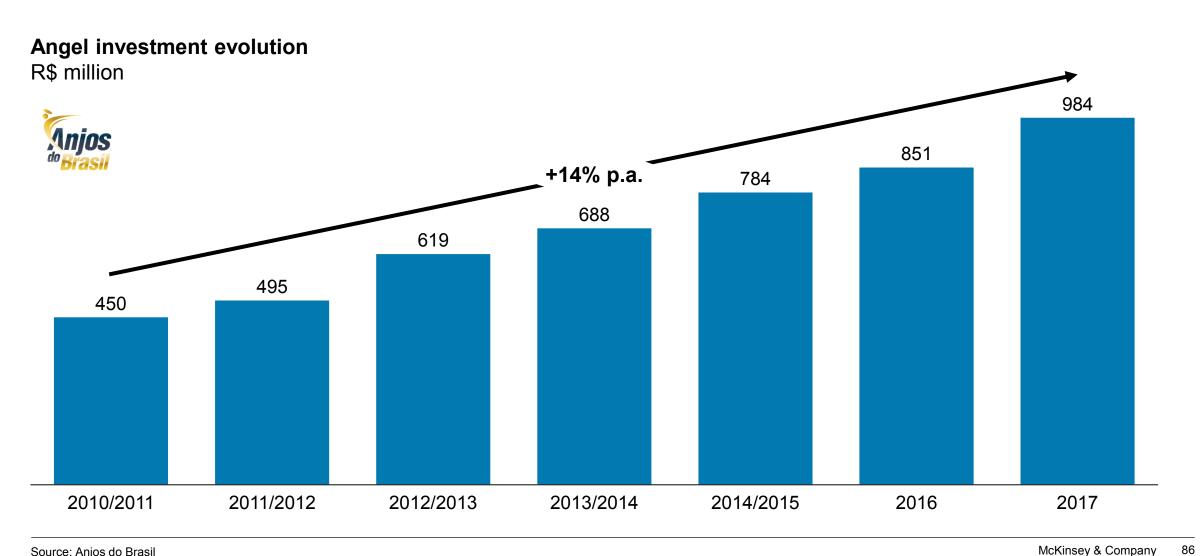
#### Main sources of funding

% of startups



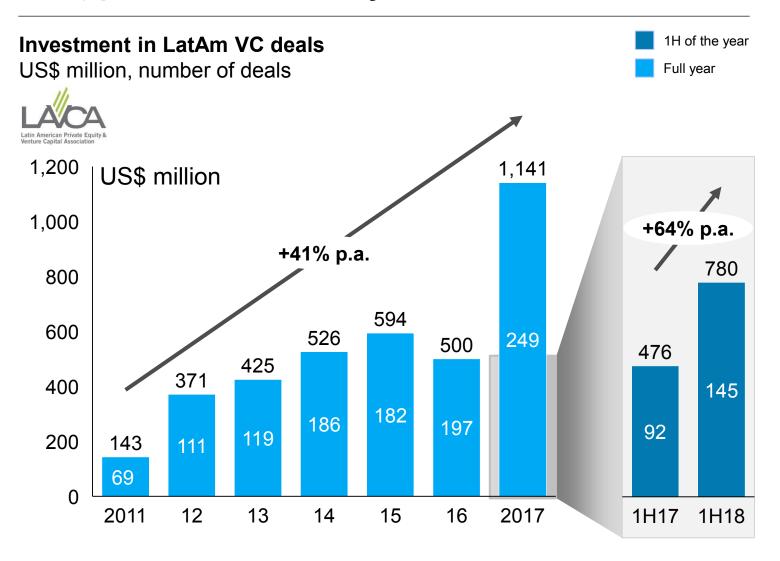


## Angel investment is growing quickly in Brazil



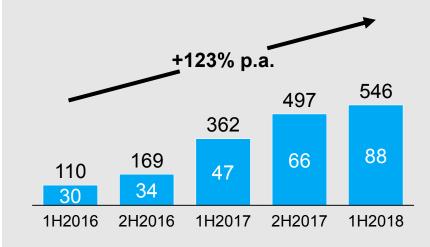
Source: Anjos do Brasil McKinsey & Company

# 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



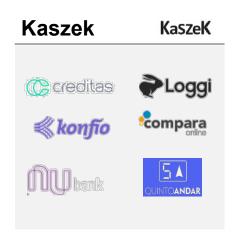
#### **Brazil**

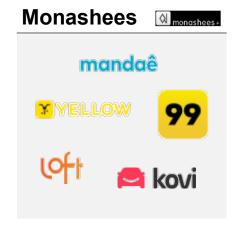
## Investment in Brazil VC deals US\$ million, number of deals





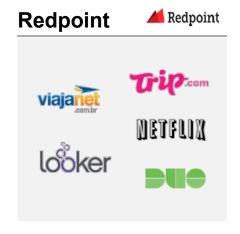
### **Examples of Brazilian VCs**



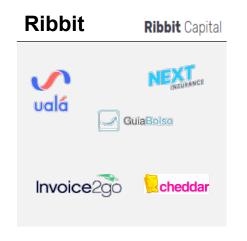










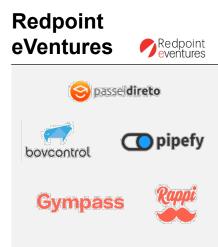




**QED** 



**Endeavor** 

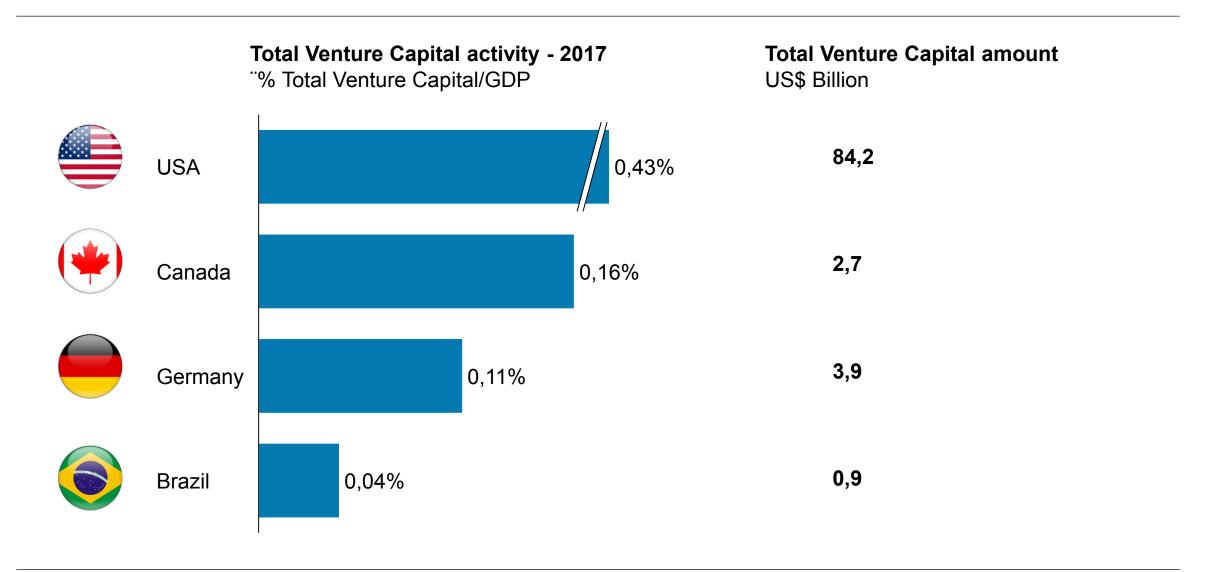


88

Source: Press clipping (2019)

McKinsey & Company

### 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	
C creditas	FinTech	61	
dr.consulta	Heathcare/Life Sciences	50	
Neoway	Big Data	45	
ifeed	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		
pagseguro	FinTech	2,300		IPO
Ascenty	IT (Data center)	1,800	FAN .	→EXIT
stone	FinTech	1,100		IPO
99	Transportation Tech	1,000		→EXIT
Gympass <sup>2</sup>	Marketplace	500		
ifood	Food delivery	500		
M <b>U</b> bank	FinTech	330		→EXIT
arco Enter 4 of the valores	Education	194		IPO
movile was trick it madelo	Marketplace	124	<b>W</b>	→EXIT
Loggi	Transportation Tech	100		
<b>YELLOW</b>	Transportation Tech	75		
CX	Transportation Tech	60		
descomplica	Education	17		
conductor conductor	FinTech	Private		

<sup>1</sup> 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





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



<sup>1</sup> 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

#### Source: CBinsights Unicorn Ranking, Crunchbase, LAVCA (2018)

### Global unicorns<sup>3</sup>



<sup>2</sup> For public companies, reference value on Mar 8th, 2014

<sup>3</sup> CB Insights criteria

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



2017

### São Paulo startup ecosystem

Highlights

#### Incubators/Accelerators













#### **Education institutions**



#### **Investment / Support** institutions

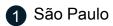








#### **Startups**









+ dr.consulta

stone

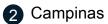






























**G** Gênica



BEBLÜE



















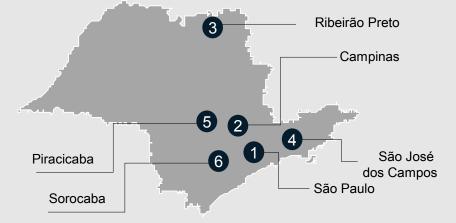


**QMÁGICO** 



GUICHÊ





**25**+

incubators

**600**+

institutions

higher education

3,300+

startups

**15**+

accelerators















### Santa Catarina startup ecosystem

Highlights

Incubators/Accelerators



**#UDESC** 

**Investment / Support** institutions







FURB







Blumenau



#### **Startups**









ASMAS

**mercos** 



/<sup>←</sup>\**Moda** 

Next CAD



**OCEAN DROP** 

Chapecó

Balneário Camboriú





























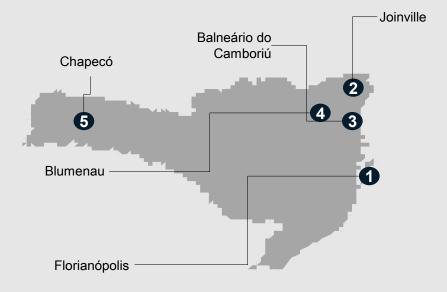




**550**+ startups

**20**+ incubators

accelerators



### **Minas Gerais ecosystem**

**FIEMG** 

lab

Highlights

2017

#### Incubators/Accelerators









#### **Education institutions**



**GUFU** 

callink

recrutei

Alluagro







#### **Investment / Support** institutions



INSEED

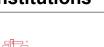




Juiz de Fora

(Zero40)

alakarte







#### **Startups**









Sympla



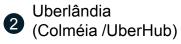








MaxMilhas









Uberaba

(Zebu Valley)













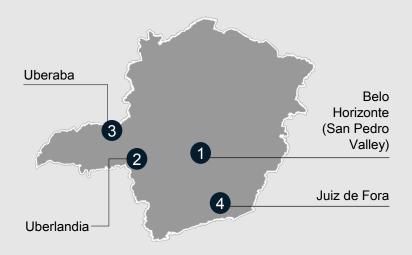


890+ startups

**10**+

accelerators

**15**+ incubators



**25**+

incubators

**130**+

institutions

higher education

**750**+

startups

**10**+

accelerators

Sul Fluminense

### Rio de Janeiro startup ecosystem

Highlights

2017

#### Incubators/Accelerators



















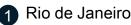






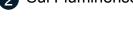


#### **Startups**













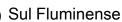










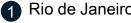














passeidireto



**WeDo**Logos









Rio de Janeiro

2017

### Paraná startup ecosystem

Highlights

#### Incubators/Accelerators











#### **Education** institutions









## institutions









#### **Startups**





**Contabilizei** 

















Ponta Grossa





















**FarmG** 





## **Investment / Support**





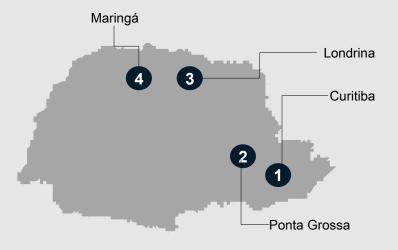




Maringá



9+ accelerators 7+ incubators



## Rio Grande do Sul startup ecosystem

Highlights

#### Incubators/Accelerators



































#### **Startups**



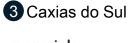






2 Santa Maria















**EGALITÊ** 















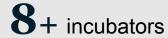


4 Canoas

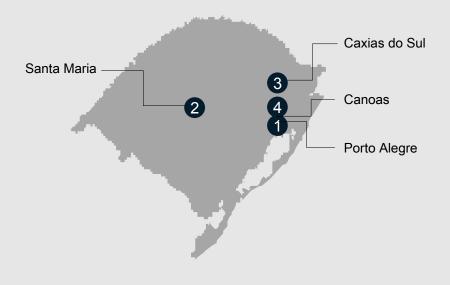


2017

915+ startups



accelerators









### Pernambuco startup ecosystem

Highlights

2017

#### Incubators/Accelerators









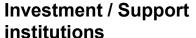




















SEBRAE

#### **Startups**





































accelerators

**3**+ incubators



### Bahia startup ecosystem

Highlights

#### Incubators/Accelerators











#### **Education** institutions



**UFOB** 



UNIFACS





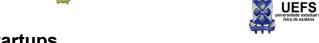






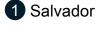






*<u>Magilize</u>* 













cubos





мотовоу.сом



















CabeloPoo







simples vet







#### 2017

**240**+ startups

4+ incubators

accelerators



### Distrito Federal startup ecosystem

Highlights

#### **Incubators/Accelerators**





















## Investment / Support institutions









#### **Startups**































educa

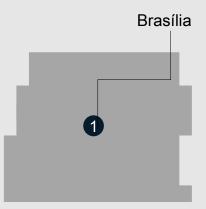


#### 2017

180+ startups **5**+ incubators

6+

accelerators



## Chapters



Macroeconomics



Digital Perspective



Entrepreneurship Ecosystem



Sector Deep Dives

## Chapter





#### **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, PagSegudo 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.



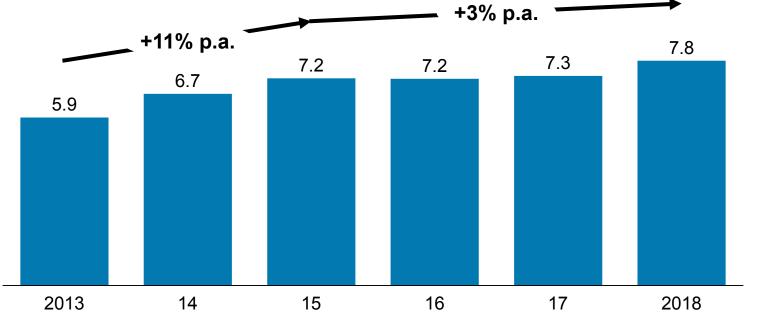
## Total banking assets in Brazil continues to grow, but at a slower rate



State of the Industry

#### **Total banking assets**

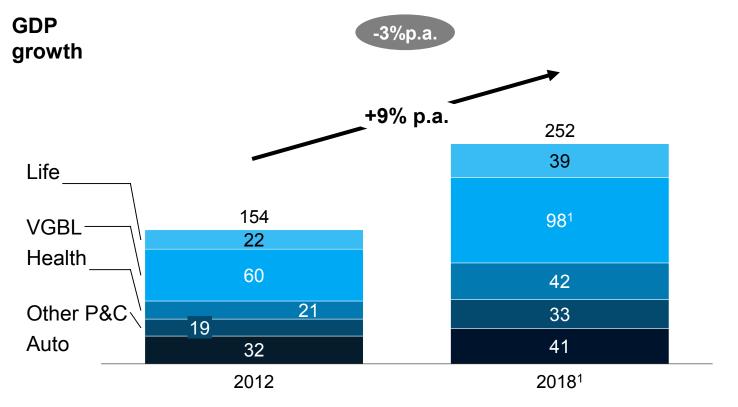
R\$ trillion





## The insurance sector is growing faster across lines





1 3Q2018 annualized

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

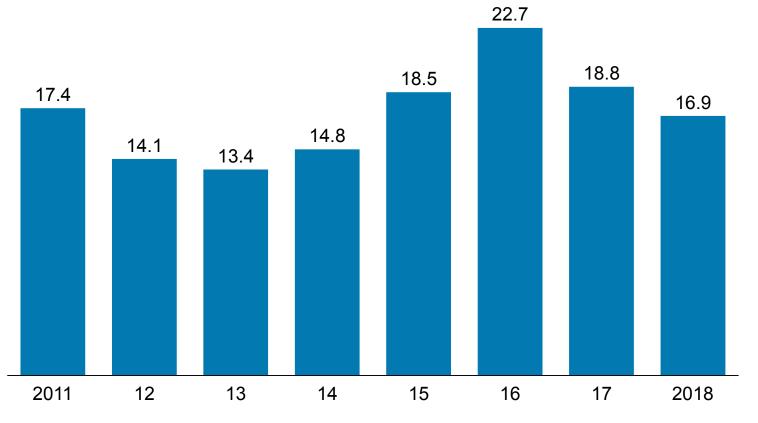


## Financial services revenues have been under pressure due to spread compression



## Average spread of new credit transactions

%, end of period





#### Since highs in 2016 and 2017, delinquency rates have declined

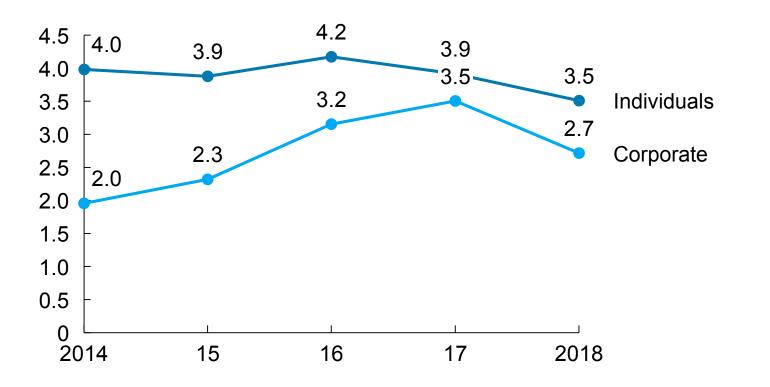




State of the Industry

#### **Delinquency rate – corporate and individual**

%, more than 90 days



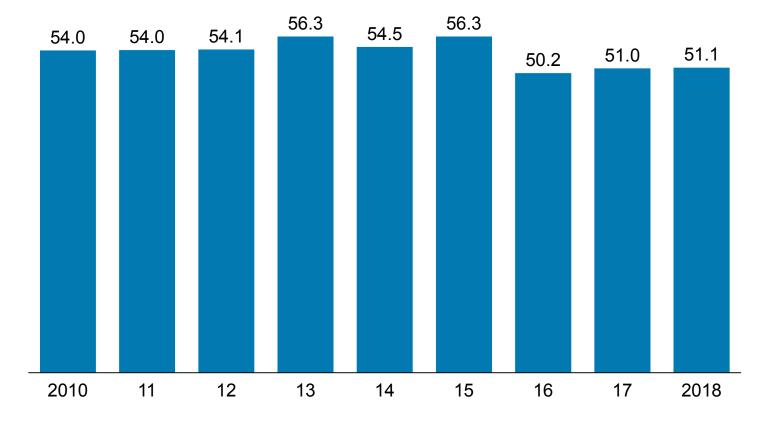


# The industry has focused mostly on efficiency, significantly improving cost-to-income ratios



State of the Industry

### Brazilian banking system cost-to-income ratios %

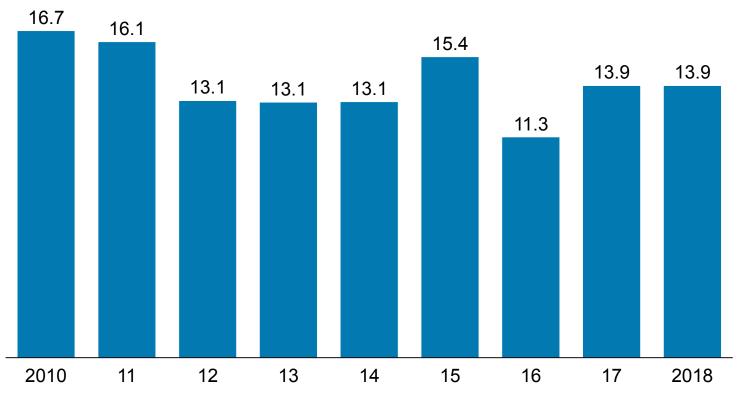




## These trends have helped the financial sector become highly profitable, with ROEs of 11-17%



### **Brazilian banking system ROE** %

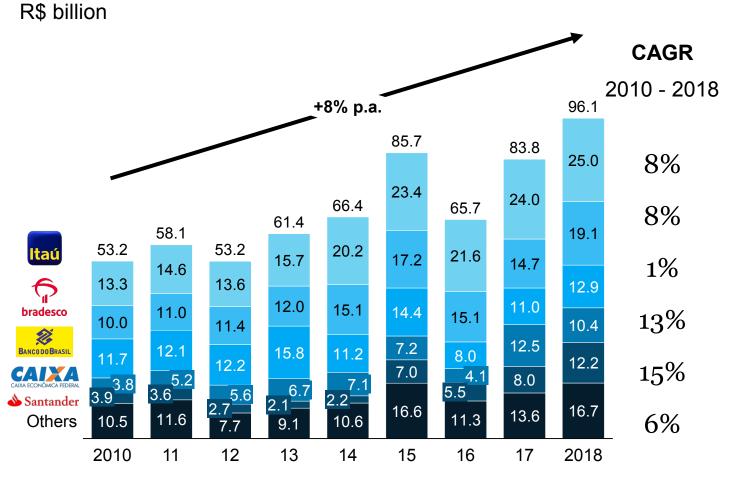




# This particularly impacts Brazil's biggest banks, which have seen earnings rise significantly over the past decade



Annual profit of Brazilian banks



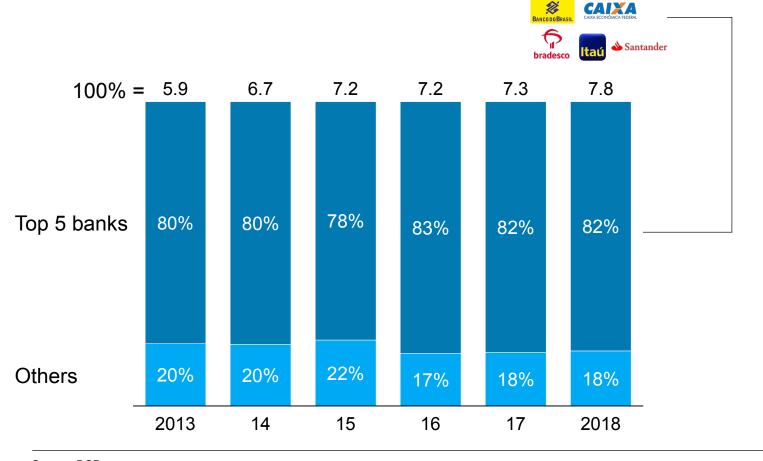


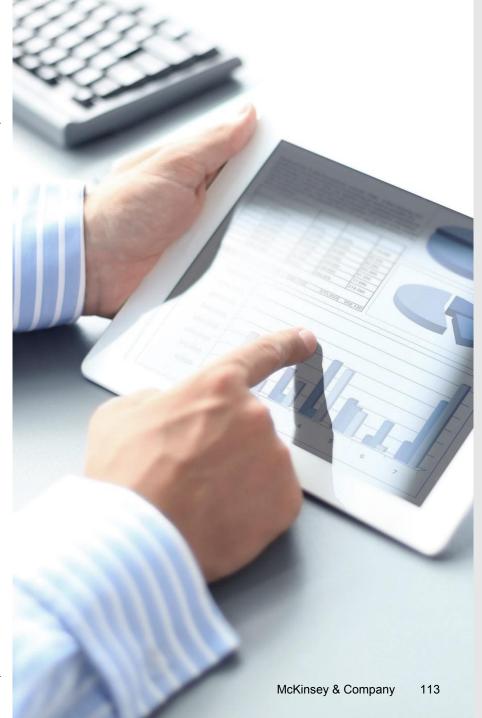
#### Industry concentration is high and increasing



#### **Banking industry concentration**

Share of total assets, R\$ trillion



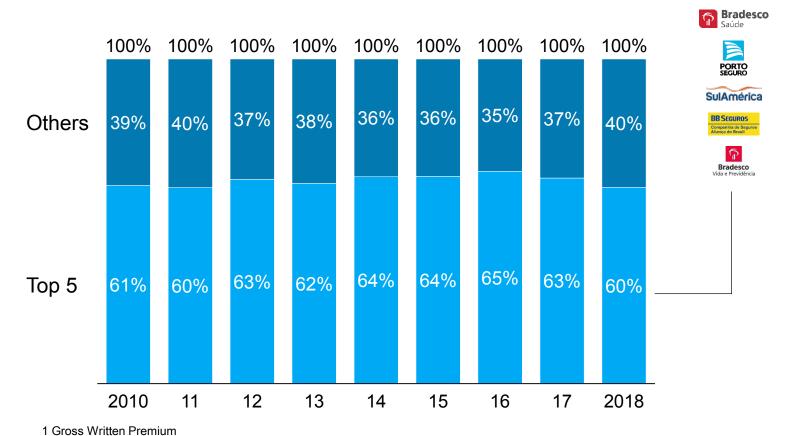


Source: BCB

### The insurance market also shows high level of concentration



Insurance concentration by GWP¹ %





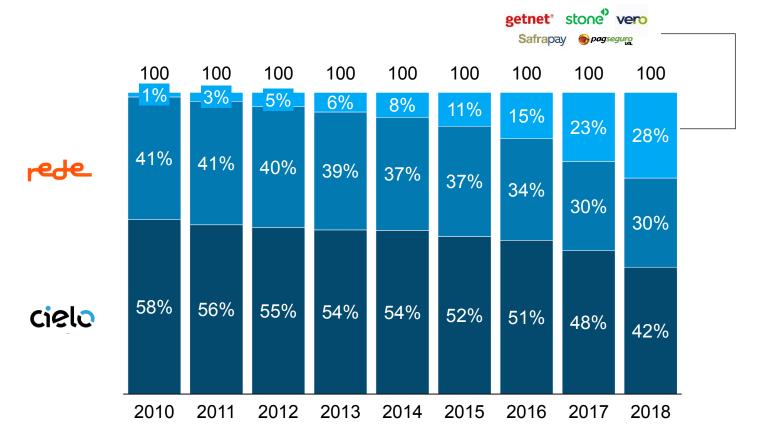


# The payment industry has become much less concentrated with new entrants and FinTechs like Stone and Pagseguro



State of the Industry

### Acquiring transaction volume market share %1



1 Specifically Acquiring

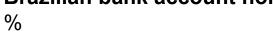
Source: ABECS, BCB, Companies' reports, McKinsey analysis

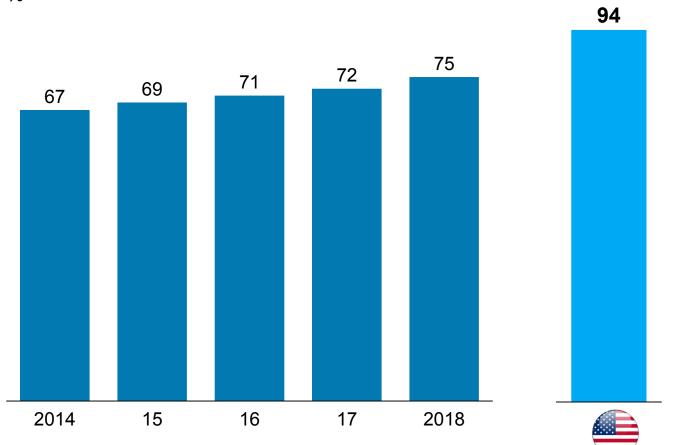


#### Financial inclusion remains a big opportunity: 25% of economically active people do not have a bank account



Brazilian bank account holders<sup>1</sup>







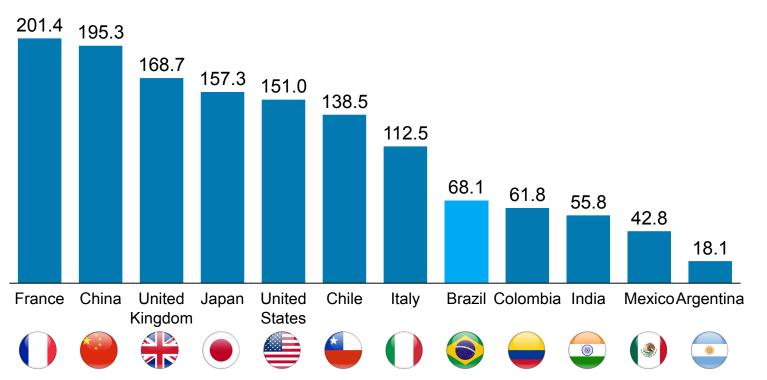
1 Number of individuals with active relationship registered in a financial institution over the total population Source: BCB; IBGE; FDIC



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



### **Consumer Credit Penetration** % of GDP



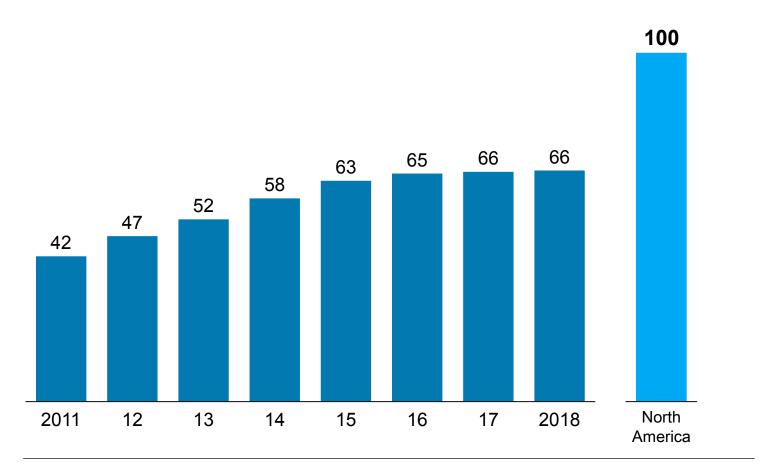


Source: BIS (3Q18)

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

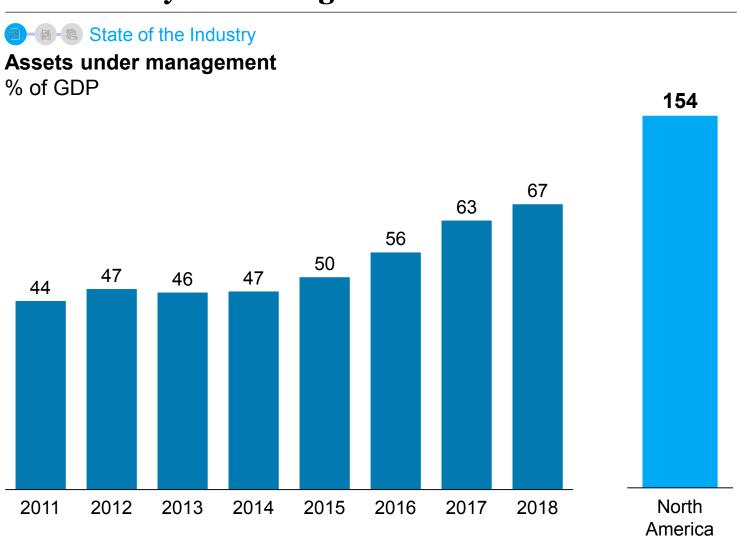


Credit portfolio average maturity - individuals Months, end of period





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



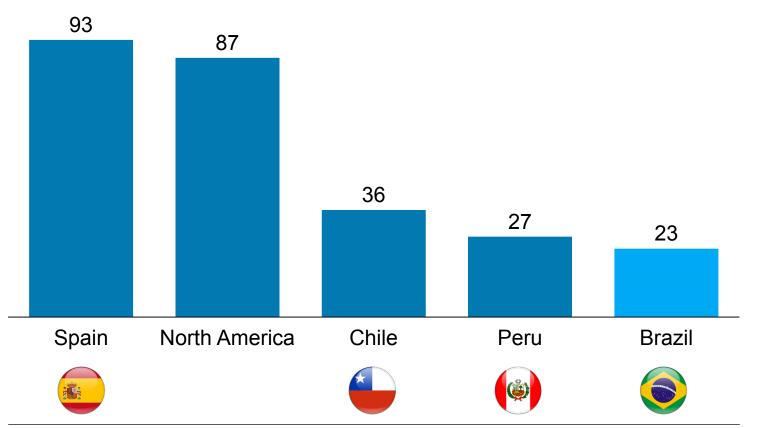


# Insurance penetration is also low, with significant room for growth via customer education and product innovation



**Auto insurance penetration** 

% of total fleet





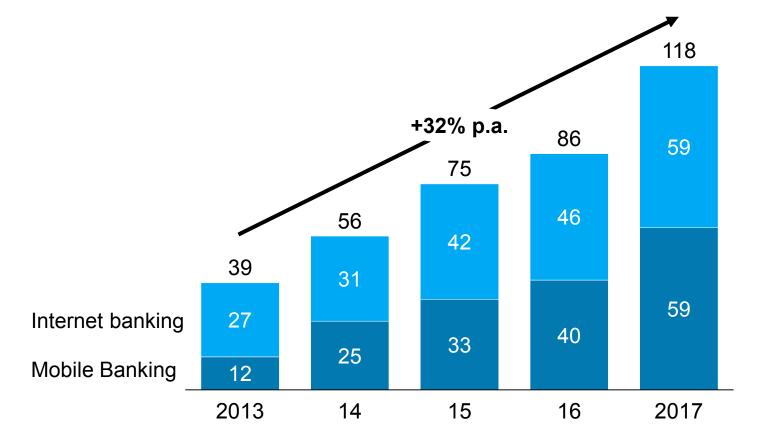
# The number of internet banking users has increased dramatically, driven by mobile banking





Digital trends

**Number of internet and mobile banking users**Millions



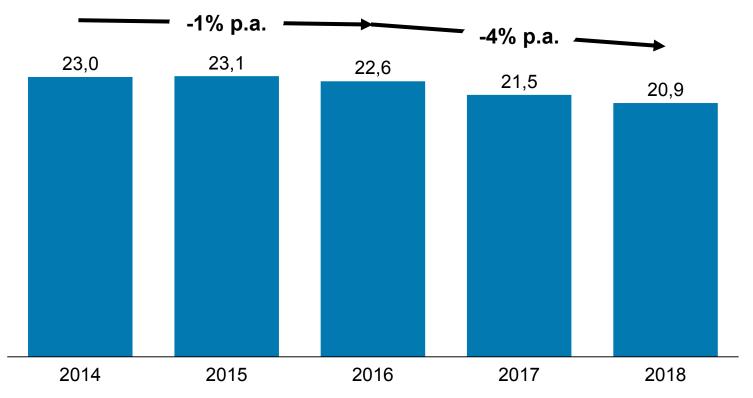


## As a result, the number of bank branches is declining – a trend that is accelerating



#### Number of bank branches

Thousands of branches





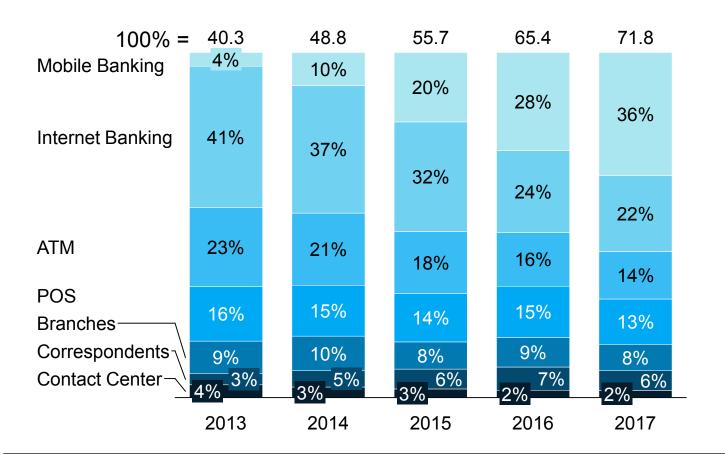
Source: BCB

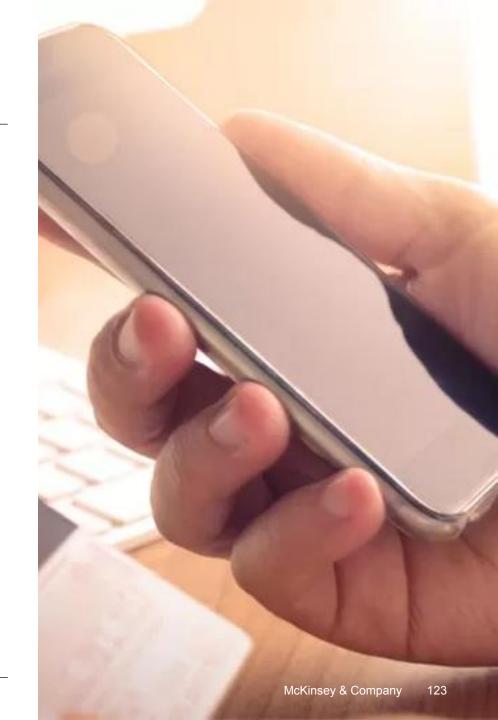
## Mobile and internet already account for more than half of all banking transactions in Brazil



#### Transactions by channel

Billions of transactions, % of total transactions





Source: Febraban

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

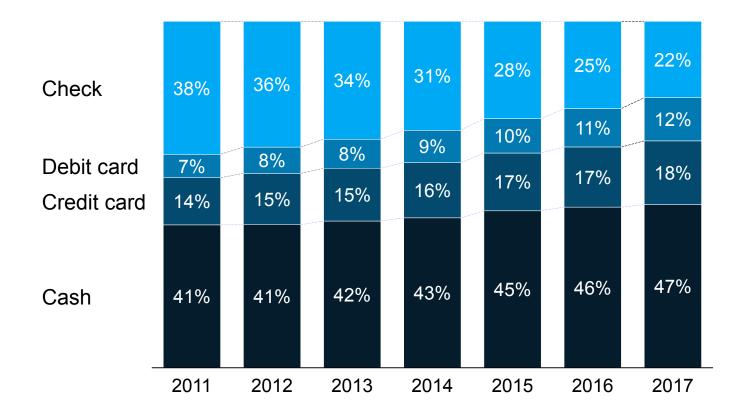




Digital trends

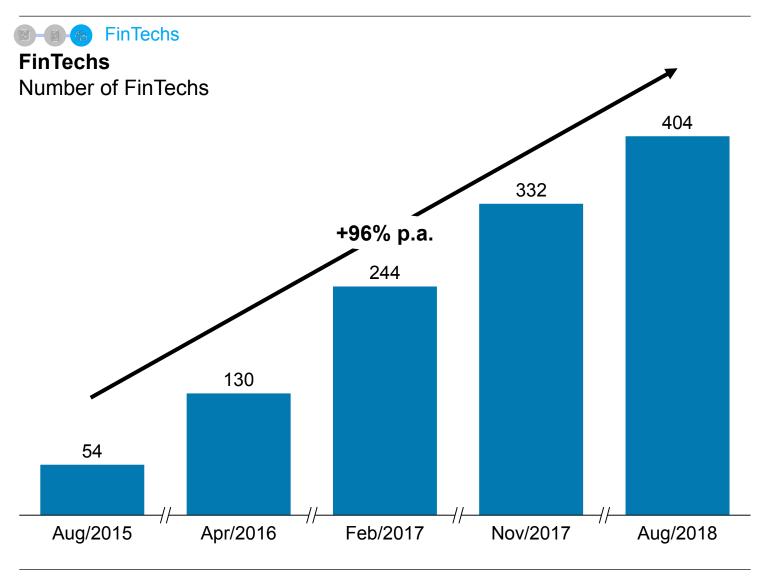
#### **Breakdown of payment transactions**

% of transacted volume





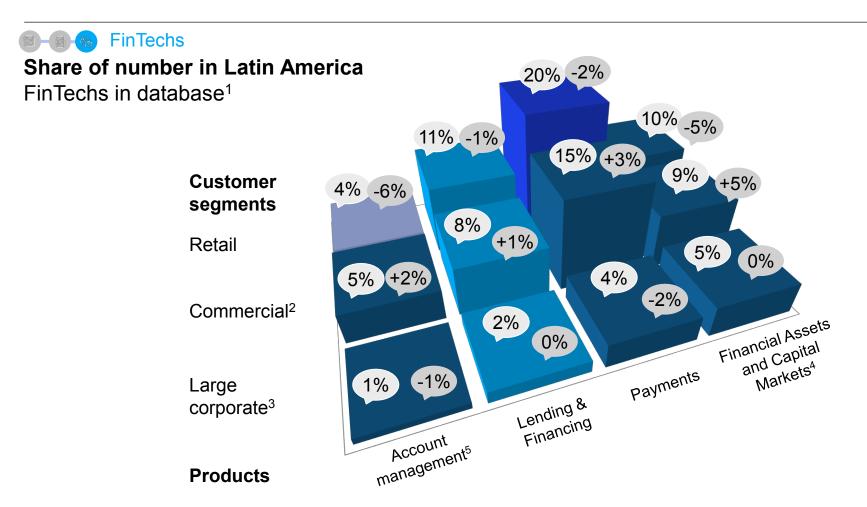
#### The number of FinTechs is rising





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

**Estimates** 



Banking segment's share of total banking revenues

<5%

7.5%-10%

5%-7.5%

>10%

Share of FinTechs identified in each bucket1

Difference in percent vs. rest of world

Source: McKinsey Panorama FinTech database (2016)

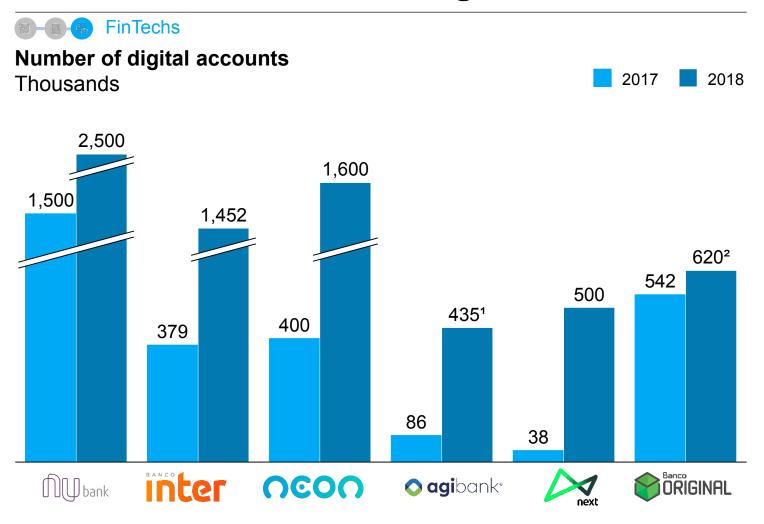
<sup>1 153</sup> LATAM FinTech companies in our database; includes double counting as FinTechs present in more than one segment or product are counted twice

<sup>2</sup> Includes Small and Medium Enterprises

<sup>3</sup> Includes Investment Banking, Sales and Trading, Securities services, retail investment, Non-CA deposits and asset management factory

<sup>4</sup> Revenue share includes C/A deposit revenue

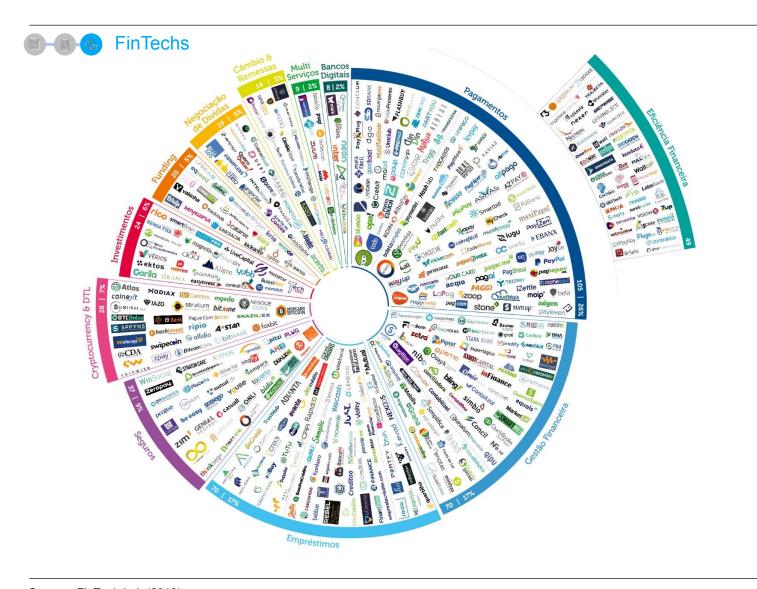
## Moreover, in the last few years, we have seen the birth and rise of a number of digital banks

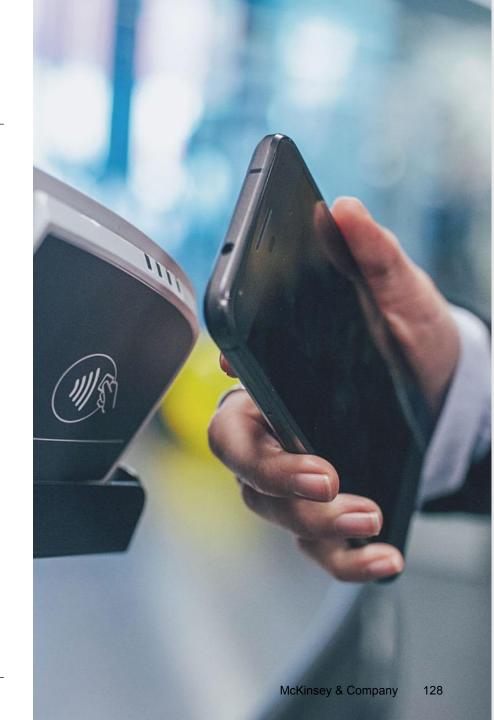


<sup>1</sup> Considering 3Q2018 numbers for 2018 2 Considering 1H2018 numbers for 2018



#### Map of the Brazilian FinTech ecosystem





Source: FinTech Lab (2018)

# The three biggest unicorns and recent success stories belong to FinTechs

53		Fin	Techs

	Founded	Valuation US\$ billions	Funding US\$ billions	IPO Date			
M bank	2013	4.0	0,7	N/A			
pagseguro uol	2006	8.8	2,3	Jan 18			
	2042	0.4	4.4	Oct 19			



2013

8.4

1,1

Oct 18



#### Chapter





#### 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

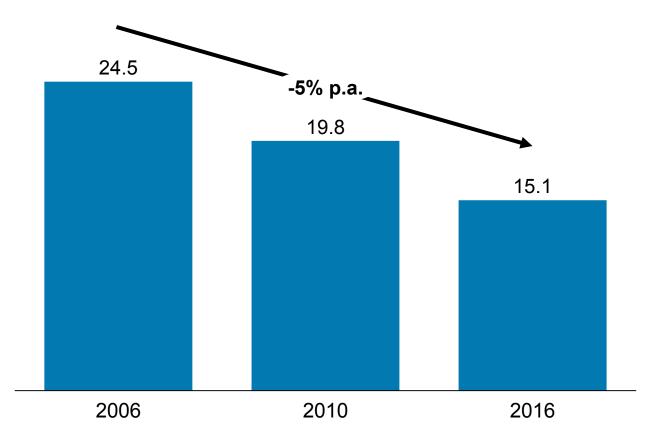
More than 200 startups have risen to this challenge, pushing the digital innovation agenda with new business models around big data, IoT medical devices, health marketplaces, and health education, among others.

#### Infant mortality rates have declined



#### Infant mortality in Brazil

Per thousand live births



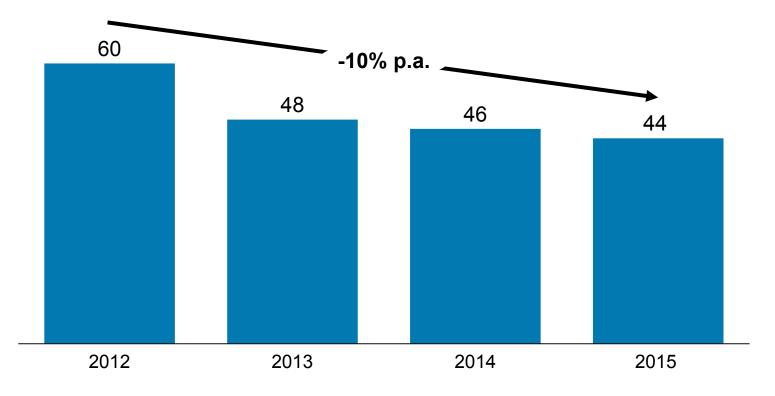


#### Maternal mortality has also declined sharply



#### **Maternal mortality**

Per 100 thousand live births





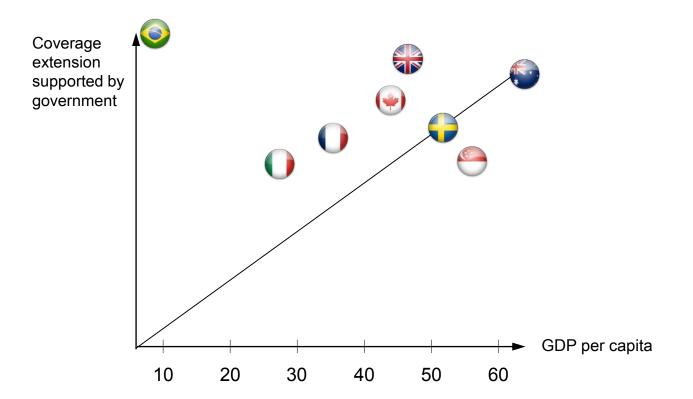
Source: WHO; World Bank

### 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)

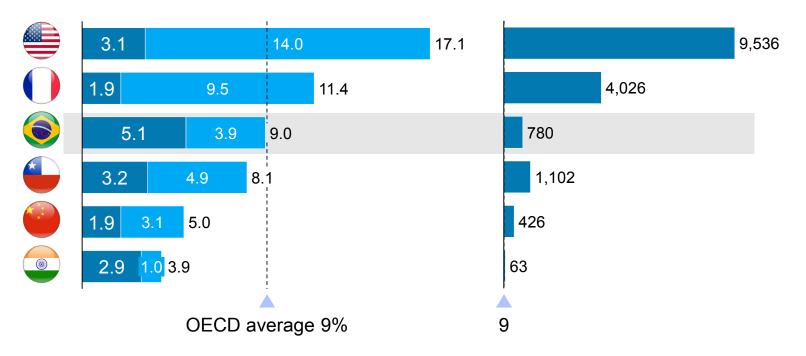
# Health spending as a share of GDP is in line with OECD, but spending per capita is still lower than developed countries



Public

Private







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



Source: ANS

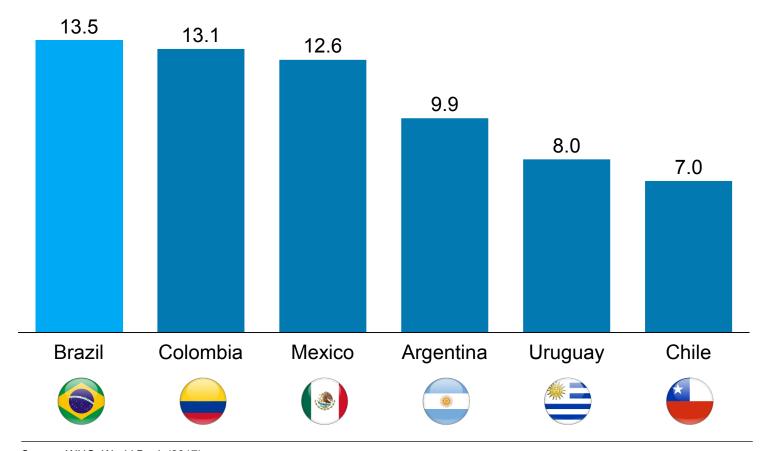
#### There is considerable room for improvement. For example, infant mortality is still high for Latin **America**



State of the Industry

#### **Infant mortality**

Per thousand live births, under 1 year

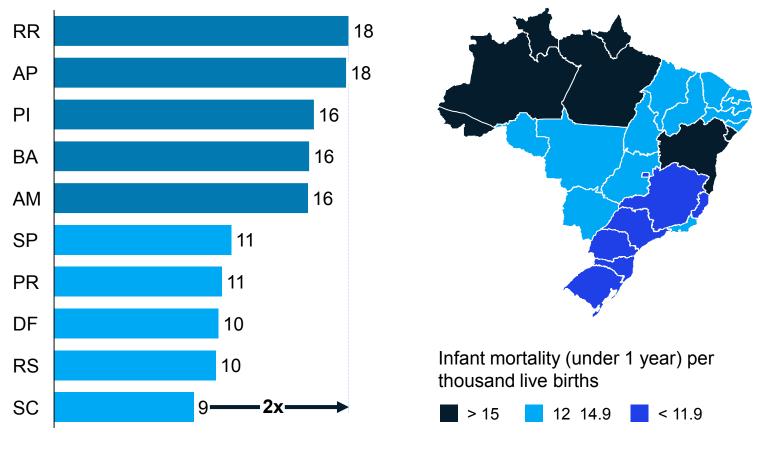




Source: WHO; World Bank (2017)

# 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
%



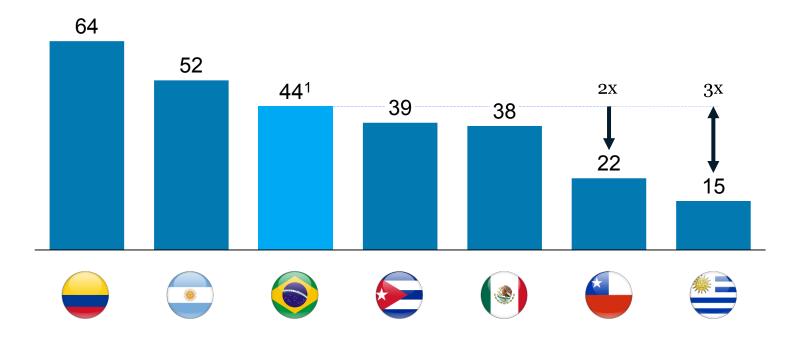


# The maternity mortality rate is also higher than in peer countries



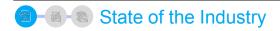
#### **Maternal mortality**

Per 100 thousand live births

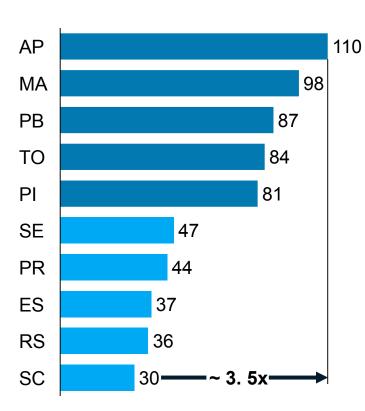




## And the maternity mortality rate varies widely across the country

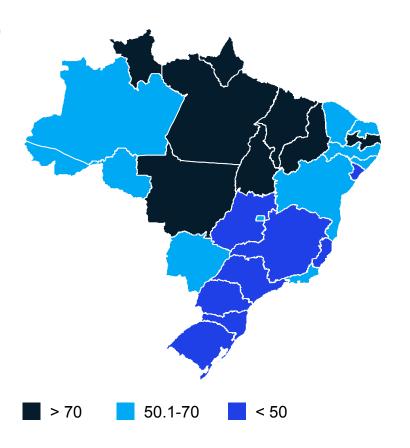


### Maternal mortality rate by state Per 100 thousand live births



#### **Maternal mortality**

Per 100 thousand live births





Source: Datasus (2017)

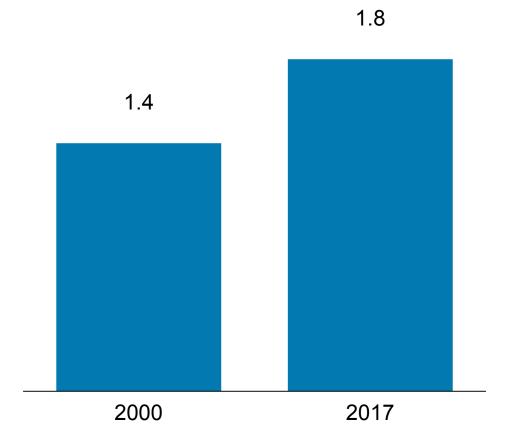
#### Brazil has fewer physicians per person than most developed countries



State of the Industry

#### **Physicians**

Per thousand inhabitants



#### **Physicians**

Per thousand inhabitants



McKinsey & Company Source: OECD (2017)

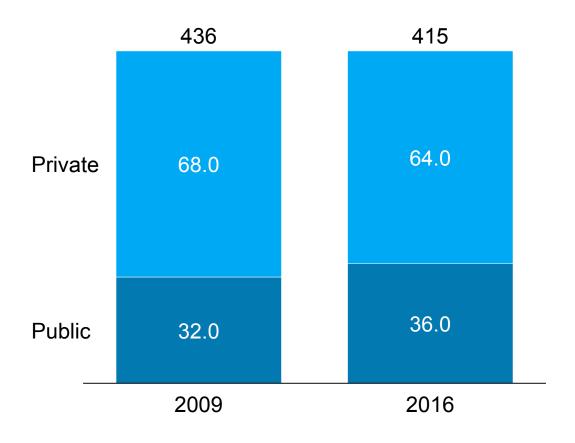
#### Brazil also has fewer hospital beds per person



State of Ithe ndustry

#### Number of hospital beds

Thousand, %



### **Hospital beds**Per thousand inhabitants

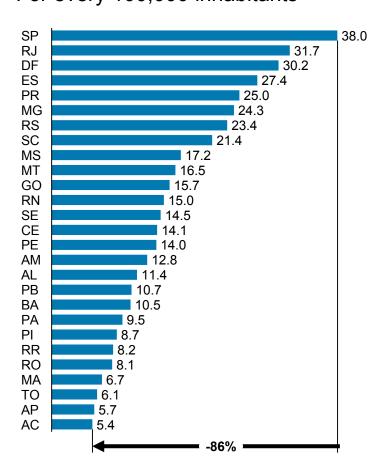


Source: OECD; SUS (2016) McKinsey & Company

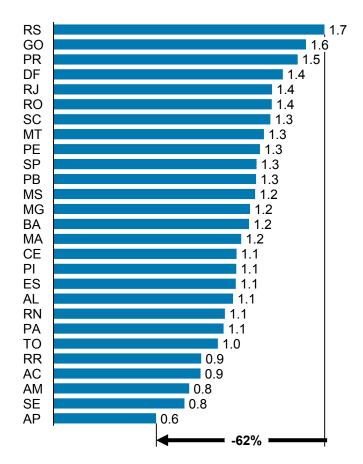
## Access to private health plans and beds varies widely across the country



### **Private plan beneficiaries**For every 100,000 inhabitants

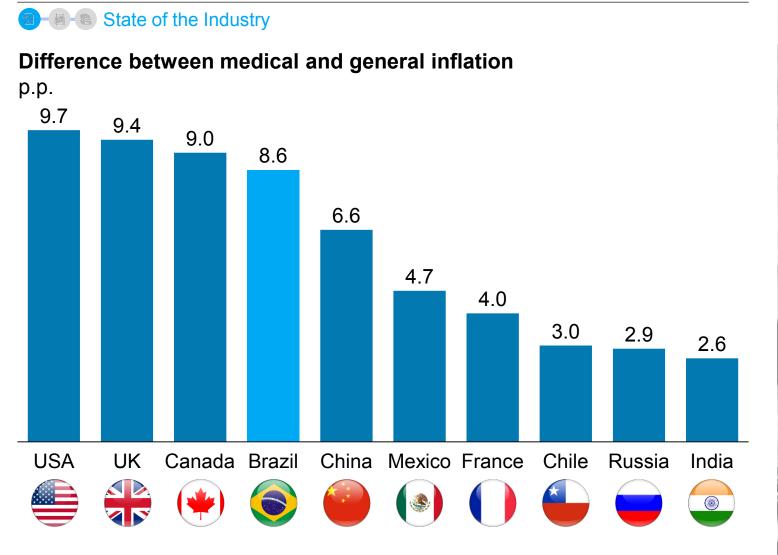


### **Private bed beneficiaries**For every 100,000 inhabitants



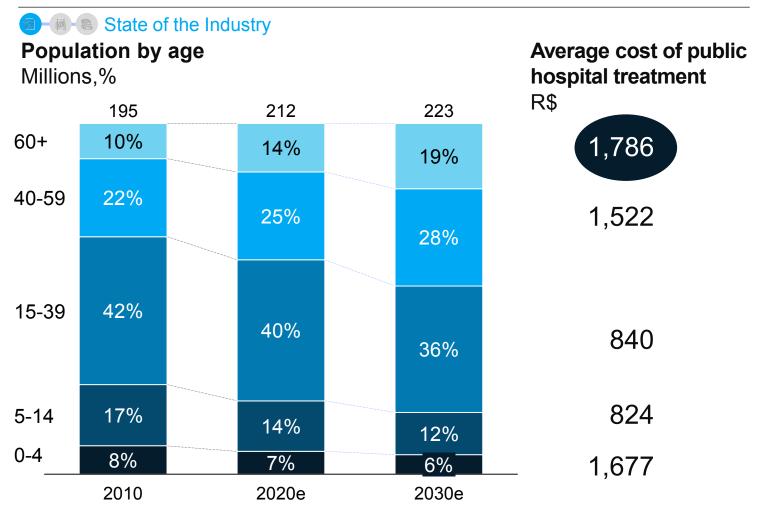


## Medical inflation far exceeds baseline inflation and rates in many other economies





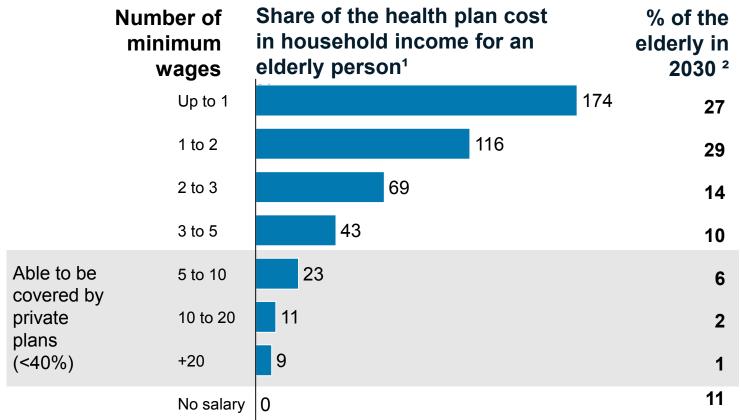
## Demographic pressures will raise health care demand and spend: people over 60 will account for 20% of the population by 2030





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





<sup>1</sup> 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

Source: IBGE (2018)



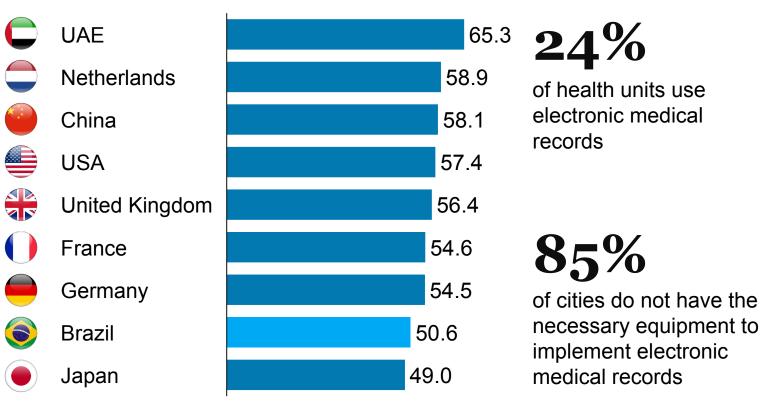
<sup>2</sup> Considers the same distribution of elderly in all income ranges. Proportion of people 60+ years of age in the Brazilian population in 2014 was ~11%

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



### **Future Index**

Score



McKinsey & Company

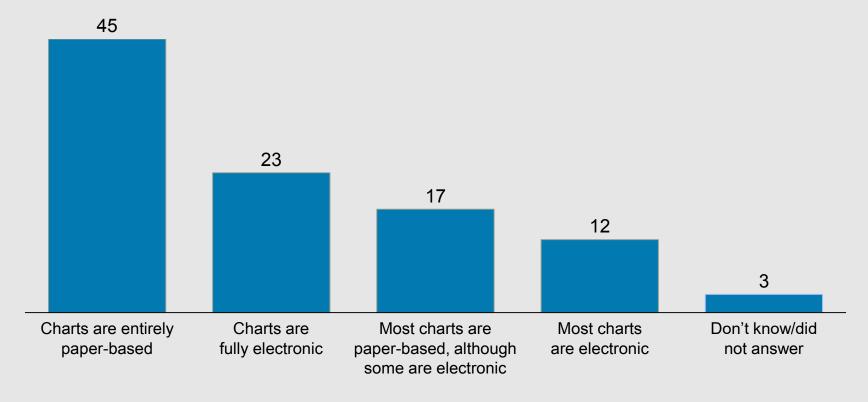
<sup>1</sup> The Future Health Index (FHI) measures the perception of readiness of 13 key countries to realize the benefits of connected and integrated medical care

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



#### Type of patient chart used<sup>1</sup>

% of healthcare establishments



<sup>1</sup> How records are kept according to the answers provided by the healthcare facilities visited

# Brazil is home to more than 200 HealthTech startups across hubs



+263 startups

17%

**15%** 

Management Systems

**Hard Sciences** 

are the sectors with the most startups

2017



São Paulo

39%



Belo Horizonte

9%

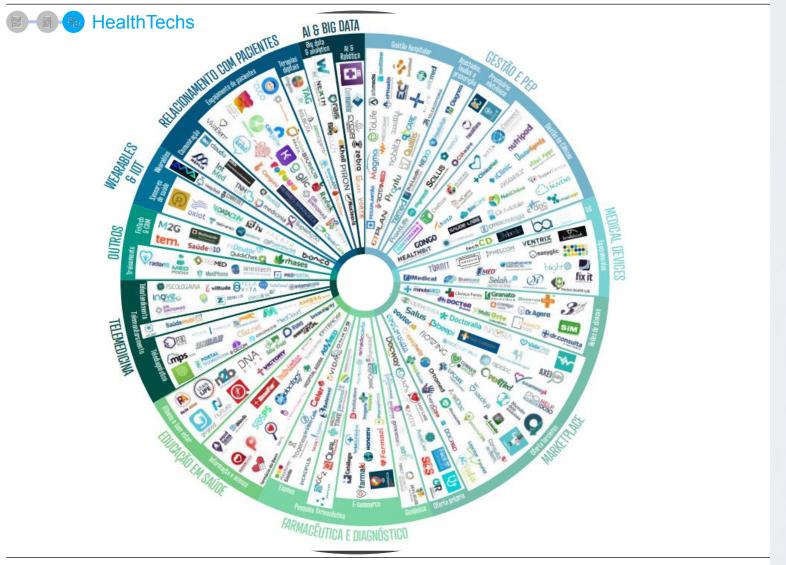


Recife

7%

...are the cities with the most HealthTechs

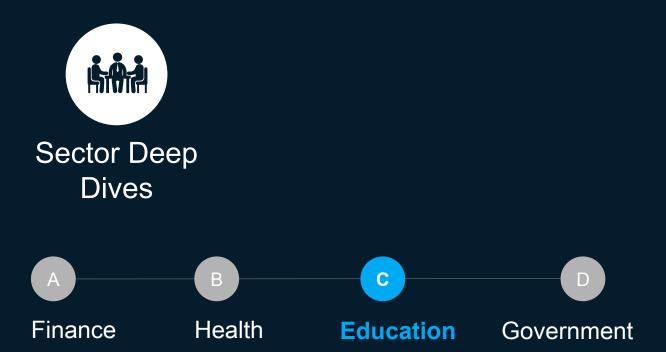
## Map of the Brazilian HealthTech ecosystem





Source: Distrito (2018) McKinsey & Company 150

## Chapter



#### **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.

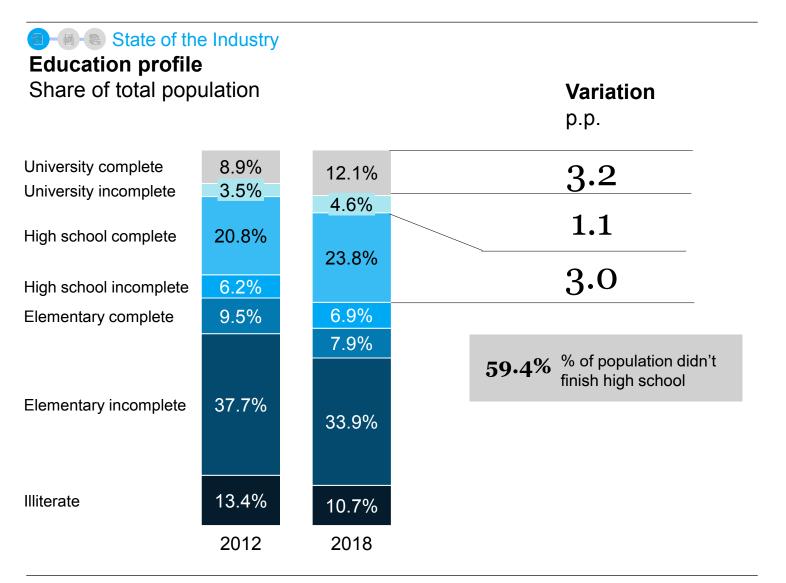
Distance learning is leading the way, with strong growth. Up to 25% of applications to higher education institutions are for distance learning.

## Startup environment

More than 350 startups are driving innovation.

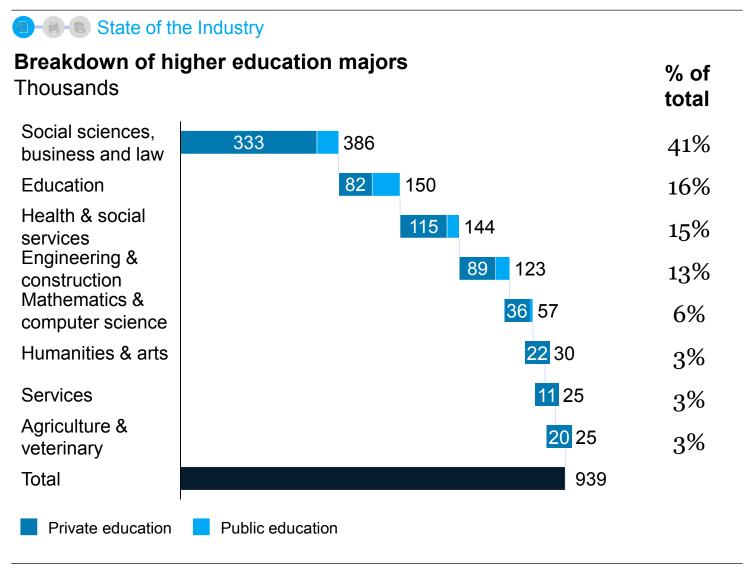
 They focus mostly on content management, education management systems, educational games, and adaptative learning platforms.

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





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



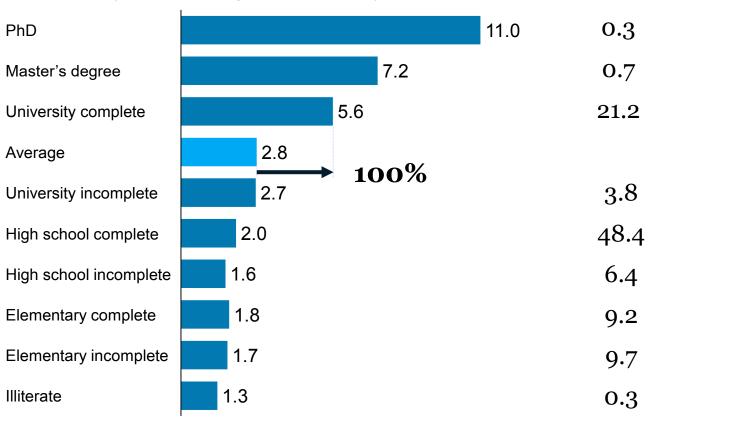


### Employees with university degrees earn twice the national average – the highest salary increase across levels



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

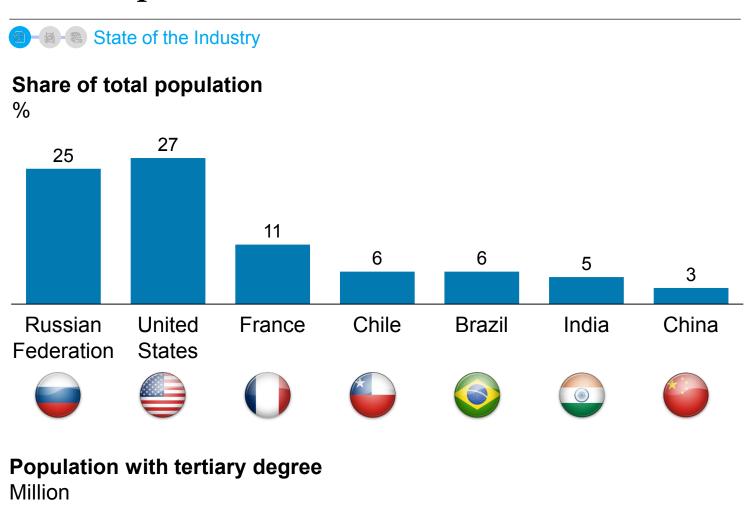
Registered employees





Source: MTE-RAIS (2018)

# The penetration of higher education is much higher in developed countries





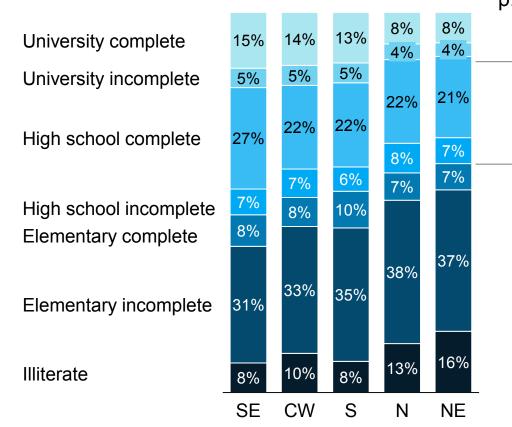
### **Education in Brazil is unevenly distributed**



State of the Industry

# **Education profile per region**

Share of population at each level



#### Difference between SE and NE educational level p.p.

8.2

5.3

-13.4

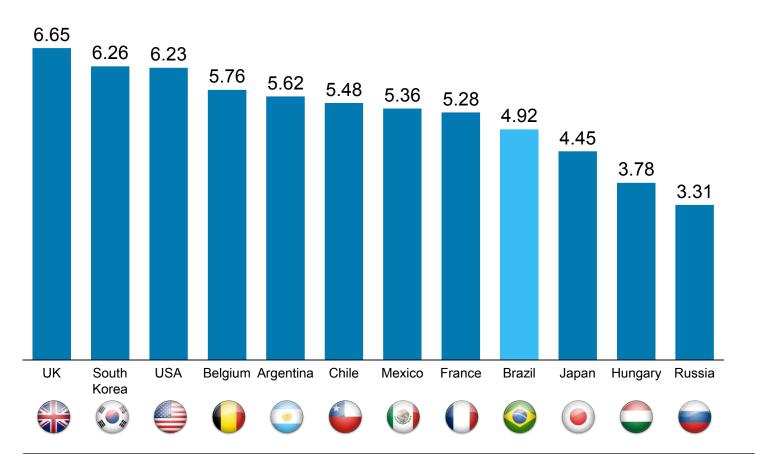


# Educational spending is low compared to developed economies and even within Latin America



### 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

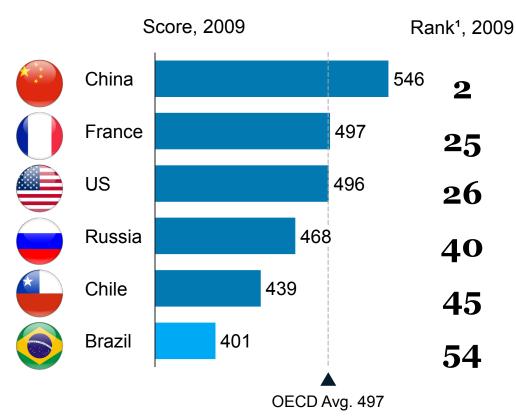


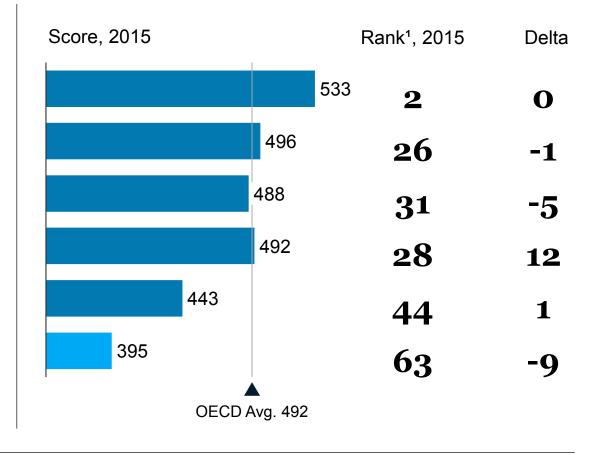
State of the Industry



#### **PISA - Student performance**

Average score in mathematics, reading and science

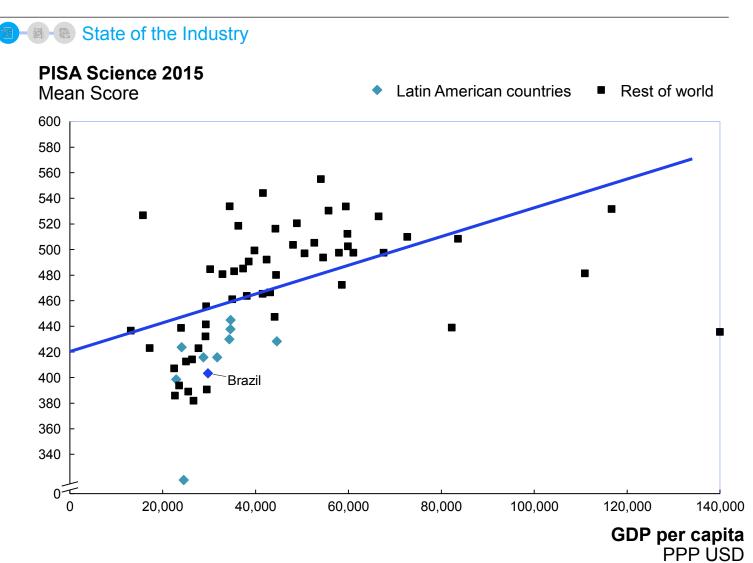


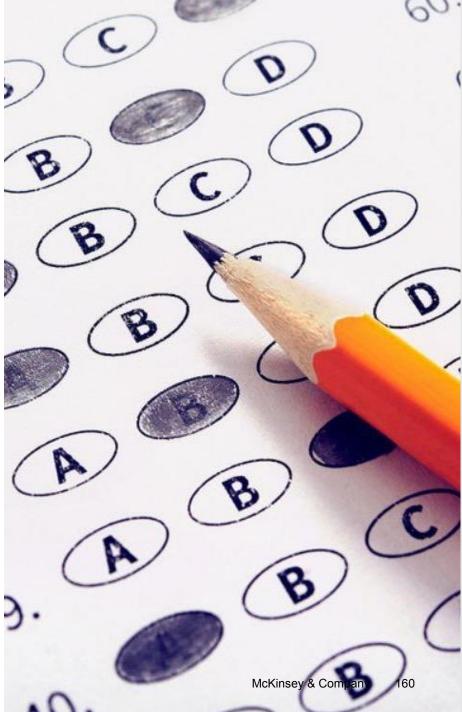


Source: PISA (2015); IBGE; OECD McKinsey & Company

<sup>1. 65</sup> 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





Source: PISA (2015)

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



Digital trends

**Format** 

Description





Courses delivered online

Timeline decided by the university

Often includes interactive elements



Non-techbased

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



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



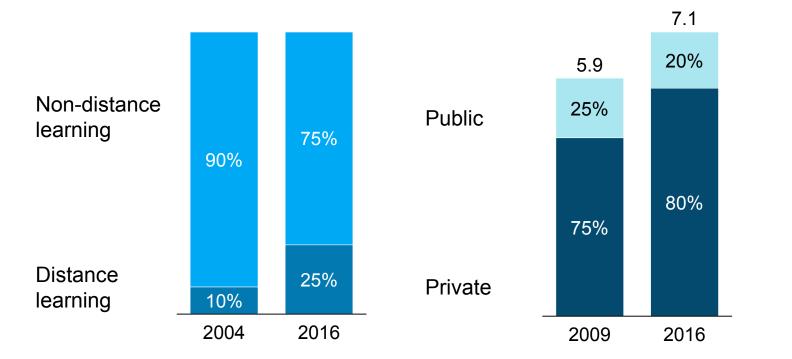


Digital trends

### **Applications for distance learning** higher education courses

% of total applicants

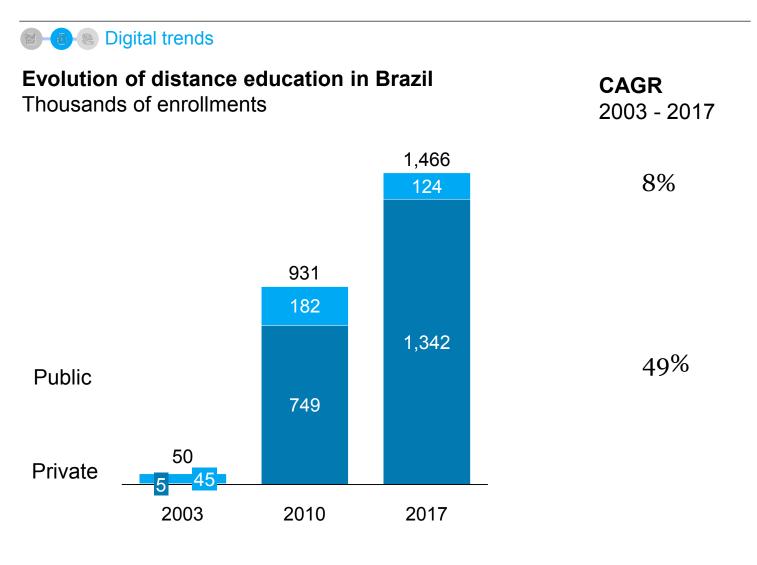
Institutions that offer distance learning higher education courses 000





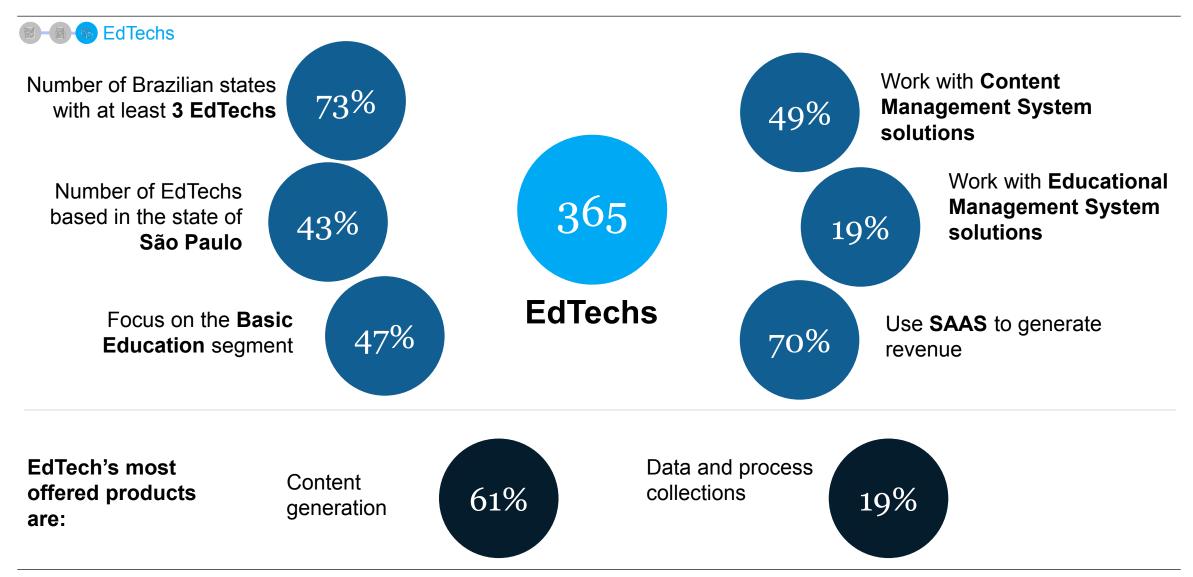
Source: INEP (2017)

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





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



Source: ABStartups and CIEB (2017)

McKinsey & Company

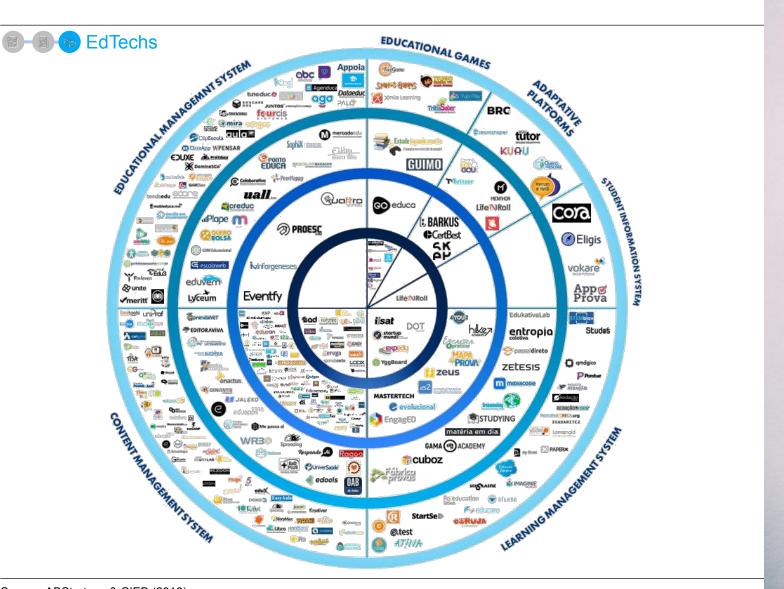
# Brazil's many education startups aim to address a wide range of topics, mostly in content management (2/2)

<b>EdTechs</b>	Basic education	Higher education	Corporate	Languages	Other courses	More than one
Solutions (# of companies)	171	24	30	15	75	50
Content Management System	35	42	57	87	77	44
Educational Management System	28	25			5	24
Educational games	16	4	24		3	10
Learning Management System	16	13	17	13	9	18
Adaptive Platform	3	17	3		4	4
Student Information System	2				•	

Source: ABStartups and CIEB (2017)

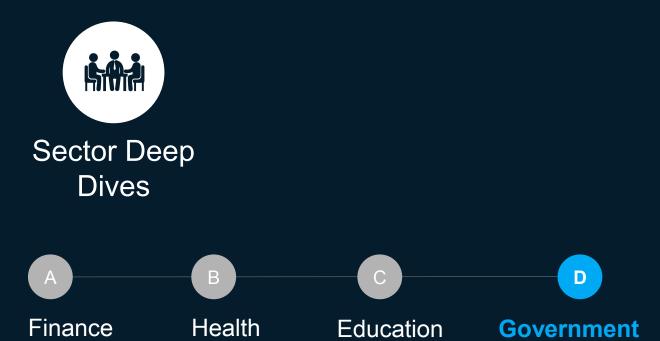
McKinsey & Company

### **Map of Brazil's current EdTech Ecosystem**





## Chapter



### Innovations have transformed public services in the last two decades





#### **Electronic voting**

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





#### **Income tax**

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





# Law of Transparency

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

Source: Press clippings McKinsey & Company

### 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** 

















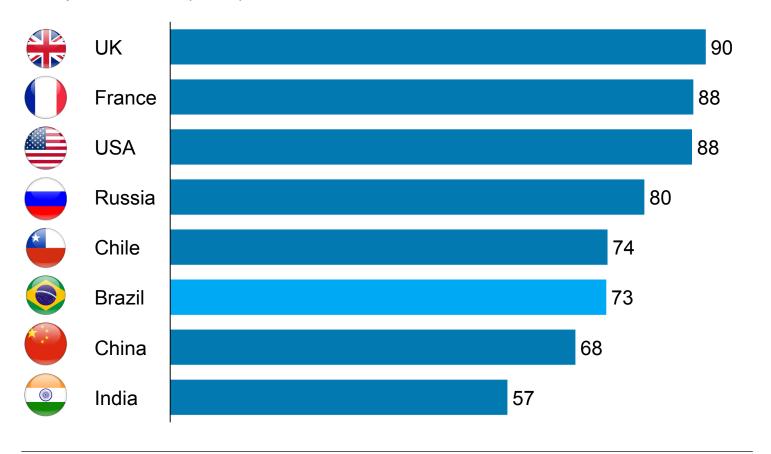




### Brazil lags global leaders in digital government

#### e-Government Development Index

Composite index (x100)

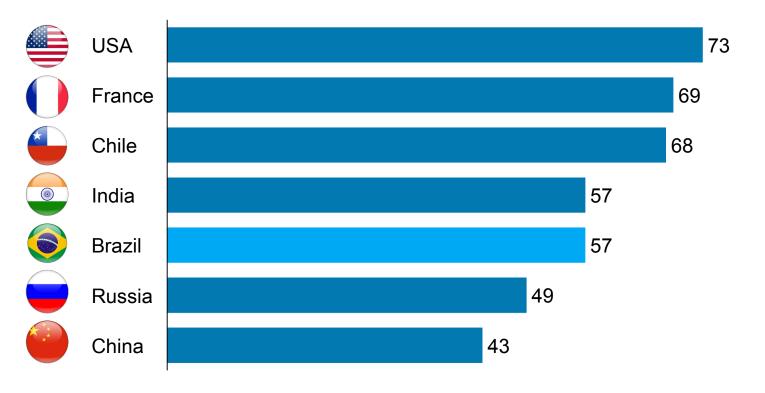




# Brazil also trails on the Open Government index, which includes civic participation and the right to government information

#### **Open Government Index**

Composite index (x100)





# Brazil has many opportunities to improve digital services for citizens

#### **Digital transactions for citizens**

Number of countries offering service via digital platform

_	2014	2018	in Brazil?
Pay utilities	41	140	<b>/</b>
File income taxes	73	139	✓
Register a business	60	126	$\checkmark$
Pay fines	42	111	<b>/</b>
Apply for a birth certificate	44	86	X
Apply for marriage certificate	39	82	×
Register a motor vehicle	33	76	×
Apply for drivers licence	29	62	×
Apply for personal identity card	27	59	×



**Available** 

### How can Brazil improve its government services?

Days to...



Open a company

**79** 

**425** 

Obtain a construction permit

Obtain electricity 64

Fulfill an average company's tax obligation

**85** 

**Benchmark** 



0.5



93



**18** 



3



### 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**

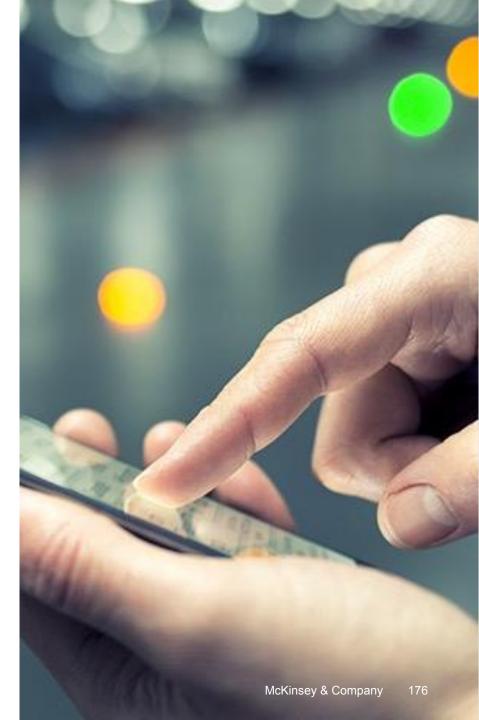




### **Efficiency / Operations**







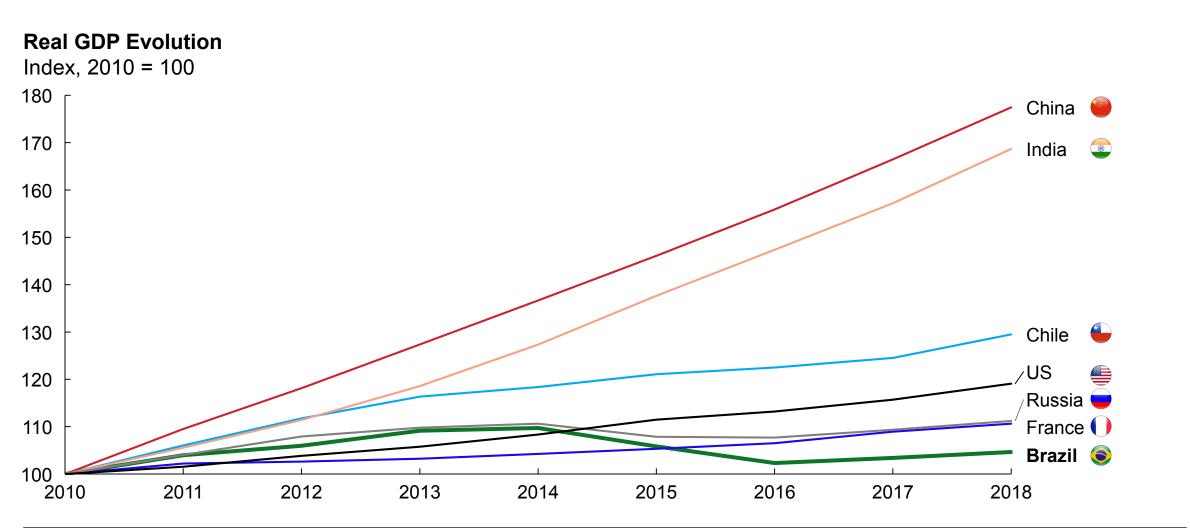
# **Appendix**

# 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

Attribute	Rank	Attribute	Rank
Area	5	주 도당망 HDI	79
Inhabitants	8	GDP per capita	76
GDP	8	្រីប៉្មុំ IHDI (Inequality index)	
Agricultural exporter	3	Education (PISA)	63
Soy production	2	Innovation	64
Users on social networks	3	Global Peace Index	106

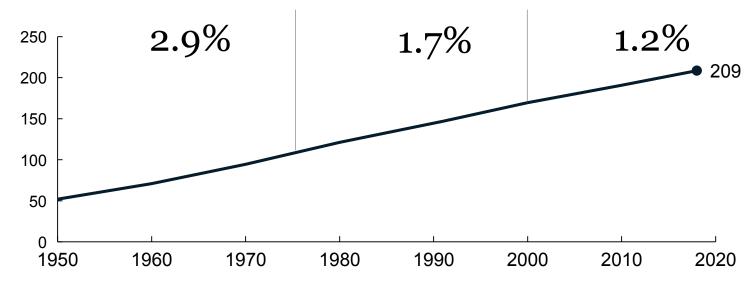
### Brazil's growth has lagged that of most developed and BRIC economies



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

#### **Total population**

Millions of inhabitants



Number of children per family

1950 6.2

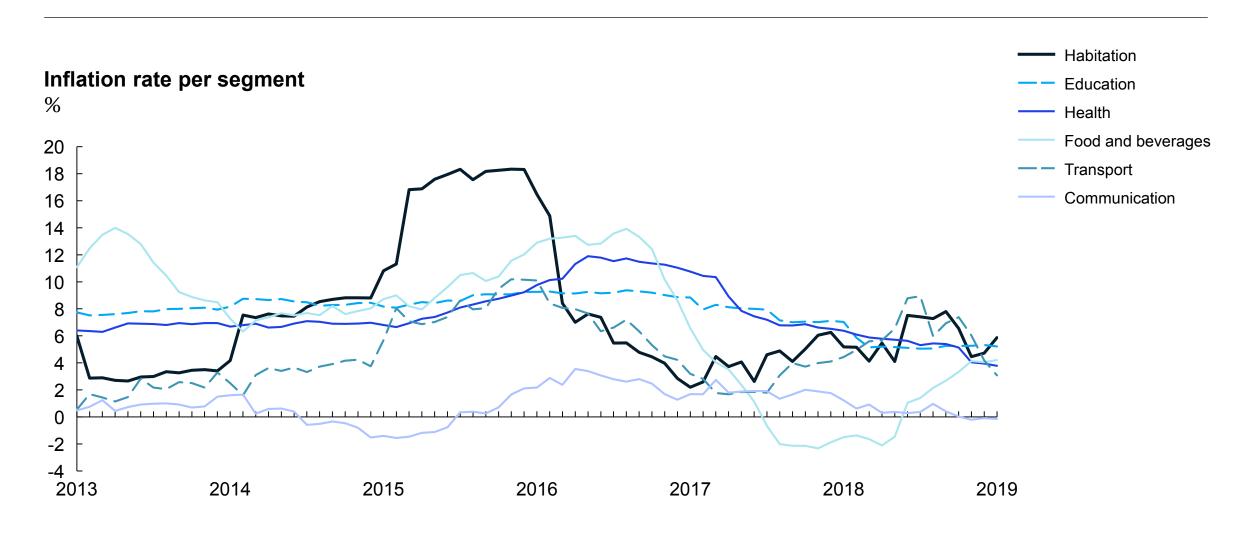
1980 4.4

2000 2.4

2018 1.6



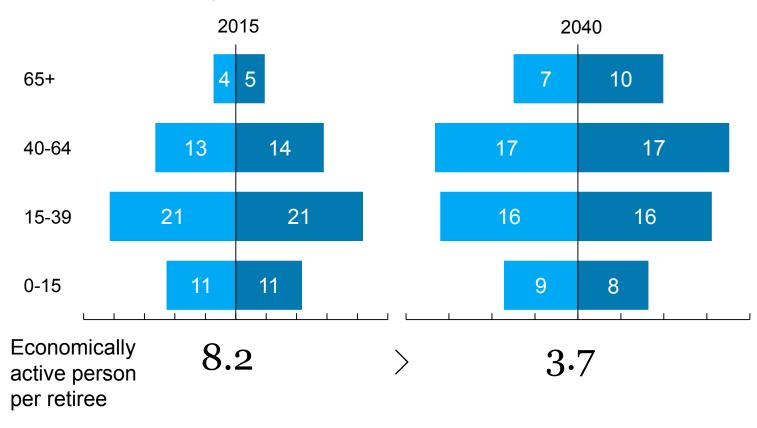
# Inflation varies by type of product and service; the costs of housing, health and education are rising faster than average



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

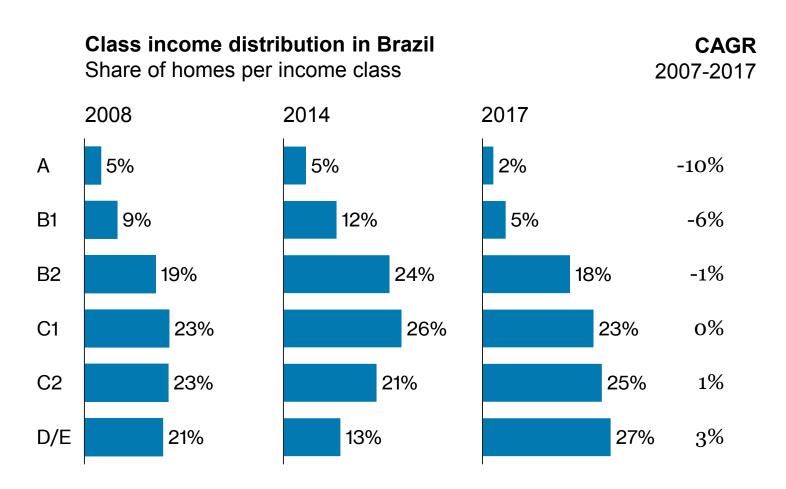
#### **Predictive demographic profile for 2040**

% of population per age bracket



<b>CAGR</b> 2015-2040	<b>Variation</b> p.p.
2.6%	8
1.0%	7
-1.2%	-10
-1.0%	-5

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

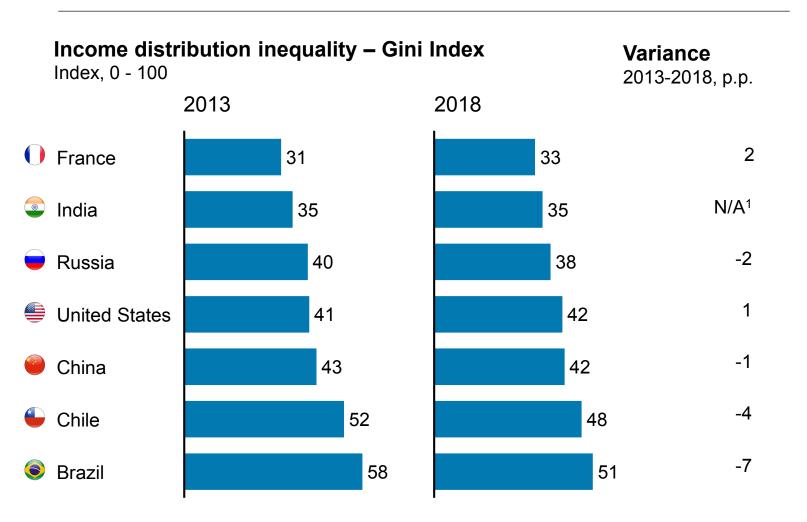


<sup>1</sup> Note: households were classified according to the Critério de Classificação Econômica Brasil, defined by ABEP. According to ABEP, the average household gross monthly income per social class is: Class A: RS\$ 20.272,56, Class B1: BRL 8.695,88,Class B2: RS\$ 4.427,36, Class C1: RS\$ 2.409,01,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

Source: IBGE



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

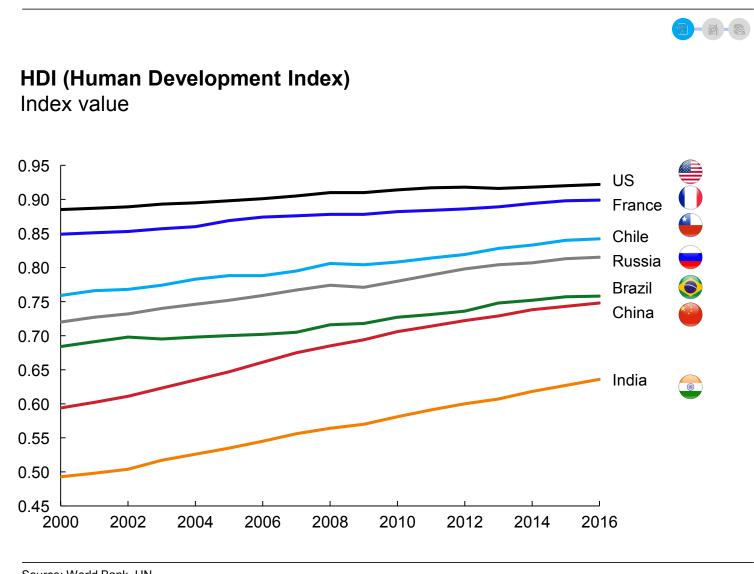


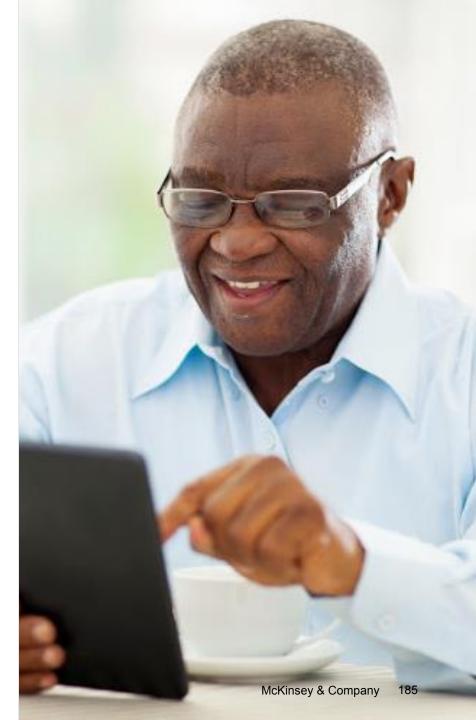
<sup>1</sup> Not possible to calculate since there is just one data point in the interval

Source: World Bank; McKinsey analysis



### **Brazil has lagged on the Human Development Index**



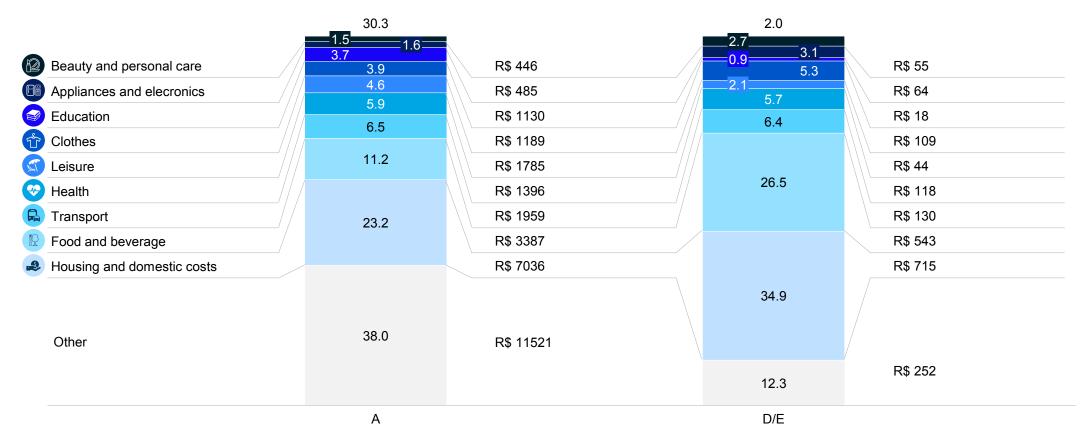


Source: World Bank, UN

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

#### **Consumption profile per income class**

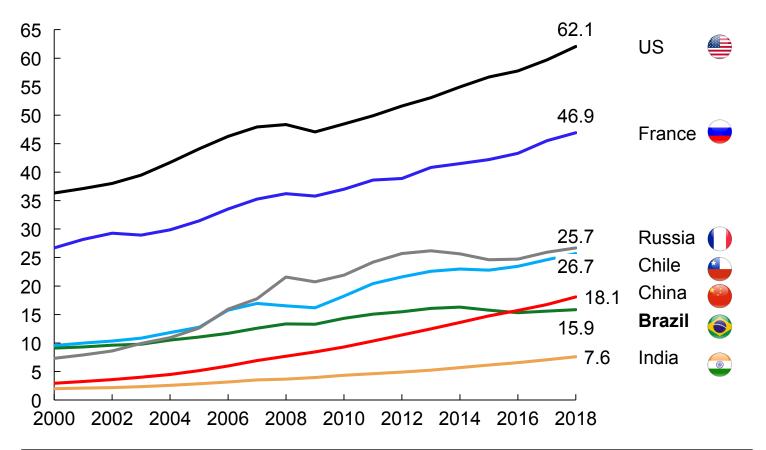
% of monthly income, total income (R\$ Thousands), average monthly spending per category



Source: IPC-MAP (2018) McKinsey & Company

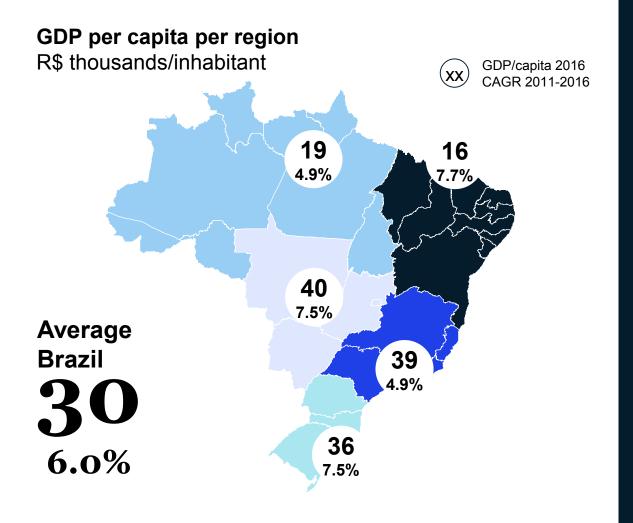
# Brazil grew GDP per capita more slowly than other BRICS and recently was surpassed by China

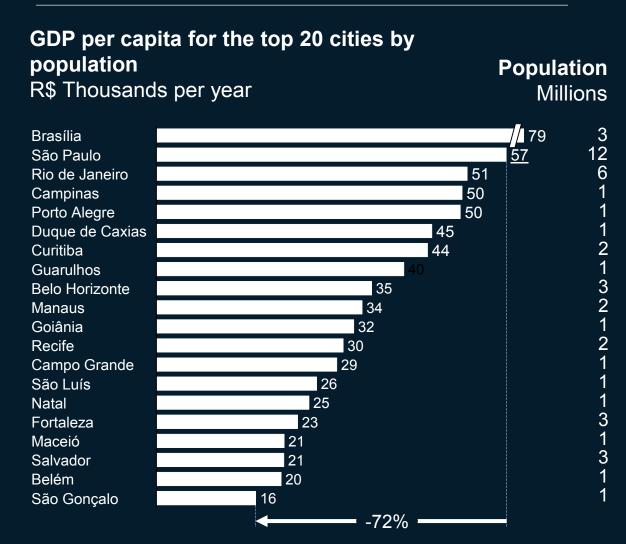






# GDP per capita varies significantly among the largest cities in Brazil

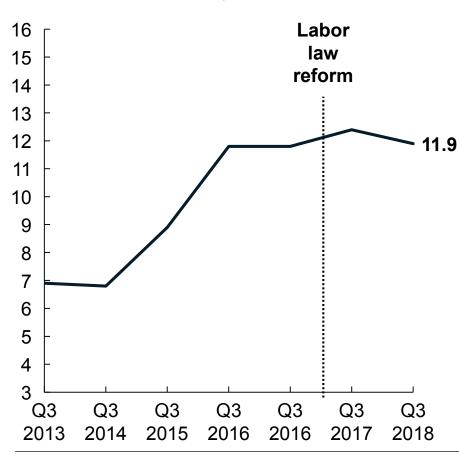




### Unemployment varies widely across regions

#### **Unemployment rate**

% of total economically active population

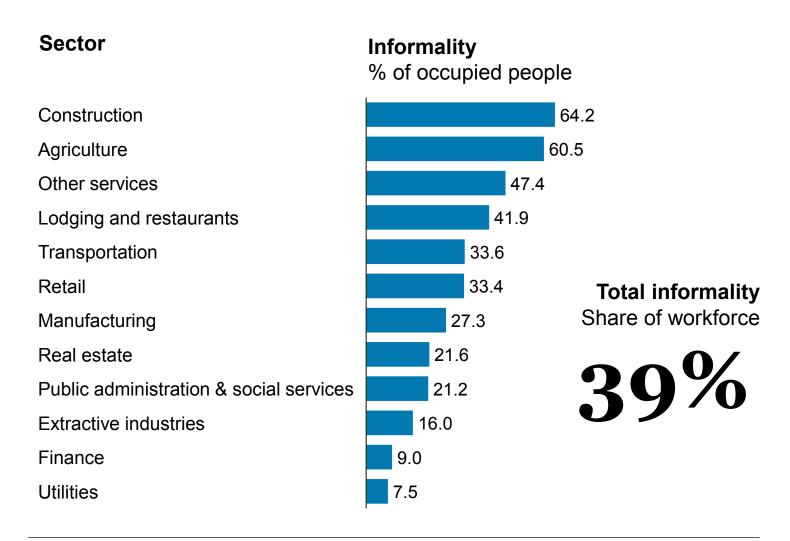


Region	Unemployment rate
Northeast	14.4
North	11.5
Southeast	12.5
Southt	7.9
Center-wes	st 8.9



Source: IBGE

### Informality is high in many sectors of the economy





Source: PNAD (2015)

### **Brazilian worker profiles**

#### Position (2015) **Company size** Industry Transport Family work Construction Employer-18 1 to 9 Professional Domestic work 10 services Private sector 12 10 10 to 19 Agri. & fishing (not registered) 9 Public sector 12 12 20 to 50 16 Others 8 50 to 100 Self-employed 26 $\widehat{\underline{IIII}} \text{ Public services}$ 16 18 100 to 500 Retail and auto 17 8 500 to 999 Private sector (registered) 36 26 1000 or more Industry 22

