6 Asthma results (standard output graphs can be found in Appendix A6)

Summary

Type of variation	Consistent across data sources?	Consistent within data sources?	Comments
Age	No	No: HSE95 alternative outcomes Yes: GPRD alternative outcomes	↑ Mortality in elderly ↑ Hospital admissions in ages 0-4 ↑ GP prescriptions in ages 5-15 ↑ Symptoms in ages 0-4, 5-15 & elderly
Sex	No	No: HSE95 alternative outcomes Partially: GPRD alternative outcomes	Mortality: M=F to age 60, then F>M HES & GPRD: M>F to mid teens, F>M in mid life, M≈F in old age HSE95 symptoms: M>F to mid teens, M≈F in mid life, M>F in ages 60+
Year on year	No	Partially: GPRD alternative outcomes	↓ Mortality ↑↓ HES ↑→ GPRD except inhalers only ↑
Week of year	No	No: GPRD alternative outcomes	↑ Mortality in December & January ↑ HES in mid September (week 38) ↑ GPRD Inhaler prescriptions for asthma in week before Christmas, no summer peak ↑ GPRD First ever consultations & non-repeat prescriptions in early summer and lowest early September (week 35)
Regional	Partially	Yes: HSE95 alternative outcomes	↑ North Western (except HSE95) ↓ Yorkshire (except HSE95), SW Thames Other regions inconsistent Minor attenuation for adjustment for smoking and social class in HSE95
Urban-rural	No	No: HSE95 comparing urban rural of household with urban rural of district of residence	Overall rural↓ urban↑ gradient in HES & mortality but not consistent across different areas of England No gradient seen in GPRD or HSE95 data, but slightly higher prevalence in HSE95 if individual lived in an urban as opposed to rural setting. No change with adjustment for smoking and social class in HSE95
Geographical correlation	No	Children vs adults Yes: HSE95 & HES No: GPRD Alternative outcomes No: HSE95 Yes: GPRD	Weak correlations between data sources except between symptoms and emergency hospital admissions by age: negative correlation (r_s =-0.86) for ages 0-14 and positive correlation (r_s =0.67) in ages 15-84 GPRD strong correlations between all measures except (all) inhaler prescriptions

The following results are considered:

Patterns in England 1991-5 by age and sex
Seasonal patterns
Regional patterns
Comparisons across data sources
Comparisons within data sources by age
Alternative measures for asthma within the HSE95
Alternative measures for asthma within the GPRD
Effects of smoking and social class in the HSE95

Patterns in England 1991-5 by age and sex

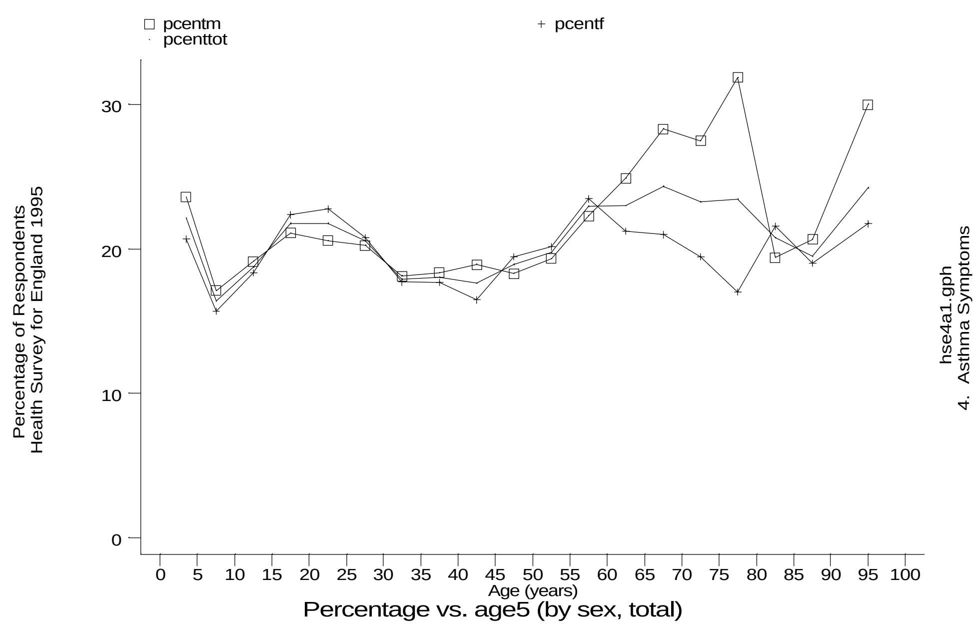
There was little consistency in patterns from the different data sources. While two peaks (in children then in young adults) were seen in symptoms and inhalers prescribed for asthma in general practice, the timing of these did not coincide (Figures 6.1 & 6.2). Emergency hospital admission rates were highest in infants, while deaths were most common in the elderly. Each data source will be described separately.

Health Survey for England 1995 – symptoms by age and sex

Symptoms of wheezing or whistling in the chest in the previous 12 months had been experienced by 20% (2,000 per 10,000) of the population overall, ranging from 16% of 5-9 year olds girls to a peak of 32% of 75-79 year old men (Figure 6.1). Peaks were seen in 2-4 year olds, with a second peak in early adulthood (ages 15-25), with a third peak seen in women at ages 55-59, but in men at ages 75-79.

Sex differences: Rates were fairly similar in men and women until the age of 60, where the prevalence rose steeply in men but declined in women. Marginally higher rates were seen in boys than girls to age 15, rates were then slightly higher in young women ages 15-25 with two further cross-overs before the age of 60 (Figure 6.1).

Figure 6.1 Wheezing or whistling in the chest in the previous 12 months in the Health Survey for England 1995 by age and sex



GPRD 1991-1995 – Inhaler prescription plus asthma diagnosis (excluding patients with a diagnosis of chronic obstructive airways disease) by age and sex

Displaying prevalence by single years of age revealed a ‘double peak’ in prevalence of childhood asthma (Figure 6.2). The first peak occurred at age 5-6 in males and females and the second peak at age 11-13 in males and age 12-15 in females (Figures 6.3 and 6.4). The magnitude of these peaks varied from year to year, but on average were approximately 120 per 1,000 pyar in boys and just under 100 per 1,000 pyar in girls. Asthma prevalence fell thereafter to plateau in mid and later life (ages 35-75), falling again from ages 75 on (Figure 6.2).

Sex differences: Male rates were higher than female rates in earlier life with a cross over at 16. Female rates remained higher up to age 85, when male and female rates became similar.

Year on year differences: Inhaler prescriptions for asthma in primary care rose from 1991-4 but were then static in males in 1995 while continuing to rise slightly in females. The increases were most marked in younger age-groups.

Cohort effect: No evidence of a cohort effect was seen.

Figure 6.2 GPRD Inhaler prescription plus diagnosis of asthma by age and sex

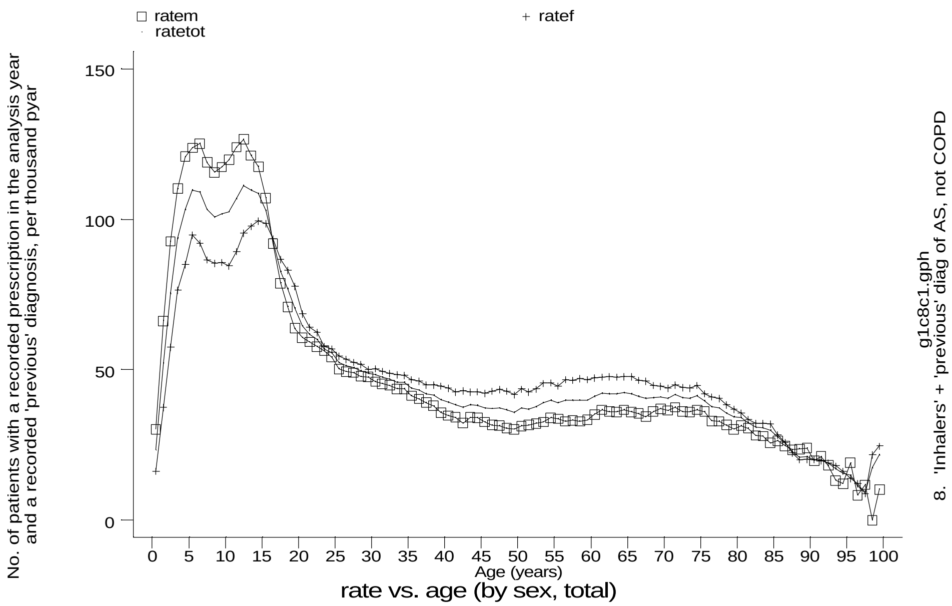


Figure 6.3 GPRD inhaler prescription plus diagnosis of asthma by single year of age and year for boys

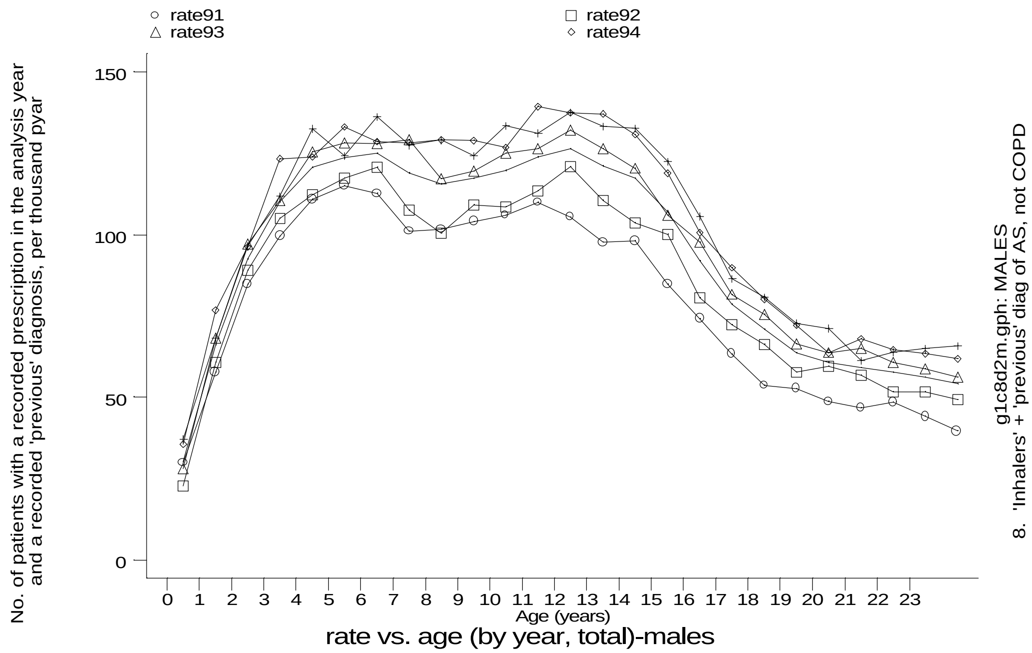
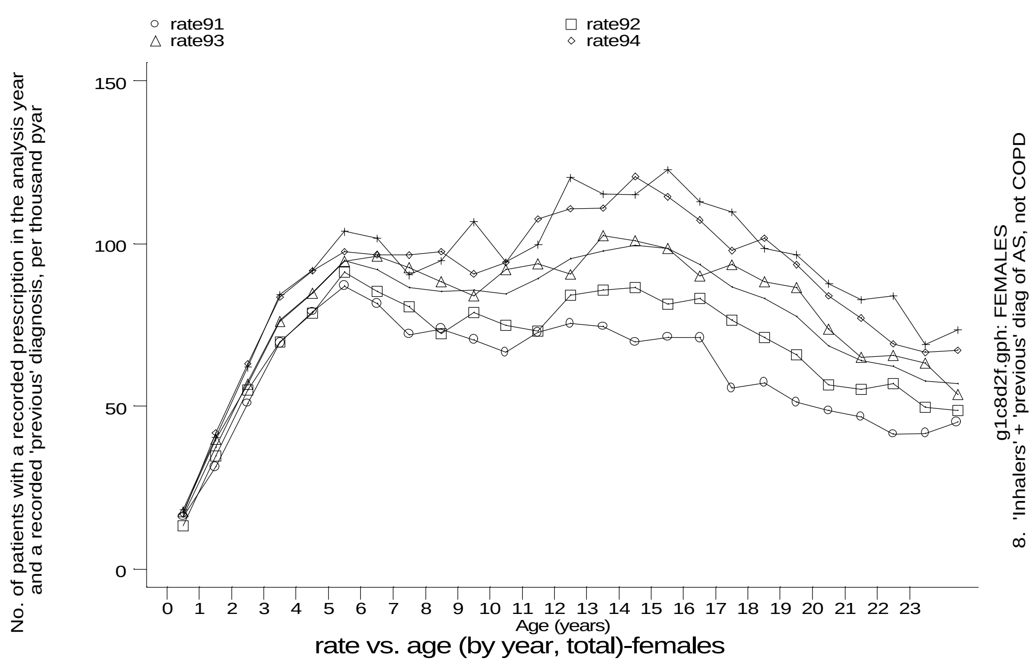


Figure 6.4 GPRD inhaler prescription plus diagnosis of asthma by single year of age and year for girls



HES 1991-1994 – Emergency hospital admissions for asthma

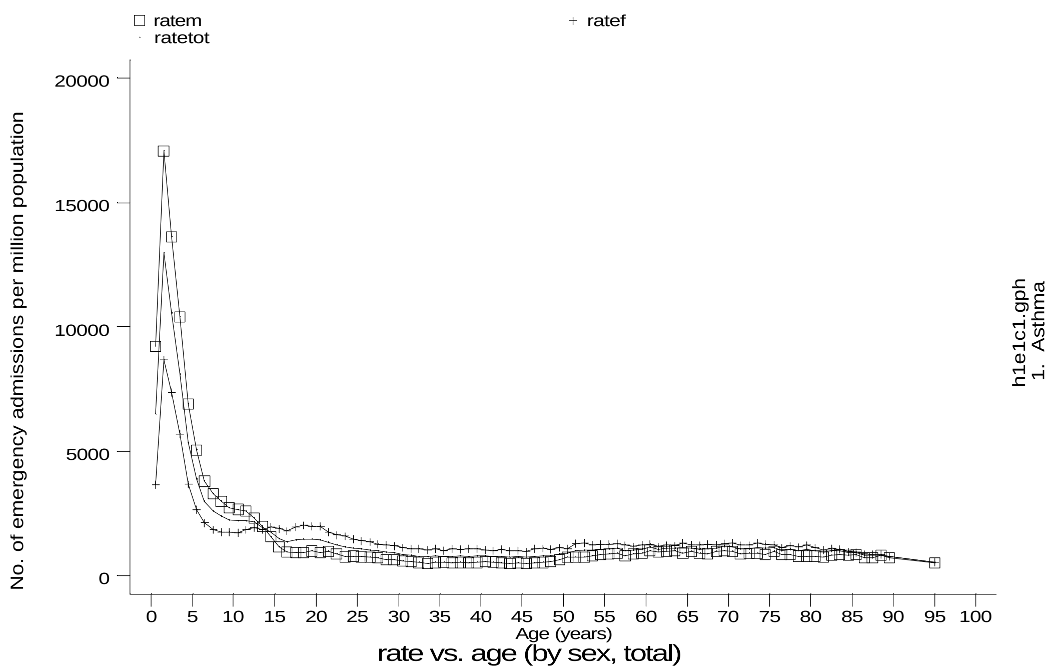
Admission rates were seen in children aged 1 years old, with the highest rates in boys at approximately 17 per 1,000, almost double the peak rate in girls. Rates dropped thereafter to plateau around 1 per 1,000 (Figure 6.5).

Sex differences: Male rates were higher than female rates in earlier life with a cross over at 13. Female rates remained higher thereafter, but converged with male rates in later years of life.

Year on year differences: Rates rose from 1991-1993, but fell in 1994.

Cohort effect: There was no evidence of a cohort effect.

Figure 6.5 Hospital admissions for asthma by age and sex in 1991-1994



Mortality 1991-1995 by age and sex

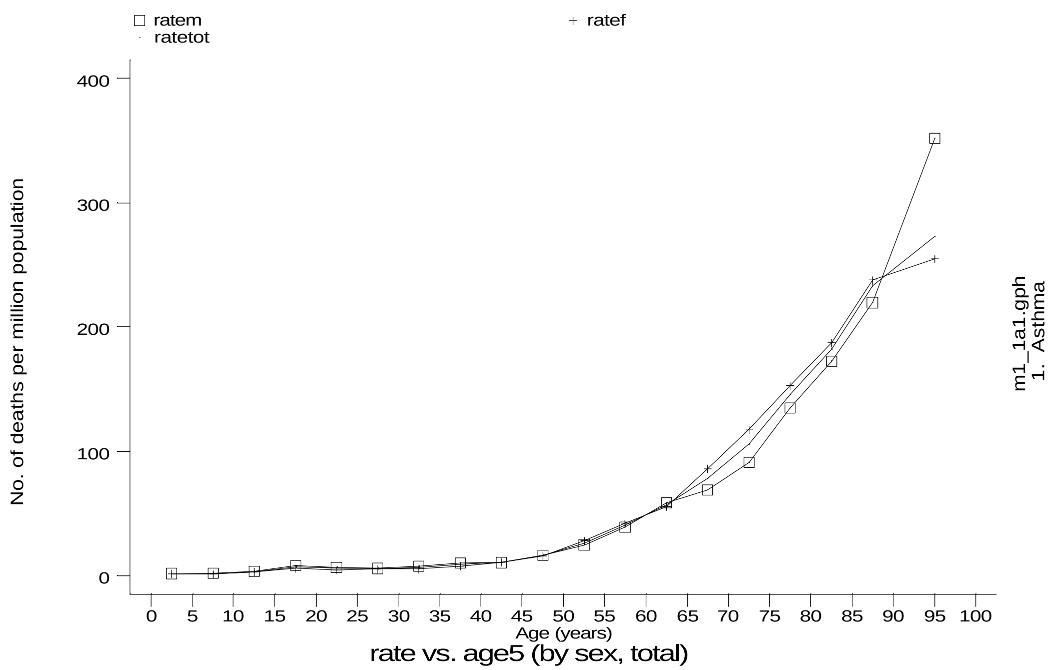
Asthma deaths were rare up to the age of about 50, but showed an exponential rise thereafter (Figure 6.6).

Sex differences: The death rates were similar up to age 65, after which death rates were higher in women until extreme old age (over 90 years old).

Year on year differences: Mortality declined over 1991-1995 in both sexes. The greatest fall was seen in those aged 65+, the second largest decline was in middle age (45-63), with a smaller fall in 15-44 and no change in the very low rates in under 15s.

Cohort effect: No cohort effect was seen.

Figure 6.6 Mortality from asthma in 1991-1995 by age and sex



Seasonal patterns

Again, there was a lack of consistency between data sources. Deaths peaked in December and January (Figure 6.7). Hospital admissions showed a sharp peak in the autumn in week 38, mainly due to admissions in children (Figure 6.8). This peak was consistent from year to year, as were secondary peaks in children aged 0-4 (Figure 6.9) and 5-14 (not shown) were seen centred around weeks 4, 12, 20, 24-26 and 48. In general practice, inhaler prescriptions for asthma peaked just before Christmas, with a suggestion of secondary peaks in children aged 0-14 in weeks 6, 20 and 24-26. Lowest levels of prescriptions were consistently seen in all ages in weeks 32-36 (when hospital admissions start to rise).

Figure 6.7 Seasonal pattern in mortality from asthma, 1991-1995

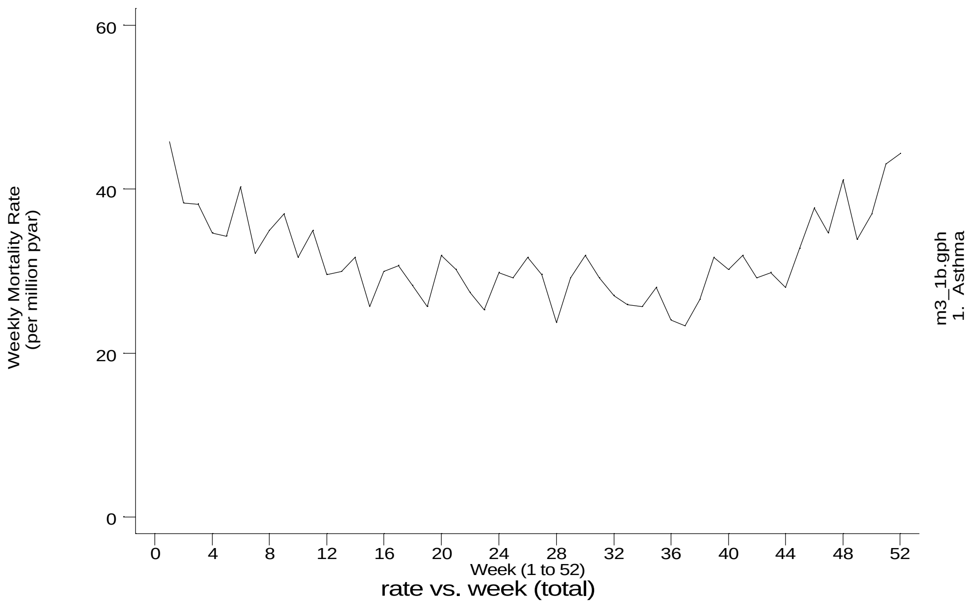


Figure 6.8 Seasonal pattern in hospital admissions, 1991-1994 by age-group

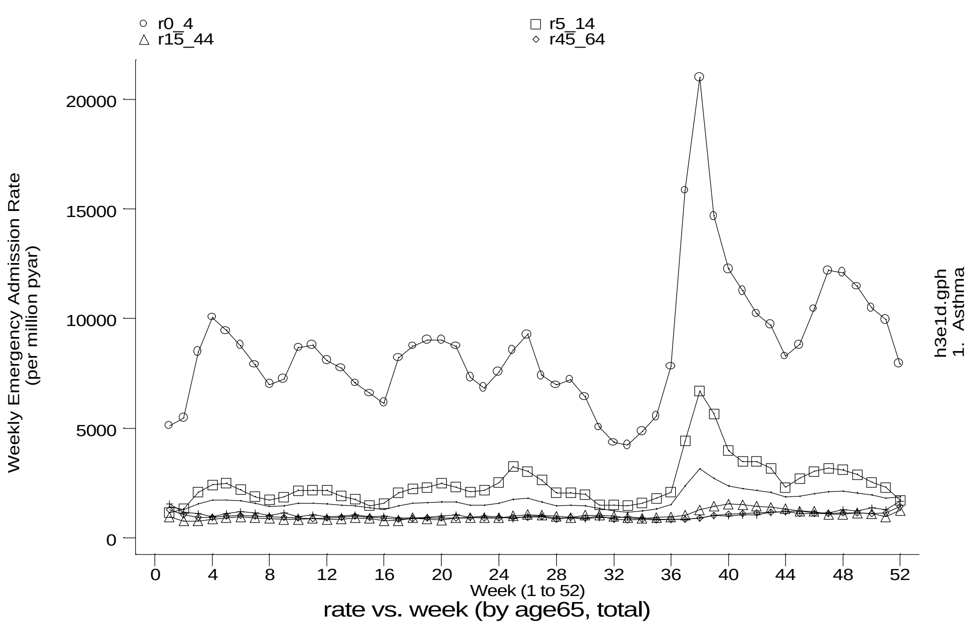


Figure 6.9 Seasonal pattern in hospital admissions, ages 0-4 by year

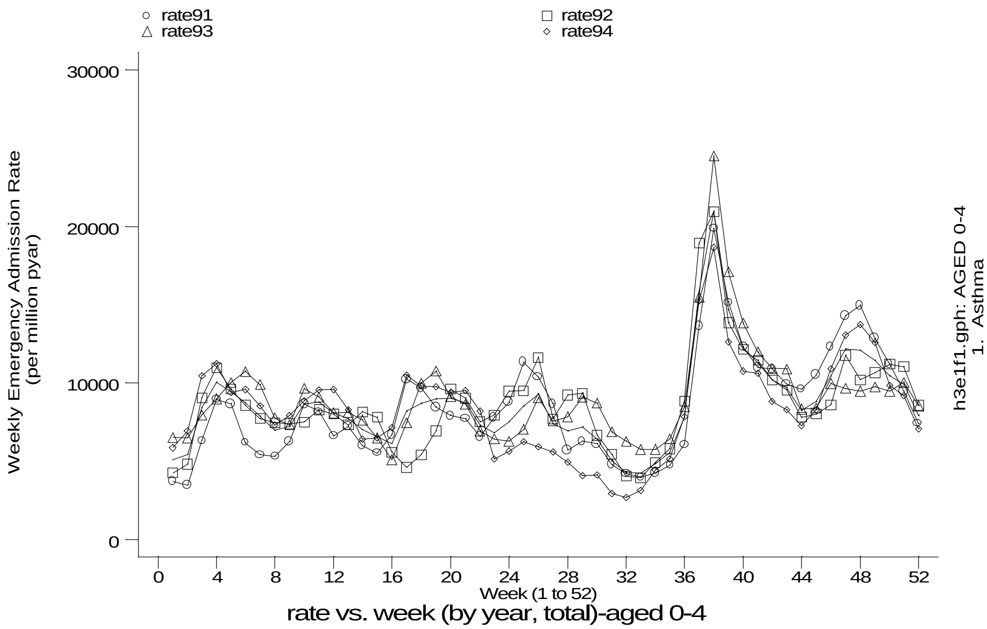
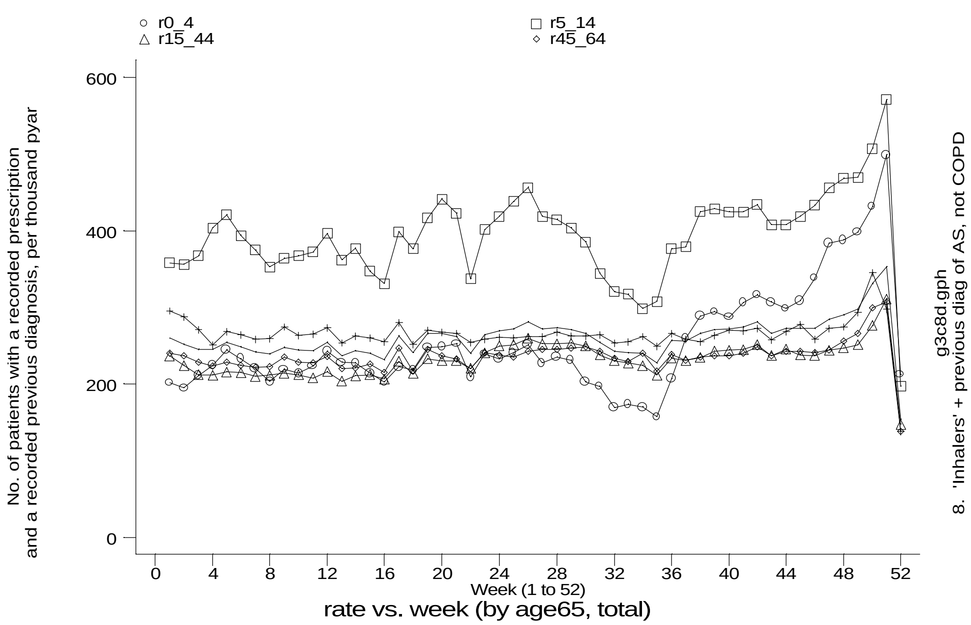


Figure 6.10 Inhaler prescriptions for asthma by age-band for 1991-1995 by week



Regional patterns

There was little consistency on inspection of the regional SERs, with three exceptions: North Western region showed significantly higher SERs for deaths, emergency hospital admissions and inhaler prescriptions for asthma in primary care, but average SERs for symptoms. South West Thames had SERs that were significantly or nearly significantly lower than average on all four data sources. and Yorkshire showed significantly lower SERs for three deaths, emergency hospital admissions and inhaler prescriptions for asthma but average SERs for symptoms.

Both hospital admissions and mortality SERs showed an approximately two fold range between the lowest and the highest (Table 6.1). SMRs ranged from 70.5 in South West Thames to 134.4 in North Western. Hospital admission SERs ranged from 69.7 in East Anglia to 141.2 in North Western region. There was less variation in the GP data (range 87.3 in NE Thames to 113.5 in East Anglia) and in symptoms of wheeze in the past year (87.0 in East Anglia to 113.4 in SE Thames).

Table 6.1 Number of events and SERs for asthma in 1994 by region ranked by SER for emergency hospital admissions

Region	Mortality		HES: emergency admissions		GPRD: patient inhaler prescription for asthma		HSE95: symptoms (wheeze/whistling in the chest)	
	Number	SMR	Number	SER	Number	SER	Number	SER
N Western	140	134.4*	9,804	141.2*	6,040	94.7*	335	99.6
Mersey	65	107.8	5,349	136.0*	5,864	109.0*	185	97.8
NW Thames	68	99.1	5,791	119.4*	7,304	102.5*	216	99.1
Northern	91	123.0*	4,947	104.6*	5,667	87.3*	265	104.2
W Midlands	129	98.2	9,024	104.0*	14,205	99.3	452	105.2
SE Thames	80	84.1	6,177	102.2	1,899	91.4*	304	113.4*
SW Thames	54	70.5*	4,688	98.4	6,868	95.8*	220	88.0
Yorkshire	106	114.4	5,931	97.9	2,822	87.7*	285	92.7
Trent	120	99.3	7,140	92.6*	7,332	98.5	448	108.8
NE Thames	103	114.6	5,703	89.8*	1,696	87.3*	281	97.7
Wessex	66	79.0	4,065	80.8*	4,995	109.8*	250	99.9
S Western	79	85.6	4,206	79.9*	6,219	105.7*	287	96.0
Oxford	53	90.8	3,125	72.8*	2,966	103.5	222	101.7
E Anglia	61	90.8	2,971	69.7*	8,028	113.5*	204	87.0*

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

Urban rural

Mortality data for England suggested an weak urban-rural gradient with higher SMRs in conurbations. However, this incorporated a (non-significant) reverse trend in Northern areas. Hospital admission data for England showed a strong urban-rural gradient (highest in conurbations) - including Northern areas, but no gradient was seen in the South West area of England. In contrast, no urban-rural gradient was seen for inhaler prescriptions for asthma (with SERs here lowest in conurbations). Using urban rural coding based on the DHA of residence, there was also no urban rural gradient in symptoms of wheeze in the previous year. However, the variable relating to the setting of the household where the individual lived (as assigned by the interviewer) suggested a small but statistically significant excess of symptoms and inhaler use in urban settings (Table 6.6).

Comparisons across data sources

Geographical correlations between databases were generally poor with r_s values <0.5 (Table 6.2). There was a weak correlation between hospital admissions and mortality (r_s = 0.32 in 1991 and r_s = 0.48 in 1994). Correlations between the GPRD inhaler prescriptions for asthma and mortality in 1991 and 1994 were inconsistent (weakly positive correlation in 1991 (r_s = 0.33), negative correlation in 1994 (r_s = –0.5)). This may reflect the relatively small number of deaths (neither correlation reached statistical significance, with p=0.20 and p=0.069 respectively).

Table 6.2 Spearman rank correlation coefficients for comparison of standardised event ratios for asthma from different data sources for region+urban rural combinations in 1991 and regions in 1994: all ages

	GPRD: ages 0-84 Inhaler + asthma diagnosis*		HES: ages 0-84 Emergency admissions		Mortality: ages 0-84	
	1991	1994	1991	1994	1991	1994
HSE95: ages 2-84 Symptoms of wheeze or whistling in the chest		-0.20		0.27		0.05
GPRD: ages 0-84 Inhaler + asthma diagnosis*			-0.12	-0.35	0.23	-0.50
HES: ages 0-84 Emergency admissions					0.32	0.48

* Patients who also had a diagnosis of COPD were excluded

Table 6.3 Spearman rank correlation coefficients for comparison of standardised event ratios for asthma from different data sources for region+urban rural combinations in 1991 and regions in 1994 by age: ages 0-14, 0-4, 5-14 and 15-84

	GPRD Inhaler + asthma diagnosis*		HES Emergency admissions	
	1991	1994	1991	1994
ages 5-14				
HSE95: Symptoms of wheeze or whistling		0.22		-0.86
ages 0-14				
GPRD: Inhaler + asthma diagnosis*			0.15	-0.06
ages 15-84				
HSE95: Symptoms of wheeze or whistling		-0.22		0.67
GPRD: Inhaler + asthma diagnosis*			-0.24	-0.29

* Patients who also had a diagnosis of COPD were excluded

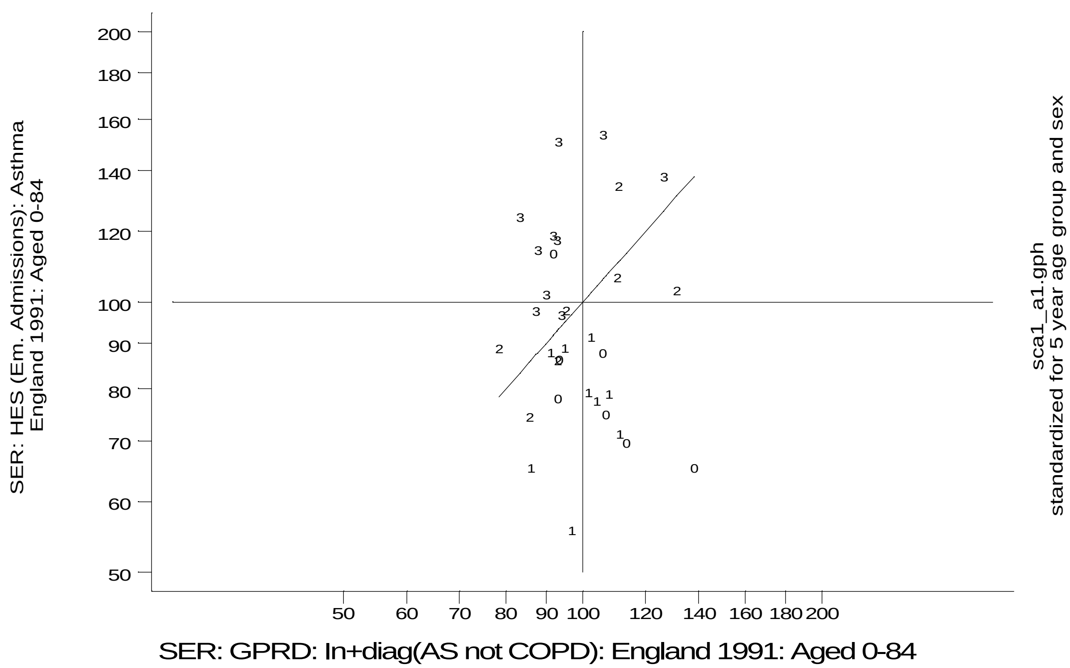
Subgroup analysis by age (Table 6.3) showed that the weak correlation between symptoms and hospital admissions for all ages (r_s = 0.27) was composed of a relatively strong positive correlation in adults (r_s = 0.67), a strong negative correlation (r_s = -0.86) in school children aged 5-15 (perhaps related to a high prevalence of mild disease in this age group) and a weakly positive correlation in pre-school children aged 0-4. Correlations between prescriptions for asthma in primary care and both symptoms and hospital admissions remained weak.

Scatterplots and urban-rural differences

Comparisons across data sources for 1991 using scatterplots allowed urban rural differences to be further investigated.

The scatterplot for GPRD and HES data suggested that urban areas and conurbations generally had higher SERs for hospital admissions than for inhaler prescriptions for asthma (as they were above the line of equivalence) while rural and mixed areas had higher SERs for primary care consultations than for hospital admissions (Figure 6.11).

Figure 6.11 Scatterplot of 1991 HES (emergency admissions) and GPRD (inhalers plus asthma diagnosis) SERs for region+urban-rural combinations



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

The scatterplot for HES and mortality data also suggested that most conurbations and urban areas showed higher SERs for hospital admissions than for mortality while most of mixed areas showed the reverse (see Appendix A6). Rural areas were scattered on both sides of the line of equivalence.

The scatterplot for GPRD and mortality data suggested that conurbations generally had higher SERs for mortality than for inhaler prescriptions for asthma in primary care while the reverse was true for rural and mixed areas (see Appendix A6).

Comparisons within data sources by age

There was a strong correlation (r_s = 0.78) between the geographical patterns of hospital admissions in children (aged 0-14) and adults (aged 15-84). However, the correlation between primary care (GPRD) consultations in children and in adults was weaker (Table 6.4).

Table 6.4 Spearman rank correlation coefficients for comparison of standardised event ratios for asthma in children and adults for region+urban rural combinations in 1991 within GPRD and HES

	GPRD: ages 15-84 Inhaler + asthma diagnosis*	HES: ages 15-84 Emergency admissions
	1991	1991
GPRD: ages 0-14 Inhaler + asthma diagnosis*	0.40	
HES: ages 0-14 Emergency admissions		0.78

* Patients who also had a diagnosis of COPD were excluded

Alternative measures for asthma within the HSE95

Three alternative measures for asthma within the HSE95 were considered: symptoms in the last 12 months, self-reported asthma and use of inhalers in the last 12 months. The relationship between these three was explored and compared with the prevalence of doctor diagnosed asthma. The variables relating to symptoms and use of inhalers were combined to form a derived variable of untreated asthma symptoms (those with symptoms of wheeze or whistling in the chest who had not used an inhaler within the last 12 months).

Comparison of overall prevalences for alternative asthma measures in HSE95

Symptoms of wheeze/whistling in the chest in the last 12 months

- Overall, 20.3% of people had had symptoms in the previous 12 months
- 27.3% of those with symptoms self-reported asthma as a long-standing illness
- 44.2% of those with symptoms had used an inhaler in the previous 12 months
- 42.8% of those with symptoms had ever had a diagnosis of asthma from a doctor

Asthma self-reported as a long-standing illness

- Overall, 6.5% people mentioned asthma as a long-standing illness and 98% of these had ever been told by a doctor that they had asthma.
- The number of people who mentioned asthma as a long-standing illness was half of the number of people who had ever been told by a doctor that they had asthma (13.0% of all respondents had been told that they had asthma)
- Most (85.7%) of those with self-reported asthma had had symptoms in the previous 12 months
- Most (90.5%) of those with self-reported asthma had used an inhaler within the previous 12 months

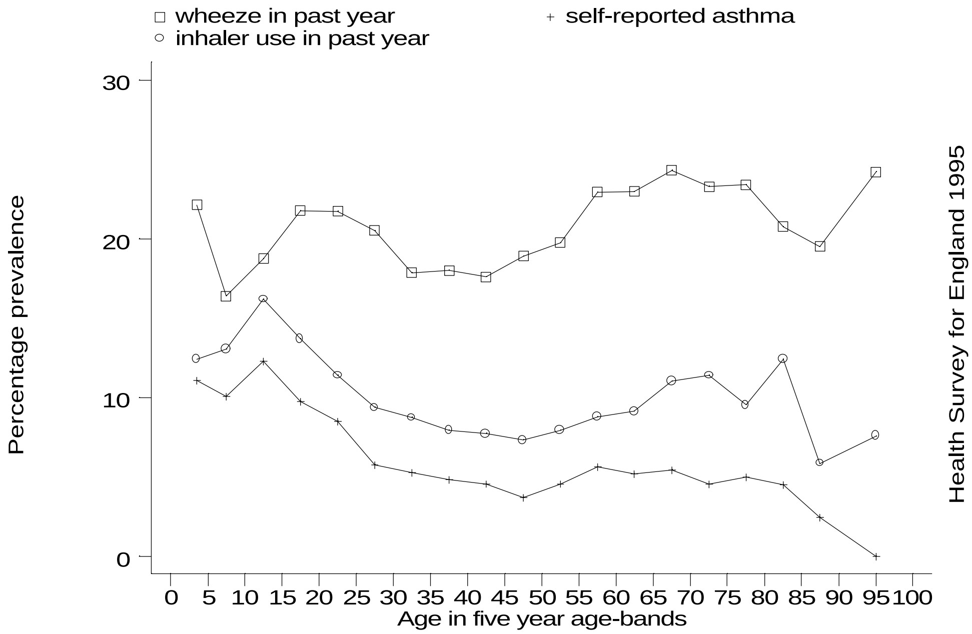
Inhaler use in last 12 months

- Overall, 10.2% of people had used an inhaler in the previous 12 months
- Most (87.8%) of those using an inhaler in the previous 12 months had had symptoms of wheezing/whistling in the chest in the previous 12 months
- Just over half (57.2%) of those using an inhaler in the previous 12 months self-reported asthma as a long-standing illness
- The majority (83.0%) of those using an inhaler in the previous 12 months had been told by a doctor at some point that they had asthma

Comparison of age-sex distributions for alternative asthma measures in HSE95

Asthma symptoms in the last year peaked in the 0-4 year olds, 15-25 year olds and in men aged 65-80. The pattern was similar for untreated asthma symptoms but was approximately 10% lower for each peak. Use of inhalers in the previous 12 months peaked in the 10-15 year olds, with a secondary peak at older ages (65-85), while self-reported asthma showed some similarity with the age-sex pattern seen in the GPRD (described above).

Figure 6.12 Prevalence of symptoms of wheeze in the previous 12 months, use of inhaler in the previous 12 months and self-reported asthma by age from the Health Survey for England 1995 by age (males and females combined)



Comparison of regional distribution for alternative asthma measures in HSE95

There were no regions consistently and significantly higher or lower than the average (Table 6.5), but confidence intervals were wide. The range between highest and lowest SER was relatively small.

Table 6.5 Numbers and SERs by region for symptoms, recent inhaler use and self-reported asthma in the HSE95 ranked by symptom SER

Region	HSE95: Symptoms of wheezing/whistling in the chest in the last 12 months		HSE95: inhaler used in the last 12 months		HSE95: asthma self-reported as a long-standing illness	
	Number	SER	Number	SER	Number	SER
SE Thames	304	113.4*	148	108.2	88	101.5
Trent	448	108.8	238	114.8*	133	101.4
W Midlands	452	105.2	184	85.0*	131	95.2
Northern	265	104.2	122	93.1	86	102.4
Oxford	222	101.7	112	100.3	61	84.8
Wessex	250	99.9	137	109.2	96	122.6*
N Western	335	99.6	166	95.7	109	97.4
NW Thames	216	99.1	125	114.0	74	105.5
Mersey	185	97.8	100	105.7	66	109.8
NE Thames	281	97.7	146	98.8	79	83.6
S Western	287	96.0	144	95.7	89	94.8
Yorkshire	285	92.7	136	87.4	92	92.2
SW Thames	220	88.0	137	108.5	90	114.0
E Anglia	204	87.0*	108	92.5	79	106.6

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

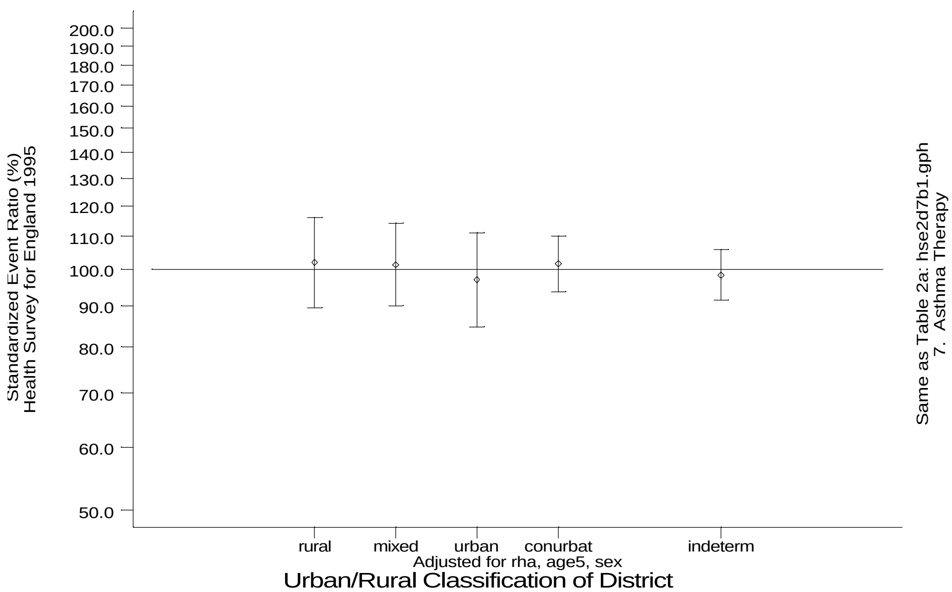
Comparison of urban rural pattern for alternative asthma measures in HSE95

Overall percentages suggested a slight excess of all asthma measures in households which the interviewer judged to be in an urban setting (Table 6.6) which was statistically significant for symptoms and inhaler use. However, using urban rural classification of district, standardised for region, age (in 5 year bands) and sex showed no urban rural gradient in any measures (use of inhalers illustrated in Figure 6.13).

Table 6.6 Prevalence of asthma symptoms, inhaler use and self-reported asthma in those living in urban and rural settings in the Health Survey for England 1995

Variable	% of those living in urban setting	% of those living in rural setting	p value (for null hypothesis of no difference between urban and rural)
Wheeze in the past year	20.9%	17.9%	0.000
Using inhalers	10.5%	9.1%	0.01
Self-reported asthma	6.6%	5.9%	0.11

Figure 6.13 Standardised event ratios for the use of inhalers in the previous 12 months by urban rural classification of district from the Health Survey for England 1995



Geographical correlations between different asthma measures in the HSE and other databases and within HSE

Correlations between all three measures and GPRD, HES and mortality data were poor (Table 6.7) as were correlations between the three measures (see Appendix A6).

Table 6.7 Spearman rank correlation coefficients for comparison of regional standardised event ratios for asthma between data sources

HSE95: ages 2-84	GPRD: ages 0-84 Asthma diagnosis	HES: Emergency admissions, ages 0-84	Mortality: ages 0-84
HSE95 symptoms of wheeze/whistling	-0.20	0.27	0.05
HSE95 inhaler therapy	0.15	0.07	-0.33
HSE95 Self reported asthma	0.45	0.21	- 0.38

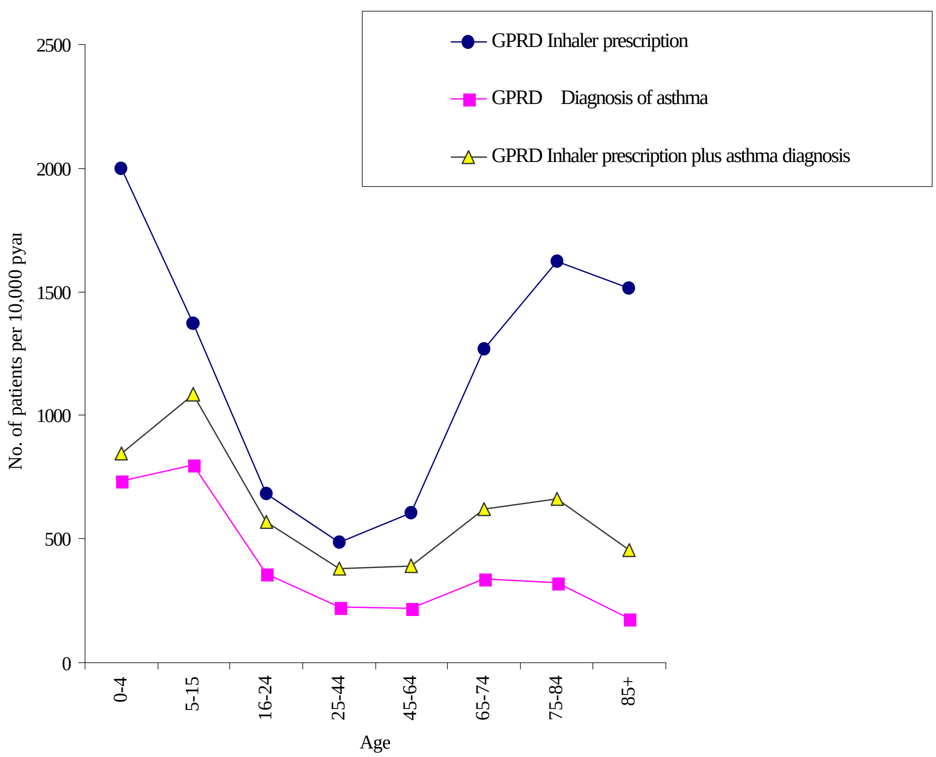
Alternative measures for asthma within the GPRD

Alternative measures for asthma considered were diagnosis alone, inhaler therapy and inhaler therapy plus diagnosis of asthma.

Age sex distributions for alternative measures of asthma in the GPRD

Different measures of asthma within the GPRD showed broadly similar patterns with peaks in childhood and old age but differences in the size of these, particularly with inhaler prescriptions**.** Patient consultation rates for asthma showed a similar pattern to rates of inhalers prescribed for asthma, but were lower for all ages. Inhaler prescription rates were higher than but reasonably similar size to the other two measures in the middle years of life (16-64) but not at the extremes of age (Figure 6.14). Inhaler prescription rates peaked in the first year of life, while peaks in patient consultations were later in childhood, which could correspond to a clinical diagnosis made after several episodes of treated wheezing. Rates of inhaler prescriptions for symptoms (but no diagnosis of asthma or chronic obstructive airways disease) were highest in one year olds, dropped steeply to age 20, remained static to age 50, and slowly rose in older age groups. This pattern was similar to the age-sex pattern for emergency hospital admissions for asthma in younger age groups.

Figure 6.14 Different measures of asthma within the GPRD for 1991/2 for males



Year on year differences

Rates for patient consultations and inhalers prescribed for asthma both rose between 1991-1994 and fell in 1995. Inhaler prescriptions alone rose slightly year on year between 1991-1995 in females of all ages and in males aged 15-24, but followed the pattern of consultations in younger males and were static in older males aged 50+.

Cohort effect
No cohort effect was seen in any of the measures for asthma.

Seasonality for alternative measures of asthma in the GPRD

Prevalence rates for patient inhaler prescriptions for asthma were 15 times higher than for first-ever consultations and showed a different pattern. Inhaler prescriptions for asthma peaked just before Christmas and were low over the subsequent holiday period (Figure 6.15), while first-ever consultations showed a peak in early summer (weeks 24-30) and lowest levels in weeks 32-36, rising again in the autumn (Figure 6.16). First-ever consultations and non-repeat prescriptions for asthma showed the same patterns, but non-repeat prescriptions had three fold higher rates (see Appendix A6). First ever consultations or non-repeat prescriptions may be better measures within the GPRD to investigate seasonal patterns than all prescriptions for asthma.

Figure 6.15 Prescriptions for asthma in 1991-1995 by week

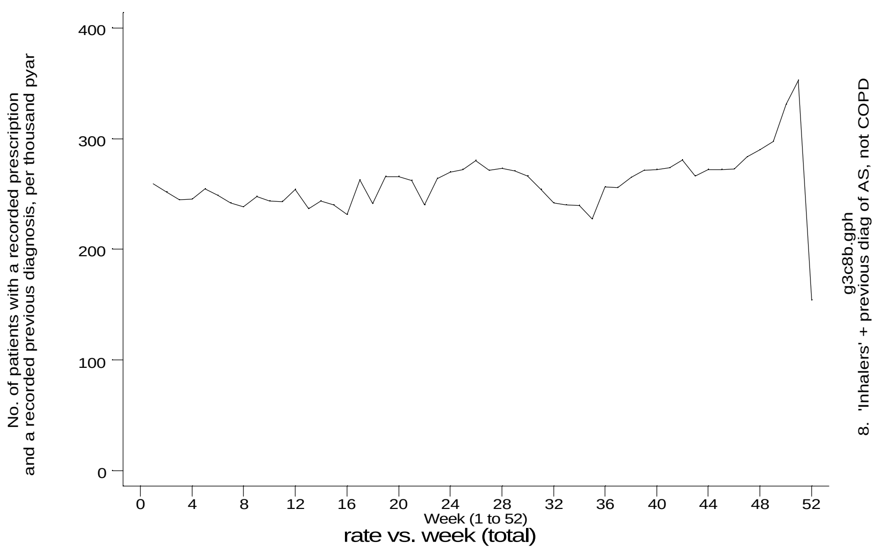
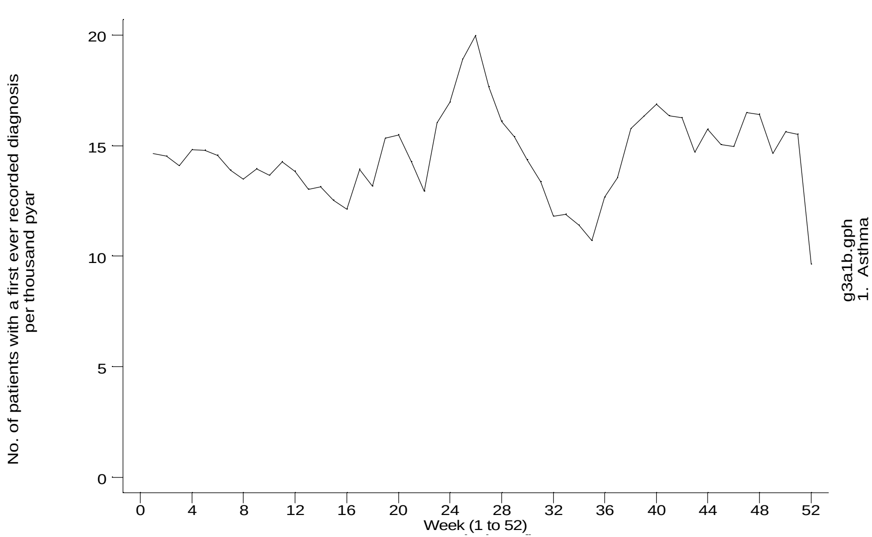


Figure 6.16 Consultations for asthma in 1991-1995 by week



Regional patterns for alternative measures of asthma in the GPRD

South East and South West Thames were both consistently significantly lower than average on all three measures of asthma while Mersey and Wessex were higher. Urban rural patterns were not consistent with each other. Only one measure, asthma diagnosis, suggested a gradient with lower SERs in conurbations.

Geographical correlation across data sources using alternative measures of asthma within the GPRD

Correlation across data sources using the different measures for asthma in GPRD were all weak (Table 6.8). Since 91% of HSE respondents with self-reported asthma had used an inhaler in the previous 12 months, it was perhaps not surprising that one of the stronger correlations was between self-reported asthma and inhaler prescription for asthma in GPRD (r_s=0.45).

Within the GPRD there was good correlation between the main measure used (inhaler plus asthma diagnosis) and other measures except for all inhaler prescriptions which may have been prescribed for conditions other than asthma (Table 6.9).

Table 6.8 Spearman rank correlation coefficients for standardised event ratios for asthma for region+urban rural combinations in 1991 and regions in 1994 from different data sources using different measures within the GPRD

	GPRD: ages 0-84 Inhaler + asthma diagnosis*		HES: ages 0-84 Emergency admissions		Mortality: ages 0-84	
	1991	1994	1991	1994	1991	1994
HSE95: ages 2-84						
HSE95 symptoms of wheeze/whistling		-0.20				
HSE95 inhaler therapy		0.15				
HSE95 Self reported asthma		0.45				
GPRD: ages 0-84						
GPRD Inhaler + asthma diagnosis*			-0.12	-0.35	0.23	-0.50
GPRD Asthma diagnosis only*			-0.20		0.33	
GPRD Inhaler prescription only			0.13		0.37	
GPRD Inhaler + diagnosis of asthma or symptoms*			0.06		0.33	

* Patients who also had a diagnosis of COPD were excluded

Table 6.9 Spearman rank correlation coefficients for comparison of standardised event ratios for asthma for region+urban rural combinations in 1991 using different measures within the GPRD

	GPRD Inhaler + asthma diagnosis*
	1991
GPRD Asthma diagnosis only*	0.74
GPRD Inhaler prescription only	0.44
GPRD Inhaler + diagnosis of asthma or symptoms, but not COPD	0.70

Effects of smoking and social class in the HSE95

Smoking and social class effects were examined within the HSE95. A strong gradient was seen between SERs for never regular, ex-regular and current smokers in the HSE95 for both asthma symptoms and untreated asthma symptoms while SERs for self-reported asthma and inhaler use was slightly higher in ex-regular smokers (Figures 6.17 & 6.18). No social class gradient was seen, but SERs for social class IIIM were slightly higher in all measures of asthma.

Figure 6.17 SERs for asthma symptoms in the HSE95 by smoking status

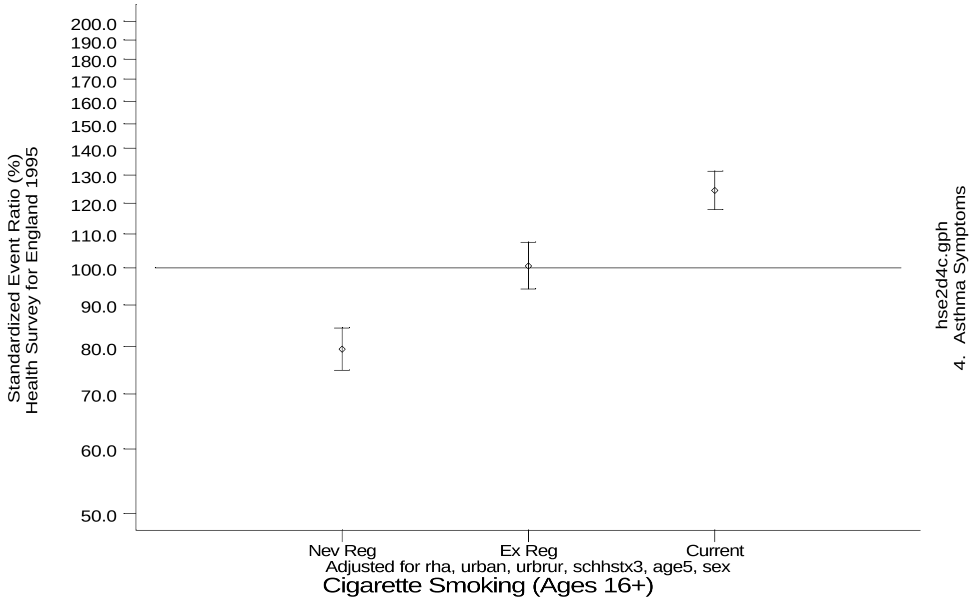
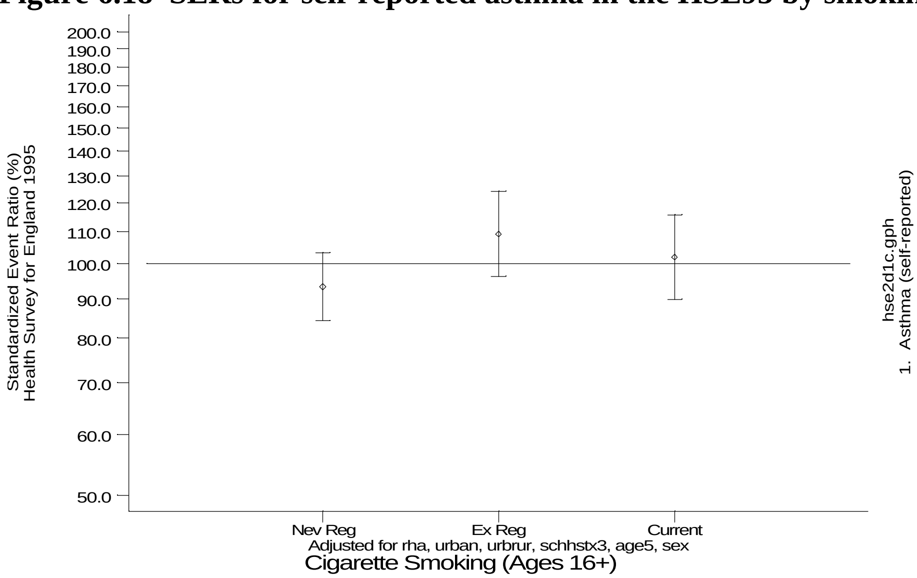


Figure 6.18 SERs for self-reported asthma in the HSE95 by smoking status



Further adjustment of regional SERs for different measures of asthma within the HSE95 (for smoking status, social class and urban-rural setting of the household as well as for urban rural code of district, 5 year age band and sex) only made minor differences to the regional patterns, bringing them slightly closer to the average, but no change was seen in SERs comparing urban and rural districts.