## Test for a statistical trend

A test for trend is applied to indicators that are proportions or rates (including crude rates and directly standardised rates) to identify recent or current trends. The calculations use the most recent indicator values () in the time series, their numerators () and their denominators () along with the time values (). Where any of the most recent indicator values are missing from the time series, the calculation is not carried out.

The algorithm starts with , ie a test for trend is carried out on the last five points in the time series. If a significant trend is found, that is highlighted in the Fingertips tool. If no significant trend is identified the test is repeated, adding the sixth most recent point in the time series. This process is repeated, adding a further point back in the time series until either a significant trend is identified, or the full time series has been tested. If there is still no significant trend with the full series, it is labelled as not significant.

For proportions and crude rates, the numerators and denominators are straightforward. For directly standardised rates, the populations are not used as the denominators: the effective denominators for the DSRs are calculated as:

The test statistic is calculated as:

If > 9.5495 the time series is labelled as significant (p < 0.2%).

The direction of the trend (either increasing or decreasing) is determined by calculating the gradient () of the slope that best fits the time series.

For proportions

For rates

If < 0 then it is labelled as a falling trend; if > 0 then it is a rising trend.