

Asthma Hospital Admissions Compared to Estimated Background Air Pollution
Asthma Hospital Admission Rates by Rotherham Wards 2007/08 - 2011/12 (5 years)
Estimated Background Air Pollution 2010 Data by Rotherham Wards

Ward	Estimated Background Air Pollution 2010 (Average annual mean concentration)				Asthma Admissions Rate per 100,000		
	NO2	NOx	PM10	PM2.5	Child (a)	All Ages (b)	
					(0-18 yrs)	Total	Emerg
Anston and Woodsetts	16.3	23.4	17.5	11.0	197.4	95.8	84.5
Boston Castle	31.5	54.2	18.3	13.1	242.2	144.9	141.5
Brinsworth and Catcliffe	27.9	45.1	18.0	12.6	106.8	97.5	95.9
Dinnington	15.9	22.8	17.8	10.9	98.5	81.4	77.0
Hellaby	23.4	36.1	19.4	12.4	111.1	60.0	60.0
Holderness	21.6	32.7	18.2	11.8	159.3	123.7	122.5
Hoober	16.7	23.9	16.3	10.8	191.6	115.6	115.6
Keppel	19.4	28.7	16.0	11.0	259.3	158.7	153.4
Maltby	15.7	22.5	17.5	10.9	117.3	122.9	114.5
Rawmarsh	21.5	32.9	16.7	11.6	133.2	109.6	104.4
Rother Vale	20.7	31.0	17.4	11.4	222.2	120.4	116.1
Rotherham East	27.9	45.9	17.5	12.5	238.2	153.2	150.4
Rotherham West	27.5	45.5	17.8	12.7	263.9	145.2	143.6
Silverwood	18.3	26.7	17.2	11.2	101.1	65.4	61.3
Sitwell	23.9	37.0	18.7	12.2	230.3	122.8	118.1
Swinton	19.9	29.6	16.2	11.2	179.5	138.1	114.9
Valley	21.5	32.6	17.2	11.7	207.9	145.6	141.4
Wales	18.6	27.6	18.0	11.3	252.0	148.0	148.0
Wath	18.3	26.7	16.4	11.0	215.7	160.2	158.6
Wickersley	22.5	34.2	17.8	12.1	149.1	130.1	128.5
Wingfield	20.0	29.8	16.5	11.2	117.8	129.0	123.8
Total (Rotherham)	19.6	29.5	17.5	11.4	183.1	122.8	118.4

Source: Estimated background air pollution data via DEFRA, hospital admissions via SUS.

Notes

Air pollution data based on ambient monitoring and meteorological data for 2010.

Total annual mean concentrations based on 1km x 1km grid squares. (Concentrations in ug.m-3)

Ward data represents average of data for 1km squares with centre point within the ward.


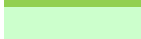



NO2 - nitrogen dioxide, NOx - nitrogen oxide, PM10/2.5 - particulate matter (up to 10/2.5 micrometres in size)

Hospital admissions for adults looked at in terms of total admissions (elective and emergency), emergency only and counting patients rather than admissions to try to better highlight the prevalence in an area.

(a) Crude rate per 100,000 children aged 0-18.

(b) Directly age-standardised rate per 100,000.

Data colour coded by sorting from lowest to highest:

lowest fifth		4 wards
second lowest		4 wards
middle		5 wards
second highest		4 wards
highest		4 wards

Comment

There appears to be some correlation between air pollution and asthma hospital admissions e.g.:
Anston & Woodsetts and Dinnington wards have low rates of air pollution and asthma
Boston Castle, Rotherham East and Rotherham West wards have high rates for both.
In contrast, Wath ward has lower levels of air pollution but higher asthma rates and
Hellaby ward has higher levels of air pollution and lower asthma rates.

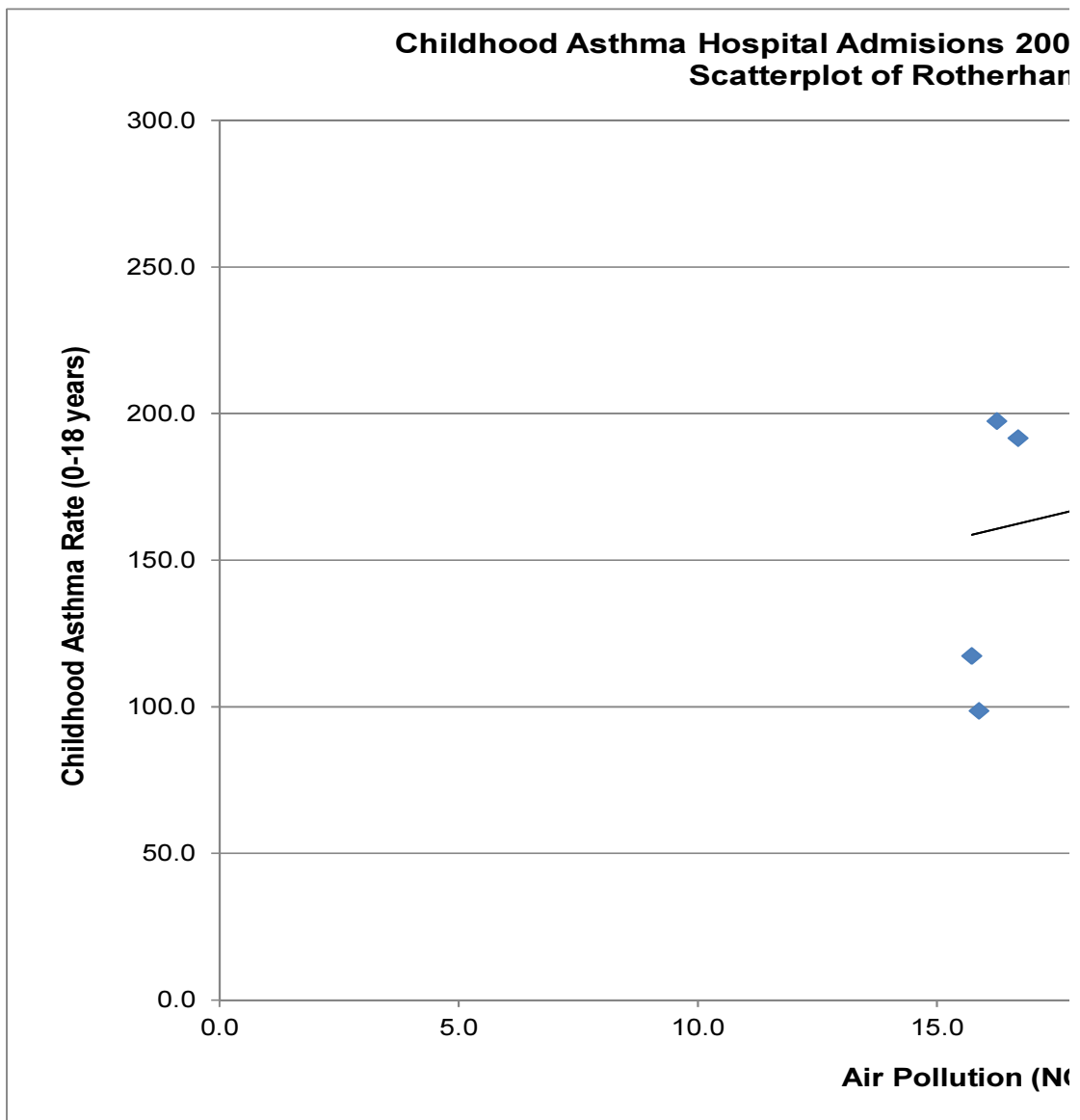
The following charts check on the correlation between air pollution and asthma rates.

100,000
Patients
61.1
114.4
71.8
67.3
52.0
76.0
96.9
97.0
77.3
88.9
98.1
124.0
109.0
55.8
77.0
91.0
106.1
115.1
90.9
87.3
101.7
89.2

e)

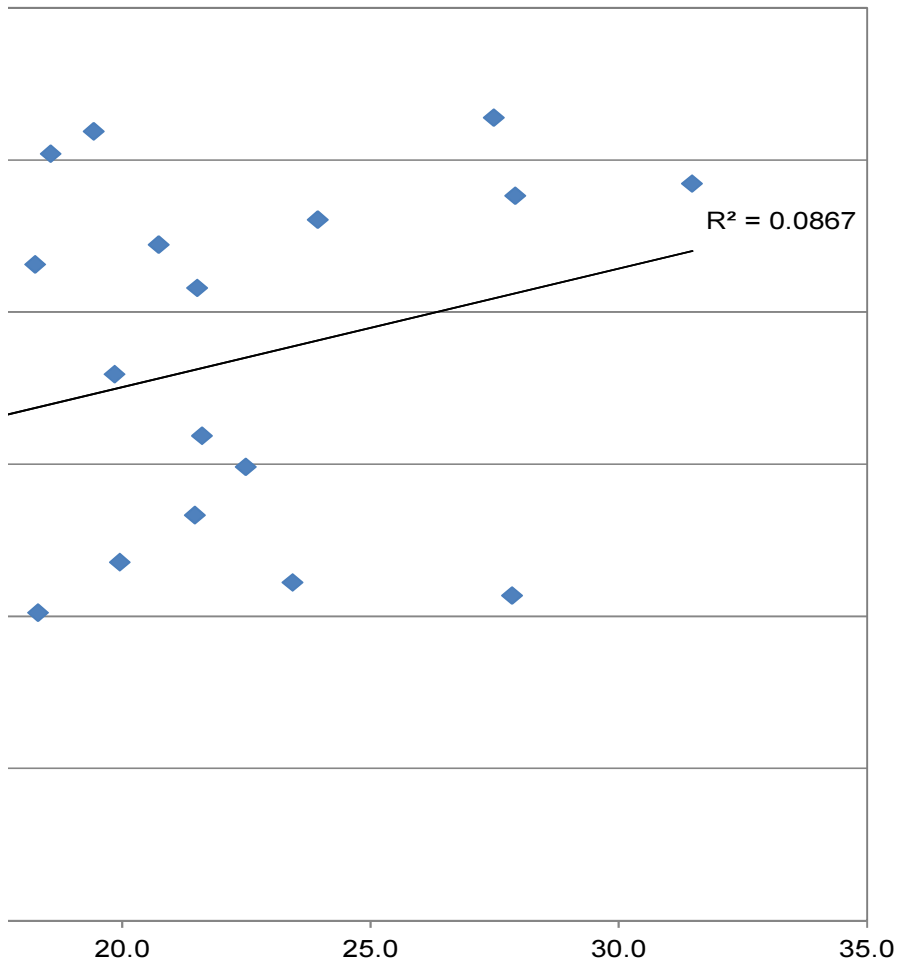
area.

In the chart below the trendline shows a positive correlation between air pollution (nitrogen
in air pollution is associated with an increase in childhood asthma hospital admission rates.
change in childhood asthma hospital admission rates can be explained by the change in air p
Thus the data suggests the link is fairly weak.



nitrogen dioxide) and childhood asthma hospital admission rates i.e. an increase in pollution. The R squared value shows the strength of the association i.e. 8.67% of the variation in asthma hospital admission rates is explained by the variation in pollution. This is more robust the closer the R squared value is to 1.0

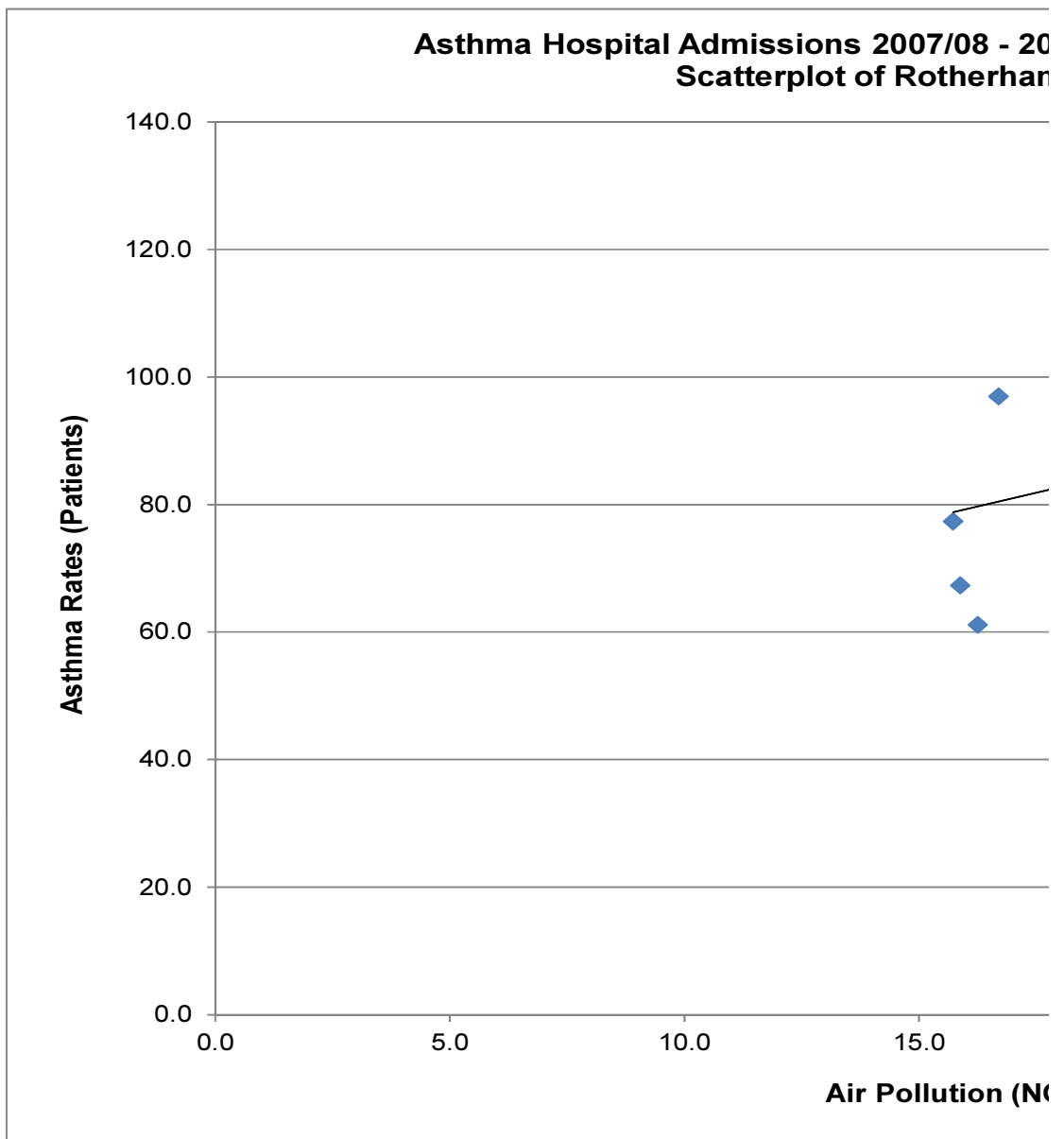
2007/08 - 2011/12 and Air Pollution 2010 in Electoral Wards



02)

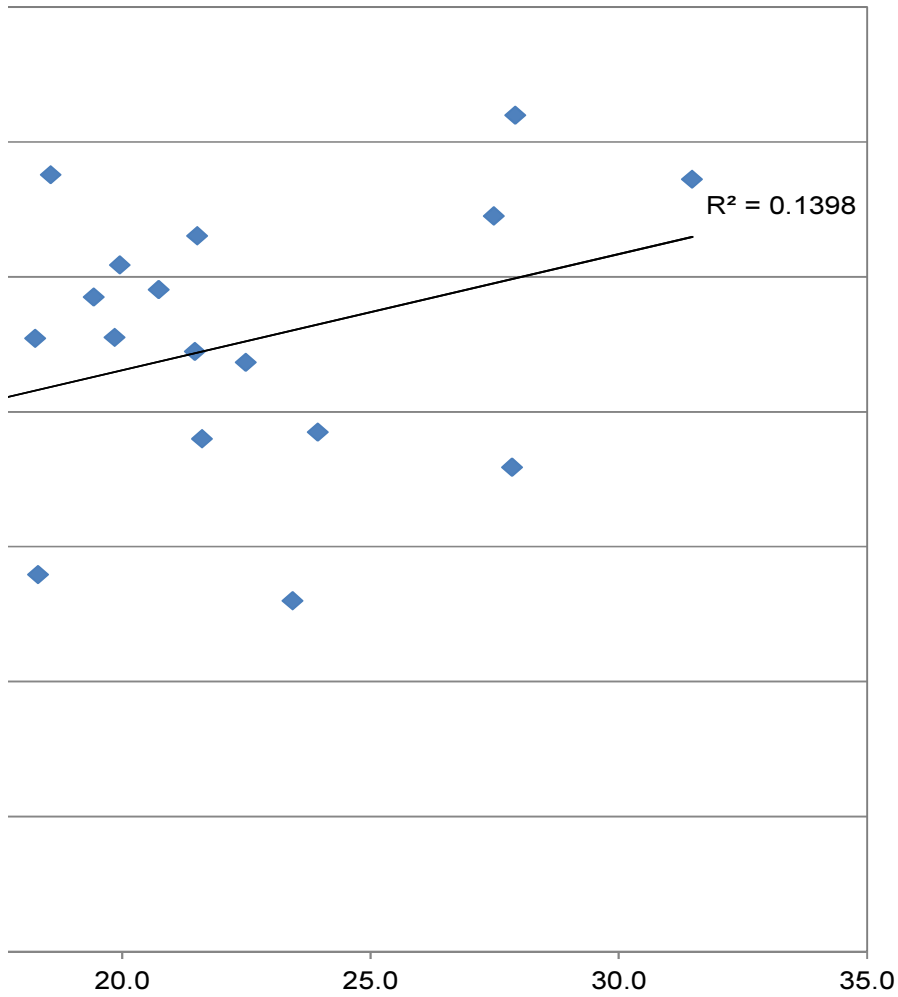
Source: DEFRA, SUS

In the chart below the trendline shows a positive correlation between air pollution (nitrogen dioxide) and asthma hospital admission rates. This suggests that an increase in air pollution is associated with an increase in asthma hospital admission rates. The R square value indicates that a small change in asthma hospital admission rates can be explained by the change in air pollution. Thus the data suggests the link is fairly weak.



nitrogen dioxide) and asthma hospital admission rates i.e. an increase in the R squared value shows the strength of the association i.e. 13.98% of the variance in asthma hospital admission rates is explained by nitrogen dioxide. This is more robust the closer the R squared value is to 1.0

2011/12 and Air Pollution 2010 (NO2) in Electoral Wards



O2)

Source: DEFRA, SUS