



Crystal Court, Aston Cross
Birmingham, B6 5RQ

Telephone: 0121 687 3400
Facsimile: 0121 687 3401
E-mail: office@pi.nhs.uk
Website: www.pi.nhs.uk

Director

Professor Jason O Gardosi MD FRCOG FRCS

Direct Line: 0121 687 3500
E-mail: gardosi@pi.nhs.uk

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Dear Colleague

PERINATAL & INFANT MORTALITY SURVEY 2008/9 – BIRMINGHAM

This report relates to the newly formed **Birmingham Cluster and its constituent PCTs**. It provides an update of mortality rates up to 2009 for stillbirths and neonatal deaths, and up to 2008 for infant deaths. PCT cohorts are defined here according to postcode.

Method

The regional information is based on the WM Perinatal Death Notifications (PDNs) which the Perinatal Institute receives from its network of co-ordinators in West Midlands units. The information may sometimes differ from the last ONS Vital Statistics because our data includes late ascertained cases which are notified to the PI on an ongoing basis. We have also implemented cross checks with the WM Safeguarding Children's Boards.

This report includes

- birth rate trend in Birmingham, West Midlands (WM) and England & Wales (E&W);
- a short description of Birmingham demographics based on PEER 09/10;
- numbers, rates and 3year moving averages for
 - stillbirths (from 24 weeks)
 - early neonatal deaths (birth to age 7 days)
 - perinatal deaths (stillbirths and early neonatal deaths)
 - neonatal deaths (birth to age 28 days)
 - infant deaths (birth to 12 months)

Although these categories overlap, the data are presented for ease of reference and comparison with other reports. Unlike previous national reports, we continue presenting trends by 3 year moving averages, as year on year variation may often falsely identify outliers.

As in previous years, we also present 'corrected' rates, whereby we exclude congenital anomalies and pre-viable births, to allow more useful comparisons between PCTs with widely different populations.

For stillbirths and infant deaths, we have undertaken the following additional analyses:

1. mortality rates plotted against deprivation index of the birth population: this allows each PCT's mortality rate to be seen within the context of the level of deprivation within its population;
2. analysis of stillbirths and infant deaths within major classification groups, to assess the main contributing causes.

Findings

1. Births

- A. As the graph shows, births in Birmingham and WM follow the national trend. The number of births have been increasing in recent years, but appear to have reached a plateau in 2009.
- B. In the table, several comparative maternity demographics are presented for Birmingham and the rest of WM. The figures highlight the high rates of deprivation in Birmingham, and list the main groups according to ethnic origin, with British Europeans representing 43% of the maternity population, followed by South Asians (33%), including 23% Pakistani. Although the smoking rate is lower, prematurity and IUGR rates are similar to the rest of WM.

2. Stillbirths

- a. Birmingham stillbirth rates continue to be higher than in E&W and WM, although appearing to fall gradually (trend $p=0.38$, NS).
 - b. Correction by exclusion of congenital anomalies shows that Birmingham rates are only marginally above the regional and national average, demonstrating the big impact which anomalies have on Birmingham mortality rates.
3. Stillbirths and Deprivation: This analysis is also repeated for crude and corrected figures, and shows that PCT rates are mostly within or even below the expected range when adjusted for IMD score.
 4. Stillbirth classification: the largest category is intrauterine growth restriction (IUGR), with a suggested but non-significant downward trend. The relatively large group of 'unexplained / unclassified' cases is likely to be related to the low uptake of postmortems in this population.

5. Infant deaths

- a. Birmingham infant death rates are higher than WM, which in turn are higher than E&W. There is substantial variation between PCTs, and an apparent increase in Solihull in 2008.
 - b. Corrected rates (after exclusion of congenital anomalies and previable births) are much closer to the regional average (no national adjusted/corrected data available for infants).
6. Infant deaths and deprivation: the plot shows again the respective infant mortality rates when adjusted according to deprivation index. Neither of the Birmingham PCTs are outliers.
 7. Infant mortality groups: trend analysis suggests gradual reduction of prematurity and previable deaths, although again not reaching statistical significance. Compared to the rest of the West Midlands, Birmingham has significantly higher rates of infant deaths in each of the main categories.

Sections 8 & 9 show rates for subgroups of infant deaths (**early neonatal and neonatal**). In section 10, rates for **perinatal deaths** are presented, with similar comparisons for crude and corrected rates.

Further analyses are currently being undertaken and will be reported in the coming weeks, including a more thorough analysis of subgroups of the WM maternity population.

Comments and suggestions for our reports are always welcome, and specific analyses continue to be available on request (www.pi.nhs.uk/data).

With sincere regards



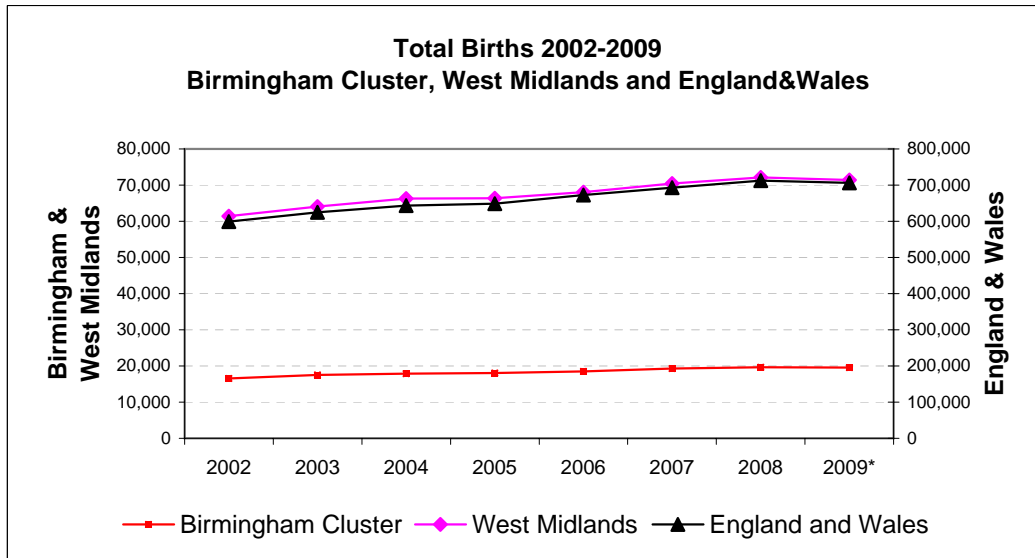
Professor Jason Gardosi
Director, West Midlands Perinatal Institute

1. Births: Birmingham, West Midlands and England & Wales 2002-2009

Source: ONS

	2002	2003	2004	2005	2006	2007	2008	2009*
England and Wales	599,279	624,816	643,026	649,094	672,966	693,356	712,328	706,248
West Midlands	61,417	64,079	66,285	66,351	68,063	70,476	72,110	71,452
Birmingham Cluster	16,573	17,517	17,852	18,047	18,508	19,261	19,606	19,584
BEN	5,815	5,934	6,312	6,153	6,599	6,784	6,924	6,933
HoB	5,205	5,435	5,452	5,506	5,479	5,711	5,742	5,763
S. Bham	3,678	4,092	4,090	4,344	4,314	4,604	4,759	4,758
Solihull	1,875	2,056	1,998	2,044	2,116	2,162	2,181	2,130

* Provisional, live births only



Data: PEER 2009/10

	Birmingham	Rest of West Midlands	West Midlands Total		Birmingham	Rest of West Midlands	West Midlands Total
Submissions:	14,936	33,563	48,499	Submissions:	14,936	33,563	48,499
Deprivation - IMD Quintile				Maternal Age			
1 (least)	2.8%	10.3%	8.0%	< 16	0.2%	0.2%	0.2%
2	4.1%	14.9%	11.5%	< 18	1.7%	2.1%	2.0%
3	11.2%	18.0%	15.9%	< 20	6.3%	7.8%	7.4%
4	16.1%	22.3%	20.4%	20 - 24	23.5%	22.8%	23.0%
5 (most)	65.8%	34.6%	44.2%	25 - 29	29.9%	28.9%	29.2%
Ethnic Origin				30 - 34	24.3%	24.3%	24.3%
African	6.8%	2.0%	3.5%	35 - 39	12.9%	13.2%	13.1%
African Caribbean	4.5%	1.2%	2.3%	35+	15.9%	16.2%	16.1%
British European	43.2%	77.6%	67.0%	40+	3.1%	3.0%	3.0%
Eastern European	2.2%	3.2%	2.9%	Body Mass Index			
Middle Eastern	2.4%	0.7%	1.3%	< 18.5	3.3%	3.4%	3.3%
South Asian	33.3%	10.6%	17.6%	18.5 - 24.9	46.3%	48.8%	48.0%
Bangladeshi	4.7%	1.0%	2.1%	25 - 29.9	29.7%	27.5%	28.2%
Indian	5.7%	4.8%	5.0%	30 - 34.9	13.3%	12.6%	12.8%
Pakistani	23.0%	4.8%	10.4%	35 - 39.9	5.3%	5.1%	5.2%
Other/Mixed	7.5%	4.6%	5.5%	30+	20.8%	20.3%	20.4%
Smoking				35+	7.5%	7.7%	7.6%
At booking	15.7%	20.9%	19.3%	40+	2.1%	2.5%	2.4%
Late in pregnancy	11.6%	15.1%	14.0%	Prematurity			
Ceased During Pregn.	24.4%	26.5%	25.9%	< 37 Weeks	6.3%	6.2%	6.2%
IUGR (<10th cust.cent.)	14.1%	14.3%	14.2%	< 34 Weeks	2.2%	1.9%	2.0%

2 A: Stillbirths 2002-2009

2 B: Stillbirths 2002-2009 - CORRECTED

(Excluding major congenital anomalies)

Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
England and Wales*	3365	3565	3517	3473	3590	3585	3617	
West Midlands	391	395	383	403	392	398	416	414
Birmingham Cluster	122	153	139	126	124	132	134	134
BEN	44	64	51	45	53	52	51	50
HoB	47	51	55	48	34	46	36	48
S. Bham	16	25	27	21	26	31	35	27
Solihull	15	13	6	12	11	3	12	9

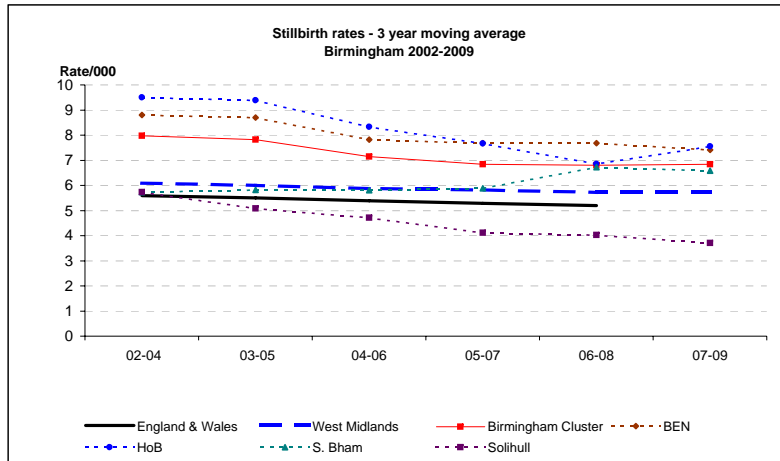
Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales*	5.6	5.7	5.5	5.4	5.3	5.2	5.1		
West Midlands	6.4	6.2	5.8	6.1	5.8	5.6	5.8	5.8	5.2 - 6.3
Birmingham Cluster	7.4	8.7	7.8	7.0	6.7	6.9	6.8	6.8	5.8 - 8.1
BEN	7.6	10.8	8.1	7.3	8.0	7.7	7.4	7.2	5.5 - 9.5
HoB	9.0	9.4	10.1	8.7	6.2	8.1	6.3	8.3	6.3 - 11.0
S. Bham	4.4	6.1	6.6	4.8	6.0	6.7	7.4	5.7	3.9 - 8.2
Solihull	8.0	6.3	3.0	5.9	5.2	1.4	5.5	4.2	2.2 - 8.0

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales	5.6	5.5	5.4	5.3	5.2	
West Midlands	6.1	6.0	5.9	5.8	5.7	5.7
Birmingham Cluster	8.0	7.8	7.1	6.8	6.8	6.8
BEN	8.8	8.7	7.8	7.7	7.7	7.4
HoB	9.5	9.4	8.3	7.7	6.9	7.6
S. Bham	5.7	5.8	5.8	5.9	6.7	6.6
Solihull	5.7	5.1	4.7	4.1	4.0	3.7

*ONS



Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
West Midlands	282	284	279	311	268	284	290	259
Birmingham Cluster	91	103	94	96	82	87	81	75
BEN	35	43	34	33	29	32	31	27
HoB	33	36	35	38	25	29	25	22
S. Bham	13	13	20	15	20	23	19	20
Solihull	10	11	5	10	8	3	6	6

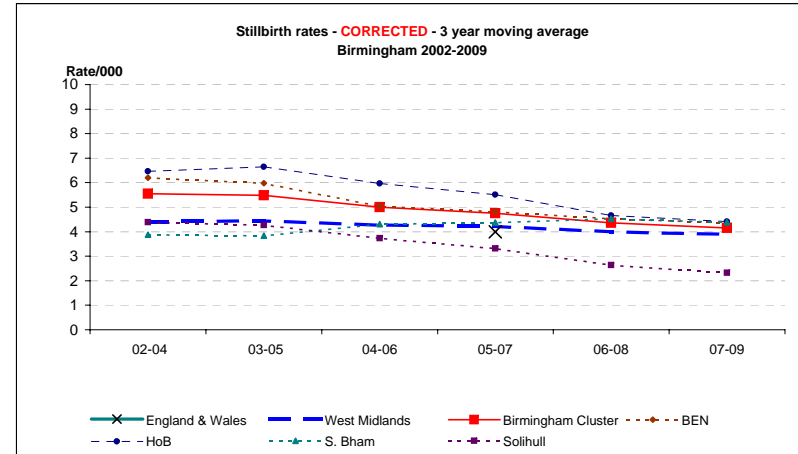
Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales**				4.1	4.1	3.9			
West Midlands	4.6	4.4	4.2	4.7	3.9	4.0	4.0	3.6	3.2 - 4.1
Birmingham Cluster	5.5	5.9	5.3	5.3	4.4	4.5	4.1	3.8	3.1 - 4.8
BEN	6.0	7.2	5.4	5.4	4.4	4.7	4.5	3.9	2.7 - 5.7
HoB	6.3	6.6	6.4	6.9	4.6	5.1	4.4	3.8	2.5 - 5.8
S. Bham	3.5	3.2	4.9	3.5	4.6	5.0	4.0	4.2	2.7 - 6.5
Solihull	5.3	5.4	2.5	4.9	3.8	1.4	2.8	2.8	1.3 - 6.1

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales				4.0		
West Midlands	4.4	4.4	4.3	4.2	4.0	3.9
Birmingham Cluster	5.5	5.5	5.0	4.7	4.4	4.2
BEN	6.2	6.0	5.0	4.8	4.5	4.4
HoB	6.5	6.6	6.0	5.5	4.7	4.4
S. Bham	3.9	3.8	4.3	4.4	4.5	4.4
Solihull	4.4	4.3	3.7	3.3	2.6	2.3

**CEMACH



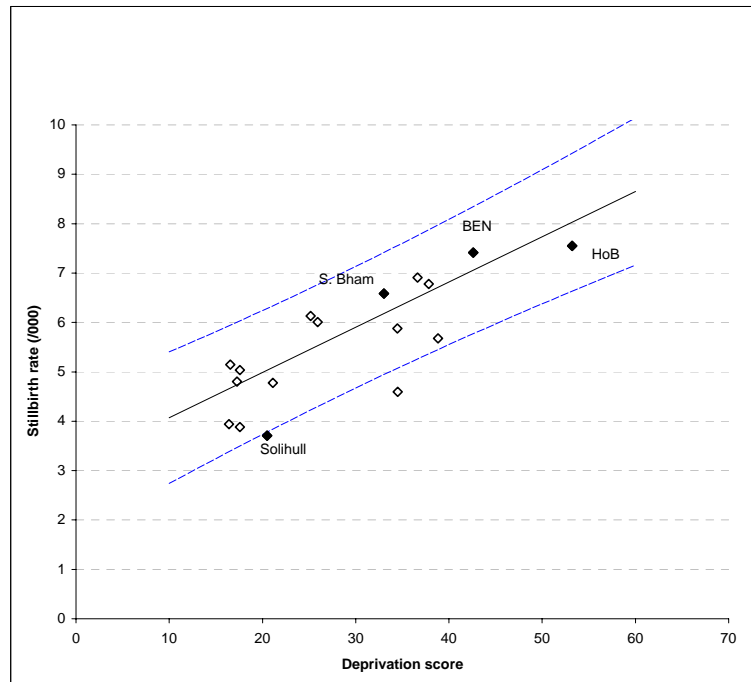
x = England & Wales 3 y adjusted average from CEMACH

3. Stillbirths and Deprivation, Birmingham PCTs

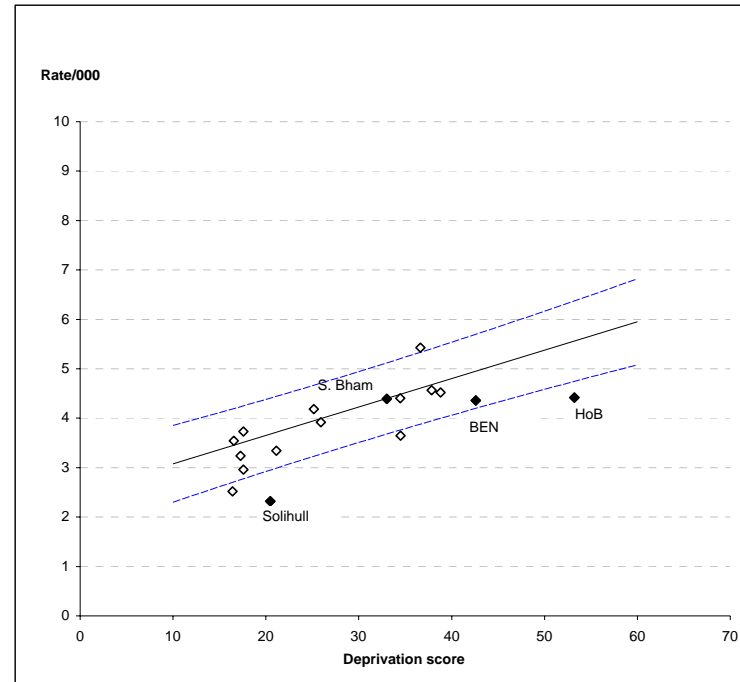
Graphs show stillbirth rates for the last triennium (2007-9) for Birmingham PCTs, plotted against each PCT's respective deprivation score (IMD 2007).

Regression line with 90% prediction intervals (based on 2002-2008 data) are also shown

A. Crude rates



B. Corrected rates - after excluding major congenital anomalies



4. Stillbirths in Birmingham, 2002-2009: Classification in main groups

Groups based on ReCoDe classification

	2002	2003	2004	2005	2006	2007	2008	2009
Births	16573	17517	17852	18047	18508	19261	19606	19584

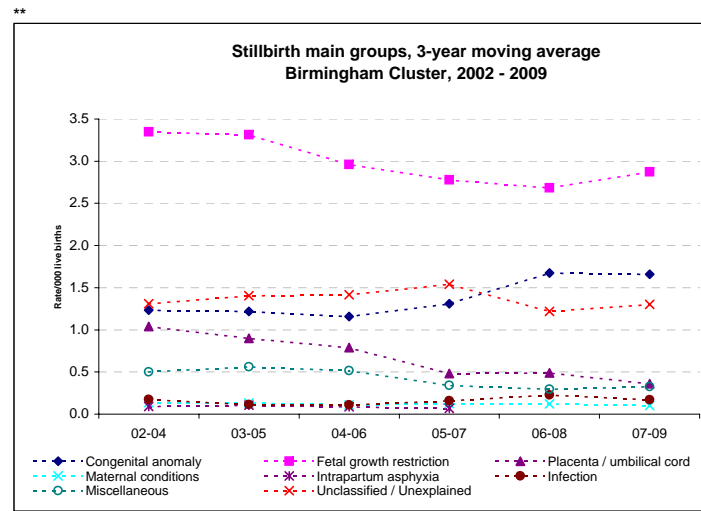
MAIN GROUPS

Numbers

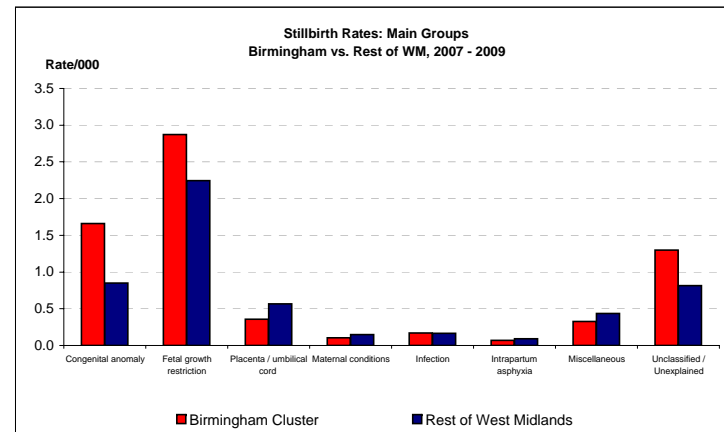
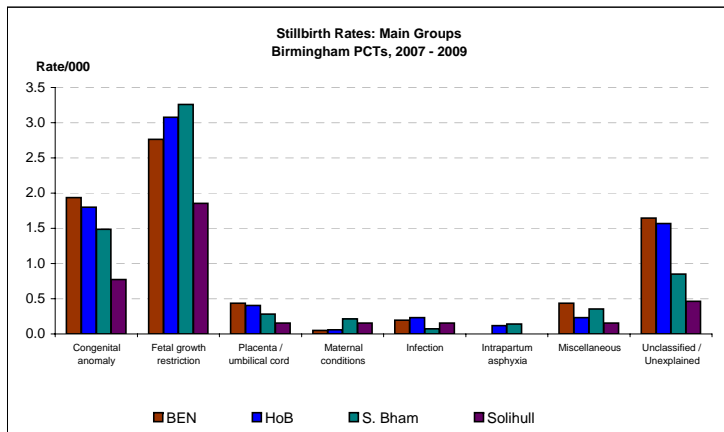
Congenital anomaly	18	26	20	19	24	30	42	25
Fetal growth restriction	51	62	61	54	46	55	53	60
Placenta / umbilical cord	12	22	20	6	17	4	7	10
Maternal conditions	2	4	1	2	3	2	2	2
Infection	3	4	2	4	4	5	4	1
Intrapartum asphyxia	5	6	1	3	1	2	2	-
Miscellaneous	7	7	12	11	5	3	9	7
Unclassified / Unexplained	24	22	22	31	24	31	15	30

3-year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
Congenital anomaly	1.2	1.2	1.2	1.3	1.7	1.7
Fetal growth restriction	3.3	3.3	3.0	2.8	2.7	2.9
Placenta / umbilical cord	1.0	0.9	0.8	0.5	0.5	0.4
Maternal conditions	0.1	0.1	0.1	0.1	0.1	0.1
Infection	0.2	0.1	0.1	0.2	0.2	0.2
Intrapartum asphyxia	0.2	0.2	0.1	0.1	0.1	0.1
Miscellaneous	0.5	0.6	0.5	0.3	0.3	0.3
Unclassified / Unexplained	1.3	1.4	1.4	1.5	1.2	1.3



Births 2007-9	BEN		HoB		S. Bham		Solihull		Birmingham Cluster		Rest of West Midlands	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Congenital anomaly	40	1.9	31	1.8	21	1.5	5	0.8	97	1.7	132	0.8
Fetal growth restriction	57	2.8	53	3.1	46	3.3	12	1.9	168	2.9	349	2.2
Placenta / umbilical cord	9	0.4	7	0.4	4	0.3	1	0.2	21	0.4	88	0.6
Maternal conditions	1	0.0	1	0.1	3	0.2	1	0.2	6	0.1	23	0.1
Infection	4	0.2	4	0.2	1	0.1	1	0.2	10	0.2	26	0.2
Intrapartum asphyxia		0.0	2	0.1	2	0.1		0.0	4	0.1	14	0.1
Miscellaneous	9	0.4	4	0.2	5	0.4	1	0.2	19	0.3	68	0.4
Unclassified / Unexplained	34	1.6	27	1.6	12	0.8	3	0.5	76	1.3	127	0.8



5 A: Infant Deaths 2002-2008

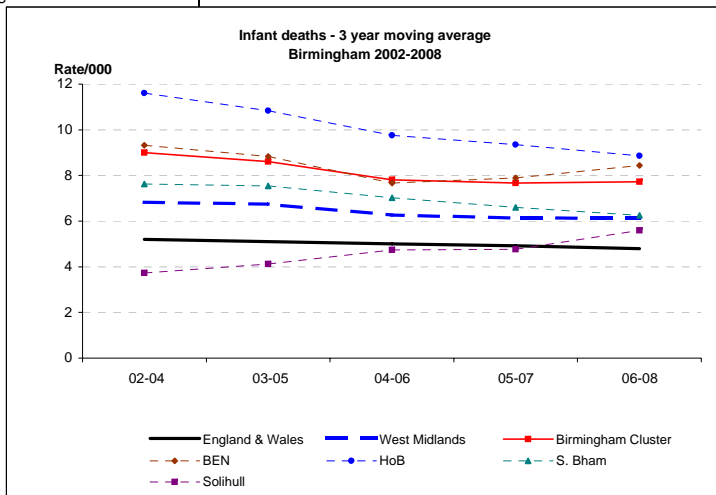
	2002	2003	2004	2005	2006	2007	2008
England and Wales*	3144	3274	3234	3217	3329	3309	3369
West Midlands	407	476	419	423	407	421	456
Birmingham Cluster	151	180	133	143	146	136	158
BEN	53	68	46	47	52	54	64
HoB	63	69	53	54	52	49	48
S. Bham	28	37	25	32	32	23	30
Solihull	7	6	9	10	10	10	16

Rate/1,000	2002	2003	2004	2005	2006	2007	2008	2008 CI
England and Wales*	5.3	5.3	5.1	5.0	5.0	4.8	4.8	4.6 - 4.9
West Midlands	6.7	7.5	6.4	6.4	6.0	6.0	6.4	5.8 - 7.0
Birmingham Cluster	9.2	10.4	7.5	8.0	7.9	7.1	8.1	6.9 - 9.5
BEN	9.2	11.6	7.3	7.7	7.9	8.0	9.3	7.3 - 11.9
HoB	12.2	12.8	9.8	9.9	9.6	8.7	8.4	6.4 - 11.1
S. Bham	7.6	9.1	6.2	7.4	7.5	5.0	6.4	4.5 - 9.1
Solihull	3.8	2.9	4.5	4.9	4.8	4.6	7.4	4.5 - 11.9

Infant death rates - 3 year moving average - PDN

	02-04	03-05	04-06	05-07	06-08
England & Wales	5.2	5.1	5.0	4.9	4.8
West Midlands	6.8	6.7	6.3	6.1	6.1
Birmingham Cluster	9.0	8.6	7.8	7.7	7.7
BEN	9.3	8.8	7.7	7.9	8.4
HoB	11.6	10.8	9.8	9.4	8.9
S. Bham	7.6	7.5	7.0	6.6	6.3
Solihull	3.7	4.1	4.7	4.8	5.6

*ONS



5 B: Infant deaths 2002-2008 - CORRECTED

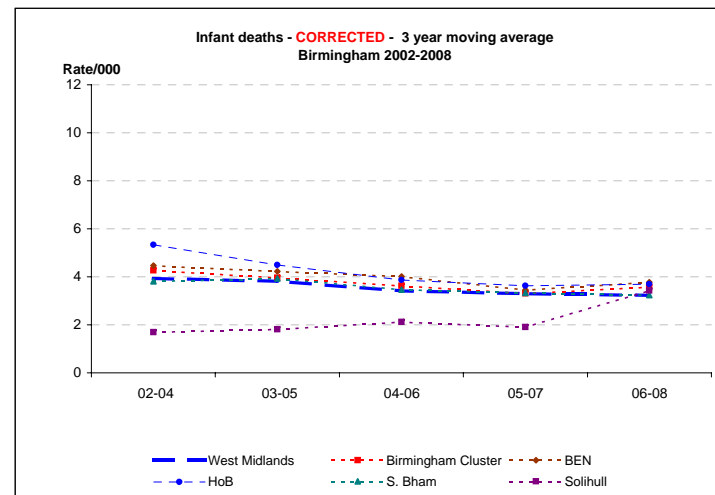
Corrected = excluding major congenital anomalies, <22 weeks gestation and <500g birthweight

	2002	2003	2004	2005	2006	2007	2008
West Midlands	238	275	236	235	209	228	239
Birmingham Cluster	72	80	68	62	66	55	83
BEN	23	29	28	20	28	19	29
HoB	31	31	23	19	21	20	21
S. Bham	15	16	14	19	11	14	19
Solihull	3	4	3	4	6	2	14

Rate/1,000	2002	2003	2004	2005	2006	2007	2008	2008 CI
West Midlands	3.9	4.3	3.6	3.6	3.1	3.3	3.3	2.9 - 3.8
Birmingham Cluster	4.4	4.6	3.8	3.5	3.6	2.9	4.3	3.4 - 5.3
BEN	4.0	4.9	4.5	3.3	4.3	2.8	4.2	2.9 - 6.1
HoB	6.0	5.8	4.3	3.5	3.9	3.5	3.7	2.4 - 5.6
S. Bham	4.1	3.9	3.4	4.4	2.6	3.1	4.0	2.6 - 6.3
Solihull	1.6	2.0	1.5	2.0	2.9	0.9	6.5	3.8 - 10.8

Corrected infant death rates - 3 year moving average - PDN

	02-04	03-05	04-06	05-07	06-08
West Midlands	3.9	3.8	3.4	3.3	3.2
Birmingham Cluster	4.3	4.0	3.6	3.3	3.6
BEN	4.5	4.2	4.0	3.5	3.8
HoB	5.3	4.5	3.9	3.6	3.7
S. Bham	3.8	3.9	3.5	3.3	3.2
Solihull	1.7	1.8	2.1	1.9	3.4

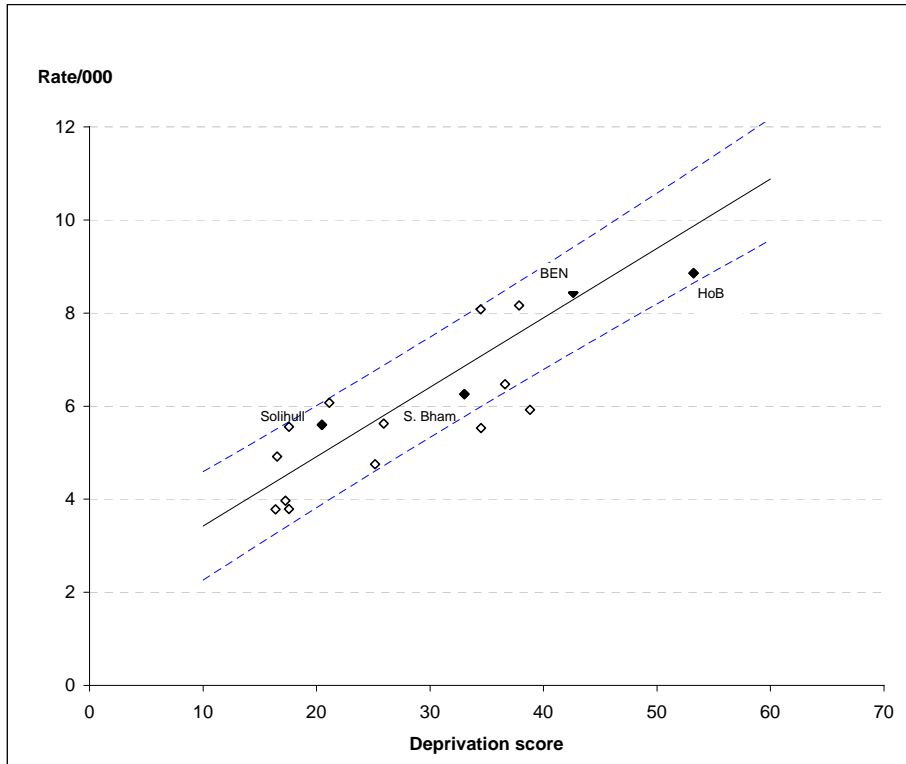


6. Infant deaths and Deprivation, Birmingham PCTs

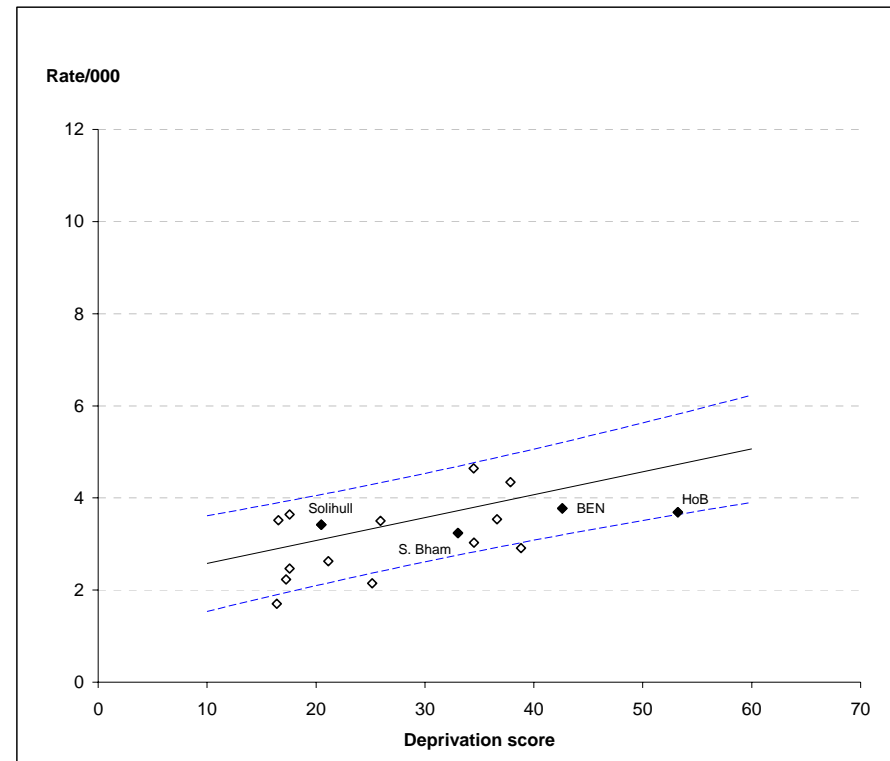
Graphs show infant deaths for the last available triennium (2006-8) for Birmingham PCTs, plotted against each PCT's respective deprivation score (IMD 2007).

Regression line with 90% prediction intervals (based on 2002-2008 data) are also shown

a. Crude rates



B. Corrected rates (after excluding major congenital anomalies and neonatal deaths <22 weeks and/or <500g)



7. Infant Deaths in Birmingham, 2002-2008: main groups

Groups based on Fetal/Neonatal/Infant classification

	2002	2003	2004	2005	2006	2007	2008
Live Births	16451	17364	17713	17921	18384	19129	19472

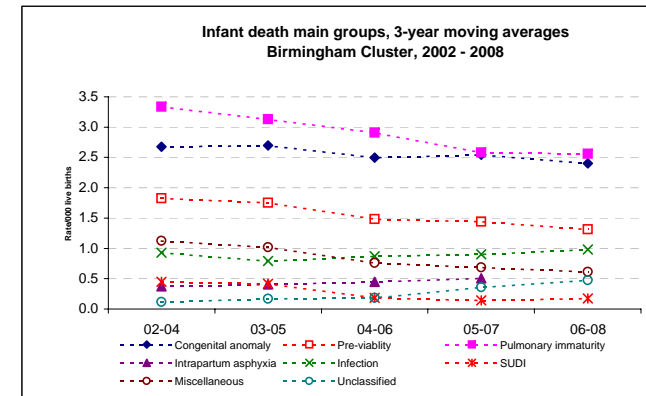
MAIN GROUPS

Numbers

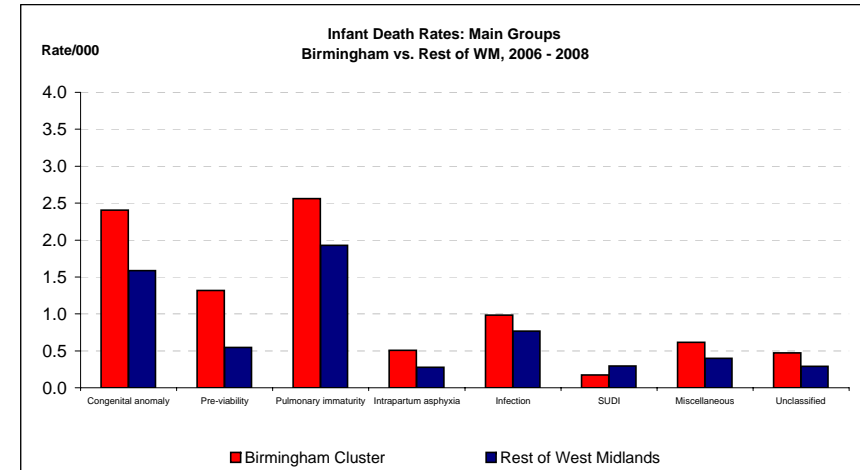
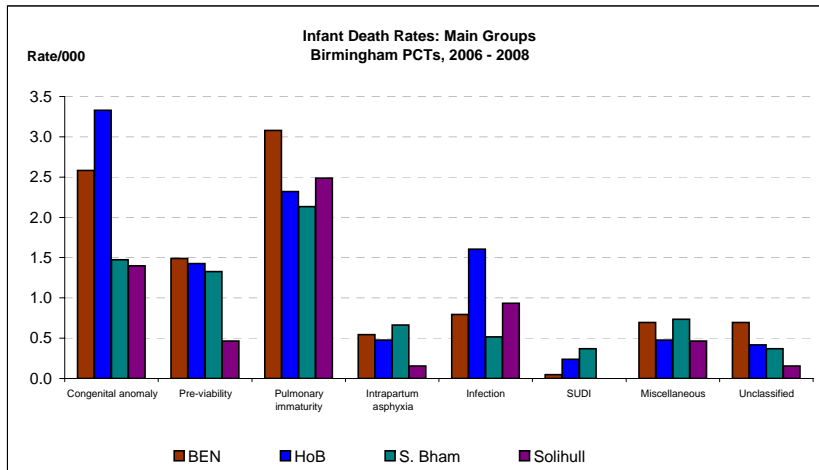
Congenital anomaly	47	55	36	52	47	42	48
Pre-viability	27	40	27	26	27	27	21
Pulmonary immaturity	53	64	55	47	55	41	50
Intrapartum asphyxia	6	6	7	7	8	10	11
Infection	21	15	12	15	20	15	21
SUDI	4	13	6	3	1	4	5
Miscellaneous	19	22	17	15	9	14	12
Unclassified	1	5		4	6	10	11

3-year moving averages

	02-04	03-05	04-06	05-07	06-08
Congenital anomaly	2.7	2.7	2.5	2.5	2.4
Pre-viability	1.8	1.8	1.5	1.4	1.3
Pulmonary immaturity	3.3	3.1	2.9	2.6	2.6
Intrapartum asphyxia	0.4	0.4	0.4	0.5	0.5
Infection	0.9	0.8	0.9	0.9	1.0
SUDI	0.4	0.4	0.2	0.1	0.2
Miscellaneous	1.1	1.0	0.8	0.7	0.6
Unclassified	0.1	0.2	0.2	0.4	0.5



Live Births (2006-8)	BEN		HoB		S. Bham		Solihull		Birmingham Cluster		Rest of West Midlands	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
20148			16815		13582		6431		56985		152458	
MAIN GROUPS - 2006-8	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Congenital anomaly	52	2.6	56	3.3	20	1.5	9	1.4	137	2.4	242	1.6
Pre-viability	30	1.5	24	1.4	18	1.3	3	0.5	75	1.3	83	0.5
Pulmonary immaturity	62	3.1	39	2.3	29	2.1	16	2.5	146	2.6	294	1.9
Intrapartum asphyxia	11	0.5	8	0.5	9	0.7	1	0.2	29	0.5	42	0.3
Infection	16	0.8	27	1.6	7	0.5	6	0.9	56	1.0	117	0.8
SUDI	1	0.0	4	0.2	5	0.4	0	0.0	10	0.2	45	0.3
Miscellaneous	14	0.7	8	0.5	10	0.7	3	0.5	35	0.6	61	0.4
Unclassified	14	0.7	7	0.4	5	0.4	1	0.2	27	0.5	44	0.3



8 A: Early Neonatal deaths 2002-2009

Early neonatal = birth to age 7 days

Numbers

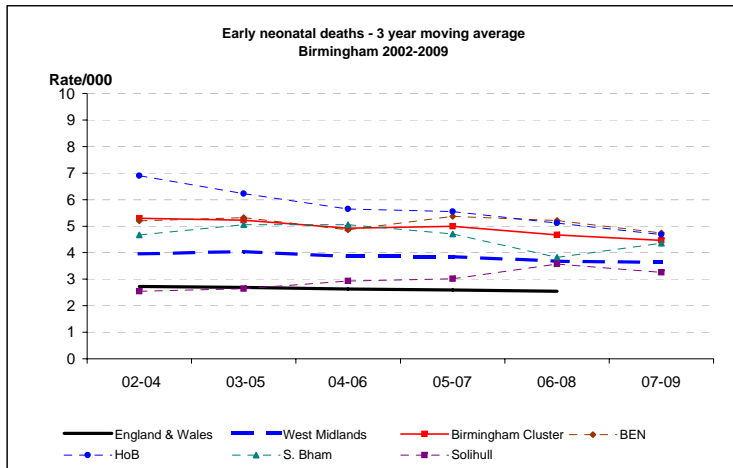
	2002	2003	2004	2005	2006	2007	2008	2009
England and Wales*	1628	1726	1714	1681	1750	1762	1763	
West Midlands	234	266	255	270	245	268	258	246
Birmingham Cluster	91	101	81	95	90	92	84	83
BEN	30	38	25	34	33	37	35	25
HoB	39	39	32	30	30	32	24	24
S. Bham	15	20	20	23	21	18	13	30
Solihull	7	4	4	8	6	5	12	4

Rate/1,000	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales*	2.7	2.8	2.7	2.6	2.6	2.6	2.5		
West Midlands	3.8	4.2	3.9	4.1	3.6	3.8	3.6	3.5	3.1 - 3.9
Birmingham Cluster	5.5	5.8	4.6	5.3	4.9	4.8	4.3	4.3	3.4 - 5.3
BEN	5.2	6.5	4.0	5.6	5.0	5.5	5.1	3.6	2.5 - 5.4
HoB	7.6	7.2	5.9	5.5	5.5	5.6	4.2	4.2	2.8 - 6.2
S. Bham	4.1	4.9	4.9	5.3	4.9	3.9	2.8	6.3	4.4 - 9.0
Solihull	3.8	2.0	2.0	3.9	2.9	2.3	5.5	1.9	0.7 - 4.8

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales	2.7	2.7	2.6	2.6	2.6	
West Midlands	4.0	4.0	3.9	3.8	3.7	3.6
Birmingham Cluster	5.3	5.2	4.9	5.0	4.7	4.5
BEN	5.2	5.3	4.9	5.4	5.2	4.7
HoB	6.9	6.2	5.6	5.6	5.1	4.7
S. Bham	4.7	5.1	5.0	4.7	3.8	4.3
Solihull	2.5	2.6	2.9	3.0	3.6	3.3

*ONS



8 B: Early Neonatal Deaths 2002-2009 - CORRECTED

Corrected = excluding major congenital anomalies, <22 weeks gestation and <500g birthweight

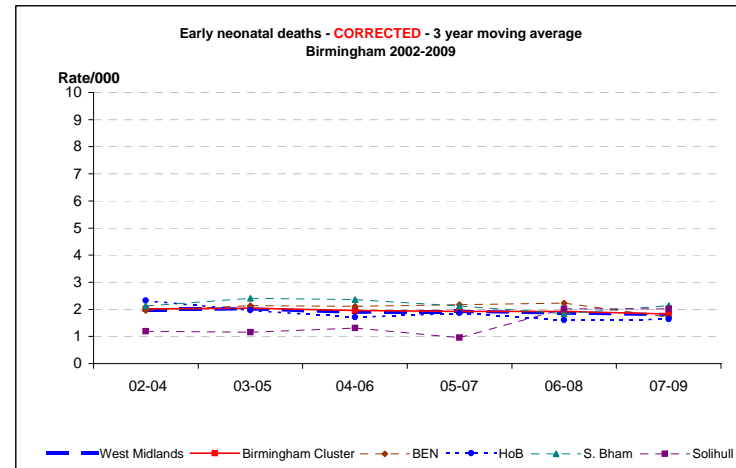
Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
West Midlands	118	134	129	131	117	144	130	110
Birmingham Cluster	36	35	33	40	33	34	43	29
BEN	10	14	11	14	15	13	17	5
HoB	16	13	8	11	9	11	7	10
S. Bham	7	6	12	12	6	10	9	11
Solihull	3	2	2	3	3		10	3

Rate/1,000	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
West Midlands	1.9	2.1	2.0	2.0	1.7	2.1	1.8	1.5	1.3 - 1.9
Birmingham Cluster	2.2	2.0	1.9	2.2	1.8	1.8	2.2	1.5	1.0 - 2.1
BEN	1.7	2.4	1.8	2.3	2.3	1.9	2.5	0.7	0.3 - 1.7
HoB	3.1	2.4	1.5	2.0	1.7	1.9	1.2	1.7	1.0 - 3.2
S. Bham	1.9	1.5	3.0	2.8	1.4	2.2	1.9	2.3	1.3 - 4.2
Solihull	1.6	1.0	1.0	1.5	1.4	0.0	4.6	1.4	0.5 - 4.2

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
West Midlands	2.0	2.0	1.9	1.9	1.9	1.8
Birmingham Cluster	2.0	2.0	2.0	1.9	1.9	1.8
BEN	2.0	2.1	2.1	2.2	2.2	1.7
HoB	2.3	2.0	1.7	1.9	1.6	1.6
S. Bham	2.1	2.4	2.4	2.1	1.8	2.1
Solihull	1.2	1.2	1.3	1.0	2.0	2.0



9 A: Neonatal deaths 2002-2009

Neonatal = birth to age 28 days

Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
England and Wales*	2129	2234	2223	2205	2331	2269	2299	
West Midlands	294	329	314	327	316	316	321	321
Birmingham Cluster	115	130	99	113	112	102	110	105
BEN	41	48	33	36	41	40	45	33
HoB	46	51	39	43	40	36	33	34
S. Bham	21	25	21	26	24	19	18	34
Solihull	7	6	6	8	7	7	14	4

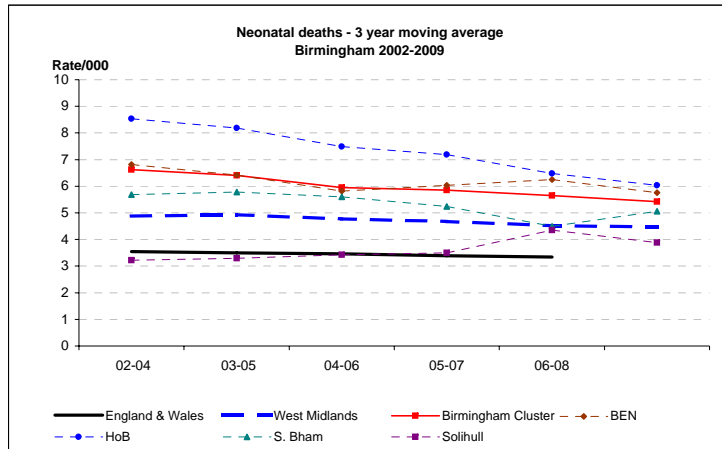
Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales*	3.6	3.6	3.5	3.4	3.5	3.3	3.2		
West Midlands	4.8	5.2	4.8	5.0	4.7	4.5	4.5	4.5	4.1 - 5.0
Birmingham Cluster	7.0	7.5	5.6	6.3	6.1	5.3	5.6	5.4	4.5 - 6.5
BEN	7.1	8.2	5.3	5.9	6.3	5.9	6.5	4.8	3.4 - 6.7
HoB	8.9	9.5	7.2	7.9	7.3	6.4	5.8	5.9	4.3 - 8.3
S. Bham	5.7	6.1	5.2	6.0	5.6	4.2	3.8	7.2	5.1 - 10.0
Solihull	3.8	2.9	3.0	3.9	3.3	3.2	6.5	1.9	0.7 - 4.8

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales	3.5	3.5	3.5	3.4	3.3	
West Midlands	4.9	4.9	4.8	4.7	4.5	4.5
Birmingham Cluster	6.6	6.4	6.0	5.9	5.6	5.4
BEN	6.8	6.4	5.8	6.0	6.3	5.8
HoB	8.5	8.2	7.5	7.2	6.5	6.0
S. Bham	5.7	5.8	5.6	5.2	4.5	5.1
Solihull	3.2	3.3	3.4	3.5	4.4	3.9

*ONS



9 B: Neonatal Deaths 2002-2009 - CORRECTED

Corrected = excluding major congenital anomalies, <22 weeks gestation and <500g birthweight

Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
West Midlands	157	176	166	172	168	172	168	149
Birmingham Cluster	48	51	45	49	49	41	60	43
BEN	15	17	18	16	20	14	22	9
HoB	19	21	12	17	17	14	15	17
S. Bham	11	9	13	13	8	11	11	14
Solihull	3	4	2	3	4	2	12	3

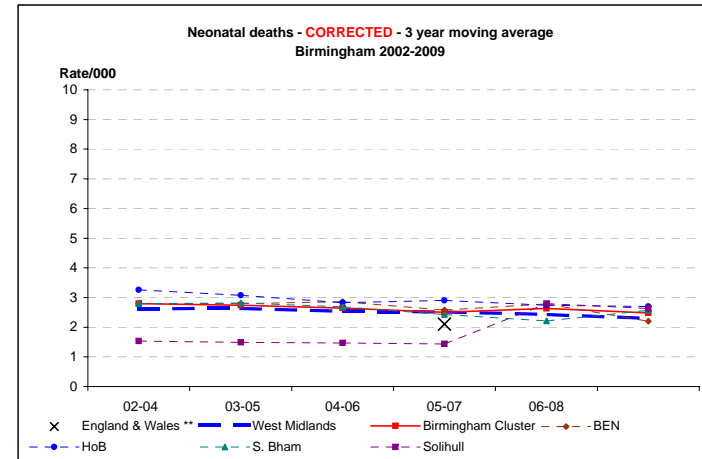
Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales**				2.1	2.3	2.0			
West Midlands	2.6	2.8	2.5	2.6	2.5	2.5	2.3	2.1	1.8 - 2.5
Birmingham Cluster	2.9	2.9	2.5	2.7	2.7	2.1	3.1	2.2	1.6 - 3.0
BEN	2.6	2.9	2.9	2.6	3.1	2.1	3.2	1.3	0.7 - 2.5
HoB	3.7	3.9	2.2	3.1	3.1	2.5	2.6	3.0	1.9 - 4.8
S. Bham	3.0	2.2	3.2	3.0	1.9	2.4	2.3	3.0	1.8 - 5.0
Solihull	1.6	2.0	1.0	1.5	1.9	0.9	5.5	1.4	0.5 - 4.2

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales **				2.1		
West Midlands	2.6	2.6	2.5	2.5	2.4	2.3
Birmingham Cluster	2.8	2.7	2.6	2.5	2.6	2.5
BEN	2.8	2.8	2.9	2.6	2.8	2.2
HoB	3.3	3.1	2.8	2.9	2.7	2.7
S. Bham	2.8	2.8	2.7	2.4	2.2	2.6
Solihull	1.5	1.5	1.5	1.4	2.8	2.6

**CEMACH



x = England & Wales 3 y adjusted average from CEMACH

10 A: Perinatal Deaths 2002-2009

Perinatal = stillbirths and early neonatal deaths

Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
England and Wales*	4993	5291	5231	5154	5340	5347	5380	
West Midlands	625	661	638	673	637	666	674	656
Birmingham Cluster	213	254	220	221	214	224	218	217
BEN	74	102	76	79	86	89	86	76
HoB	86	90	87	78	64	78	60	71
S. Bham	31	45	47	44	47	49	48	58
Solihull	22	17	10	20	17	8	24	13

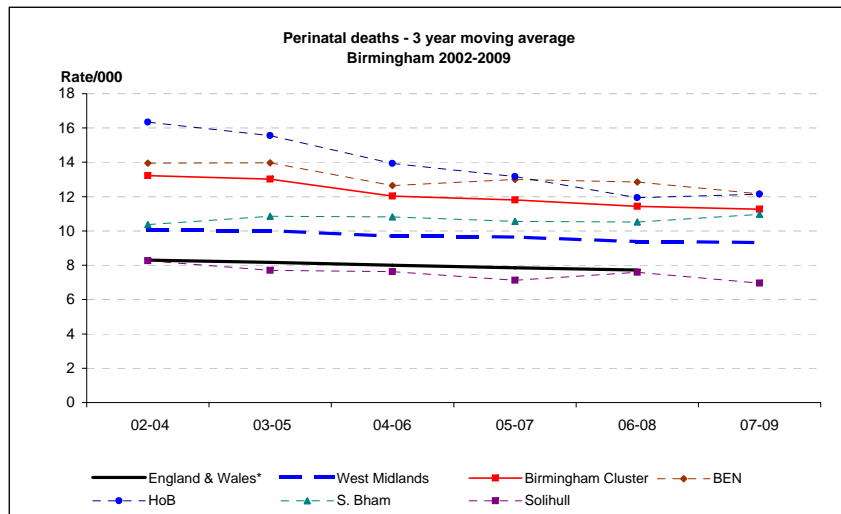
Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
England and Wales*	8.3	8.5	8.1	7.9	7.9	7.7	7.6		
West Midlands	10.2	10.3	9.6	10.1	9.4	9.5	9.3	9.2	8.5 - 9.9
Birmingham Cluster	12.9	14.5	12.3	12.2	11.6	11.6	11.1	11.1	9.7 - 12.6
BEN	12.7	17.2	12.0	12.8	13.0	13.1	12.4	11.0	8.8 - 13.7
HoB	16.5	16.6	16.0	14.2	11.7	13.7	10.4	12.3	9.8 - 15.5
S. Bham	8.4	11.0	11.5	10.1	10.9	10.6	10.1	12.2	9.4 - 15.7
Solihull	11.7	8.3	5.0	9.8	8.0	3.7	11.0	6.1	3.6 - 10.4

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
England & Wales*	8.3	8.2	8.0	7.9	7.7	
West Midlands	10.0	10.0	9.7	9.6	9.4	9.3
Birmingham Cluster	13.2	13.0	12.0	11.8	11.4	11.3
BEN	14.0	14.0	12.6	13.0	12.9	12.2
HoB	16.3	15.6	13.9	13.2	11.9	12.1
S. Bham	10.4	10.9	10.8	10.6	10.5	11.0
Solihull	8.3	7.7	7.6	7.1	7.6	7.0

*ONS



10 B: Perinatal Deaths 2002-2009 - CORRECTED

Corrected = excluding major congenital anomalies, <22 weeks gestation and <500g birthweight

Numbers

	2002	2003	2004	2005	2006	2007	2008	2009
West Midlands	400	418	408	442	385	428	420	369
Birmingham Cluster	127	138	127	136	115	121	124	104
BEN	45	57	45	47	44	45	48	32
HoB	49	49	43	49	34	40	32	33
S. Bham	20	19	32	27	26	33	28	31
Solihull	13	13	7	13	11	3	16	9

Rate/1,000

	2002	2003	2004	2005	2006	2007	2008	2009	2009 CI
West Midlands	6.5	6.5	6.2	6.7	5.7	6.1	5.8	5.2	4.7 - 5.7
Birmingham Cluster	7.7	7.9	7.1	7.5	6.2	6.3	6.3	5.3	4.4 - 6.4
BEN	7.7	9.6	7.1	7.6	6.7	6.6	6.9	4.6	3.3 - 6.5
HoB	9.4	9.0	7.9	8.9	6.2	7.0	5.6	5.7	4.1 - 8.0
S. Bham	5.4	4.6	7.8	6.2	6.0	7.2	5.9	6.5	4.6 - 9.2
Solihull	6.9	6.3	3.5	6.4	5.2	1.4	7.3	4.2	2.2 - 8.0

3 year moving averages

	02-04	03-05	04-06	05-07	06-08	07-09
West Midlands	6.4	6.4	6.2	6.1	5.9	5.7
Birmingham Cluster	7.5	7.5	6.9	6.7	6.3	6.0
BEN	8.1	8.1	7.1	7.0	6.7	6.1
HoB	8.8	8.6	7.7	7.4	6.3	6.1
S. Bham	6.0	6.2	6.7	6.5	6.4	6.5
Solihull	5.6	5.4	5.0	4.3	4.6	4.3

