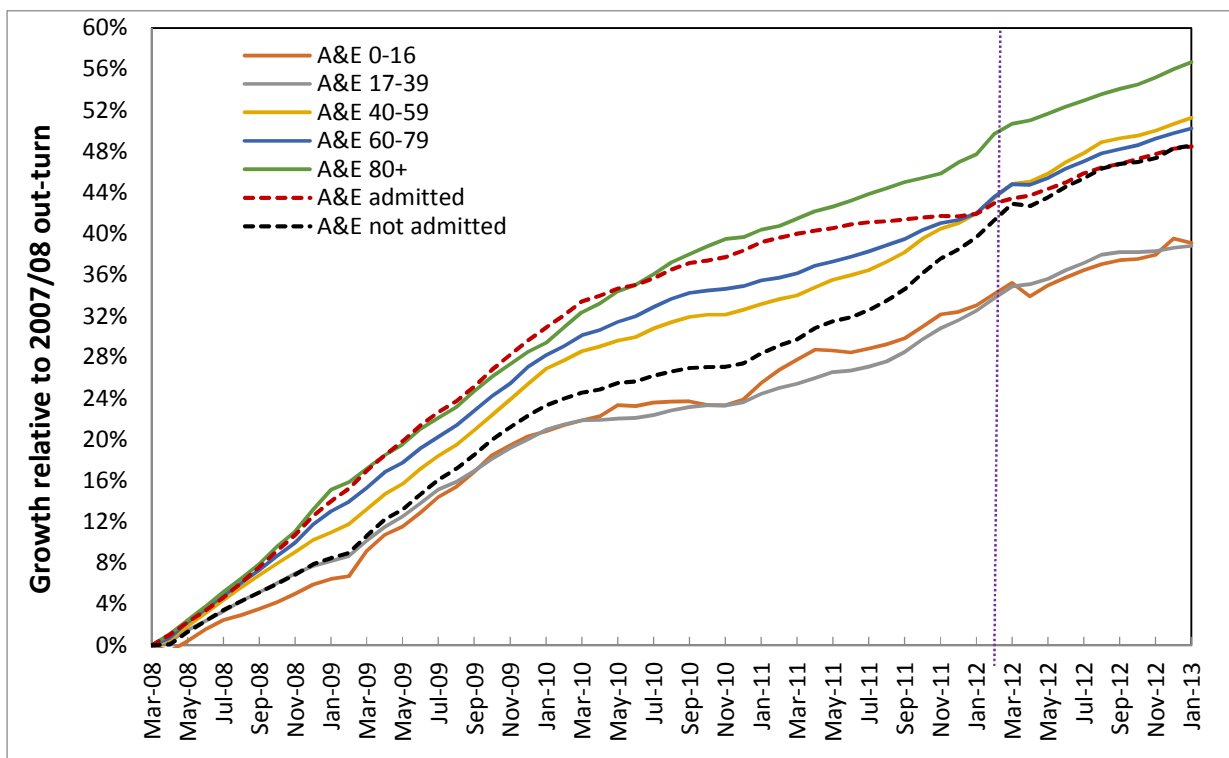# Hidden complexity in A&E trends in England

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Last month Money Matters investigated growth in total A&E attendance in England, growth in those A&E attendances which were admitted and growth in total emergency admissions which will include GP referred patients who are admitted directly via assessment units. A change in the trajectory of the trends was observed to occur at the point at which deaths unexpectedly increased and it was suggested that an unrecognized infectious outbreak may be involved (Jones 2013a,b).

Figure 1: Growth by age band and attendance outcome

Footnote: All trends are a running 12 month total.

This article will investigate the growth by age band and the time trajectory by attendance outcome (admitted versus not-admitted). Figure 1 summarises the situation with respect to age where growth in the various age bands has been adjusted for underlying population growth, however, the growth by attendance outcome has not been growth adjusted – it is the shape of the time trend that is the most important factor. As can be seen growth profiles for admitted and not-admitted (all age groups) follow two separate trajectories where the proportion admitted increases with age, hence, the profile for each age band will be a mix of the two trajectories.

There are several key points:

1. Even after adjusting for demographic growth the highest growth is in the >39 year old age bands and especially in the 80+ age band, i.e although there is underlying overall growth (see point 2) we cannot *primarily* blame the usual scapegoats of worried parents, irresponsible teenagers or young adults.
2. A proportion of the apparent underlying growth between 2007/08 and 2011/12 is due to increased data coverage in the HES data (Health and Social Care Information Centre 2013) although this will mainly affect non-admitted MIU and WIC data.
3. Note that up to Feb-2012 (the point that deaths increase) the profile for admitted attendances has peaked and looks to have started to decline while that for non-admitted drops to a lower slope seen immediately after the mid-2007 event where deaths likewise increase.
4. This age-specific response roughly corresponds to the same increase seen before and after the 2007 event (Jones 2012).

Recall that the far longer time series of points where deaths increase are symptomatic of deeper health related events (Jones 2013a,b).

At this point a comparison with a similar study conducted around the 2007 outbreak is warranted (Jones 2012). In the previous study the age-related changes in A&E attendance were corrected for both demographic change and under-reporting in the HES-based data. Data coverage in HES has increased from 63% in 2007/08 to 81% in 2011/12 (Health and Social Care Information Centre 2013) and as yet the detailed breakdown of the data shortfall is not available by age band to make this additional adjustment. Hence as discussed in point 2 above there is an apparent growth due to data capture which probably brings the resulting age-trends back to that observed around the 2007 outbreak, namely that growth is restricted to the older age bands and especially for the elderly. This is far more complex than everyone bypassing their GP to go to A&E.

However these matters aside the trend in non-admitted attendances given in Figure 2 shows a clear saw-tooth pattern which is interrupted in 2011 and includes unexpected peaks in attendance and the extent of the saw-tooth is also truncated in 2012/13. The small peak in attendances during October 2009 corresponds to the swine flu epidemic. Given the well-known

and extensively documented sensitivity of A&E attendances to a host of environmental variables (weather, air quality, infectious outbreaks) it would seem that this contribution to the overall trends needs to be explored in far greater detail.

In conclusion, both the trends and their trajectory over time are far more complex than simplistic explanations around 'system failure' may suggest. Attempts to run a complex and multi-billion pound health service without supporting health forecasting is exceedingly shortsighted and is probably a contributory factor to our current A&E dilemma which is almost certainly part of a much longer time series in A&E attendance, emergency admissions and deaths with a possible common infectious linkage (Jones 2010, Jones 2013a,b).

Figure 2: Growth in non-admitted attendances
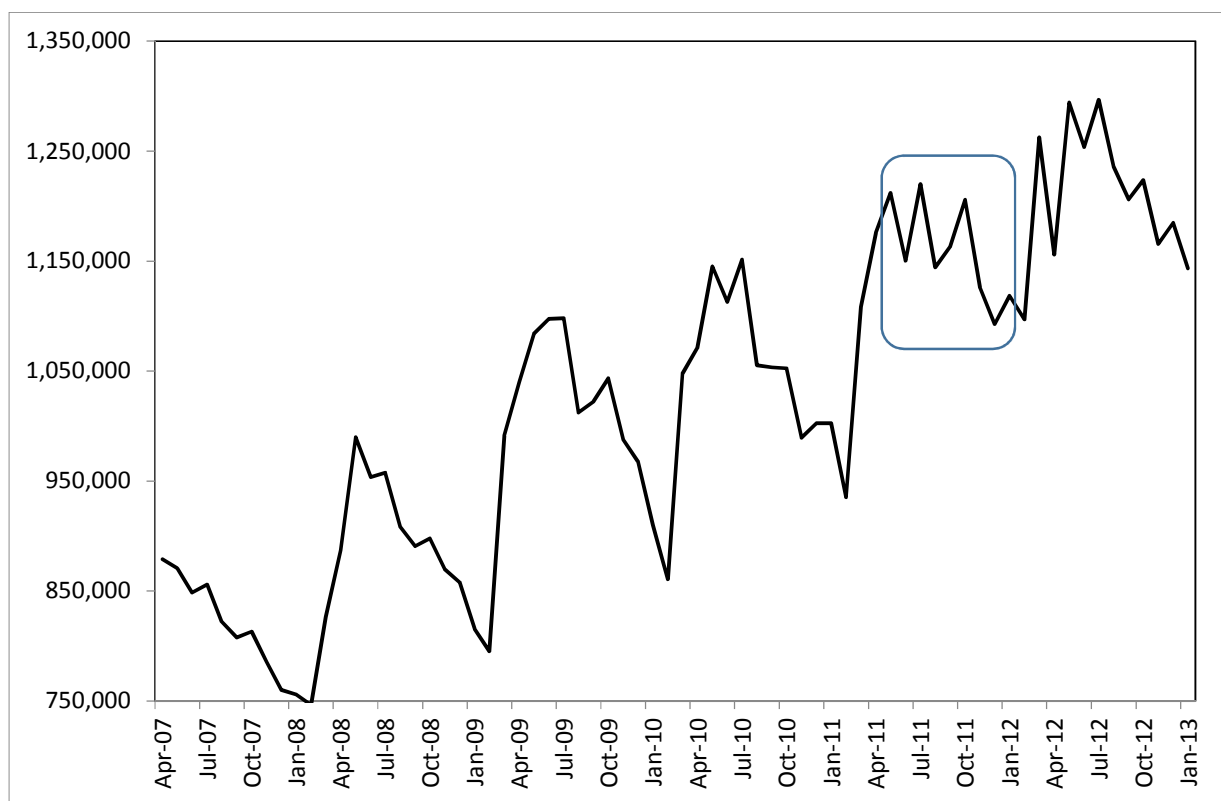
Footnote: Data is a count of monthly attendances after adjusting all months to same number of days per month.

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