Econometrics Lab

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Minimum Daily Temperature Dataset

This dataset describes the minimum daily temperatures over 10 years (1981-1990) in the city Melbourne, Australia. The units are in degrees Celsius and there are 3650 observations. The source of the data is credited as the Australian Bureau of Meteorology.

```
data<-read.csv("D:/Projects/Akhil/temp_data.csv",stringsAsFactors = FALSE)
head(data)
```

```
##         Date Temp
## 1 1981-01-01 20.7
## 2 1981-01-02 17.9
## 3 1981-01-03 18.8
## 4 1981-01-04 14.6
## 5 1981-01-05 15.8
## 6 1981-01-06 15.8
```

```
class(data)
```

```
## [1] "data.frame"
```

```
dim(data)
```

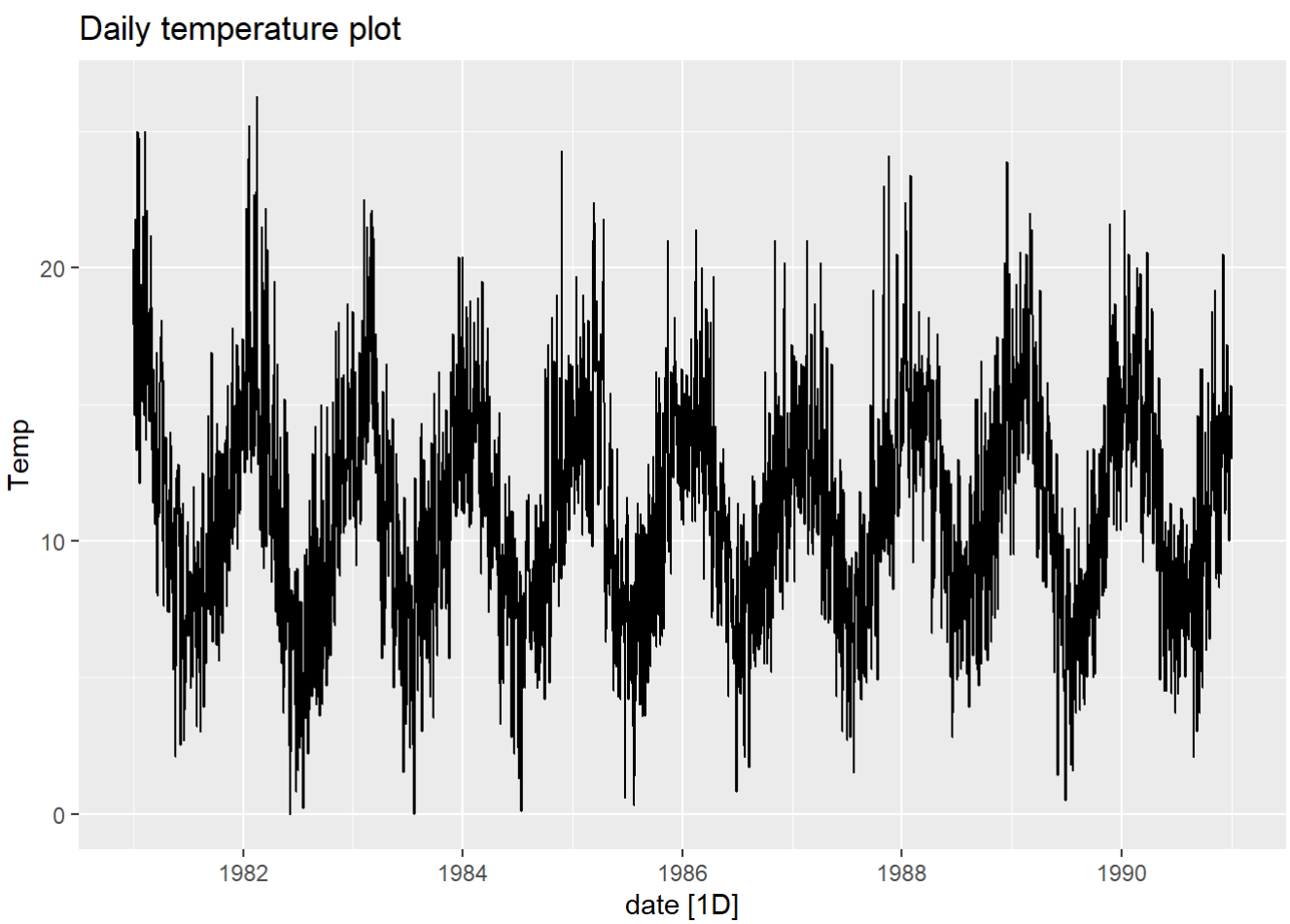
```
## [1] 3650    2
```

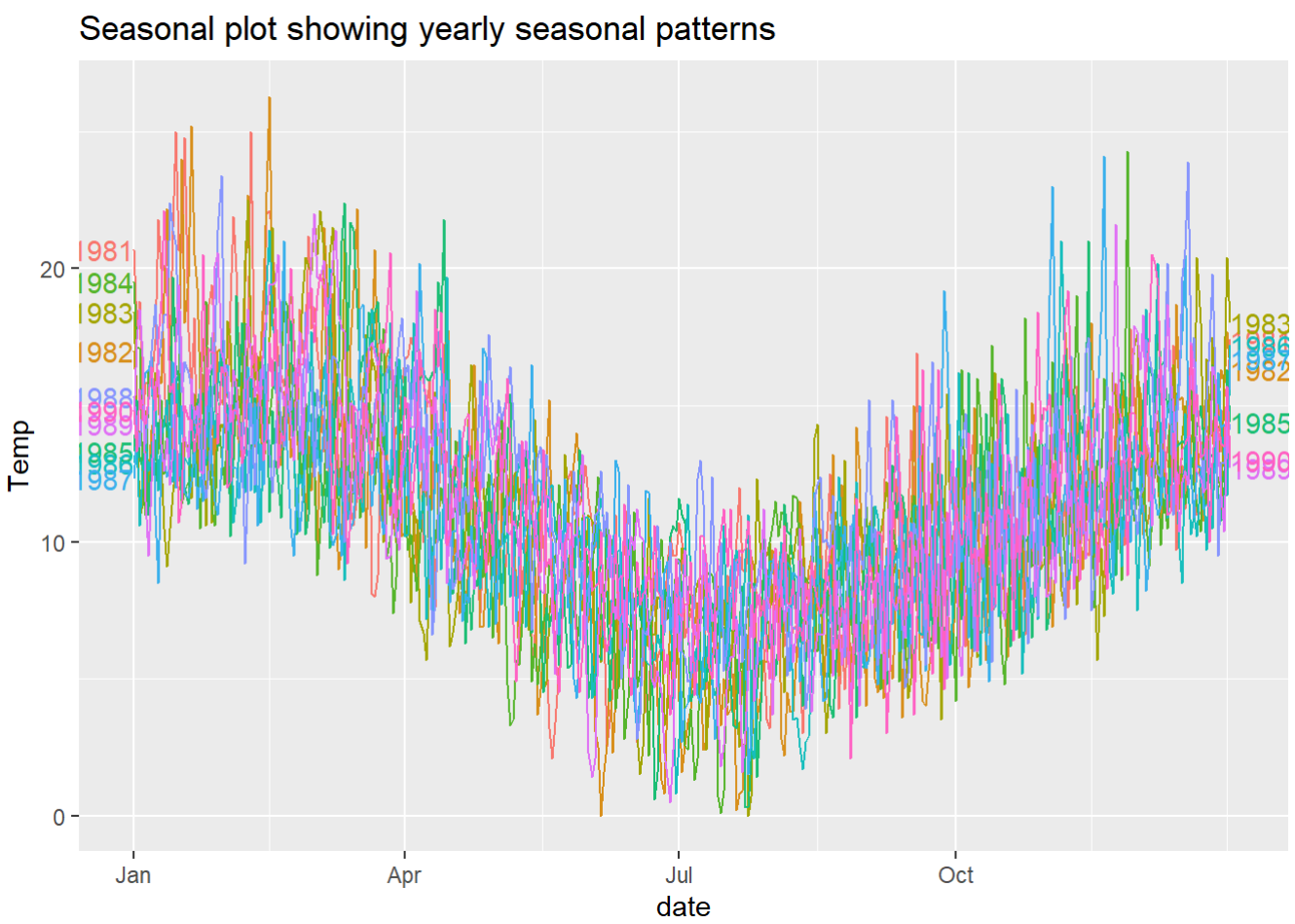
```
str(data)
```

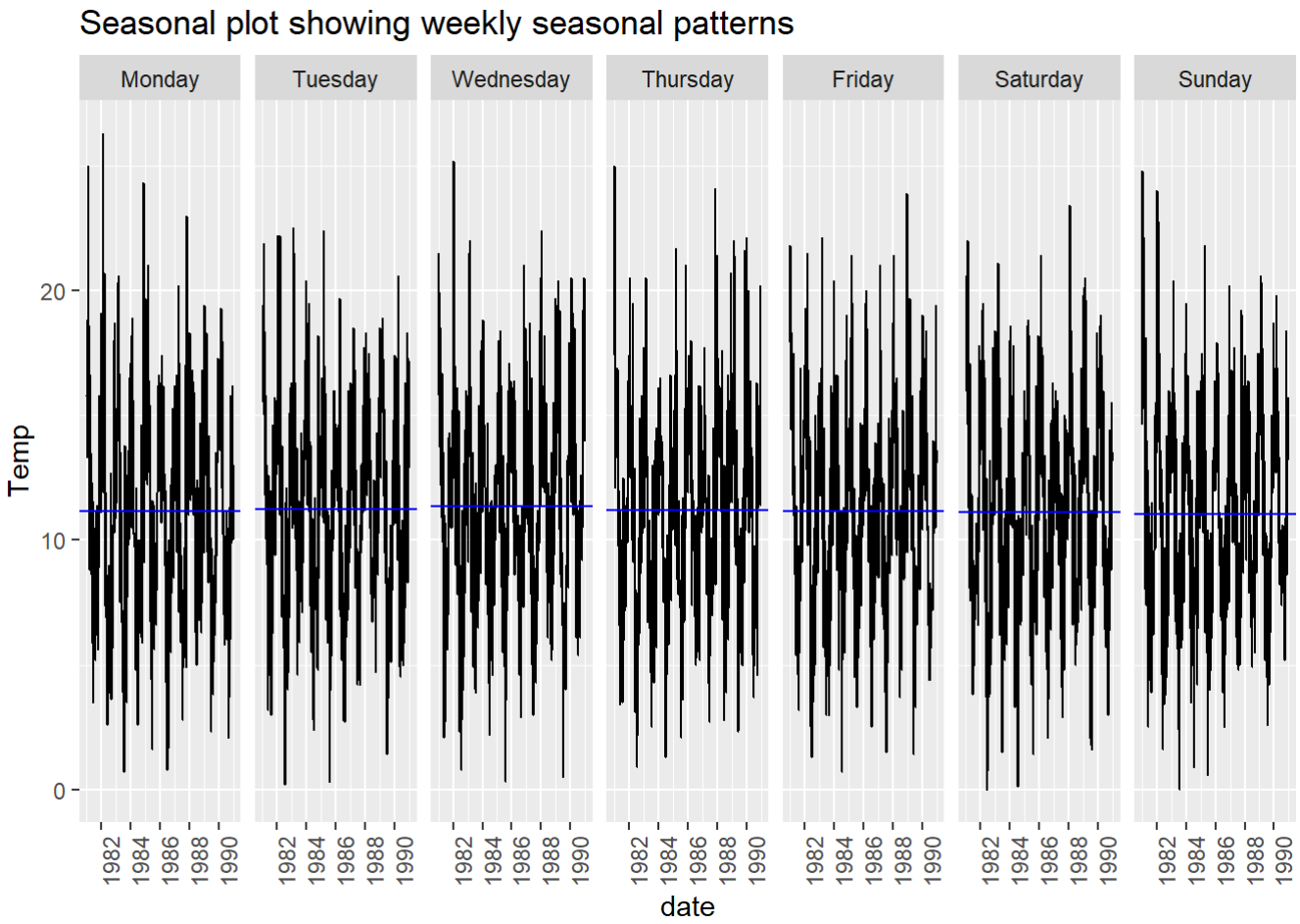
```
## 'data.frame':    3650 obs. of  2 variables:
##  $ Date: chr  "1981-01-01" "1981-01-02" "1981-01-03" "1981-01-04" ...
##  $ Temp: num  20.7 17.9 18.8 14.6 15.8 15.8 15.8 17.4 21.8 20 ...
```

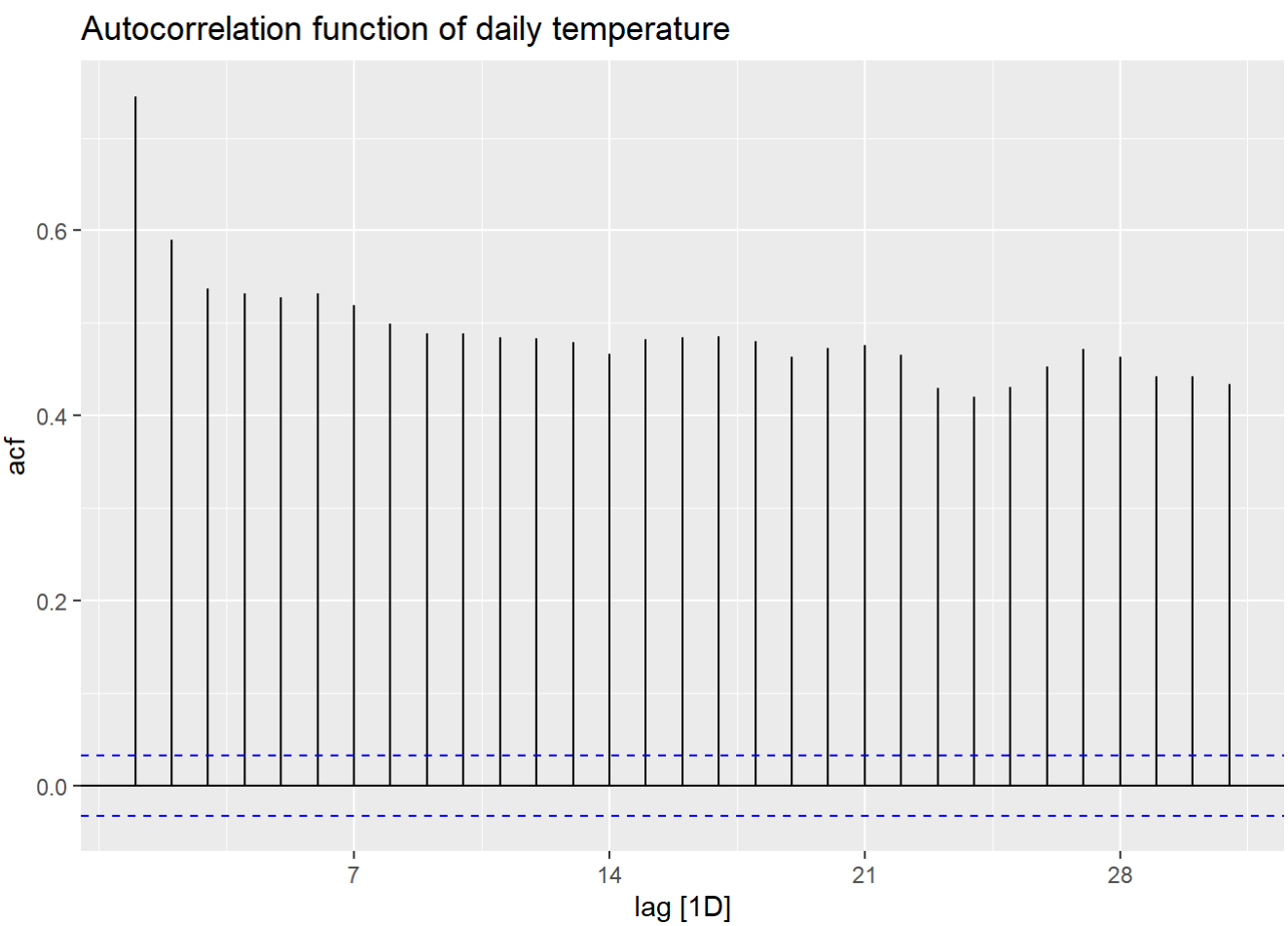
```
data %>%
  mutate(date = as_date(Date)) %>%
  as_tsibble(index = date)-> my_tsbl

str(my_tsbl)
```

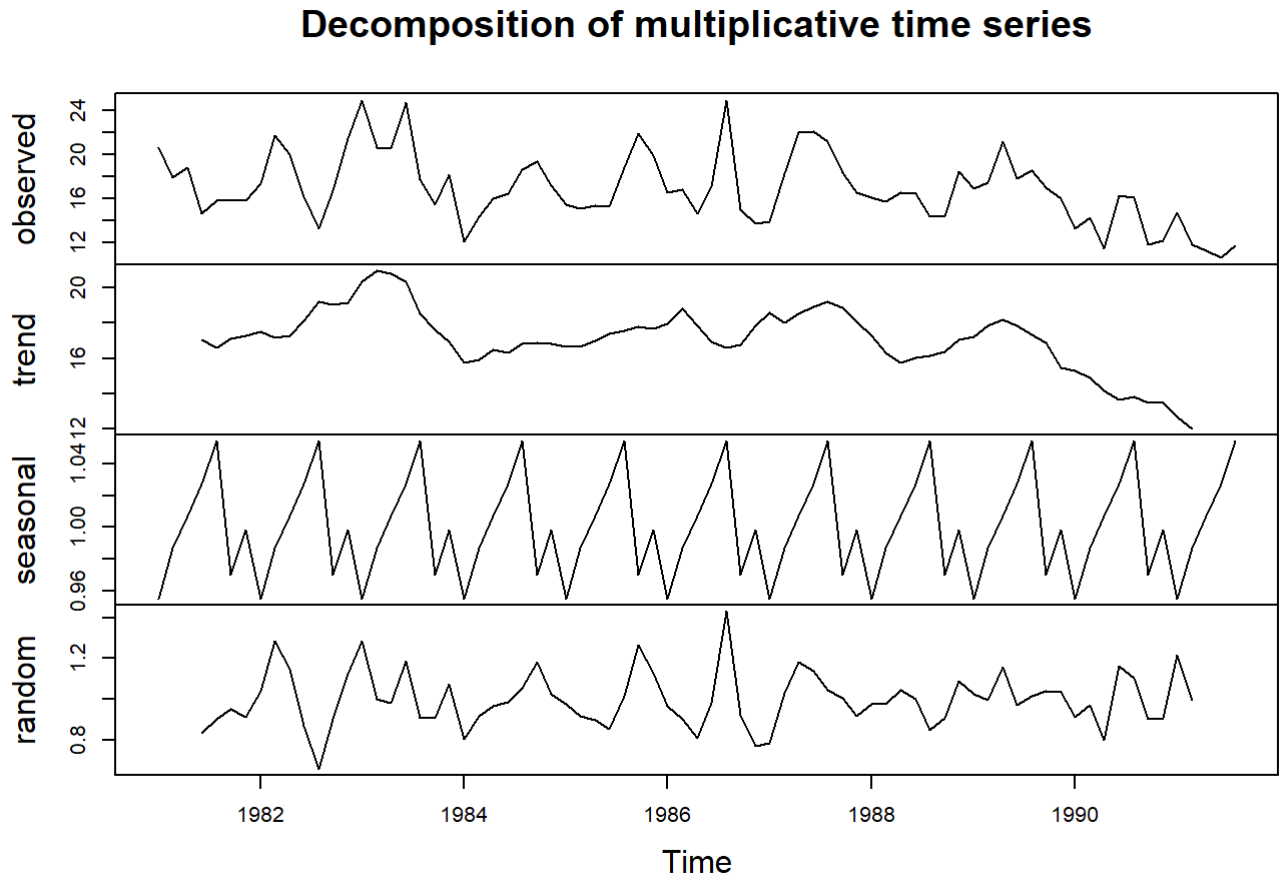
```
## tbl_ts [3,650 x 3] (S3: tbl_ts/tbl_df/tbl/data.frame)
##  $ Date: chr [1:3650] "1981-01-01" "1981-01-02" "1981-01-03" "1981-01-04" ...
##  $ Temp: num [1:3650] 20.7 17.9 18.8 14.6 15.8 15.8 15.8 17.4 21.8 20 ...
##  $ date: Date[1:3650], format: "1981-01-01" "1981-01-02" ...
##  - attr(*, "key")= tibble [1 x 1] (S3: tbl_df/tbl/data.frame)
##   ..$ .rows: list<int> [1:1]
##   .. ..$ : int [1:3650] 1 2 3 4 5 6 7 8 9 10 ...
##   .. ..@ ptype: int(0)
##  - attr(*, "index")= chr "date"
##   ..- attr(*, "ordered")= logi TRUE
##  - attr(*, "index2")= chr "date"
##  - attr(*, "interval")= interval [1:1] 1D
##   ..@ .regular: logi TRUE
```


Daily temperature plot
Temp
20
10
0
1982
1984
1986
1988
1990
date [1D]


Seasonal plot showing yearly seasonal patterns
Temp
20
10
0
Jan
Apr
Jul
Oct
date
1981
1984
1983
1982
1985
1983
1982
1985


Seasonal plot showing weekly seasonal patterns
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Temp
20
10
0
1982
1984
1986
1988
1990
date


Autocorrelation function of daily temperature
acf
0.6
0.4
0.2
0.0
7
14
21
28
lag [1D]


Decomposition of multiplicative time series
observed
trend
seasonal
random
12
16
20
24
16
20
0.96
1.00
1.04
0.8
1.2
1982
1984
1986
1988
1990
Time