Time Series Graphics

Chapter 2

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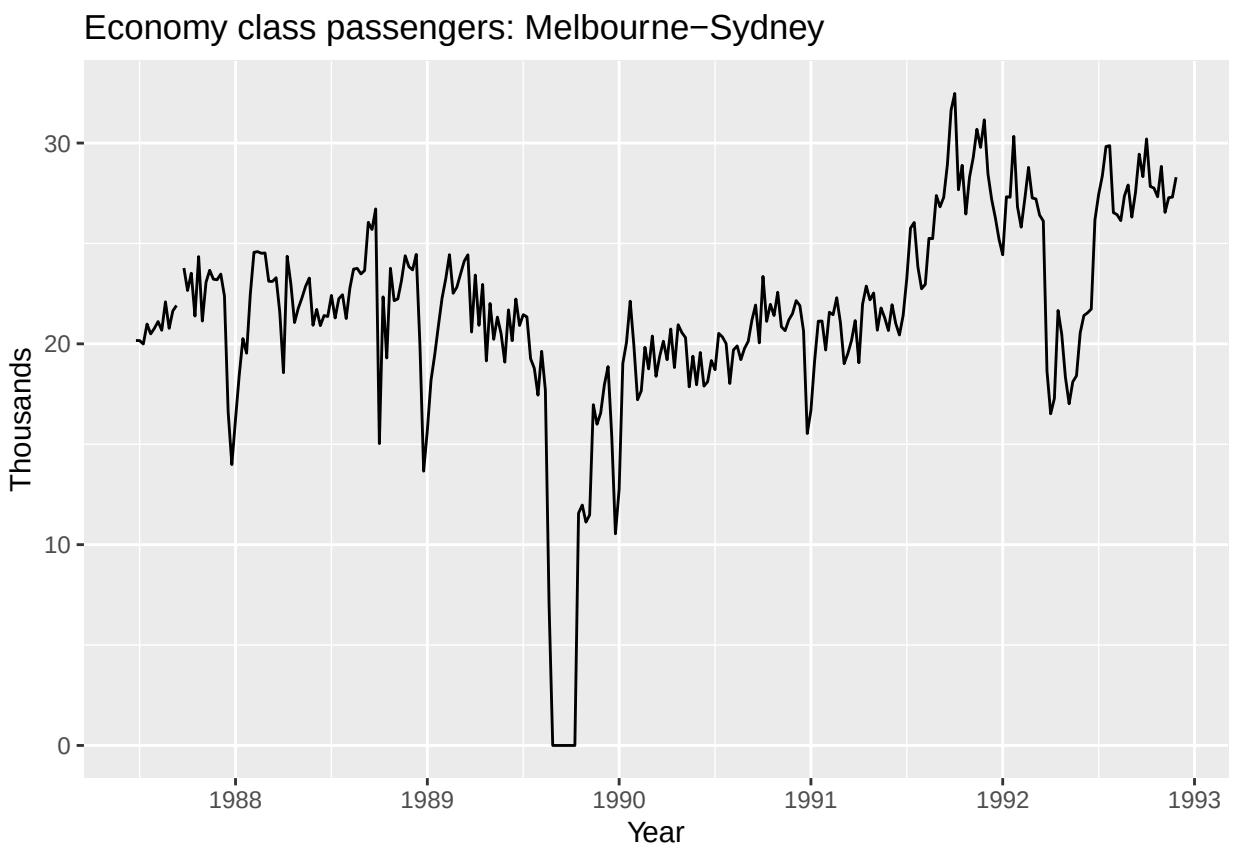
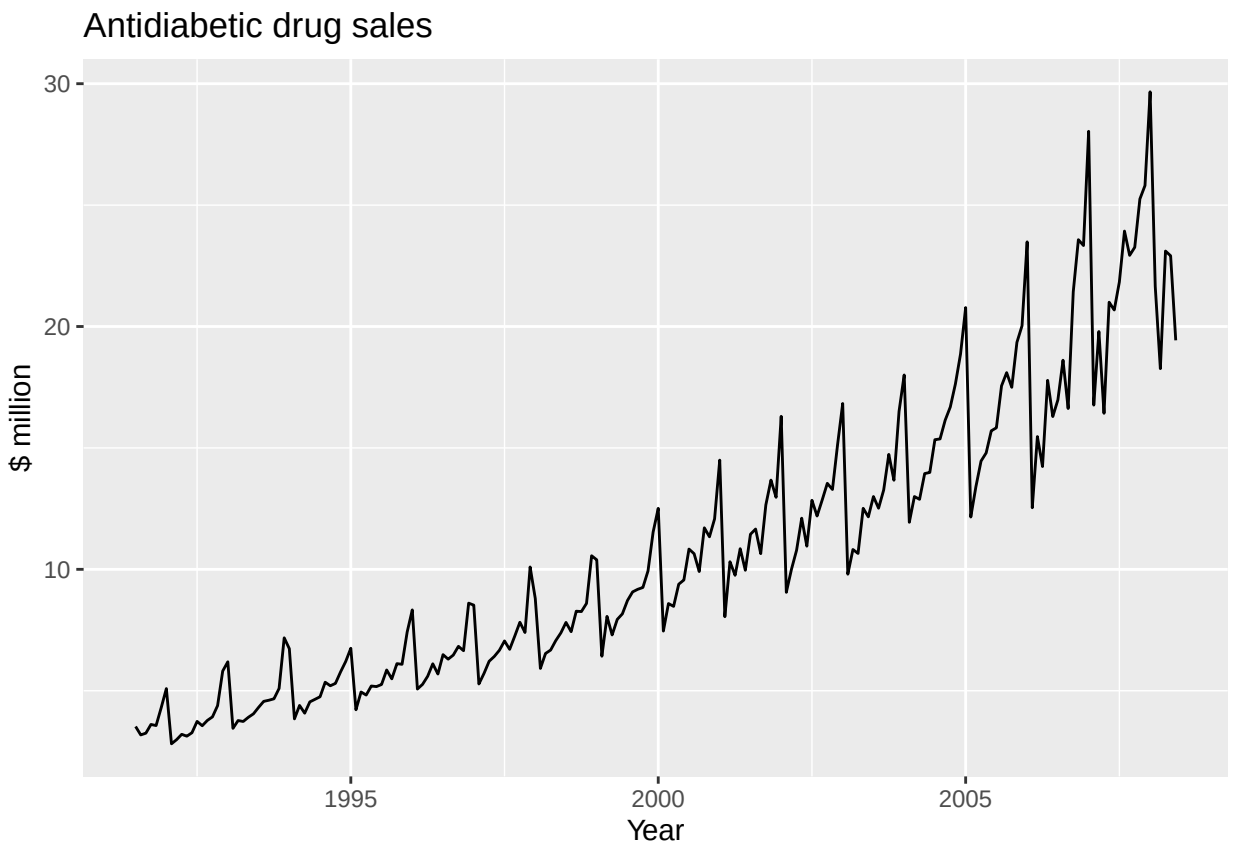
```
## Load all required packages
library('pacman')
p_load('forecast','fpp2','GGally') # Equivalentt of library('package-name')
```

```
## Using autoplot for plotting a time-series data
autoplot(melsyd[,"Economy.Class"]) +
  ggtitle("Economy class passengers: Melbourne-Sydney") +
  xlab("Year") +
  ylab("Thousands")
```

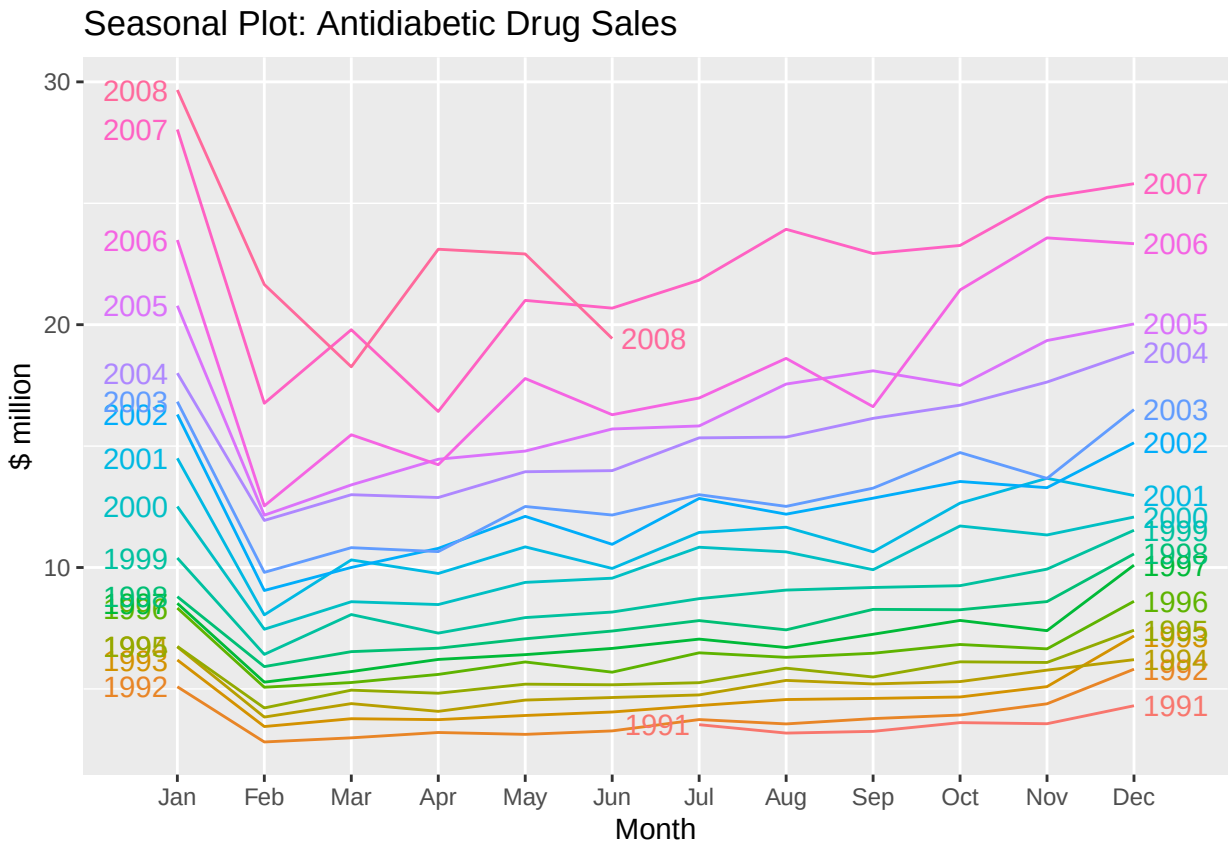



```
## Plot showing a Trend
autoplot(a10) +
  ggtitle("Antidiabetic drug sales") +
  ylab("$ million") +
```

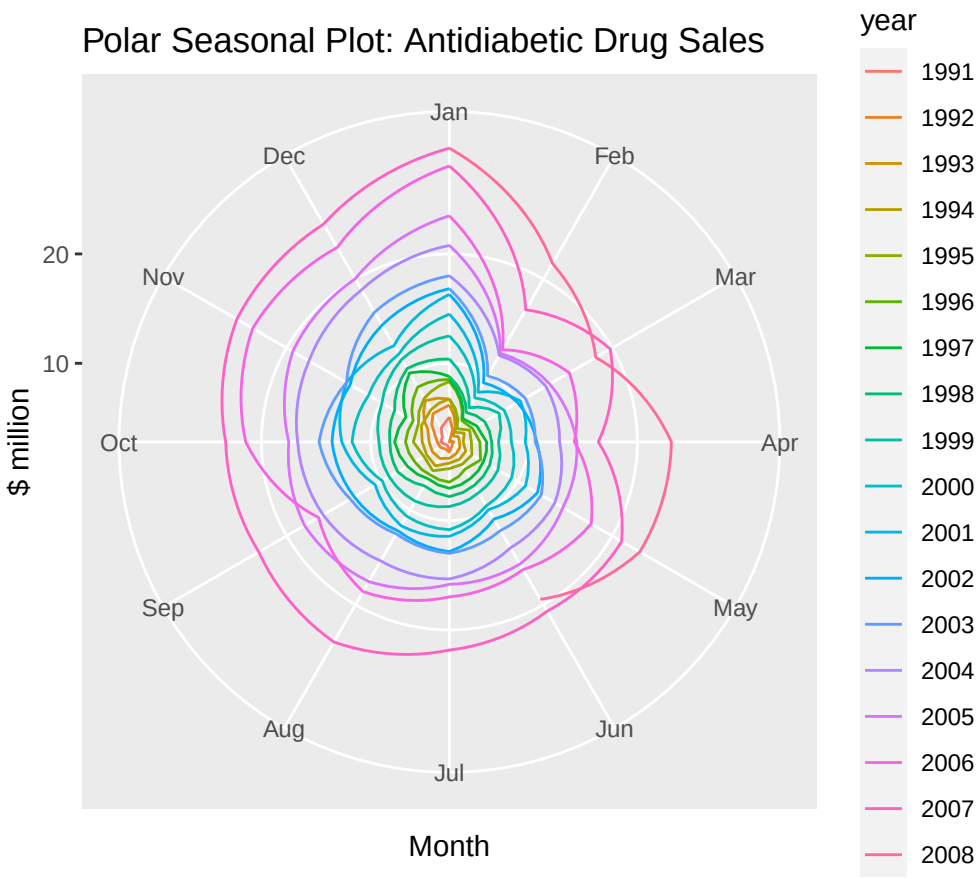
```
  xlab("Year")
```



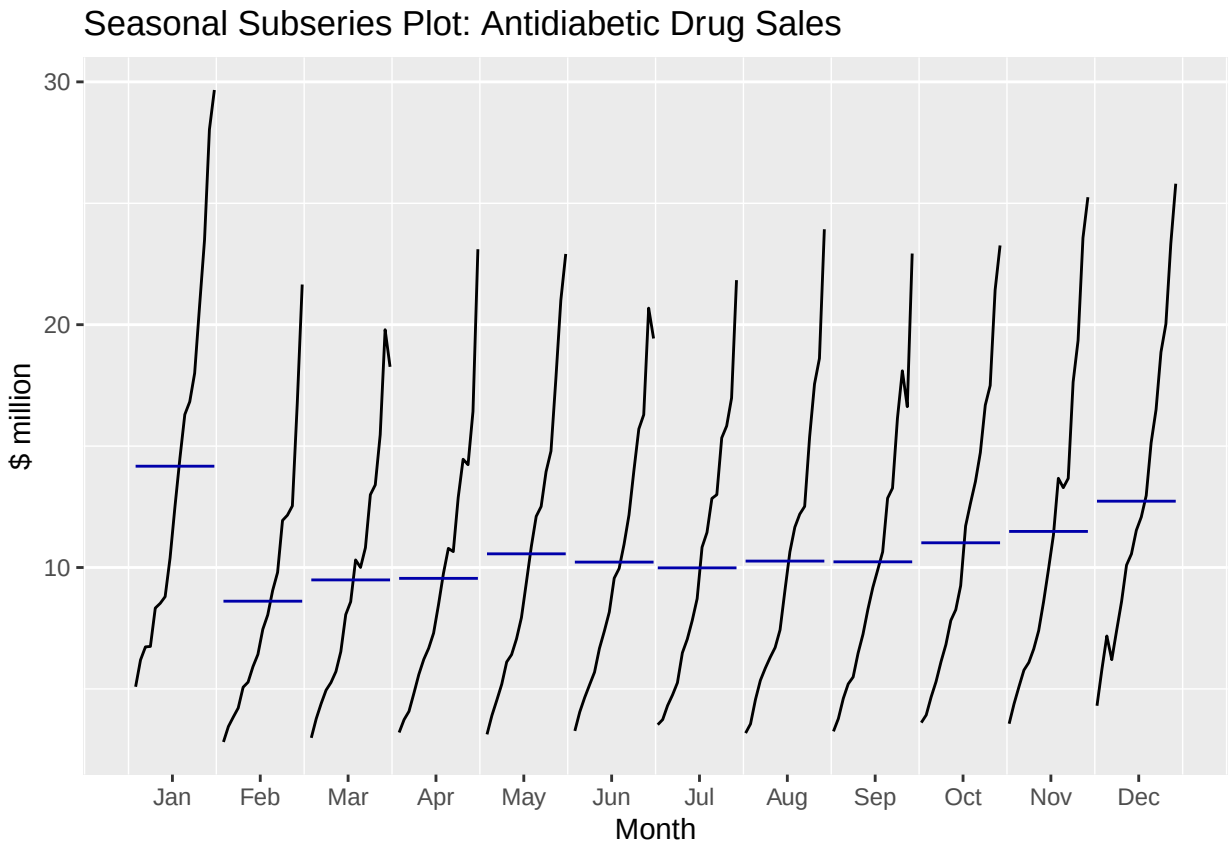

```
## Seasonal Plot
ggseasonplot(a10, year.labels=TRUE, year.labels.left=TRUE) +
  ylab("$ million") +
  ggtitle("Seasonal Plot: Antidiabetic Drug Sales")
```



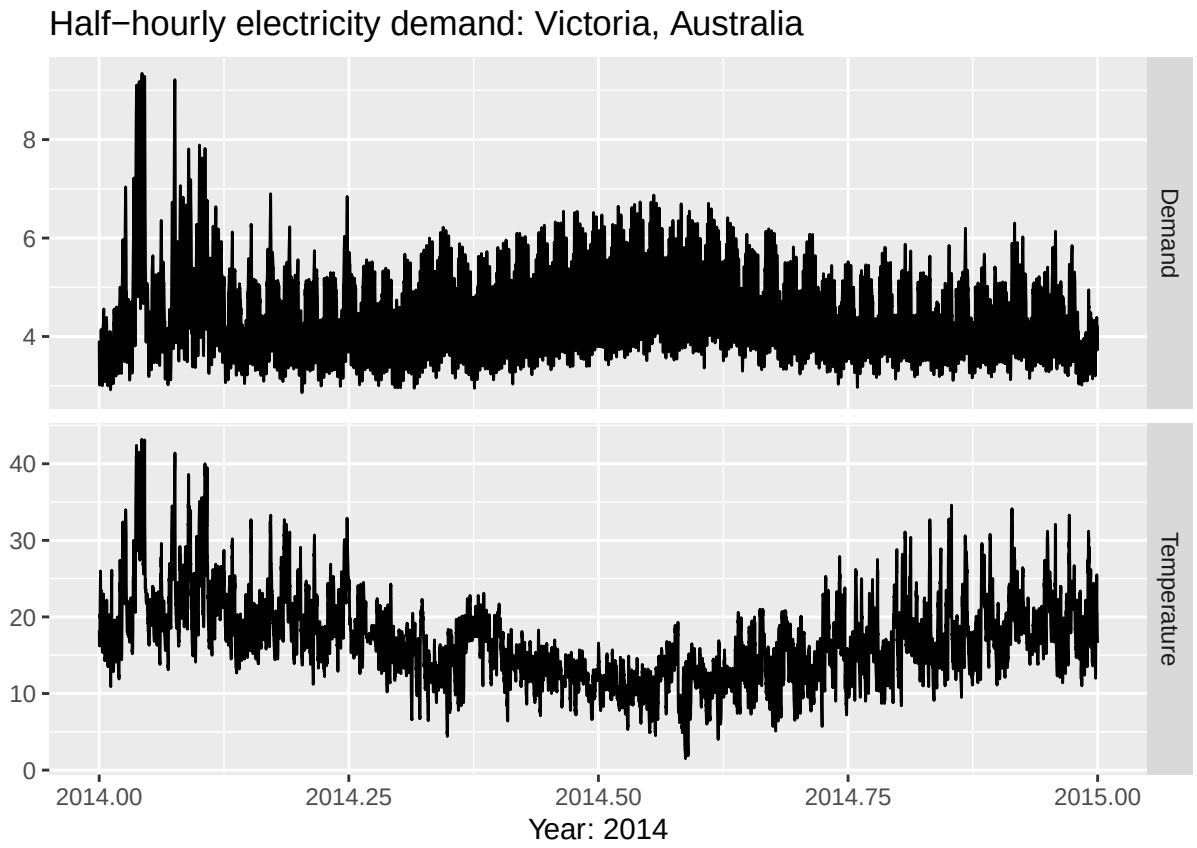

```
## Polar Seasonal Plot
ggseasonplot(a10, polar=TRUE) +
  ylab("$ million") +
  ggtitle("Polar Seasonal Plot: Antidiabetic Drug Sales")
```



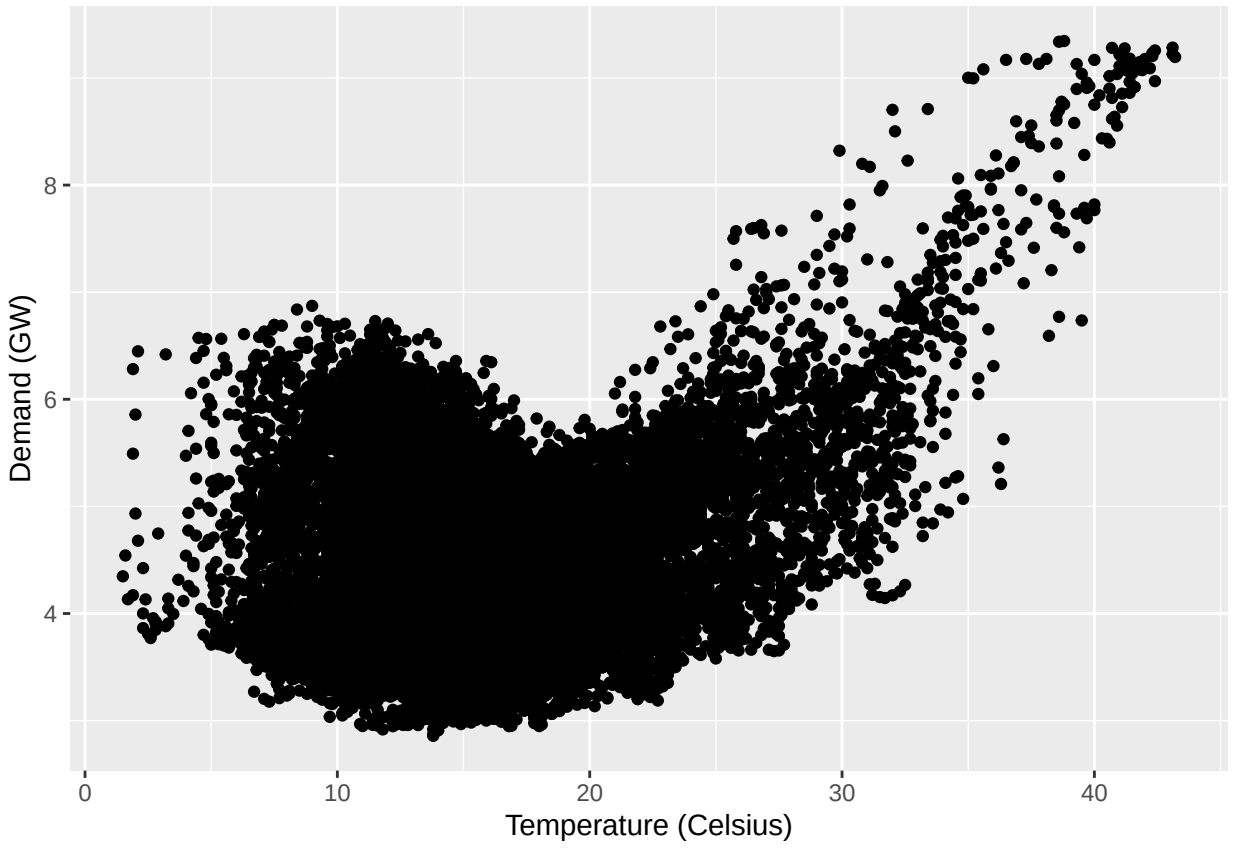

```
ggsubseriesplot(a10) +
  ylab("$ million") +
  ggtitle("Seasonal Subseries Plot: Antidiabetic Drug Sales")
```



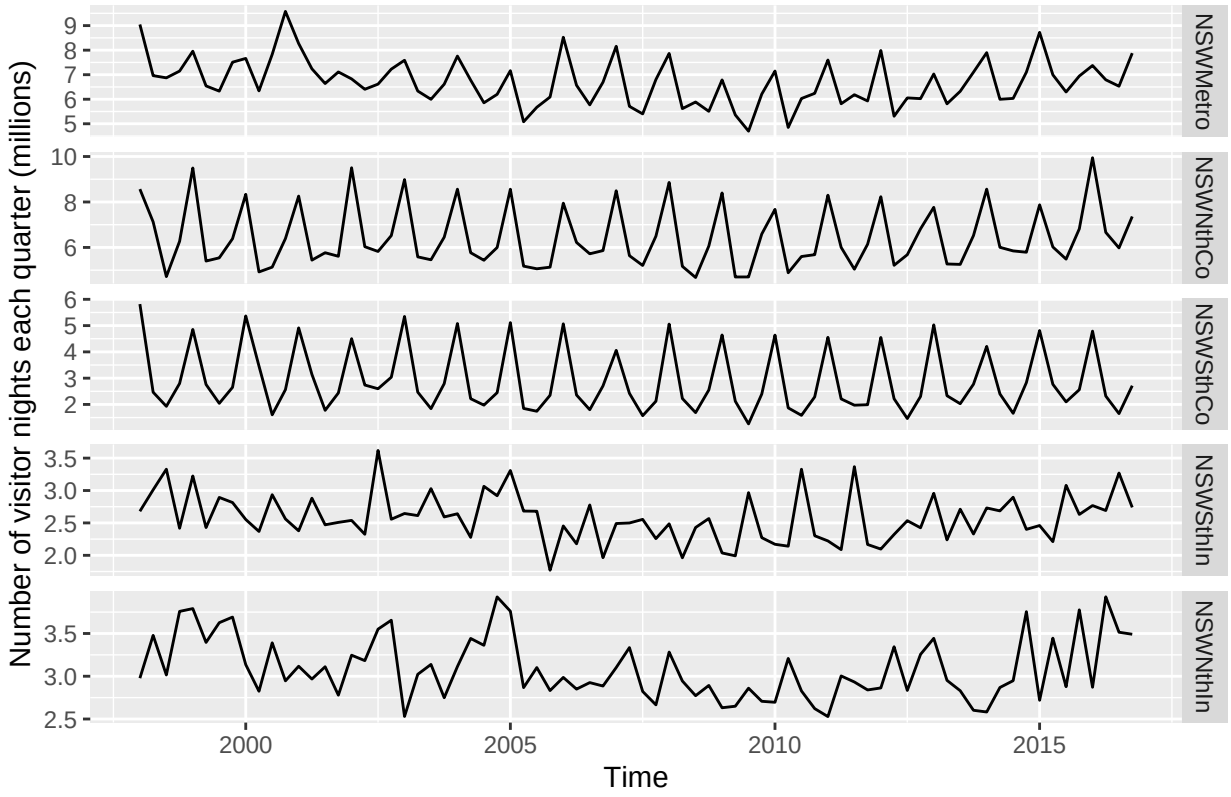

```
## Scatterplots
autoplot(elecdemand[,c("Demand","Temperature")], facets=TRUE) +
  xlab("Year: 2014") + ylab("") +
  ggtitle("Half-hourly electricity demand: Victoria, Australia")
```



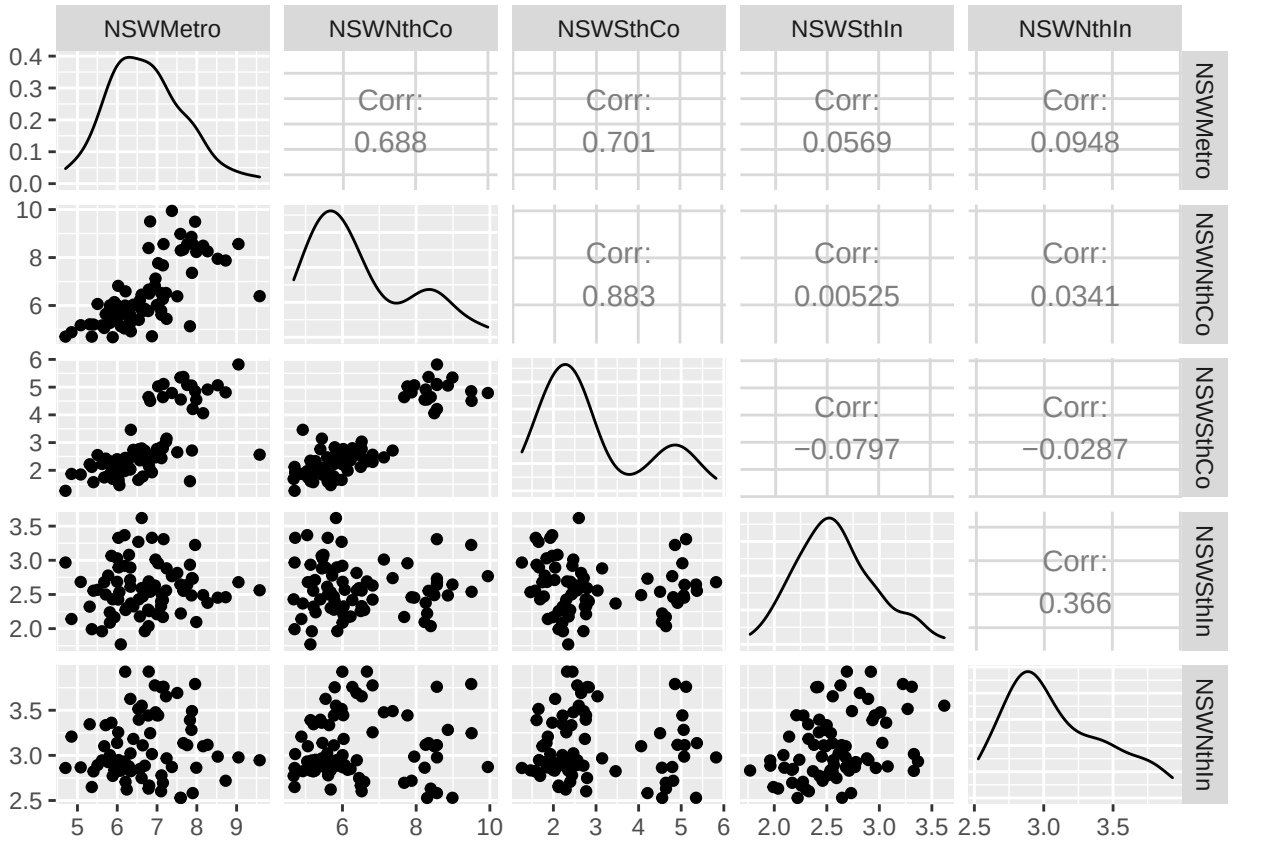

```
qplot(Temperature, Demand, data=as.data.frame(elecdemand)) +
  ylab("Demand (GW)") + xlab("Temperature (Celsius)")
```



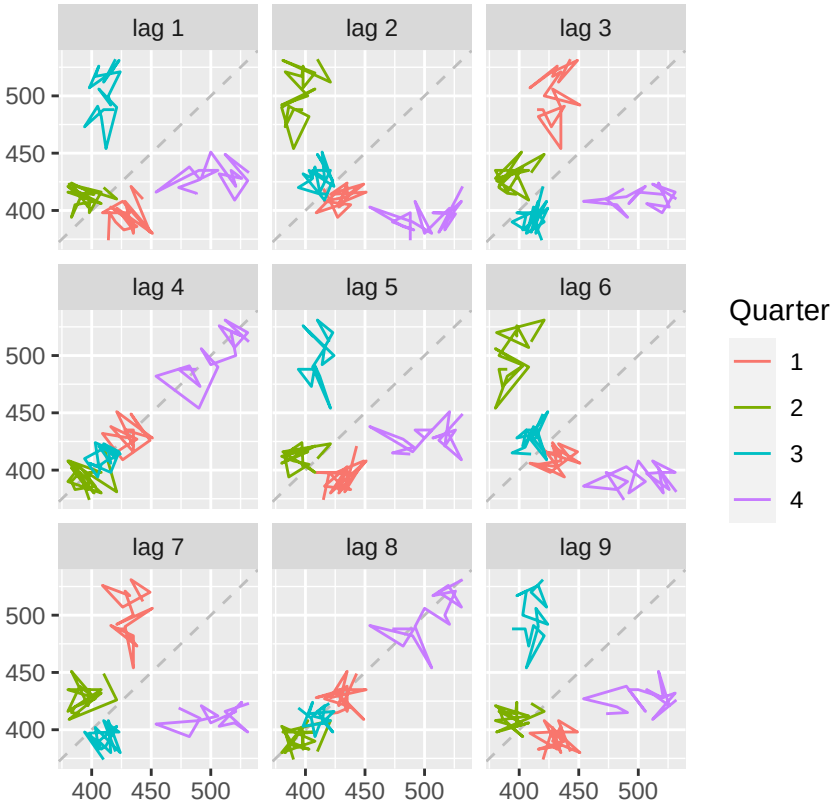

```
autoplot(visnights[,1:5], facets=TRUE) +
  ylab("Number of visitor nights each quarter (millions)")
```



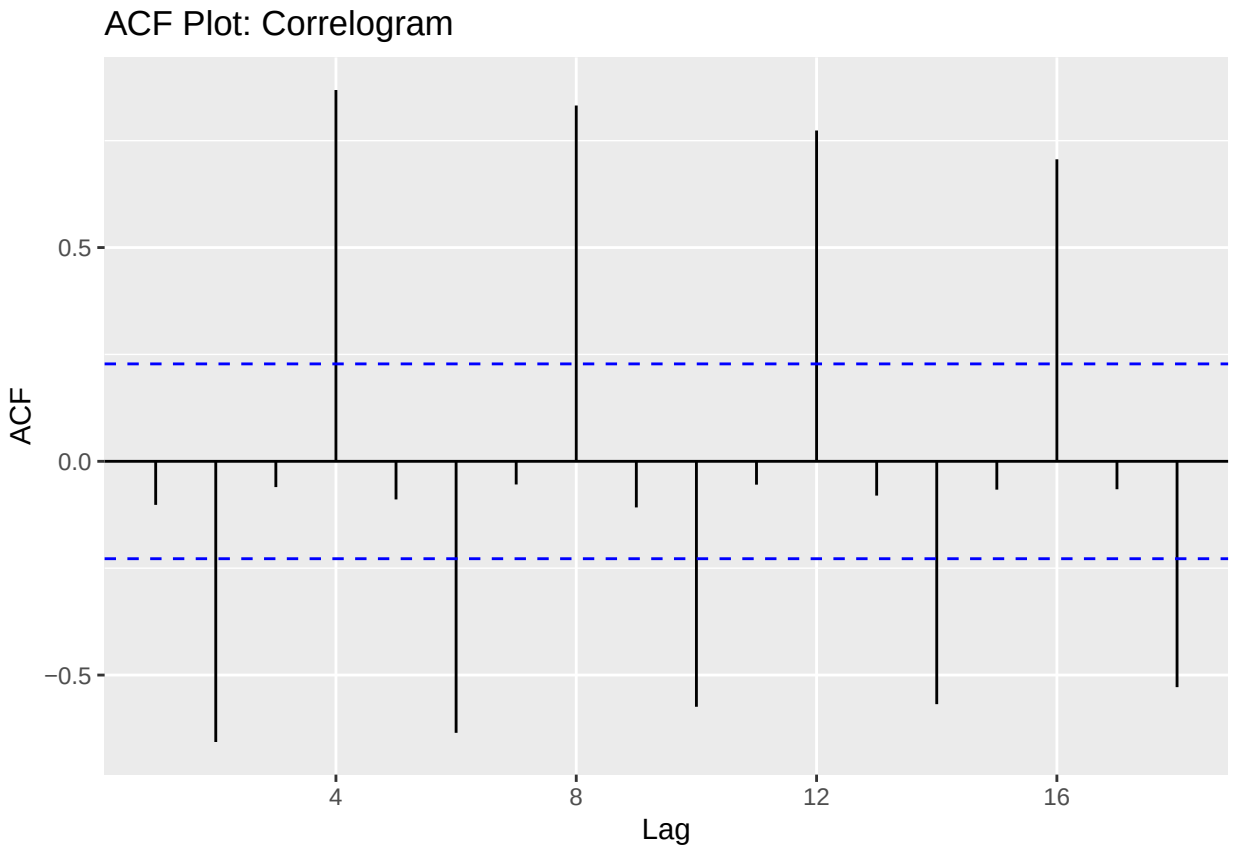

```
GGally::ggpairs(as.data.frame(visnights[,1:5]))
```



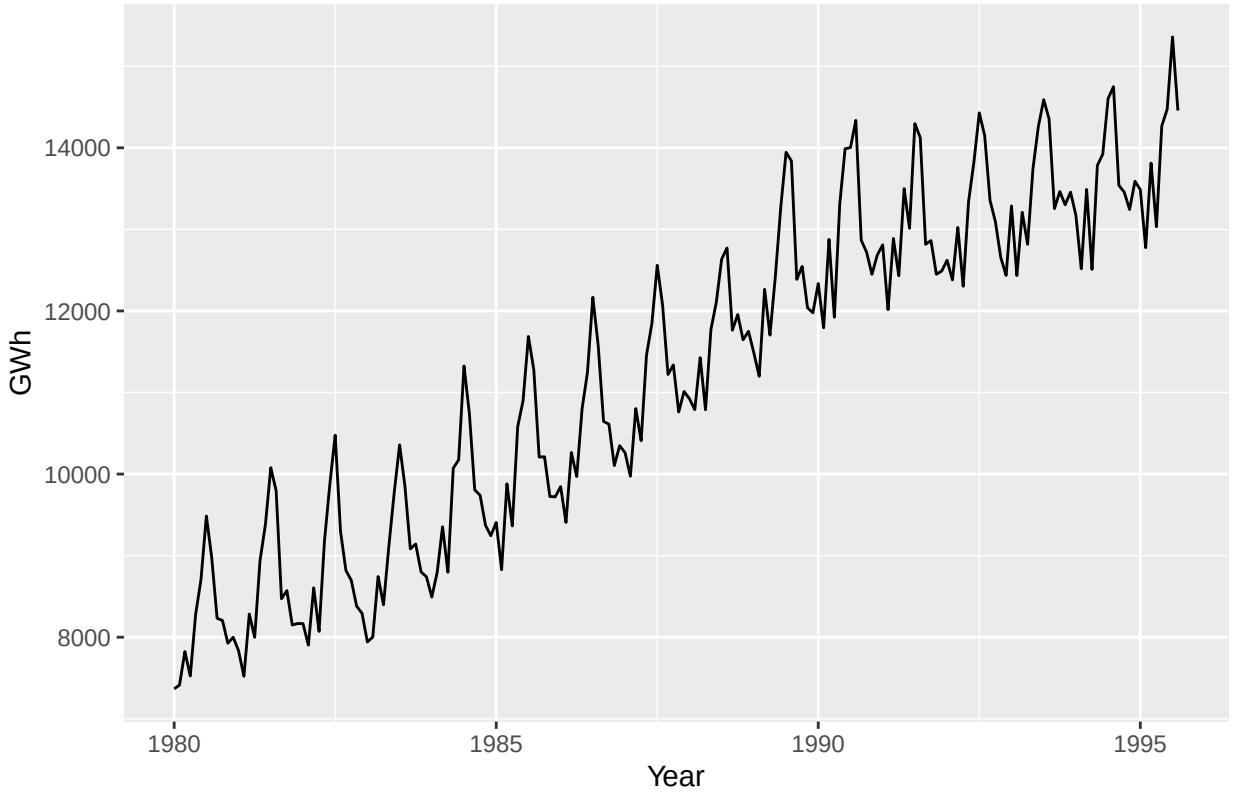
```
beer2 <- window(ausbeer, start=1992)

## Lag Plots
gglagplot(beer2)
```



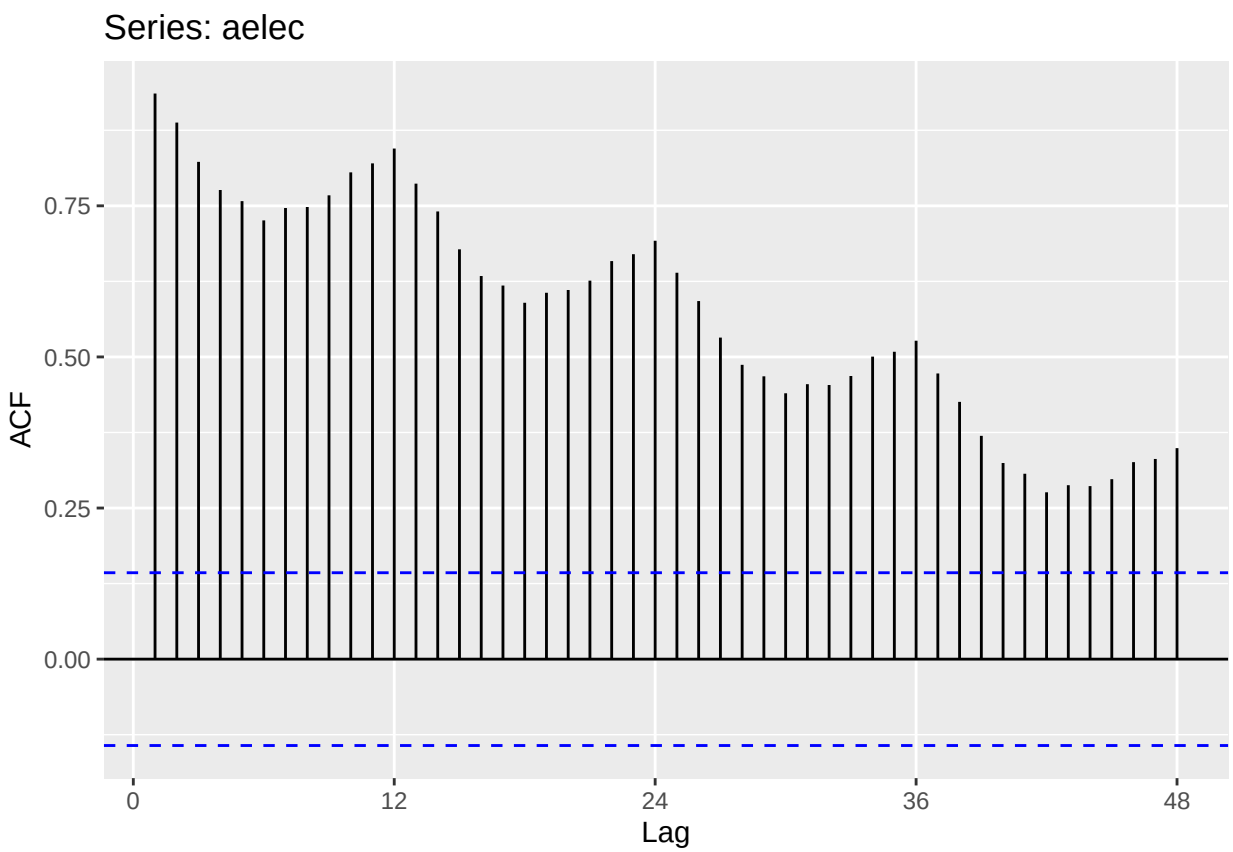

```
## ACF Plot
ggAcf(beer2) +
  ggtitle('ACF Plot: Correlogram')
```



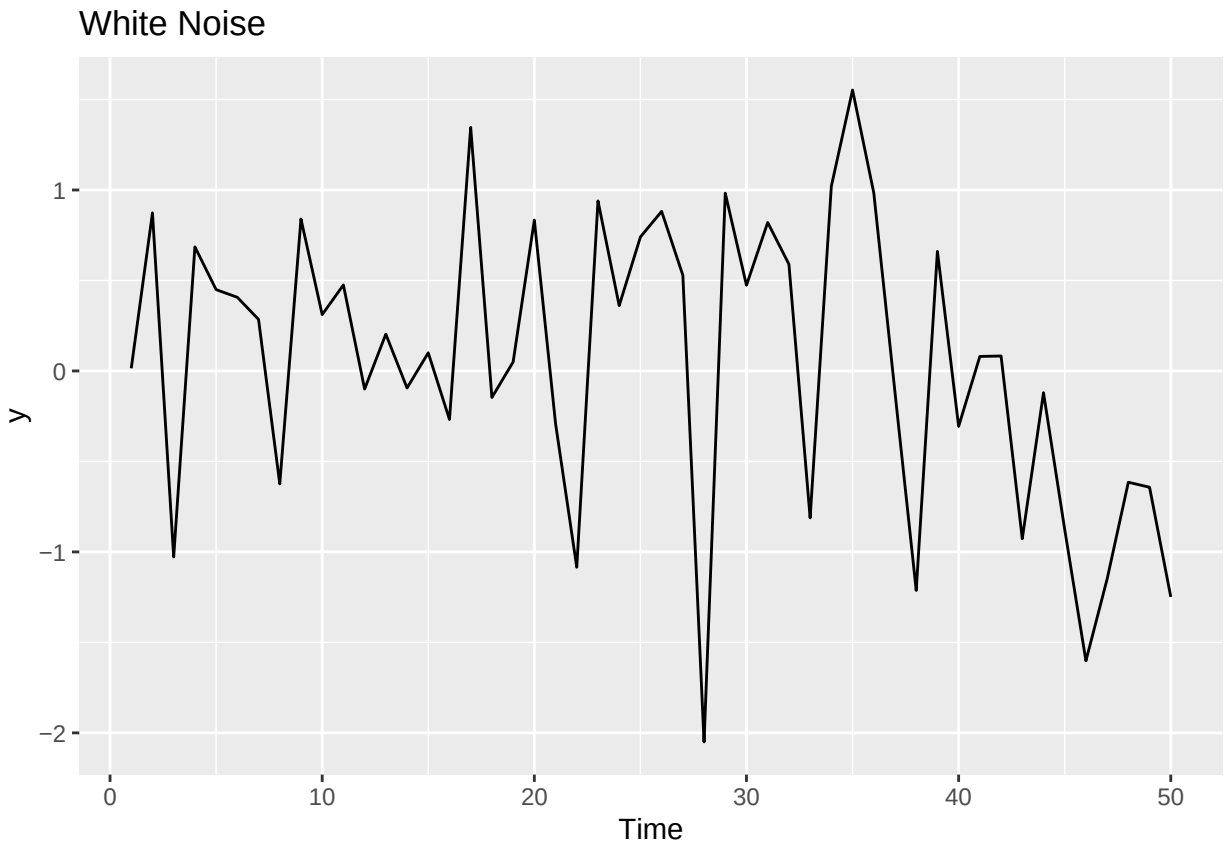

```
aelec <- window(elec, start=1980)
autoplot(aelec) + xlab("Year") + ylab("GWh")
```



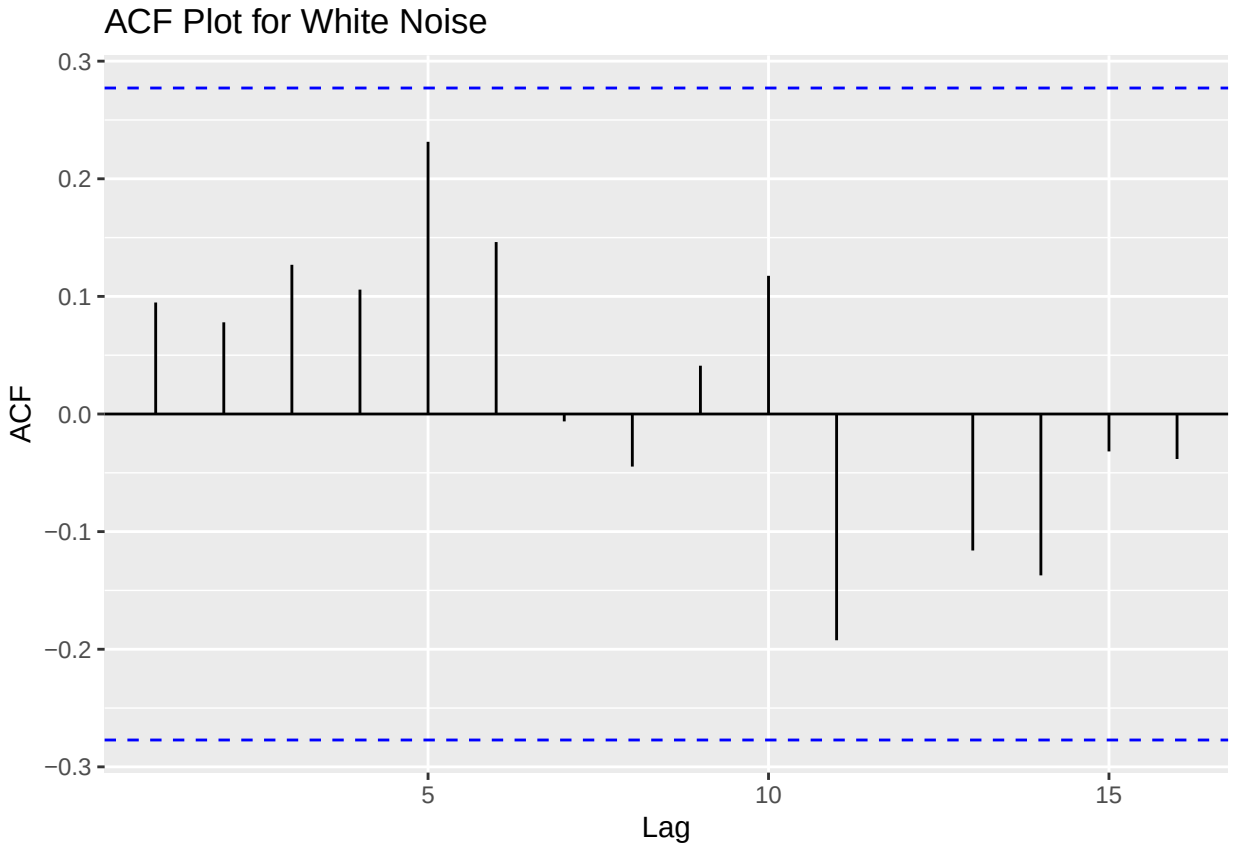
```r
ggAcf(aelec, lag=48)
```




```r
## White Noise
set.seed(32)
y <- ts(rnorm(50))
autoplot(y) +
  ggtitle("White Noise")
```




```
## ACF Plot for White Noise
ggAcf(y) +
  ggtitle('ACF Plot for White Noise')
```


ACF Plot for White Noise
ACF
Lag
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
5
10
15