

# Brazilian Fuel Prices Analysis

João Paiva

```
from pyspark.sql import SparkSession
from pyspark.sql.functions import col, regexp_replace, avg, round, when
from pyspark.sql.types import FloatType

import seaborn as sns
import matplotlib.pyplot as plt
```

```
spark = SparkSession.builder \
    .appName("Fuel Prices in Brazil Analysis") \
    .getOrCreate()
```

```
df_gasoline_ethanol = spark.read.format("parquet").load("Gasoline and Ethanol Prices.parquet")
df_gasoline_ethanol.show()
```

Regiao - Sigla	Estado - Sigla	Município	Revenda	CNPJ da Revenda
	SE	SP	SOROCABA COMPETRO COMERCIO...	00.003.188/0001-21 RUA I
	SE	SP	SOROCABA COMPETRO COMERCIO...	00.003.188/0001-21 RUA I
	N	AC	CRUZEIRO DO SUL AMAZONIA COMERCIO...	01.492.748/0003-83  AVI
	N	AC	CRUZEIRO DO SUL AMAZONIA COMERCIO...	01.492.748/0003-83  AVI
	N	AC	CRUZEIRO DO SUL AMAZONIA COMERCIO...	01.492.748/0003-83  AVI
	N	AC	RIO BRANCO CODEPE COMBUSTIVE...	08.220.930/0001-62 RODOV
	N	AC	RIO BRANCO CODEPE COMBUSTIVE...	08.220.930/0001-62 RODOV
	N	AC	RIO BRANCO CODEPE COMBUSTIVE...	08.220.930/0001-62 RODOV
	N	AC	RIO BRANCO AUTO POSTO CASTAN...	06.003.183/0001-85  ESTI
	N	AC	RIO BRANCO AUTO POSTO CASTAN...	06.003.183/0001-85  ESTI
	N	AC	RIO BRANCO AUTO POSTO CASTAN...	06.003.183/0001-85  ESTI
	N	AC	RIO BRANCO AUTO POSTO CIDADE...	06.321.359/0001-47 AVENI
	N	AC	RIO BRANCO AUTO POSTO CIDADE...	06.321.359/0001-47 AVENI
	N	AC	RIO BRANCO AUTO POSTO DISTRI...	04.087.649/0001-42

	N	AC	RIO BRANCO	AUTO POSTO DISTRI...		04.087.649/0001-42	
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...		04.087.649/0001-42	
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	NE	AL	ARAPIRACA	AUTO POSTO M M GA...		08.738.994/0001-50	

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```
df_diesel_cng = spark.read.format("parquet").load("Diesel and CNG Prices.parquet")
df_diesel_cng.show()
```

Regiao - Sigla	Estado - Sigla	Municipio	Revenda	CNPJ da Revenda			
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...		01.492.748/0003-83	
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...		01.492.748/0003-83	
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...		08.220.930/0001-62	I
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...		08.220.930/0001-62	I
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...		06.003.183/0001-85	
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...		06.003.183/0001-85	
	N	AC	RIO BRANCO	AUTO POSTO CIDADE...		06.321.359/0001-47	I
	N	AC	RIO BRANCO	AUTO POSTO CIDADE...		06.321.359/0001-47	I
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	
	NE	AL	ARAPIRACA	AUTO POSTO MASSAR...		07.248.398/0001-29	
	NE	AL	ARAPIRACA	DISTRIBUIDORA DE ...		12.396.339/0001-38	I
	NE	AL	ARAPIRACA	IBN PINTO E SILVA...		01.242.690/0001-58	
	NE	AL	DELMIRO GOUVEIA	AUTO POSTO FREITA...		12.436.978/0001-80	I
	NE	AL	DELMIRO GOUVEIA	COMERCIO DE COMBU...		04.431.113/0001-00	
	NE	AL	DELMIRO GOUVEIA	COMERCIO DE COMBU...		04.431.113/0001-00	
	NE	AL	PALMEIRA DOS INDIOS	SEVERINO S. LOPES...		05.331.412/0002-09	I
	NE	AL	PALMEIRA DOS INDIOS	A. B. LESSA NETO ...		05.562.589/0001-35	I
	NE	AL	PALMEIRA DOS INDIOS	BALBINO & CIA LTDA		08.623.068/0001-39	I
	NE	AL	RIO LARGO	OLIVEIRA & FREITA...		01.600.494/0001-08	I

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```
df_lpg = spark.read.format("parquet").load("LPG Prices.parquet")
df_lpg.show()
```

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Regiao - Sigla	Estado - Sigla	Municipio	Revenda	CNPJ da Revenda
CO	MS	CAMPO GRANDE	COMPANHIA ULTRAGA...	61.602.199/0024-09
SE	MG	MONTES CLAROS	SUPERGASBRAS ENER...	19.791.896/0070-24
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	08.220.930/0001-62
N	AC	RIO BRANCO	AUTO POSTO ISAURA...	04.594.586/0001-10
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	06.003.183/0001-85
N	AC	RIO BRANCO	POSTO VILLAGE LTDA.	06.906.483/0001-74
N	AC	RIO BRANCO	AUTO POSTO CIDADE...	06.321.359/0001-47
N	AC	RIO BRANCO	COMDEPE COMERCIO ...	01.198.443/0002-82
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	04.087.649/0001-42
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	14.412.076/0001-39
N	AC	RIO BRANCO	POSTO FLORESTA E ...	04.767.269/0001-59
N	AC	RIO BRANCO	FREITAS COMERCIO ...	04.587.754/0001-40
N	AM	PARINTINS	F.J. COMERCIO DE ...	09.368.602/0001-70
NE	BA	ILHEUS	COMERCIAL SAVOIA ...	02.366.787/0001-35
NE	BA	JEQUIE	STOCK COMERCIO DE...	13.707.245/0001-03
CO	DF	BRASILIA	AUTO SHOPPING DER...	37.063.328/0009-14
CO	DF	BRASILIA	CASCOL COMBUSTIVE...	00.306.597/0015-00
SE	ES	LINHARES	POSTO OURO NEGRO ...	02.468.894/0001-74
NE	MA	SAO LUIS	LIMA COMERCIAL DE...	69.418.101/0003-45
NE	MA	SAO LUIS	ANTONIA LIANE GOM...	08.585.377/0001-61

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```
df_fuels = df_gasoline_ethanol.union(df_diesel_cng).union(df_lpg)
df_fuels.show()
```

Regiao - Sigla	Estado - Sigla	Municipio	Revenda	CNPJ da Revenda
SE	SP	SOROCABA	COMPETRO COMERCIO...	00.003.188/0001-21
SE	SP	SOROCABA	COMPETRO COMERCIO...	00.003.188/0001-21
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	01.492.748/0003-83
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	01.492.748/0003-83
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	01.492.748/0003-83
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	08.220.930/0001-62
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	08.220.930/0001-62
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	08.220.930/0001-62
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	06.003.183/0001-85
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	06.003.183/0001-85
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	06.003.183/0001-85

	N	AC	RIO BRANCO	AUTO POSTO CIDADE...		06.321.359/0001-47	AVEN
	N	AC	RIO BRANCO	AUTO POSTO CIDADE...		06.321.359/0001-47	AVEN
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...		04.087.649/0001-42	
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...		04.087.649/0001-42	
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...		04.087.649/0001-42	
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...		14.412.076/0001-39	RU
	NE	AL	ARAPIRACA	AUTO POSTO M M GA...		08.738.994/0001-50	

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```
df_fuels = df_fuels.select("Regiao - Sigla", "Estado - Sigla", "Município", "Revenda", "Produto", "Valor")
df_fuels.show()
```

Regiao - Sigla	Estado - Sigla	Município	Revenda	Produto	Valor
	SE	SP	SOROCABA	COMPETRO COMERCIO...	GASOLINA
	SE	SP	SOROCABA	COMPETRO COMERCIO...	ETANOL
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	GASOLINA
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	GASOLINA ADITIVADA
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	ETANOL
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	GASOLINA
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	GASOLINA ADITIVADA
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	ETANOL
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	GASOLINA
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	GASOLINA ADITIVADA
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	ETANOL
	N	AC	RIO BRANCO	AUTO POSTO CIDADE...	GASOLINA
	N	AC	RIO BRANCO	AUTO POSTO CIDADE...	ETANOL
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...	GASOLINA
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...	GASOLINA ADITIVADA
	N	AC	RIO BRANCO	AUTO POSTO DISTRI...	ETANOL
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...	GASOLINA
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...	GASOLINA ADITIVADA
	N	AC	RIO BRANCO	AUTO POSTO SANTO ...	ETANOL
	NE	AL	ARAPIRACA	AUTO POSTO M M GA...	GASOLINA

only showing top 20 rows

```
df_fuels = df_fuels.withColumnRenamed("Regiao - Sigla", "Region") \
    .withColumnRenamed("Estado - Sigla", "State") \
    .withColumnRenamed("Município", "City") \
    .withColumnRenamed("Revenda", "Gas Station") \
    .withColumnRenamed("Produto", "Product") \
    .withColumnRenamed("Valor de Venda", "Sales Price") \
    .withColumnRenamed("Valor de Compra", "Purchase Price") \
    .withColumnRenamed("Bandeira", "Fuel Brand")
df_fuels.show()
```

Region	State	City	Gas Station	Product	Sales Price	Purchase Price
SE	SP	SOROCABA	COMPETRO COMERCIO...	GASOLINA	5,65	
SE	SP	SOROCABA	COMPETRO COMERCIO...	ETANOL	3,78	
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	GASOLINA	8,09	
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	GASOLINA ADITIVADA	8,19	
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	ETANOL	5,95	
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	GASOLINA	7,62	
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	GASOLINA ADITIVADA	7,65	
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	ETANOL	5,29	
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	GASOLINA	7,64	
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	GASOLINA ADITIVADA	7,69	
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	ETANOL	5,49	
N	AC	RIO BRANCO	AUTO POSTO CIDADE...	GASOLINA	7,60	
N	AC	RIO BRANCO	AUTO POSTO CIDADE...	ETANOL	5,29	
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	GASOLINA	7,64	
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	GASOLINA ADITIVADA	7,64	
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	ETANOL	5,49	
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	GASOLINA	7,65	
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	GASOLINA ADITIVADA	7,73	
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	ETANOL	5,32	
NE	AL	ARAPIRACA	AUTO POSTO M M GA...	GASOLINA	6,26	

only showing top 20 rows

```
df_fuels = df_fuels.withColumn(
    "Product",
    when(df_fuels["Product"] == "ETANOL", "Ethanol")
    .when(df_fuels["Product"] == "GASOLINA", "Gasoline")
    .when(df_fuels["Product"] == "GASOLINA ADITIVADA", "Premium Gasoline")
)
```

```

        .when(df_fuels["Product"] == "DIESEL", "Diesel")
        .when(df_fuels["Product"] == "DIESEL S10", "Diesel S10")
        .when(df_fuels["Product"] == "GLP", "LPG")
        .when(df_fuels["Product"] == "GNV", "CNG")
        .otherwise(df_fuels["Product"])
    )
df_fuels.show()

```

Region	State	City	Gas Station	Product	Sales Price	Purchase Price
SE	SP	SOROCABA	COMPETRO COMERCIO...	Gasoline	5,65	nu
SE	SP	SOROCABA	COMPETRO COMERCIO...	Ethanol	3,78	nu
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Gasoline	8,09	nu
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Premium Gasoline	8,19	nu
N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Ethanol	5,95	nu
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Gasoline	7,62	nu
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Premium Gasoline	7,65	nu
N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Ethanol	5,29	nu
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Gasoline	7,64	nu
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Premium Gasoline	7,69	nu
N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Ethanol	5,49	nu
N	AC	RIO BRANCO	AUTO POSTO CIDADE...	Gasoline	7,60	nu
N	AC	RIO BRANCO	AUTO POSTO CIDADE...	Ethanol	5,29	nu
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	Gasoline	7,64	nu
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	Premium Gasoline	7,64	nu
N	AC	RIO BRANCO	AUTO POSTO DISTRI...	Ethanol	5,49	nu
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	Gasoline	7,65	nu
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	Premium Gasoline	7,73	nu
N	AC	RIO BRANCO	AUTO POSTO SANTO ...	Ethanol	5,32	nu
NE	AL	ARAPIRACA	AUTO POSTO M M GA...	Gasoline	6,26	nu

only showing top 20 rows

```

df_fuels = df_fuels.withColumn("Sales Price", regexp_replace("Sales Price", ",", "."))
df_fuels.show(10)

```

Region	State	City	Gas Station	Product	Sales Price	Purchase Price
SE	SP	SOROCABA	COMPETRO COMERCIO...	Gasoline	5.65	nu

	SE	SP	SOROCABA	COMPETRO COMERCIO...	Ethanol	3.78	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Gasoline	8.09	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Premium Gasoline	8.19	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Ethanol	5.95	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Gasoline	7.62	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Premium Gasoline	7.65	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Ethanol	5.29	nu.
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Gasoline	7.64	nu.
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Premium Gasoline	7.69	nu.

only showing top 10 rows

```
df_fuels = df_fuels.withColumn("Sales Price", col("Sales Price").cast(FloatType()))
df_fuels.show(10)
```

	Region	State	City	Gas Station	Product	Sales Price	Purchase Price
	SE	SP	SOROCABA	COMPETRO COMERCIO...	Gasoline	5.65	nu.
	SE	SP	SOROCABA	COMPETRO COMERCIO...	Ethanol	3.78	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Gasoline	8.09	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Premium Gasoline	8.19	nu.
	N	AC	CRUZEIRO DO SUL	AMAZONIA COMERCIO...	Ethanol	5.95	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Gasoline	7.62	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Premium Gasoline	7.65	nu.
	N	AC	RIO BRANCO	CODEPE COMBUSTIVE...	Ethanol	5.29	nu.
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Gasoline	7.64	nu.
	N	AC	RIO BRANCO	AUTO POSTO CASTAN...	Premium Gasoline	7.69	nu.

only showing top 10 rows

```
df_fuels.filter(col("Sales Price").isNull()).show()
```

	Region	State	City	Gas Station	Product	Sales Price	Purchase Price	Fuel Brand
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## National Average Sales Price

```
df_fuels.groupBy("Product") \
  .agg(round(avg("Sales Price"), 2).alias("Average Sales Price")) \
  .orderBy('Average Sales Price', ascending=False) \
  .show()
```

Product	Average Sales Price
LPG	108.58
Premium Gasoline	6.52
Diesel S10	6.4
Diesel	6.35
Gasoline	6.33
CNG	4.82
Ethanol	4.52

## Average Sales Price by Region

### Ethanol

```
df_fuels.filter(df_fuels["Product"] == "Ethanol") \
  .groupBy("Region") \
  .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
  .orderBy("Average Ethanol Sales Price", ascending=False) \
  .show()
```

Region	Average Ethanol Sales Price
N	5.11
NE	4.91
S	4.7
SE	4.3
CO	4.28



## Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Gasoline") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
    .orderBy("Average Gasoline Sales Price", ascending=False) \
    .show()
```

Region	Average Gasoline Sales Price
N	6.79
S	6.46
NE	6.38
CO	6.31
SE	6.19

## Premium Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Premium Gasoline") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
    .orderBy("Average Premium Gasoline Sales Price", ascending=False) \
    .show()
```

Region	Average Premium Gasoline Sales Price
N	6.96
S	6.59
NE	6.52
CO	6.46
SE	6.43

## Diesel

```
df_fuels.filter(df_fuels["Product"] == "Diesel") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
    .orderBy("Average Diesel Sales Price", ascending=False) \
    .show()
```

Region	Average Diesel Sales Price
N	6.78
CO	6.35
S	6.33
NE	6.31
SE	6.27

## Diesel S10

```
df_fuels.filter(df_fuels["Product"] == "Diesel S10") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
    .orderBy("Average Diesel S10 Sales Price", ascending=False) \
    .show()
```

Region	Average Diesel S10 Sales Price
N	6.76
S	6.42
CO	6.4
SE	6.38
NE	6.31

## CNG

```
df_fuels.filter(df_fuels["Product"] == "CNG") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
    .orderBy("Average CNG Sales Price", ascending=False) \
    .show()
```

Region	Average CNG Sales Price
N	5.49
S	5.01
NE	4.8
SE	4.79
CO	4.46

## LPG

```
df_fuels.filter(df_fuels["Product"] == "LPG") \
    .groupBy("Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=False) \
    .show()
```

Region	Average LPG Sales Price
N	121.77
CO	110.77
S	109.46
NE	108.49
SE	104.33

## Average Sales Price by State

### Ethanol

```
df_fuels.filter(df_fuels["Product"] == "Ethanol") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
    .orderBy("Average Ethanol Sales Price", ascending=False) \
    .show()
```

State	Average Ethanol Sales Price
-------	-----------------------------

AC	5.57
AM	5.48
AP	5.47
RO	5.25
CE	5.25
RR	5.16
MA	5.04
AL	4.98
RN	4.96
RS	4.94
PA	4.93
SE	4.86
BA	4.85
PE	4.84
SC	4.82
TO	4.78
PI	4.74
DF	4.71
RJ	4.69
PB	4.62

only showing top 20 rows

## Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Gasoline") \
  .groupBy("State") \
  .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
  .orderBy("Average Gasoline Sales Price", ascending=False) \
  .show()
```

State	Average Gasoline Sales Price
AC	7.82
AM	7.45
RO	7.02
RR	7.0
SE	6.59
TO	6.57
DF	6.53

	PR	6.53
	SC	6.52
	RN	6.52
	BA	6.47
	PA	6.46
	CE	6.45
	AL	6.43
	RS	6.37
	PE	6.37
	ES	6.35
	MS	6.32
	MA	6.27
	GO	6.25

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### Premium Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Premium Gasoline") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
    .orderBy("Average Premium Gasoline Sales Price", ascending=False) \
    .show()
```

	State	Average Premium Gasoline Sales Price
	AC	7.87
	AM	7.46
	RO	7.13
	RR	7.1
	PA	6.68
	SE	6.68
	TO	6.67
	SC	6.64
	PR	6.63
	AL	6.58
	CE	6.58
	BA	6.56
	RN	6.56
	DF	6.56
	RS	6.55

	ES	6.53
	PE	6.53
	MS	6.49
	MT	6.48
	SP	6.44

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only showing top 20 rows

## Diesel

```
df_fuels.filter(df_fuels["Product"] == "Diesel") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
    .orderBy("Average Diesel Sales Price", ascending=False) \
    .show()
```

	State	Average Diesel Sales Price
	AC	7.94
	RR	6.95
	AM	6.91
	RO	6.84
	PA	6.78
	AL	6.7
	AP	6.67
	CE	6.61
	MS	6.59
	RN	6.5
	DF	6.45
	MT	6.38
	RS	6.37
	PE	6.37
	SC	6.36
	RJ	6.35
	MA	6.33
	SP	6.28
	PI	6.27
	ES	6.27

only showing top 20 rows

## Diesel S10

```
df_fuels.filter(df_fuels["Product"] == "Disel S10") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
    .orderBy("Average Diesel S10 Sales Price", ascending=False) \
    .show()
```

```
+-----+-----+
|State|Average Diesel S10 Sales Price|
+-----+-----+
+-----+-----+
```

## CNG

```
df_fuels.filter(df_fuels["Product"] == "CNG") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
    .orderBy("Average CNG Sales Price", ascending=False) \
    .show()
```

```
+-----+-----+
|State|Average CNG Sales Price|
+-----+-----+
|  AM|                5.49|
|  SC|                5.23|
|  CE|                5.18|
|  PB|                5.14|
|  MG|                4.99|
|  PR|                4.96|
|  AL|                4.9|
|  SE|                4.9|
|  RN|                4.9|
|  RJ|                4.83|
|  RS|                4.78|
|  MS|                4.75|
|  SP|                4.73|
|  PE|                4.64|
|  BA|                4.41|
|  ES|                4.37|
|  MT|                4.05|
+-----+-----+
```

## LPG

```
df_fuels.filter(df_fuels["Product"] == "LPG") \
    .groupBy("State") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=False) \
    .show()
```

State	Average LPG Sales Price
RR	137.11
AM	127.85
TO	125.62
RO	123.64
AC	122.55
BA	119.18
MT	118.95
SC	118.39
AP	117.73
MA	114.82
MS	112.63
PA	111.86
RS	111.3
CE	107.84
GO	107.81
RN	106.99
SP	106.39
PI	105.73
MG	104.75
PB	104.12

only showing top 20 rows

## Average Sales Price by City

### Ethanol

```
df_fuels.filter(df_fuels["Product"] == "Ethanol") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
```



```
.orderBy("Average Ethanol Sales Price", ascending=False) \
.show()
```

City	Average Ethanol Sales Price
CRUZEIRO DO SUL	5.98
VILHENA	5.74
SANTANA DO LIVRAM...	5.68
ALTAMIRA	5.61
ITAPIOCA	5.6
CODO	5.57
MANAUS	5.49
CRATEUS	5.47
MACAPA	5.47
PORTO VELHO	5.46
MANACAPURU	5.42
RIO BRANCO	5.4
ERECHIM	5.4
CONCORDIA	5.39
SALGUEIRO	5.39
SOBRAL	5.39
BAGE	5.39
PETROLINA	5.36
CAUCAIA	5.36
ICO	5.35

only showing top 20 rows

## Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Gasoline") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
    .orderBy("Average Gasoline Sales Price", ascending=False) \
    .show()
```

City	Average Gasoline Sales Price
PARINTINS	8.39

CRUZEIRO DO SUL	8.03
RIO BRANCO	7.64
BARUERI	7.35
BAGE	7.3
MANAUS	7.29
MANACAPURU	7.25
PIMENTA BUENO	7.18
DELMIRO GOUVEIA	7.17
CORUMBA	7.17
SANTAREM	7.09
JI-PARANA	7.08
ALTAMIRA	7.06
VILHENA	7.04
ALENQUER	7.04
PORTO SEGURO	7.03
BOA VISTA	7.0
PORTO VELHO	7.0
BALSAS	6.98
ARIQUEMES	6.97

+-----+

only showing top 20 rows

## Premium Gasoline

```
df_fuels.filter(df_fuels["Product"] == "Premium Gasoline") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
    .orderBy("Average Premium Gasoline Sales Price", ascending=False) \
    .show()
```

City	Average Premium Gasoline Sales Price
PARINTINS	8.41
CRUZEIRO DO SUL	8.16
BARUERI	7.75
RIO BRANCO	7.68
BAGE	7.47
PIMENTA BUENO	7.36
MANAUS	7.31
DELMIRO GOUVEIA	7.28
MANACAPURU	7.26

	CORUMBA	7.25
	JI-PARANA	7.23
	ALTAMIRA	7.22
	SANTAREM	7.17
	PORTO SEGURO	7.16
	PORTO VELHO	7.15
	CURITIBA	7.14
	ASSIS	7.14
	COLOMBO	7.12
	CACHOEIRO DE ITAP...	7.11
	BOA VISTA	7.1
+-----+		

only showing top 20 rows

## Diesel

```
df_fuels.filter(df_fuels["Product"] == "Diesel") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
    .orderBy("Average Diesel Sales Price", ascending=False) \
    .show()
```

+-----+	
	City Average Diesel Sales Price
+-----+	
	PARINTINS 8.22
	CRUZEIRO DO SUL 8.12
	RIO BRANCO 7.77
	CORUMBA 7.71
	ALENQUER 7.33
	ITAPIPOCA 7.09
	SANTAREM 7.08
	BAGE 7.04
	CAICO 7.01
	PORTO SEGURO 7.01
	DELMIRO GOUVEIA 7.0
	BOA VISTA 6.95
	MACAE 6.93
	CUBATAO 6.93
	JI-PARANA 6.92
	ALTAMIRA 6.91
	TABOAO DA SERRA 6.9

ANGRA DOS REIS	6.9
PORTO VELHO	6.89
BARRA DO PIRAI	6.87

+-----+

only showing top 20 rows

## Diesel S10

```
df_fuels.filter(df_fuels["Product"] == "Diesel S10") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
    .orderBy("Average Diesel S10 Sales Price", ascending=False) \
    .show()
```

City	Average Diesel S10 Sales Price
PARINTINS	8.39
CRUZEIRO DO SUL	8.13
RIO BRANCO	7.84
CORUMBA	7.77
ALENQUER	7.31
BAGE	7.14
PORTO SEGURO	7.13
SANTAREM	7.09
CAICO	7.05
CUBATAO	7.05
ANGRA DOS REIS	7.04
DELMIRO GOUVEIA	7.03
ITAPIPOCA	7.01
ITAPETININGA	6.99
ALTAMIRA	6.99
JI-PARANA	6.97
MACAE	6.97
SORRISO	6.96
BOA VISTA	6.96
CODO	6.9

+-----+

only showing top 20 rows

## CNG

```
df_fuels.filter(df_fuels["Product"] == "CNG") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
    .orderBy("Average CNG Sales Price", ascending=False) \
    .show()
```

City	Average CNG Sales Price
ITAPERUNA	6.49
ARARUAMA	6.43
SAQUAREMA	6.38
CANINDE	6.09
ANGRA DOS REIS	5.99
PATOS	5.98
SANTO ANTONIO DE ...	5.98
TRES RIOS	5.94
MARICA	5.79
LAJEADO	5.65
VITORIA DA CONQUISTA	5.59
LAGUNA	5.51
MANAUS	5.49
CAMPOS DOS GOYTAC...	5.39
ARARAS	5.39
VOLTA REDONDA	5.38
CABO FRIO	5.37
MACAE	5.36
CAMPINA GRANDE	5.31
TEOFILO OTONI	5.29

only showing top 20 rows

## LPG

```
df_fuels.filter(df_fuels["Product"] == "LPG") \
    .groupBy("City") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=False) \
    .show()
```

City	Average LPG Sales Price
------	-------------------------

City	Average LPG Sales Price
PARAGOMINAS	139.29
SINOP	139.07
ILHEUS	138.89
MACAE	138.14
BOA VISTA	137.11
JACOBINA	136.4
PARINTINS	135.96
CACOAL	135.04
BRUSQUE	133.63
SERRINHA	133.46
BARREIRAS	132.86
PIMENTA BUENO	132.0
ERECHIM	131.05
MANACAPURU	130.37
TATUI	130.0
RIO VERDE	129.87
SORRISO	129.43
PARAISO DO TOCANTINS	129.0
SALVADOR	128.8
ARIQUEMES	128.11

only showing top 20 rows

## Average Sales Price by Brand

### Ethanol

```
df_fuels.filter(col("Product") == "Ethanol") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
    .orderBy("Average Ethanol Sales Price", ascending=True) \
    .show(10)
```

Fuel Brand	Average Ethanol Sales Price
ROYAL FIC	3.79
D`MAIS	4.03
SIM DISTRIBUIDOR	4.04

	WATT	4.16
	IDAZA	4.25
	CIAPETRO	4.27
	TAURUS	4.31
	TOTALENERGIES	4.37
	PETROSERRA	4.4
	BRANCA	4.41
+-----+-----+		

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Ethanol") \
  .groupBy("Fuel Brand") \
  .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
  .orderBy("Average Ethanol Sales Price", ascending=False) \
  .show(10)
```

+-----+-----+	
	Fuel Brand Average Ethanol Sales Price
+-----+-----+	
	RZD DISTRIBUIDORA 5.49
	ATEM' S 5.47
	EQUADOR 5.35
	FAN 5.22
	SP 5.21
	SABBÁ 5.02
	RAIZEN MIME 4.99
	SANTA LUCIA 4.99
	DISLUB 4.96
	ON PETRO 4.93
+-----+-----+	

only showing top 10 rows

## Gasoline

```
df_fuels.filter(col("Product") == "Gasoline") \
  .groupBy("Fuel Brand") \
  .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
  .orderBy("Average Gasoline Sales Price", ascending=True) \
  .show(10)
```

+-----+-----+	
---------------	--

Fuel Brand	Average Gasoline Sales Price
PETROSERRA	5.83
ROYAL FIC	5.85
D`MAIS	5.94
PETROBRASIL	5.99
SIM DISTRIBUIDOR	6.04
TEMAPE	6.1
IDAZA	6.13
LARCO	6.2
RODOIL	6.2
BRANCA	6.21

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Gasoline") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
    .orderBy("Average Gasoline Sales Price", ascending=False) \
    .show(10)
```

Fuel Brand	Average Gasoline Sales Price
RZD DISTRIBUIDORA	7.29
ATEM' S	7.27
EQUADOR	7.25
ON PETRO	6.93
PELIKANO	6.84
RAIZEN MIME	6.66
POTENCIAL	6.63
PETROX DISTRIBUIDORA	6.61
RIO BRANCO	6.59
DIBRAPE	6.58

only showing top 10 rows

## Premium Gasoline

```
df_fuels.filter(col("Product") == "Premium Gasoline") \
    .groupBy("Fuel Brand") \
```



```
.agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
.orderBy("Average Premium Gasoline Sales Price", ascending=True) \
.show(10)
```

Fuel Brand	Average Premium Gasoline Sales Price
ROYAL FIC	5.85
D`MAIS	6.03
TEMAPE	6.12
IDAZA	6.18
PETROBRASIL	6.19
SETTA DISTRIBUIDORA	6.23
STANG	6.25
CIAPETRO	6.3
PETROBAHIA	6.32
BRANCA	6.33

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Premium Gasoline") \
.groupBy("Fuel Brand") \
.agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
.orderBy("Average Premium Gasoline Sales Price", ascending=False) \
.show(10)
```

Fuel Brand	Average Premium Gasoline Sales Price
ATEM' S	7.31
RZD DISTRIBUIDORA	7.29
EQUADOR	7.25
ON PETRO	7.03
RAIZEN MIME	6.84
PELIKANO	6.84
SABBÁ	6.79
DIBRAPE	6.68
PETROX DISTRIBUIDORA	6.62
VIBRA	6.61

only showing top 10 rows

## Diesel

```
df_fuels.filter(col("Product") == "Diesel") \
  .groupBy("Fuel Brand") \
  .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
  .orderBy("Average Diesel Sales Price", ascending=True) \
  .show(10)
```

Fuel Brand	Average Diesel Sales Price
PETROSERRA	5.89
STANG	5.93
SIM DISTRIBUIDOR	5.94
PETROBRASIL	6.07
PELIKANO	6.07
FEDERAL ENERGIA	6.07
DIBRAPE	6.09
LARCO	6.12
RIO BRANCO	6.14
D`MAIS	6.19

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Diesel") \
  .groupBy("Fuel Brand") \
  .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
  .orderBy("Average Diesel Sales Price", ascending=False) \
  .show(10)
```

Fuel Brand	Average Diesel Sales Price
EQUADOR	7.19
ATEM' S	6.97
RZD DISTRIBUIDORA	6.69
WALENDOWSKY	6.68
SABBÁ	6.67
MASUT DISTRIBUIDORA	6.59
PETROX DISTRIBUIDORA	6.59
RAIZEN MIME	6.51

SANTA LUCIA	6.5
ROYAL FIC	6.49

only showing top 10 rows

## Diesel S10

```
df_fuels.filter(col("Product") == "Diesel S10") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
    .orderBy("Average Diesel S10 Sales Price", ascending=True) \
    .show(10)
```

Fuel Brand	Average Diesel S10 Sales Price
TDC DISTRIBUIDORA	5.96
PETROSERRA	5.99
SIM DISTRIBUIDOR	6.04
TEMAPE	6.07
POTENCIAL	6.08
FEDERAL ENERGIA	6.09
FAN	6.14
STANG	6.14
LARCO	6.17
PETROBRASIL	6.17

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Diesel S10") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
    .orderBy("Average Diesel S10 Sales Price", ascending=False) \
    .show(10)
```

Fuel Brand	Average Diesel S10 Sales Price
EQUADOR	7.13
ATEM' S	7.01
WALENDOWSKY	6.76

MASUT DISTRIBUIDORA	6.69
RZD DISTRIBUIDORA	6.69
ROYAL FIC	6.62
ESTRADA	6.59
SANTA LUCIA	6.59
RAIZEN MIME	6.55
TAURUS	6.52

only showing top 10 rows

## CNG

```
df_fuels.filter(col("Product") == "CNG") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
    .orderBy("Average CNG Sales Price", ascending=True) \
    .show(10)
```

Fuel Brand	Average CNG Sales Price
PETROBRASIL	4.27
TOTALENERGIES	4.29
LARCO	4.34
ATLÂNTICA	4.59
RAIZEN	4.71
VIBRA	4.77
IPIRANGA	4.86
ALE	4.89
BRANCA	4.9
PETROX DISTRIBUIDORA	4.9

only showing top 10 rows

```
df_fuels.filter(col("Product") == "CNG") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
    .orderBy("Average CNG Sales Price", ascending=False) \
    .show(10)
```

Fuel Brand	Average CNG Sales Price
------------	-------------------------

Fuel Brand	Average CNG Sales Price
SABBÁ	5.49
ATEM' S	5.49
CHARRUA	5.31
RAIZEN MIME	5.23
DISLUB	5.0
BRANCA	4.9
PETROX DISTRIBUIDORA	4.9
ALE	4.89
IPIRANGA	4.86
VIBRA	4.77

only showing top 10 rows

## LPG

```
df_fuels.filter(col("Product") == "LPG") \
    .groupBy("Fuel Brand") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=True) \
    .show(10)
```

Fuel Brand	Average LPG Sales Price
NGC DISTRIBUIDORA	94.0
SERVGÁS	101.0
MINASGAS	102.28
BRANCA	104.54
CONSIGAZ	105.12
NACIONAL GÁS BUTANO	107.28
SUPERGASBRAS ENERGIA	108.48
BAHIANA	109.08
COPA ENERGIA	109.34
ULTRAGAZ	109.49

only showing top 10 rows

```
df_fuels.filter(col("Product") == "LPG") \
    .groupBy("Fuel Brand") \
```

```
.agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
.orderBy("Average LPG Sales Price", ascending=False) \
.show(10)
```

Fuel Brand	Average LPG Sales Price
AMAZONGÁS	124.81
FOGAS	123.3
LIQUIGÁS	110.47
ULTRAGAZ	109.49
COPA ENERGIA	109.34
BAHIANA	109.08
SUPERGASBRAS ENERGIA	108.48
NACIONAL GÁS BUTANO	107.28
CONSIGAZ	105.12
BRANCA	104.54

only showing top 10 rows

## Average Sales Price by Gas Station

### Ethanol

```
df_fuels.filter(col("Product") == "Ethanol") \
.groupBy("Gas Station", "City", "State", "Region") \
.agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
.orderBy("Average Ethanol Sales Price", ascending=True) \
.show(10)
```

Gas Station	City	State	Region	Average Ethanol Sales Price
AUTO POSTO TABARE...	SAO PAULO	SP	SE	3.44
AUTO POSTO JARDIM...	SAO PAULO	SP	SE	3.44
AUTO POSTO WANEL ...	SOROCABA	SP	SE	3.46
AUTO POSTO VEMAX ...	GUARULHOS	SP	SE	3.46
FORTSUL POSTO DE ...	SAO PAULO	SP	SE	3.46
AUTO POSTO R5 LTD...	SAO CAETANO DO SUL	SP	SE	3.46
CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	3.47

CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	3.47
AUTO POSTO TUIM L...	SAO PAULO	SP	SE	3.47
AUTO POSTO PRINCI...	SANTO ANDRE	SP	SE	3.48

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Ethanol") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Ethanol Sales Price")) \
    .orderBy("Average Ethanol Sales Price", ascending=False) \
    .show(10)
```

	Gas Station	City	State	Region	Average Ethanol Sales Price
	COMERCIAL ALTO SA...	SERRA TALHADA	PE	NE	6.49
	SADI DALLACORTE E...	CHAPECO	SC	S	6.36
	C M DERIVADOS DE ...	FORTALEZA	CE	NE	6.09
	S & G PETROLEO LTDA	CRUZEIRO DO SUL	AC	N	6.08
	PG COMERCIO E TRA...	VACARIA	RS	S	6.05
	SKY AUTO POSTO LTDA	SAO PAULO	SP	SE	5.99
	AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	5.99
	MASTER POSTO COME...	SOBRAL	CE	NE	5.99
	AUTO POSTO R&R AL...	BARUERI	SP	SE	5.99
	AUTO POSTO CATARI...	VILHENA	RO	N	5.99

only showing top 10 rows

## Gasoline

```
df_fuels.filter(col("Product") == "Gasoline") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
    .orderBy("Average Gasoline Sales Price", ascending=True) \
    .show(10)
```

	Gas Station	City	State	Region	Average Gasoline Sales Price
	AUTO POSTO R5 LTD...	SAO CAETANO DO SUL	SP	SE	5.26
	CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	5.29

AUTO POSTO TABARE...	SAO PAULO	SP	SE	5.29
AUTO POSTO JARDIM...	SAO PAULO	SP	SE	5.29
CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	5.29
FORTSUL POSTO DE ...	SAO PAULO	SP	SE	5.32
AUTO POSTO VEMAX ...	GUARULHOS	SP	SE	5.32
AUTO POSTO TUIM L...	SAO PAULO	SP	SE	5.32
AUTO POSTO SUPER ...	ITAQUAQUECETUBA	SP	SE	5.34
AUTO POSTO PRINCI...	SANTO ANDRE	SP	SE	5.34

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Gasoline") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Gasoline Sales Price")) \
    .orderBy("Average Gasoline Sales Price", ascending=False) \
    .show(10)
```

Gas Station	City	State	Region	Average Gasoline Sales Price
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.79
POSTO VILLA LOBOS...	SAO PAULO	SP	SE	8.79
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.79
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.79
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.79
CENTRO AUTOMOTIVO...	TATUI	SP	SE	8.79
POSTO DE SERVICOS...	BARUERI	SP	SE	8.79
PRL PETROLEO II L...	GUARUJA	SP	SE	8.79
AUTO POSTO R&R AL...	BARUERI	SP	SE	8.79
CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	8.79

only showing top 10 rows

## Premium Gasoline

```
df_fuels.filter(col("Product") == "Premium Gasoline") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
    .orderBy("Average Premium Gasoline Sales Price", ascending=True) \
    .show(10)
```



Gas Station	City	State	Region	Average Premium Gasoline Sales Price
AUTO POSTO FRANCI...	SUZANO	SP	SE	5.49
AUTO POSTO JÓIA D...	DIADEMA	SP	SE	5.49
AUTO POSTO LINCÉ ...	TAUBATE	SP	SE	5.54
GOLF AUTO POSTO LTDA	SAO PAULO	SP	SE	5.59
F L COMERCIO DE C...	SAO LUIS	MA	NE	5.59
POSTOS WK ANAPOLI...	ANAPOLIS	GO	CO	5.59
LIRIOS SERVICOS A...	SAO CARLOS	SP	SE	5.59
POSTO ANEL VIARIO...	APARECIDA DE GOIANIA	GO	CO	5.59
AUTO POSTO DO TUC...	LINS	SP	SE	5.6
POSTO JB MOURA LTDA	GOIATUBA	GO	CO	5.62

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Premium Gasoline") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Premium Gasoline Sales Price")) \
    .orderBy("Average Premium Gasoline Sales Price", ascending=False) \
    .show(10)
```

Gas Station	City	State	Region	Average Premium Gasoline Sales Price
AUTO POSTO MARANE...	SAO PAULO	SP	SE	8.99
POSTO VILLA LOBOS...	SAO PAULO	SP	SE	8.99
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.99
POSTO DE SERVICOS...	BARUERI	SP	SE	8.99
CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	8.99
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.99
PLUS CENTER AUTO ...	BARUERI	SP	SE	8.94
SENA PARK AUTO PO...	SAO PAULO	SP	SE	8.89
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.84
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.79

only showing top 10 rows

## Diesel

```
df_fuels.filter(col("Product") == "Diesel") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
    .orderBy("Average Diesel Sales Price", ascending=True) \
    .show(10)
```

Gas Station	City	State	Region	Average Diesel Sales Price
P LIMA COMBUSTIVE...	SAO LUIS	MA	NE	5.53
TREVO DERIVADOS D...	FEIRA DE SANTANA	BA	NE	5.56
F L COMERCIO DE C...	SAO LUIS	MA	NE	5.58
POSTO NITEROI 400...	NITEROI	RJ	SE	5.59
POSTO PAGUE MENOS...	IPIRA	BA	NE	5.63
J. R. PINTO DA COSTA	SAO LUIS	MA	NE	5.65
CENTRO AUTOMOTIVO...	SAO PAULO	SP	SE	5.67
AM ANEL VIARIO CO...	APARECIDA DE GOIANIA	GO	CO	5.67
POSTO ICCAR LTDA	BAURU	SP	SE	5.68
POSTO DE SERVICOS...	SAO LUIS	MA	NE	5.68

only showing top 10 rows

```
df_fuels.filter(col("Product") == "Diesel") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average Diesel Sales Price")) \
    .orderBy("Average Diesel Sales Price", ascending=False) \
    .show(10)
```

Gas Station	City	State	Region	Average Diesel Sales Price
L DA COSTA VASCON...	PARINTINS	AM	N	8.33
F.J. COMERCIO DE ...	PARINTINS	AM	N	8.33
REDE COMERCIO DE ...	CRUZEIRO DO SUL	AC	N	8.19
LUBRAS DISTRIBUID...	CRUZEIRO DO SUL	AC	N	8.17
AMAZONIA COMERCIO...	CRUZEIRO DO SUL	AC	N	8.17
S & G PETROLEO LTDA	CRUZEIRO DO SUL	AC	N	8.17
CARDINAL E OLIVEI...	CRUZEIRO DO SUL	AC	N	8.17
J. ARAUJO DE OLIV...	CRUZEIRO DO SUL	AC	N	8.17
RODOCAMP AUTO SER...	CAMPINAS	SP	SE	8.14
SAO MARTINHO AUTO...	CAMPINAS	SP	SE	8.09

```
+-----+-----+-----+-----+
only showing top 10 rows
```

## Diesel S10

```
df_fuels.filter(col("Product") == "Diesel S10") \
  .groupBy("Gas Station", "City", "State", "Region") \
  .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
  .orderBy("Average Diesel S10 Sales Price", ascending=True) \
  .show(10)
```

```
+-----+-----+-----+-----+
|      Gas Station|      City|State|Region|Average Diesel S10 Sales Price|
+-----+-----+-----+-----+
|P LIMA COMBUSTIVE...|    SAO LUIS|MA|NE|5.55|
|F L COMERCIO DE C...|    SAO LUIS|MA|NE|5.59|
|AUTO POSTO ITAMAR...|    LEME|SP|SE|5.64|
|POSTO DE SERVICOS...|  PIRASSUNUNGA|SP|SE|5.64|
|AUTO POSTO REDE C...|    LAJEDO|PE|NE|5.66|
|AUTO POSTO EUROPA...|TABOAO DA SERRA|SP|SE|5.67|
|CENTRO AUTOMOTIVO...|    SAO PAULO|SP|SE|5.67|
|COMERCIO DE COMBU...|    SALGUEIRO|PE|NE|5.69|
|  POSTO BRASIL LTDA|    SALGUEIRO|PE|NE|5.69|
|AUTO POSTO PAULIS...|    SAO CARLOS|SP|SE|5.69|
+-----+-----+-----+-----+
```

```
only showing top 10 rows
```

```
df_fuels.filter(col("Product") == "Diesel S10") \
  .groupBy("Gas Station", "City", "State", "Region") \
  .agg(round(avg("Sales Price"), 2).alias("Average Diesel S10 Sales Price")) \
  .orderBy("Average Diesel S10 Sales Price", ascending=False) \
  .show(10)
```

```
+-----+-----+-----+-----+
|      Gas Station|      City|State|Region|Average Diesel S10 Sales Price|
+-----+-----+-----+-----+
|AUTO POSTO DUQUE ...|SAO PAULO|SP|SE|8.99|
|SKY AUTO POSTO LTDA|SAO PAULO|SP|SE|8.99|
|PEDRO BRANCO FERR...|OURINHOS|SP|SE|8.99|
|AUTO POSTO DUQUE ...|SAO PAULO|SP|SE|8.99|
|AUTO POSTO MIRANT...|OURINHOS|SP|SE|8.99|
```

POSTO ISOLA DERIV...	SAO PAULO	SP	SE	8.49
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	8.49
M P MONTEIRO - ME	PARINTINS	AM	N	8.39
NATAL M DE OLIVEI...	PARINTINS	AM	N	8.39
POSTO DA PONTE CO...	PARINTINS	AM	N	8.39

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only showing top 10 rows

## CNG

```
df_fuels.filter(col("Product") == "CNG") \
  .groupBy("Gas Station", "City", "State", "Region") \
  .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
  .orderBy("Average CNG Sales Price", ascending=True) \
  .show(10)
```

	Gas Station	City	State	Region	Average CNG Sales Price
POSTO DE COMBUSTI...	SAO MATEUS	ES	SE	3.99	
PHENIX - COMERCIO...	SAO PAULO	SP	SE	3.99	
AUTO POSTO DO TRA...	RIO DE JANEIRO	RJ	SE	3.99	
AUTO POSTO VANCOU...	NITEROI	RJ	SE	3.99	
AUTO POSTO DUQUE ...	SAO PAULO	SP	SE	3.99	
EUROPOSTO COMERCI...	SALVADOR	BA	NE	3.99	
POSTO DE SERVICOS...	SALVADOR	BA	NE	3.99	
DIAS BLANCO COMER...	CUIABA	MT	CO	4.05	
AUTO POSTO SANTOS...	VARZEA GRANDE	MT	CO	4.05	
POSTO KALILANDIA ...	SALVADOR	BA	NE	4.07	

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only showing top 10 rows

```
df_fuels.filter(col("Product") == "CNG") \
  .groupBy("Gas Station", "City", "State", "Region") \
  .agg(round(avg("Sales Price"), 2).alias("Average CNG Sales Price")) \
  .orderBy("Average CNG Sales Price", ascending=False) \
  .show(10)
```

	Gas Station	City	State	Region	Average CNG Sales Price
--	-------------	------	-------	--------	-------------------------

POSTO DE GASOLINA...	ITAPERUNA	RJ	SE	6.49
AUTO POSTO PISCA ...	ARARUAMA	RJ	SE	6.48
AUTO POSTO TREVO ...	SAQUAREMA	RJ	SE	6.47
AUTO POSTO MONTEI...	ARARUAMA	RJ	SE	6.39
CENTRO AUTOMOTIVO...	SAQUAREMA	RJ	SE	6.39
VERTICE DE SAQUAR...	SAQUAREMA	RJ	SE	6.39
POSTO SIM LTDA	CANINDE	CE	NE	6.09
AUTO LUBRIFICADOR...	TRES RIOS	RJ	SE	5.99
POSTO DUAS COLUNA...	TRES RIOS	RJ	SE	5.99
VALE DO CAFE AUTO...	ANGRA DOS REIS	RJ	SE	5.99

only showing top 10 rows

## LPG

```
df_fuels.filter(col("Product") == "LPG") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=True) \
    .show(10)
```

Gas Station	City	State	Region	Average LPG Sales Price
DISTRIBUIDORA DE ...	GUARATINGUETA	SP	SE	74.99
TEREZINHA GARCIA ...	CACAPAVA	SP	SE	74.99
SICGAS COMERCIO D...	ITAJUBA	MG	SE	76.99
ENGENHO DO GAS RE...	NITEROI	RJ	SE	78.99
AVENIDA GAS MAFRA...	MAFRA	SC	S	79.99
REVENDEDORA DE GÁ...	NOVA IGUACU	RJ	SE	79.99
ITATIAIA GAS COME...	DUQUE DE CAXIAS	RJ	SE	80.0
J E DA ROCHA COME...	CARUARU	PE	NE	80.0
DISTRIBUIDORA AUT...	ITAJUBA	MG	SE	81.0
A DA COSTA MANSO	SAO JOSE DOS CAMPOS	SP	SE	81.99

only showing top 10 rows

```
df_fuels.filter(col("Product") == "LPG") \
    .groupBy("Gas Station", "City", "State", "Region") \
    .agg(round(avg("Sales Price"), 2).alias("Average LPG Sales Price")) \
    .orderBy("Average LPG Sales Price", ascending=False) \
    .show(10)
```

Gas Station	City	State	Region	Average LPG Sales Price
ELIANA FERNANDES ...	BOA VISTA	RR	N	155.0
GMS DISTRIBUIDORA...	ILHEUS	BA	NE	150.0
LJL REVENDEDORA D...	SALVADOR	BA	NE	149.67
JE COMERCIO VAREJ...	SALVADOR	BA	NE	149.0
LUCIVANIA PEREIRA...	MANAUS	AM	N	149.0
AM DERIVADOS DE P...	ILHEUS	BA	NE	147.5
COMERCIAL SAVOIA ...	ILHEUS	BA	NE	147.25
DISK GAS E AGUA LTDA	BOA VISTA	RR	N	146.0
MANOS COMERCIO DE...	URUGUAIANA	RS	S	146.0
NILSON MIOZZO - ME	CACADOR	SC	S	145.0

only showing top 10 rows