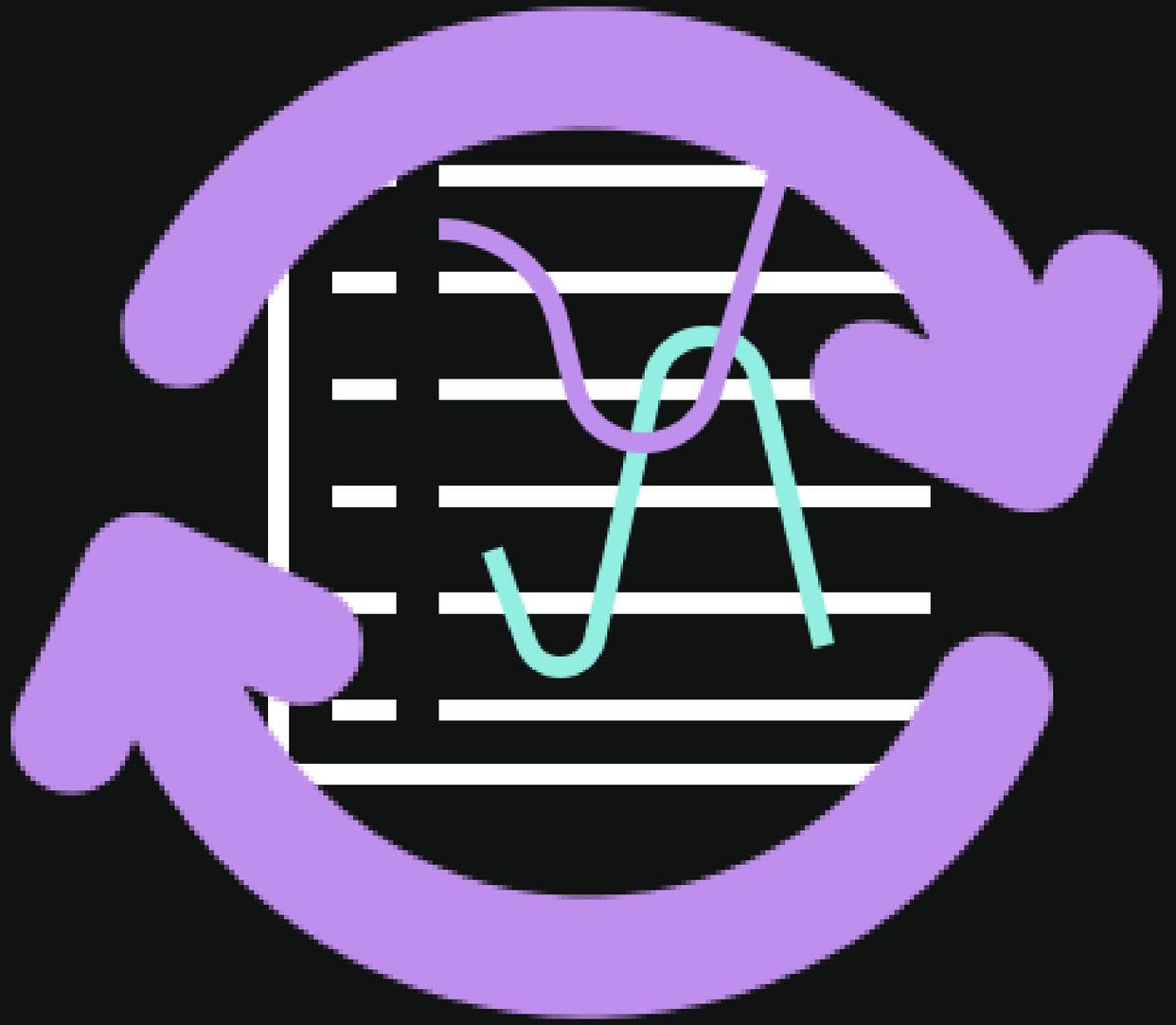
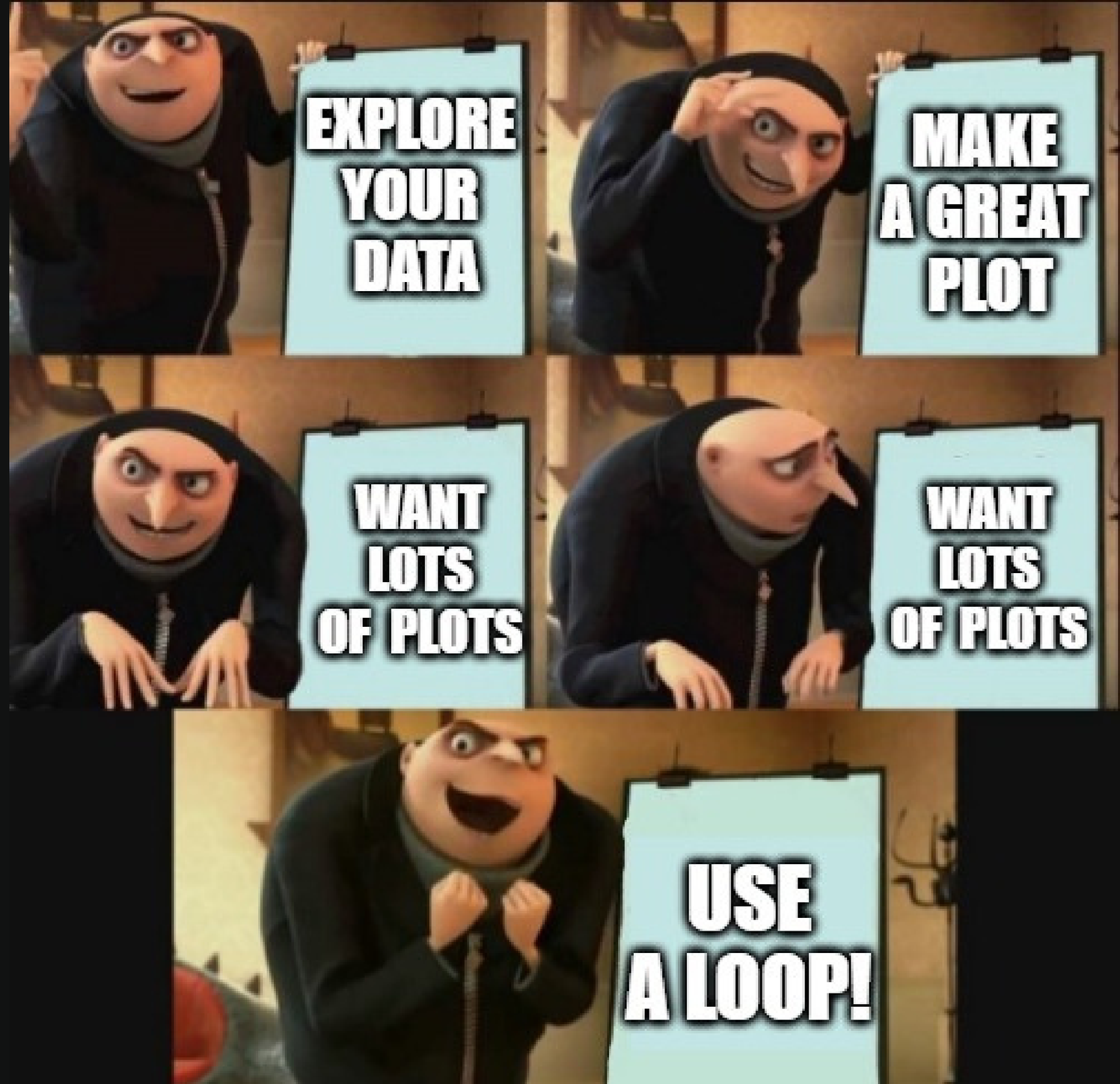
LOOPS + PLOTS

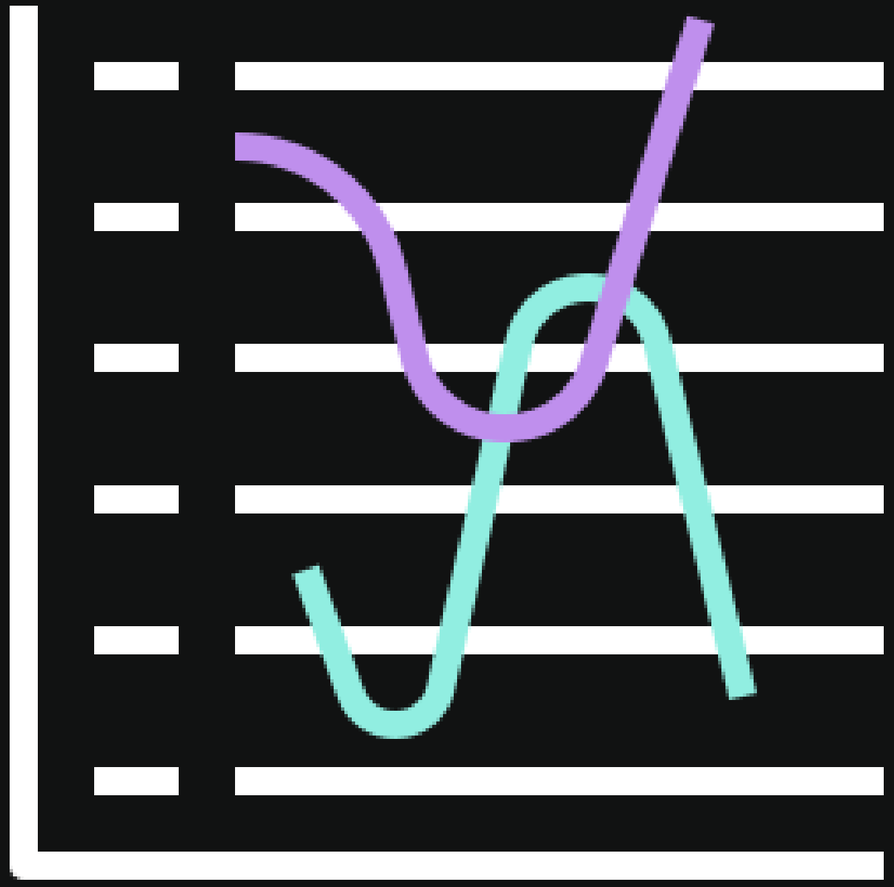
Keene Morrow
#tidytuesday @UCSB
2021-04-13



WHY BOTHER MAKING PLOTS WITH A LOOP?



START WITH THE PLOT



ESTABLISH WHAT YOU WANT YOUR FINAL PLOT TO LOOK LIKE FIRST

Keep in mind that your subsets will more than likely have different extents!

EXAMPLE DATA

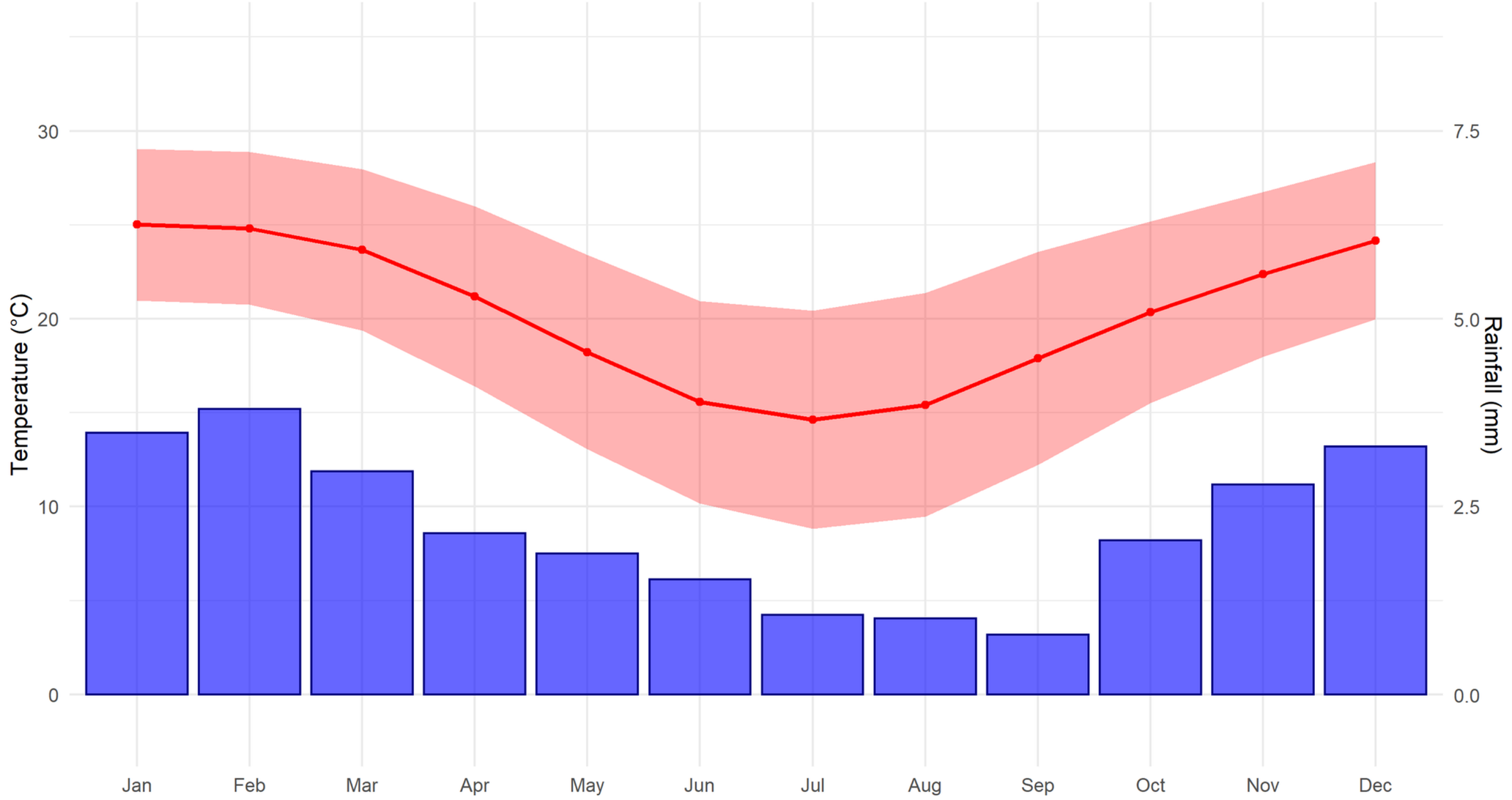
Rainfall and temperature data for five cities in Australia:

Brisbane, Canberra, Melbourne, Perth, & Sydney

#tidytuesday data from 2020-01-07

Monthly Mean Temperature Range & Mean Rainfall

Brisbane, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Brisbane, Australia.

Data: Australian Bureau of Meterology
#tidytuesday 2020-01-07
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LOOPS IN R

01 **`FOR`**

Executes the loop command a set number of times

02 **`WHILE`**

Executes the loop command when a condition is true

03 **`REPEAT`**

Executes the loop command when a condition is true but at least once

LOOPS IN R

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FOR LOOP STRUCTURE

```
for (value in sequence){
    statement
}
```

BASIC FOR LOOPS

```
list <- c(0,1,1,3,1)
count <- 0
for (i in list){
    count = count + 1)
}
print(count)
```

BASIC FOR LOOPS

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list <- c(0,1,1,3,1)
count <- 0
for (i in list){
    count = count + 1)
}
print(count)
```

```
[1] 5
```

PLANNING YOUR LOOP

01 **WHAT VARIABLE DO YOU WANT TO CHANGE ACROSS YOUR PLOTS?**

This will form your sequence.

02 **WHERE DO YOU WANT TO USE THE INFORMATION FROM THE SEQUENCE?**

The subset, a title, a caption...?

03 **WHAT DO YOU WANT TO DO WITH THE OUTPUT?**

Save them as images? Store them for later use?

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SAVE WITH GGSAVE

BUILDING THE LOOP

01 **ESTABLISH THE SEQUENCE USING THE VARIABLE YOU WANT TO CHANGE**

```
cities <- unique(data$city)
```

```
> print(cities)
[1] "Brisbane"  "Canberra"
 "Melbourne"  "Perth"  "Sydney"
```

BUILDING THE LOOP

02 SET UP THE LOOP TO PROGRESS ALONG THE SEQUENCE

```
for(i in seq_along(cities)){

    ...

}
```

BUILDING THE LOOP

03 GET THE RIGHT DATA

```
for(i in seq_along(cities)){
    ggplot(data =
        subset(data,
        data$city ==
        cities[i])) + ...
}
```

BUILDING THE LOOP

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```
for(i in seq_along(cities)){
    ggplot(data =
        subset(data,
        data$city ==
        cities[i])) + ...
}
```

BUILDING THE LOOP

04 USE THE RIGHT LABELS

```
for(i in seq_along(cities)){

    ...

        labs(subtitle =
            paste(cities[i],",
            Australia", sep = "")
}
```

BUILDING THE LOOP

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```
for(i in seq_along(cities)){

    ...

        labs(subtitle =
            paste(cities[i],",
            Australia", sep = "")
}
```

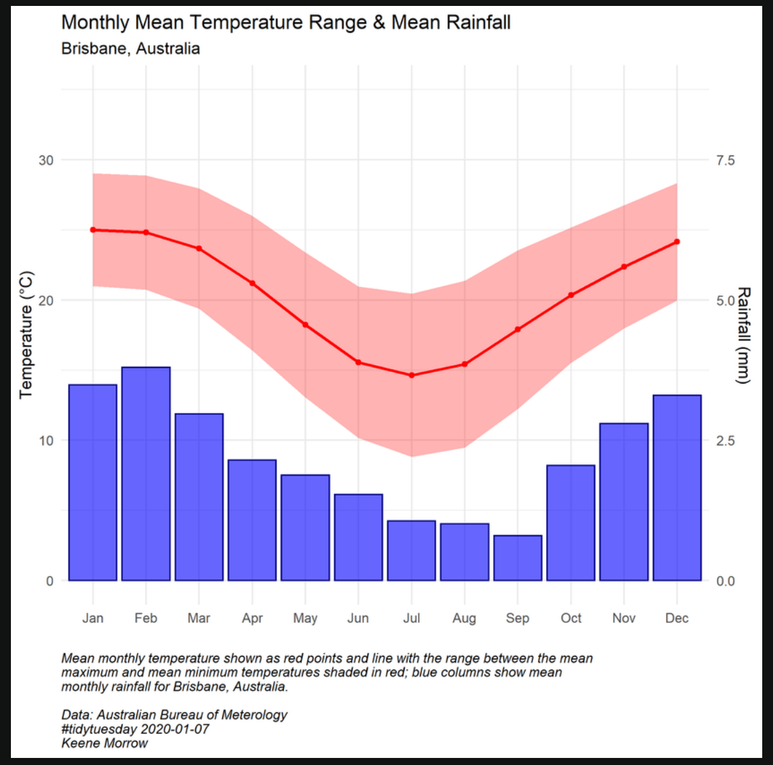
BUILDING THE LOOP

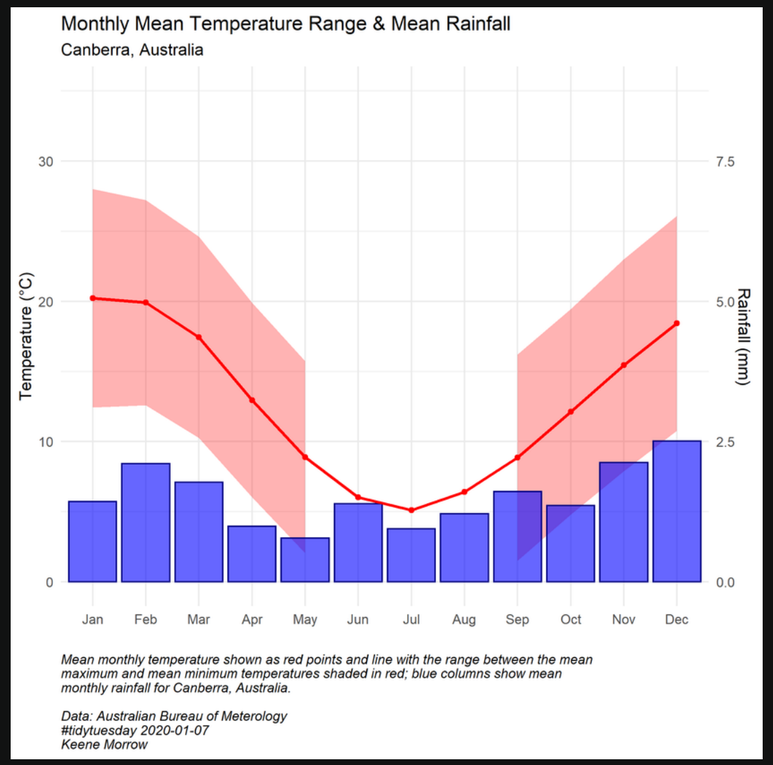
04 USE THE RIGHT LABELS

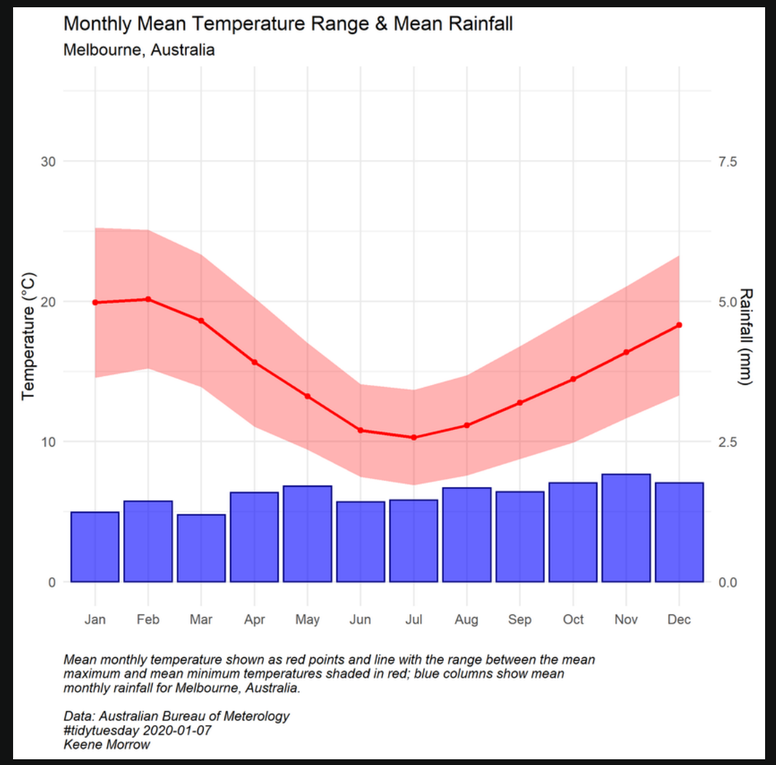
```
ggsave(here::here("figures",
    paste(cities[i],
    "_climate.png", sep = "")),
    height = 7, width = 7)
```

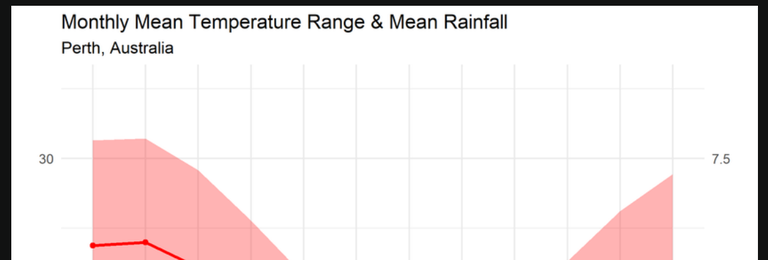
BUILDING THE LOOP

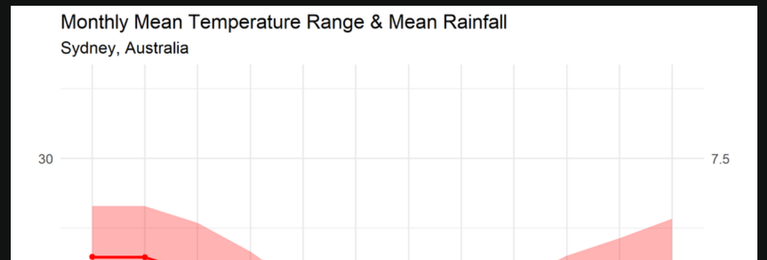
05 TEST IT OUT





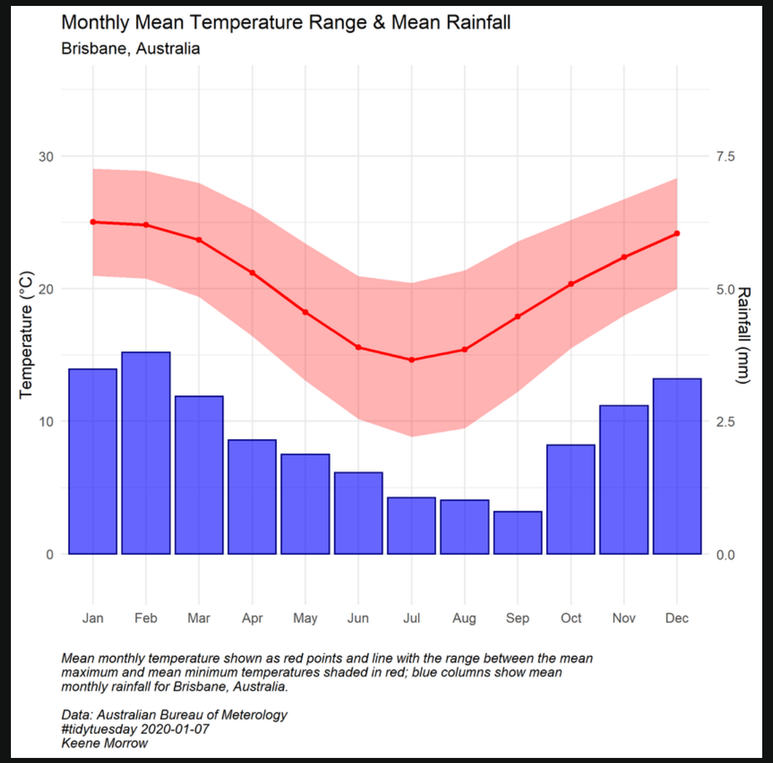


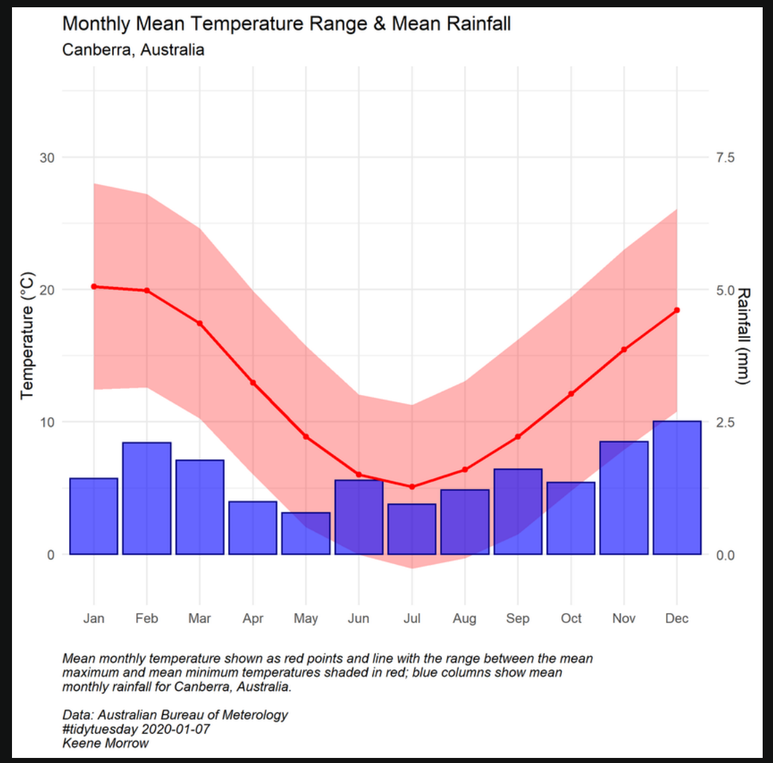


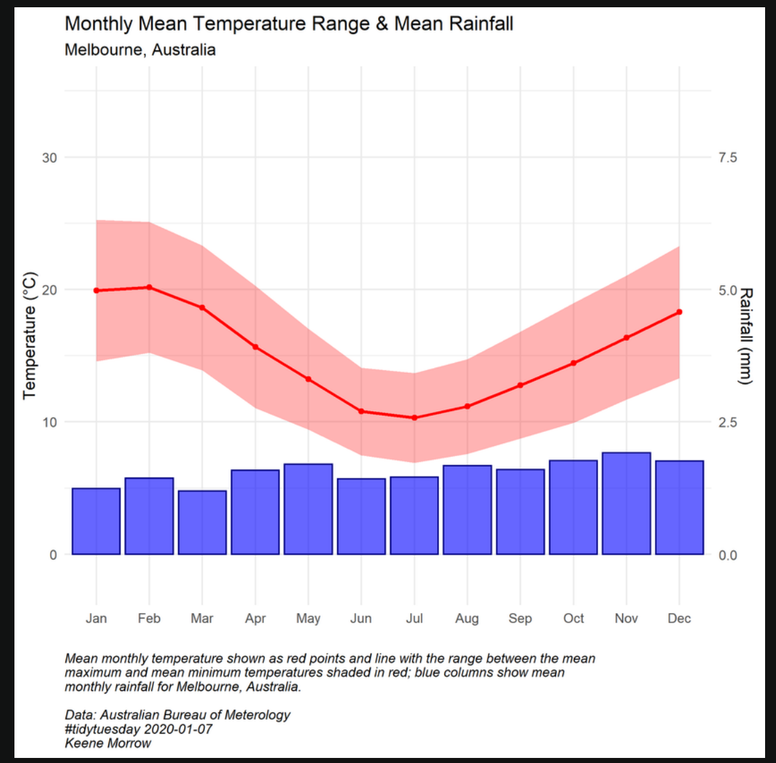


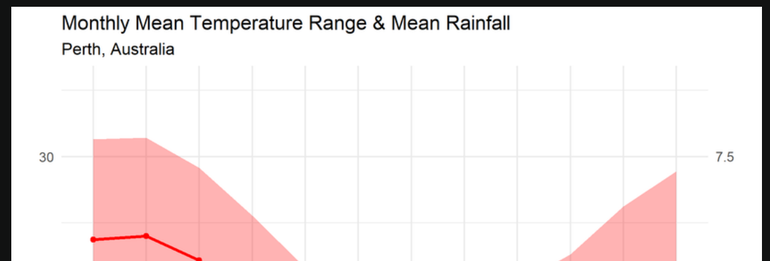
BUILDING THE LOOP

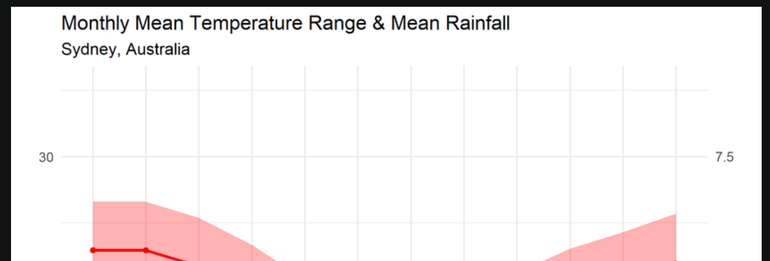
06 TROUBLESHOOT









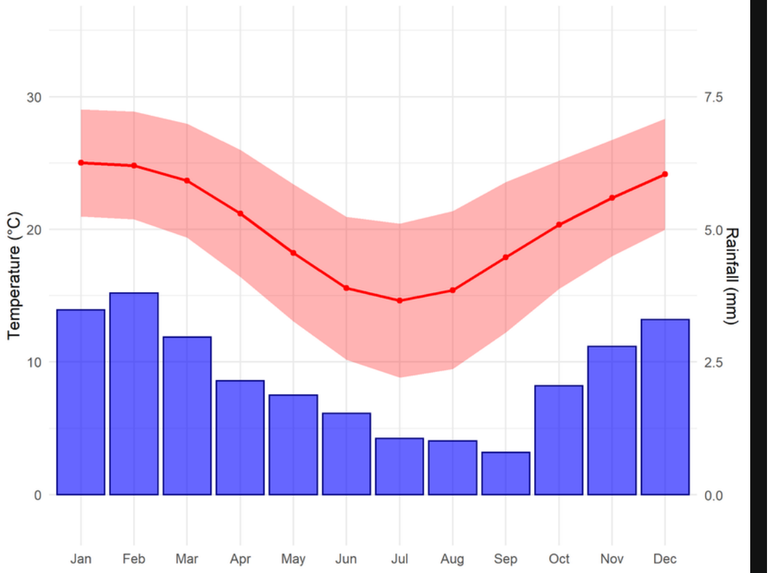


BUILDING THE LOOP

07

Monthly Mean Temperature Range & Mean Rainfall

Brisbane, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Brisbane, Australia.

Data: Australian Bureau of Meterology
#tidytuesday 2020-01-07
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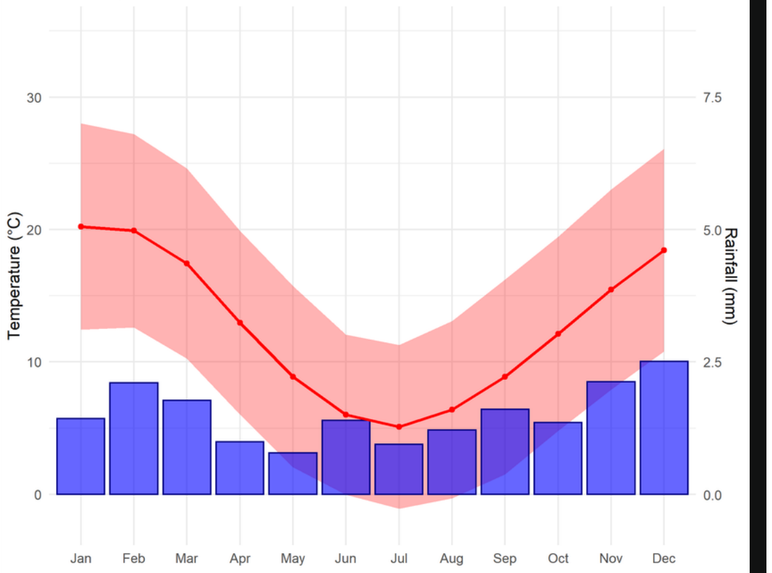
Monthly Mean Temperature Range & Mean Rainfall

Canberra, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Canberra, Australia.

Data: Australian Bureau of Meterology
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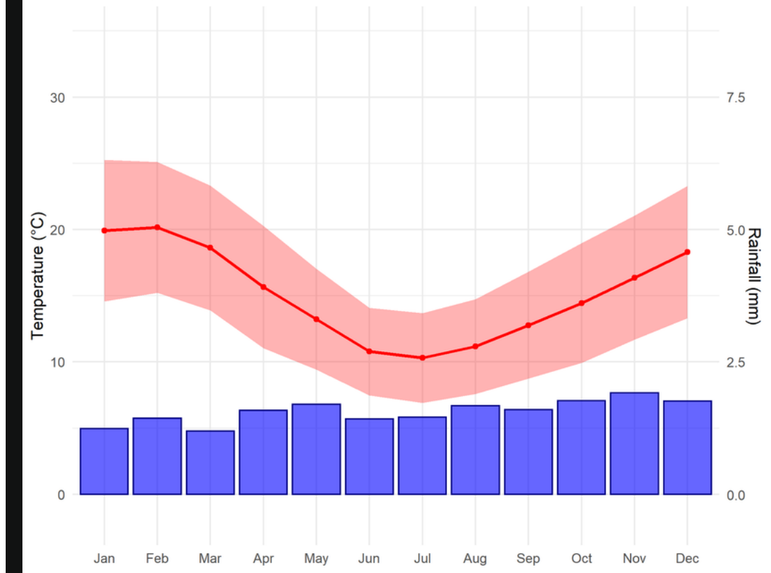
Monthly Mean Temperature Range & Mean Rainfall

Melbourne, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Melbourne, Australia.

Data: Australian Bureau of Meterology
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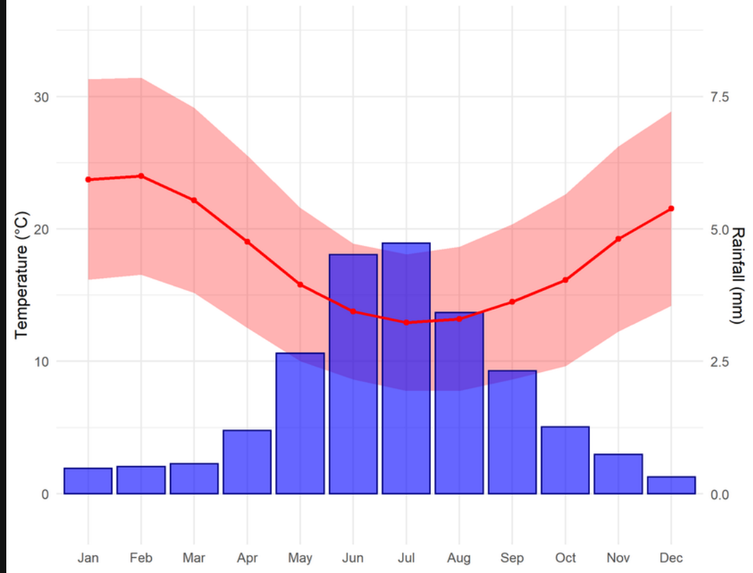
Monthly Mean Temperature Range & Mean Rainfall

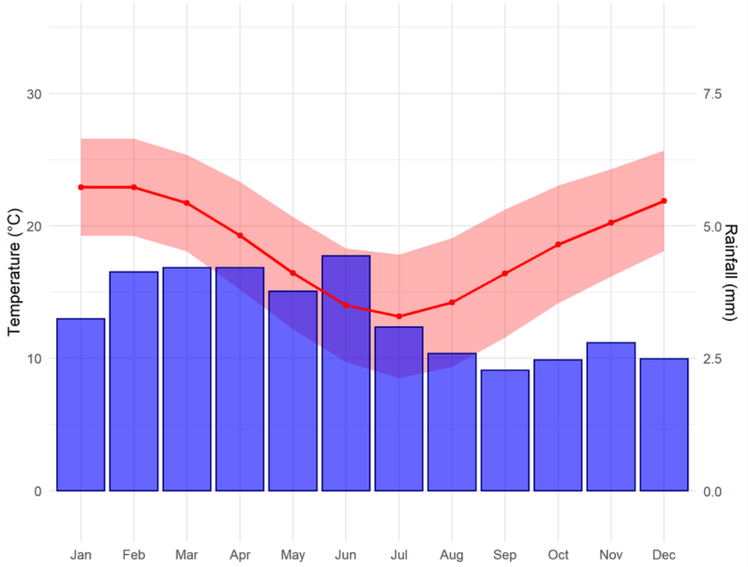
Perth, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Perth, Australia.

Monthly Mean Temperature Range & Mean Rainfall

Sydney, Australia



Mean monthly temperature shown as red points and line with the range between the mean maximum and mean minimum temperatures shaded in red; blue columns show mean monthly rainfall for Sydney, Australia.

KEY FUNCTIONS

01 UNIQUE()

We easily made a sequence of cities using:

```
unique(data$city)
```

02 FOR LOOP

We looped through the list of cities using:

```
for(i in seq_along(cities){...}
```

03 SUBSET()

We plotted just the data for the city using:

```
subset(data,  data$city ==  cities[i]))
```

04 PASTE() + cities[i]

We referenced the name of the city using:

```
paste(cities[i], ", Australia", sep = " ")
```

FIND THE FULL THING ON

GitHub

GITHUB.COM/KAMORROW/TIDYTUESDAY_2020-01-07