**2.2.4 Breakpoint analysis**

The following section will perform breakpoint analysis using the segmented package for each UK nation as well as the UK as a whole.

First we look to see if two and three breakpoints can be identified in any of the populations.

In many cases, breakpoints cannot be identified. However this may be if multiple breakpoints are being attempted, but not all can be estimated. We are mainly interested in whether there’s been a single breakpoint, and whether this has been identified consistently in all populations.

To investigate this, let’s explore whether the same single breakpoint can be consistently identified. We can do that by checking whether the choice of random number seed matters.

Note that consecutive random numbers cannot be used, as for some random numbers (4, 5 and 7 in this case) breakpoints cannot be identified.

Let’s pull the 1 breakpoint estimates

* Note: For some reason this currentl doesn’t run. I’m not sure of the reasons so this needs to be fixed at some point.

This shows that 1 breakpoint models can be identified for each population, but 2 and 3 breakpoint models only for some populations. For almost all populations, except Northern Ireland, the breakpoint is identified as around 2009 (so the change from 2009 to 2010)

**2.2.4.2 Breakpoint table**

This shows a lot of consistency in estimates of when the breakdown occurred. With the exception of Northern Ireland, we can use 2010 afterwards as ‘post-slowdown’, and the years from 1980 onwards as ‘pre-slowdown’.