



# AUTO INSURANCE MARKET IN LATIN AMERICA

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XL Insurance  
Reinsurance



# ABOUT THE SPEAKERS

# César Neves, PhD.

- 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.



# Camilo González

- I'm from Bogotá, Colombia
- Actuary since 2006
- MSc in Actuarial Science and Mathematical Risk Management at Georgia State University in Atlanta, GA.
- Member in the Colombian Actuarial Society and CAS candidate.
- Reinsurance Pricing Actuary in AXA XL for 1.5 years. Responsible for Pricing in almost all P&C line of businesses for all LATAM markets.
- Former experience: Actuarial and Analytics manager in Seguros Bolívar S.A. (Colombian insurance company) for 11 years. In charge of all actuarial and analytics matters regarding non-life businesses.
- **Areas of Expertise:** Pricing, Insurance, Reinsurance, and products design.



# LATAM AUTO INSURANCE OVERVIEW



Puerto Rico



Mexico



Colombia



Ecuador



Peru



Brazil



Chile



Argentina

# WORLDWIDE – Number of vehicles density

#Vehicles (Millions)  
#inhabitants (Millions)  
Motorization Rate (x 1000 inh.)

## WORLDWIDE

#V: 1,282.3  
#inh: 7,034  
MR: 182

#V: 287.4  
#inh: 358  
MR: 803



#V: 387.5  
#inh: 823  
MR: 471

#V: 44.8  
#inh: 1,067  
MR: 42

#V: 126.3  
#inh: 633  
MR: 200

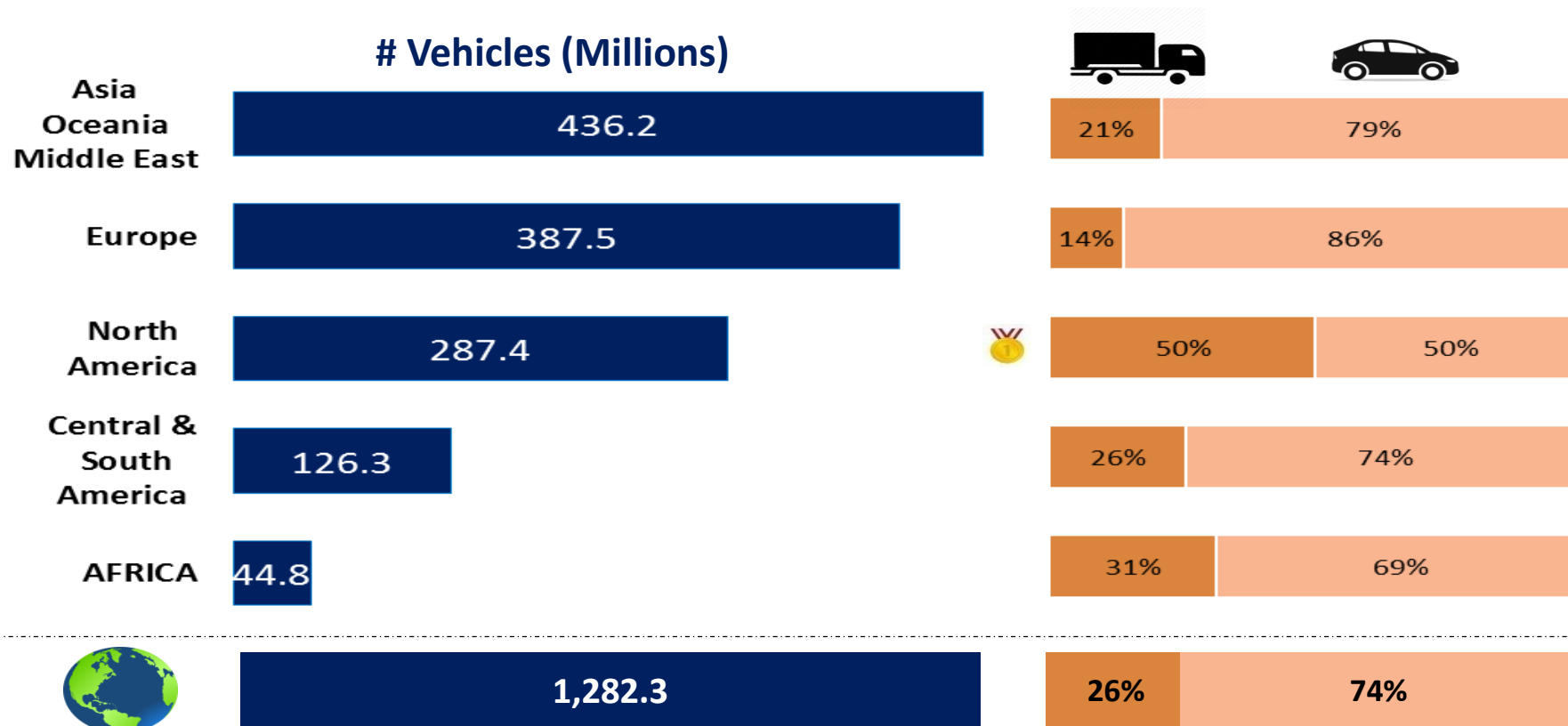
#V: 436.2  
#inh: 4,154  
MR: 105

- As expected, Asia/Oceania/Middle East has the largest # of vehicles and # of inhabitants.
- 🥇 Nevertheless, North America has the largest **Motorization Rate**.
- LATAM has the third **Motorization Rate (200 x 1000 inh)** among all continents.



# WORLDWIDE

## Commercial vehicles (CV) vs Passenger Cars

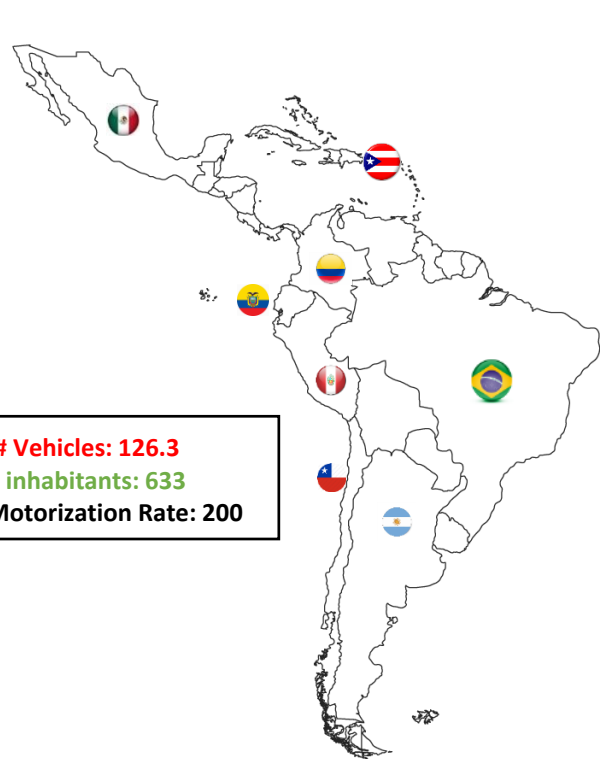


- Worldwide **26%** of vehicles are CVs.
- 🏆 North America has the highest CV ratio: **50%**
- LATAM % is similar to World %



# LATAM

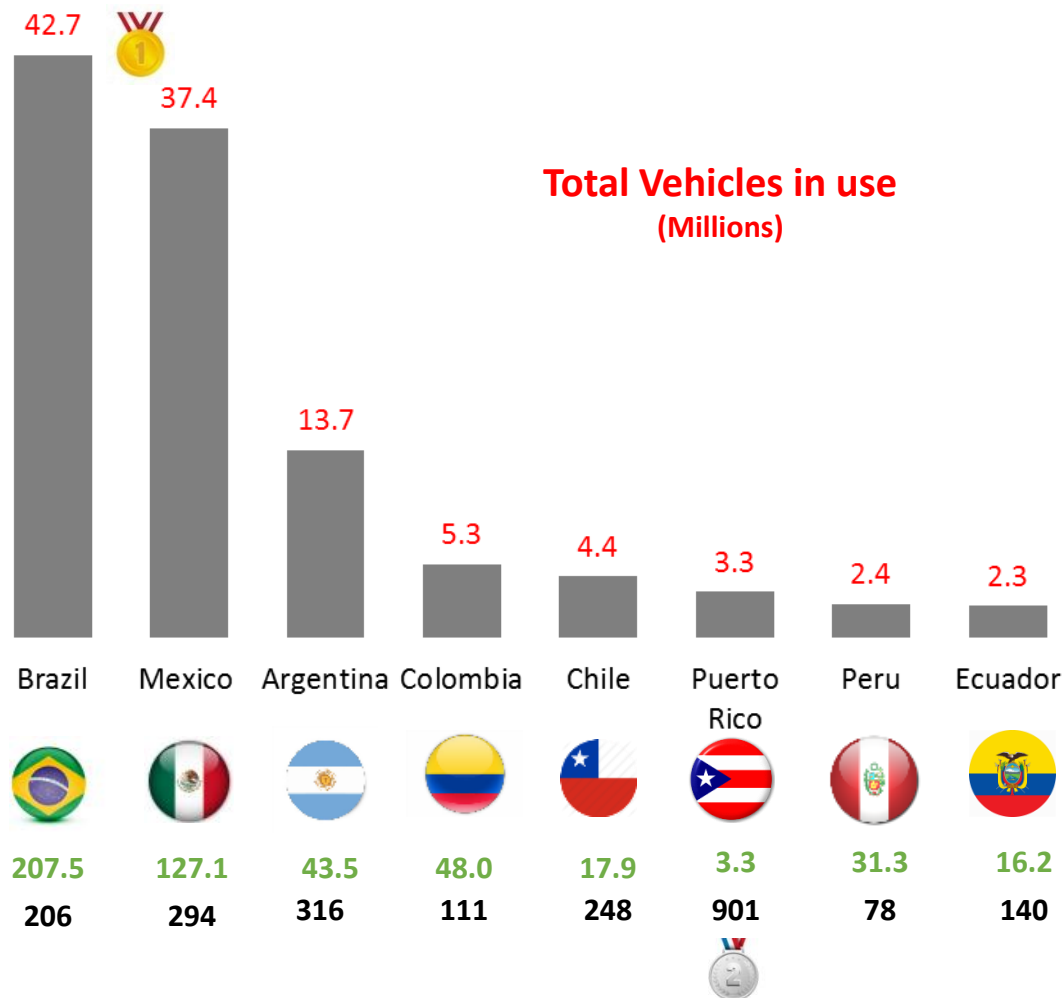
## Number of vehicles and density



# Vehicles: 126.3  
# inhabitants: 633  
Motorization Rate: 200

Inhabitants (2015 Millions)

Motorization Rate (/ 1000 inh.)



Brazil and Mexico represents **72%** of the **total vehicles** in LATAM.

Puerto Rico has the largest **MR(901)** followed by Argentina **MR(316)**





# LATAM

## Type of Products per Country

All countries have voluntary market for comprehensive and collision coverages. Mandatory products exist for Motor Third Party Liability and Medical Expenses mainly.



### PUBLIC SERVICE

PUERTO RICO



ECUADOR



Governmental programs rather than private insurance products.

Centralization of national prevention programs and victims claim attention.

“Premiums” come via taxes

### MANDATORY MEDICAL EXPENSES

BRAZIL



CHILE



COLOMBIA



PERU



Compulsory first loss **(Non Fault)** Personal Accident policy.

Risks Covered: Driver, passengers, third party uninsured victims and pedestrians.

Coverages: MedEx, Death, Funeral Expenses, total and partial disability.

Products: In general, small Limits offered and defined by regulator. Premiums defined by regulator or strongly regulated.

### MANDATORY THIRD PARTY LIABILITY

MEXICO



ARGENTINA



Compulsory Classical Third Party liability coverage that covers Bodily Injury and Property Damage.

Liability needs to be proved, so the process is slow and involves legal authorities.

There are some minor coverages covering MedEx (works as a “advance” payment).

# LATAM

## Penetration %



	Brazil
	Mexico
	Argentina
	Colombia
	Chile
	Puerto Rico
	Peru
	Ecuador

# Vehicles in use (Millions)	Insurance Penetration %	
	Mandatory	Voluntary
43	70	30
37	27	
14	90	55
5	75	30
4	90	30
3	100	
2	71	24
2	100	30



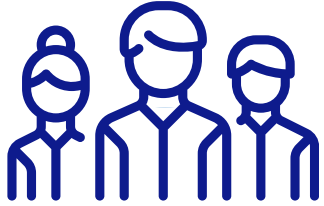
Weak controls in Mexico has driven low penetration % even being mandatory.



# AUTO INSURANCE MARKET IN BRAZIL

César Neves  
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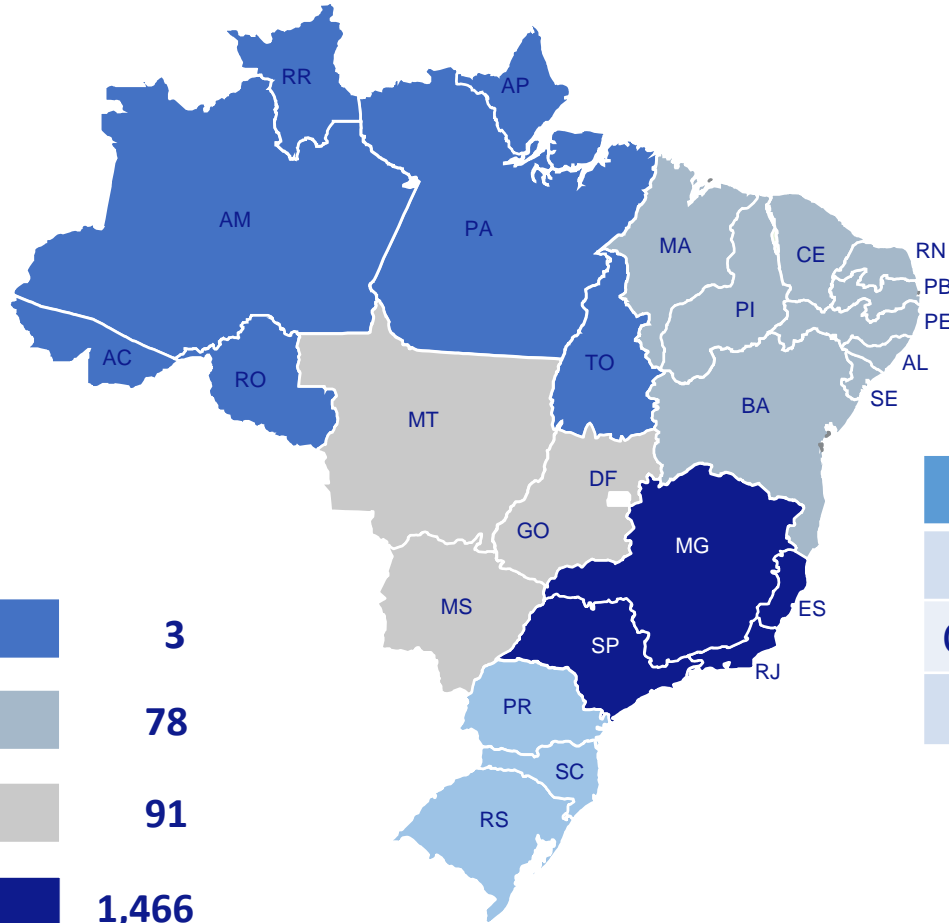
# Brazilian Institute of Actuaries Numbers



**1,808**  
Fellows

## MIBA:

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



## Types of Members

Types	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/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 (km<sup>2</sup>)**

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



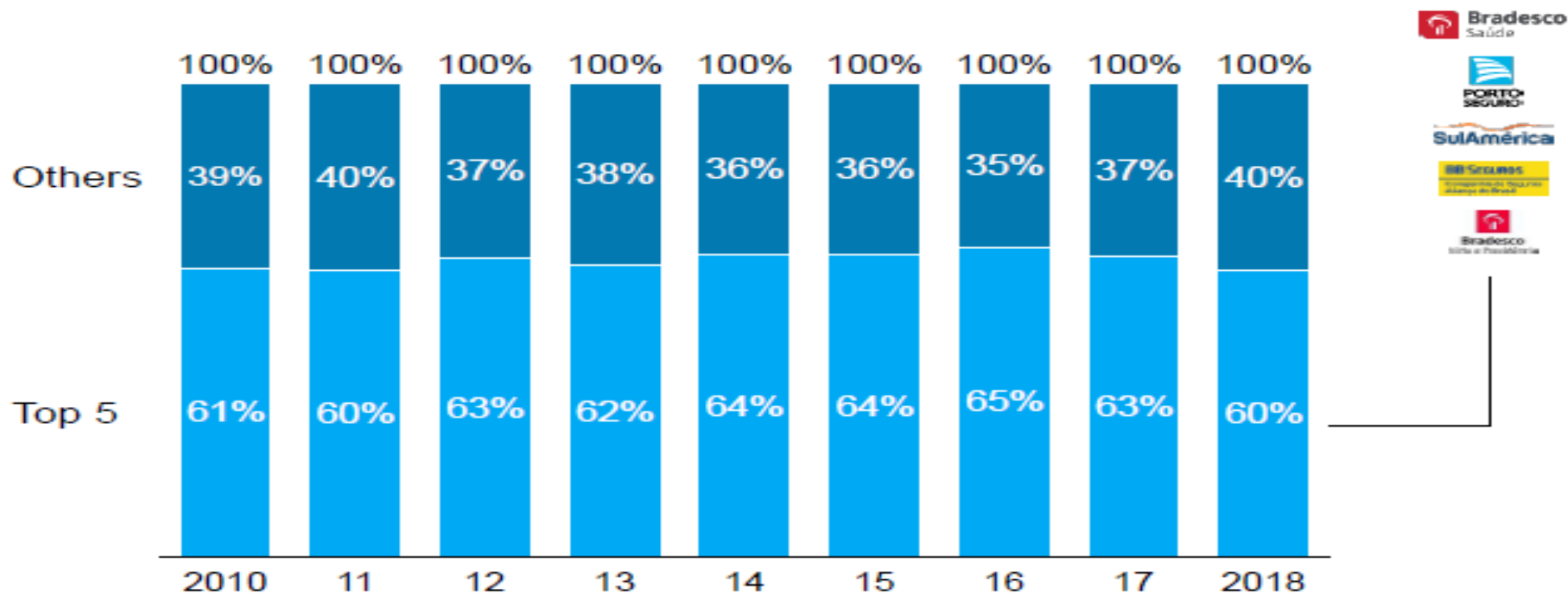


# The insurance market shows a high level of concentration – 5 principal players

State of the Industry

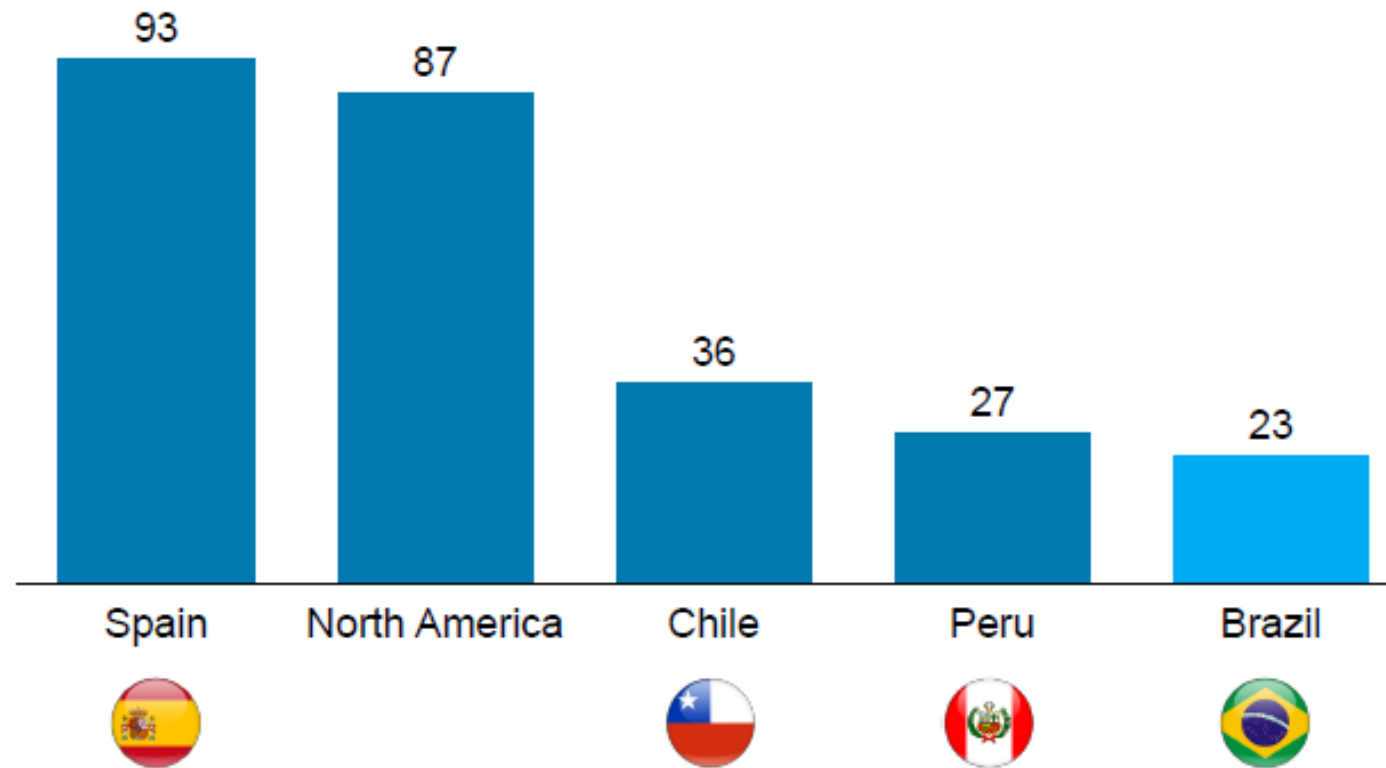
Insurance concentration by GWP<sup>1</sup>

%



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

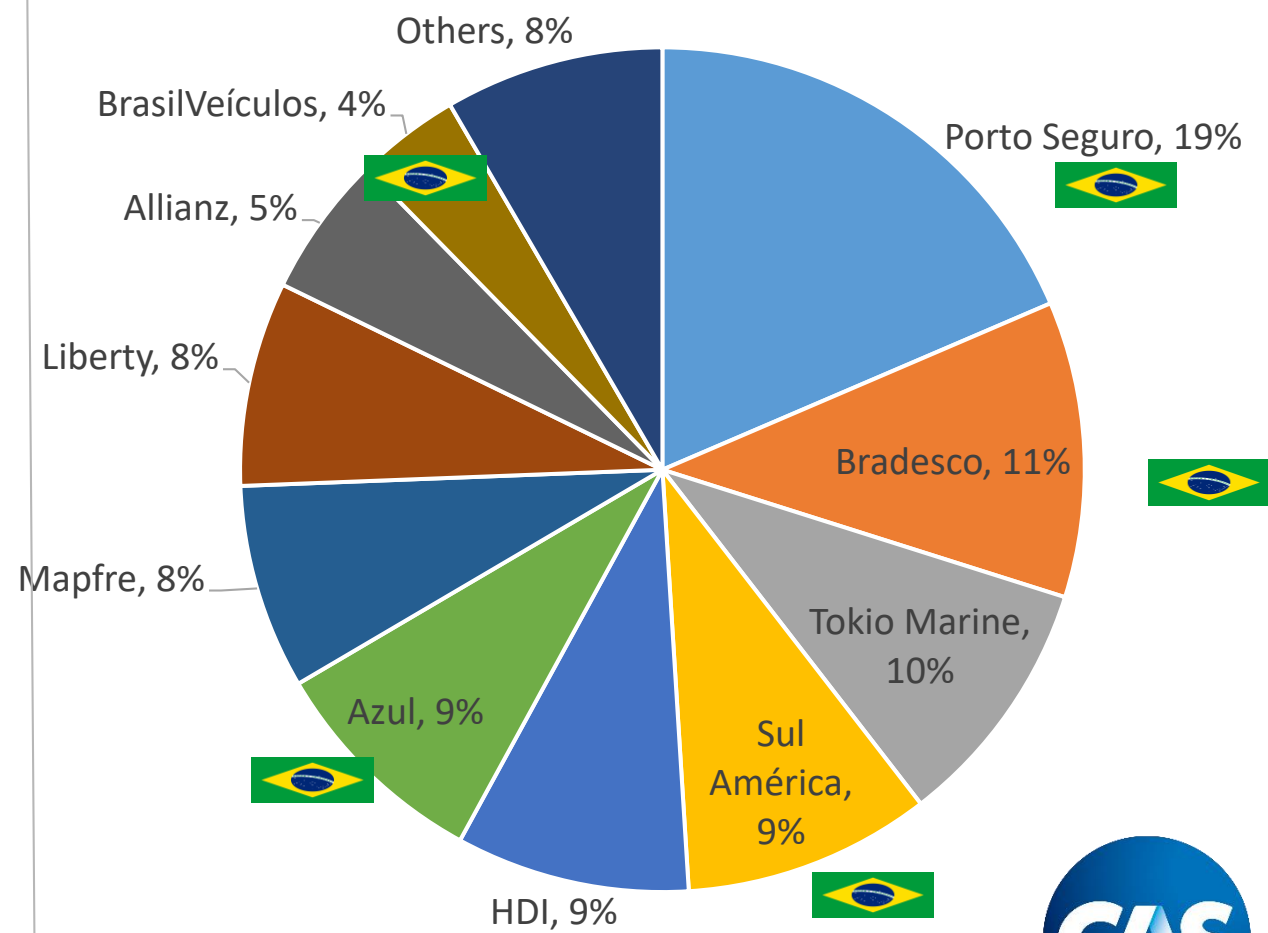
**Auto insurance penetration**  
% of total fleet



# 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

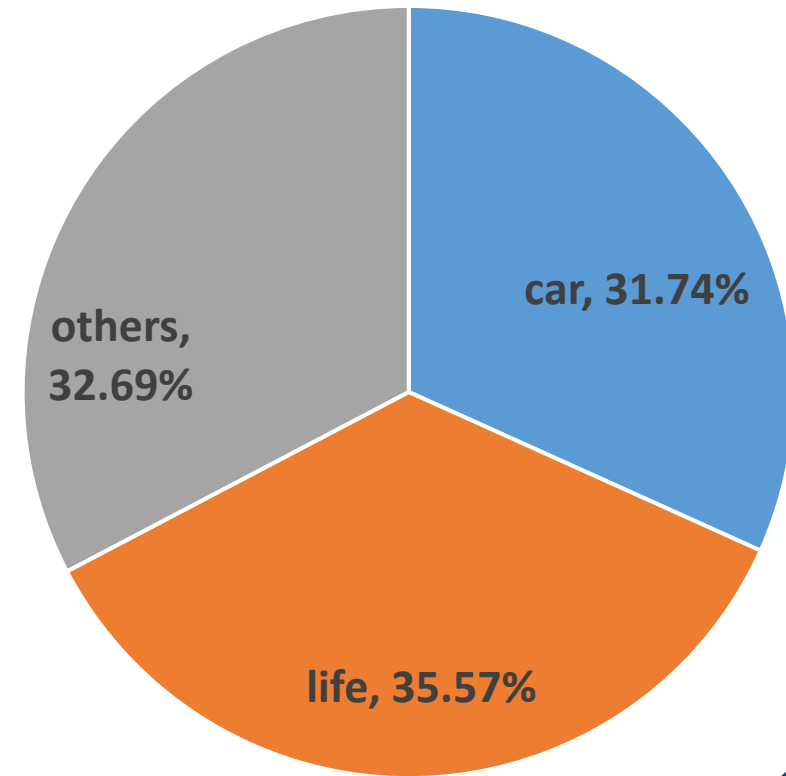
- 2 types of insured amount:
  - Fixed value of insured amount in Brazilian currency; or
  - Value in accordance with reference table:
    - ✓ reference tables are established by recognized institutions
    - ✓ values are in accordance with car model and year
    - ✓ each policy has an adjustment factor, 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.



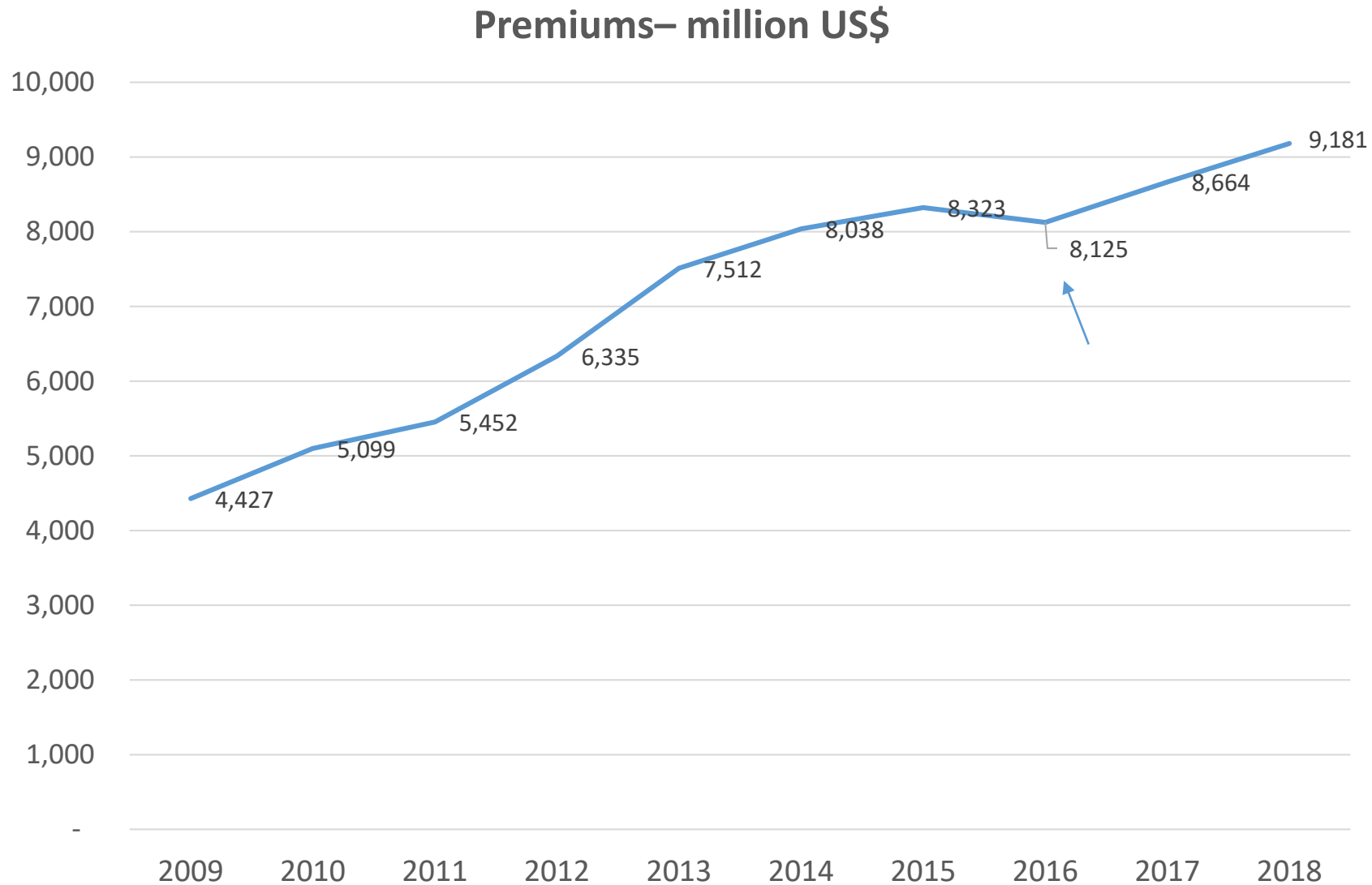
# Market Numbers

- 43 million vehicles in Brazil
- Around 23% of these vehicles 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



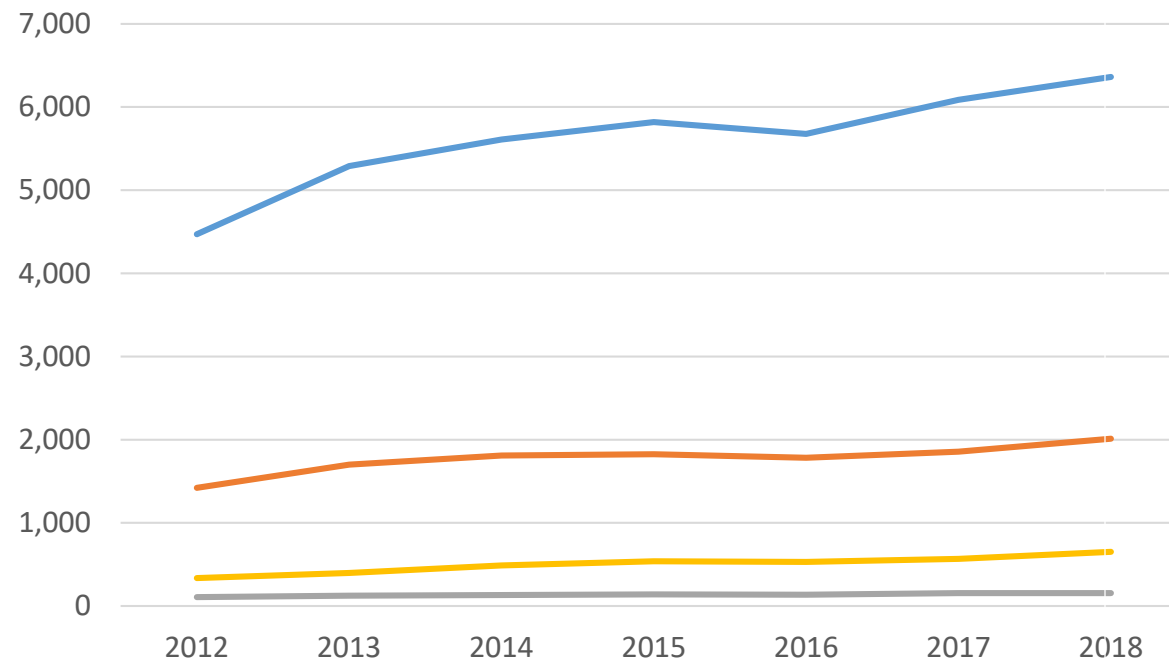
# Market Numbers : Time Series of the Premiums Paid



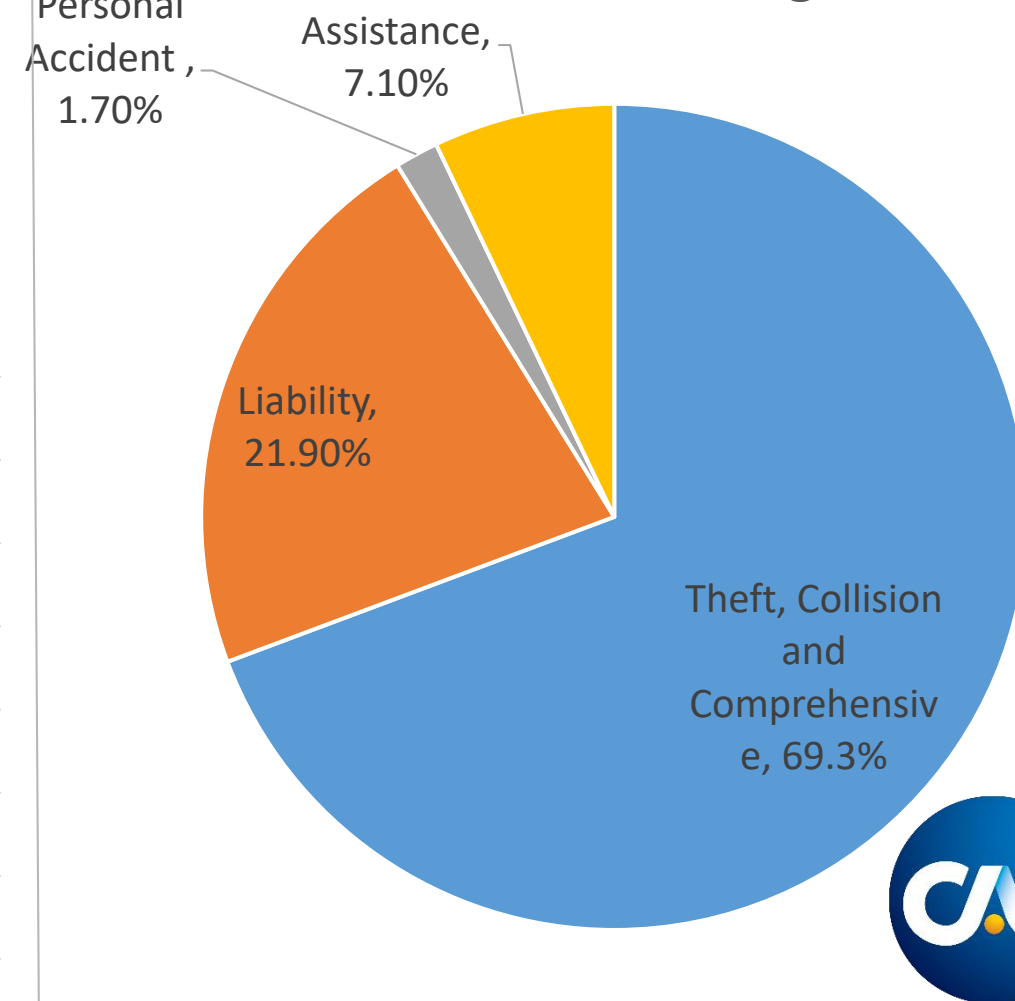
# Time Series of the Premiums for Types of Coverages

## Premiums– million US\$

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

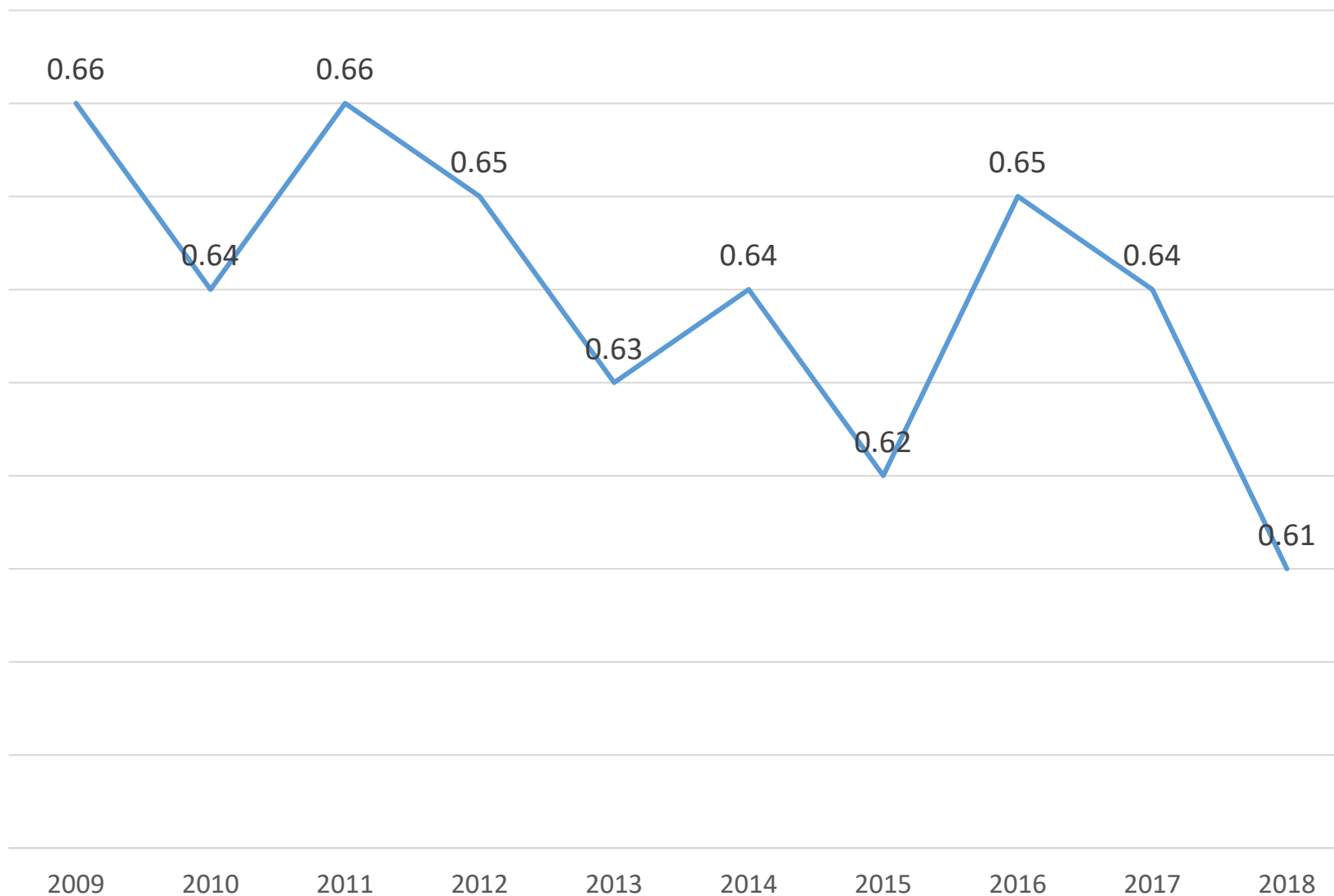


## % Premiums for Coverage - 2018





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



# Distribution

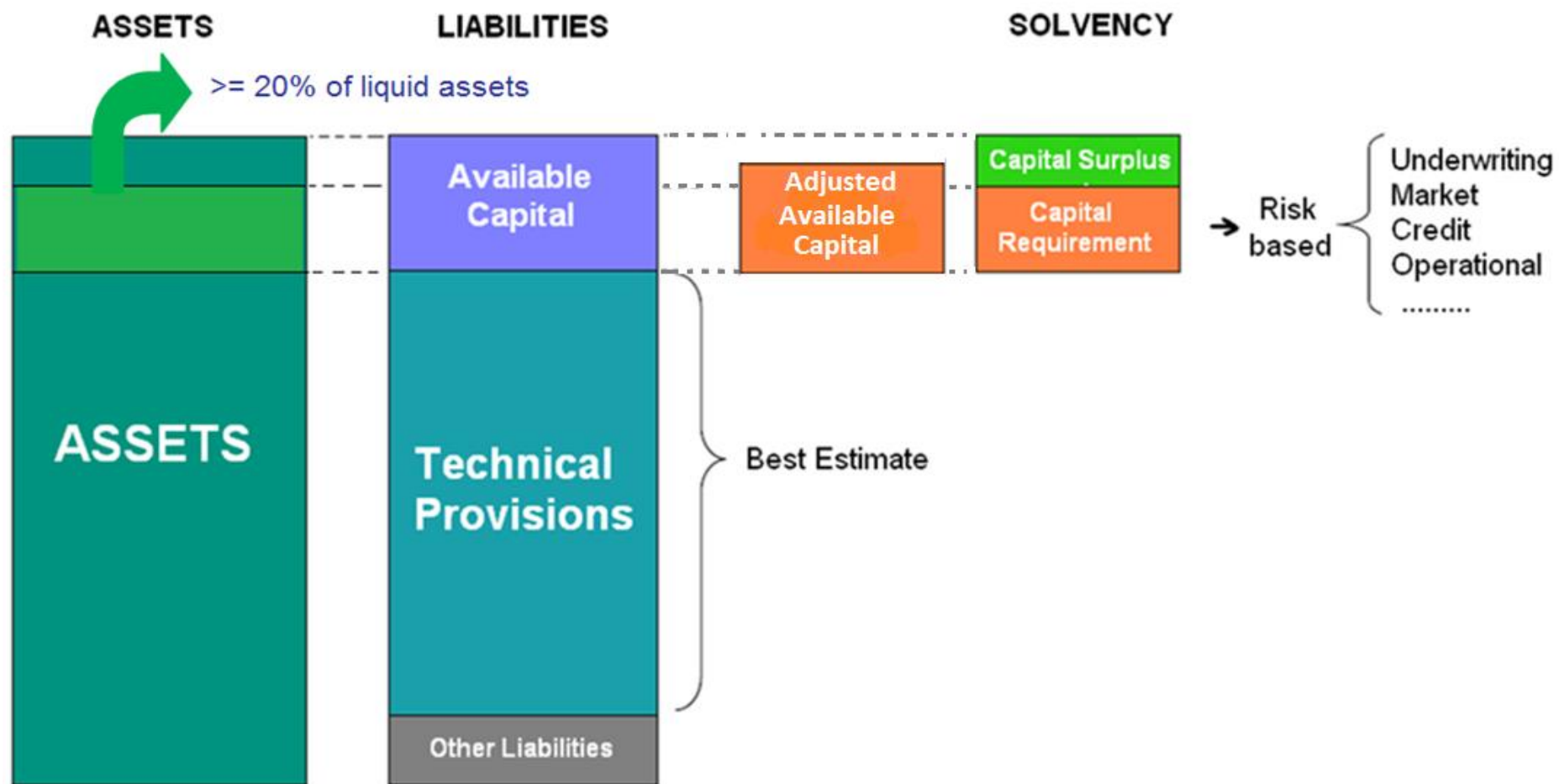
- Brokers
- Banks
- *Digital: Insutechs and Brokers*

# 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 = 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 = 0.2

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

- Provision for Claims risk factor  
= 0.14

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

- If the company only sells car insurance =

$$\sqrt{\text{premium retained} \times 0.20 + \text{indemnity} \times 0.14}$$



# 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:

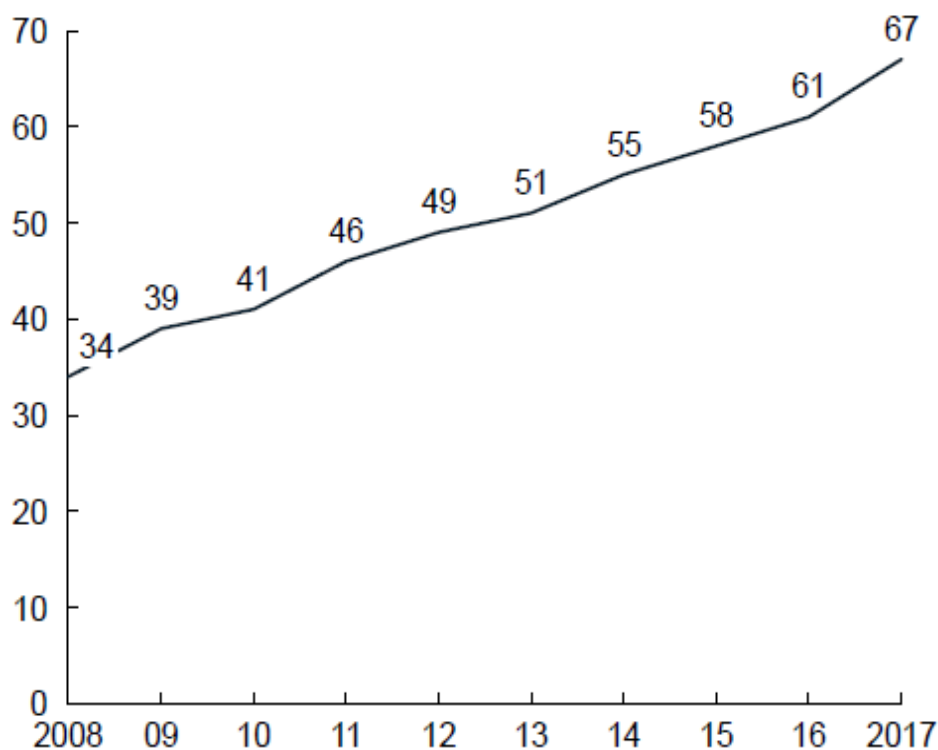
- Access varies widely in the regions, social classes and age groups
- Internet speeds are slower than in many developed and emerging economies
- E-commerce penetration is still low
- While Brazilians are avoid consumers of digital media, they are not yet doing many transactions or spending much money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



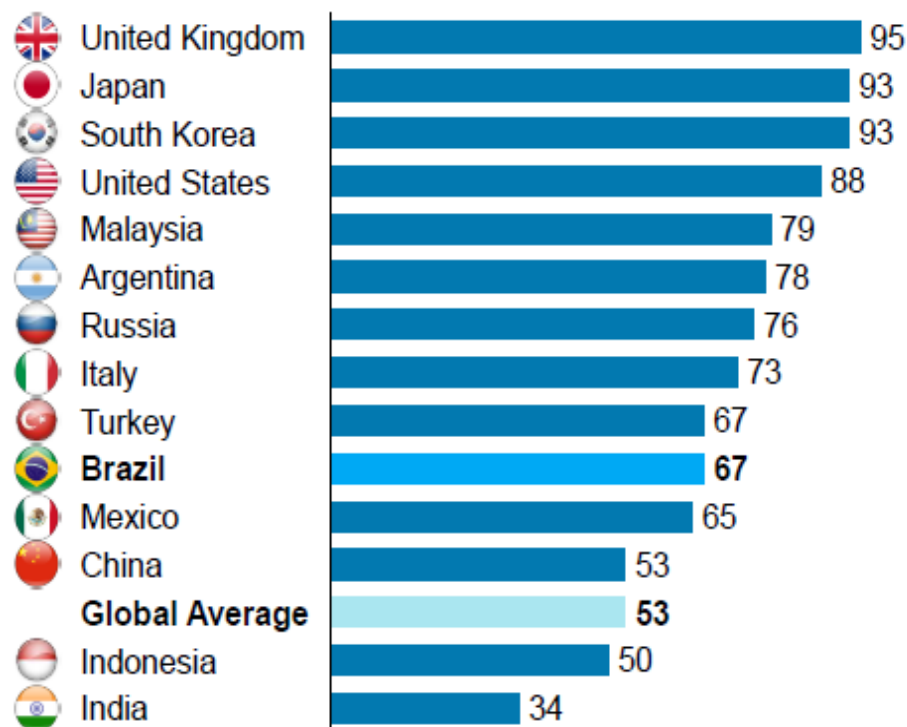


# Two out of three Brazilians have access to the internet, more than the global average...

**Internet users**  
% of total population



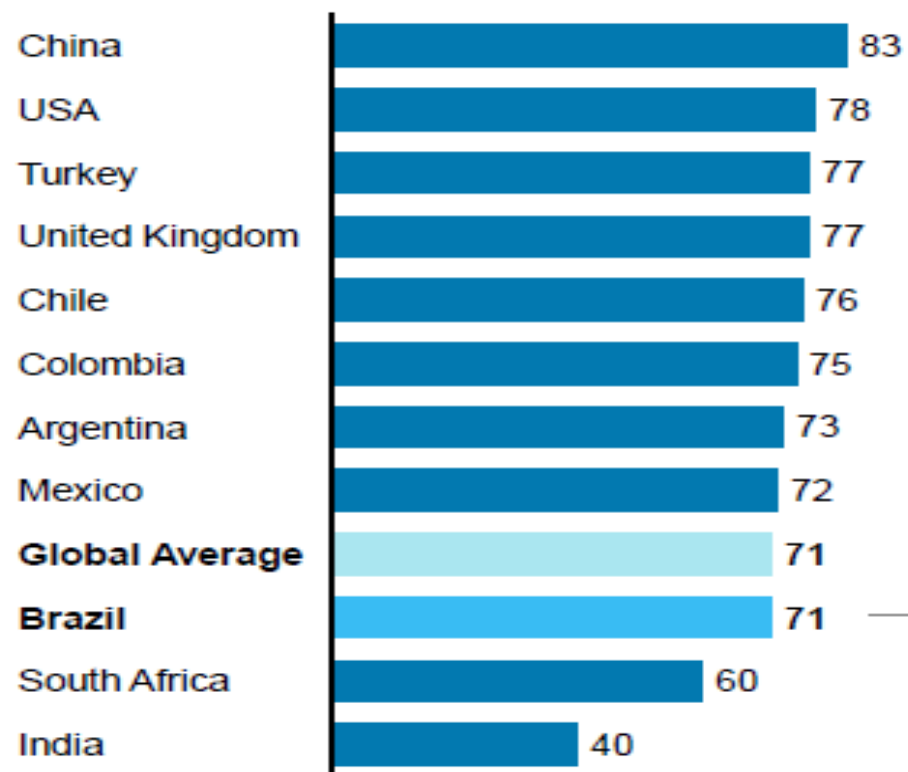
**Internet penetration by country**  
% of population aged 16-64, 2017



# Smartphone penetration is already high

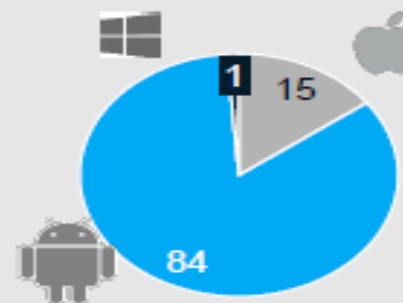
## Smartphone penetration

% population that uses a smartphone<sup>1</sup>



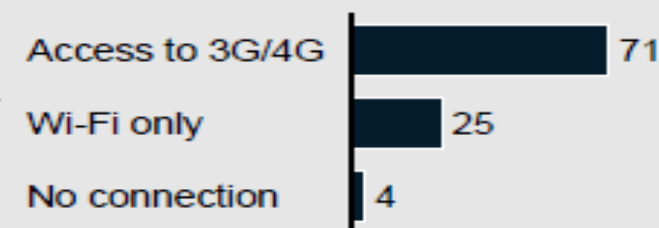
## Operating system

%



## Type of internet connection by smartphones in Brazil

% smartphone users; 2017

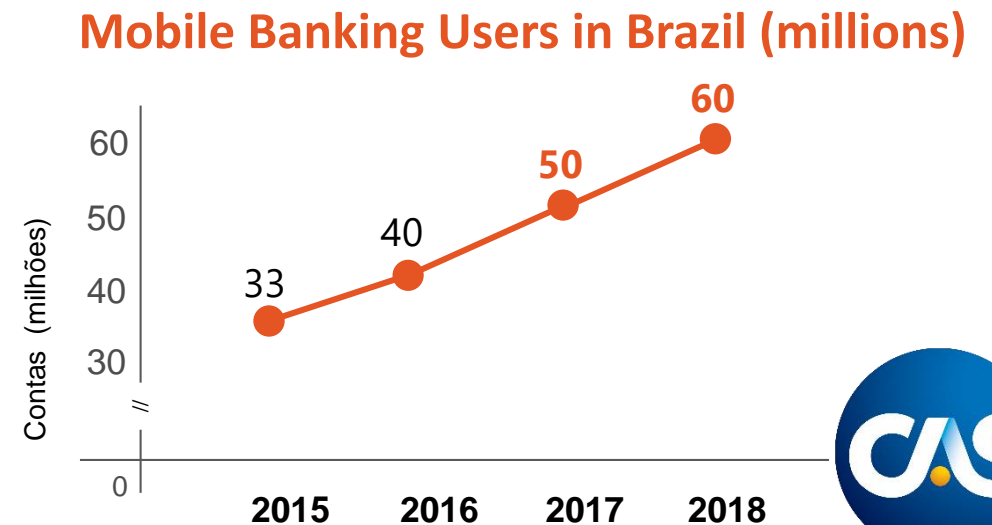
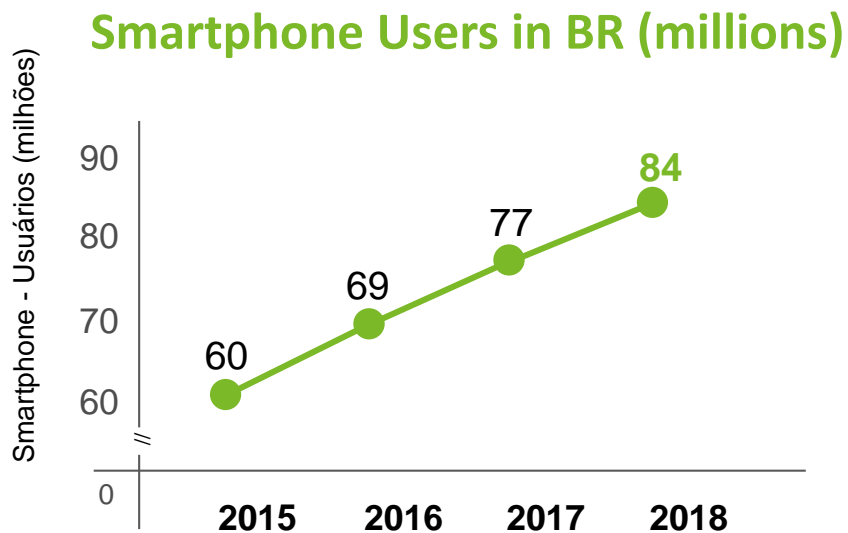
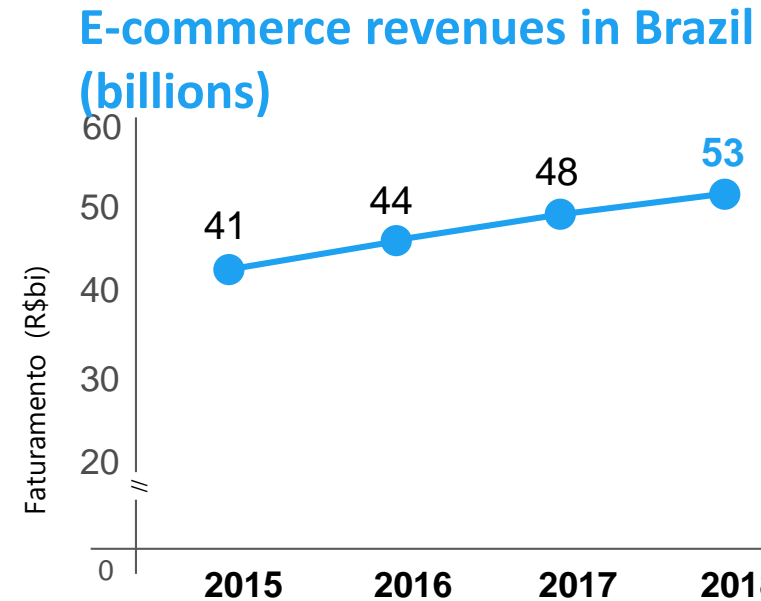
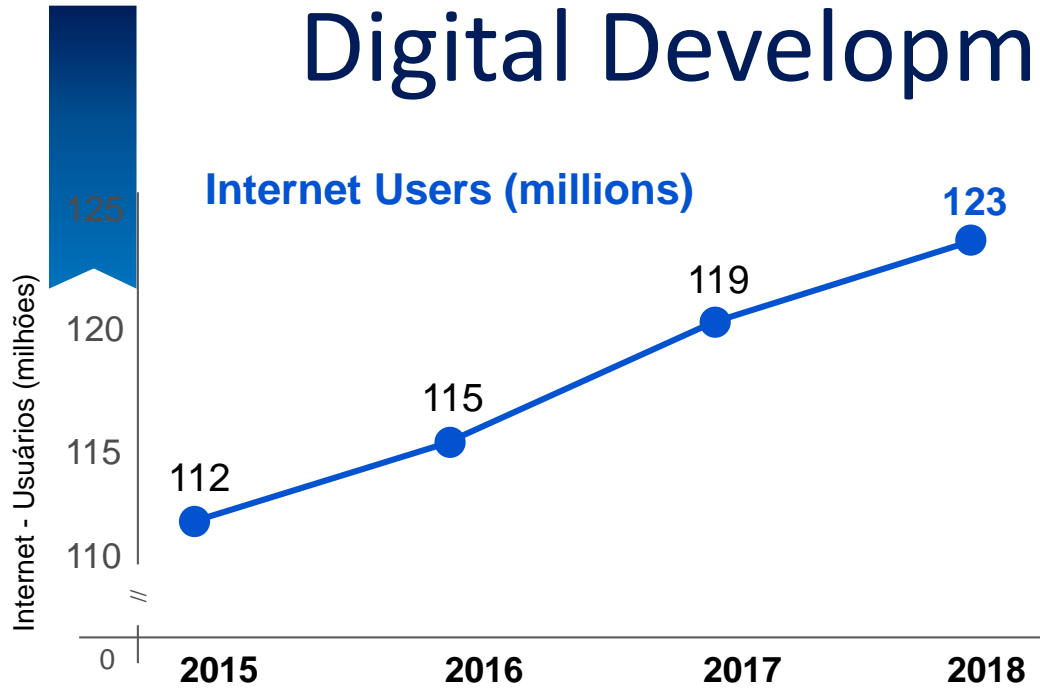


<sup>1</sup> For Brazil, the CETIC.br value was used (most updated value)

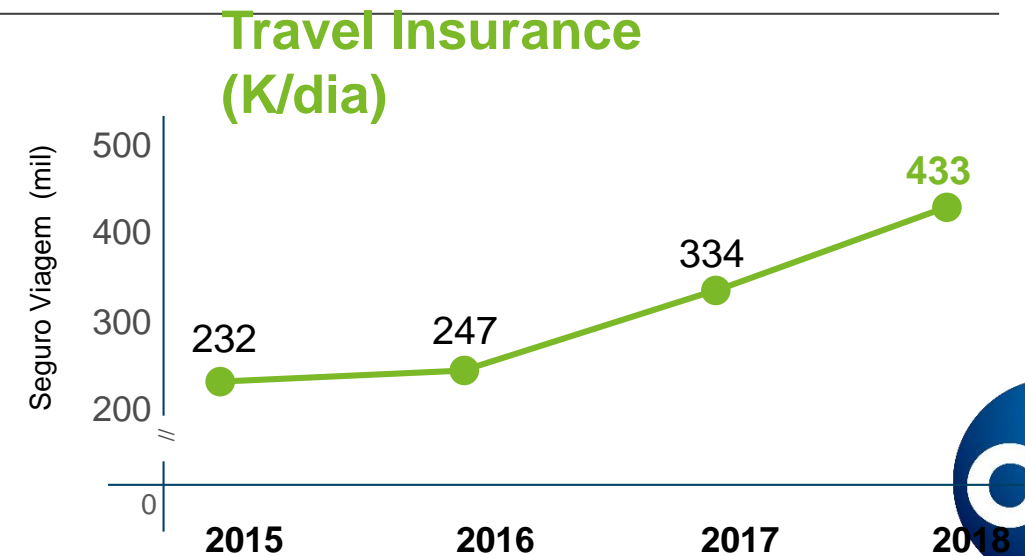
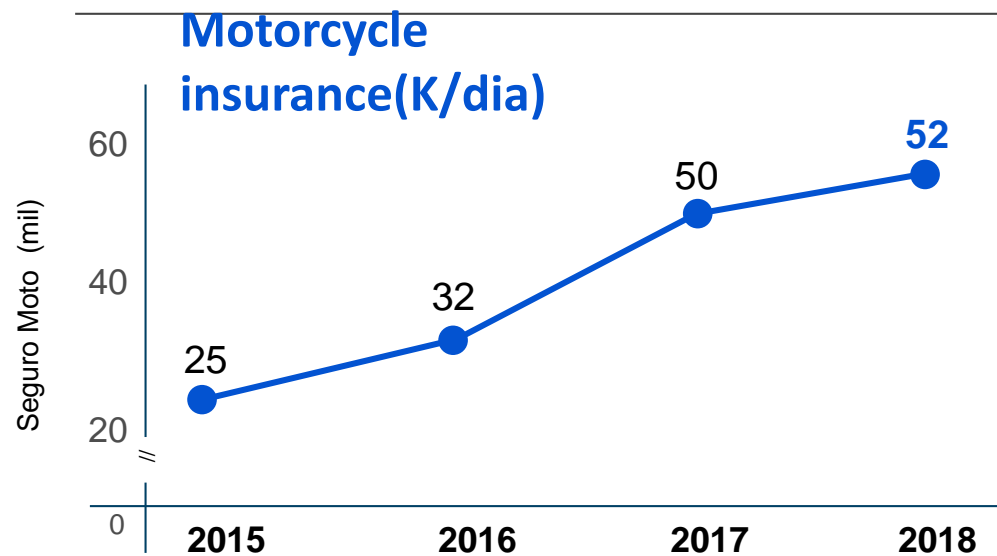
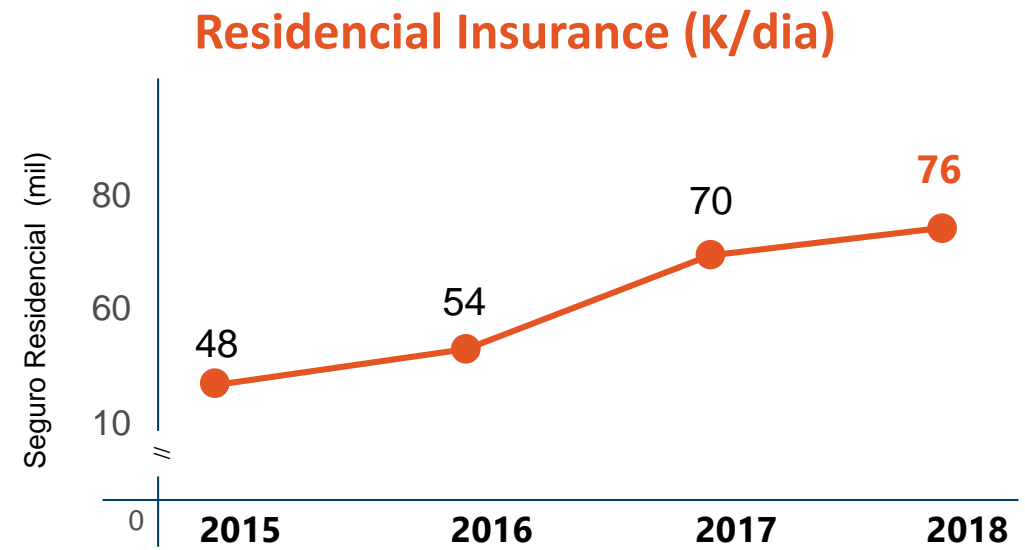
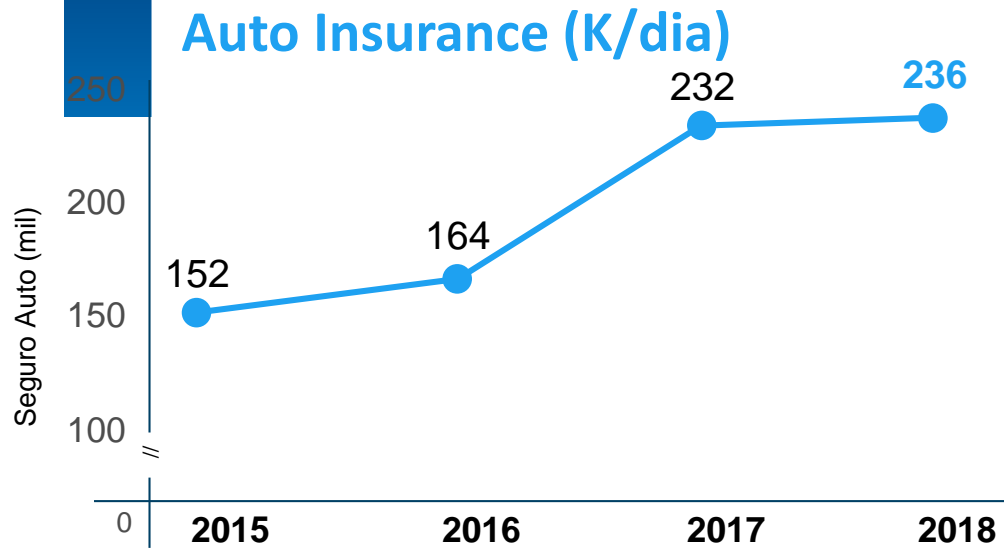
Source: Google's The Connected Consumer Survey; CETIC; Statcounter; McKinsey analysis (2017)



# 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**

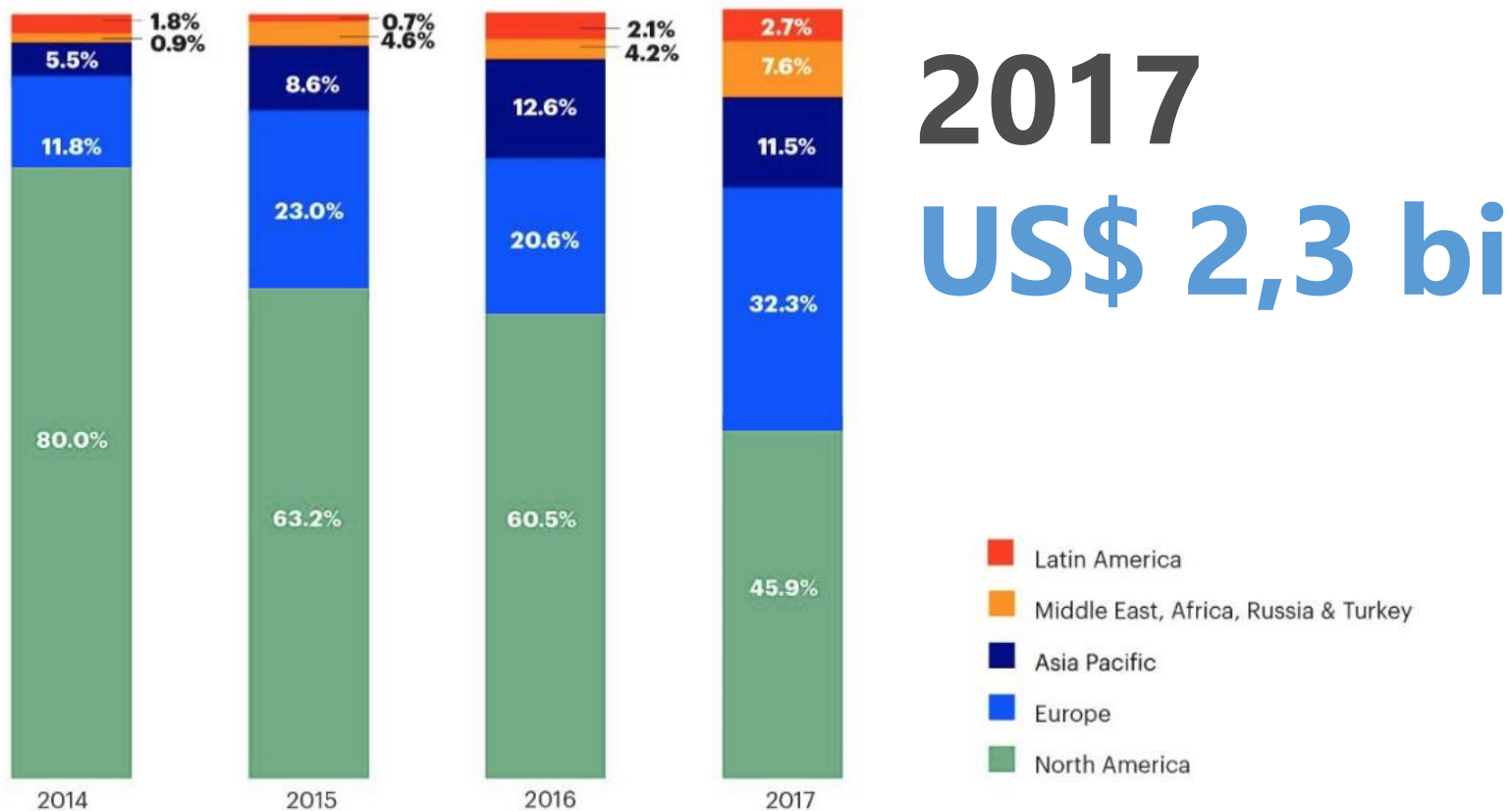
- +600K taxi drivers
- + 1K cities in Brazil



**More than 3.8 million users in São Paulo (global leader)**



# Investments in Insurtechs grew 32% in 2017 (Worldwide)



**2017**  
**US\$ 2,3 bi**

**2018**  
**US\$ 4,1 bi**

**More than US\$ 9  
billions invested over  
the last 7 years.**



# DEMOCRATIZATION & PERSONALIZATION OF INSURANCE

**Better Experiences | Better Products | Fair Prices**

# DEMOCRATIZATION OF INSURANCE

- Connect consumer
- Digital selling (smartphone)
- Growth of number of Insurtechs
- Agility to contract
- 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





# AUTO INSURANCE MARKET IN

# COLOMBIA



# COLOMBIA

## General Information



- Located at north of South America
- It is the only South American country with access to the two oceans.
- 25<sup>th</sup> largest country in the world (larger than all inland Europe Countries)
- 85<sup>th</sup> country in GDP per capita. ☹

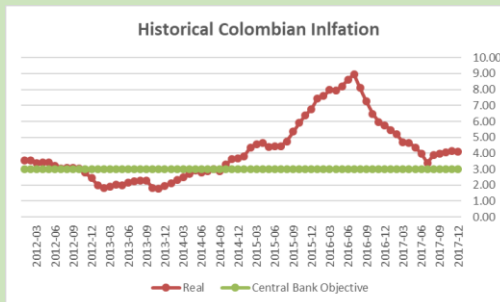
- 3 out of 4 main cities located in the mountains.  
(**Bogota, Medellin, Cali**, Barranquilla)
- More than 50% of the country is plain soil. (Sparsely inhabited)
- Ground borders available with Ecuador and Venezuela.
- Panama and Brazil can not be connected by ground



# COLOMBIA

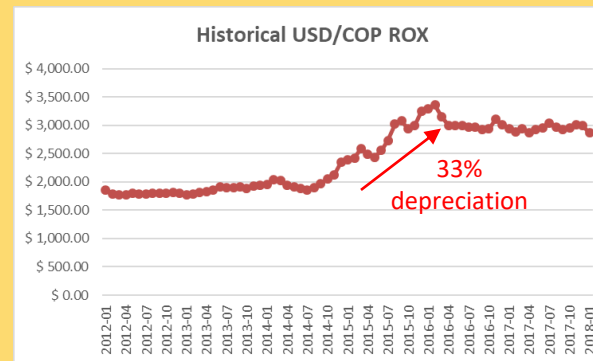
## Economical Enviroment

Inflation **very stable**  
for several years.



Central bank  
independent from  
government

Rate of exchange.  
US Dollars (USD) Colombian  
Pesos (COP)



Low volatility overall, but  
some high value peaks



Economics **highly**  
**dependent** on  
political stability:

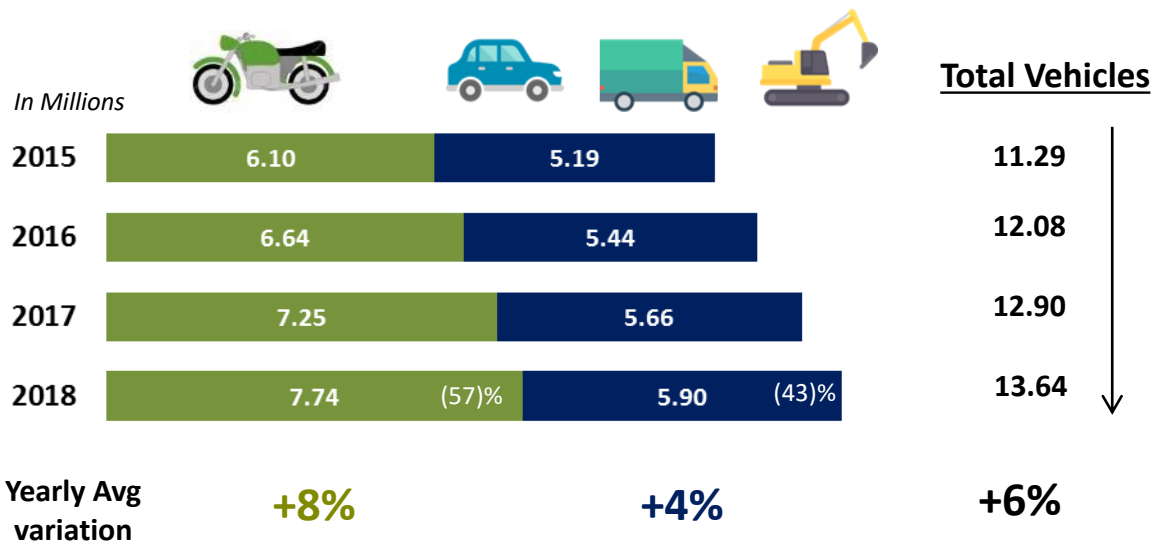
*Last 20 years: Right  
Side Political Parties  
has govern*





# COLOMBIA

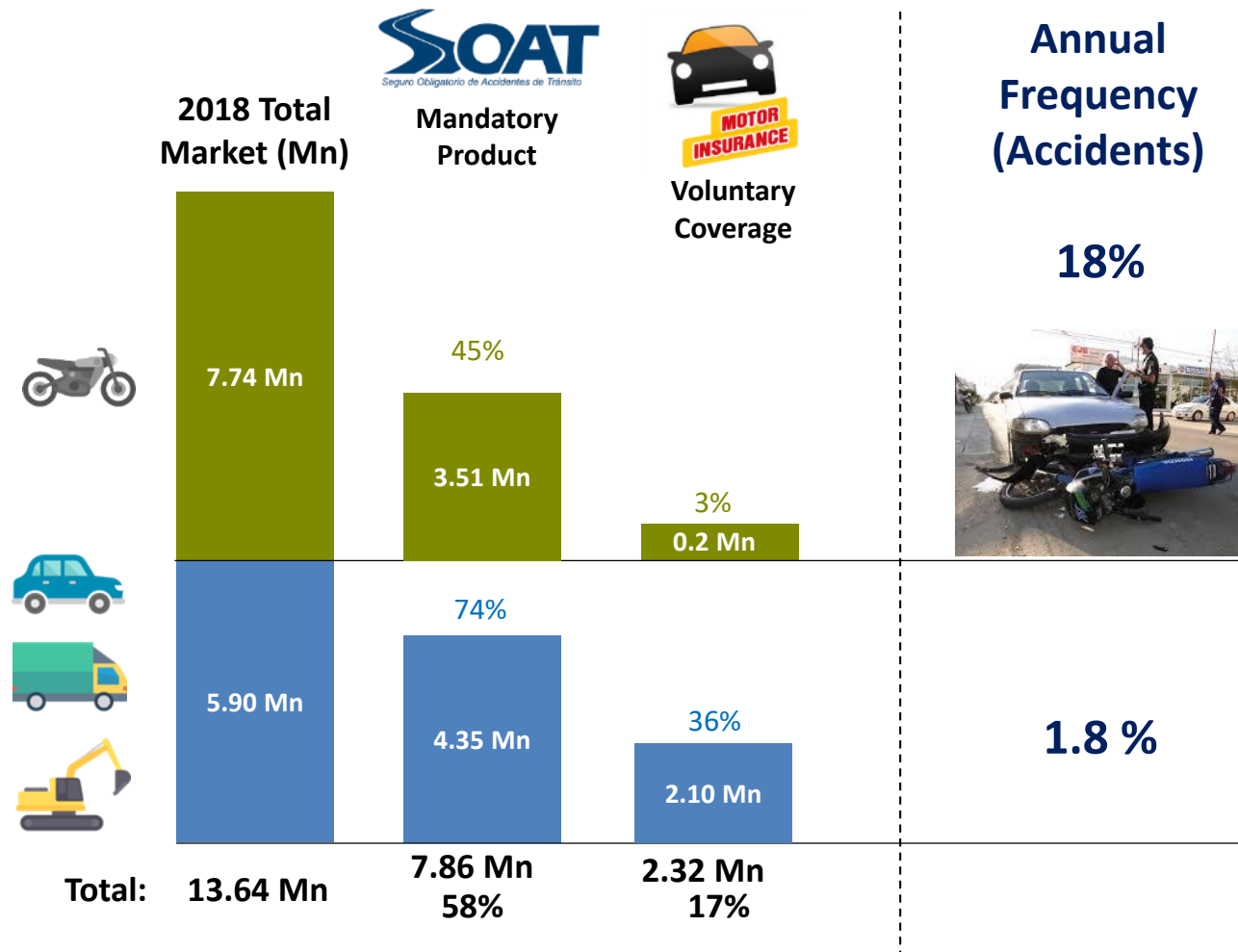
## Vehicles growth and distribution



- Motorbikes increasing rate (8%) are **higher** than Auto rates (4%)
- In 2017, **57%** of total vehicles are motorbikes

# COLOMBIA

## Total Vehicles and Penetration %



### SOAT – Mandatory Product

- Moto users are very vulnerable in an accident. **(10 times higher risk)**
- Even with subsidies, only **45%** of motos buy SOAT.
- 44% of total premium is taken by the government (via taxes).

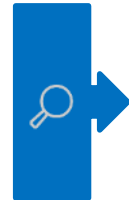
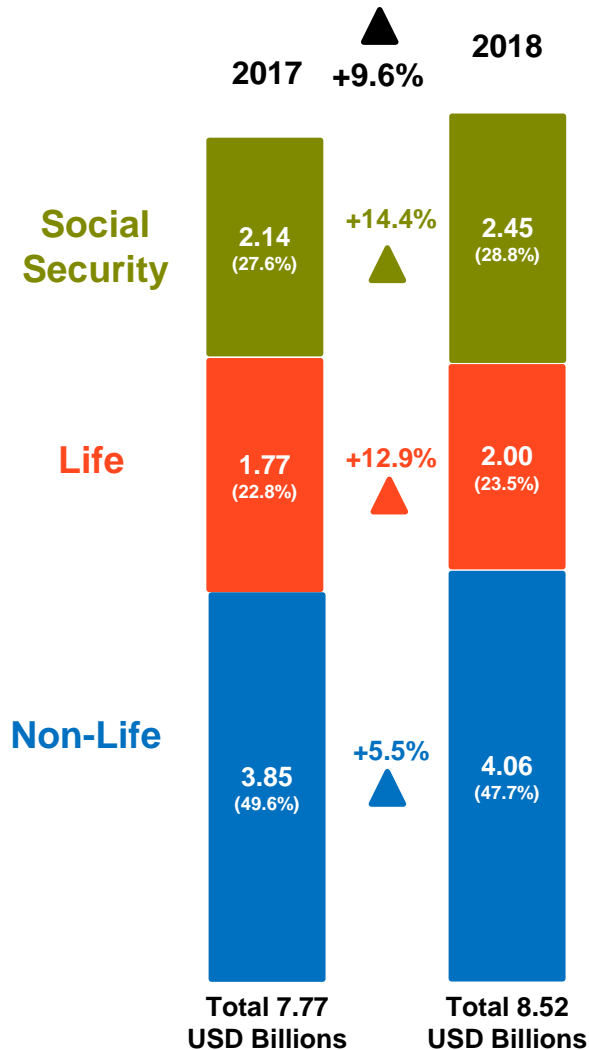
### VOLUNTARY

- Only **17%** of total vehicles are voluntary insured.
- Motos are an unexplored market in voluntary products, but very challenging due to high frequency rates.



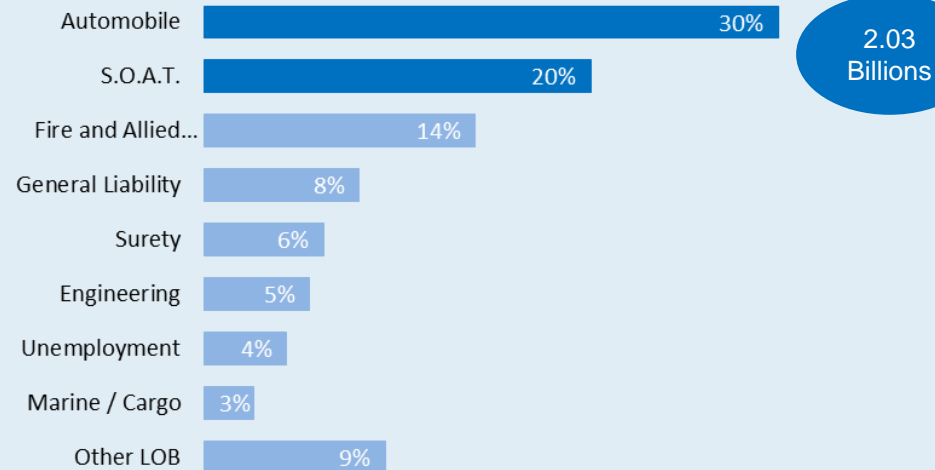
# COLOMBIA

## Market Auto Written Premiums (in USD Bn)



### Non-Life Premiums by LOB 2018

Auto represents 50% !

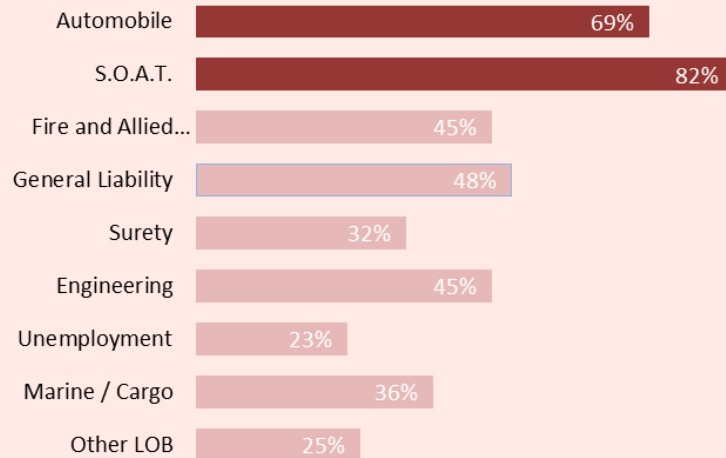


# COLOMBIA

## Market Profitability

### Non-Life Loss Ratios by LOB 2018

*Auto and SOAT have **worst** results !!*



**AUTO**  
Voluntary

Commissions	15%
UW / Other Expenses	15%
<b>Combined Ratio</b>	<b>99%</b>

**SOAT**  
Mandatory

Commissions	10%
UW / Other Expenses	10%
<b>Combined Ratio</b>	<b>102%</b>

- Low profitable LOBs.
- High Maintenance Costs (Sales, Marketing, Claims infrastructure)

- Easy to sell and to gain market share quickly





# COLOMBIA

## Pricing Environment

**<1995**

### **Premium and Limits imposed by Law. Protected Market**

- ➔ Before 1993 , Colombia was Economically closed
- ➔ Same rates for all companies. (Only locals)  
Avg rates: 15% - 20%

**1995 - 2010**

### **First Multivariate models (Notions of GLMs)**

- ➔ Lack of good information
- ➔ Hand written UW formulary
- ➔ Filled by agents
- ➔ Easy to manipulate:  
90% of drivers were women
- ➔ Timid regulation: First focused in solvency.

**2010-**

### **First Multivariate models (Improved GLMs, Optimization Price notions and Telematics ahead)**

- ➔ Better and more information using by the use of technology.

#### New info used:

- ➔ Credit Based score
- ➔ Historical Market Claims
- ➔ Governmental Auto databases
- ➔ Agreement among insurers in information sharing
- ➔ First notions of churn rate, supply/demand in pricing.
- ➔ One leader company offering telematics products.



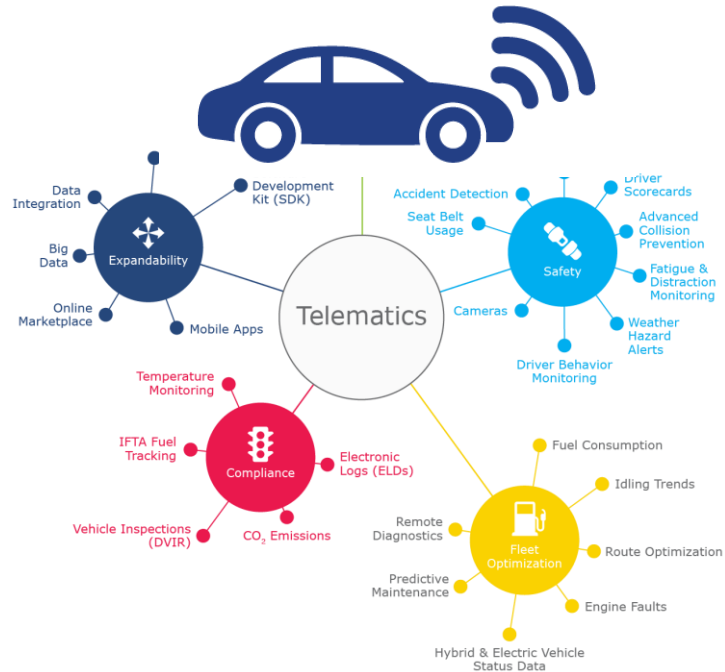
# COLOMBIA

## Future of Auto Insurance

### Short Term:

Connected vehicles and telematics.

- Products design
- Claims attention
- Frequency / Severity
- Customer loyalty, etc.



### Medium Term:

Analytics Usefulness

- New Analytics areas created.
- Mostly in data handling and storage – Phase 1

### Long Term:

Self – Driver vehicles ecosystem

- What is this about?



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