

THOR-GP input to HSE Annual Statistics 2010

Note on methods and on 'caveats' in interpretation

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HSE requested the 2010 annual statistics to be delivered in the same format (11 tables) as for the previous year. In June 2009 HSE requested 3 further tables giving incidence rates by major occupational group. These have also been added to the series of tables delivered as part of the Annual Statistical requirement. This note has been produced to accompany the statistics and is in two parts: firstly to explain the methods used, and then to stress important 'caveats' that must be borne in mind when interpreting the data.

Methods

The GB incidence rate for 2010 has been calculated as follows with a working example shown in red. The incidence rates for core and sample reporters are calculated separately as the number of reporters and response rates differ; the average rate is then calculated. Sickness absence data is extrapolated to GB figures using the same methodology and adjusting for the under-recording of sickness absence spells subsequent to the initial spell.

Step 1. Number of cases reported in 2010

460 cases, 220 of which were reported by core reporters and 240 reported by sample reporters

Step 2. Weighting of sample cases

Cases reported by sample reporters are multiplied by 12 to give an estimated annual total; this is then weighted to adjust for the effect of sampling on reporter behaviour. The number of cases per reporter per month from 2005 to 2010 was calculated for core and sample reporters. Sample = 1.8 and Core = 0.67 therefore the sample:core reporting rate ratio is therefore 2.7. Estimated cases reported by sample reporters were divided by 2.7 to adjust for this sampling effect and added to the core reporter cases.

**240 sample cases multiplied by 12, divided by 2.7 and added to core cases.
240 x 12/2.7 = 1067**

The following steps are calculated for core and (re-weighted) sample reported cases separately.

Step 3. Number of cases reported per GP.

This is calculated by taking the number of cases and dividing it by the average number of GPs actively reporting each month (e.g. 200 GPs reporting per month at a 75% response rate = 150 GPs).

Core reports: 220 / 33 = 6.7 cases per GP

Sample reports: 1067 / 150 = 7.1 cases per GP

Step 4. Adjusting for the part-time (PT) practice of THOR-GPs.

At the beginning of January 2011 all participating GPs were asked how many GP sessions they undertook each week as part of an exercise to characterise the GP reporting denominator. 200 GPs responded to this question and the total number

of sessions = 1399. If full time (FT) practice is considered to be 10 sessions per week, this would mean that if all these GPs worked FT the number of sessions would = 2,000. THOR-GPs therefore work 70% of this. This estimate is very similar to a previous questionnaire on the same issue which gave a part-time practice proportion of 71%. The number of cases per GP is then factored up to estimate FT practice reporting.

Core reports: $6.7 / 70 \times 100 = 9.6$ cases per GP

Sample reports: $7.1 / 70 \times 100 = 10.1$ cases per GP

Step 5. Extrapolating to GB figures.

As the THOR-GP cases have been adjusted to FT practice the figure for the number of Full Time Equivalent (FTE) GPs was used. For the previous year's statistics, this figure involved contacting the health statistics providers for each of the three countries of GB. The most recent figure available for each country for 2010 data (England 2010 (2), Wales 2010 (3) and Scotland 2009 (4)) was combined to give the best possible estimate for the number of FTE GB GPs (40,287). The figure for 2010 cases per GP is therefore multiplied by this number. The figure for 2008 to 2010 cases is multiplied by the mean of 2010 and the best estimate for the previous two years.

Core reports: $9.6 \times 40287 = 386,755$ cases in GB

Sample reports: $10.1 \times 40287 = 406,899$ cases in GB

Step 6. Calculation of incidence rates

This number of GB cases is then divided by the number of persons employed in GB = 27,427,598 (LFS 2009 (LFS 2010 was not yet available when these calculations were prepared) and multiplied by 100,000 to give an incidence rate per 100,000 persons employed. For 2008 to 2010 data the mean of 2008 and 2009 LFS data is used.

Core reports: $386,755 / 27,427,598 \times 100,000 = 1410$ cases per 100,000 persons employed

Sample reports: $406,899 / 27,427,598 \times 100,000 = 1484$ cases per 100,000 persons employed

Step 7. Overall incidence rate calculated

The overall annual incidence rate is calculated by taking the average of the core and sample rates, weighted by the proportion of core and sample reporters active in the period.

$1410 \times 0.2 + 1484 \times 0.8 = 1479$ cases per 100,000 persons employed

Caveats

The data, although more robust than in previous years has some figures that may be numerically limited, especially when broken down by industrial sectors, we would strongly caution against drawing conclusions on proportions or rates based on small numbers.

Differences between core and sample reporters

At the start of THOR-GP data collection, all participating GPs reported incident cases every month (core reporters), thus permitting the rapid collection of relatively large incident data sets for analysis and interpretation. As the scheme progressed, in common with other THOR schemes, an increasing proportion of GPs were asked to report incident data during only one randomly selected month

of the year (sample reporters). This helped to contain costs and also to reduce the potential of GPs to 'fatigue' in their reporting.

In line with the practice in the specialist THOR schemes, estimates for the number of cases seen by the reporting group as a whole were calculated by multiplying the case numbers reported by sample reporters by 12. However, it became apparent when applying this approach to the data for 2010, that the reporting rate per reporting month was much higher for sample reporters than for core reporters.

Previously published work in relation to occupational physicians' reporting (1) showed incidence rates based on sample reporting were modestly (25%) higher than those based on core reporting, to a degree that was plausibly ascribable to lower levels of under-reporting in sample reporters.

By contrast, the difference between reporting rates for sample and core GP reporters was a factor of 3. The reasons for this difference are unclear, but may be related to multiple consultations at GP level and the fact that these may be dealt with by different practice members. Work is in hand to clarify the reasons for this difference, but in the mean time the summary 'incidence' rates for 2010 have been adjusted to show what they would have been if the GPs in 2010 had the same core:sample mix as in 2009.

As well as work to quantify and explain the difference in core:sample reporting rates amongst GPs, the THOR team are undertaking work to refine denominator estimates, with the long-term aim of improving the accuracy and reliability of incidence estimates.

Representativeness of coverage

Figures 1 to 7 below suggest a THOR-GP patient population representative to GB, however there may be issues related to the type of general practitioner participating in the scheme. We already know that our THOR-GP practices are NOT entirely representative of practices in GB -for example there is a higher proportion of training practices reporting to THOR-GP, and our impression is that there is a lower proportion of single handed practitioners. These practices may offer better training and hence hopefully a higher diagnostic quality but the (quantitative) denominator is not representative. There is also a higher proportion of male GPs participating in THOR-GP than GB as a whole, and some initial analysis has suggested some differing patterns in behaviour (such as referral) between genders.

The number of cases reported by the THOR-GPs has been divided by the number of **active** reporters. This is based on the GP response rates of core and sample GPs and assumes that the rate of cases of non-responders is the same as among the responders.

Sickness absence

The sickness absence information has been factored up by 56% to adjust for the estimated under-reporting of sickness absence days. The sickness absence data provided by participating GPs is continuously audited; to date 10% of all sickness absence cases have been audited and preliminary results from these have estimated that the total number of days sickness absence certified reported with

the case submissions is approximately 44% of the days certified until the end of the actual sick leave. Participating GPs are asked to continue to submit information on further sickness absence issued to previously reported cases and the continuation of this may be difficult especially in cases of the long term sick. The audit data has consistently shown this level of under-estimation, therefore the sickness absence data has adjusted to reflect this, however caution has to be applied to the interpretation of these.

The prime aim of THOR-GP is to furnish incidence data on occupational disease and work-related ill-health. A cardinal component of this exercise is the quality of the denominator information. Figures 1-7 below suggest that the population covered by THOR-GP is representative of the GB population. We are currently working on more sophisticated methods of denominator characterisation based on patient postcode information. The incidence data that we provide here has to be interpreted in context and with caution, whilst working towards more accurate information in the future.

Representativeness of THOR-GP participants when compared to GB GPs in general.

Figure 1. Distribution of GPs in Great Britain and THOR-GP practices by Government Region

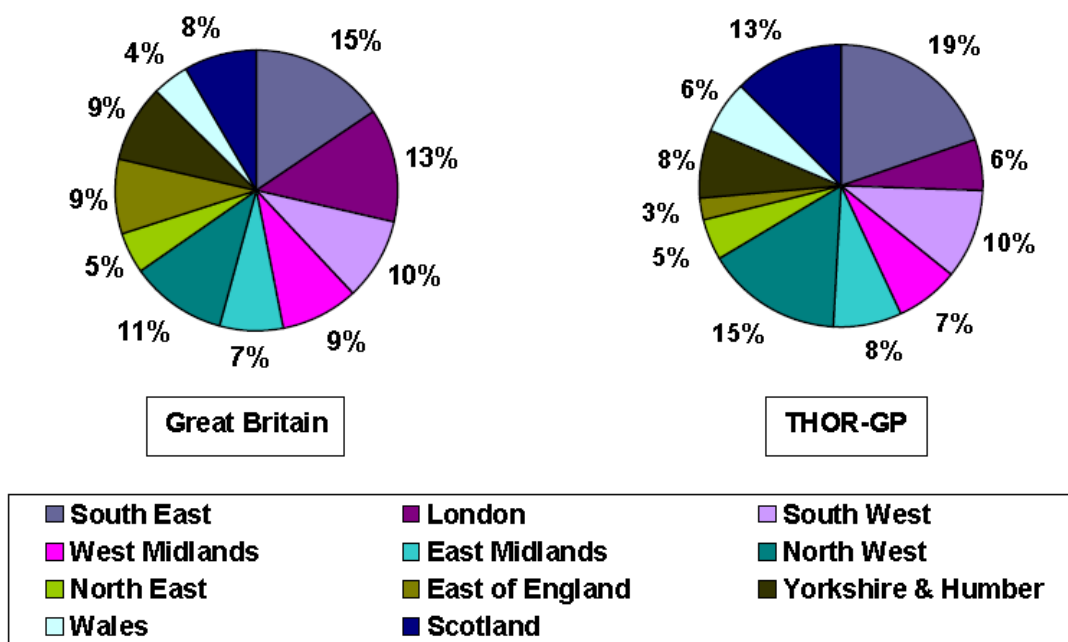


Figure 2. Urban/rural classification of middle layer super output areas within England & Wales as a whole compared to THOR-GP practices

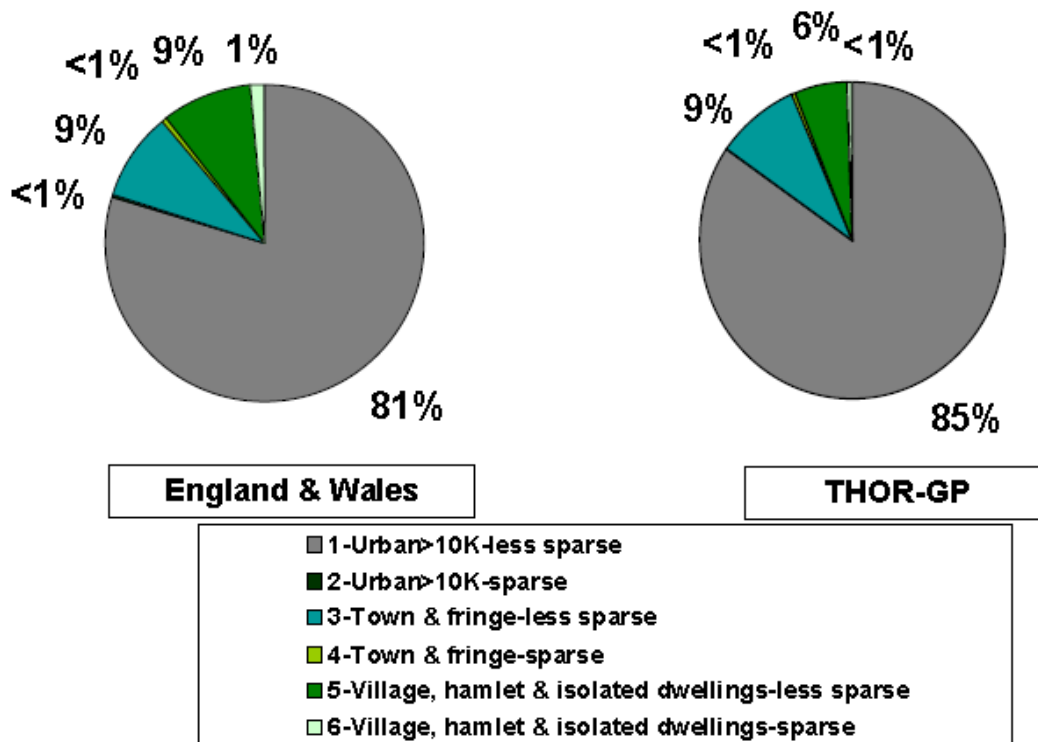


Figure 3. Urban/rural classification of datazones within Scotland as a whole compared to THOR-GP practices

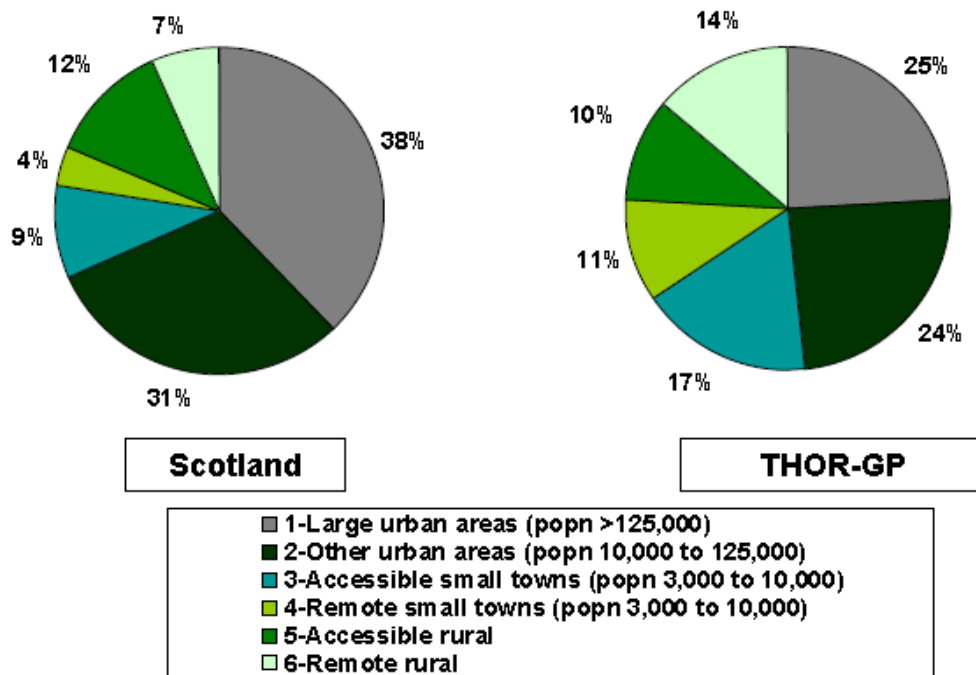


Figure 4. Local Authority group classification for Great Britain as a whole compared to THOR-GP practices

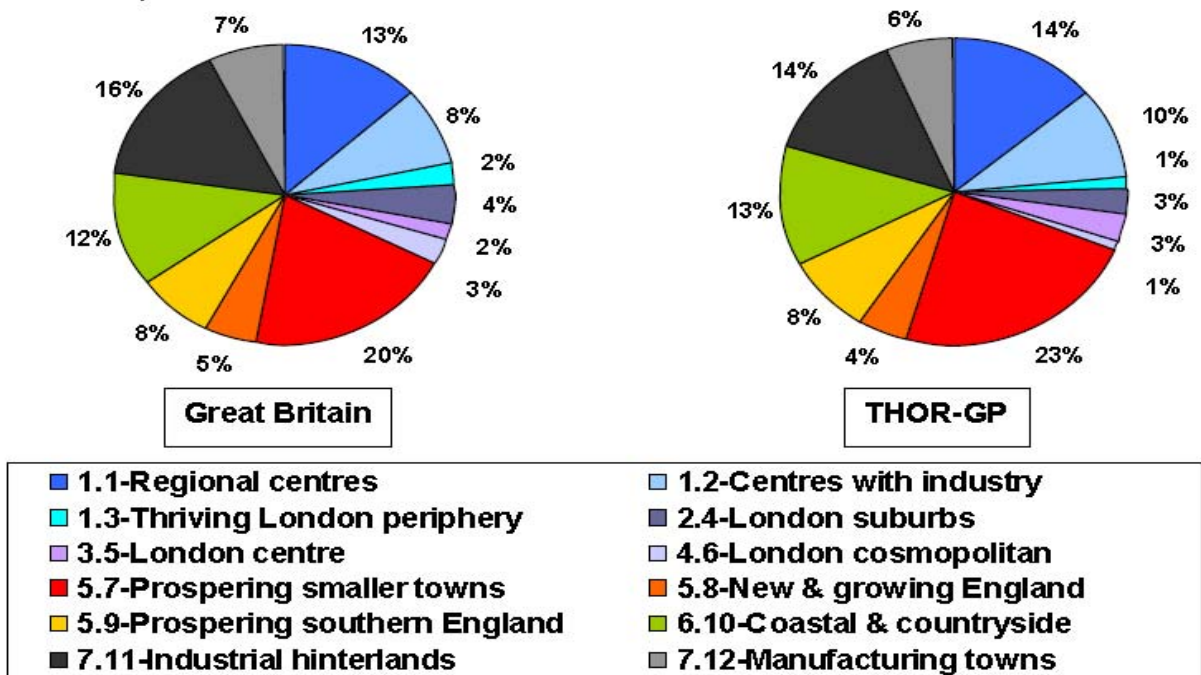


Figure 5. Industrial employment of GB population (LFS data) and output areas of THOR-GP practices (by proportion)

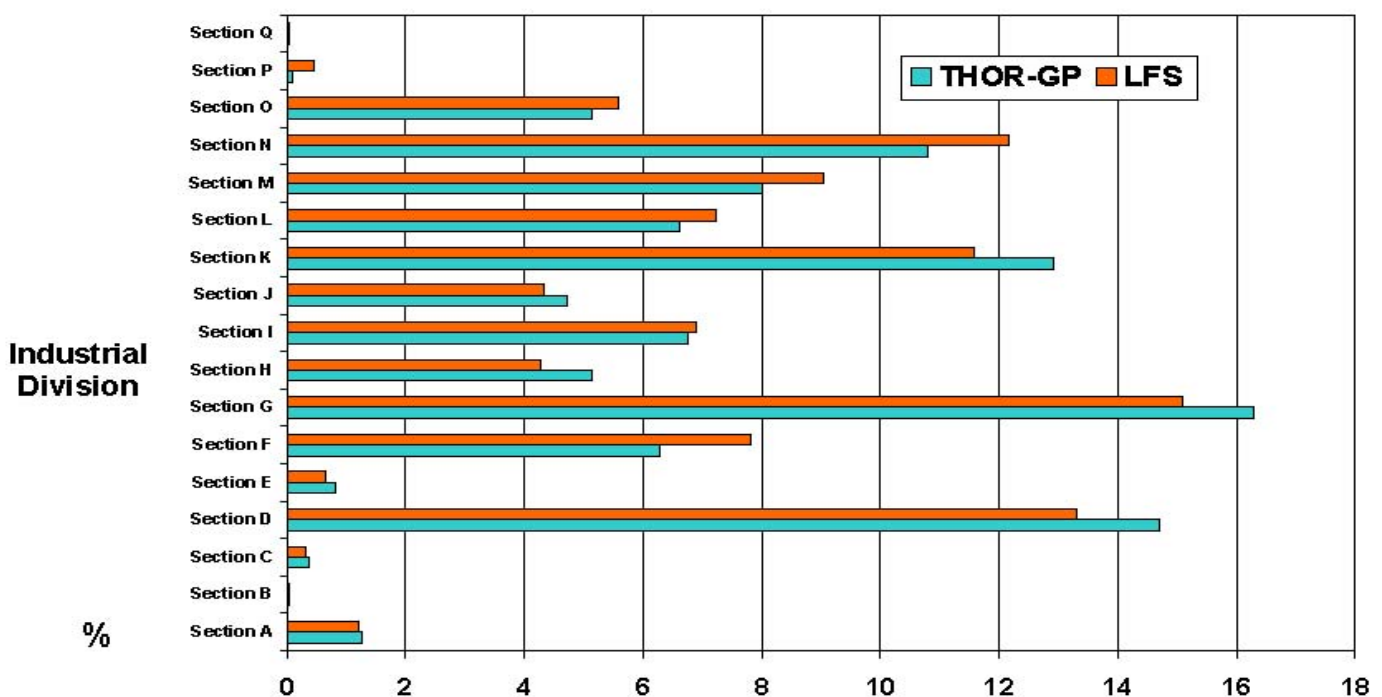


Figure 6. Gender of GB population (LFS data) and output areas of THOR-GP practices

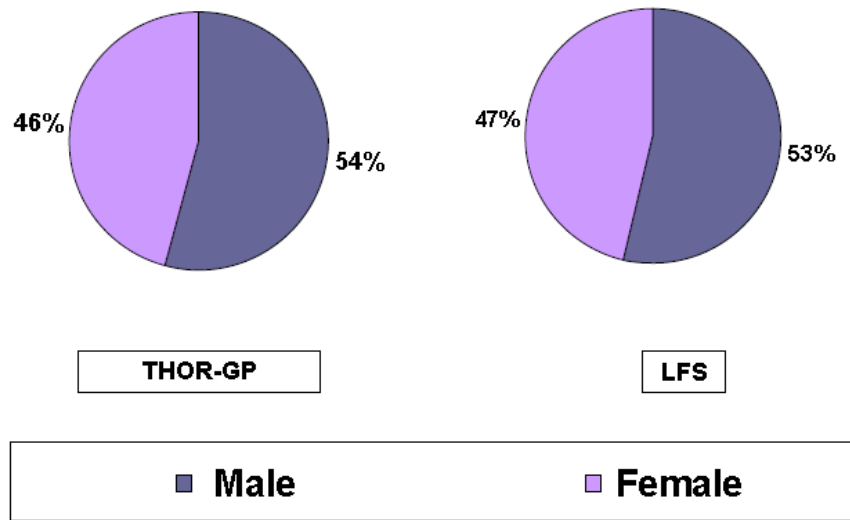


Figure 7. Age range of GB population (LFS data) and output areas of THOR-GP practices

