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
As expected, Asia/Oceania/Middle East has the largest number of vehicles and number of inhabitants.

Nevertheless, North America has the largest Motorization Rate.

LATAM has the third Motorization Rate (200 x 1000 inh) among all continents.

Source: OICA, Year data: 2015
## Worldwide Commercial Vehicles (CV) vs Passenger Cars

### # Vehicles (Millions)

<table>
<thead>
<tr>
<th>Region</th>
<th>CV (Millions)</th>
<th>Total (Millions)</th>
<th>CV Ratio</th>
<th>Total Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia Oceania Middle East</td>
<td>436.2</td>
<td>1,282.3</td>
<td>21%</td>
<td>79%</td>
</tr>
<tr>
<td>Europe</td>
<td>387.5</td>
<td></td>
<td>14%</td>
<td>86%</td>
</tr>
<tr>
<td>North America</td>
<td>287.4</td>
<td></td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Central &amp; South America</td>
<td>126.3</td>
<td></td>
<td>26%</td>
<td>74%</td>
</tr>
<tr>
<td>Africa</td>
<td>44.8</td>
<td></td>
<td>31%</td>
<td>69%</td>
</tr>
</tbody>
</table>

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

---

**Source**: OICA, Year data: 2015
Brazil and Mexico represents 72% of the total vehicles in LATAM.

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

### Total Vehicles in use (Millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>42.7</td>
</tr>
<tr>
<td>Mexico</td>
<td>37.4</td>
</tr>
<tr>
<td>Argentina</td>
<td>13.7</td>
</tr>
<tr>
<td>Colombia</td>
<td>5.3</td>
</tr>
<tr>
<td>Chile</td>
<td>4.4</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>3.3</td>
</tr>
<tr>
<td>Peru</td>
<td>2.4</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2.3</td>
</tr>
</tbody>
</table>

### Inhabitants (2015 Millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>207.5</td>
</tr>
<tr>
<td>Mexico</td>
<td>127.1</td>
</tr>
<tr>
<td>Argentina</td>
<td>43.5</td>
</tr>
<tr>
<td>Colombia</td>
<td>48.0</td>
</tr>
<tr>
<td>Chile</td>
<td>17.9</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>3.3</td>
</tr>
<tr>
<td>Peru</td>
<td>31.3</td>
</tr>
<tr>
<td>Ecuador</td>
<td>16.2</td>
</tr>
</tbody>
</table>

### Motorization Rate (/ 1000 inh.)

<table>
<thead>
<tr>
<th>Country</th>
<th>Motorization Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>206</td>
</tr>
<tr>
<td>Mexico</td>
<td>294</td>
</tr>
<tr>
<td>Argentina</td>
<td>316</td>
</tr>
<tr>
<td>Colombia</td>
<td>111</td>
</tr>
<tr>
<td>Chile</td>
<td>248</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>78</td>
</tr>
<tr>
<td>Peru</td>
<td>78</td>
</tr>
<tr>
<td>Ecuador</td>
<td>140</td>
</tr>
</tbody>
</table>
All countries have voluntary market for comprehensive and collision coverages. Mandatory products exist for Motor Third Party Liability and Medical Expenses mainly.

### Public Service

<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puerto Rico</td>
<td>Governmental programs rather than private insurance products. Centralization of national prevention programs and victims claim attention. “Premiums” come via taxes</td>
</tr>
<tr>
<td>Ecuador</td>
<td></td>
</tr>
</tbody>
</table>

### Mandatory Medical Expenses

<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td></td>
</tr>
</tbody>
</table>

### Mandatory Third Party Liability

<table>
<thead>
<tr>
<th>Country</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>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).</td>
</tr>
<tr>
<td>Argentina</td>
<td></td>
</tr>
</tbody>
</table>
### LATAM Penetration %

<table>
<thead>
<tr>
<th>Country</th>
<th># Vehicles in use (Millions)</th>
<th>Mandatory</th>
<th>Voluntary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>43</td>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>Mexico</td>
<td>37</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>14</td>
<td>90</td>
<td>55</td>
</tr>
<tr>
<td>Colombia</td>
<td>5</td>
<td>75</td>
<td>30</td>
</tr>
<tr>
<td>Chile</td>
<td>4</td>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>3</td>
<td>100</td>
<td>24</td>
</tr>
<tr>
<td>Peru</td>
<td>2</td>
<td>71</td>
<td>24</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2</td>
<td>100</td>
<td>30</td>
</tr>
</tbody>
</table>

Weak controls in Mexico has driven low penetration % even being mandatory.
AUTO INSURANCE MARKET IN BRAZIL

César Neves
cesar@ime.uerj.br
Brazilian Institute of Actuaries Numbers

1,808 Fellows

Types of Members

<table>
<thead>
<tr>
<th>Types</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members – MIBA</td>
<td>1,808</td>
</tr>
<tr>
<td>Companies – CIBA</td>
<td>83</td>
</tr>
<tr>
<td>Students - EIBA</td>
<td>68</td>
</tr>
</tbody>
</table>

MIBA:

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

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 GWP
%

<table>
<thead>
<tr>
<th>Year</th>
<th>Others</th>
<th>Top 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>11%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>12%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>13%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>14%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>15%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>16%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>17%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>2018</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

1 Gross Written Premium
Source: SUSEP, McKinsey analysis
Insurance penetration is low, with significant room for growth via consumer education and product innovation.

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

- Porto Seguro, 19%
- Bradesco, 11%
- Tokio Marine, 10%
- Sul América, 9%
- HDI, 9%
- Mapfre, 8%
- Liberty, 8%
- Azul, 9%
- Others, 8%
- BrasilVeículos, 4%

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:
  o Fixed value of insured amount in Brazilian currency; or
  o 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 Numbers: Time Series of the Premiums Paid

<table>
<thead>
<tr>
<th>Year</th>
<th>Premiums (million US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>4,427</td>
</tr>
<tr>
<td>2010</td>
<td>5,099</td>
</tr>
<tr>
<td>2011</td>
<td>5,452</td>
</tr>
<tr>
<td>2012</td>
<td>6,335</td>
</tr>
<tr>
<td>2013</td>
<td>7,512</td>
</tr>
<tr>
<td>2014</td>
<td>8,038</td>
</tr>
<tr>
<td>2015</td>
<td>8,323</td>
</tr>
<tr>
<td>2016</td>
<td>8,125</td>
</tr>
<tr>
<td>2017</td>
<td>8,664</td>
</tr>
<tr>
<td>2018</td>
<td>9,181</td>
</tr>
</tbody>
</table>
Time Series of the Premiums for Types of Coverages

**Prestios— million US$**

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

% Premiums for Coverage - 2018:
- **Theft, Collision and Comprehensive**, 69.3%
- **Liability**, 21.90%
- **Passenger Personal Accident**, 1.70%
- **Assistance**, 7.10%
Market Numbers: Time Series of index = Indemnity / Premium

![Graph showing the time series of the index from 2009 to 2018. The index values range from 0.61 to 0.66.](image-url)
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

- Assets
- Liabilities
- Solvency

Assets:
- Technical Provisions
- Other Liabilities

Liabilities:
- Available Capital
- Adjusted Available Capital
- Capital Surplus
- Capital Requirement

Solvency:
- Risk based
  - Underwriting
  - Market
  - Credit
  - Operational

>= 20% of liquid assets
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

\[ R.\ emi.\ danos = \sqrt{\sum_{i=1}^{17} \sum_{j=1}^{17} \left( f_{i}^{\text{prem}} \right) \left( f_{j}^{\text{prem}} \right) \rho_{i,j}^{\text{prem}}} \]

• Provision for Claims risk factor

= 0.14

\[ R.\ prov.\ danos = \sqrt{\sum_{k=1}^{17} \sum_{l=1}^{17} \left( f_{k}^{\text{prov}} \sinistro_{k}^{m} \right) \left( f_{l}^{\text{prov}} \sinistro_{l}^{m} \right) \rho_{k,l}^{\text{prov}}} \]

• 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 doing many transactions or spending much money online.
Two out of three Brazilians have access to the internet, more than the global average...

Source: We Are Social (2018); CETIC.br (2017); McKinsey analysis.
Smartphone penetration is already high

### Smartphone penetration

<table>
<thead>
<tr>
<th>Country</th>
<th>% Population that uses a smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>83</td>
</tr>
<tr>
<td>USA</td>
<td>78</td>
</tr>
<tr>
<td>Turkey</td>
<td>77</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>77</td>
</tr>
<tr>
<td>Chile</td>
<td>76</td>
</tr>
<tr>
<td>Colombia</td>
<td>75</td>
</tr>
<tr>
<td>Argentina</td>
<td>73</td>
</tr>
<tr>
<td>Mexico</td>
<td>72</td>
</tr>
<tr>
<td>Global Average</td>
<td>71</td>
</tr>
<tr>
<td>Brazil</td>
<td>71</td>
</tr>
<tr>
<td>South Africa</td>
<td>60</td>
</tr>
<tr>
<td>India</td>
<td>40</td>
</tr>
</tbody>
</table>

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

Internet Users (millions)

- 2015: 112
- 2016: 115
- 2017: 119
- 2018: 123

E-commerce revenues in Brazil (billions)

- 2015: 41
- 2016: 44
- 2017: 48
- 2018: 53

Smartphone Users in BR (millions)

- 2015: 60
- 2016: 69
- 2017: 77
- 2018: 84

Mobile Banking Users in Brazil (millions)

- 2015: 33
- 2016: 40
- 2017: 50
- 2018: 60

Fontes: Digital Marketing Outlook | Statista; Ebit; Febraban
Average of online searches on Insurance

- **Auto Insurance (K/dia)**
  - 2015: 152
  - 2016: 164
  - 2017: 232
  - 2018: 236

- **Residencial Insurance (K/dia)**
  - 2015: 48
  - 2016: 54
  - 2017: 70
  - 2018: 76

- **Motorcycle insurance (K/dia)**
  - 2015: 25
  - 2016: 32
  - 2017: 50
  - 2018: 52

- **Travel Insurance (K/dia)**
  - 2015: 232
  - 2016: 247
  - 2017: 334
  - 2018: 433

Fonte: Base interna (período jan-out de cada ano)
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
COLOMBIA

General Information

- Located at north of South America
- It is the only South American country with access to the two oceans.
- 25th largest country in the world (larger than all inland Europe Countries)
- 85th 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 Environment

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

33% depreciation
COLOMBIA
Vehicles growth and distribution

- **In Millions**
  - 2015: 6.10 Motorbikes, 5.19 Cars, 11.29 Total Vehicles
  - 2016: 6.64 Motorbikes, 5.44 Cars, 12.08 Total Vehicles
  - 2017: 7.25 Motorbikes, 5.66 Cars, 12.90 Total Vehicles
  - 2018: 7.74 Motorbikes, 5.90 Cars, 13.64 Total Vehicles

- **Yearly Avg variation**
  - +8% for Motorbikes
  - +4% for Cars
  - +6% for Total Vehicles

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

**Source:** Fasecolda -> Colombian Insurance Association
COLOMBIA
Total Vehicles and Penetration %

2018 Total Market (Mn)

- Mandatory Product
  - 7.74 Mn (45%)
  - 3.51 Mn (3%)

- Voluntary Coverage
  - 5.90 Mn (74%)
  - 4.35 Mn (36%)

Total: 13.64 Mn (58%)

Annual Frequency (Accidents)

- Mandatory Product:
  - 18%

- Voluntary Coverage:
  - 1.8%

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.

Source: Fasecolda -> Federación de aseguradoras Colombiana
COLOMBIA
Market Auto Written Premiums (in USD Bn)

<table>
<thead>
<tr>
<th>LOB</th>
<th>2017</th>
<th>% Change</th>
<th>2018</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security</td>
<td>2.14 B</td>
<td>+14.4%</td>
<td>2.45 B</td>
<td>+14.4%</td>
</tr>
<tr>
<td>Life</td>
<td>1.77 B</td>
<td>+12.9%</td>
<td>2.00 B</td>
<td>+12.9%</td>
</tr>
<tr>
<td>Non-Life</td>
<td>3.85 B</td>
<td>+5.5%</td>
<td>4.06 B</td>
<td>+5.5%</td>
</tr>
<tr>
<td>Total</td>
<td>7.77 B</td>
<td></td>
<td>8.52 B</td>
<td></td>
</tr>
</tbody>
</table>

Non-Life Premiums by LOB 2018
Auto represents 50%!

- Automobile: 30% (2.03 B)
- S.O.A.T.: 20% (1.2 B)
- Fire and Allied: 14% (0.89 B)
- General Liability: 8% (0.68 B)
- Surety: 6% (0.49 B)
- Engineering: 5% (0.39 B)
- Unemployment: 4% (0.19 B)
- Marine / Cargo: 3% (0.13 B)
- Other LOB: 9% (0.18 B)
COLOMBIA
Market Profitability

Non-Life Loss Ratios by LOB 2018
*Auto and SOAT have worst results!!*

<table>
<thead>
<tr>
<th>LOB</th>
<th>Commissions</th>
<th>UW / Other Expenses</th>
<th>Combined Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO Voluntary</td>
<td>15%</td>
<td>15%</td>
<td>99%</td>
</tr>
<tr>
<td>SOAT Mandatory</td>
<td>10%</td>
<td>10%</td>
<td>102%</td>
</tr>
<tr>
<td>AUTO Mandatory</td>
<td>32%</td>
<td>45%</td>
<td>99%</td>
</tr>
<tr>
<td>SOAT Mandatory</td>
<td>10%</td>
<td>10%</td>
<td>102%</td>
</tr>
<tr>
<td>Fire and Allied</td>
<td>48%</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>Surety</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>36%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine / Cargo</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other LOB</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 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 Maket

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.
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?