

## 8 Hayfever results (standard output graphs can be found in Appendix A8)

### Summary

Type of variation	Consistent across data sources?	Consistent within data sources?	Comments
Age	Yes: HSE95 & GPRD	N/A	↑ Symptoms in HSE95 in ages 20-24 ↑ GP prescriptions in ages 15-19
	No: HES		↑ Hospital admissions in ages 0-4 No comparisons with mortality as only one death in 1991-5
Sex	Yes	N/A	↑ in boys aged 0-14, ↑ in females aged 15-64, similar in old age (65+)
Year on year	No	N/A	GPRD ↑→1991-4, ↓ 1995 HES ↑ 1991-2, ↓ 1992-4
Week of year	Yes	N/A	↑ in HES & GPRD in weeks 24-28
Regional	Limited: HSE & GPRD	N/A	HSE95 and GPRD: ↑ SW Thames & Oxford ↓ Yorkshire
	No: HES		Other regions inconsistent HES based on small numbers
Urban-rural	No	N/A	No gradient in HSE95 or HES  Weak rural↓ - urban↑ gradient in GPRD, but conurbation SERs average
Geographical correlation	No	N/A	Poor regional correlation between HSE95 and GPRD. Too few hospital admissions to investigate regional correlations.

The following results are considered:

Variations by age and sex

Seasonality

Regional and urban rural distribution

Regional and urban rural variations adjusted for smoking and social class

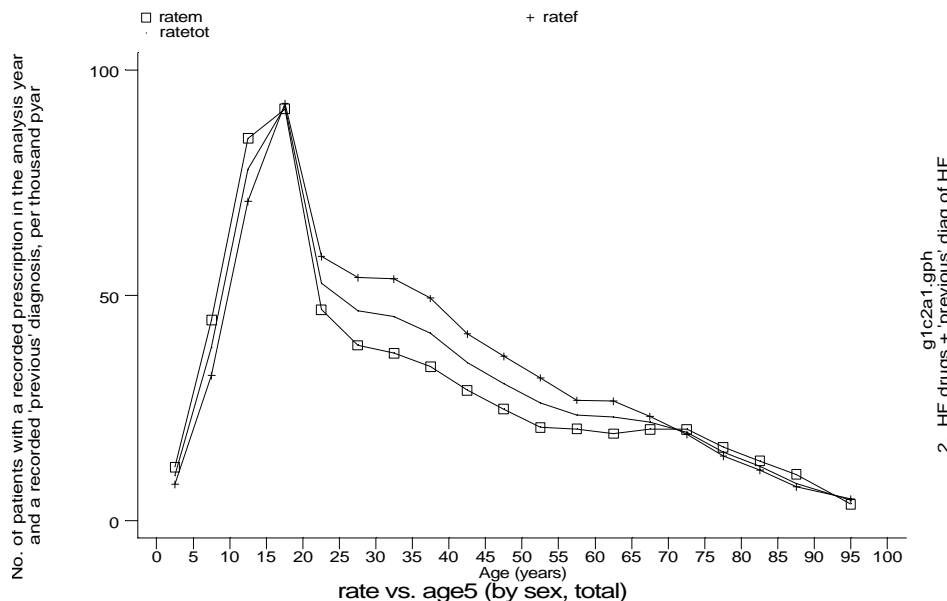
Comparisons across data sources

## Variations by age and sex

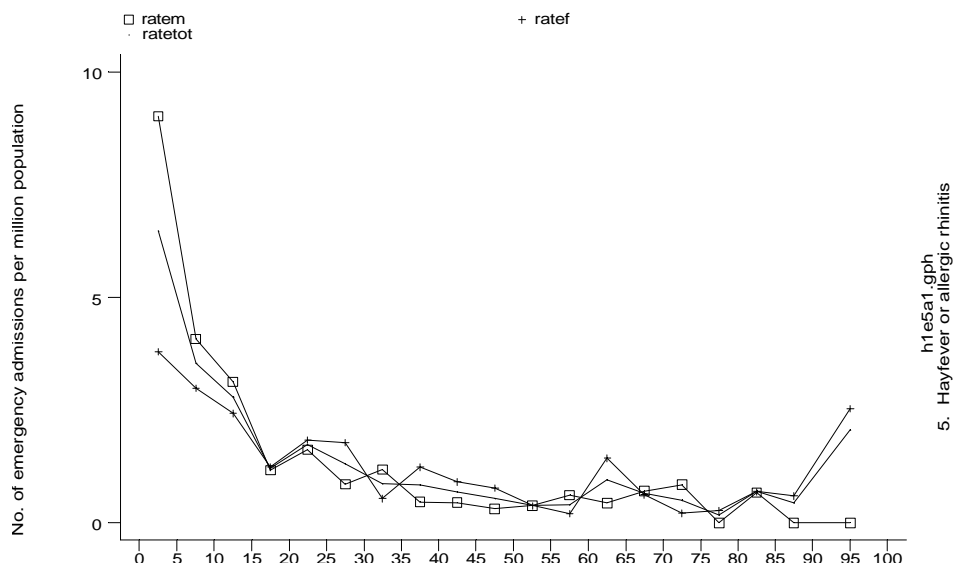
Hayfever symptoms in HSE95 and prescriptions for hayfever in the GPRD displayed similar age and sex patterns. Symptoms peaked in ages 20-25, while prescriptions for hayfever in the GPRD peaked in ages 15-20 (Figure 8.1). Rates fell thereafter, but the symptom prevalence rose again in those aged over 85 – possibly a chance finding because of small numbers. There were only 295 emergency hospital admissions in 1991-4. These showed a different pattern with peak rates in children aged 0-4.

Rates in both HSE95 and GPRD (Figure 8.1) were marginally higher in boys than girls until young adulthood (ages 15-20 with symptoms, ages 20-25 with prescriptions) when rates became higher in females. Later in life (55-60 with symptoms, 70-75 with prescriptions) rates became broadly similar for both sexes. In hospital admissions, peak rates in boys aged 0-4 were double those in girls (Figure 8.2). Rates were slightly higher in females in young adulthood and similar in both sexes in later life.

**Figure 8.1 Patient prescription rates for hayfever in the GPRD, 1991-1995**



**Figure 8.2 Emergency hospital admission rates for hayfever, 1991-1994**



*Year on year* GP prescription rates were noticeably lower in 1991 than the other years. There was a small rise 1992-1994 and a small fall in 1995. Combined male and female admissions rose from 1991 to 1992 and fell thereafter, despite a small rise in males in 1993.

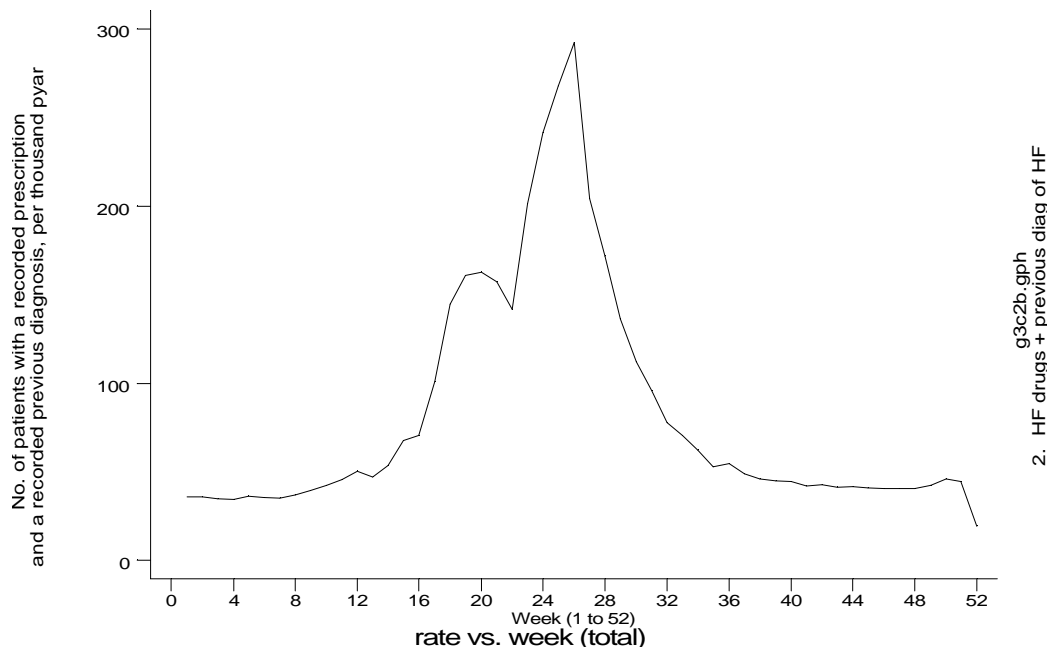
## Seasonality

Both emergency admissions and prescriptions peaked in mid June to mid July (Figure 8.3), the grass pollen season, with peak prescription rates between 3,000-4,000 per 10,000 and peak admission rates between 15-25 per 10,000 . Prescriptions showed an earlier, smaller peak between weeks 18-20 in each year, possibly due to patients obtaining medication in advance of the pollen season. This peak in weeks 18 to 20 (early May) was also seen in GP patient consultations for hayfever, but was less pronounced than with prescriptions.

*Time trends:* Prescriptions showed a similar pattern for all years except 1991 which had a lower and later peak (in week 28), but the numbers of hospital admissions were too small for meaningful examination.

*Differences by age:* Peaks in prescriptions occurred at the same times in each age group. Again, small numbers of hospital admissions precluded further examination.

**Figure 8.3 Seasonal pattern in prescriptions for hayfever, 1991-1995**



## Regional and urban rural distribution

There was limited consistency in regional patterns between data sources (Table 8.1). SERs for symptoms were significantly different from 100 in South West Thames and Oxford, which were higher and Yorkshire which was lower. Prescribing for hayfever, showed more marked variability between regions. The numbers of hospital admissions were small, even in combined analyses for 1991-4. In 1994, Trent had significantly higher hospital admissions than average (based on 13 admissions) but numbers were too small in other regions to show significant differences (Table 8.1).

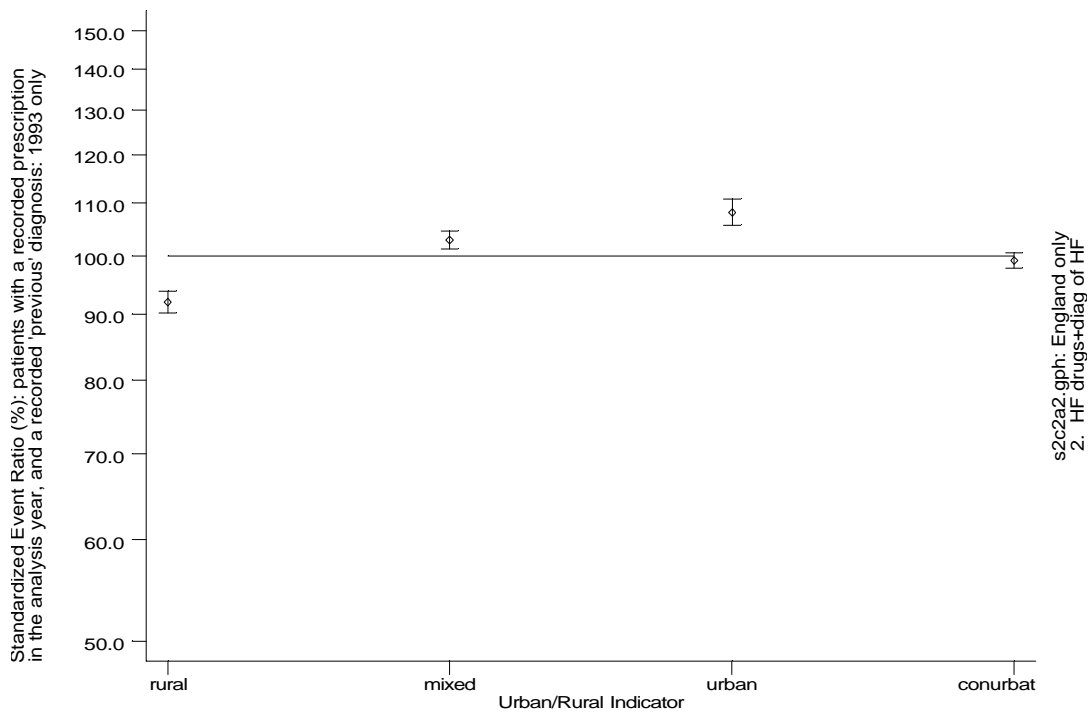
**Table 8.1 Number of events and SERs for hayfever ranked (high-low) in order of patient prescribing SERs in 1994**

Region	Emergency hospital admissions		Patient prescribing in GPRD		Symptoms in HSE95	
	Number	SMR	Number	SER	Number	SER
N Western	10	159.6	4,711	109.4*	212	87.8
SE Thames	6	110.6	1,505	106.9*	214	111.2
Trent	13	188.0*	5,324	106.1*	266	91.5
E Anglia	1	26.2	5,074	105.2*	171	101.7
NW Thames	2	45.1	5,152	105.0*	176	110.1
Oxford	1	25.5	2,001	102.1	206	126.8*
S Western	1	21.6	4,037	101.7	207	99.5
W Midlands	7	89.7	9,793	100.3	301	99.3
SW Thames	4	93.9	4,795	98.8	216	122.0*
Mersey	1	28.2	3,564	97.6	112	84.5
Wessex	7	156.3	2,890	95.2*	167	95.1
Yorkshire	8	146.4	1,927	88.9*	193	86.2*
NE Thames	4	69.2	1,174	88.5*	212	99.9
Northern	6	141.2	3,649	82.8*	179	97.2

\* SER significantly different from 100 (p<0.05)

*Urban rural:* Patient prescribing showed a rise from rural to urban districts, while prescriptions in conurbations were average (Figure 8.4). This pattern was preserved in analyses for north, Midlands, south-west and south-east England. However, there was no significant urban-rural gradient in symptoms or hospital admissions using the urban rural district classification (Figure 8.5). There was a slight excess in symptoms if the household was judged to be in an urban setting (14.7% vs 13.5%, p value = 0.06 for null hypothesis of no difference).

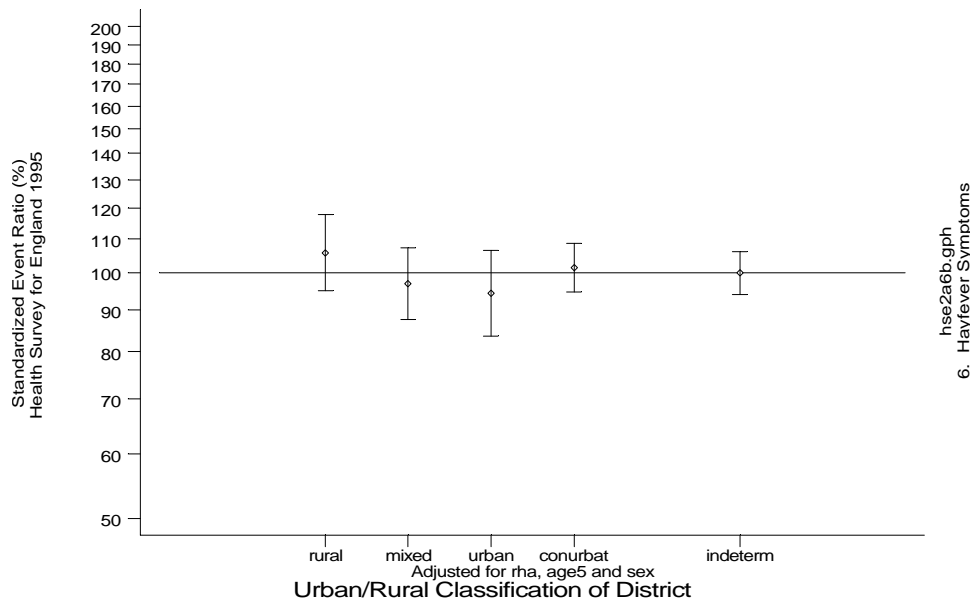
**Figure 8.4 Urban-rural pattern in prescribing for hayfever in 1991-1994**



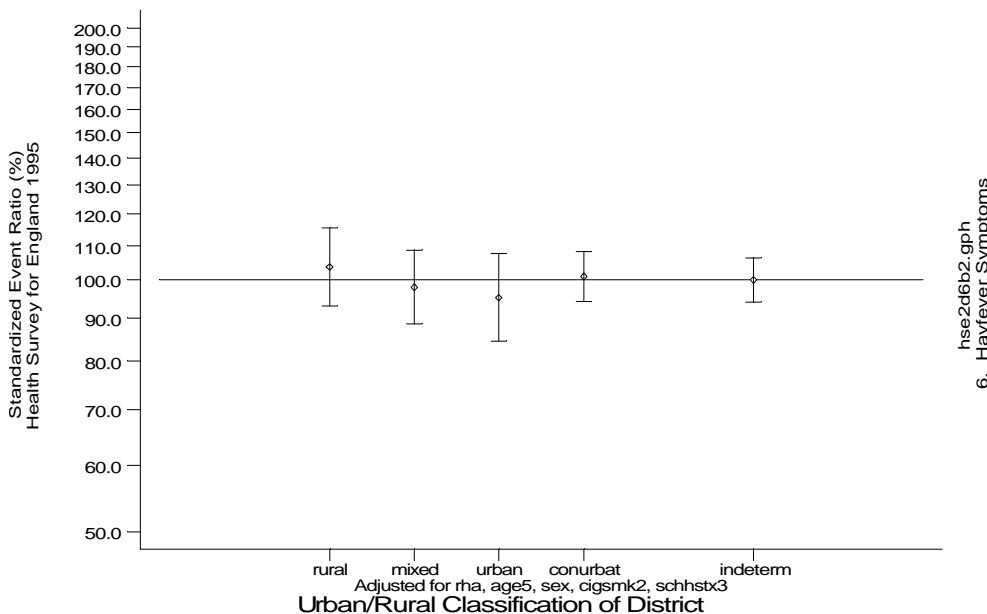
## Regional and urban rural variations adjusted for smoking and social class

There was effectively no change in either regional SERs (see Appendix A8) , or in urban rural patterns after adjustment for social class and smoking in the HSE95 (Figures 8.5 and 8.6).

**Figure 8.5 Urban rural pattern for symptom SERs seen in the HSE95**



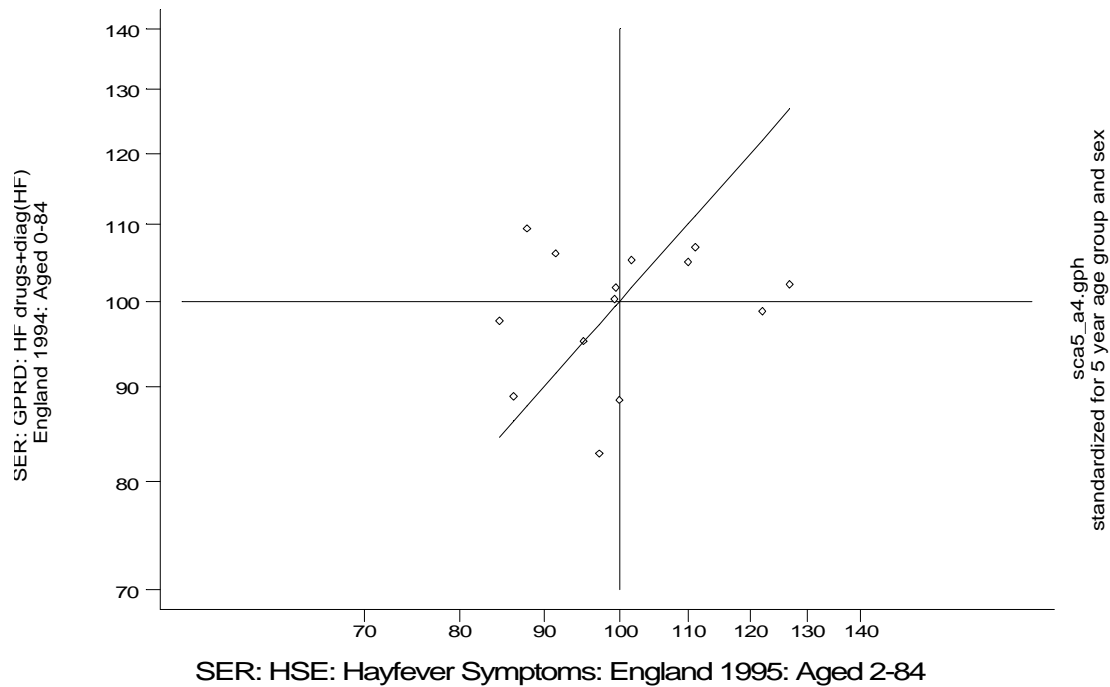
**Figure 8.6 Urban rural pattern for symptom SERs seen in the HSE95 after further adjustment for smoking and social class**



## Comparisons across data sources

The regional variation in hayfever symptoms correlated poorly with prescribing with a correlation coefficient  $r_s = 0.22$  (Figure 8.7). Regional correlations with hospital admissions were based on too small a number of admissions to be reliable so are not presented here.

**Figure 8.7 Scatterplot of regional SERs for hayfever symptoms from the HSE95 and patient prescriptions from the GPRD in 1994\***



\* Footnote: The line added to scatterplot graphs is the line of equivalence.  
Key to points: 0 = rural, 1 = mixed, 2 = urban, 3 = conurbations, 9 = indeterminate