

Rob J Hyndman  
George Athanasopoulos

# FORECASTING

## PRINCIPLES AND PRACTICE

A comprehensive introduction to the latest forecasting methods using R. Learn to improve your forecast accuracy using dozens of real data examples.



3RD EDITION

 **OTexts**  
Oxford Texts in Finance and Statistics

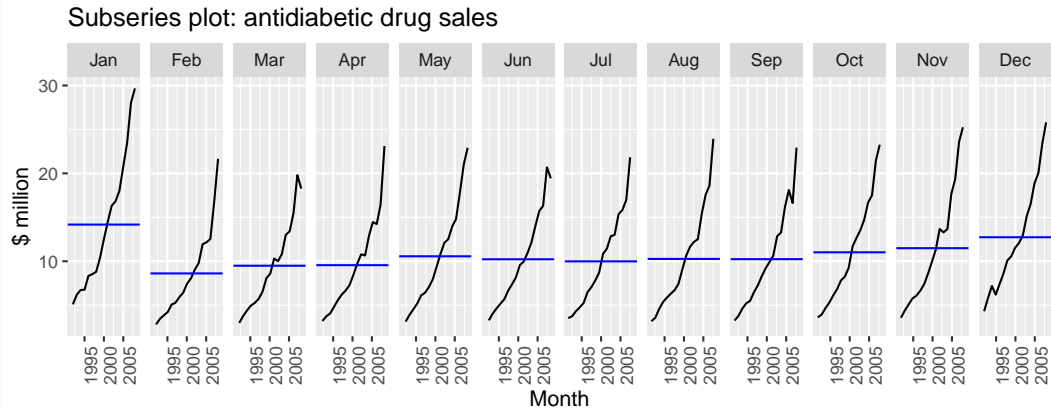
## 2. Time series graphics

### 2.5 Seasonal subseries plots

[OTexts.org/fpp3/](http://OTexts.org/fpp3/)

# Seasonal subseries plots

```
a10 |>  
  gg_subseries(Cost) +  
  labs(y = "$ million", title = "Subseries plot: antidiabetic drug sales")
```

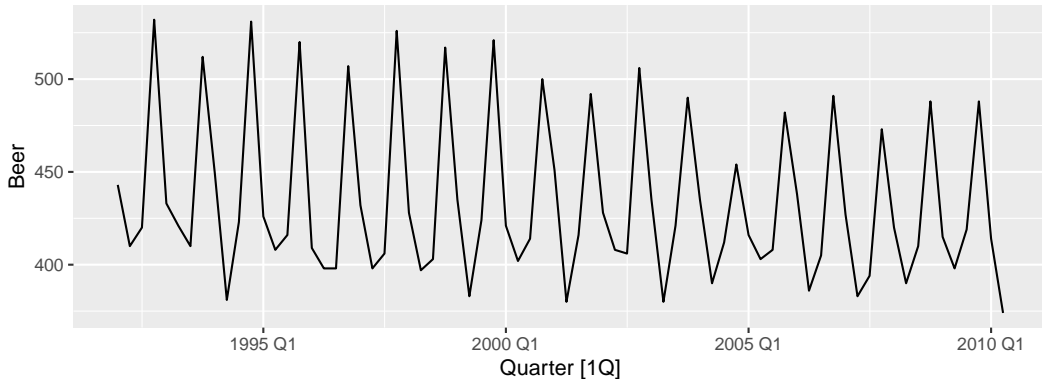


## Seasonal subseries plots

- Data for each season collected together in time plot as separate time series.
- Enables the underlying seasonal pattern to be seen clearly, and changes in seasonality over time to be visualized.
- In R: `gg_subseries()`

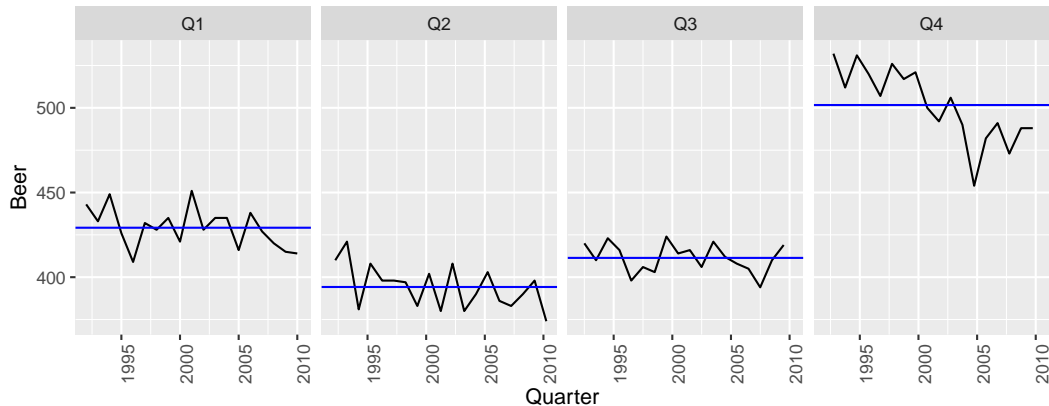
# Quarterly Australian Beer Production

```
beer <- aus_production |>  
  select(Quarter, Beer) |>  
  filter(year(Quarter) >= 1992)  
beer |> autoplot(Beer)
```



# Quarterly Australian Beer Production

```
beer |> gg_subseries(Beer)
```



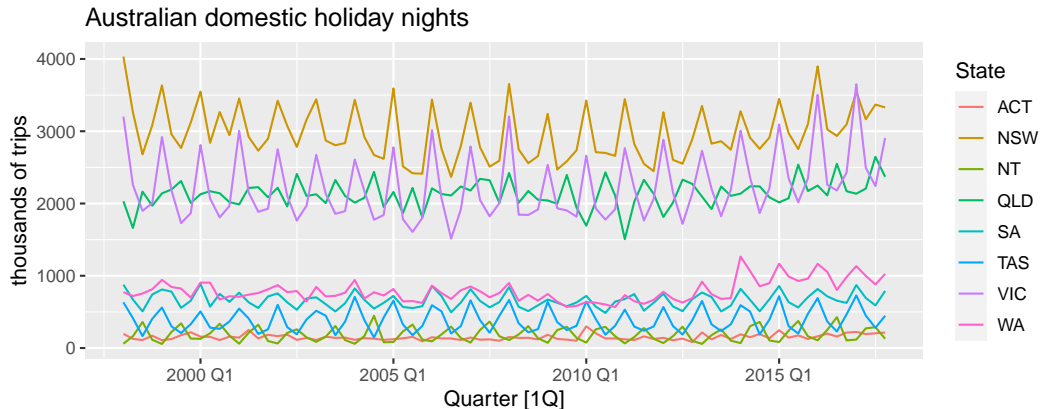
# Australian holidays

```
holidays <- tourism |>
  filter(Purpose == "Holiday") |>
  group_by(State) |>
  summarise(Trips = sum(Trips))
```

```
## # A tsibble: 640 x 3 [1Q]
## # Key:      State [8]
##   State Quarter Trips
##   <chr>    <qtr> <dbl>
## 1 ACT     1998 Q1  196.
## 2 ACT     1998 Q2  127.
## 3 ACT     1998 Q3  111.
## 4 ACT     1998 Q4  170.
## 5 ACT     1999 Q1  108.
## 6 ACT     1999 Q2  125.
## 7 ACT     1999 Q3  178.
## 8 ACT     1999 Q4  218.
## 9 ACT     2000 Q1  158.
```

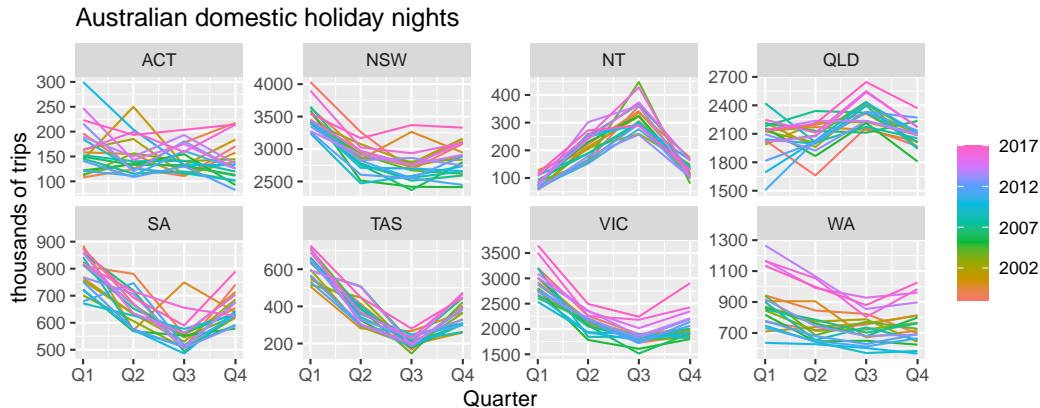
# Australian holidays

```
holidays |> autoplot(Trips) +  
  labs(y = "thousands of trips", title = "Australian domestic holiday nights")
```



# Seasonal plots

```
holidays |> gg_season(Trips) +  
  facet_wrap(vars(State), nrow = 2, scales = "free_y")+  
  labs(y = "thousands of trips", title = "Australian domestic holiday nights")
```





# Seasonal subseries plots

```
holidays |>  
  gg_subseries(Trips) +  
  labs(y = "thousands of trips", title = "Australian domestic holiday nights")
```

