Exercise: Time Series analysis for more than one series

This exercise will enable you to use iNZight to compare several series using Time Series analysis.

The skills addressed are:

- Use iNZight to create a Time Series plot for more than one series.
- Use iNZight to get several Time Series plots for different variables at the same time, to be able to compare them.

[*iNZight Lite version linked here*]

INSTRUCTIONS

Follow the instructions below to generate the graphs. Or you may prefer to print the instructions. If you have a problem doing the exercise, scroll down to **Common questions**.

Load the **Week8_AverageVisitorsQuarterly** dataset into iNZight using **File > Example data ….** You will find the data set in **Module (package)** *FutureLearn*.

Comparing several series

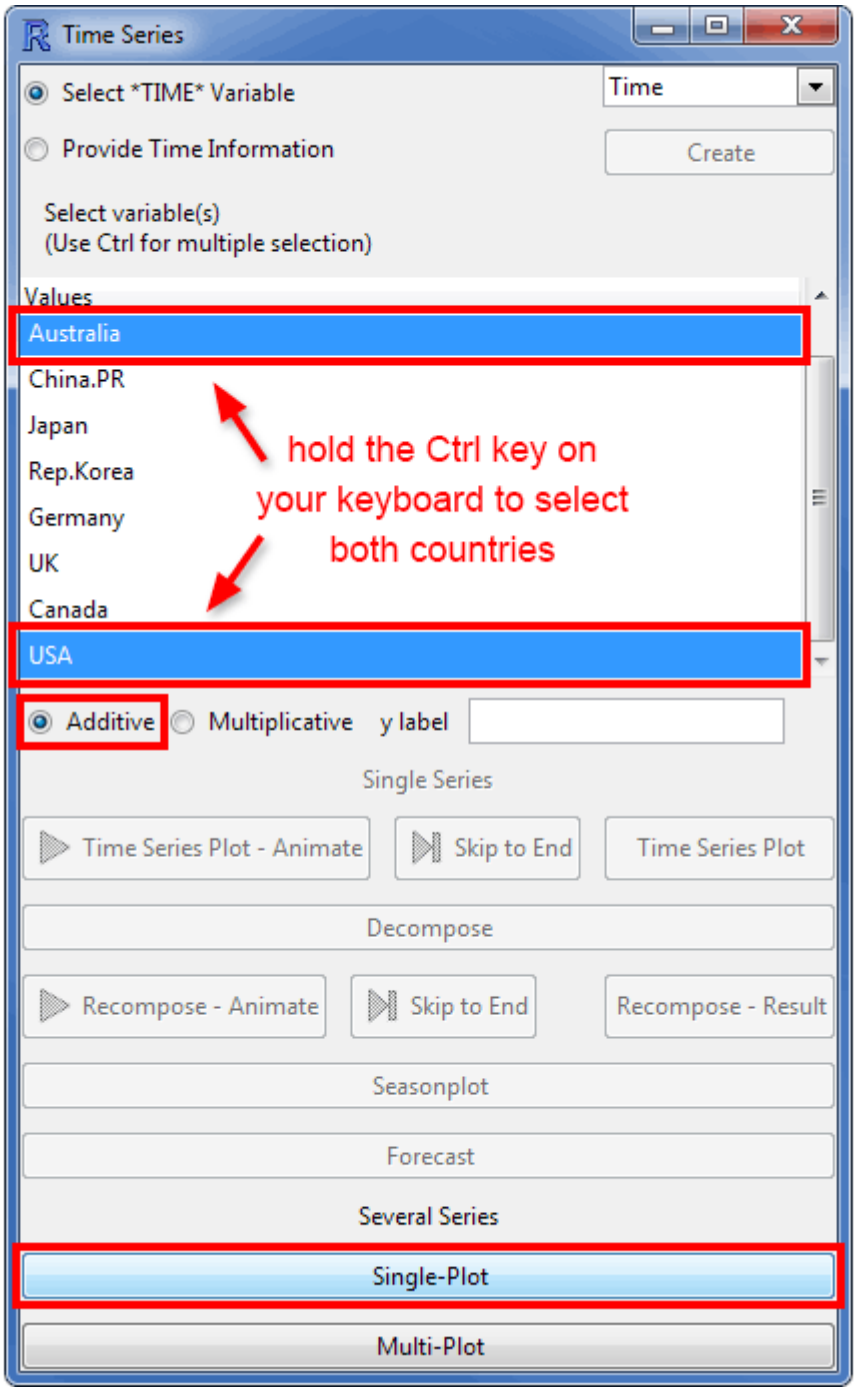
In the previous exercise we only looked at the visitors from one country alone. Now we want to see the graphs for more than one, to be able to compare their visitor numbers.

To do this we need the Time Series window again.

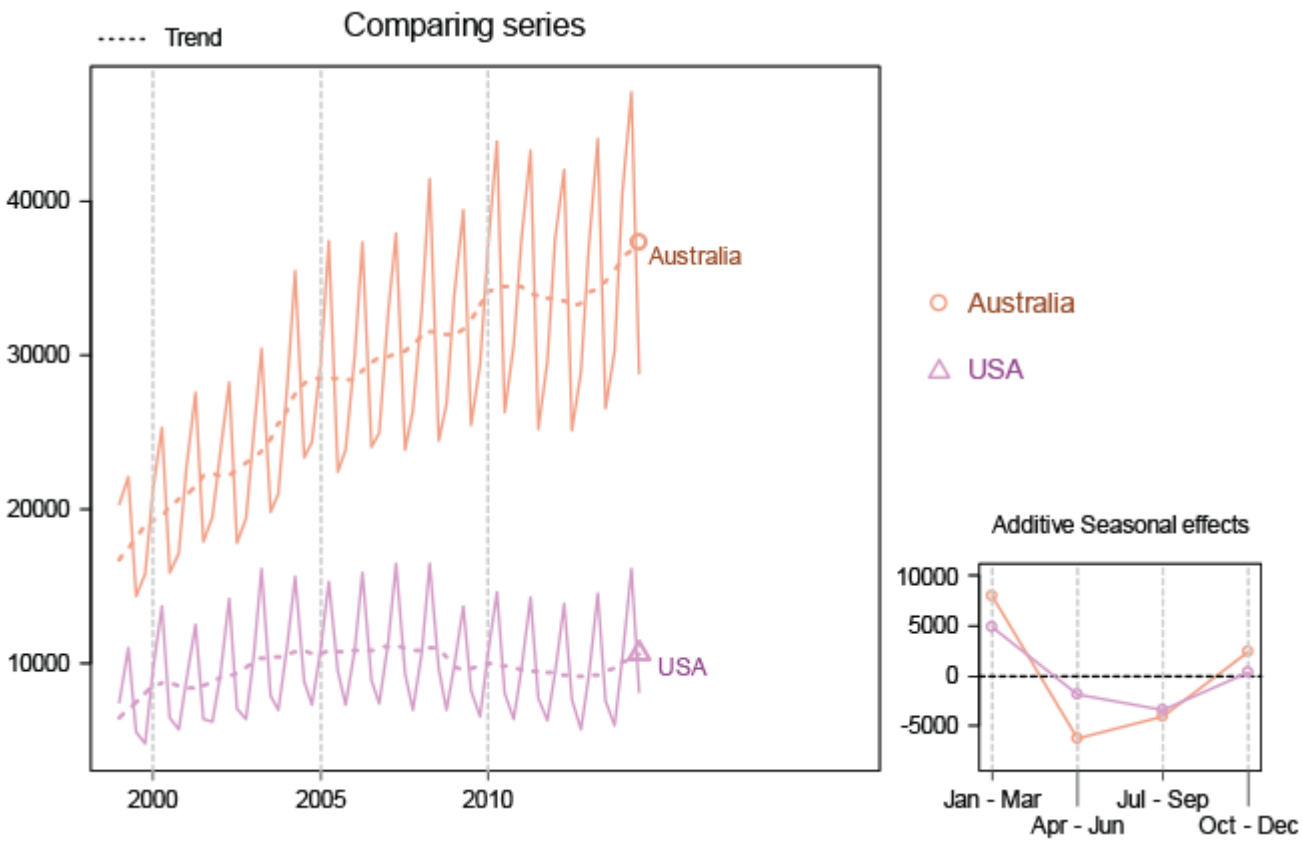
- Click **Advanced** in the top column
- Select **Time Series**.

First we'll compare visitors from Australia and the USA.

- Select **Australia** and hold the **Ctrl** key on your keyboard while selecting **USA**
- Choose **Additive**
- Click **Single-Plot**.



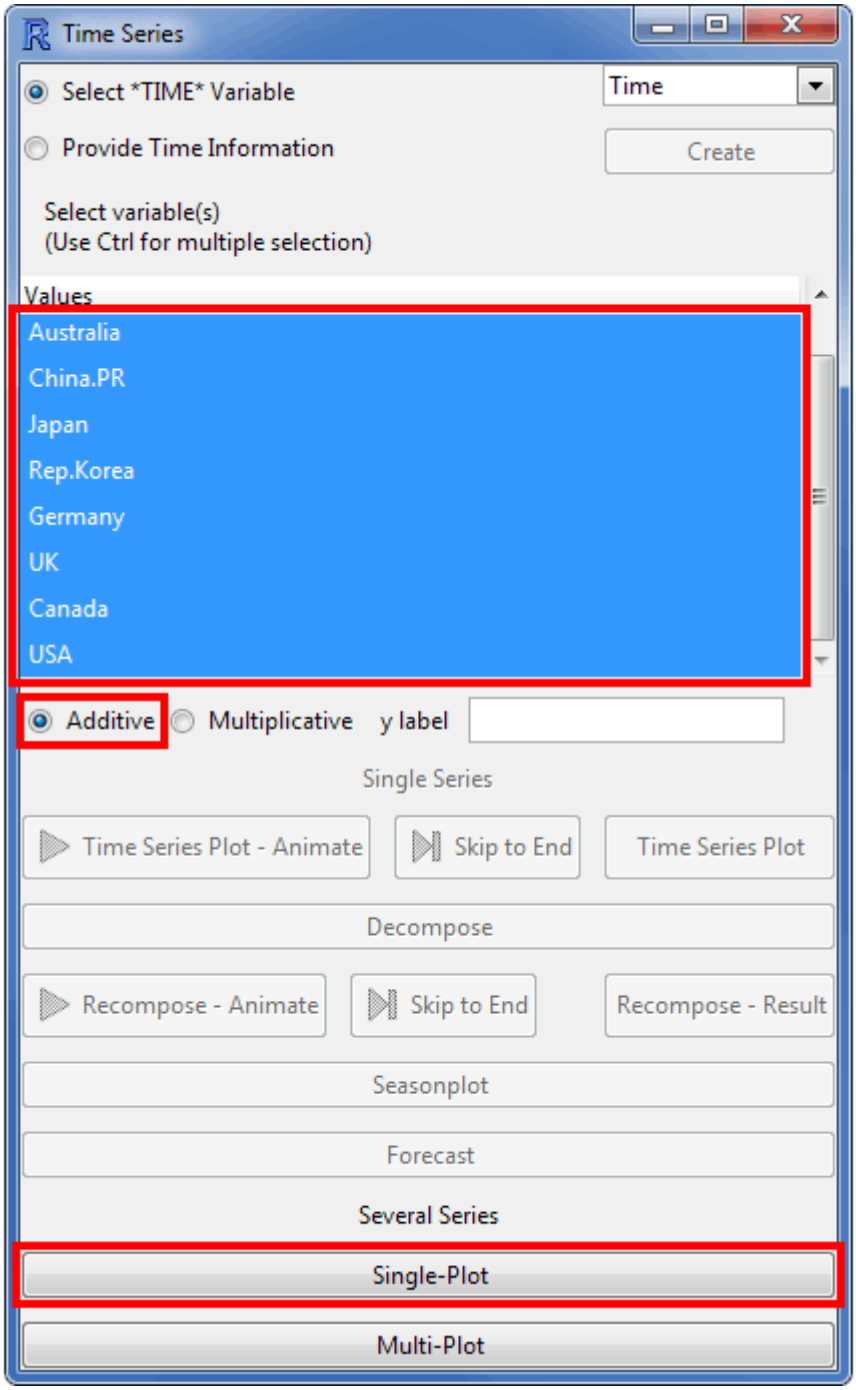
A Time Series plot will appear including the graphs for the USA and for Australia. On the right hand side you find the Additive Seasonal effects for both countries.

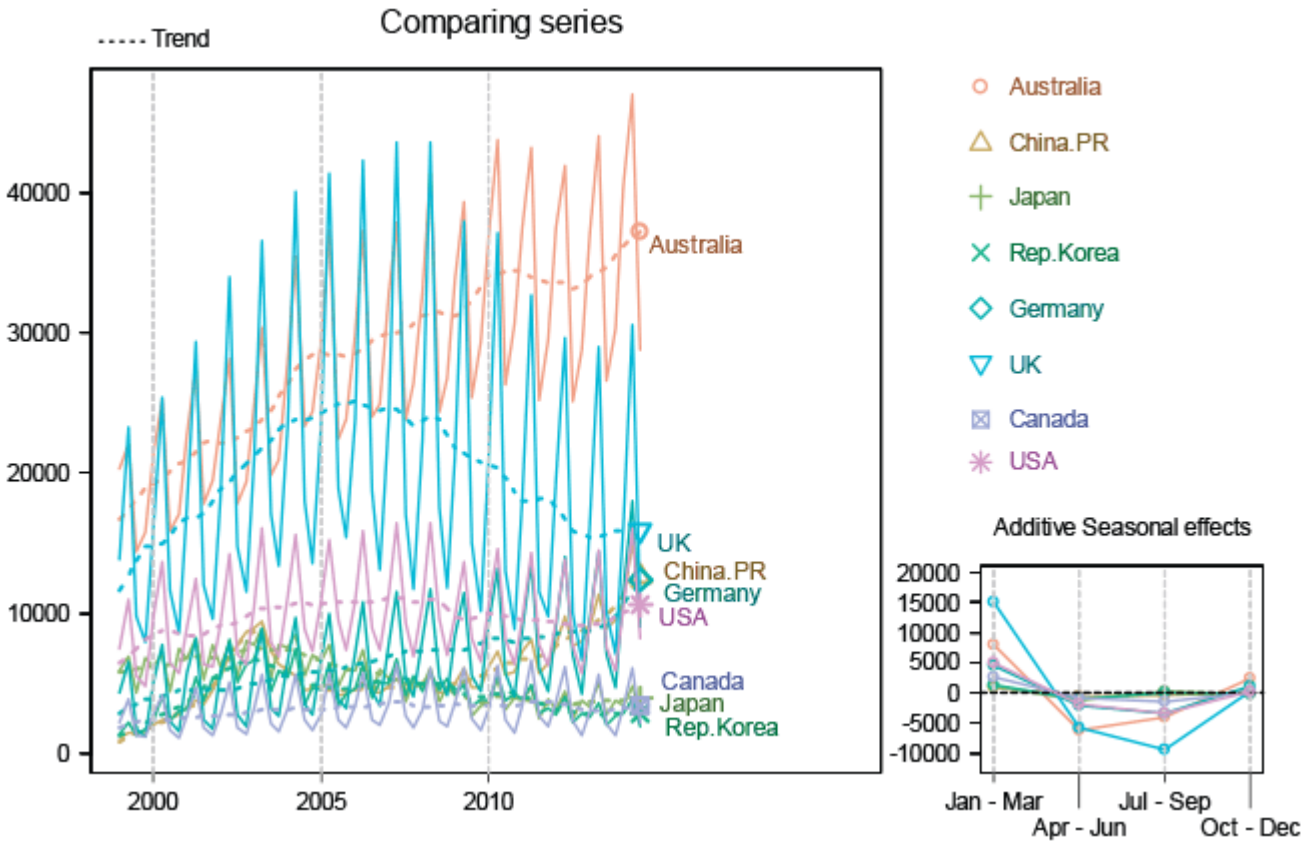


Enlarge image

Now we want to make a comparison for all the offered countries.

- **Select** all countries, hold the **Ctrl** key on your keyboard to do so
- Choose **Additive**
- Click **Single-plot**.


Time Series
Select *TIME* Variable
Time
Provide Time Information
Create
Select variable(s)
(Use Ctrl for multiple selection)
Values
Australia
China.PR
Japan
Rep.Korea
Germany
UK
Canada
USA
Additive
Multiplicative
y label
Single Series
Time Series Plot - Animate
Skip to End
Time Series Plot
Decompose
Recompose - Animate
Skip to End
Recompose - Result
Seasonplot
Forecast
Several Series
Single-Plot
Multi-Plot



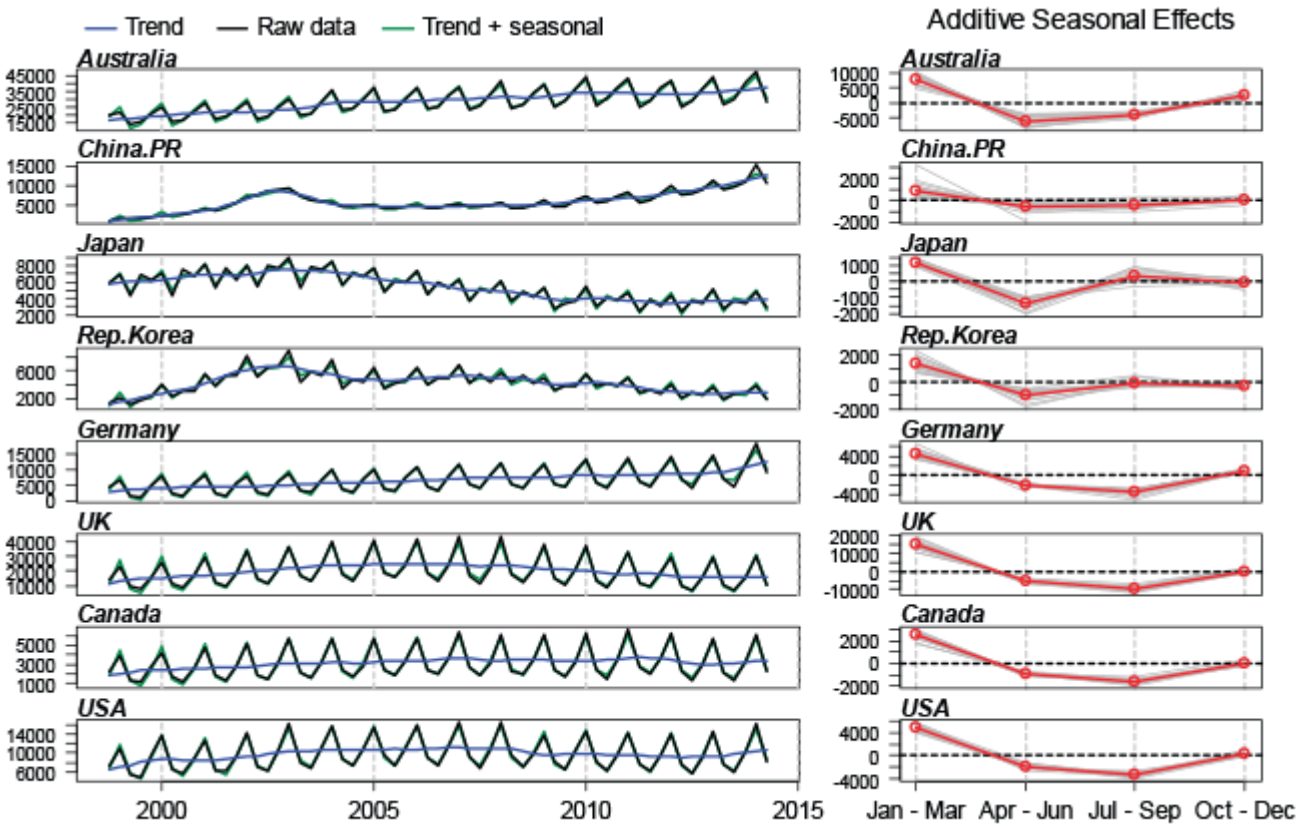
Enlarge image

Even though the plot shows the graphs for all countries it is quite hard to make comparisons because the graphs are too close in the bottom part.

When the ***visitor arrival*** numbers were plotted in the video, the numbers from Australia were much bigger than those from anywhere else. Here with ***numbers of visitors currently in the country***, the Australian figures are similar to the UK (at least until 2008 when the UK numbers started going down after the Global Financial Crisis).

What do you think might account for these differences (Australian "visitor arrivals" numbers much larger but "average visitor numbers in NZ" similar)?

To see the separate graphs, click **Multi-Plot**.



Enlarge image

Here all Time Series plots are separate and the approximation (Trend + Seasonal Swing) is also shown in green. On the right side you have the Additive Seasonal Effect for each year in grey and the average in red. If you have a problem with seeing the different lines it may help to enlarge the window.

Explore (~5min)

Use the Single-Plot and the Multi-Plot option to compare different countries. What similarities and differences do you see?

Post a comment if you discover anything interesting.

Common questions

Why does the window name say 'ACTIVE' or 'inactive'?

The ACTIVE window is the last one that was opened. Things like the recomposing refer to the graphs in that window.

When I change the size of a window it becomes grey.
When you have closed your ACTIVE window, the other windows become grey when you change their size. Generate a new ACTIVE window and change the size of the grey one. It will go back to normal.