

# A study on the price of gasoline in Bahia

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**Abbreviated abstract:** The price of petroleum products has been undergoing significant adjustments in recent years, this significantly impacts the prices of consumer goods. The interesting fact is that the price of gasoline in Bahia, in addition to following the influence of internal and external factors, is also influenced according to the physical distribution of the municipalities. This work aims to make a descriptive study of this problem with a temporal and spatial evaluation of the behavior of these prices.



# Problem, Data, Previous Works

Motivation: The high cost in the price of petroleum products

- Data collected in the ANP:

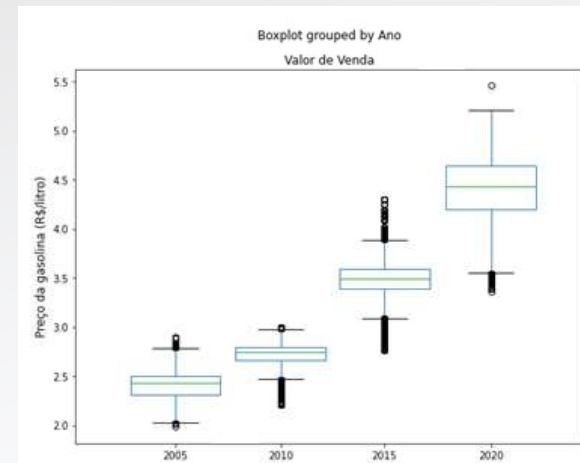
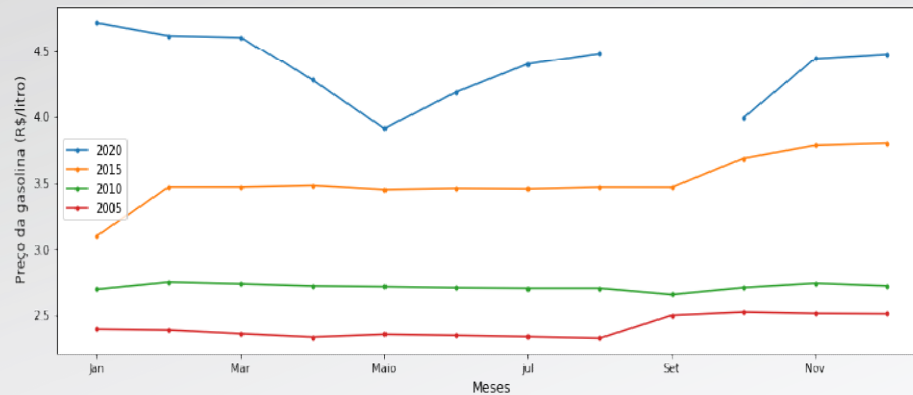
Fonte: <https://www.gov.br/anp/pt-br/centrais-de-conteudo/dados-abertos/serie-historica-de-precos-de-combustiveis>

- Collection, data processing, filter and connection of IBGE geographic network with ANP database
- Monthly filters were applied for the data in 2005, 2010, 2015 and 2020.
- Observations 4.257.561 collected that after treatment, we had 77.248.
- Available data from 44 municipalities out of 417.
- The big challenge was to identify the reason for the variability of the price of gasoline according to the region.

Ano	Quantidade	Média	Mediana	Mínimo	Máximo	Desvio Padrão
2005	25311	R\$ 2.422	R\$ 2.430	R\$ 1.990	R\$ 2.895	R\$ 0.146
2010	21697	R\$ 2.719	R\$ 2.740	R\$ 2.209	R\$ 2.999	R\$ 0.128
2015	18121	R\$ 3.488	R\$ 3.490	R\$ 2.760	R\$ 4.299	R\$ 0.217
2020	12119	R\$ 4.400	R\$ 4.429	R\$ 3.360	R\$ 5.460	R\$ 0.323

# Descriptive analysis

- Use of open source tools: python and R
- Method: Temporal and spatial evaluation
- Variable evaluated: Price versus time (months/years)
- Type of analysis: Qualitative and quantitative (map, boxplot, time series and tables)



## Results and Conclusions

- There was no significant variation between 2005 and 2010.
- From 2010 onwards, there is an increasing and non-linear variation in the price of gasoline.
- There was an increase of approximately 82% in the average price from 2005 to 2020.
- In 2010 prices show little variation in the year
- In 2020 the price drops from January to May

