# Time Series Graphics
Chapter 2

Pramod Duvvuri

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```r
## Load all required packages
library("pacman")
p_load("forecast", "fpp2", "GGally") # Equivalent of library("package-name")
```

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



```r
## Plot showing a Trend
autoplot(a10) +
  ggtitle("Antidiabetic drug sales") +
  ylab("$ million") +
  xlab("Year")
```
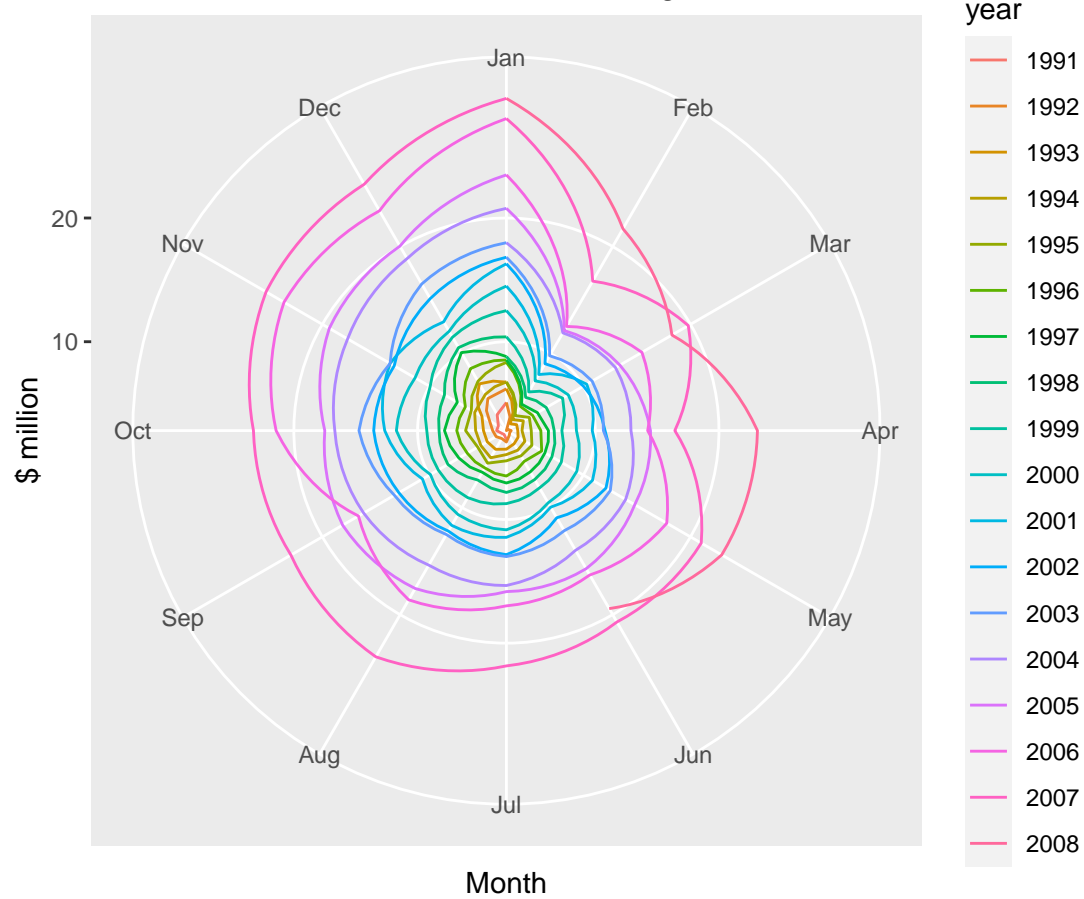
Antidiabetic drug sales
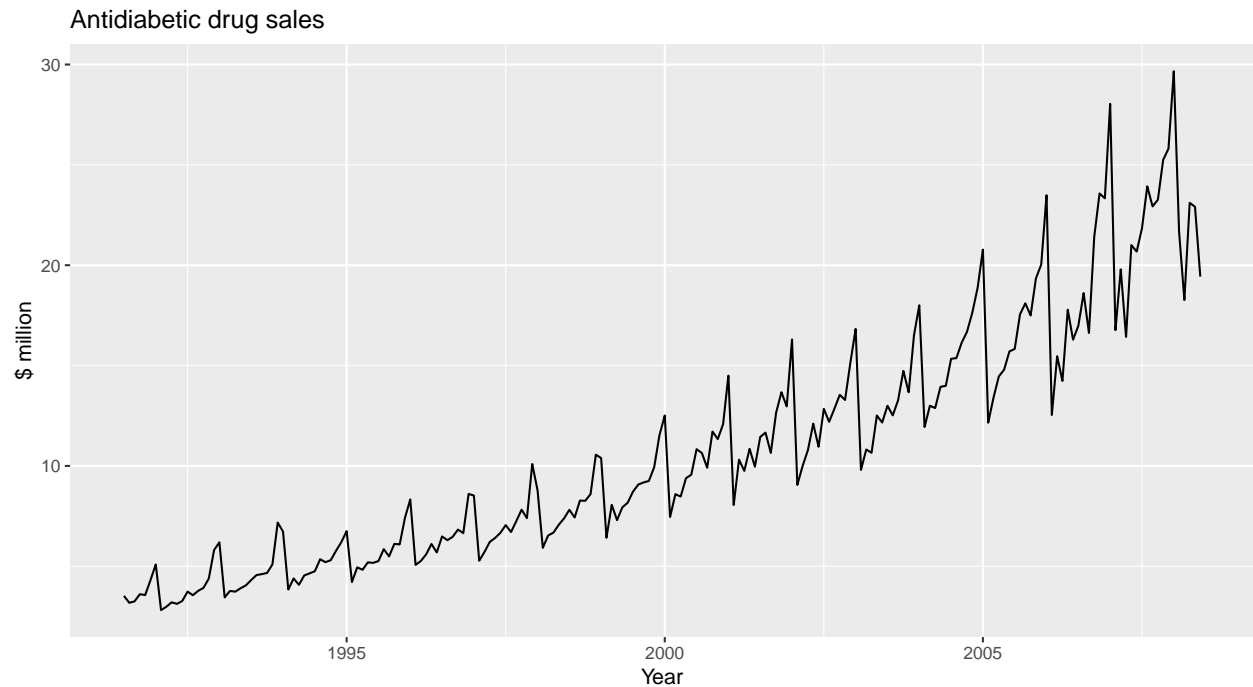
```
## Seasonal Plot
ggseasonplot(a10, year.labels = TRUE, year.labels.left = TRUE) +
  ylab("$ million") +
  ggtitle("Seasonal Plot: Antidiabetic Drug Sales")
```
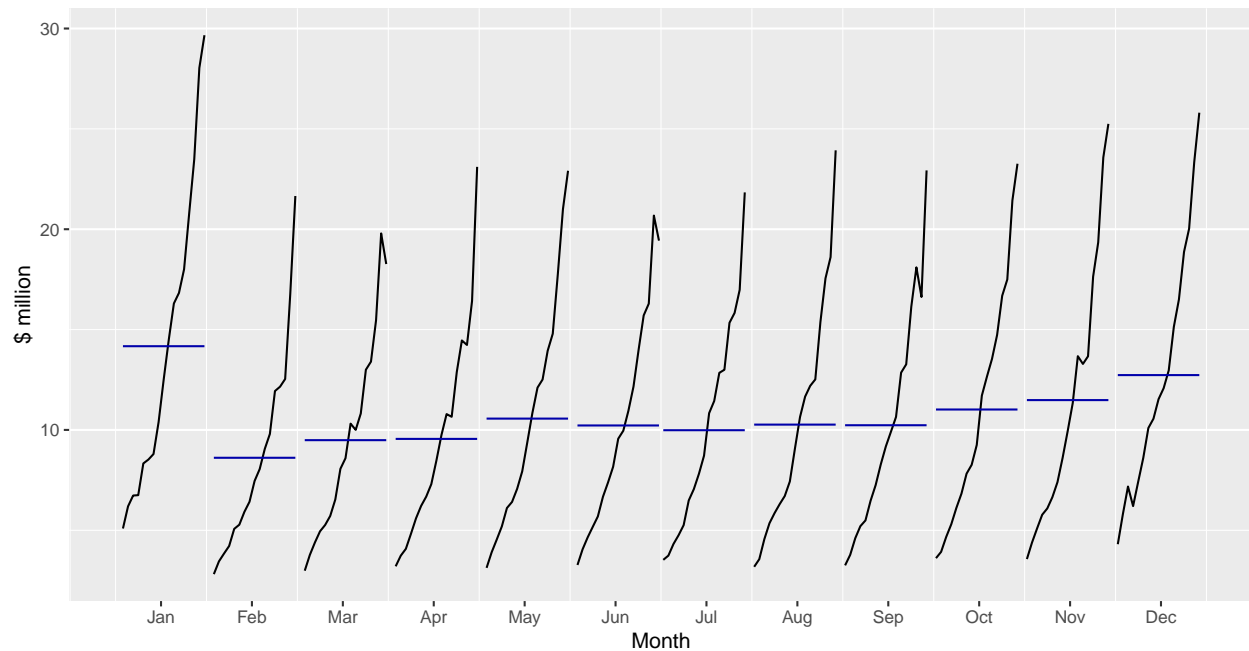
Seasonal Plot: Antidiabetic Drug Sales
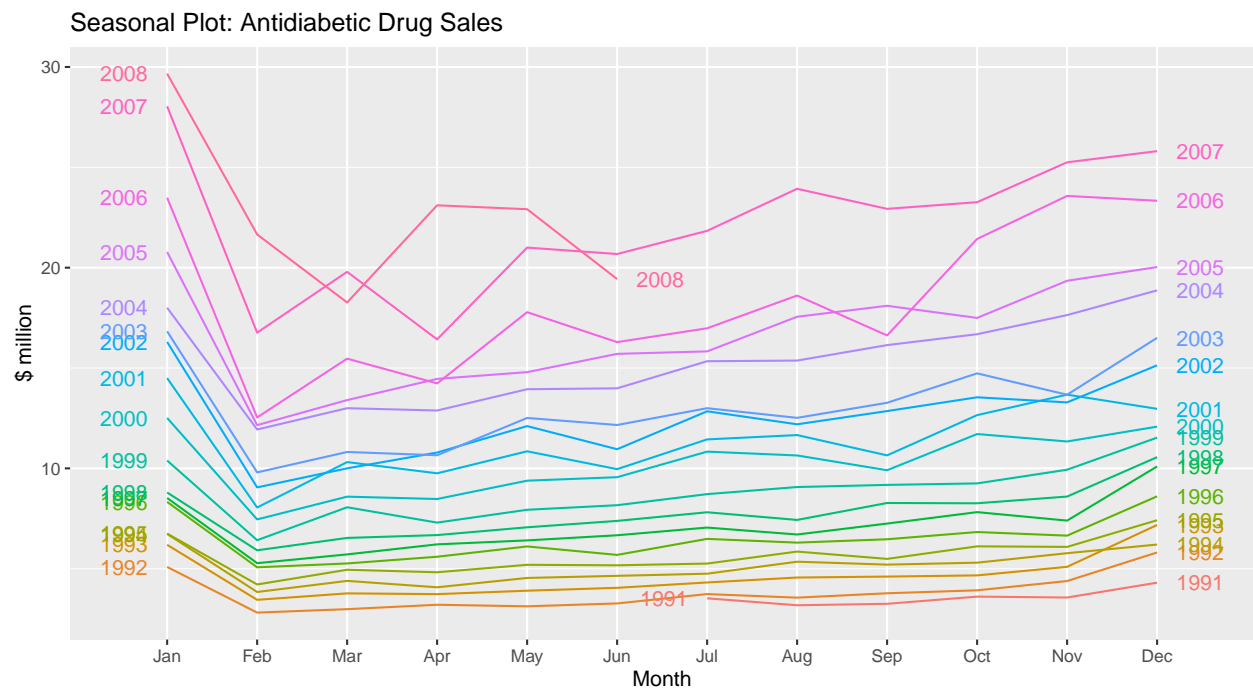
```
## Polar Seasonal Plot
ggseasonplot(a10, polar = TRUE) +
  ylab("$ million") +
  ggtitle("Polar Seasonal Plot: Antidiabetic Drug Sales")
```

Polar Seasonal Plot: Antidiabetic Drug Sales


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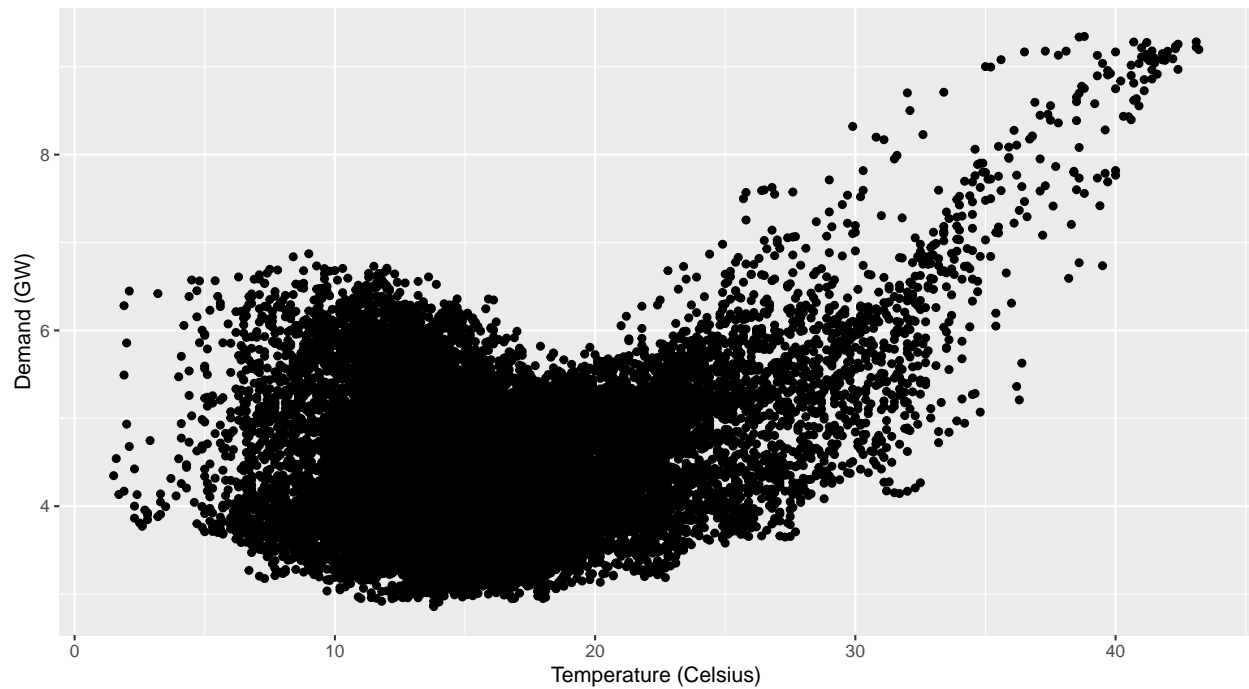
Seasonal Subseries Plot: Antidiabetic Drug Sales


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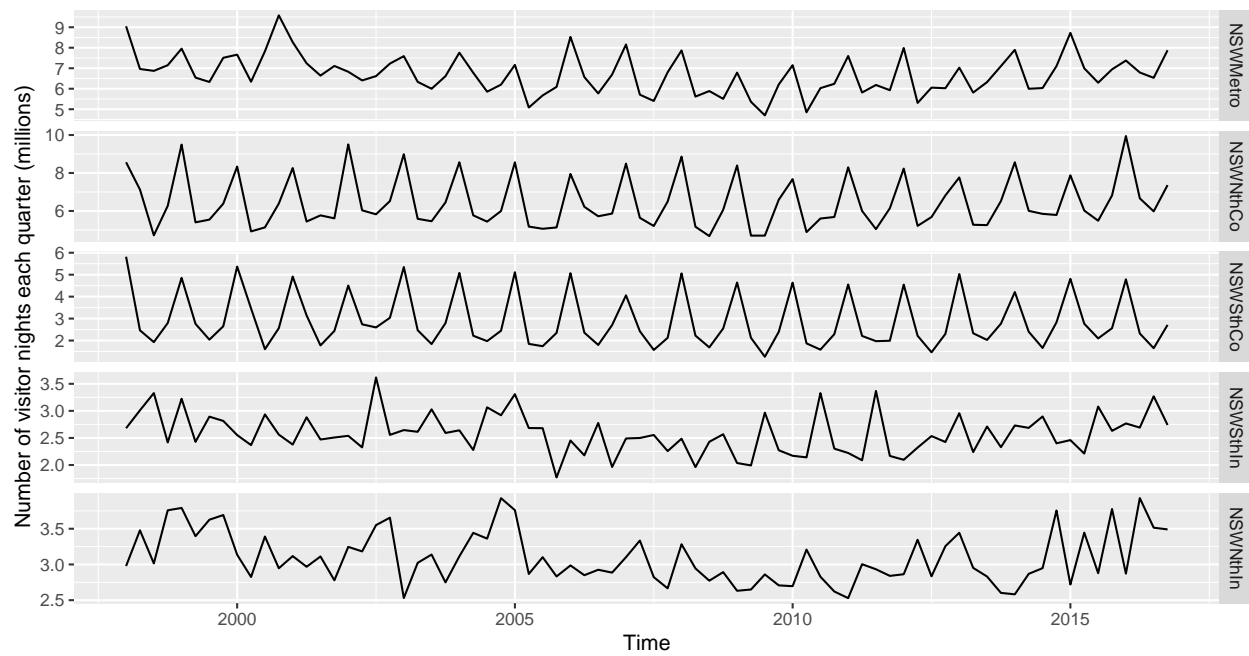
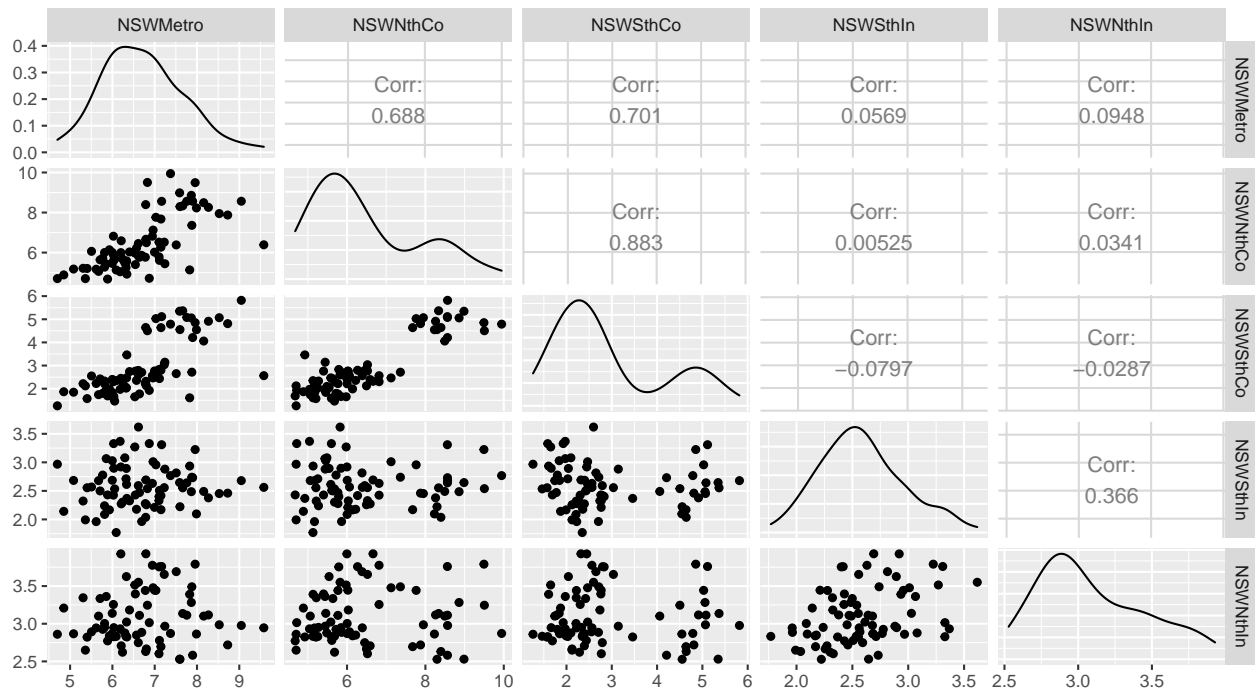## Half−hourly electricity demand: Victoria, Australia
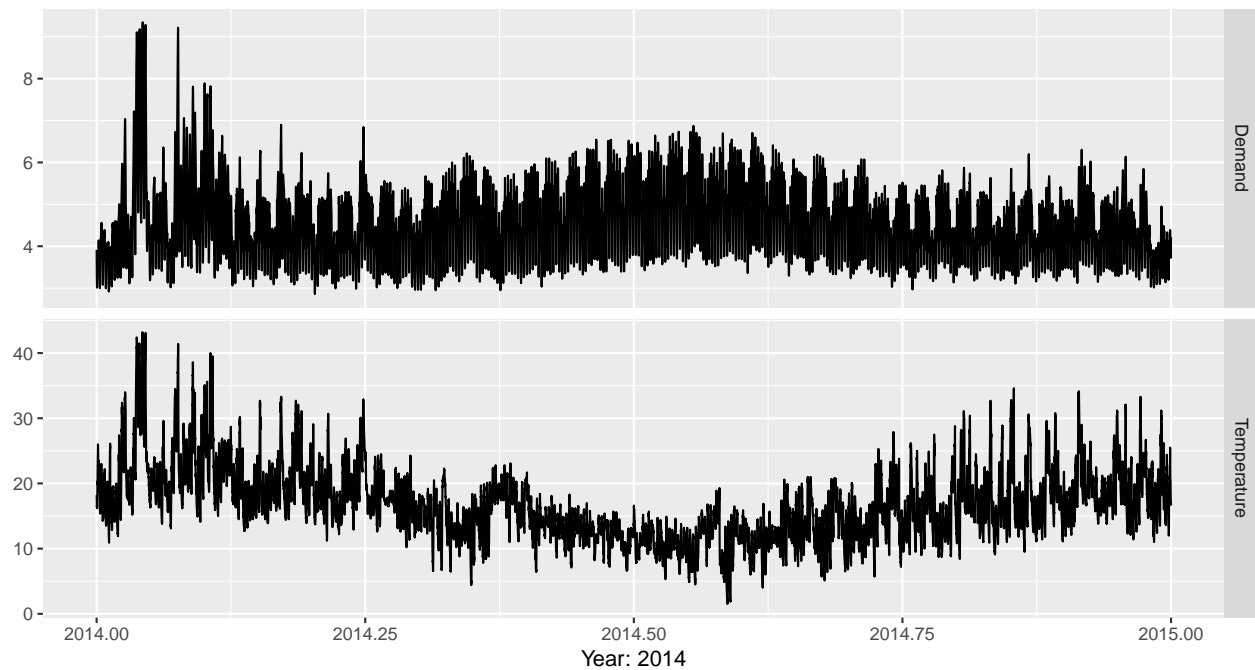

```
qplot(Temperature, Demand, data = as.data.frame(elecdemand)) +
  ylab("Demand (GW)") + xlab("Temperature (Celsius)")
```

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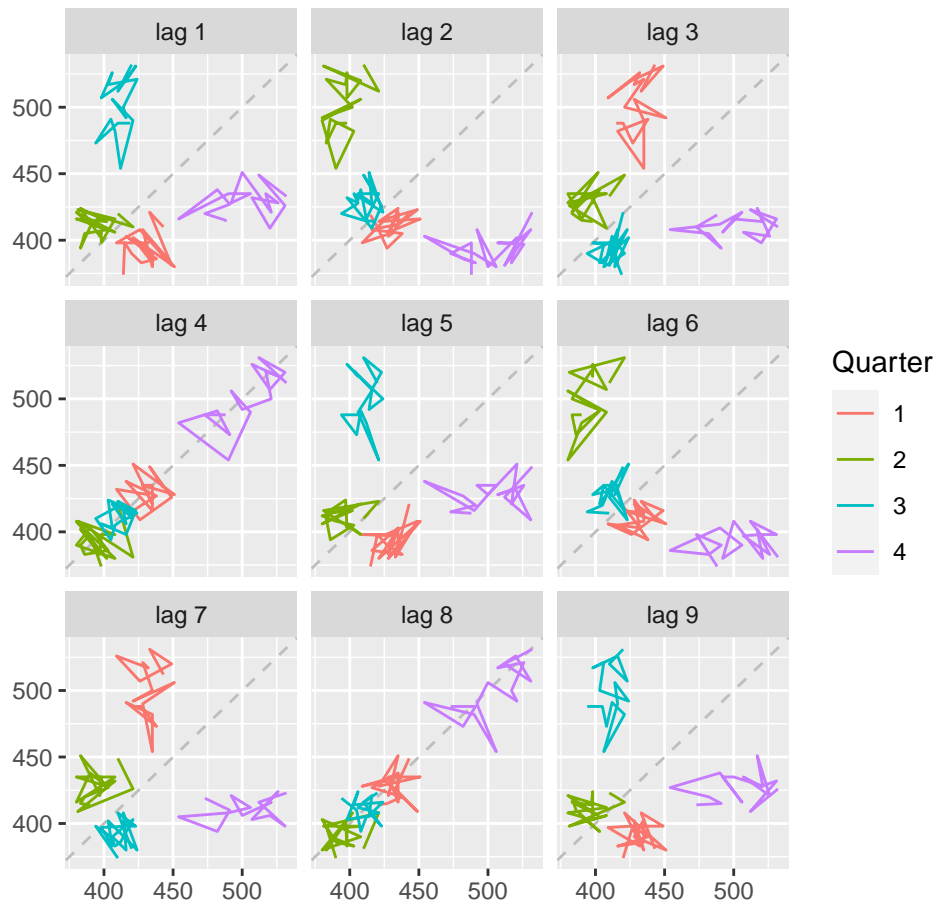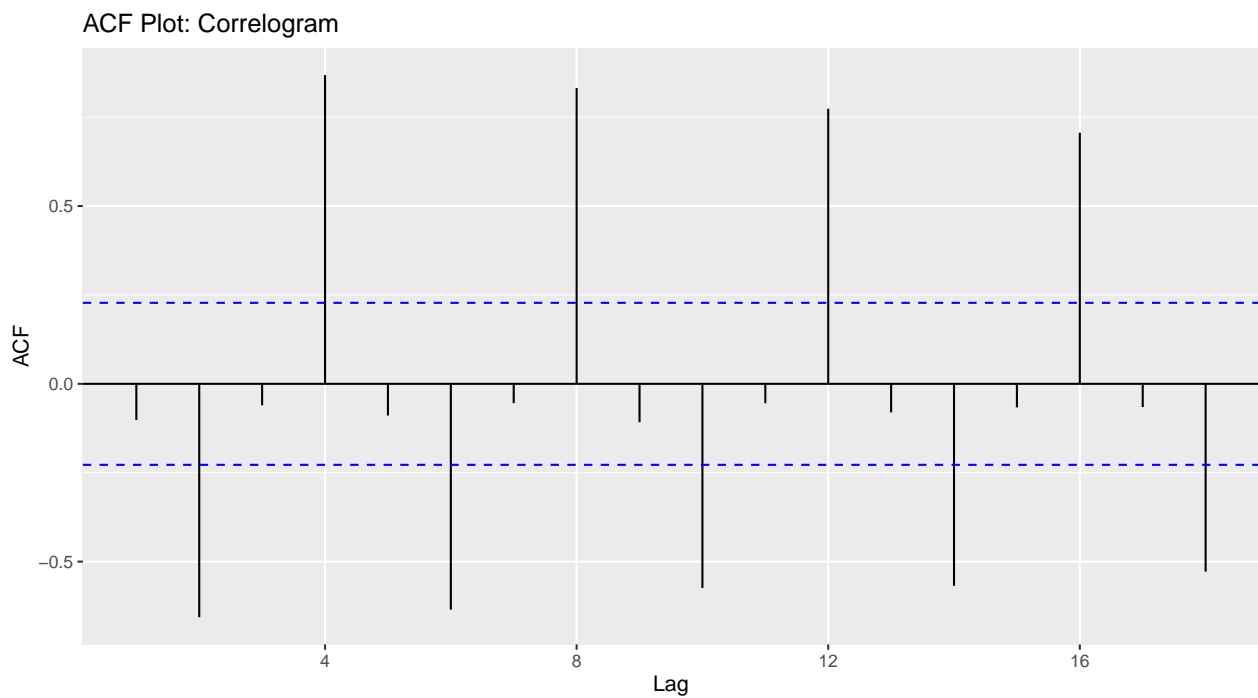


```
GGally::ggpairs(as.data.frame(visnights[, 1:5]))
```
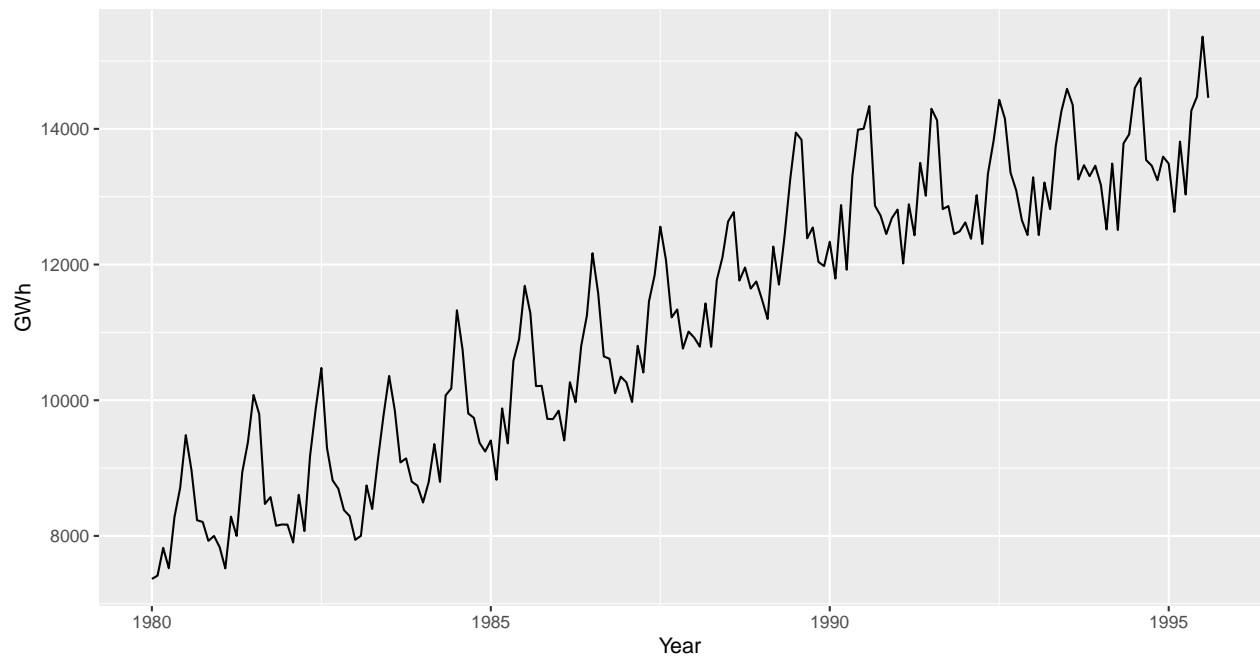
```
beer2 <- window(ausbeer, start = 1992)

## Lag Plots
gglagplot(beer2)
```

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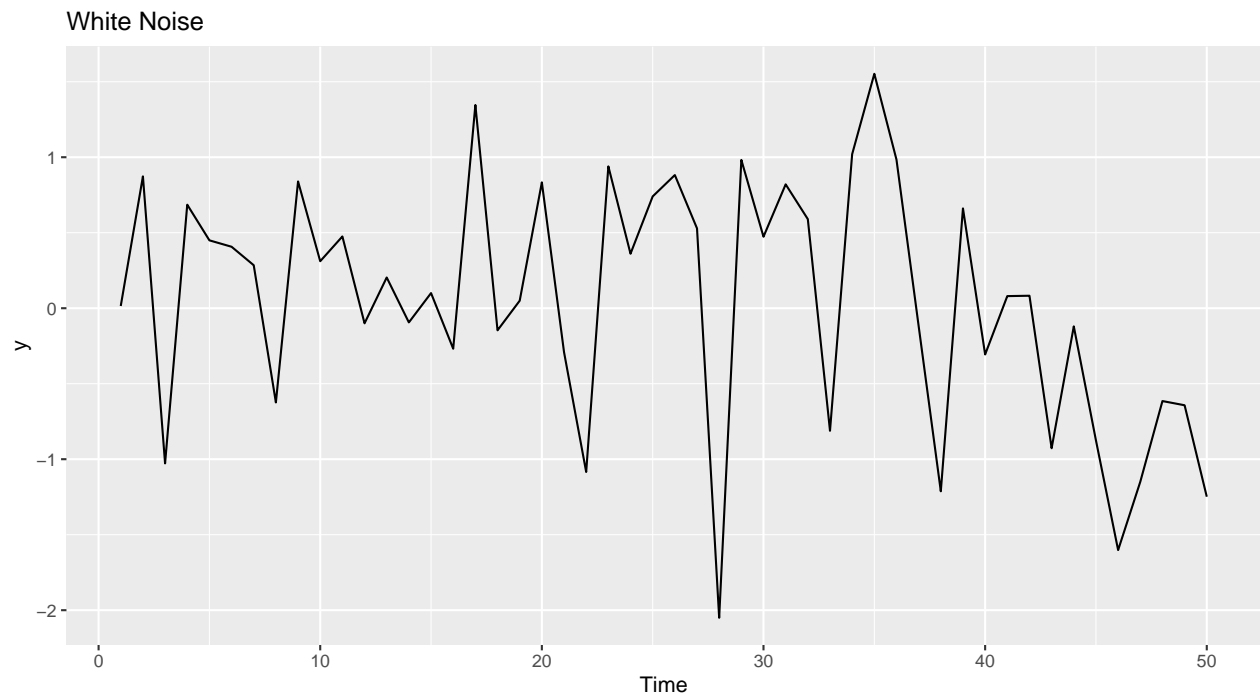

ACF Plot: Correlogram

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



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


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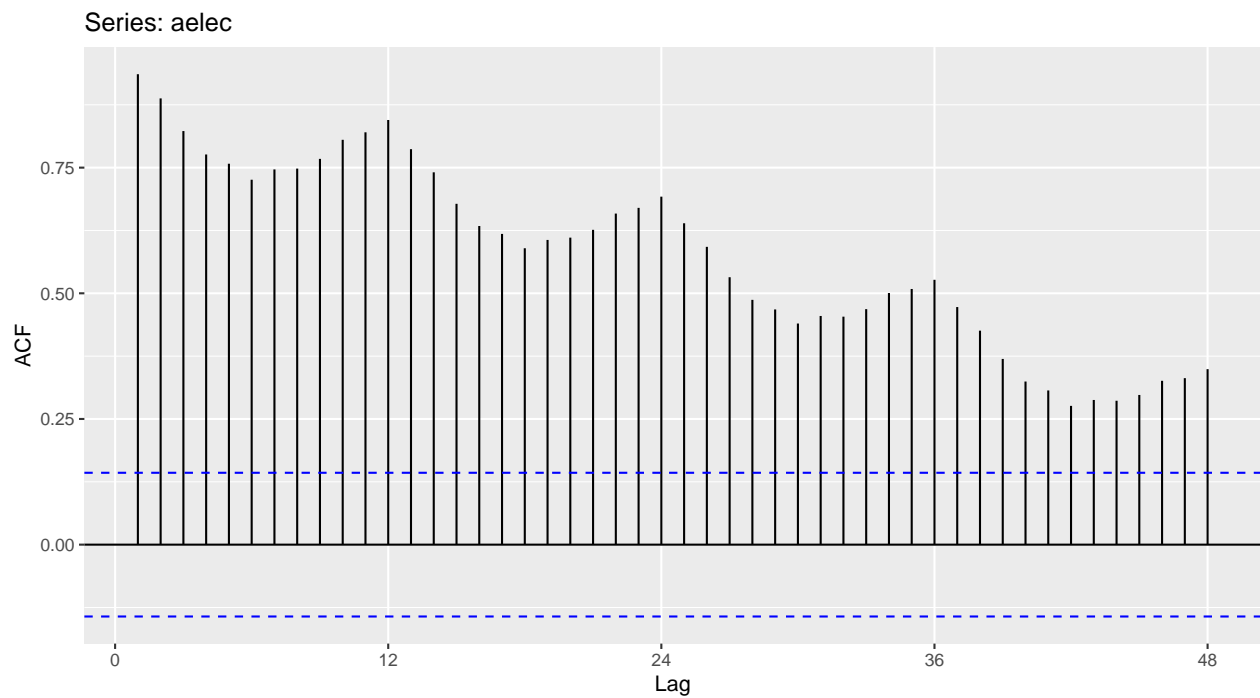
```r
## White Noise
set.seed(32)
y <- ts(rnorm(50))
autoplot(y) +
  ggtitle("White Noise")
```

White Noise


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

ACF Plot for White Noise