



# ***Fuel Economy Program in Brazil***

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ANFAVEA - Energy & Environment Commission



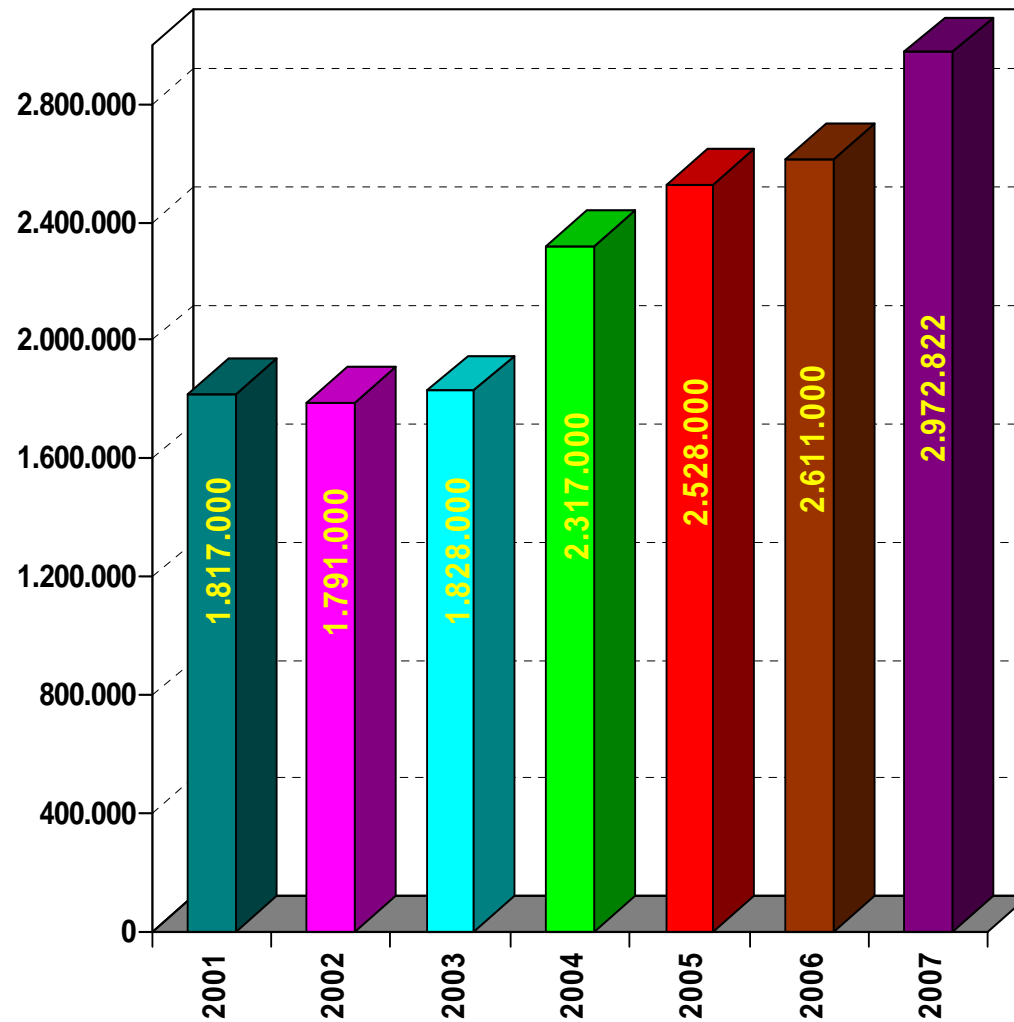
# The Brazilian Automobile Industry



- |                                       |                       |
|---------------------------------------|-----------------------|
| Local Manufacturers                   | - 25 companies        |
| Net Revenue (2006)                    | - US \$ 41.1 billions |
| Investments (1997 ~ 2006)             | - US \$ 15.4 billions |
| Total Tax Generation (2006)           | - US \$ 12.8 billions |
| Share of Industrial GDP (2006)        | - 14.5 %              |
| Share of Total GDP (2005)             | - 3.9 %               |
| Employment (direct + indirect) (2006) | - 1. 300.000 heads    |

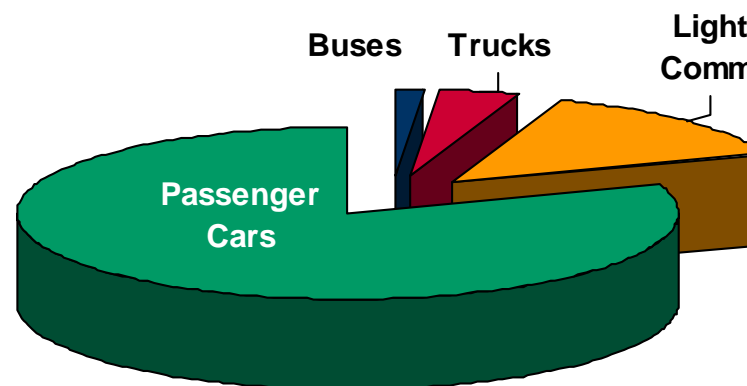
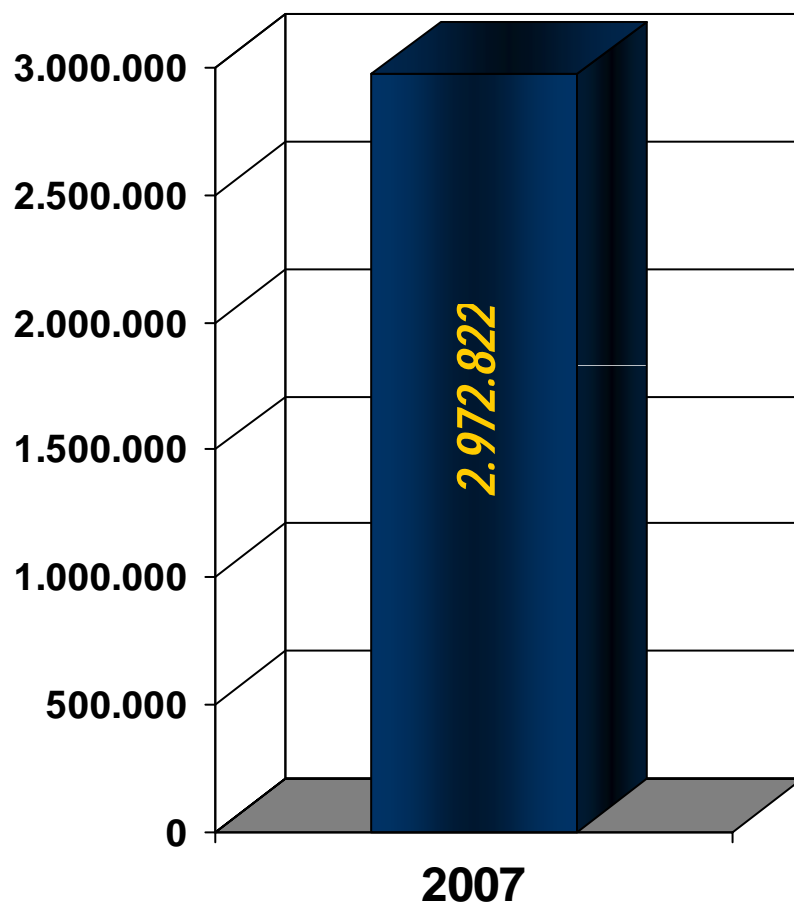


# The Brazilian Automobile Production



Country		Production (2007)
1 <sup>st</sup>	Japan	11.596.327
2 <sup>nd</sup>	USA	10.780.729
3 <sup>rd</sup>	China	8.882.456
4 <sup>th</sup>	Germany	6.213.460
5 <sup>th</sup>	South Korea	4.086.308
6 <sup>th</sup>	France	3.019.144
7 <sup>th</sup>	<b>Brazil</b>	<b>2.972.822</b>
8 <sup>th</sup>	Spain	2.889.703
9 <sup>th</sup>	Canada	2.578.238
10 <sup>th</sup>	India	2.306.768
11 <sup>th</sup>	Mexico	2.095.245
12 <sup>th</sup>	UK	1.750.253
13 <sup>th</sup>	Russia	1.660.120
14 <sup>th</sup>	Italy	1.284.312
15 <sup>th</sup>	Thailand	1.238.460

# The Brazilian Production Profile



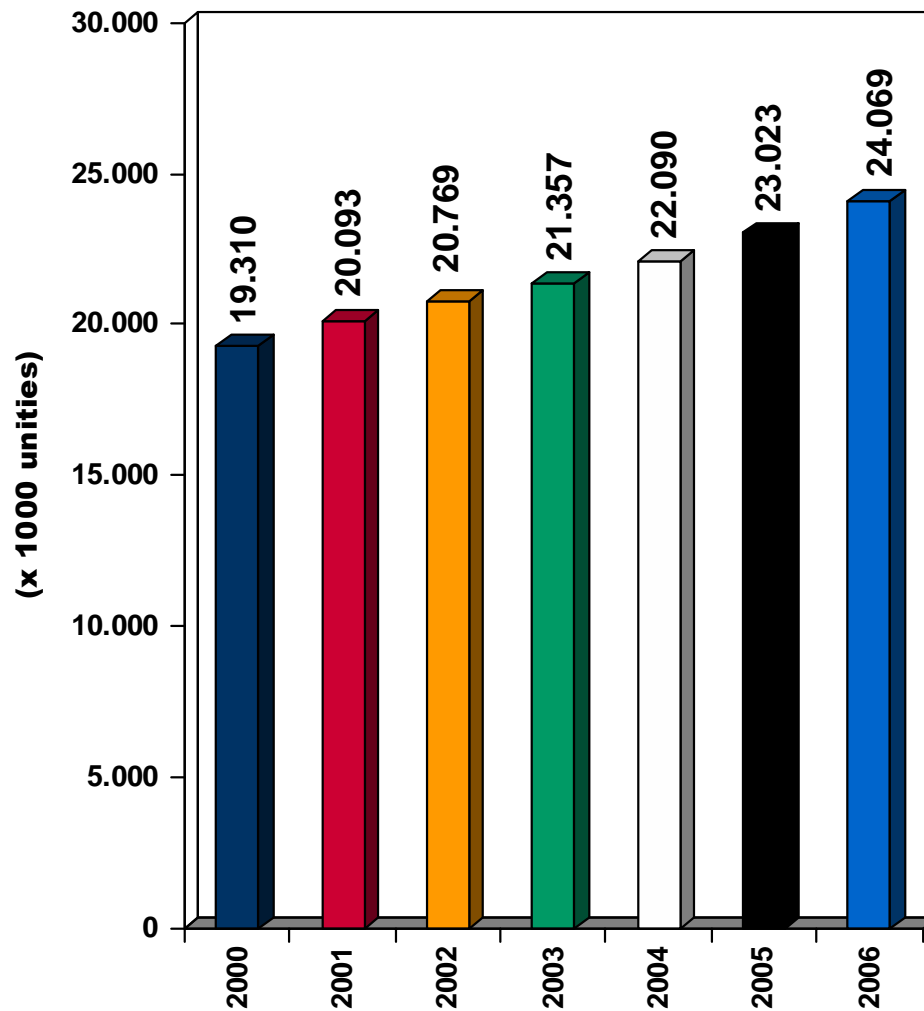
Passenger Cars	2.389.409	80,4 %
Light Commercials	407.912	13,7 %
Trucks	136.760	4,6 %
Buses	38.741	1,3 %

To Domestic Market	2.186.050	73,5 %
To Export Market	786.772	26,5 %

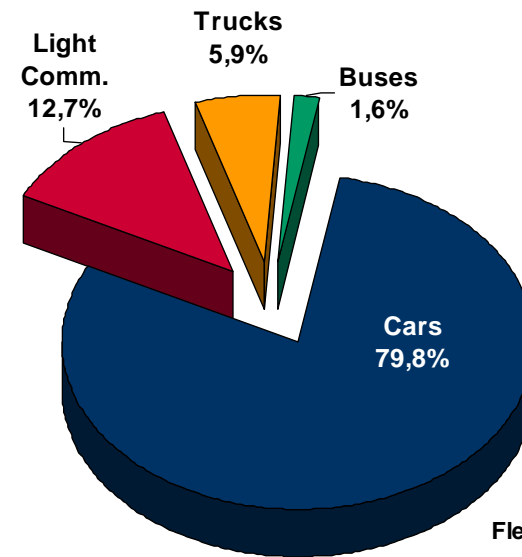
# The Brazilian Automobile Fleet



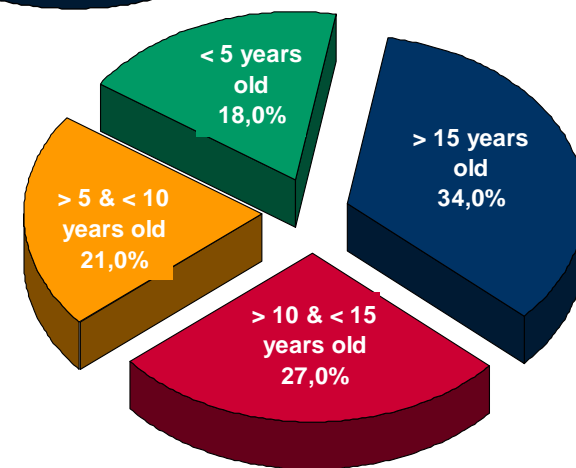
### Total Number of Vehicles



### Fleet Composition



### Fleet Age

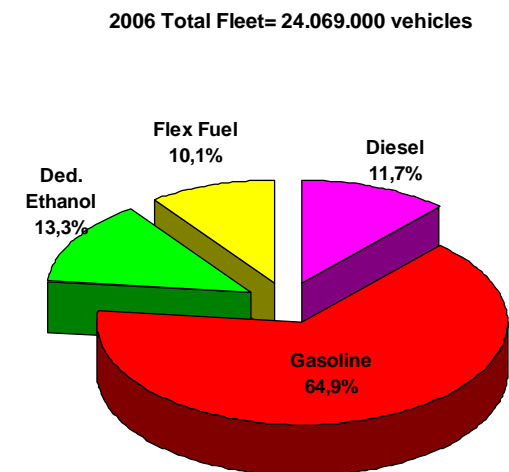
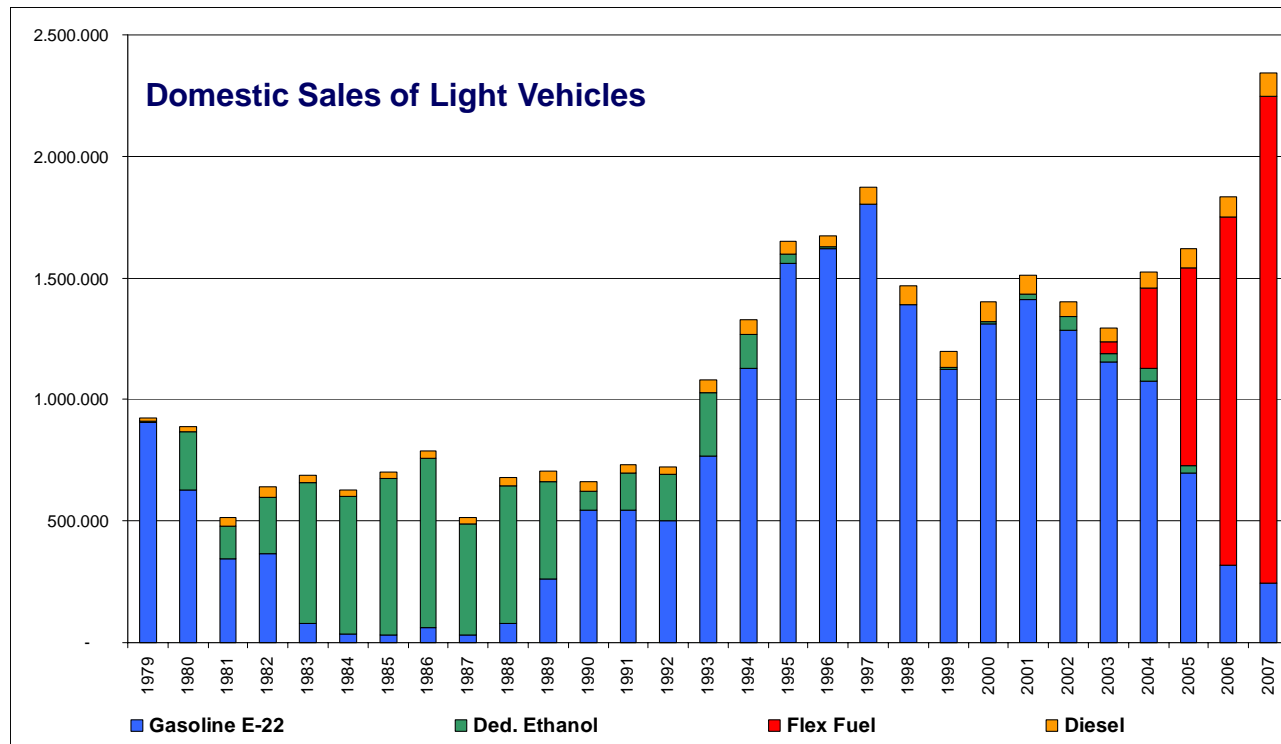


# The Brazilian Vehicular Fuels



Since 1975, “ethanol” is employed as vehicular fuel in Brazil for light vehicles:

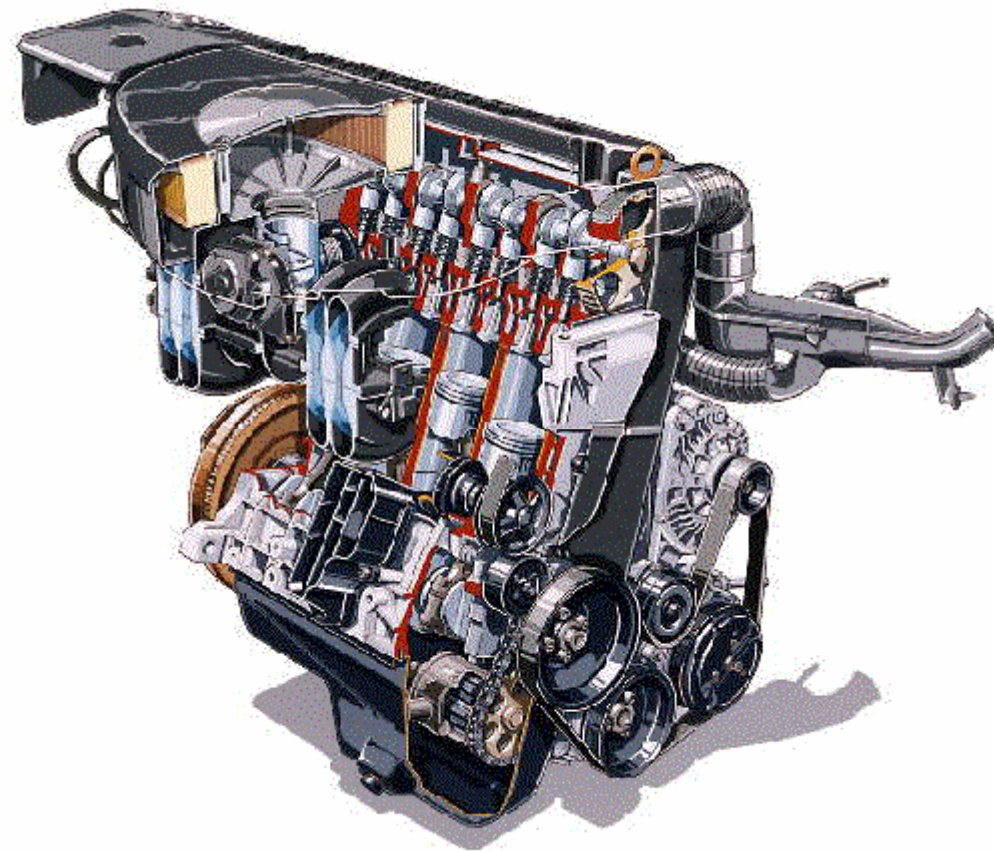
- 20 ~ 25% blended in gasoline;
- 100% for appropriated vehicles (dedicated vehicles and flex fuel vehicles).



Since 2005, 2 ~ 3% of “biodiesel” is blended to diesel fuel in Brazil for all applications.

From 2013 on, the biodiesel blend will increase to 5%.

# The Brazilian Fuel Economy Program



# The Brazilian Fuel Economy Program



## Brazilian Program of Energy Efficiency

### Federal Law 10.285/01:

- Determine maximum limits of energy consumption for all machines\* and equipments, according to technical indicators.
- Obliges the producers to adopt measurements to achieve the maximum limits of energy consumption.

(\* internal combustion engines are defined by ABNT/INMETRO as “thermal machines”)

### Federal Decree 4.059/01:

Create the Executive Commission of Energy Efficiency Indicators (CGIEE);

Give to the National Institute of Metrology (INMETRO) the right to inspect and control the different FE Programs.

# The Brazilian Fuel Economy Program

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## The Energy Efficiency Program for Vehicles

- Initially, the Program will include only light vehicles with Otto Cycle engine;
- It is a “voluntary program” where the participation of vehicle manufacturers is expected thanks to the market competition;
- To participate, the manufacturers must to declare the fuel consumption at least of 50% of their models, which have sales of more than 2.000 units per year.
- The fuel consumption must be measured through standard procedures and the tests must be performed in accredited labs;

# The Brazilian Fuel Economy Program

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## The Energy Efficiency Program for Vehicles - 2

- Every year, INMETRO will publish a list with all the results, divided by 8 categories, given a Fuel Efficiency Indicator for each product, based on average values of that category;
- The fuel consumption data and the Efficiency Indicator must be clearly exposed to the costumers at the sales stores (dealers) or through appropriated “labels” in the products;
- Manufacturers can advertise the Fuel Efficiency Indicator of their products.

# The Brazilian Fuel Economy Program



## Test Procedures

- Brazilian Standard NBR-7024 (similar to US CFR-75);
- Chassis Dynamometer Measurement;
- Test Cycle: Urban Drive + Highway Drive;
- Test Fuels: E-22, E-100, E-22/E-100 (FFV);
- Data Report: 55% Urban + 45% Highway;
- Test Results:
  - Autonomy (km/L);
  - Consumption (L/100km);
  - Fuel Energy Efficiency (MJ/km).
    - 100% gasoline= 32,33 MJ/l
    - 78% gasoline + 22% ethanol= 29,98 MJ/l
    - 100% ethanol= 20,38 MJ/l

# The Brazilian Fuel Economy Program



## Vehicle Categories:

(Light Vehicles: GVW 3.856 kg & CW 2.720 kg)

### 1. Sporting Passenger Cars

(ECE R51: 140 kW, 75 kW/ton, acc 50~61 km/h in 20 m 3rd G);

### 2. Light Commercials derived from Passenger Car;

### 3. Light Commercials not derived from Passenger Car;

### 4. Off Road Vehicles.

### 5. Subcompact Passenger Cars (area $\leq 6,5 \pm 0,1 \text{ m}^2$ )

### 6. Compact Passenger Cars (area $\geq 6,5 \pm 0,1 \text{ m}^2$ and $7,0 \pm 0,1 \text{ m}^2$ );

### 7. Medium Passenger Cars (area $\geq 7,0 \text{ m}^2$ and $\leq 8,0 \pm 0,1 \text{ m}^2$ );

### 8. Large Passenger Cars (area $8,0 \text{ m}^2$ );

(area do not consider protuberances like external mirrors or spare tyre)

# Fuel Efficiency Label



<b>Energia</b> ( Combustível ) Empresa Marca Modelo Versão Câmbio Categoria Combustível	<b>AUTOMÓVEL</b> XYZ (Logo) Exemplo Flex 1.8 Manual Compacto Álcool / Gasolina	
	Menor consumo (MJ/km)  Maior consumo (MJ/km)	
<b>AUTONOMIA POR UNIDADE DE COMBUSTÍVEL</b> <small>(consumo medido em laboratório acreditado, conforme norma de ensaio, utilizando combustíveis padrão)</small>	<b>Álcool (km/l)</b>	<b>Gasolina (km/l)</b>
Ciclo urbano	8,7	9,8
Ciclo rodoviário	10,1	11,3
<b>Emissão Efeito Estufa</b> <b>CO<sub>2</sub> (g/km)</b>	121	123
<b>Característica principal do combustível</b> <small>(O combustível renovável permite minimizar esta emissão com a recuperação do CO<sub>2</sub> na fotossíntese durante o replantio)</small>	Renovável	Fóssil
 Regulamento Específico Para Uso da Etiqueta Nacional de Conservação de Energia - Veículos Automotores - RESP/00X-VEI Consumo real depende de fatores como condições do veículo, condições de trânsito e hábitos do motorista Instruções e recomendações de uso, leia o Manual do Proprietário		
<b>IMPORTANTE: A REMOÇÃO DESTA ETIQUETA ANTES DA VENDA ESTÁ EM DESACORDO COM O CÓDIGO DE DEFESA DO CONSUMIDOR</b>		



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**Thank you for your attention.**

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