# How to maintain 18 weeks with relative ease

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The previous article in this series discussed the capacity margin associated with
delivering 18 weeks and the need for flexible deployment of resources (Jones 2009c).
While operational managers will be sympathetic to such ideas they are caught in the
dilemma of needing some degree of certainty so that staff can arrive to work and run
clinics and theatre lists within the usual confines of work days, public and school
holidays and annual leave.

Figure 1: Referrals received for a dermatology clinic
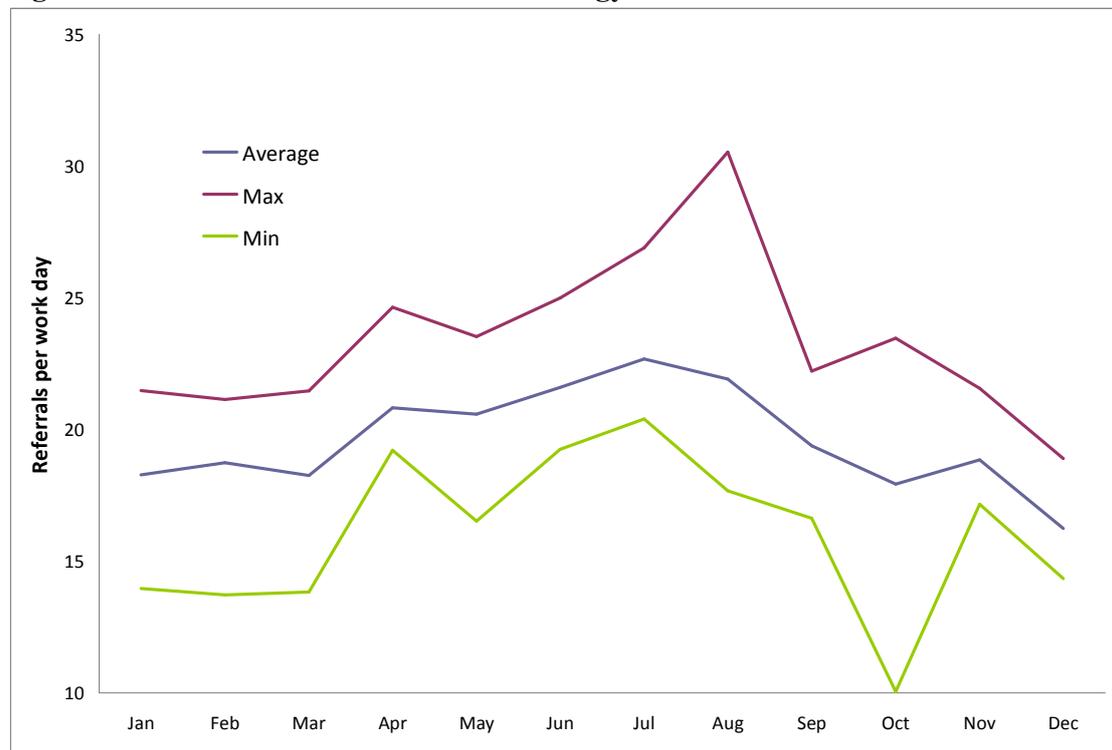
Footnote: Data was collected over a nine year period and adjusted for growth. Monthly referrals
were divided by the number of work days per month which ranges from 19 to 23 depending on
the month and year. This is because GP's make most referrals on a work day.

So how do we go about capacity planning in a somewhat demanding and uncertain world? The first step is to characterise the seasonal nature of demand. All diseases and conditions have a seasonal pattern either due to exacerbation of the symptoms by heat or cold, release of airborne allergens, a host of other environmental factors or due to factors such as summer holidays taking patients away to other locations or winter ice, etc. Hence GP referrals, A&E attendances, emergency admissions and even births all have their own patterns of demand (Jones 1996, Jones 2000, Jewell & Spiers 2000, Proudlove & Brown 2002).

In the context of delivering 18 weeks it is vital to understanding these patterns since the deployment of the basic human and physical resources need to match these patterns or else adapt to them. Experience shows that the data needs to be adjusted for the underlying relationship between total days or work days per month and that it takes over 5 years of data to get a reasonable estimate of the cycle in the face of the random scatter associated with all healthcare averages (Jones 1996, Jones 2000, Jones 1996). This fundamental step establishes the proportion of the total yearly demand likely to occur in that particular week or month. Remember that if the outpatient wait is an average of four weeks then the knock-on inpatient demand will have a four week lag, etc.

Making allowance for growth is a problematic area and the general conclusions from a recent review of the mechanisms for growth in emergency admissions are equally applicable to GP referral and elective inpatient demand (Jones 2009a,b). The key is to arrive at a likely average for the year with associated upper and lower limits.

The next step is to take the forecast annual demand and divide this out across the seasonal pattern and apply the likely upper and lower limits. From the viewpoint of efficient use of resources it may be best to plan to use regular staff resources to handle the likely demand lying between the minimum possible and the average and to use one-off resources to handle the possibility of outcomes between the average and the maximum, i.e. tell staff ahead of time that an occasional Saturday clinic may be needed (Jones 2001). At this point statistical models can be used to investigate a range of scenarios with discussion as to what steps could be taken to meet these scenarios.

Having done your homework you will then discover (to your horror) that the historical patterns of activity or available capacity (outpatient slots and theatre lists) do not come anywhere near the patterns of arriving demand. This is illustrated in Figure 1 where the seasonal pattern of referrals to Dermatology (as an example) reaches a peak in July & August; however, the available capacity follows patterns of staff holidays with minimum available capacity in July, August and December (Jones 2000). Now begins the challenging task of re-aligning resources to match the incoming demand and its associated variation around the average (Jones 2001).

The financial and operational impact of the necessary re-arrangement of resources to meet the cycles in demand can be estimated and it may well transpire that the most cost

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effective solution is to do more work when staffs are available (allowing the waiting list to drain and then re-fill) rather than attempting to change the summer holidays! Statistical modelling of outcomes will be required to balance the conflicting demands of economy and instant access. Finally process control charts can then be used to monitor performance (Jones 2002).

There will always be more than one way to achieve a desired objective and so capacity planning should always be supported by appropriate statistical analysis. Tools such as Monte Carlo simulation can prove to be a relatively simple and invaluable aid (Jones 2006). It is, after all, far better to have some idea of the likely range of outcomes before they occur rather than after! In a time where 18 week referral to treatment is a 'right' and not a 'target' the days of flying by the seat of the pants is no longer an option.

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