302_HW3

April 9, 2024

[12]:
```
library(tidyverse)
library(dplyr)
library(tidyverse)
library(repr)
library(infer)
library(repr)
library(scales)
library(haven)
library(lubridate)
library(readxl)
library(ggplot2)
```

[13]:
```
ur <- read_csv("canada_unemployment.csv")
tail(ur)
```

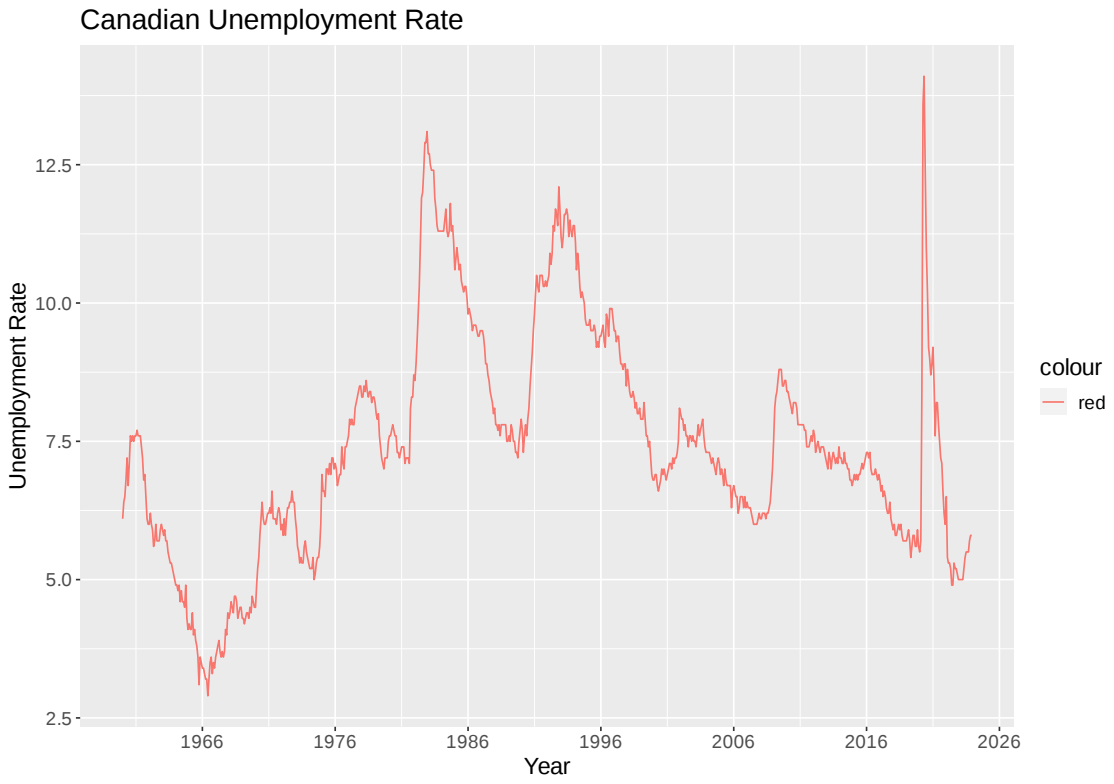
```
Rows: 768 Columns: 2
  Column specification

Delimiter: ","
dbl  (1): LRUNTTTTCAM156S
date (1): DATE

 Use `spec()` to retrieve the full column specification for this
data.
 Specify the column types or set `show_col_types = FALSE` to quiet
this message.
```

A tibble: 6 × 2

DATE <date>	LRUNTTTTCAM156S <dbl>
2023-07-01	5.5
2023-08-01	5.5
2023-09-01	5.5
2023-10-01	5.7
2023-11-01	5.8
2023-12-01	5.8

[14]:
```
options(repr.plot.width = 10)
rate_graph <- ur |>
```

```
    ggplot(aes(x = DATE, y = LRUNTTTTCAM156S, color= "red")) +
geom_line() +
labs(title = "Canadian Unemployment Rate",
x = "Year",
y = "Unemployment Rate") +
theme(text = element_text(size = 15))+  scale_x_date(date_breaks = "10 years",␣
 ↪date_labels = "%Y")
rate_graph
```



[15]:
```
chronology <- read_excel("chronology.xlsx", skip=2)|>


head(chronology)
```

```
New names:
• `Monthly Peak (Quarterly)` -> `Monthly Peak (Quarterly)…1`
• `Monthly Trough (Quarterly)` -> `Monthly Trough (Quarterly)…2`
• `` -> `…3`
• `` -> `…4`
• `Monthly Peak (Quarterly)` -> `Monthly Peak (Quarterly)…5`
• `Monthly Trough (Quarterly)` -> `Monthly Trough (Quarterly)…6`
```

```
Error in checkHT(n, d <- dim(x)): object 'chronology' not found
Traceback:

1. head(read_excel("chronology.xlsx", skip = 2), chronology)
2. head.data.frame(read_excel("chronology.xlsx", skip = 2), chronology)
3. checkHT(n, d <- dim(x))
```

[16]:
```
dates <- read_excel("dating_data.xlsx")
```

[17]:
```
head(dates)
```

A tibble: 6 × 9

DATE <chr>	Q RGDP Growth <chr>	2Q RGDP Growth <chr>	Q RGDP/Cap Growth <dbl>	2Q RGDP/Ca <dbl>
Q2 1961	2.514855620455509	NA	2.0635465	NA
Q3 1961	2.4155066514398591	4.9911087766815809	1.8605762	3.962517
Q4 1961	1.399872218337874	3.8491928763233436	0.8918513	2.769021
Q1 1962	2.6478551748939698	4.0847939822070067	2.2081425	3.119687
Q2 1962	0.72675681153545479	3.3938554542725603	0.3079458	2.522888
Q3 1962	1.3122341037139245	2.0485276659814113	0.7951683	1.105563

[ ]:
```

```

[18]:
```
troughs2 <- data.frame(
  start_date = as.POSIXct(c("1957-03-01", "1960-03-01", "1974-10-01",␣
 ↪"1981-06-01", "1990-03-01",
                            "2008-10-01", "2020-02-01")),
  end_date = as.POSIXct(c("1958-01-01", "1961-03-01", "1975-03-01",␣
 ↪"1982-10-01", "1992-06-01",
                          "2009-06-01", "2020-05-01")))
```

[19]:
```
troughs2$start_date <- as.Date(troughs2$start_date)
troughs2$end_date <- as.Date(troughs2$end_date)

# Now retry your ggplot code
options(repr.plot.width = 10)

rate_graph_2 <- ur |>
     ggplot(aes(x = DATE, y = LRUNTTTTCAM156S, color = "blue")) +
     geom_line() +
     annotate("rect", xmin = troughs2$start_date, xmax = troughs2$end_date,␣
 ↪ymin = 0, ymax = Inf,
              fill = "lightgreen",
              alpha = 0.4) +
     labs(title = "Canadian Unemployment Rate",
          x = "Year",
          y = "Unemployment Rate") +
```

```
    theme(text = element_text(size = 15)) +
    scale_x_date(date_breaks = "10 years", date_labels = "%Y")

rate_graph_2
```