



CAS - 2019 Spring Meeting

HYATT REGENCY
NEW ORLEANS, LOUISIANA, USA
MAY 19-22, 2019



Auto Insurance Market in Brazil

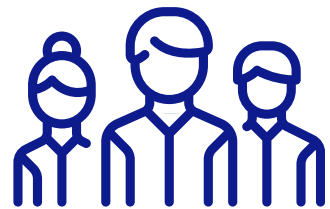
César Neves, PhD.

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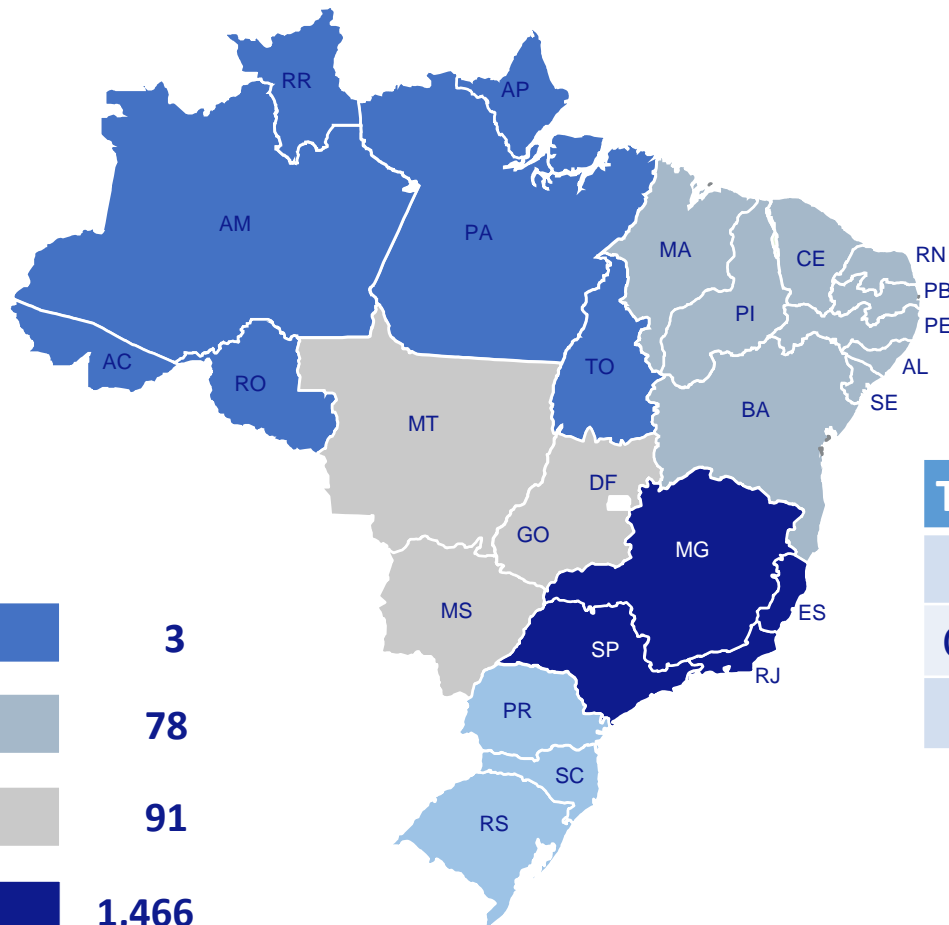
- I am from Rio de Janeiro, Brazil
- Actuary since 1999
- Professor of Actuarial Science at the Rio de Janeiro State University (UERJ)
- Head of the Department for Monitoring Business Conduct in the Brazilian Insurance Supervisory Authority (Superintendência de Seguros Privados - SUSEP)
- Member of the Academic Central of The Casualty Actuarial Society
- I represent the Brazilian Institute of Actuaries (IBA)
- **Areas of Expertise:** Risk Modeling, Solvency, Products, Insurance, Reinsurance, Regulation, Pension Plan and Longevity.



Brazilian Institute of Actuaries Numbers



1,808
Fellows



MIBA:

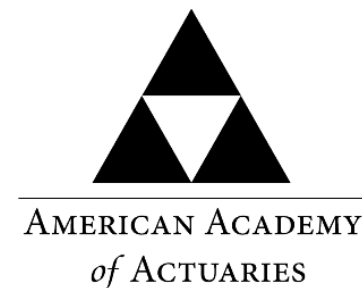
North	3
Northeast	78
Central-West	91
Southeast	1,466
South	170

Types of Members	2018
Members – MIBA	1,808
Companies – CIBA	83
Students - EIBA	68



IBA International Connections

FMA - IAA full membership entitled to 3 votes in the meetings



Agenda

1. Brazilian Auto Insurance Market
2. Coverage
3. Market numbers
4. Distribution
5. Pricing
6. Solvency rules
7. Future of the car insurance market





Brazilian Auto Insurance Market

- Insurance companies need to be authorized by the Brazilian Insurance Supervisory Authority (SUSEP)
- 2 kinds of companies: companies specialized in property and liability insurance and others in life insurance and annuities.
- Brokers are also registered at the Brazilian Insurance Supervisory Authority and they represent the principal channel for distributing car insurance products.
- There is a parallel and illegal market which is on the increase, and this is a significant problem for the Brazilian car insurance market.
- The car insurance market is innovating pricing techniques and products.



Auto Insurance in Brazil



Brazil

Area (km²)

8,511,965,
5th

Population 209 Million, 5th

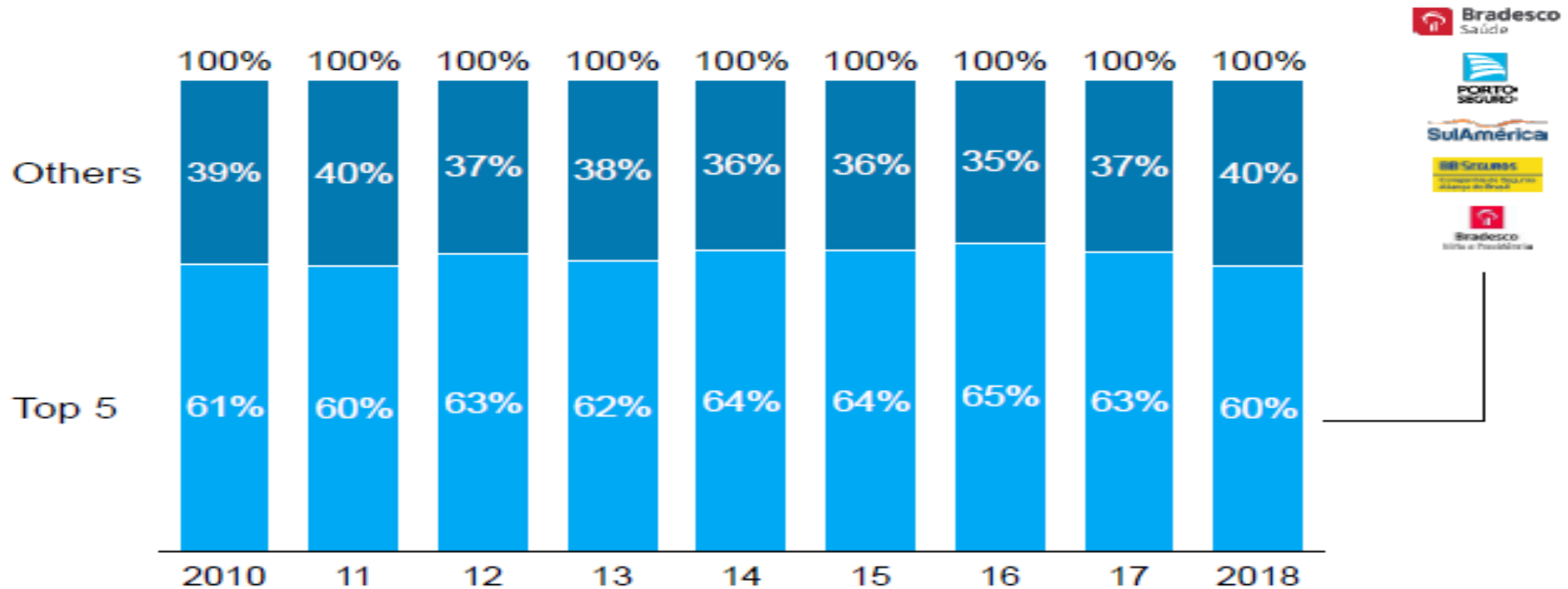
GDP: US\$ 1,868 Billion, 9th (nominal,
2018)

Car Insurance Premium: US\$ 9.18 Billion, 0.5% GDP



The insurance market shows a high level of concentration – 5 principal players

State of the Industry
Insurance concentration by GWP¹
%

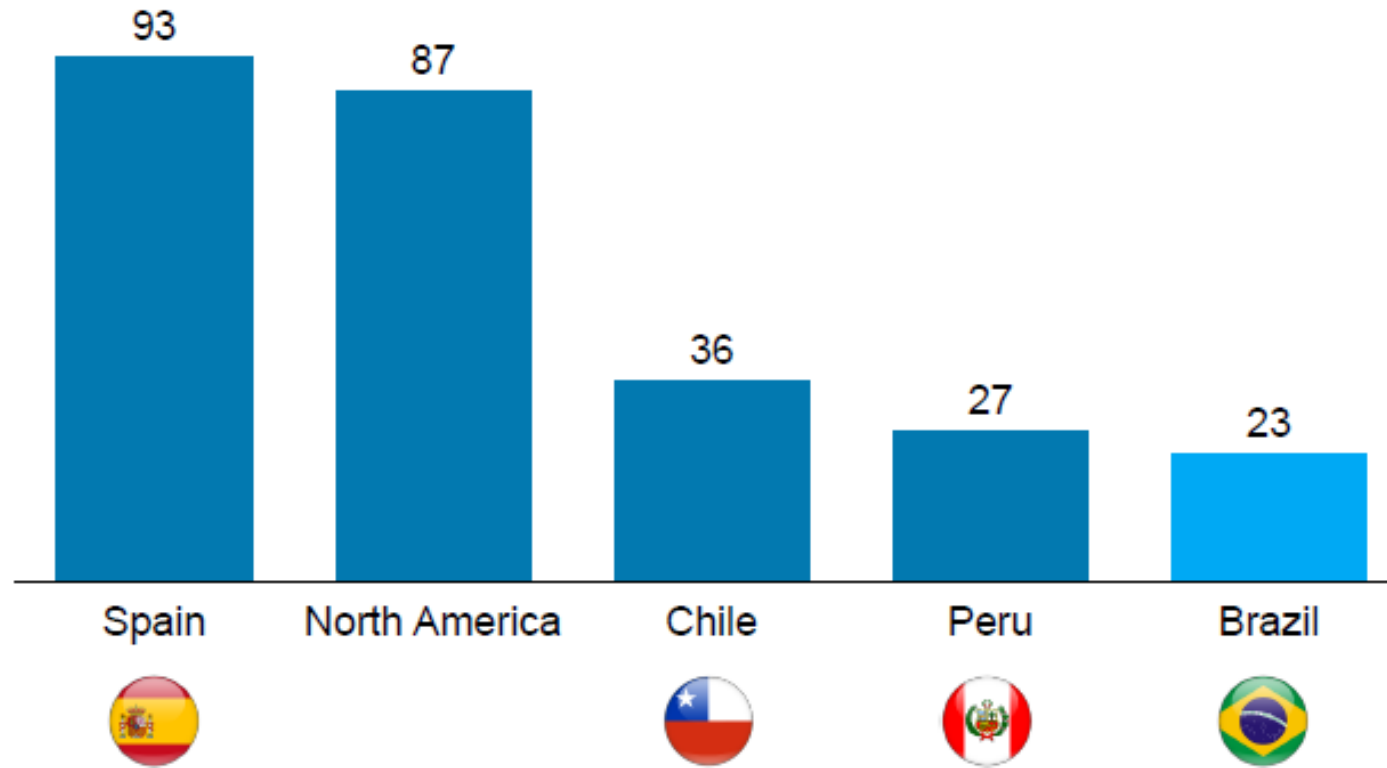


¹ Gross Written Premium
Source: SUSEP, McKinsey analysis



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

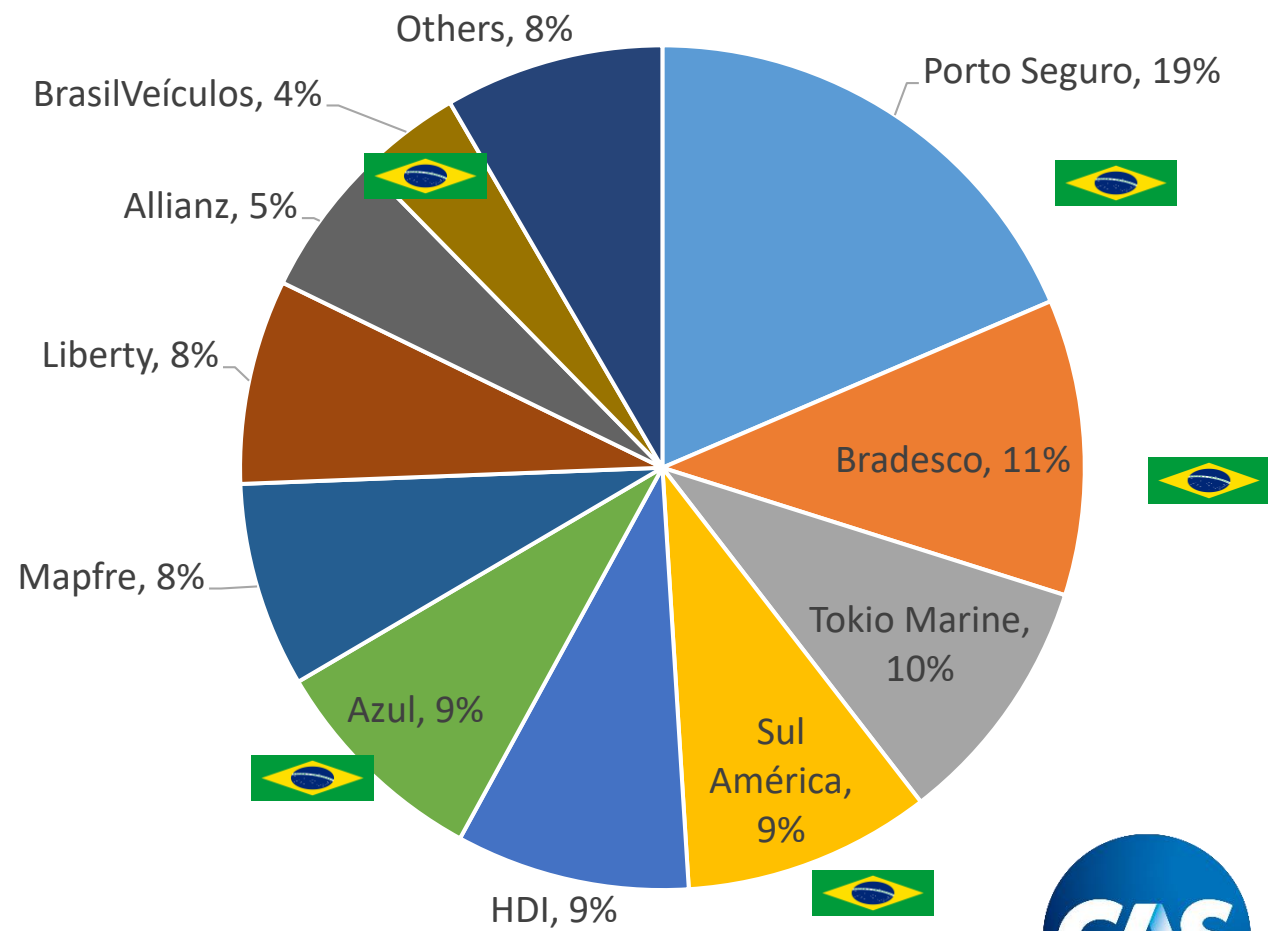
Auto insurance penetration
% of total fleet



Insurance Companies

- Insurance Companies: # 117
- Insurers that sell auto insurance products: # 29, 25% of the total
- 10 insurers have 92% of market share in 2018
- Foreign Players: 36,6% of market share in 2018 *(Brazilian companies owned by foreigners)*

Market Share – Car insurance Premiums in 2018



Foreign Players: Tokio, HDI, Mapfre, Liberty and Allianz



Auto Insurance Coverage

- **Basic coverage:**

Theft

Collision

Fire

Comprehensive

Liability

- Comprehensive: damages caused by lightning, flooding - including vehicles stored and damaged underground, freak tidal surges and waves, gales, hail storms, hurricanes and earthquakes – natural occurrences
- Not obligatory liability: bodily injury and property damage

- **Additional coverage:**

- Personal accidents for occupants
- Back-up cars
- Other assistance: locksmith service, tire changers, funeral expenses...





Auto Insurance Coverage: Some Characteristics

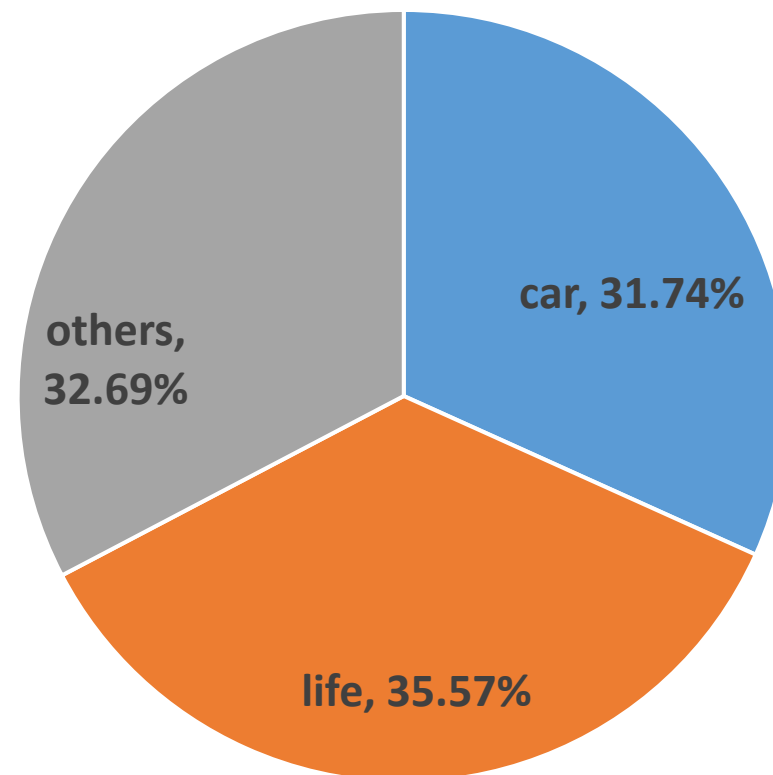
- 2 types of policies:
 - Fixed value of the insured amount in Brazilian currency; or
 - Value in accordance with reference table:
 - ✓ reference tables are established by recognized institutions
 - ✓ values are in accordance with car model and year
 - ✓ each policy has an adjustment factor, which depends on the state of conservation of the vehicle in question
- Reduced deductibles if recognized repair shop networks are used in the case of collisions
- Deductibles are forbidden in the case of full indemnity claims, and for damage caused by fire, lightning strikes and explosions.



Market Numbers

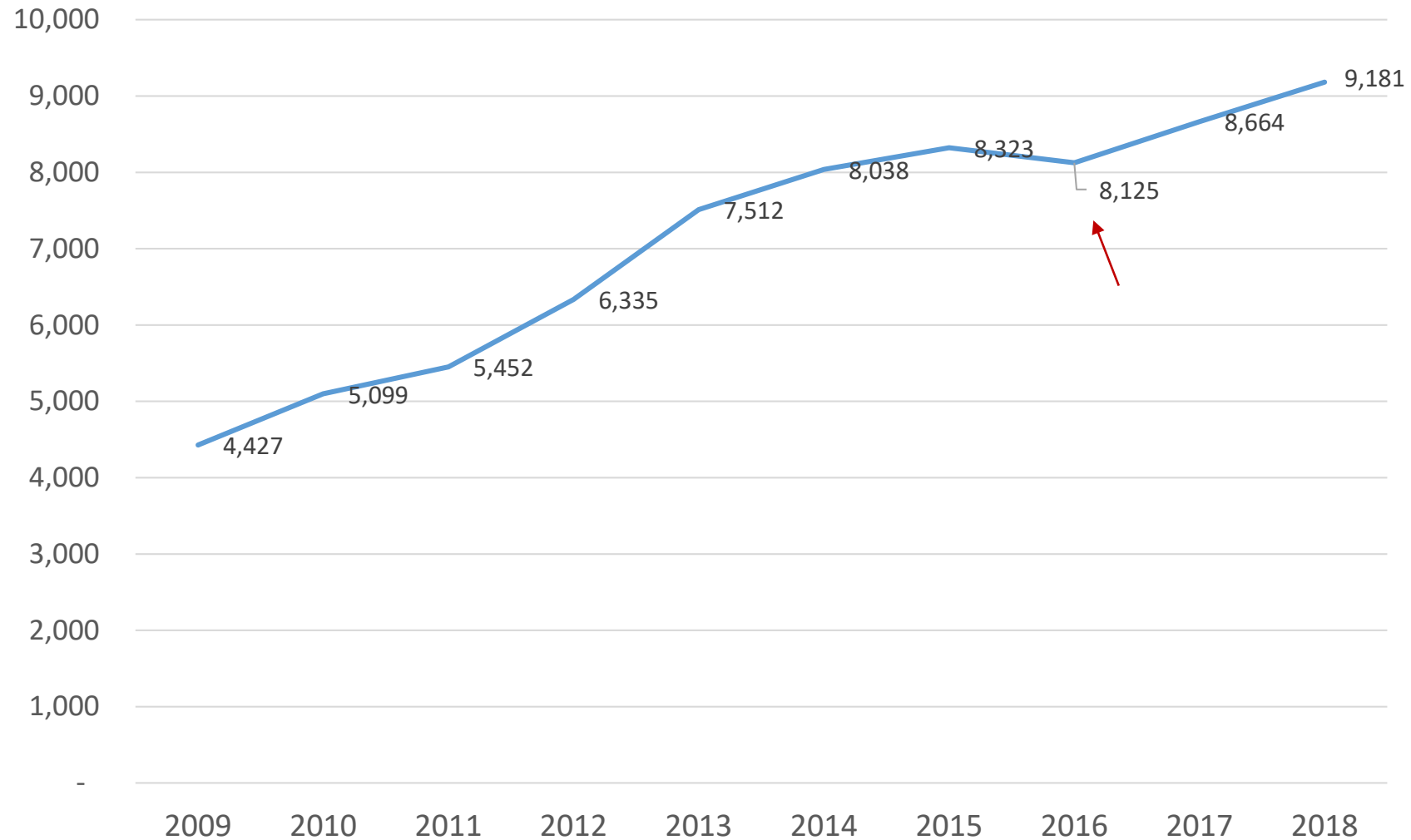
- 54 million cars in Brazil
- Around 23% of these cars have insurance coverage
- Car insurance is the second largest type of insurance.
- Based on the **Boone index**, the car insurance market is the most competitive in the Brazilian insurance market

Market Share by Type of Insurance



Market Numbers : Time Series of the Premiums Paid

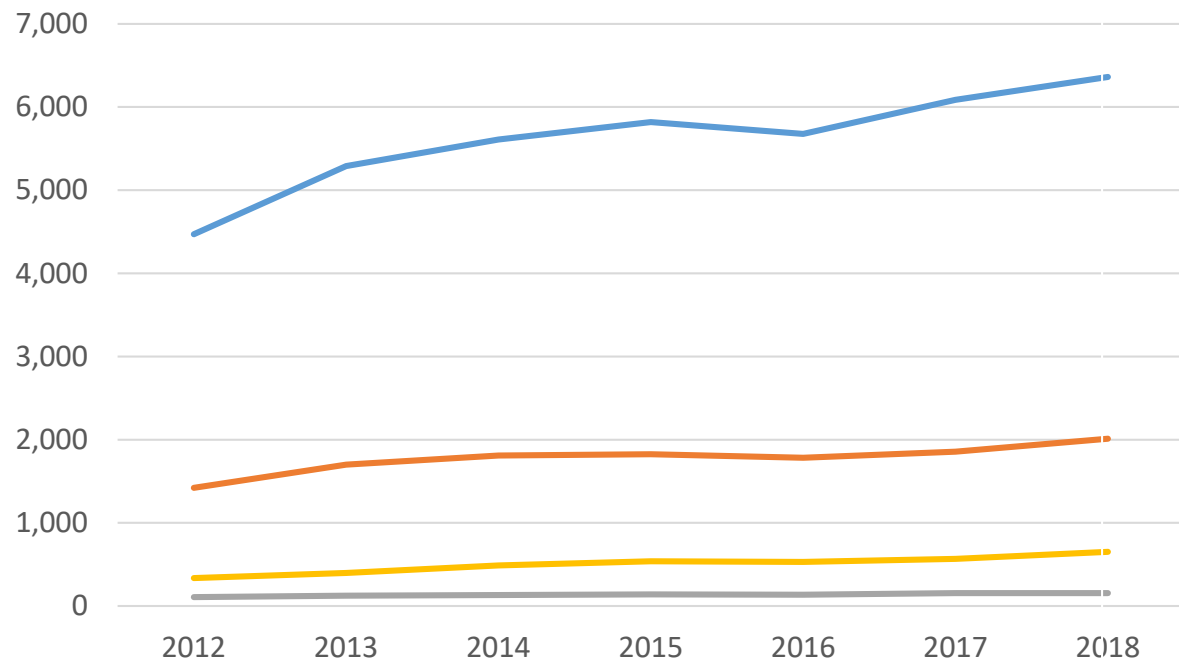
Premiums— million US\$



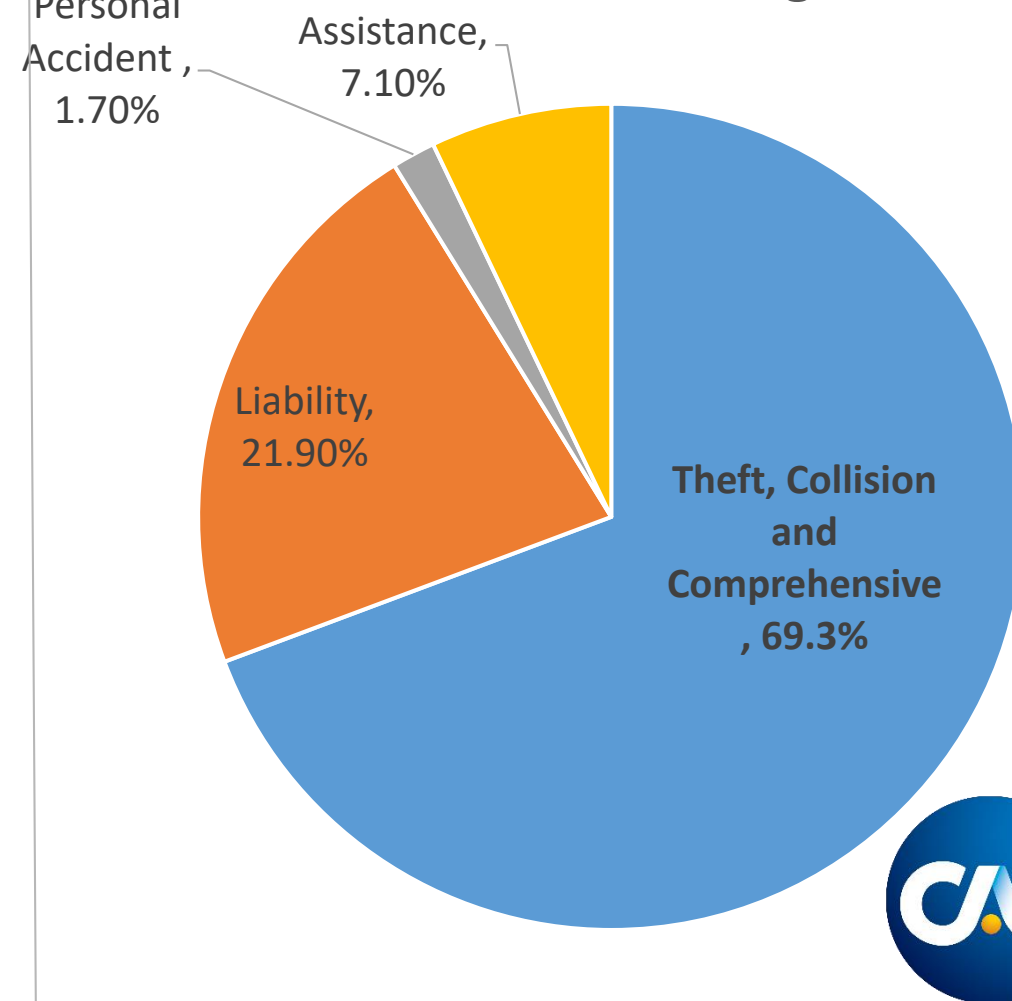
Time Series of the Premiums for Types of Coverage

Premiums— million US\$

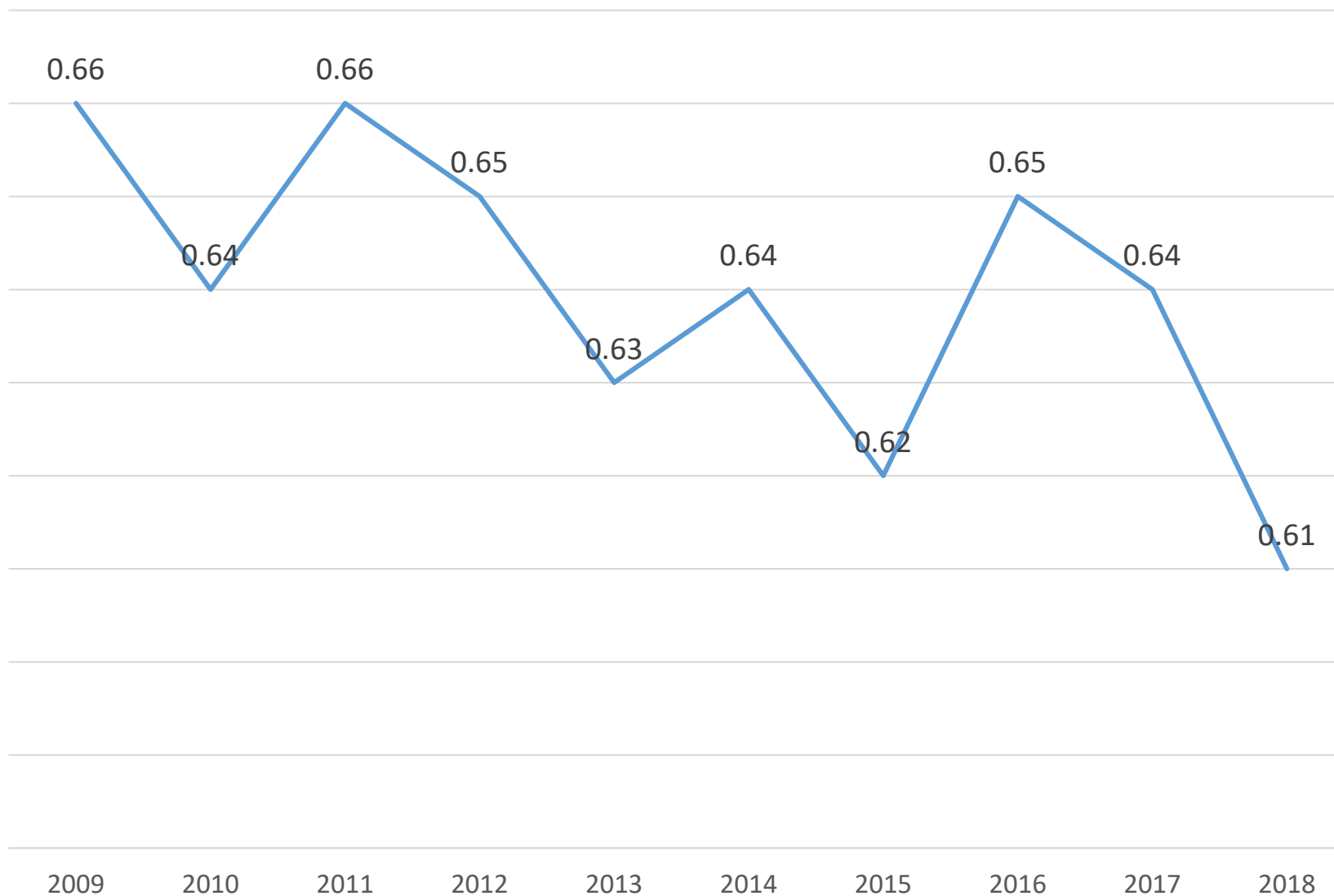
- Theft, Collision and Comprehensive
- Liability
- Passenger Personal Accident
- Assistance



% Premiums for Coverage - 2018



Market Numbers: Time Series of the index = Indemnity / Premium



Distribution

- Brokers
- Banks
- *Digital: Insutechs and Brokers*

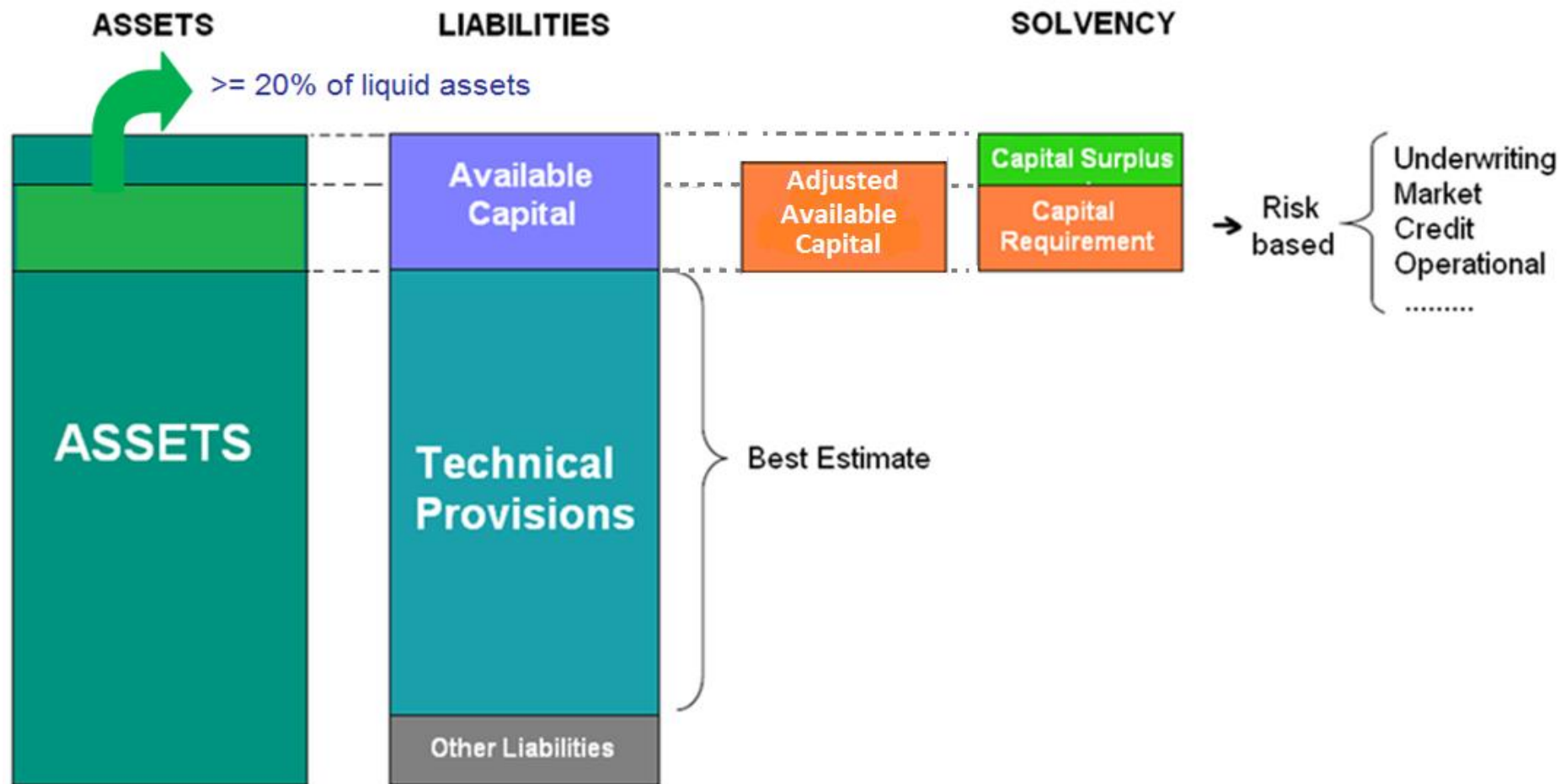


Pricing



- Reduction of the number of questions to facilitate digital selling
- Development of other pricing techniques : machine learning

Solvency Rules: Total Balance Sheet Approach



Capital Requirements

Solvency Capital Requirement (SCR) = max (A , B)

Initial Base Capital (A)= R\$ 15 million (US\$ 3.75 million)

Capital Based on Risks (B)

Underwriting

Credit

Market

Operational

Non-Life

**Life and Pension
Plans**

Reinsurance



Standard Formula for Underwriting Capital Risks

Auto Insurance

- Pricing risk factor (auto) = 0.2

$$R.emi.danos = \sqrt{\sum_{i=1}^{17} \sum_{j=1}^{17} (f_i^{prem} \cdot premio_i^m) (f_j^{prem} \cdot premio_j^m) \rho_{i,j}^{prem}}$$

- Provision for Claims risk factor = 0.14

$$R.prov.danos = \sqrt{\sum_{k=1}^{17} \sum_{l=1}^{17} (f_k^{prov} \cdot sinistro_k^m) (f_l^{prov} \cdot sinistro_l^m) \rho_{k,l}^{prov}}$$

- If the company only sells car insurance =

$$\sqrt{0.20 \times \text{retained premiums} + 0.14 \times \text{incurred claims}}$$





The Future of the Auto Insurance Market



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

- More than two out of three Brazilians have access to smartphones and the internet
- Brazilians spend more than 9 hours per day connected (among the highest rates in the world)
- They rank 2nd or 3rd in the world in terms of using leading social media platforms

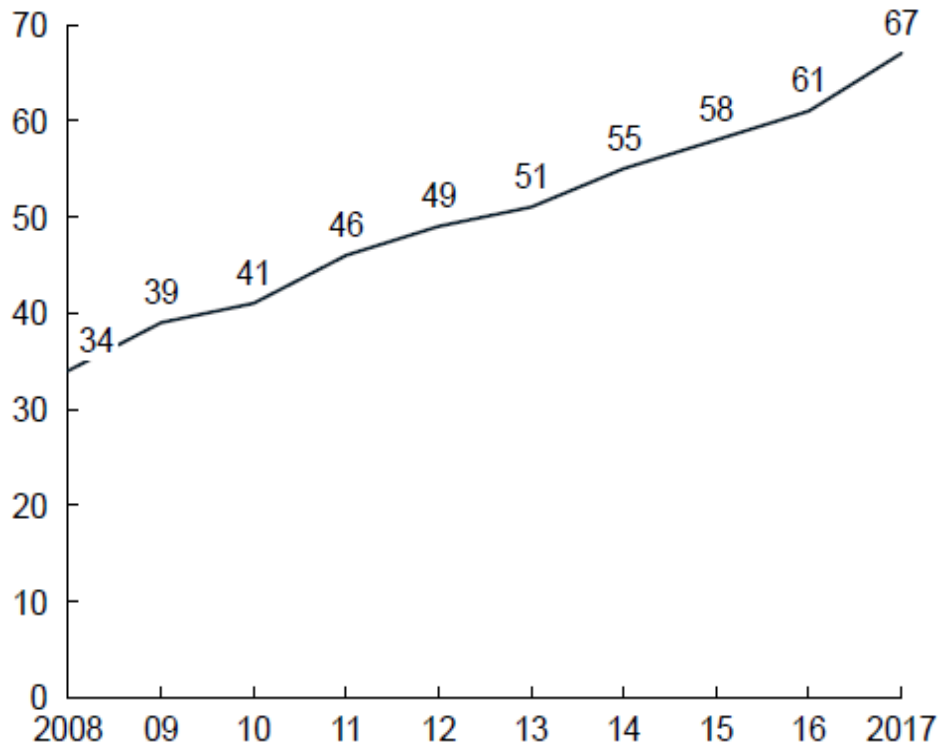
But digital inclusion is still under-developed:

- Access varies widely in the regions, social classes and age groups
- Internet speeds are slower than in many developed and emerging economies
- E-commerce penetration is still low
- Brazilians are not yet doing many transactions or spending much money online.

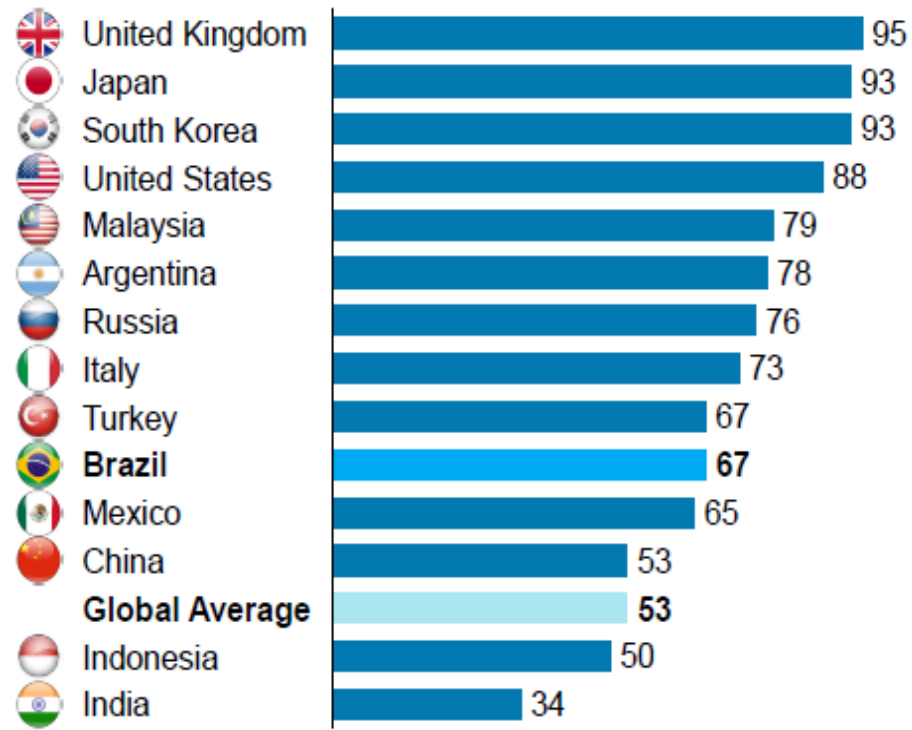


Two out of three Brazilians have access to the internet, more than the global average...

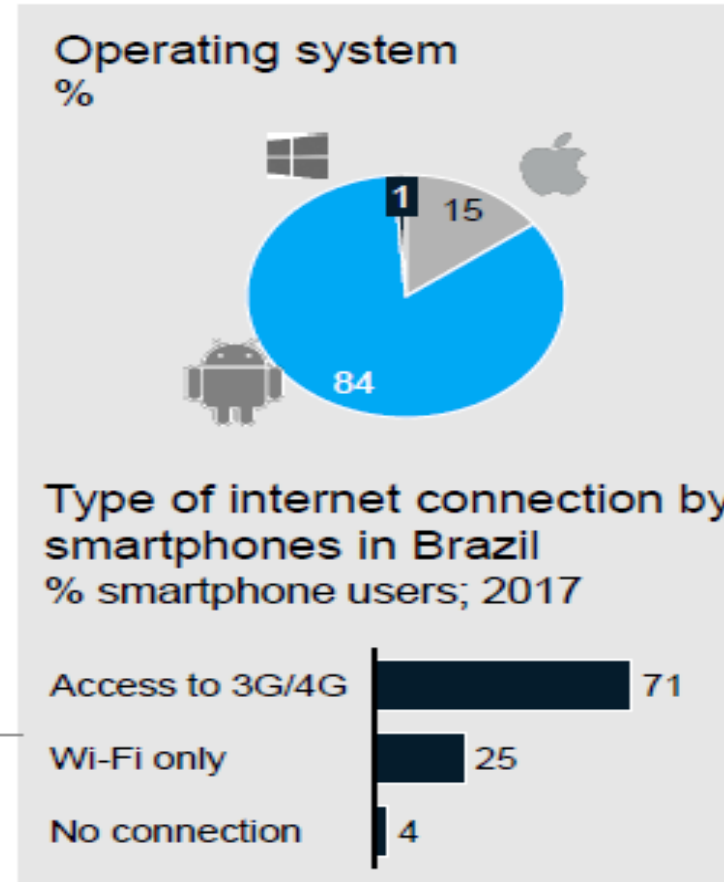
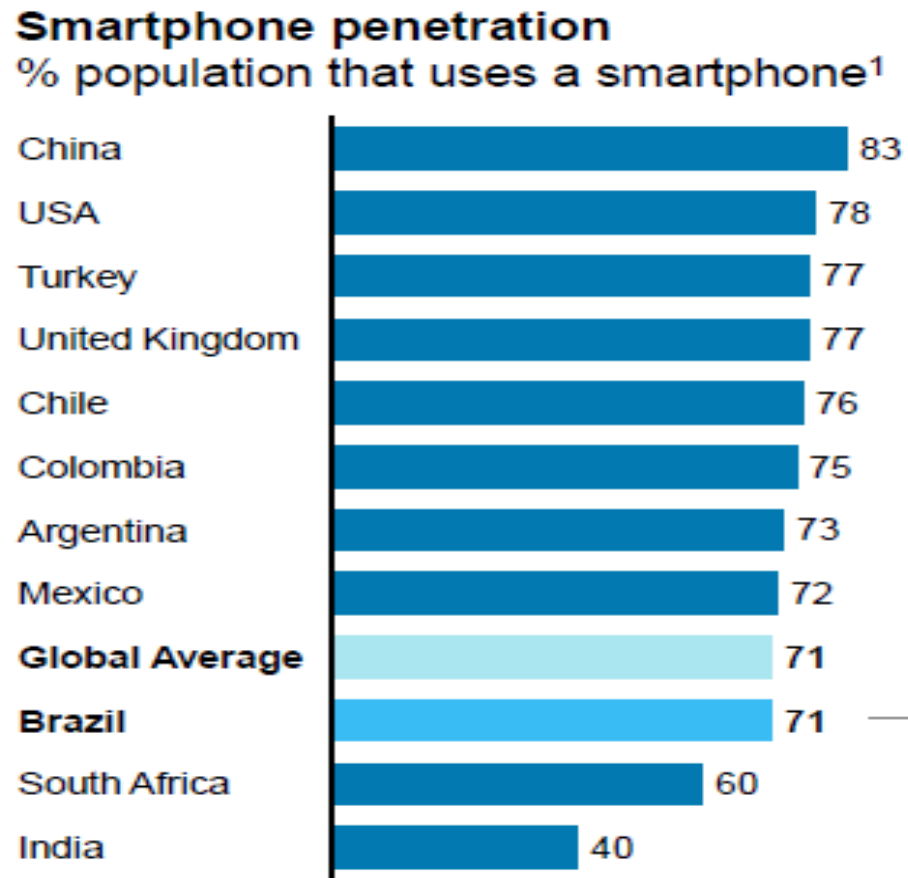
Internet users
% of total population



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



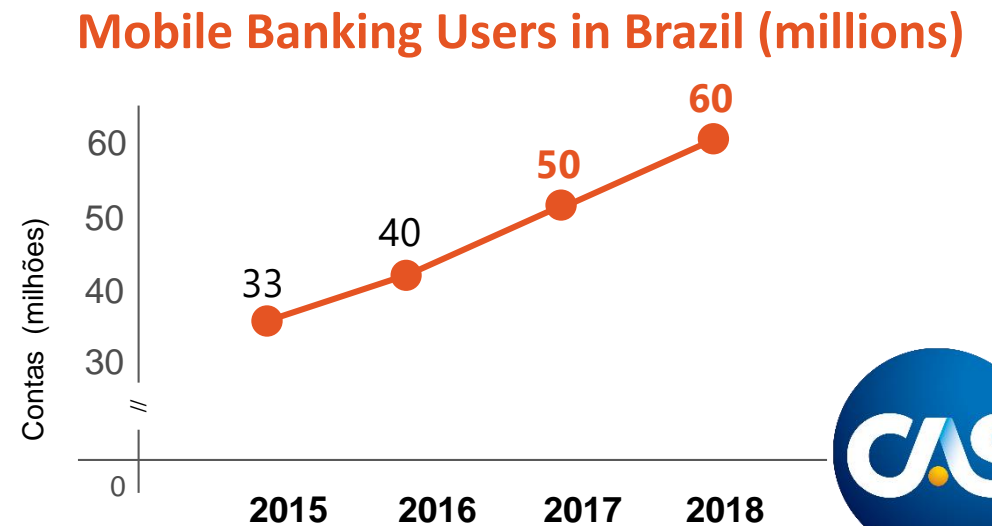
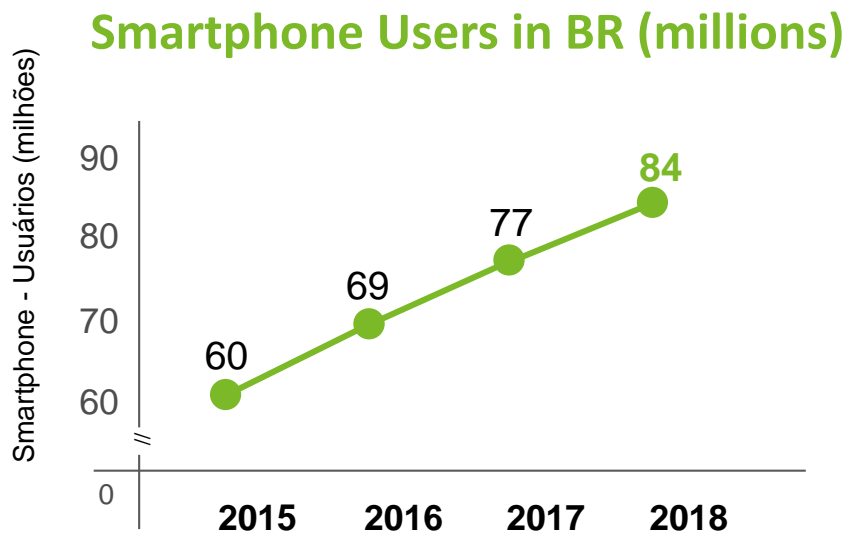
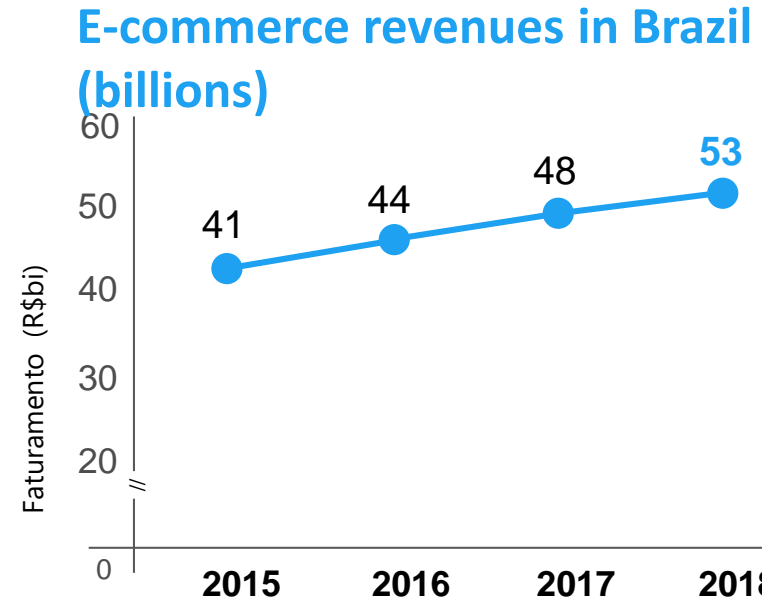
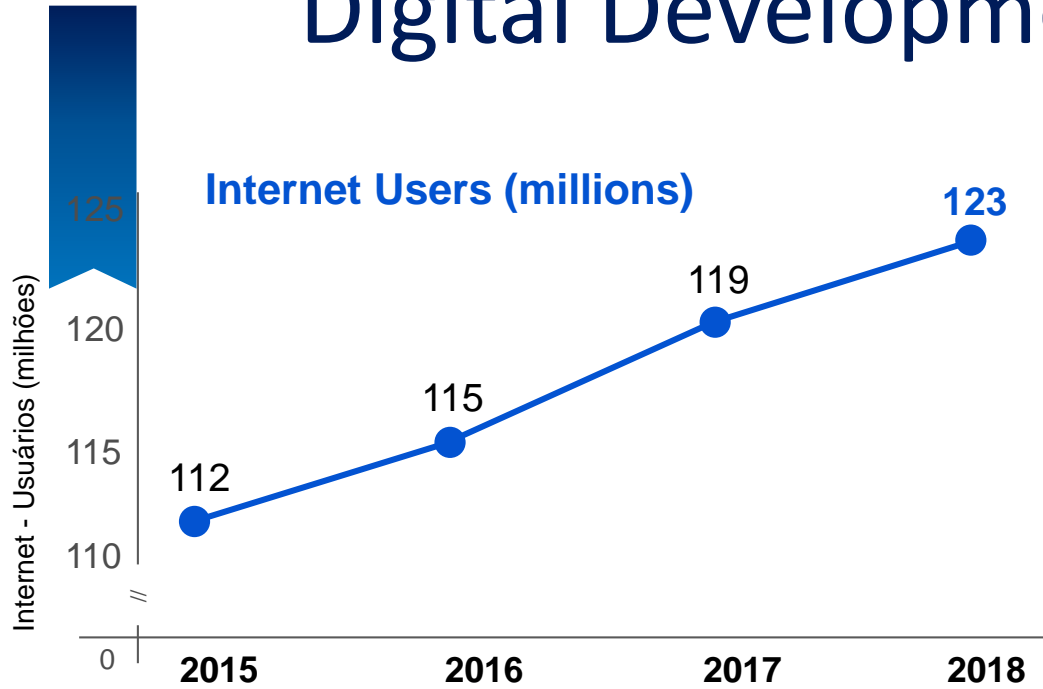
Smartphone penetration is already high



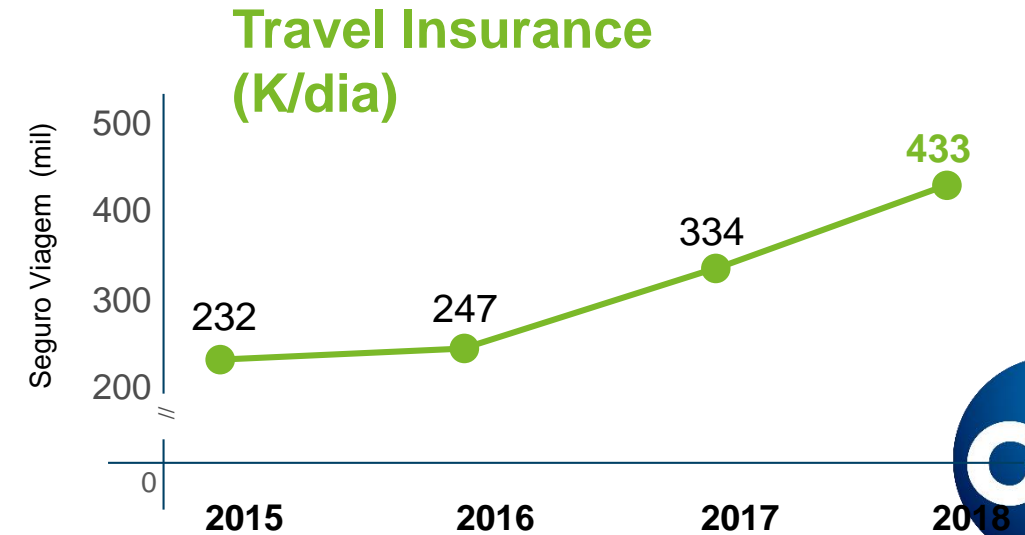
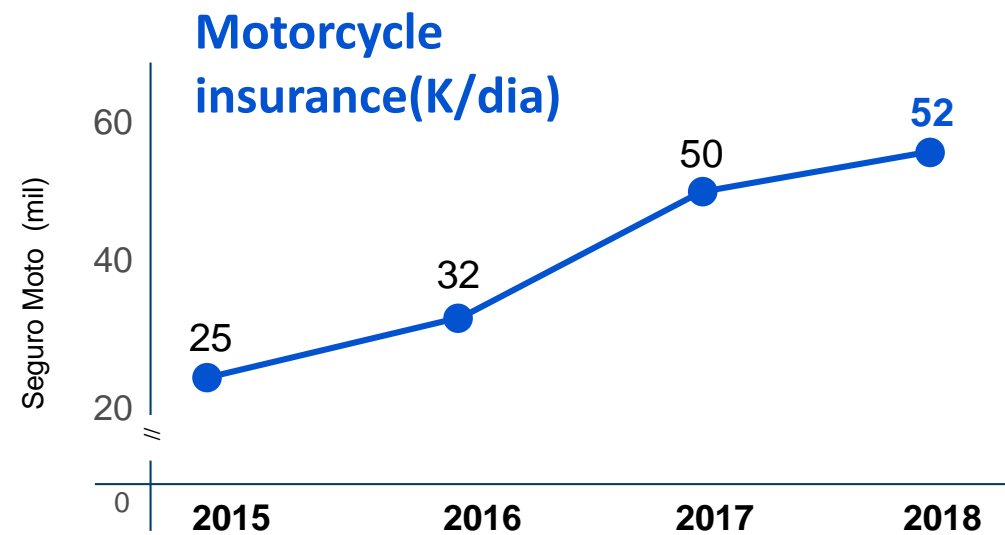
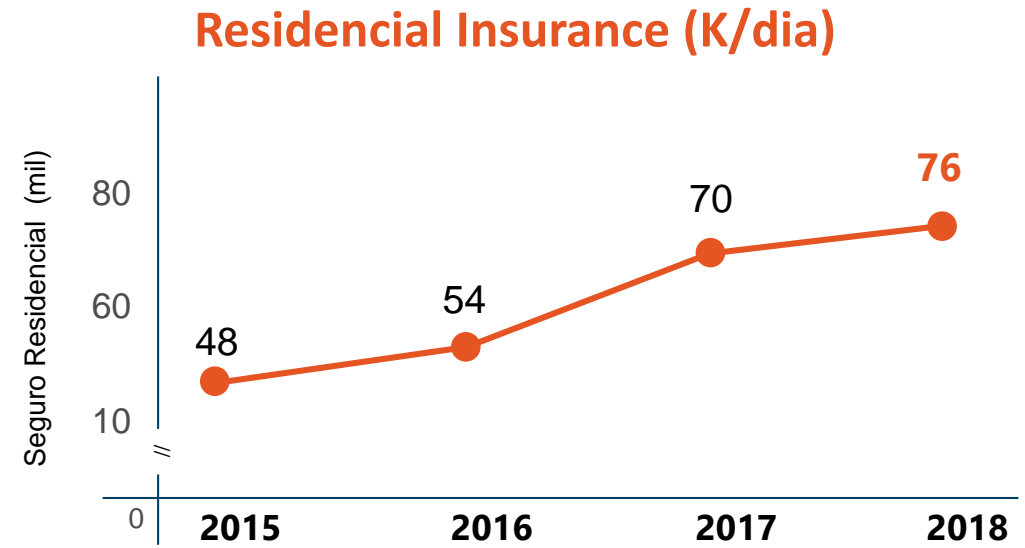
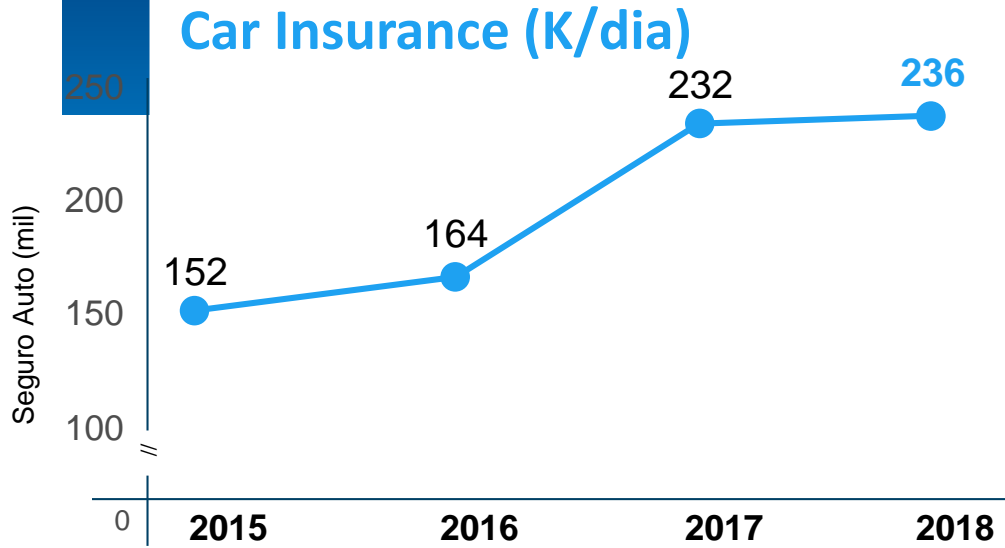
¹ For Brazil, the CETIC.br value was used (most updated value)
Source: Google's The Connected Consumer Survey; CETIC; Statcounter; McKinsey analysis (2017)



Digital Development in 2018



Average of online searches on Insurance





Mobility in Brazil



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



Democratization and Personalization

Better Experiences | Better Products | Fair Prices

- Connected consumers
- Digital selling (smartphone)
- Growth of number of Insurtechs
- Personalization of the products
- On-demand insurance
- Pay Per Use automobile insurance
- Pay-As-You-Drive (PAYD) automobile insurance



New Pricing Aspects

- Machine Learning
- Policyholder Behavior
- Use of Telematics
- More tailor-made Pricing



Thank you!

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