Time series data

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Standard time series data is collected at equally spaced time points. iNZight's time series module, like most standard software, assumes this structure and assumes that there are no missing-data holes in the series.

If there are holes it will report an error (or may possibly produce silly results). This is not the totality of the way people collect data over time. It just the simplest, and probably the most common, case.

Holes in a series

If you have some holes in your series you could fill them in with guesses at the sort of values that might have been likely if a reading was able to be taken, and then change these guesses and see how that affects the results ("sensitivity analysis") - or find someone who knows about more sophisticated techniques and more sophisticated software. Holes are very common, for example, with data recorded daily on week days (Monday-Friday) because of public holidays.

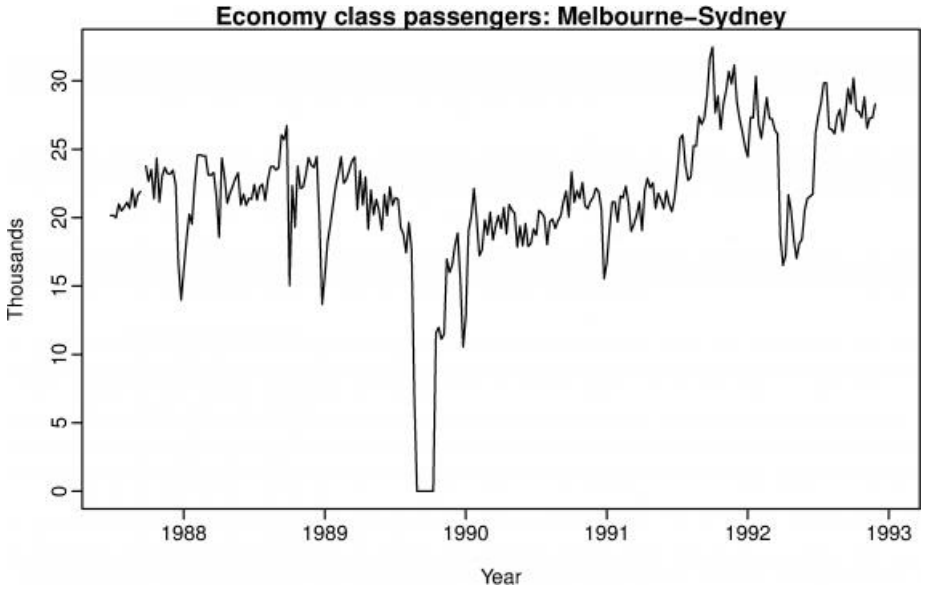
Cycles

In our discussion of time series data we highlight the time series with *seasonal patterns* (patterns that repeat over regular (or fixed) periods of time. There is another idea commonly raised in the discussion of time series, that of *cycle*.

Cyclic patterns are rises and falls that seem to repeat but over time periods that are not of the same length. We often hear of the "business cycle". Unless you have long series it is very hard to tell distinguish trend from cycle. We are not distinguishing between trend and cycle. If true cycles exist, the smoothers in iNZight are summarising the combination of trend and cycle.

Oddities

As with all forms of data, we should be on the lookout for things that look odd and then start wondering whether they are real and what caused them.



Weekly economy passenger load on Ansett Airlines

The plot shows the weekly economy passenger load on Ansett Airlines between Australia's two largest cities. You have probably spotted the most obvious oddity in this plot, the period in 1989 where it plunges down to zero passengers being carried. The cause was an industrial dispute.

There are quite a few other interesting patterns in this graph. To see what they are and what was happening we refer you to Section 2.1 of the excellent free online text "Forecasting: Principles and practice" by Hyndman and Athanasopoulos which is where we found the picture.