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Gender and financial risk in commissioning

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A series of articles in BJHCM has been attempting to draw attention to 'real world' commissioning risk arising out of the intrinsic volatility associated with the components of health care costs. In particular explanations are needed as to why the magnitude of financial risk appears to be highly location specific. Up to the present it has been assumed that if the capitation formula allocates equal funding then the financial risk should be roughly the same.

Volatility has been calculated as the percentage difference between one year and the next, i.e. to what degree do costs jump around from one year to the next. Volatility will also be high when the long-term trends contain hidden patterns and cycles arising from the interaction of health with the wider environment (Jones 2004, 2012a,b), i.e. the basis for location-specific volatility in costs.

In essence volatility is the basis for risk, uncertainty in forecasts, spurious financial variances, hence, futile management meetings, the need to swap money between budgets and attempts to address 'problems' which appear to have no immediately apparent direct cause or to which inappropriate solutions are devised based on an incorrect understanding of the real problem. Indeed what is the use of a contract between commissioner and provider where neither party is aware of the inherent uncertainty contained in the activity and costs? When is a particular cost line genuinely over-performing if there are no upper- and lower-limits against which to compare the performance?

It has been pointed out that certain diagnoses are more sensitive to the surrounding environment (weather, air quality, infectious outbreaks) than others (Jones 2012a,c) and based on the analysis of volatility associated with gender in cancers it would make sense to assume that there are additional gender differences (Jones 2010c, 2011, 2012d). Indeed analysis of over 1,500 diagnoses shows that 60% have >1 percentage point difference in volatility between the genders (474 female versus 435 male). Recall that national average volatility is around 3% so even a 1% increment is very significant. Figure 1 presents details of the top diagnoses (106 female, 86 male) showing >10 percentage points intrinsic difference in the volatility (diagnoses affecting pregnancy and the reproductive organs are excluded).

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There are several issues to be understood. Since the proportion of male and female admissions in each diagnosis can be variable (Jones 2010c) and the proportions will further vary between locations with different population demography the issue of gender differences in expressed volatility are very real and are a contributing factor to the wide range in intrinsic financial risk observed in different locations (Jones 2012b). These observations appear to explain the observed long-term cycles in the ratio of male to female costs observed for cancer and the costs for other long-term conditions (Jones 2011). Indeed research has confirmed that both pneumonia and influenza have characteristic levels of volatility which extend across geographic, age and gender domains (Crighton et al 2007, 2008). In this respect the interaction between the environment (location) and immune function is an area of growing academic interest (see http://www.msra.org.au/ausimmune-australian-multi-centre-study-environment-and-immune-function).

To illustrate the issues from a commissioning perspective the trends in aggregated occupied beds and admissions for the diagnoses showing very high intrinsic gender-differential volatility are shown in Figure 2. Each diagnosis can have one or more primary and secondary environmental effectors and so the two sets of diagnoses result in a highly complex system with unexpected trends involving multiple long-term gender patterns coupled with time lags and differential effects upon admissions and occupied beds.

There are three main conclusions. Firstly, the multiple hidden patterns in the data make it difficult to forecast with the degree of precision which commissioning seems to (incorrectly) imply is possible. Secondly, the assumption that 'fair funding' is associated with equal ease of financial management is fundamentally flawed and CCGs operating in particular locations will struggle with this issue as did PCTs before them. Thirdly, if cycles are such an intrinsic part of health care cost behaviour (Jones 2010a, 2012a) then financial forecasting and budgeting needs to be conducted over a time frame consistent with such cycles, i.e. around six years, and surpluses need to be carried forward to cover the part of the cycle where a deficit is accrued.

In the field of statistical process control the variation (or volatility) is said to be 'the voice of the process' (Wheeler & Chambers 1992). The process is indeed speaking but are we listening? It would seem that the commissioning board is about to enforce a system of performance management which is based upon a flawed understanding of the spatio-temporal behaviour of costs.

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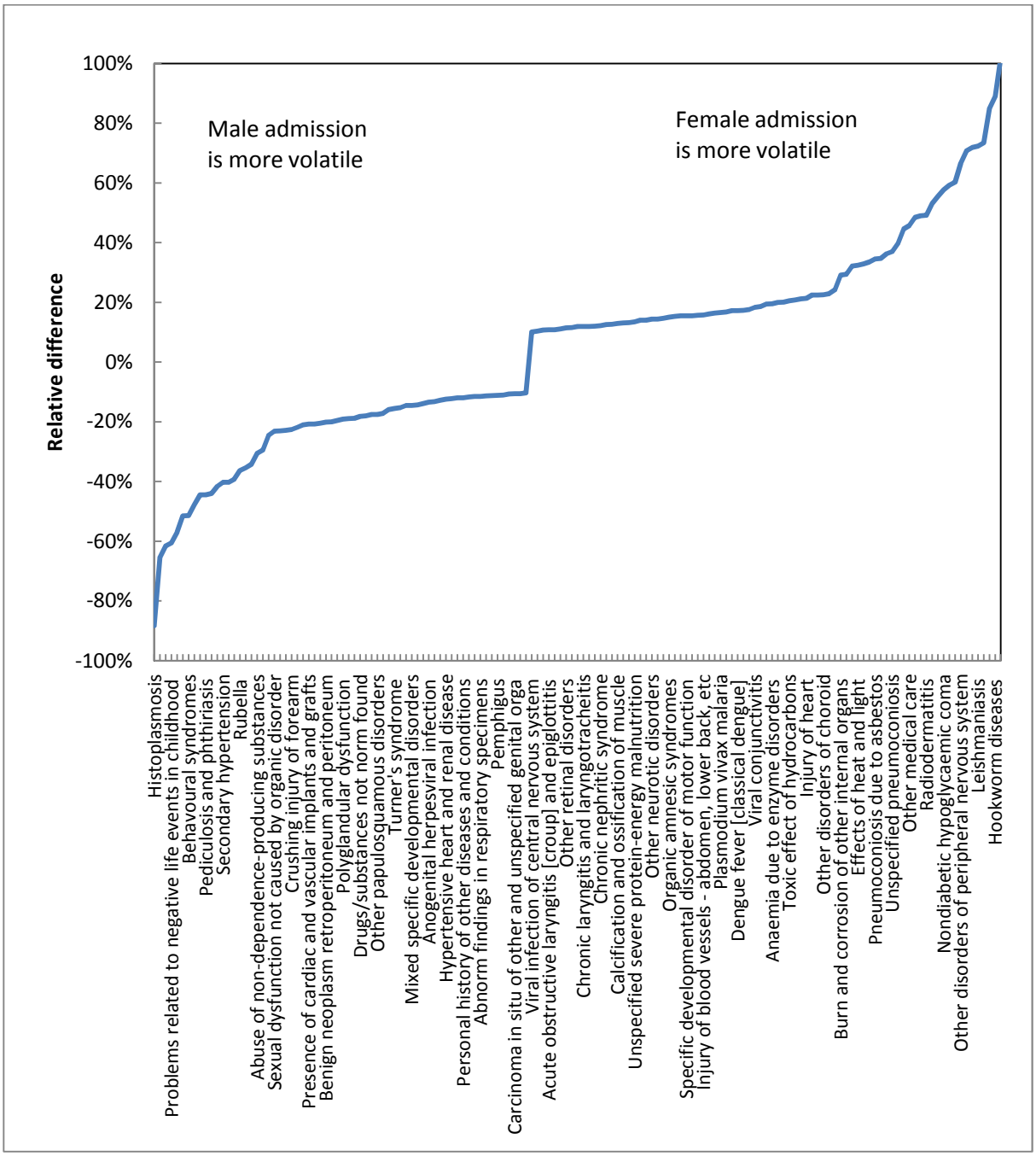
Figure One: Gender specific volatility for certain diagnoses



Footnote: Primary diagnosis (three digit ICD-10) for finished consultant episodes (FCE) over the period 1998/99 to 2010/11 was obtained from http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=203. The absolute year to year difference in admissions for each diagnosis was calculated as in previous articles. The difference between actual and average volatility and then calculating for each diagnosis/gender pair and the percentage point difference between the two gender was then determined. Diagnoses with less than a 10 percentage point difference have been excluded. Only every third diagnosis is given on the X-axis.

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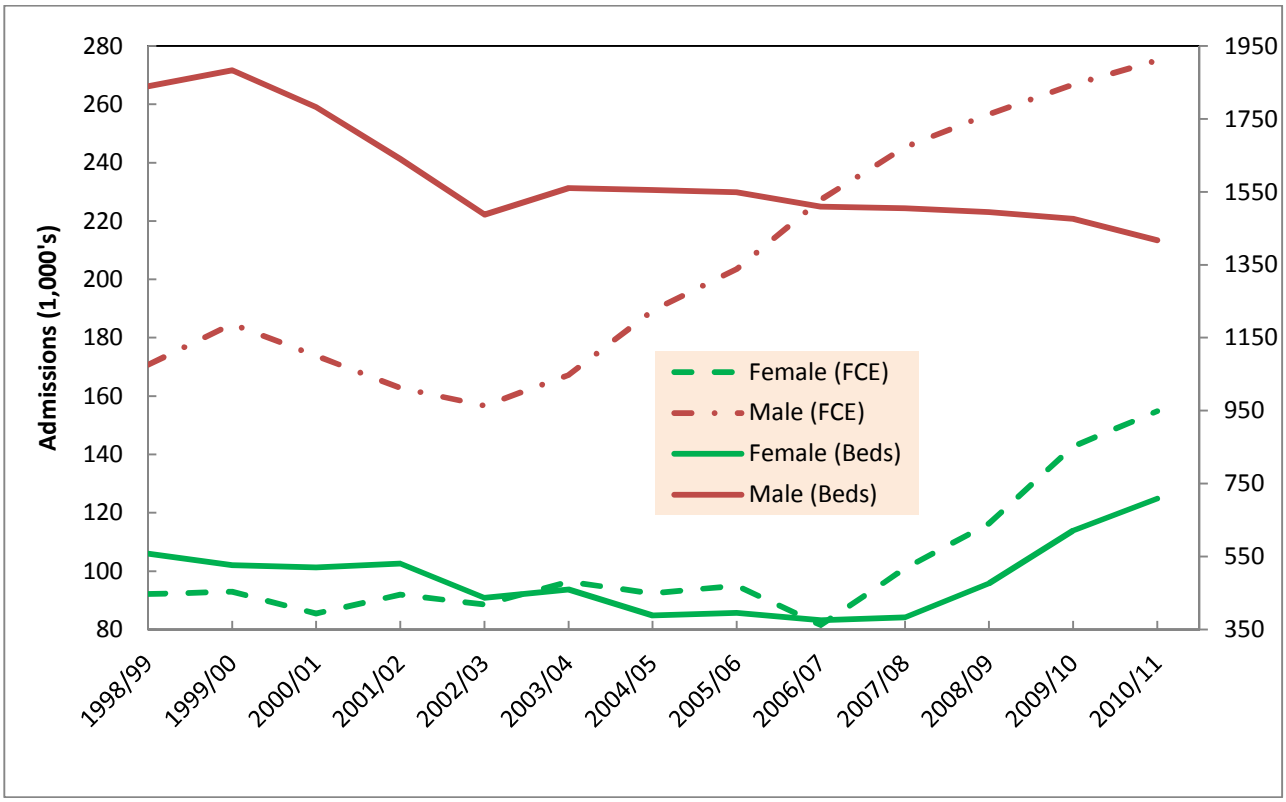
Figure 2: Trends in admissions and occupied beds



Footnote: The female and male groups comprise 106 and 85 diagnoses respectively and account for between 1.0% and 1.3% of total FCE depending on the year with the minimum value in 2002/03. Occupied beds (occupied bed days/365) are on the right hand side Y-axis.