Fuel Prices From 2003 to 2023

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Research Question

With recent unprecedented increases in the price of fuel worldwide, it prompted the question of how have fuel prices for petrol and diesel changed in the last 20 years within the UK? Fuel prices have a wide impact on many aspects of life and are a useful indicator for the state of a country's economy.

Data Origins

Data was obtained from Government National Statistics, reported by the Department for Energy Security and Net Zero. Data was the weekly road fuel prices table which reports the cost of unleaded petrol (ULSP) and unleaded diesel from 9/06/2013 until present day.

```
raw_data <- read_excel(here('Data','Weekly_Fuel_Prices.xlsx'), #loading data
                       skip=7, #skipping first 7 lines
                       sheet='All years') #selecting sheet titled "All Years"
```

Due to formatting of the Excel workbook I skipped the first 7 lines of the sheet in order for the data to load correctly and specify the page of the workbook I wanted data to be loaded from.

Table 1: Raw Data

Date	ULSP: Pump price (p/litre)	ULSP: Diff on previous WEEK (p/litre)	ULSP: Diff on previous YEAR (p/litre)	Duty rate ULSP (p/litre)	VAT (% rate) ULSP	ULSD: Pump price (p/litre)	ULSD: Diff on previous WEEK (p/litre)	ULSD: Diff on previous YEAR (p/litre)	Duty rate ULSD (p/litre)	VAT (% rate) ULSD
2003-06-09	74.59028	NA	NA	45.82	17.5	76.77339	NA	NA	45.82	17.5
2003-06-16	74.46914	-0.121141	NA	45.82	17.5	76.68905	-0.084340	NA	45.82	17.5
2003-06-23	74.42357	0.000000	NA	45.82	17.5	76.62055	-0.068508	NA	45.82	17.5
2003-06-30	74.35242	-0.071145	NA	45.82	17.5	76.50526	-0.115286	NA	45.82	17.5

Link to National Statistics Weekly Road Fuel Prices*

Data Preparation

```
#create clean_data
clean_data <- raw_data %>%

#rename variables ULSP and ULSD to Petrol and Diesel
  rename("Petrol"="ULSP:  Pump price (p/litre)",
         "Diesel"="ULSD: Pump price (p/litre)") %>%

#select only variables date, Diesel and Petrol
  select(Date,Petrol,Diesel)
```

Then I converted the data frame to long format.

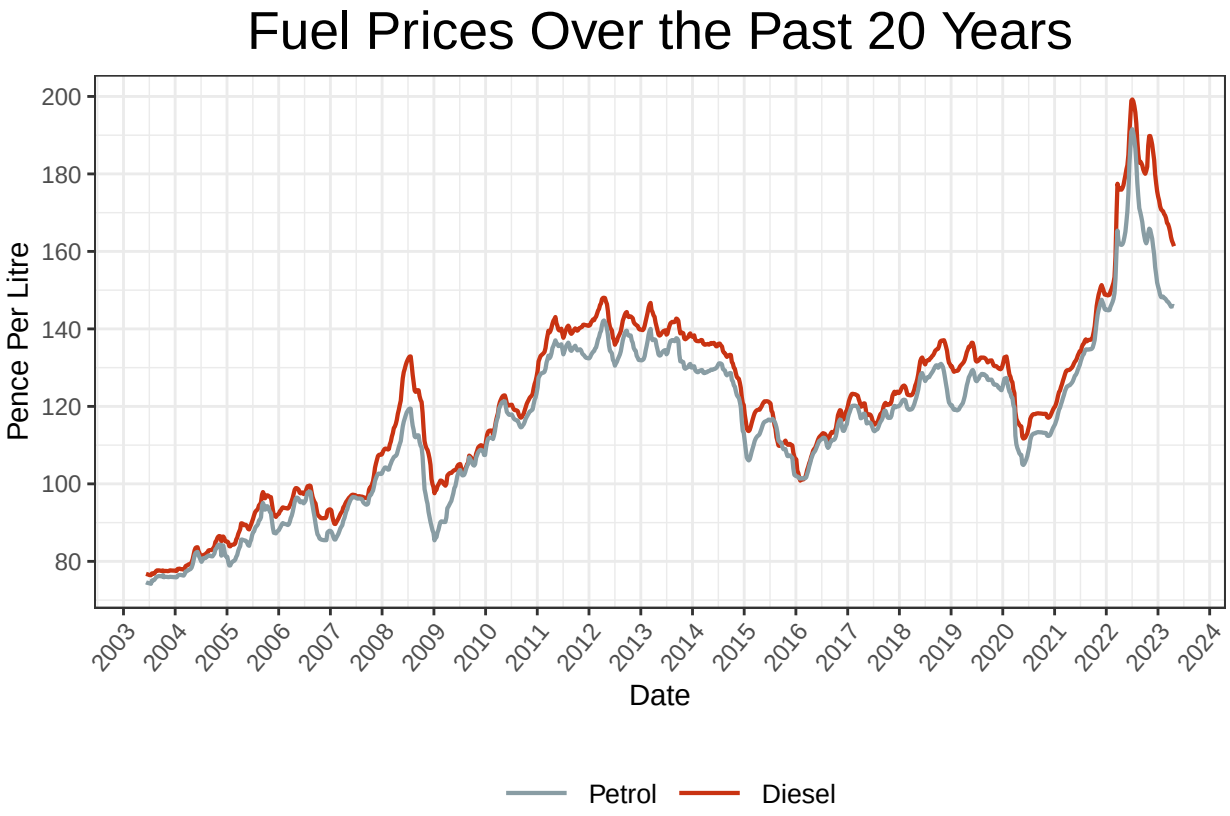
```
df <- pivot_longer(clean_data,-Date, names_to="Cat", values_to="Value")
```

Table 2: Processed Data

Date	Cat	Value
2003-06-09	Petrol	74.59028
2003-06-09	Diesel	76.77339
2003-06-16	Petrol	74.46914
2003-06-16	Diesel	76.68905
2003-06-23	Petrol	74.42357
2003-06-23	Diesel	76.62055

Visualisation

```
plot1 <- ggplot(df, aes(x=Date,y=Value,colour=Cat))+
  geom_line(linewidth=0.75)+

#titles and legends
  labs(title="Fuel Prices Over the Past 20 Years",x="Date",y="Pence Per Litre",color=NULL)+

#assign colours to Petrol and Diesel
  scale_color_manual(limits=c("Petrol","Diesel"),values=wes_palette("Royal1",n=2))+

#adjust scale breaks
  scale_x_datetime(date_breaks="1 year",date_labels="%Y")+
  scale_y_continuous(breaks=c(80,100,120,140,160,180,200))+

#changing position and size of legends and labels
  theme_bw()+
  theme(axis.text.x=element_text(angle=50,hjust=1),
        legend.position = "bottom",
        plot.title=element_text(size=20,hjust=0.5),
        legend.text=element_text(size=10),
        legend.key.size=unit(1,"cm"))

#save output
ggsave("Fuel Prices 2003-2023.pdf", plot1, path=here("Plots"))
```



Discussion

1. Fuel prices in 2022 were the highest they have been within the last 20 years
2. Price of fuel has been decreasing through 2023

Next time with more data and time, I would investigate potential relationships between fuel prices and other factors such as government party in power. I would also include a measure of inflation to create a relative baseline.