



Public Health
England

Protecting and improving the nation's health

Infant and Perinatal Mortality in the West Midlands

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Contents

About Public Health England	i
Executive Summary	5
Introduction	8
The West Midlands demography	10
The West Midlands general population	10
The West Midlands ethnic population	11
Stillbirth, perinatal and infant mortality in the West Midlands	12
Stillbirth	12
Infant Mortality	18
Factors contributing to infant mortality	22
Low birth weight	22
Smoking at time of pregnancy	23
Teenage pregnancy	24
Breastfeeding initiation	26
Breastfeeding prevalence six to eight weeks after birth	27
Mother's country of birth	28
Consanguinity and congenital abnormalities	29
Deprivation	30
Maternal age	32
Summary of risk factors	34
Most common causes of infant mortality: neonatal and post neonatal deaths	35
Conclusion	36
Limitations	36
References	38
Appendices	40
Appendix A1. Population pyramids – local authorities in the West Midlands	40
Appendix A2. Stillbirth rates – West Midlands local authorities*	42
Appendix A3. Perinatal rates – West Midlands local authorities*	44
Appendix A4. Neonatal mortality rates – West Midlands local authorities*	46
Appendix A5. Infant mortality rates – West Midlands local authorities*	48
Appendix A6. Mother's country of birth – local authorities in the West Midlands	50
Appendix A7. Infant mortality and deprivation – local authorities in the West Midlands	54
Appendix A8. Stillbirth rates three year rolling averages – West Midlands local authorities*	56
Appendix A9. Perinatal mortality rates three year rolling averages – West Midlands local authorities*	58
Appendix 10. Neonatal mortality rates three year rolling averages – West Midlands local authorities*	60
Appendix A11. Infant mortality rates three year rolling averages – West Midlands local authorities*	62

Appendix 12. Neonatal and post neonatal deaths by cause – local authorities in the West Midlands; 2012 to 2014 64

Definitions used in the report

Stillbirth	A baby delivered at or after 24 weeks of gestational age showing no signs of life, irrespective of when the death occurred. The stillbirth rate is calculated per 1,000 total births (both live and stillbirths)
Neonatal mortality	Number of deaths of infants at ages under 28 days. Neonatal mortality can be divided into early neonatal mortality (deaths up to six days after live birth) and late neonatal mortality (deaths from seven days but under 28 days after live birth). The neonatal mortality rate is calculated per 1,000 total live births
Perinatal mortality	Perinatal mortality: includes stillbirths (after 24 weeks gestation) and deaths of early neonates (aged less than seven complete days). The perinatal mortality rate is calculated per 1,000 total births (both live and stillbirths)
Infant mortality	Number of deaths of infants aged less than one year excluding stillbirths
Low birth weight	Number of live and stillbirths occurring in the respective calendar year at under 2500 grams for all maternal ages. The proportion is calculated as a percentage of all live and stillborn infants.

Executive Summary

The following analyses highlight the key trends in stillbirth, infant and perinatal mortality for England and the West Midlands for the period 2000 to 2014. West Midlands local authorities are also compared to England for the period 2012 to 2014.

Stillbirths:

- there was a statistically significant improvement in the stillbirth rate in England between 2000 and 2014 (5.3 to 4.6 per 1,000), although the improvement seen in the West Midlands (5.6 to 5.0) was not statistically significant
- for the period 2012 to 2014, stillbirth rates were significantly worse than England in Herefordshire (6.9 per 1,000), Sandwell (6.0 per 1,000) and Birmingham (5.5 per 1,000)
- conversely, stillbirth rates were significantly better than England in Warwickshire (3.3 per 1,000)

Perinatal mortality:

- there was a statistically significant improvement in the perinatal mortality rate between 2000 and 2014 for both England (8.2 to 6.7) and the West Midlands (9.7 to 8.2)
- perinatal mortality rates were significantly worse in the West Midlands than for England throughout the fifteen year period 2000 to 2014
- for the period 2012 to 2014 the West Midlands perinatal mortality rate (7.9 per 1,000) was significantly worse than the rate for England (6.8 per 1,000)
- for the same period, perinatal mortality rates were significantly worse than for England in Sandwell (10.5), Birmingham (9.8) and Wolverhampton (9.0)
- none of the West Midlands local authorities had a perinatal mortality rate statistically significantly better than the England rate

Infant mortality:

- in the West Midlands, the number of babies who died either before birth or before aged one year old in 2014 was 738.
- the infant mortality rate improved significantly between 2000 and 2014 for both England (5.6 to 3.9) and the West Midlands (6.9 to 5.5)
- infant mortality rates were significantly worse in the West Midlands than for England throughout the fifteen year period 2000 to 2014
- for the period 2012 to 2014, the infant mortality rate in the West Midlands (5.5), was significantly worse than for England (4.0)

- there was wide variation of infant mortality within the West Midlands. Infant mortality rates were significantly worse than for England in six of the 14 upper tier West Midlands local authorities: Birmingham (7.2), Stoke-on-Trent (6.9), Walsall (6.8), Sandwell (6.7), Wolverhampton (6.4) and Telford and Wrekin (6.0)
- none of the West Midlands local authorities had an infant mortality rate statistically significantly better than the England rate

Risk factors

Low birth weight:

- in 2014, the percentage of low birth weight babies born in the West Midlands (9.2%) was significantly worse than England (8.8%)
- there is a wide variation across the West Midlands in the proportion low birth weight term babies. Low birth weight was significantly more common (worse) than the England average in Walsall (13%), Wolverhampton (11%), Sandwell (10%) and Birmingham (10%)
- low birth weight was significantly less common (better) than the England average in Warwickshire (7.8%), Staffordshire (7.6%), Shropshire (7.6%) and Solihull (7.5%)
- the highest proportion of low birth weight babies were born to mothers who were themselves born in the Caribbean (13.7%) followed India and Pakistan (12%)

Smoking at the time of pregnancy:

- for the period 2014 to 2015, the proportion of mothers who smoked at the time of pregnancy in the West Midlands (14.2%) was significantly worse than the England average (11.4%)
- the proportion of mothers who smoked was significantly worse than the England average in six out of the eight West Midlands local authorities that provided data
- only Sandwell (10.0%) had significantly fewer women who smoked at the time of pregnancy

Teenage pregnancy:

- in 2013, teenage conceptions in under 16s were significantly higher in the West Midlands (5.5 per 1,000) than for England (4.8)
- teenage conceptions in under 16s were significantly higher than the England average in Wolverhampton (8.6), Sandwell (7.8) and Coventry (7.3)
- rates were significantly lower than the England average in Shropshire (2.4)
- for under 18 conceptions, rates in the West Midlands (28.9) were significantly higher than for England (24.4), and this is true for eight of the 14 West Midlands local authorities

- under 18 conceptions were significantly lower in Shropshire (19.1)

Breast feeding initiation:

- for the period 2014 to 2015, the proportion of women who initiate breastfeeding in the West Midlands (66.8%) was significantly worse than for England (74.3%)
- only Coventry had significantly higher (better) breastfeeding initiation rates (76.9%)
- breast feeding initiation rates were significantly lower (worse) than the England average for nine of the 11 local authorities for which data were available
- data not available for three of the West Midlands local authorities: Birmingham, Sandwell, and Staffordshire due to data quality issues

Breast feeding at 6 to 8 weeks after birth:

- for the period 2014 to 2015, the proportion of women breastfeeding 6 to 8 weeks after birth in England was 43.8%
- Birmingham, Herefordshire, Shropshire, Warwickshire and Worcestershire had significantly higher (better) breastfeeding prevalence rates 6 to 8 weeks after birth compared to England
- data not available for four of the West Midlands local authorities: Coventry, Sandwell, Staffordshire and Wolverhampton due to data quality issues

Most common causes of infant and perinatal mortality:

- immaturity related conditions were the most common cause of neonatal deaths (57%), followed by congenital anomalies (15%) and intrapartum (asphyxia, Anoxia or Trauma) (11%)
- conversely, congenital anomalies were the most common cause of post-neonatal deaths (32%) followed by immaturity related conditions (12%). Other less common conditions accounted for 24% of post neonatal deaths

Intended audience

This document is aimed at those working in local authorities, the NHS and voluntary sector fields. It is intended to provide an insight into the areas where infant and perinatal mortality rates may need addressing, as well as the associated wider risk factors and health inequalities which may have an impact.

Introduction

Infant mortality is an indicator of the general health of an entire population. It reflects the relationship between causes of infant mortality and determinants of population health such as economic, social and environmental conditions.¹ Deaths occurring during the first 28 days of life (the neonatal period) in particular, are considered to reflect the health and care of both mother and newborn.

At 5.5 deaths per 1,000 live births, the West Midlands has the poorest infant mortality rate in England (compared to the England rate of 3.9 per 1,000, [2014 data]). The West Midlands has seen annual improvements in infant mortality rates since 2003 when the rate in the West Midlands was 7.3 deaths per 1,000 compared to the England average of 5.3 per 1,000, however, six of the ten local authorities with the poorest infant mortality rates in England are in the West Midlands.

Reducing overall infant mortality and the gap between the richest and poorest groups are significant public health priorities. The work undertaken by the National Support team in 2010 still has relevance highlighting that infant mortality rates are worse in disadvantaged groups and areas. Poor health outcomes, for example higher infant mortality rates, are often linked to social factors such as poverty. Lifestyle choices and the quality, availability and accessibility of services are also important, as Sir Michael Marmot's review makes clear.²

More recently PHE has a focus on the Best Start in Life, emphasising that tackling health inequalities in infant mortality, and infant and maternal health, will not just improve health outcomes today, but lay the foundations for sustainable, long-term improvements in health. This requires the joining up of services around the family, intervening at an earlier stage, and tackling health concerns of whole families as part of a bigger picture of employment, education and housing.³

The NHS Five Year Forward View describes where NHS England intends to undertake further work, in partnership with PHE, to assess the priorities in relation to maternal and neonatal paediatric interventions.⁴

PHE also recently produced supporting guides to assist local authorities in the commissioning of the Healthy Child Programme. These include: health visiting and school nursing services to lead and co-ordinate delivery of public health for children aged nought to 19 with an emphasis on the best start in life⁵ along with a rapid review of the evidence base supporting the healthy child programme (HCP) nought to five years.⁶

Health Visitor Service Delivery Metrics were also published in January 2016 for financial year 2015 to 2016 Quarter 2 at a local authority resident level, collected through the

same interim reporting system. The metrics currently cover the antenatal check, new birth visit, the six to eight week review, the 12 month assessment and the two to two and a half year assessment. Information is presented at a local authority, PHE and England level. They are available at www.chimat.org.uk/transfer.

This document is the result of the collaboration between PHE and partners, including CCGs, SCN, clinicians and maternity networks, across the West Midlands to highlight and tackle the issues of the potential causes of infant mortality.

Using multiple data sources the aim of this report is to investigate the trends of stillbirth, perinatal and infant mortality in the West Midlands and to investigate some of the risk factors which have the potential to impact on these. It is hoped that the report will enable local areas to undertake further analysis and investigation in this priority area.

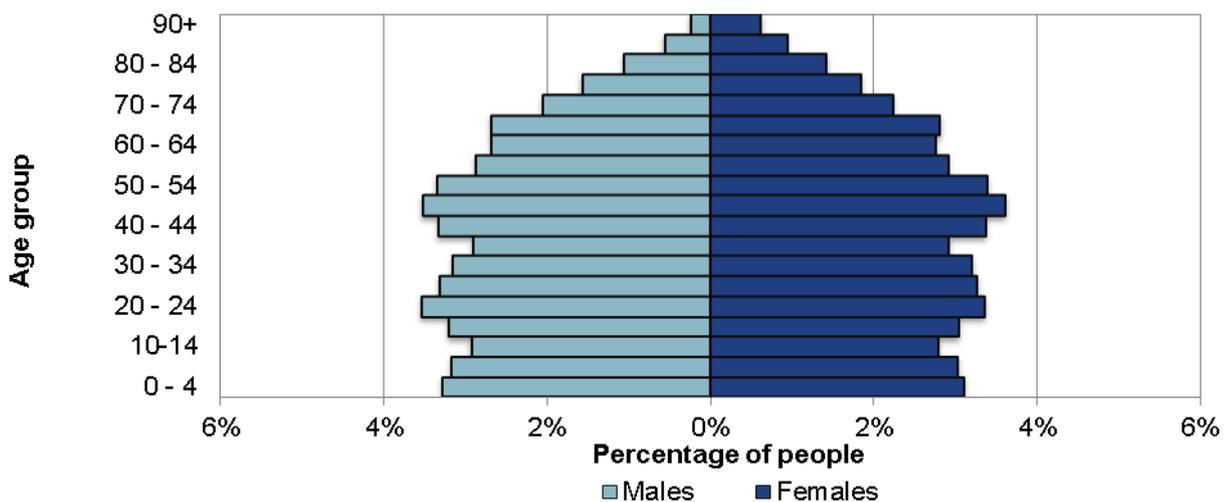
The West Midlands demography

The West Midlands general population

In 2014, 50.6% of the West Midlands population were female, and 49.4% were male. The population gender distribution was very similar across all age groups with the exception of the older age categories aged 70 and over (Figure 1). Coventry was the only local authority in which there are slightly more males than females in the population; 49.8% females and 50.2% males. Across the West Midlands, the age stratification varied between local authorities; more than 20% of the population of Solihull, Worcestershire, Herefordshire, Shropshire, Staffordshire and Warwickshire were aged over 65 years, compared to the West Midlands average of 18.0%. Birmingham and Sandwell had populations where more than 20% were aged nought to 14 years, compared to the West Midlands average of 18.3%.

Considering the general maternal age group to be 15 to 44 years old, 19.1% of the female population in the West Midlands are in this age group. Across the local authorities this is as high as 22.3% in Birmingham, and as low as 16.0% in Shropshire. Population pyramids for individual local authorities are provided in Appendix A1.

Figure 1. Age and sex composition of the West Midlands population, 2014

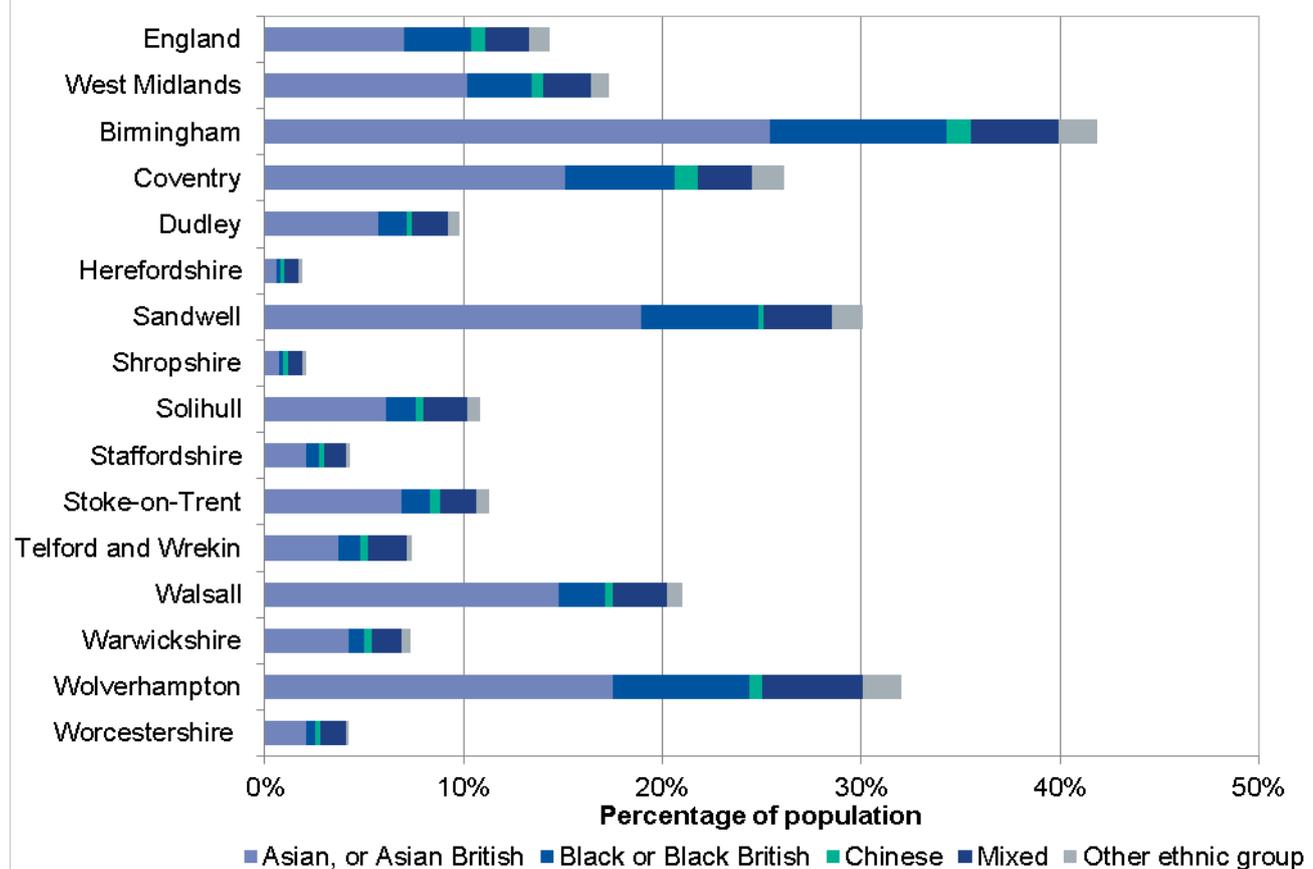


Source: ONS, analysis LKIS (WM)

The West Midlands ethnic population

Considering the broad ethnic groupings of white, mixed, Asian or Asian British, black or black British, Chinese, and other ethnic group, white is the most common ethnicity across England (2011 census). In the West Midlands, 83% of the population are white, ranging from 58% in Birmingham to 98% in Herefordshire. In all of the local authorities, Asian or Asian British is the most common ethnic minority group (Figure 2). As white ethnicity is the most common category in all local authorities, the data for this group are suppressed in Figure 2 so more detail can be shown for smaller ethnic populations.

Figure 2. Ethnic composition of the West Midlands population, 2011



Source: ONS, analysis LKIS (WM)

Stillbirth, perinatal and infant mortality in the West Midlands

Stillbirth and infant mortality represent a highly distressing pregnancy outcome, and the need for increased efforts around preventative measures has been highlighted by the Stillbirth and Neonatal Death Charity (SANDS).⁷ Mortality in infancy is indicative of the overall health status of a population and can also reflect the quality of maternity services.⁸

Stillbirth

In 2014, the stillbirth rate for the West Midlands was 5.0 per 1,000, compared to the England average of 4.7 per 1,000. The number of stillbirths in the West Midlands increased from 347 in 2013 to 350 in 2014 (an increase of 0.9%). The total number of births (both live births and stillbirths) decreased by 1.5% from 71,187 in 2013 to 70,473 in 2014. Although there was a marginal increase in the stillbirth rate between 2013 and 2014, the overall trend between 2000 and 2014 suggests an improvement in the stillbirth rate across the West Midlands and England (applying a *reverse arrangement* test for significance to the time series^a =0.01) (Figure 3). The stillbirth rate takes into account the total number of births and so provides a more accurate indication of trends than just analysing the number of stillbirths over time.

Table 1. Number and proportion of Stillbirth, 2013 and 2014

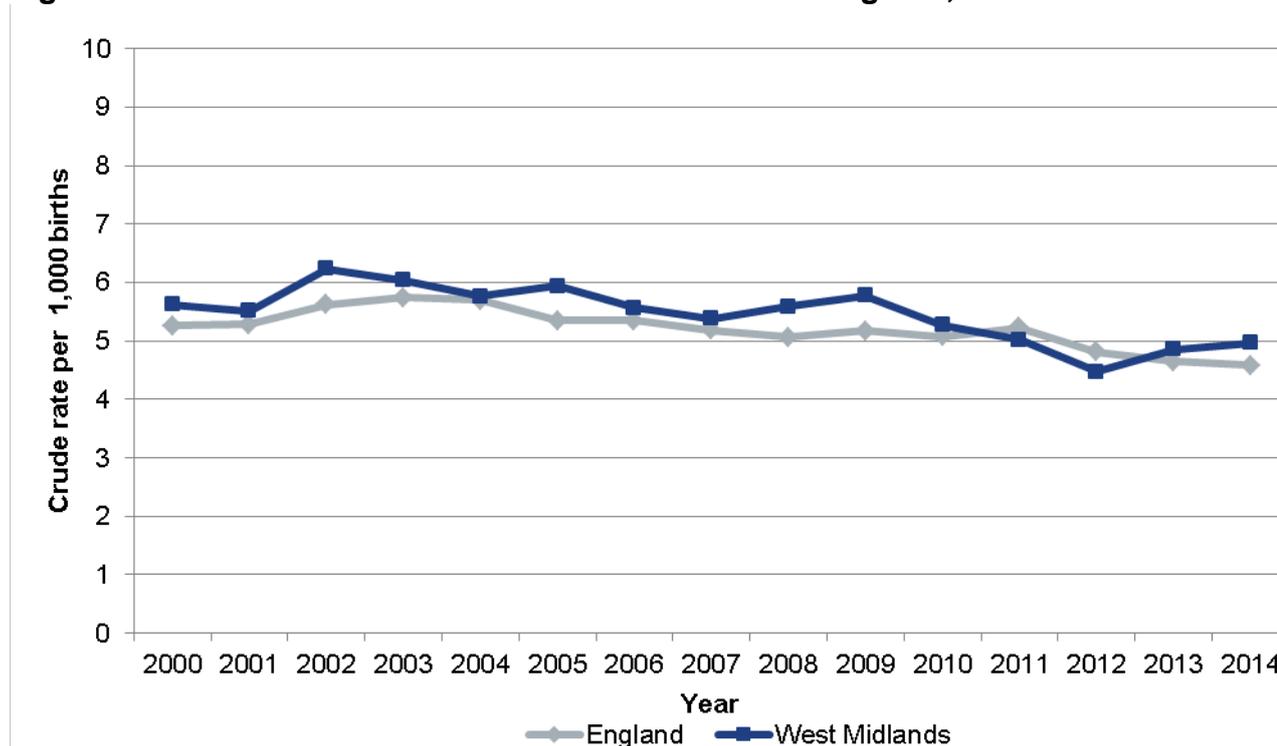
Local authority	2013			2014		
	Stillbirth	Live birth	Proportion of stillbirth	Stillbirth	Live birth	Proportion of Stillbirth
England	3,103	664,517	0.47%	3,047	661,499	0.46%
West Midlands	347	71,187	0.49%	350	70,123	0.50%
Birmingham	101	17,420	0.58%	102	16,927	0.60%
Coventry	18	4,495	0.40%	29	4,572	0.63%
Dudley	16	3,853	0.42%	13	3,758	0.34%
Herefordshire	15	1,833	0.82%	14	1,728	0.80%
Sandwell	25	4,844	0.52%	26	4,680	0.55%
Shropshire	13	2,843	0.46%	13	2,834	0.46%
Solihull	11	2,238	0.49%	6	2,261	0.26%
Staffordshire	36	8,580	0.42%	36	8,672	0.41%
Stoke-on-Trent	16	3,555	0.45%	17	3,641	0.46%
Telford and Wrekin	14	2,191	0.64%	6	2,044	0.29%

^a The reverse arrangement test is used for evaluating whether a sequence of ordered data is derived from independent observations of the same random variable by detecting whether a significant trend underlies the observations

Local authority	2013			2014		
	Stillbirth	Live birth	Proportion of stillbirth	Stillbirth	Live birth	Proportion of Stillbirth
Walsall	17	3,715	0.46%	14	3,748	0.37%
Warwickshire	18	6,089	0.30%	22	5,885	0.37%
Wolverhampton	19	3,460	0.55%	25	3,481	0.71%
Worcestershire	28	6,071	0.46%	27	5,892	0.46%

Source: ONS, analysis LKIS (WM)

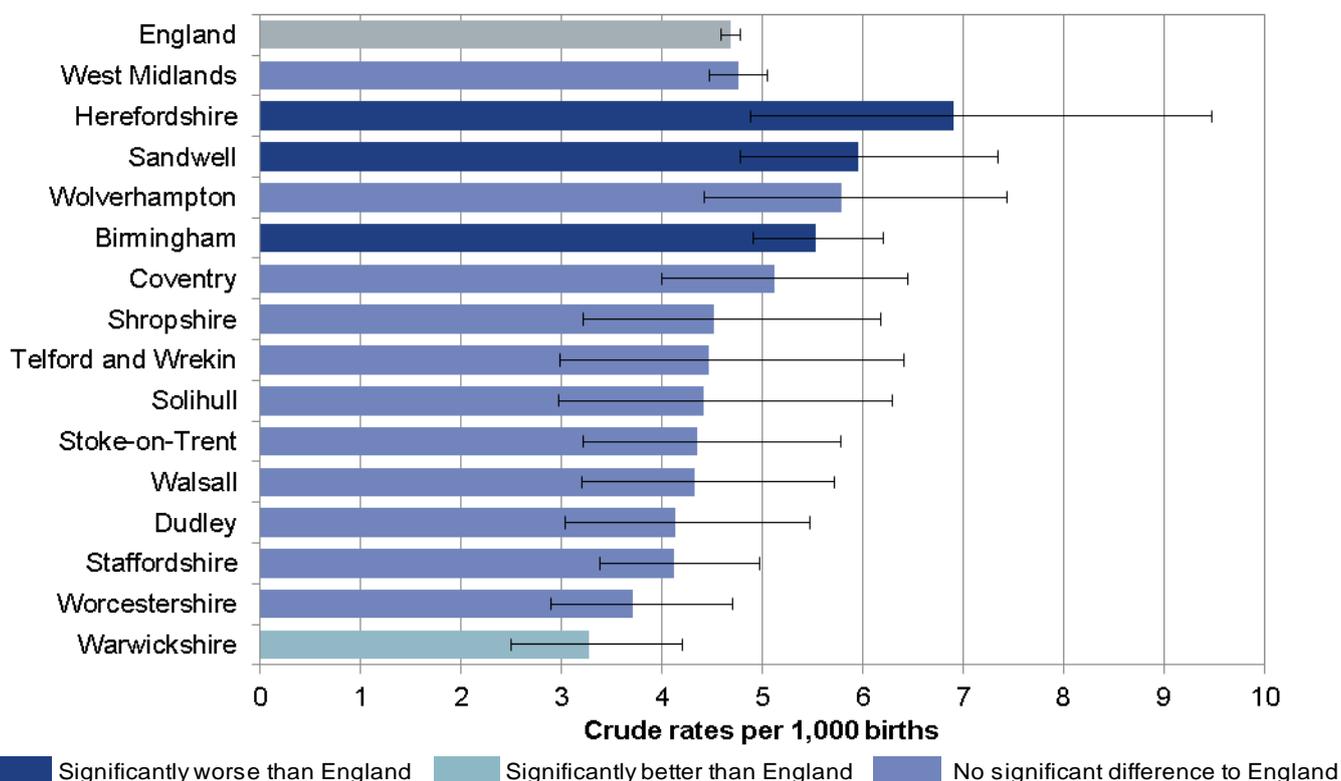
Figure 3. Trend in stillbirth in the West Midlands and England, 2000 to 2014



Source: ONS, analysis LKIS (WM)

The overall picture for the whole of the West Midlands masks variations that exist in rates of stillbirths between local authorities. Fortunately, the overall incidence of stillbirths is relatively low. Thus, in order to compare local authority stillbirth rates the data have been pooled for the most recent three years (2012 to 2014). The rate of stillbirth in the upper tier local authorities in the West Midlands for 2012 to 2014 range from 3.3 per 1,000 births in Warwickshire (significantly lower than the England average of 4.8) to 6.9 per 1,000 births in Herefordshire (significantly higher than the England average) (Figure 4). While the West Midlands rate of stillbirth has decreased significantly since 2000, it is still marginally (although not significantly) higher than the national average, and inequalities remain between local authorities in the West Midlands (Figures 3 and 4). The trend figures for stillbirths for West Midlands local authorities can be found in Appendix A2. Additional data showing the rolling three-year rates has been included in Appendix A8.

Figure 4. Stillbirth in the West Midlands, 2012 to 2014



The bars on Figure 4, and all subsequent figures, represent the confidence intervals around the underlying rates. 95% confidence intervals are presented throughout. That is for each local authority, on average, 95 out of 100 intervals will include the calculated rates.

Perinatal Mortality

Perinatal deaths comprise stillbirth (babies delivered at or after 24 weeks of gestational age showing no signs of life) and early neonatal deaths (mortality up to six days after live birth). Between 2012 and 2014 in England and the West Midlands, the majority of perinatal deaths occurred in the stillbirth period, which accounts for approximately 69% of perinatal deaths in England and 60% in the West Midlands (Table 2). The proportion of perinatal deaths occurring in the stillbirth period ranged from 52% in Stoke-on-Trent, to 83% in Herefordshire. There were 1,717 perinatal deaths in the West Midlands between 2012 and 2014, equating to approximately 572 perinatal deaths annually.

Table 2. Number and proportion of perinatal mortality and mortality rates (per 1,000 live births, 2012 to 2014)

Local authority	Early Neonatal		Stillbirth		Perinatal		Proportion of stillbirth in perinatal mortality
	No. of deaths	Mortality rate	No. of deaths	Mortality rate	No. of deaths	Mortality rate	
England	4,270	2.11	9,507	4.7	13,777	6.8	69%
West Midlands	688	3.20	1,029	4.8	1,717	7.9	60%
Birmingham	223	4.28	290	5.5	513	9.8	57%

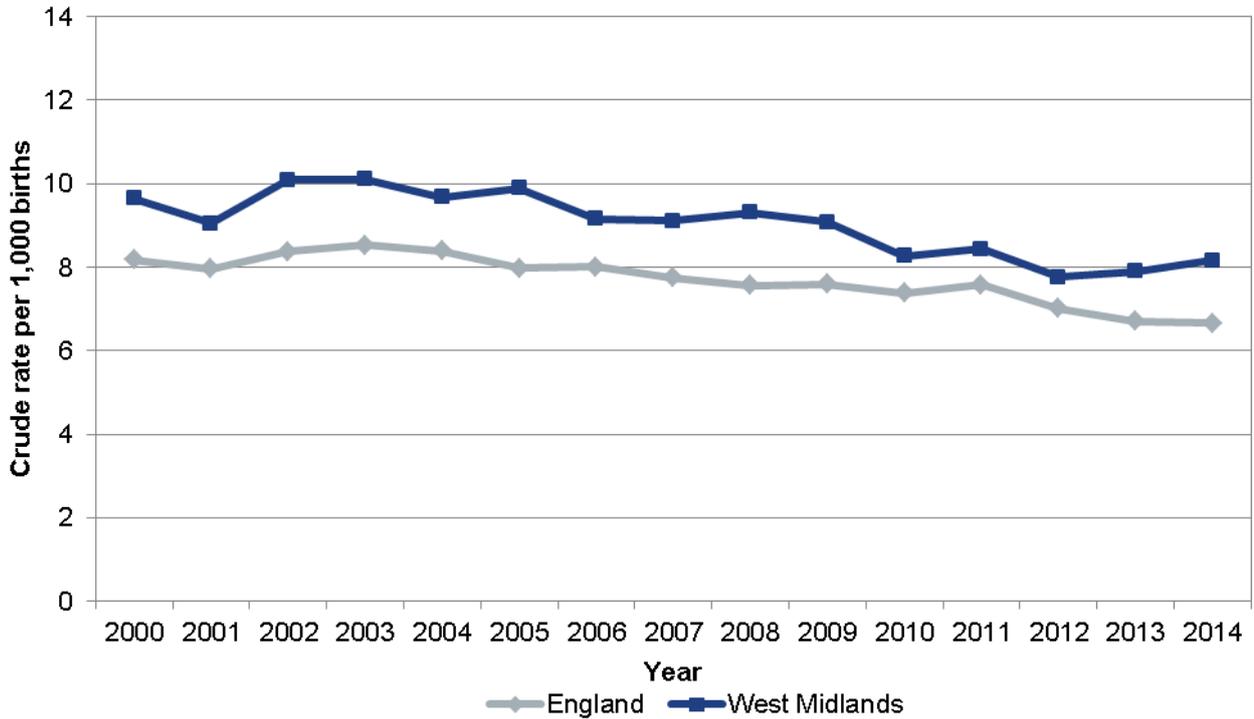
Local authority	Early Neonatal		Stillbirth		Perinatal		Proportion of stillbirth in perinatal mortality
	No. of deaths	Mortality rate	No. of deaths	Mortality rate	No. of deaths	Mortality rate	
Coventry	24	1.74	71	5.1	95	6.8	75%
Dudley	28	2.42	48	4.1	76	6.5	63%
Herefordshire	8	1.46	38	6.9	46	8.4	83%
Sandwell	67	4.57	88	6.0	155	10.5	57%
Shropshire	15	1.75	39	4.5	54	6.3	72%
Solihull	25	3.69	30	4.4	55	8.1	55%
Staffordshire	68	2.58	109	4.1	177	6.7	62%
Stoke-on-Trent	45	4.10	48	4.4	93	8.4	52%
Telford and Wrekin	23	3.56	29	4.5	52	8.0	56%
Walsall	44	3.90	49	4.3	93	8.2	53%
Warwickshire	40	2.19	60	3.3	100	5.5	60%
Wolverhampton	34	3.24	61	5.8	95	9.0	64%
Worcestershire	44	2.38	69	3.7	113	6.1	61%

Source: ONS, analysis LKIS (WM)

As with stillbirth, the rate of perinatal death for the West Midlands increased marginally between 2012 and 2014 and is currently 8.2 deaths per thousand total births (2014). This is significantly higher than the England average of 6.7. Despite the current increase and small fluctuation in the rates over the years, the general pattern since 2000 shows improving trend over the period 2000 to 2014 (Figure 5).

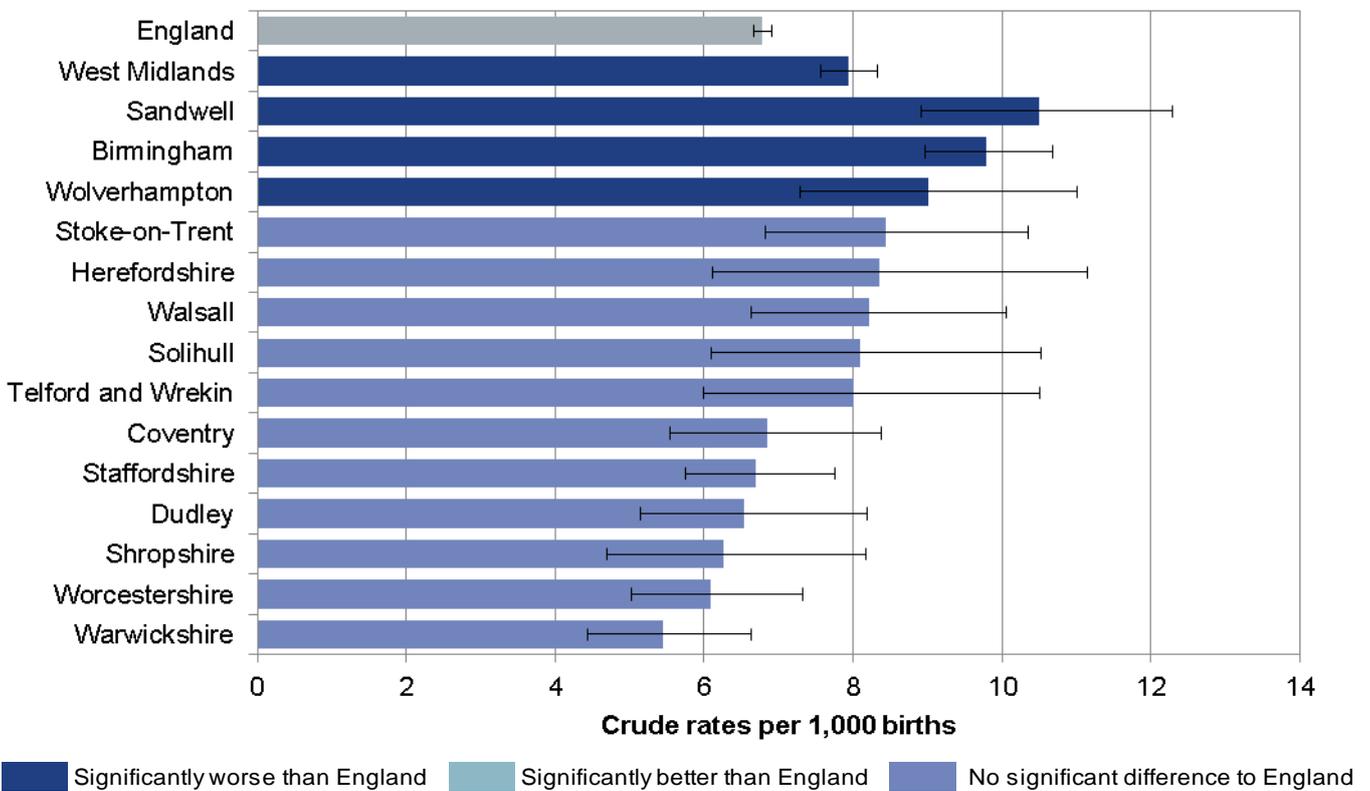
In order to compare West Midlands local authority perinatal mortality rates, data have been pooled for the most recent three years (2012 to 2014) to calculate a three-year rolling average. Between 2012 and 2014 the average perinatal mortality rate in the West Midlands was 7.9 per 1,000 births and was significantly higher than the three-year rolling England average of 6.8 per 1,000. Rates in the upper-tier local authorities in the West Midlands ranged from 5.5 per 1,000 in Warwickshire to 10.5 per 1,000 in Sandwell (Table 2 and Figure 6). The other West Midlands local authorities which had perinatal mortality rates significantly higher than the England average are Sandwell, Birmingham, Wolverhampton and Stoke on Trent. While the rate of perinatal mortality has fallen significantly since 2000, it is still higher than the national average and inequalities remain between the West Midlands local authorities (Figures 5 and 6).

Figure 5. Trend in perinatal mortality in the West Midlands and England, 2000 to 2014



Source: ONS, analysis LKIS (WM)

Figure 6. Perinatal mortality in the West Midlands, 2012 to 2014



Source: ONS, analysis LKIS (WM)

The figures for perinatal mortality for local authorities in the West Midlands can be found in Appendix A3. Additional data showing the rolling three-year rates has been included in Appendix A9.

Infant Mortality

Infant mortality can be divided into neonatal deaths, (mortality up to 27 days after live birth) and post-neonatal mortality (deaths from 28 days to under one year). In England and the West Midlands the majority of infant deaths occur in the neonatal period, which accounts for approximately 70 percent of infant deaths (Table 3). Looking across the West Midlands area, neonatal deaths account for over 80 percent of all infant deaths in Solihull and Sandwell, the highest rates. There were 1,178 infant deaths in the West Midlands between 2012 and 2014 equating to about 393 infant deaths annually. This represents a decrease of about 4% compared to 2011 to 2013.⁹

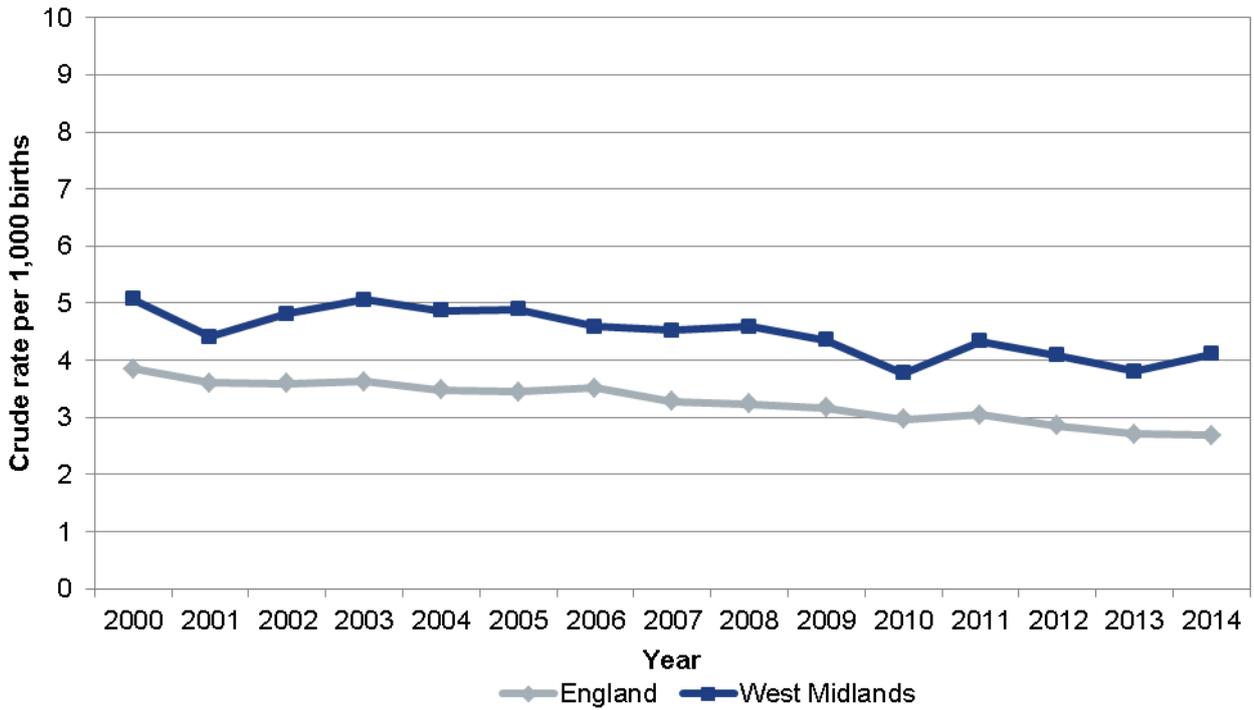
Table 3. Number and proportion and rates of infant and neonatal mortality

	Number of deaths 2012 to 2014		Proportion of neonatal deaths	Mortality rates (per 1,000) 2012 to 2014	
	Infant	Neonatal		Infant	Neonatal
England	8,029	5,564	69%	4.0	2.8
West Midlands	1,178	861	73%	5.5	4.0
Birmingham	375	272	73%	7.2	5.2
Coventry	56	38	68%	4.1	2.8
Dudley	45	35	78%	3.9	3.0
Herefordshire	19	13	68%	3.5	2.4
Sandwell	98	80	82%	6.7	5.5
Shropshire	28	20	71%	3.3	2.3
Solihull	33	29	88%	4.9	4.3
Staffordshire	121	86	71%	4.6	3.3
Stoke-on-Trent	76	56	74%	6.9	5.1
Telford and Wrekin	39	27	69%	6.0	4.2
Walsall	77	56	73%	6.8	5.0
Warwickshire	65	50	77%	3.6	2.7
Wolverhampton	67	45	67%	6.4	4.3
Worcestershire	79	54	68%	4.3	2.9

Source: ONS, analysis LKIS (WM)

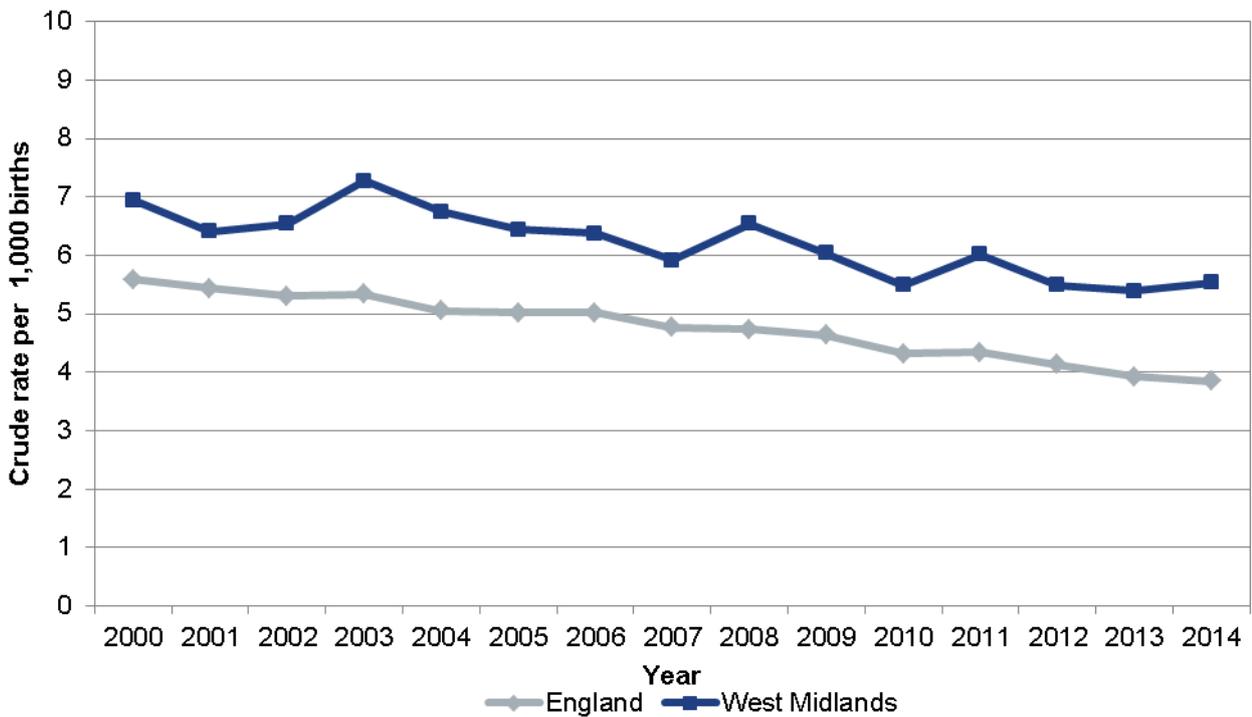
The infant mortality rate takes into account the total number of live births and so provides a more accurate indication of trends than just analysing the number of deaths in infancy over time. Despite a marginal increase in neonatal and infant mortality rates in England in 2014, the general pattern of infant mortality is decreasing for both England and the West Midlands, however, the West Midlands neonatal and infant mortality rates are still significantly higher than the England average (Figures 7 and 8).

Figure 7. Trend in neonatal mortality rates in the West Midlands and England, 2000 to 2014



Source: ONS, analysis LKIS (WM)

Figure 8. Trend in infant mortality in the West Midlands and England, 2000 to 2014



Source: ONS, analysis LKIS (WM)

Trend analysis for neonatal and infant mortality rates shows varying results across the West Midlands local authorities. The analysis shows significant decreasing trends in neonatal and infant mortality rates in Birmingham, Coventry, Sandwell, Shropshire, Staffordshire, Stoke on Trent, Wolverhampton and Worcestershire. The remaining local authorities in the West Midlands did not show any clear significant trend. The figures for neonatal and infant mortality rates for the West Midlands local authorities can be found in Appendices A4 and A5. Additional data showing the rolling three-year rates has been included in Appendices A10 and A11.

Neonatal and infant mortality rates vary across the West Midlands. The overall picture for neonatal and infant mortality rates across the whole of the West Midlands masks variations that exist in rates between local authorities (Figures 9 and 10). Aggregating three years of data (2012 to 2014) provides adequate information to allow comparisons between the local authorities. Between 2012 and 2014 the average neonatal mortality rate in the upper-tier local authorities in the West Midlands ranged from 2.3 per 1,000 births in Shropshire (similar to the England average of 2.8) to 5.5 per 1,000 births in Sandwell (significantly higher than the England average).

The infant mortality rate in the upper-tier local authorities of the West Midlands for the same period ranged from 3.3 per 1,000 births in Shropshire (similar to the England average of 4.0) to 7.2 per 1,000 births in Birmingham (significantly higher than the England average).

While the rates of neonatal and infant mortality have fallen significantly since 2000, they are still higher than the national average, and inequalities in neonatal and infant mortality remain between local authorities (Figures 7, 8, 9 and 10).

Previously published research demonstrates that at 3.1 per 1,000, the UK neonatal mortality rate is similar to other European countries, although it remains significantly higher than in Sweden (1.5 per 1,000).¹⁰ These rates are also similar to the 2.8 per 1,000 mortality rates observed for England in this report. Moreover, mortality rates in the UK decreased significantly between 1990 and 2010.

Figure 9. Neonatal mortality in the West Midlands, 2012 to 2014

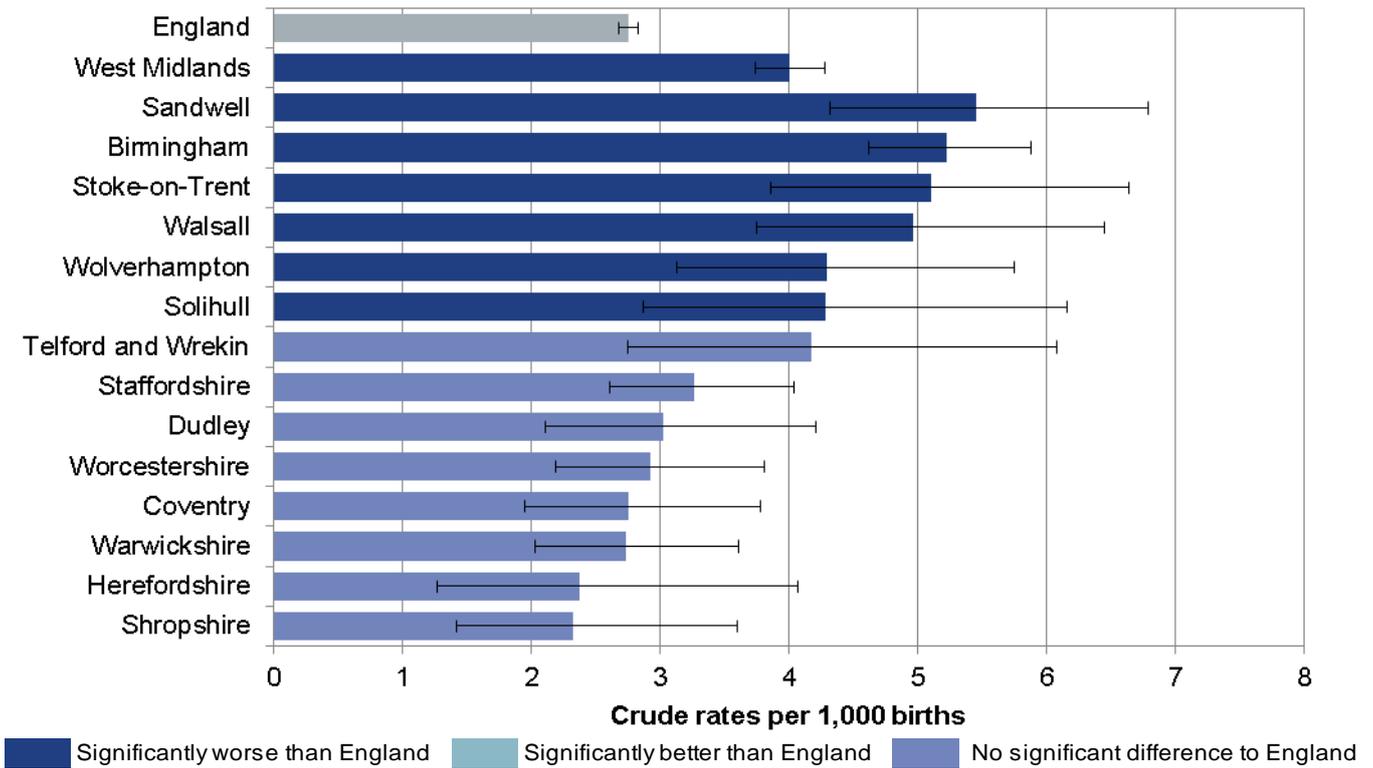
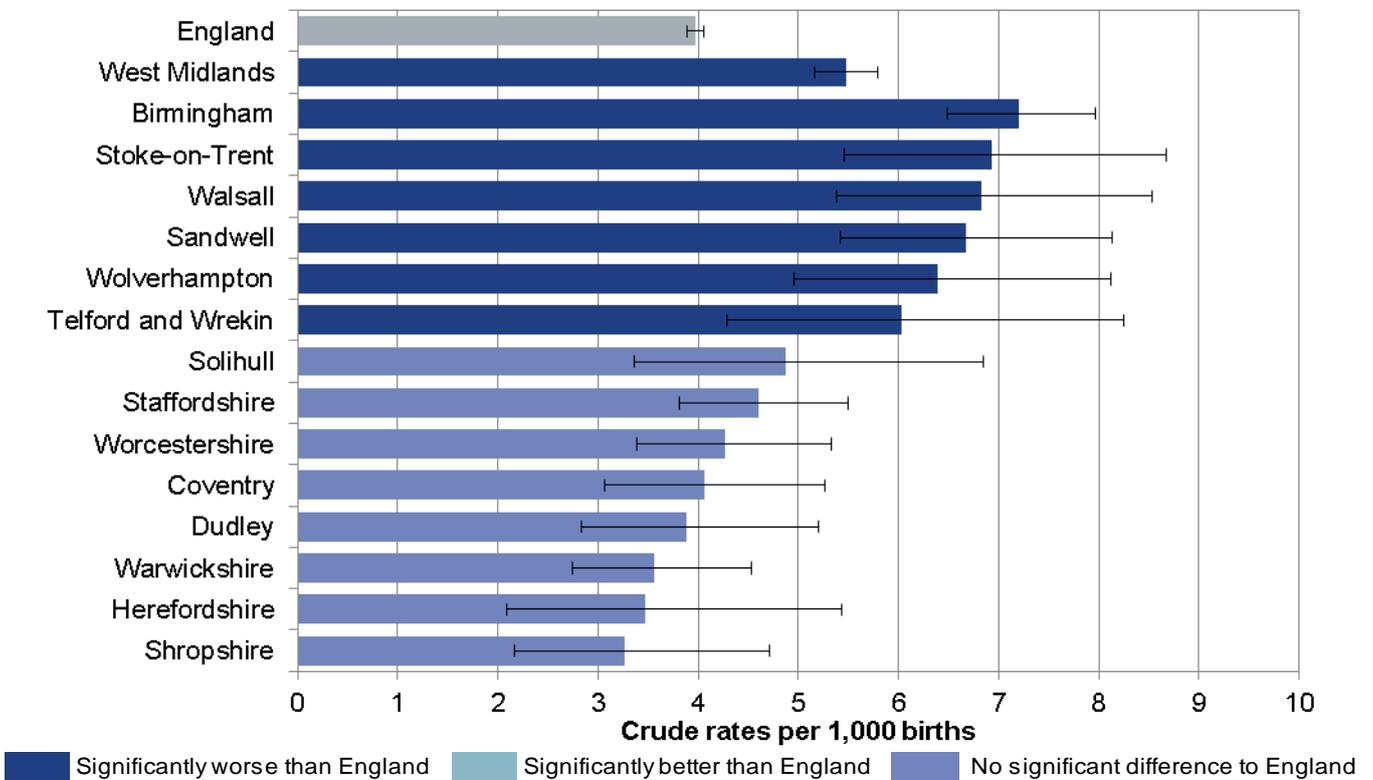


Figure 10. Infant mortality in the West Midlands, 2012 to 2014



Source: ONS, analysis LKIS (WM)

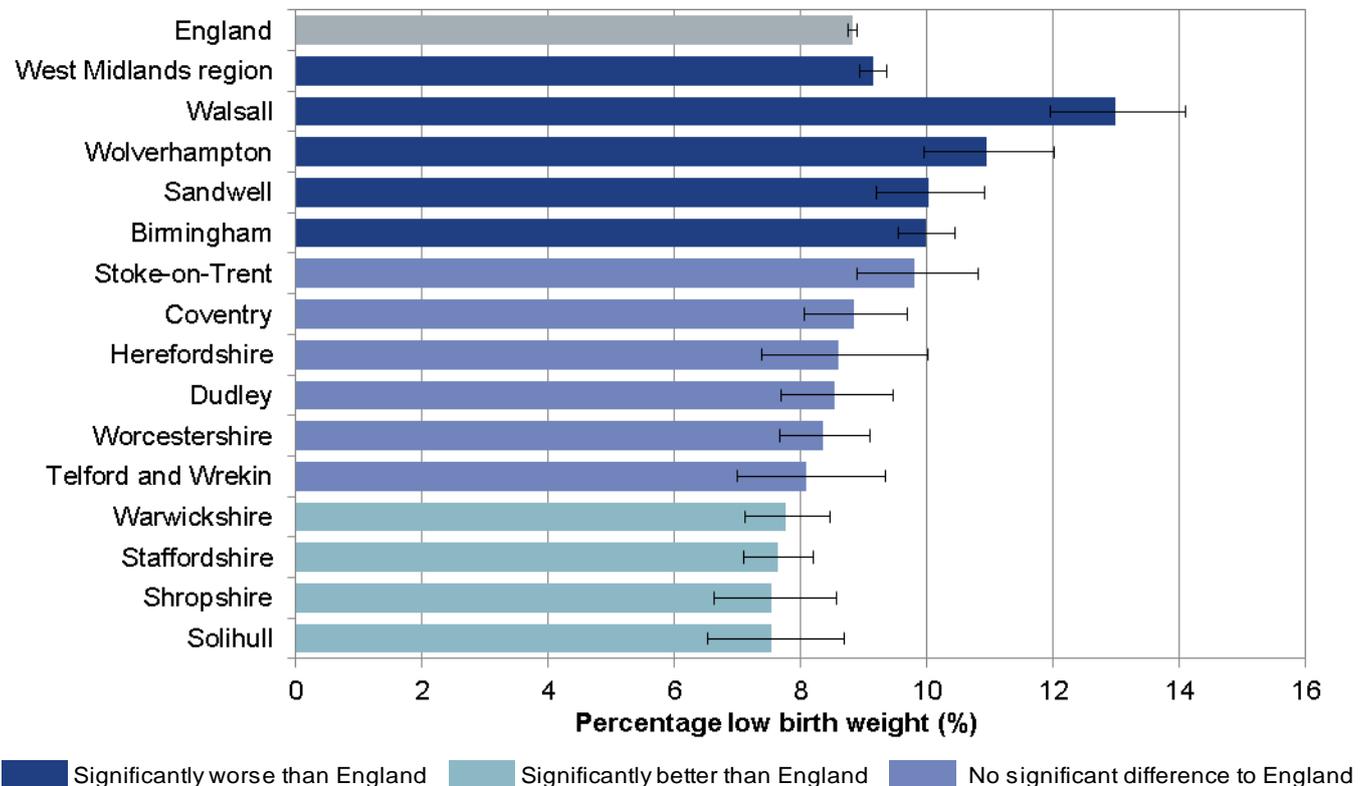
Factors contributing to infant mortality

There are many factors which can contribute to and impact on infant mortality rates. Understanding why a significantly greater proportion of children in the West Midlands die in infancy is challenging. This section looks at some of the main determinants of infant deaths. While this section concentrates on deaths from birth to under one year old, stillbirths are a major problem in the West Midlands too and share the same underlying determinants as with deaths in infancy.

Low birth weight

Infant mortality is more likely to occur in infants who had a low birth weight. This is defined as a recorded birth weight of less than 2,500g in all live and stillbirths. In England and Wales (2013), the infant mortality rate for low birthweight babies was 32.4 deaths per 1,000 live births compared to 1.3 deaths per 1,000 live births among babies of normal birthweight.¹¹

Figure 11. Percentage of low birth weight babies in the West Midlands, 2012 to 2014



Source: ONS, analysis LKIS (WM)

Between 2012 and 2014, the West Midlands had a higher average proportion of babies born with a low birth weight (9.2%) compared with the England average of 8.8%. Walsall had the highest levels of low birth weight in the West Midlands at 13.0%. Wolverhampton

(11.0%), Sandwell (10.0%) and Birmingham (10.0%) also had a statistically significant higher proportion of low birth weight babies compared to the England average. Levels of low birth weight are significantly lower than the England average in Warwickshire (7.8%), Staffordshire (7.6%), Shropshire (7.6%) and Solihull (7.5%).

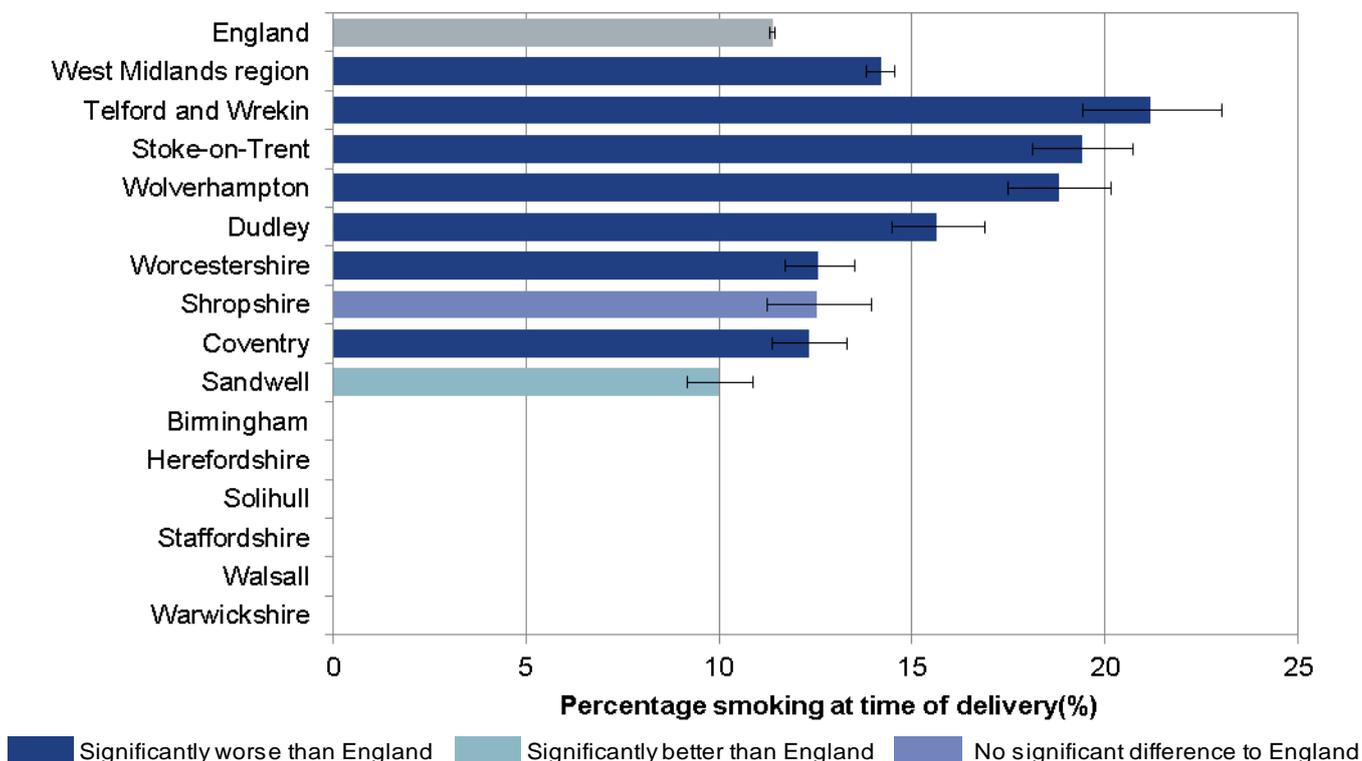
Birth weight also varies considerably by the mother's country of birth. Between 2012 and 2014 in the West Midlands, the highest proportion of low birth weight babies were born to mothers from the Caribbean (13.7%), India (12.0%) and Pakistan (12.0%), compared to a proportion of 8.4% low birth weights to mothers born in the UK. (UK data presented as data for England not available). Mothers born in Poland had the lowest rates of low birth weight in babies, at 5.8%. In a study from Scotland, Polish migrants were younger, lighter, smoked less and reduced Caesarean section rates, however, they also booked maternal care at a later point of pregnancy.¹²

Smoking at time of pregnancy

Smoking during pregnancy leads to a number of negative effects on the health of both the mother and baby, including the slowing of foetal growth, depressing of infant birthweight, as well as the increased risk of pregnancy loss.¹³ The data presented below are based on observation and implicitly assumes that where smoking status is unknown the mother is a non-smoker, which may lead to some underestimation, however the data provides a useful indication of where smoking in pregnancy takes place at a higher rate than average.

In the financial year 2014 to 2015, the West Midlands had a higher proportion of mothers smoking at the time of delivery (14.2%) when compared to the England average of 11.4%. Due to data quality issues, data were missing for six local authorities in the West Midlands; Birmingham, Herefordshire, Solihull, Staffordshire, Walsall and Warwickshire. Telford and Wrekin had the highest levels of smoking at the time of delivery in the West Midlands at 21.2%. Stoke-on-Trent (19.4%), Wolverhampton (18.8%), Dudley (15.7%), Worcestershire (12.6%), and Coventry (12.3%) also had statistically significant higher proportions of mothers smoking at the time of delivery compared to the England average. Only Sandwell (10.0%) had a significantly lower proportion of mothers who smoked at the time of delivery when compared to the England average.

Figure 12. Mothers smoking at time of delivery in the West Midlands, 2013 to 2014



Source: Public Health Outcomes Framework

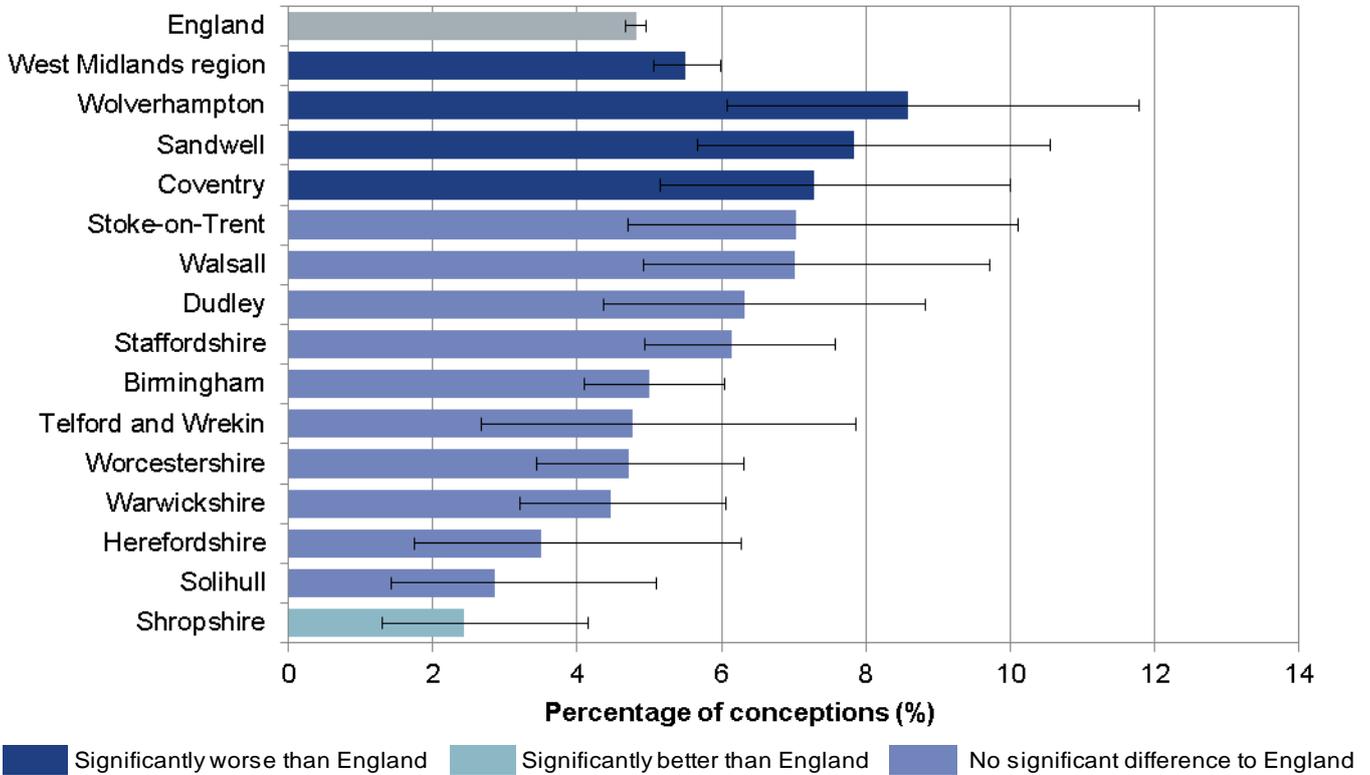
Teenage pregnancy

Infant mortality is more likely to occur in infants who are born to teenage mothers. Teenage conception rates are generally broken down into two age groups; conceptions to girls aged 13 to 15 and conceptions to girls aged 15 to 17. The data in Tables 13a and 13b are presented in terms of rate per same aged population, that is, the number given represents the average number of conceptions per 1,000 girls aged 13 to 15 or 15 to 17 living in a local authority.

In 2013, the West Midlands had a significantly higher rate of conceptions in both the 13 to 15 and 15 to 17 age groups (5.5 and 28.9 respectively) when compared with the England rates (4.8 and 24.3 respectively). Within the West Midlands, Wolverhampton had the highest rate of conceptions in the 13 to 15 age group at 8.6 per 1,000. Sandwell (7.8), Coventry (7.3), Walsall (7.0) and Staffordshire (6.2) also had higher rates when compared to England. Only Shropshire was significantly lower than the England average, with a conception rate of 2.4 per 1,000 population. Within the 15 to 17 age group, Stoke-on-Trent had the highest conception rate in the West Midlands, at 43.9, compared to the England rate of 24.3. Coventry (39.5), Walsall (36.8), Sandwell (36.6), Telford and Wrekin (35.1), Wolverhampton (30.7), Dudley (30.7) and Staffordshire (29.1) also had higher rates compared to the England average. Again, only Shropshire

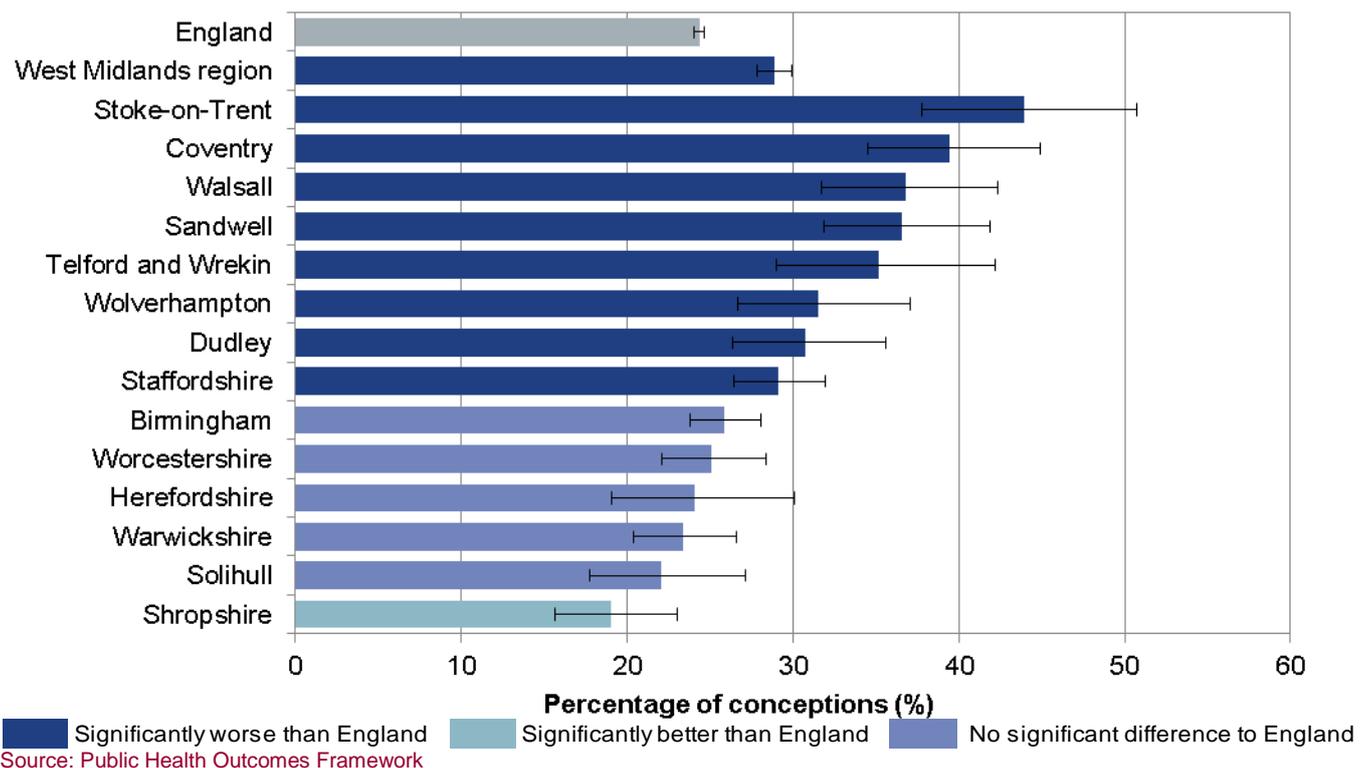
was significantly lower than the England average, with a conception rate of 19.1 per 1,000 population.

Figure 13a. Teenage pregnancy in those aged under 16 in the West Midlands, 2013



Source: Public Health Outcomes Framework

Figure 13b. Teenage pregnancy in those aged under 18 in the West Midlands, 2013

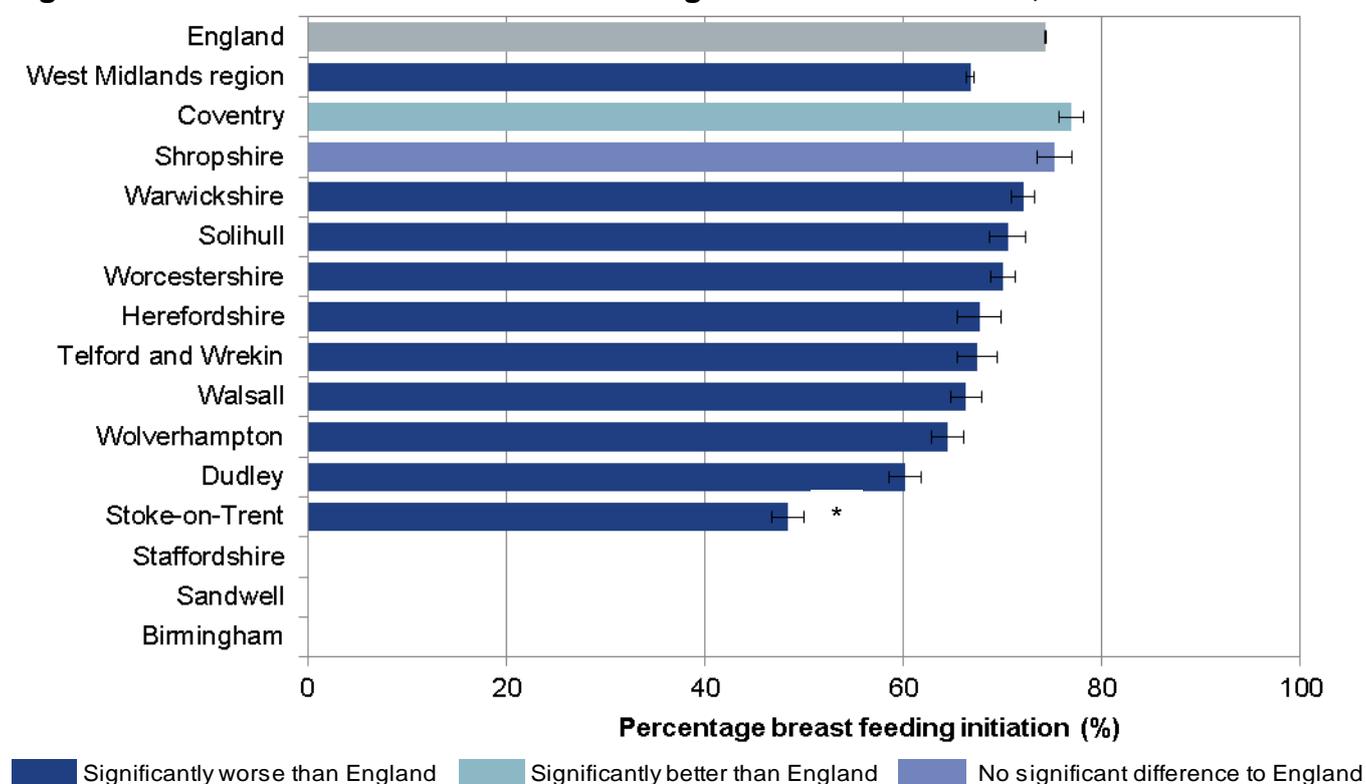


Source: Public Health Outcomes Framework

Breastfeeding initiation

There is evidence that breastfeeding infants leads to better health outcomes for both the mother and baby, and evidence from the UK¹⁴ suggests that breastfed babies have a 21% reduced risk of death in first year, compared with babies who are never breastfed. Breastfed babies have a lower risk of conditions such as gastrointestinal infections, respiratory infections, ear infections, allergies, and insulin dependent diabetes, as well as reducing the risk of breast cancer in mothers.^{15,16} The data presented below indicates the number of mothers who initiate breastfeeding in the first 48 hours after delivery as a percentage of the number of maternities.

Figure 14: Mothers who initiate breastfeeding in the West Midlands, 2014 to 2015



Source: Public Health Outcomes Framework (* Breastfeeding data is available for Stoke-on-Trent in the Public Health Outcomes Framework although these are based on incomplete data)

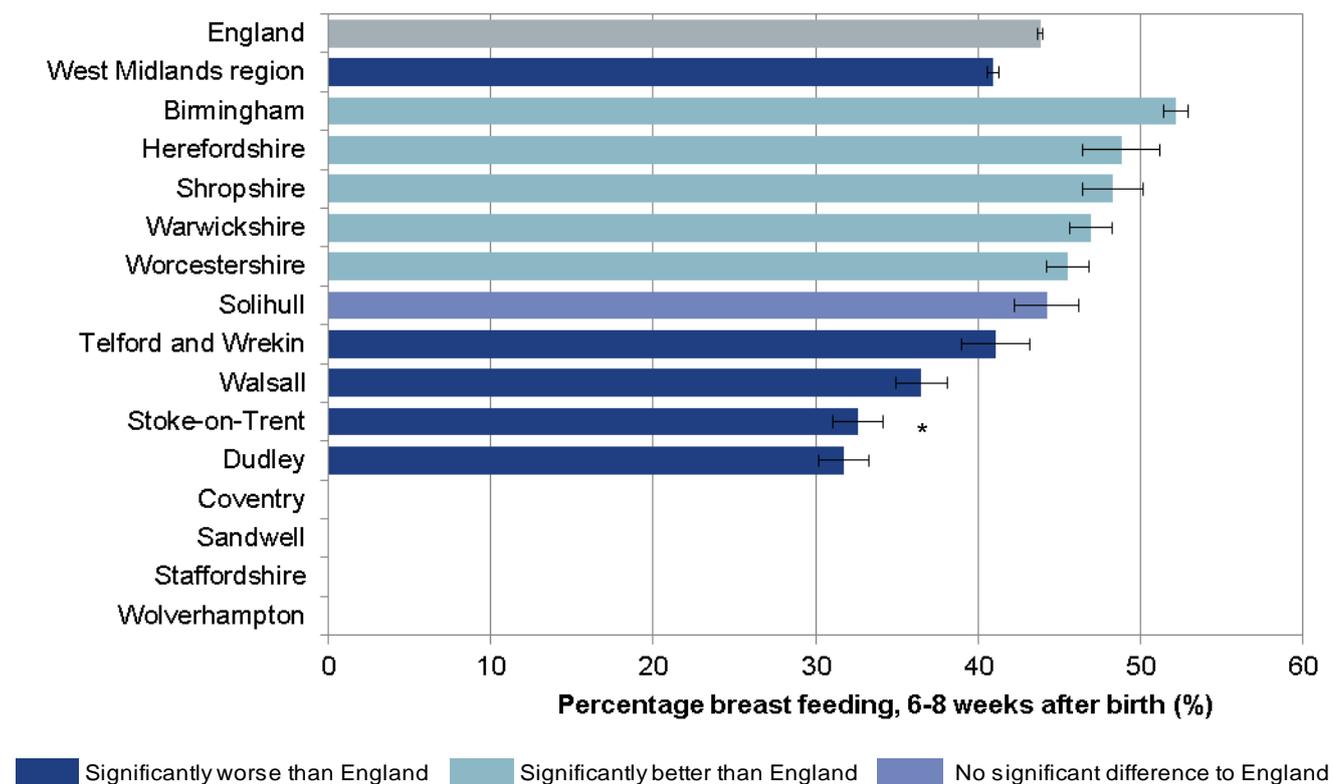
In financial year 2014 to 2015, the West Midlands had a statistically significantly lower proportion of mothers initiating breastfeeding in the first 48 hours after delivery (66.8%) compared to the England average of 74.3%. The data are required to pass very stringent quality tests to be included in the published NHS England data. As such, the 2014 to 2015 rates for Birmingham, Sandwell and Staffordshire are not currently available, however, of the eleven local authorities for which data are available, Stoke-on-Trent had the lowest breastfeeding initiation rate in the West Midlands at 48.4%. Dudley (60.2%), Wolverhampton (64.4%), Walsall (66.3%), Telford and Wrekin (67.5%), Herefordshire (67.7%), Worcestershire (70.1%), Solihull (70.6%) and Warwickshire (72.1%) also had lower rates of breastfeeding compared to the England average. Only

Coventry had significantly higher initiation rates than the England average, with 76.9% of mothers initiating breastfeeding in the first 48 hours.

Breastfeeding prevalence six to eight weeks after birth

In the financial year 2014 to 2015, the West Midlands had a significantly lower proportion of babies being breastfed six to eight weeks after birth, (40.9%, using data calculated from available local authority data), compared to England (43.8%). Due to data quality reasons, the 2014 to 2015 rates for Coventry, Sandwell, Staffordshire and Wolverhampton are not currently available, however, of the ten local authorities for which data are available, Dudley had the lowest breastfeeding prevalence at six to eight weeks after birth in the West Midlands (31.7%). Stoke-on-Trent (32.6%), Walsall (36.5%), and Telford and Wrekin (41.1%) also have lower rates of breastfeeding compared to the England average. Birmingham has the highest rate, with 52.2% of babies being breastfed six to eight weeks after birth.

Figure 15. Babies breastfeeding, six to eight weeks after birth in the West Midlands, 2014 to 2015



Source: Public Health Outcomes Framework (* Breastfeeding data is available for Stoke-on-Trent in the Public Health Outcomes Framework although these are based on incomplete data)

Note: West Midlands data calculated from available local authority data

Mother's country of birth

The mother's country of birth has the potential to impact the health of the baby. In 2013 in England and Wales, the infant mortality rate for babies of mothers born outside the UK was 4.2 deaths per 1,000 live births compared with 3.6 deaths per 1,000 live births for mothers born inside the UK. The highest infant mortality rates of 9.0 and 8.3 deaths per 1,000 live births were for babies of mothers born in the Caribbean and in Central Africa respectively.¹⁷

Analysis of country of birth of mother from the birth records alone shows that the percentage of live births in the West Midlands to mothers born outside the UK between 2012 and 2014 was 23.34%, with a range of 8.9% in Shropshire to 39.2% in Birmingham. Other areas with more than 20% of births from mothers outside the UK are Birmingham, Coventry, Sandwell and Wolverhampton. Of the West Midlands live births to mothers born outside of the UK, 49% are from Pakistan, Poland, India and Bangladesh. The table below shows the ten most common countries of birth of mothers for the West Midlands. Mothers born outside the UK are disproportionately at a higher risk of stillbirth: 27.1% of all stillbirths in the West Midlands are born to mothers born outside the UK. Tables for local authorities in the West Midlands can be found in Appendix A6.

Table 4. The ten most common countries of birth of mothers born outside the UK (West Midlands; 2012 to 2014)

Country of birth of mother		2012 to 2014			p value
		Number of births in West Midlands	Percentage (%) of live births in West Midlands	Percentage (%) of stillbirths in West Midlands	
1	Pakistan	10,666	4.92	7.29	0.00
2	Poland	6,087	2.81	2.92	0.65
3	India	5,202	2.40	3.21	0.06
4	Bangladesh	2,744	1.27	1.36	0.66
5	Somalia	1,497	0.69	0.97	0.28
6	Romania	1,239	0.57	0.97	0.07
7	Iraq	1,200	0.55	0.68	0.50
8	Nigeria	1,086	0.50	0.58	0.63
9	Latvia	973	0.45	0.29	0.50
10	Germany	969	0.45	0.19	0.25
Total Mothers born outside the UK		50,509	23.34	27.11	-
Total Mothers born in UK		165,770	76.66	72.89	base

Source: ONS, analysis LKIS (WM)

Only mothers from Pakistan had a statistically significantly higher proportion of stillbirths compared to mothers born in the UK ($P < 0.01$)., however, mothers born in India, and Romania also had a relatively high proportion of stillbirths when compared with mothers born in the UK.

Consanguinity and congenital abnormalities

The country of birth of mother is important as the information can be used to infer information with regards to consanguinity. Data pertaining to births from consanguineous marriages in the West Midlands are not currently collected. However, information from a study of 85,735 births in Birmingham (2006 to 2010) found that congenital anomaly related deaths contributed to 29.3% of stillbirth and infant deaths, with significantly higher mortality rates in Pakistani and Bangladeshi mothers compared to White Europeans. A proposed causal factor for this is the higher rates of consanguineous relationships in the Pakistani community. It was found that 49.9% of Pakistani mothers were in consanguineous relationships, compared to 15.9% across the whole cohort.¹⁸ A recent study from England examined 377 Birmingham stillbirths and infant deaths (2006 to 2010) for links to autosomal recessive (AR) conditions.¹⁹ AR conditions are those which only appear in people who have two copies of an altered gene; one gene inherited from each parent. These conditions are more common in people whose parents are in a consanguineous relationship, as the altered genes can be passed down through families via unaffected carriers. Examples of AR conditions include cystic fibrosis and sickle-cell anaemia. Of the 377 stillbirths and infant deaths, 10.4% were linked to AR conditions. In those where congenital anomalies were the cause of death, 35.1% were linked to AR conditions. In births to couples from the Birmingham Pakistani community, 26.5% of all deaths were linked to AR conditions and 61.5% of deaths from congenital anomalies were linked to AR conditions. Multiple studies have highlighted the importance for local, culturally sensitive services for Pakistani parents around genetic risk and consanguineous marriage.^{20, 21, 22}

The most recent study from the West Midlands had a specific emphasis on Birmingham. The prevalence of consanguineous unions was 15.9%, with the majority to Pakistani mothers, with a prevalence of 49.9%. Mortality from congenital anomalies was also statistically significantly higher in Pakistani (OR 3.0) and Bangladeshi (OR 2.1) mothers. Linking mortality to clinical genetic cases, linkage rates were highest in deaths to Pakistani and Indian mothers, which could suggest a higher rate of mortality due to genetic causes in these groups.²³

A qualitative study amongst the Pakistani/Kashmiri community in Birmingham highlighted that, although research participants were aware of disabilities in children born to first cousins, there was no evidence to suggest that risks were higher in the Pakistani/Kashmiri community when compared to white communities. The generic perception explaining stillbirths and impairment amongst the community were the 'will of

god' and black magic. Also, more women than men were in support of screening for conditions, however, some women declined screening and tests for conditions such as Down's syndrome during pregnancies as they felt they would be pressured into aborting pregnancies which is not an option in the Muslim community.²²

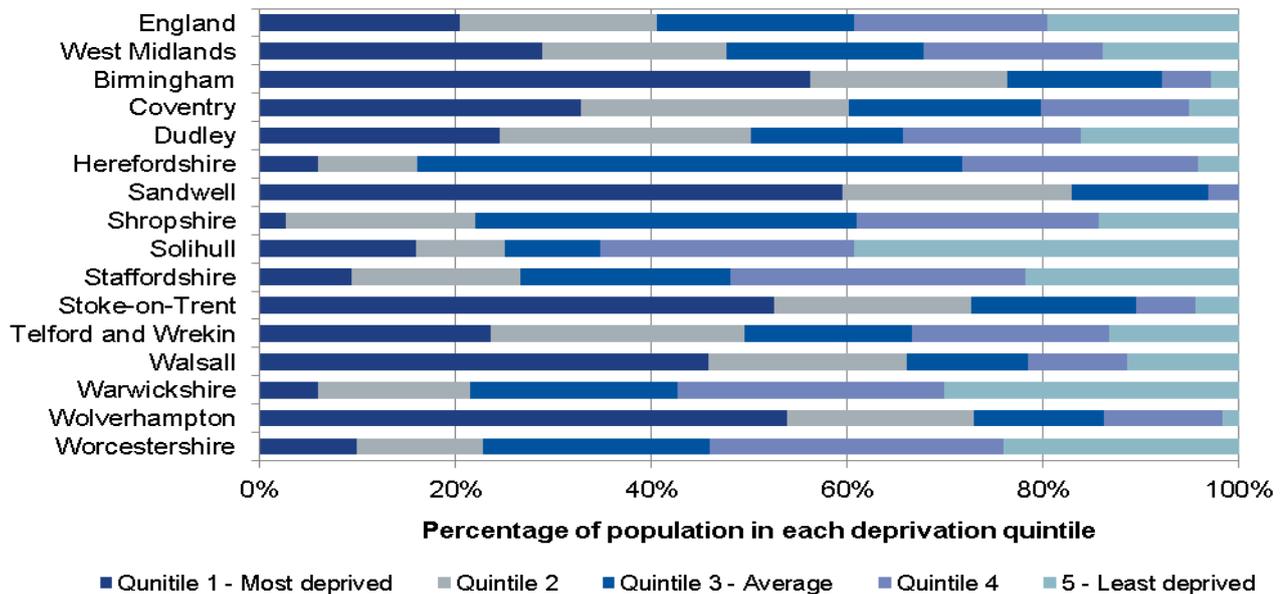
Deprivation

Infant mortality is more likely to occur in infants born to women living in areas of higher deprivation. It has been shown that there is a significant increase risk of infant mortality with increasing deprivation.²⁴

The Index of Multiple Deprivation (IMD) is a measure of relative deprivation for small areas in England, combining information from seven different domains including income deprivation and barriers to housing and services. Areas can be grouped into national quintiles (fifths) according to their deprivation; quintile 1 is the most deprived, and quintile 5 is the least deprived.

In 2013, the West Midlands had a higher proportion of its population living in areas in the most deprived quintile (28.9%) compared to the England average (20.4%). Sandwell had the highest proportion of its population living in some of the most deprived neighbourhoods in England; 59.5% of the population are resident in areas in the most deprived quintile. Birmingham, Stoke-on-Trent, Walsall and Wolverhampton also all have very high proportions of their population living in the most deprived areas of England (56.2%, 52.6%, 45.9% and 53.8% respectively). Levels of deprivation are much lower in the rural counties of Herefordshire (6.1%), Shropshire (2.7%), Staffordshire (9.4%), Warwickshire (5.9%), and Worcestershire (9.7%) (Figure 16).

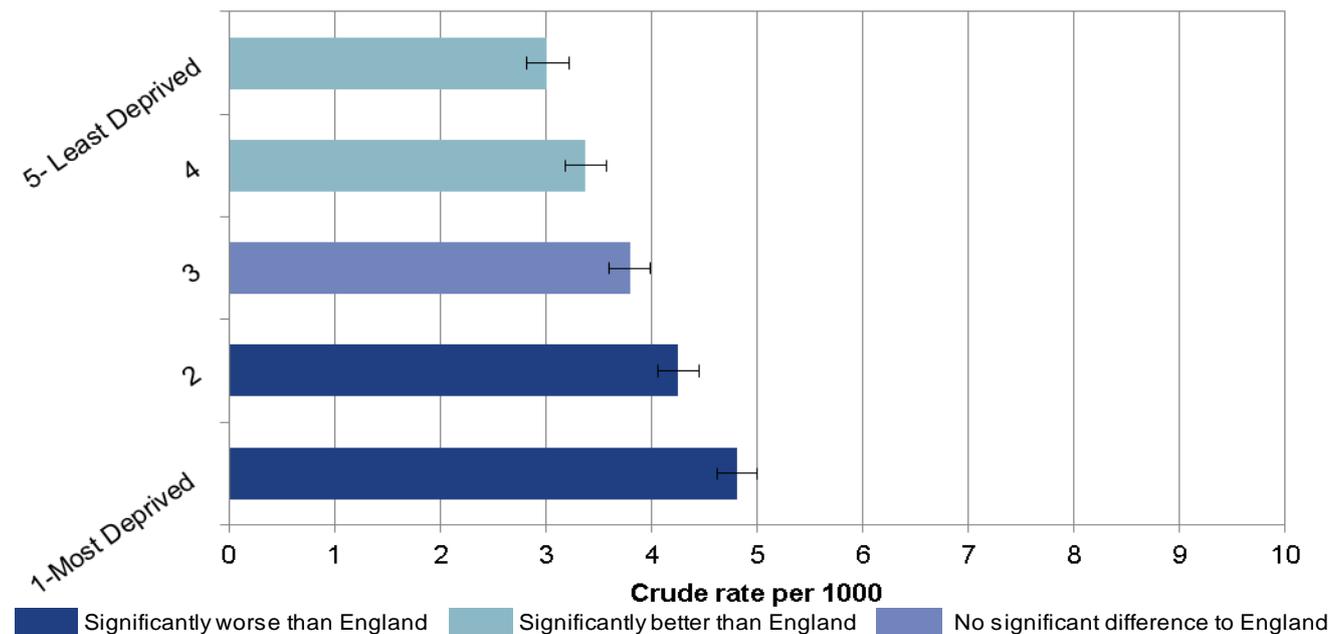
Figure 16. Deprivation composition of the West Midlands, 2013, IMD 2010



Source: ONS, analysis LKIS (WM)

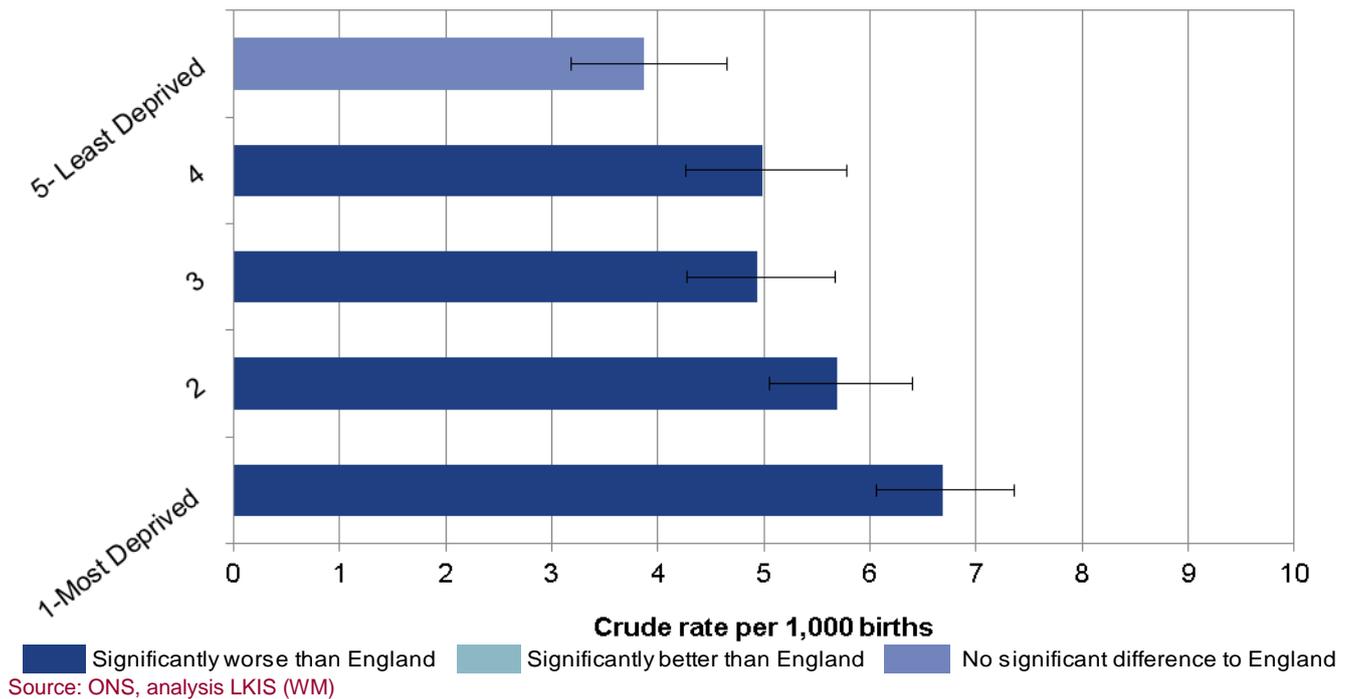
Pooled infant mortality data for 2012 to 2014 confirm the trend of increasing risk of death with increasing deprivation in England and to some extent in the West Midlands (Figures 17 and 18). About 25% all deaths under one year in England and about 45% of all deaths in the West Midlands would potentially be avoided if all mortality rates were identical to the least deprived areas [data not shown].

Figure 17. Infant mortality by deprivation quintiles in England, 2012 to 2014



Source: ONS, analysis LKIS (WM)

Figure 18. Infant mortality by deprivation quintiles in the West Midlands, 2012 to 2014



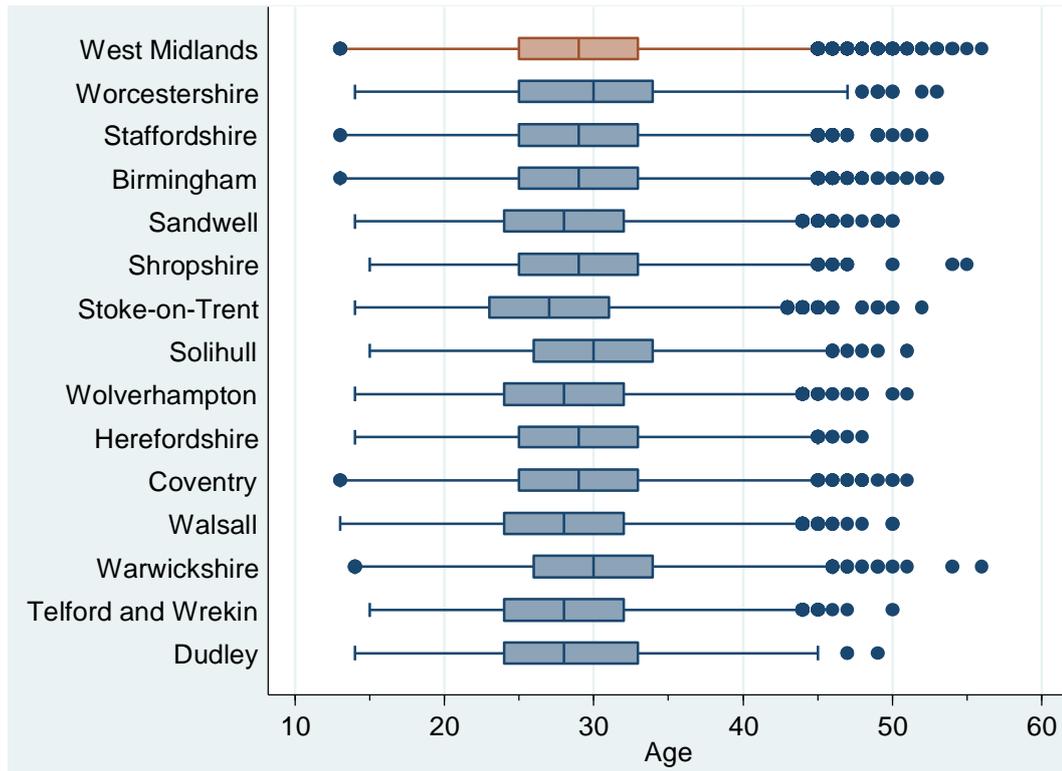
Within the West Midlands the trend of increasing infant mortality with deprivation is not clear (Appendix A7) and the pattern is only evident for Birmingham.

Maternal age

Younger (under 20 years old) and older maternal ages (mothers aged 40 years and over) are associated with higher risk of infant death.²⁵ The latest available data for England and Wales (based on 2013 births) shows that the highest infant mortality rate is for mothers aged under 20 years (6.1 deaths per 1,000 live births) and the lowest is for mothers aged 25 to 29 years (3.4 deaths per 1,000 live births).²⁶

The lack of linked mortality data to birth data prevented analysis of infant mortality by maternal age at sub national level, however the median maternal age for the West Midlands is 29 years (2012 to 2014). Half of all births are to mothers aged 24 to 33 years compared to half from mothers aged 25½ to 34½ in England (data not shown). Within the West Midlands, the lowest median maternal age is 27 years in Stoke-on-Trent and the highest is 30 years in Solihull (Figure 19).

Figure 19. Boxplot of maternal age of birth registered in 2012 to 2014



Source: Office for National Statistics

NB The circles in the boxplot (Figure 18) indicate the suspected outliers

Summary of risk factors

The previous section demonstrates that there are a multitude of risk factors which have potential to contribute to early mortality. Summarising these for each local authority, as well as the West Midlands on whole, against the England average provides a detailed insight into the inequalities across the West Midlands (Figure 20).

Figure 20. Summary of potential risk factors of infant mortality

	Compared to England												
	Stillbirth	Neonatal mortality	Perinatal mortality	Infant mortality	Low Birth Weight	Smoking at time of pregnancy	Teenage pregnancy (<16)	Teenage pregnancy (<18)	Breastfeeding initiation	Breastfeeding (6-8 weeks)	Deprivation (>40% in most deprived areas)	% of mothers born outside the UK	Children in Poverty (under 16s)
West Midlands	Amber	Red	Red	Red	Red	White	Amber	Amber	Red	White	Amber	Green	Red
Birmingham	Red	Red	Red	Red	Red	White	Amber	Amber	White	Green	Red	Red	Red
Coventry	Amber	Amber	Amber	Amber	Amber	Red	Red	Red	Green	White	Amber	Red	Red
Dudley	Amber	Amber	Amber	Amber	Red	White	Amber	Amber	Red	Red	Amber	Green	Red
Herefordshire	Red	Amber	Amber	Amber	Amber	White	Amber	Amber	Red	Green	Green	Green	Green
Sandwell	Red	Red	Red	Red	Red	Green	Red	Red	White	White	Red	Red	Red
Shropshire	Amber	Amber	Amber	Amber	Amber	Amber	Green	Green	Amber	Green	Green	Green	Green
Solihull	Amber	Red	Amber	Amber	Amber	White	Amber	Amber	Red	Amber	Green	Green	Green
Staffordshire	Amber	Amber	Amber	Amber	Green	White	Red	Red	White	White	Green	Green	Green
Stoke-on-Trent	Amber	Red	Amber	Red	Red	Red	Amber	Red	Red	Red	Red	Green	Red
Telford and Wrekin	Amber	Amber	Amber	Red	Amber	Red	Amber	Red	Red	Red	Amber	Green	Red
Walsall	Amber	Red	Amber	Red	Red	White	Red	Red	Red	Red	Red	Green	Red
Warwickshire	Green	Amber	Amber	Amber	Amber	White	Amber	Amber	Red	Green	Green	Green	Green
Wolverhampton	Amber	Red	Red	Red	Amber	Red	Red	Red	Red	White	Red	Amber	Red
Worcestershire	Amber	Amber	Amber	Amber	Amber	Red	Amber	Amber	Red	Green	Green	Green	Green

-  White = no data available for that local authority
-  Green = significantly better than the England average
-  Amber = no significant difference from the England average
-  Red = significantly worse than the England average

This provides a useful insight into where potential challenges may require addressing, and these will vary across the local authorities.

Most common causes of infant mortality: neonatal and post neonatal deaths

For the purpose of this section, the Office for National Statistics (ONS) apply different methodologies for assigning neonatal and post-neonatal deaths, so the data presented here are separated according to these classifications.²⁷ Due to the low occurrence of individual ICD-10 codes, the broad ONS causes of mortality are presented.

For the period 2012 to 2104, there were 1,178 infant deaths in the West Midlands, of which 861 were neonatal and 317 post-neonatal.

With regards to neonatal mortality, immaturity-related conditions, including respiratory and cardiovascular conditions, were the most common causes of mortality, accounting for 57% of the deaths. Congenital anomalies (15%) and intrapartum (asphyxia, anoxia or trauma, [11%]) were other major causes of mortality. With regards to post-neonatal mortality, congenital anomalies (32%) were the leading cause of death followed by immaturity related conditions (12%) and infections (10%) [Table 4].

Table 5. Number and proportion of neonatal and post neonatal mortality by cause of death, 2012 to 2014

Cause of death	Neonatal	Proportion of neonatal cause of death	Post neonatal	Proportion of post neonatal deaths
Antepartum Infections	5	0.6%	3	0.9%
Congenital anomalies*	131	15.2%	102	32.2%
External Conditions	1	0.1%	16	5.0%
Immaturity related conditions**	490	56.9%	37	11.7%
Infections	33	3.8%	33	10.4%
Intrapartum(asphyxia, anoxia or trauma)	97	11.3%	5	1.6%
Other specific conditions	34	3.9%	4	1.3%
Other	65	7.5%	75	23.7%
Sudden infant deaths	5	0.6%	42	13.2%
Total	861	100.0%	317	100.0%

*consists of 707 different ICD10 codes including Thalassaemia, congenital malformations, cystic fibrosis, microcephaly

**consists of 37 different ICD10 codes including low birth weight, intracerebral haemorrhage, respiratory failure

Source: ONS, analysis LKIS (WM)

The cause of neonatal deaths across the West Midlands upper tier local authorities (UTLAs) was similar to that of the West Midlands. Immaturity-related conditions were the major cause of neonatal deaths in all local authorities ranging from 32% (11 deaths) in Dudley to 69% (nine deaths) in Herefordshire.

For post neonatal deaths, the pattern varies across the West Midlands. Congenital anomalies were the major cause of post neonatal deaths in Birmingham, Coventry, Shropshire, Staffordshire, Stoke-on-Trent, Walsall, Warwickshire and Worcestershire. Immaturity-related conditions were the major cause of post-neonatal deaths in Sandwell and Solihull while in Herefordshire, infections were the major cause of post neonatal deaths.

Three areas in the West Midlands (Dudley, Telford and Wrekin and Worcestershire) have a high proportion of sudden infant deaths, however, the underlying incidence is too low to calculate meaningful and robust statistics.

The figures for causes of neonatal and post neonatal deaths for the West Midlands local authorities can be found in Appendix A12.

Conclusion

Infant mortality remains a key health outcome for infant and child health. Although there have been some improvements in infant and perinatal mortality in the West Midlands, there remain unacceptable variation and health inequalities across local authorities. This report provides a focus on our local areas, providing data and information to further support local organisations to tackle these differences in outcomes. The health inequalities focus describes the differences across the West Midlands and in social and ethnic groups.

Priority should continue to be given to early years support, including infant and maternal health. Partnership working between the NHS, local authorities and other local bodies will continue to strengthen a shared understanding of the factors shaping infant and perinatal mortality and improved engagement with local communities.

The analyses presented in this document do not consider all potential infant mortality risk factors, but include those which are more directly related to adverse infant outcomes. Consequently, this provides an impetus for individual local authorities to take the analyses forwards and to consider other potential infant mortality risk factors such as education, work and environmental.

Limitations

This report highlights the trends in stillbirth, perinatal, neonatal and infant mortality within each West Midlands upper-tier local authority. Analyses of factors which have the potential to impact on each of these rates are also considered.

Linked data between the underlying factors and mortality are currently not available, so it is not possible to identify infant mortality rates by ethnicity, the age of the mother at conception or the mother's country of birth. These challenges could be overcome through close collaboration with key partners and stakeholders which hold this detailed level of information.

There are also some data, such as consanguinity, which are not currently available.

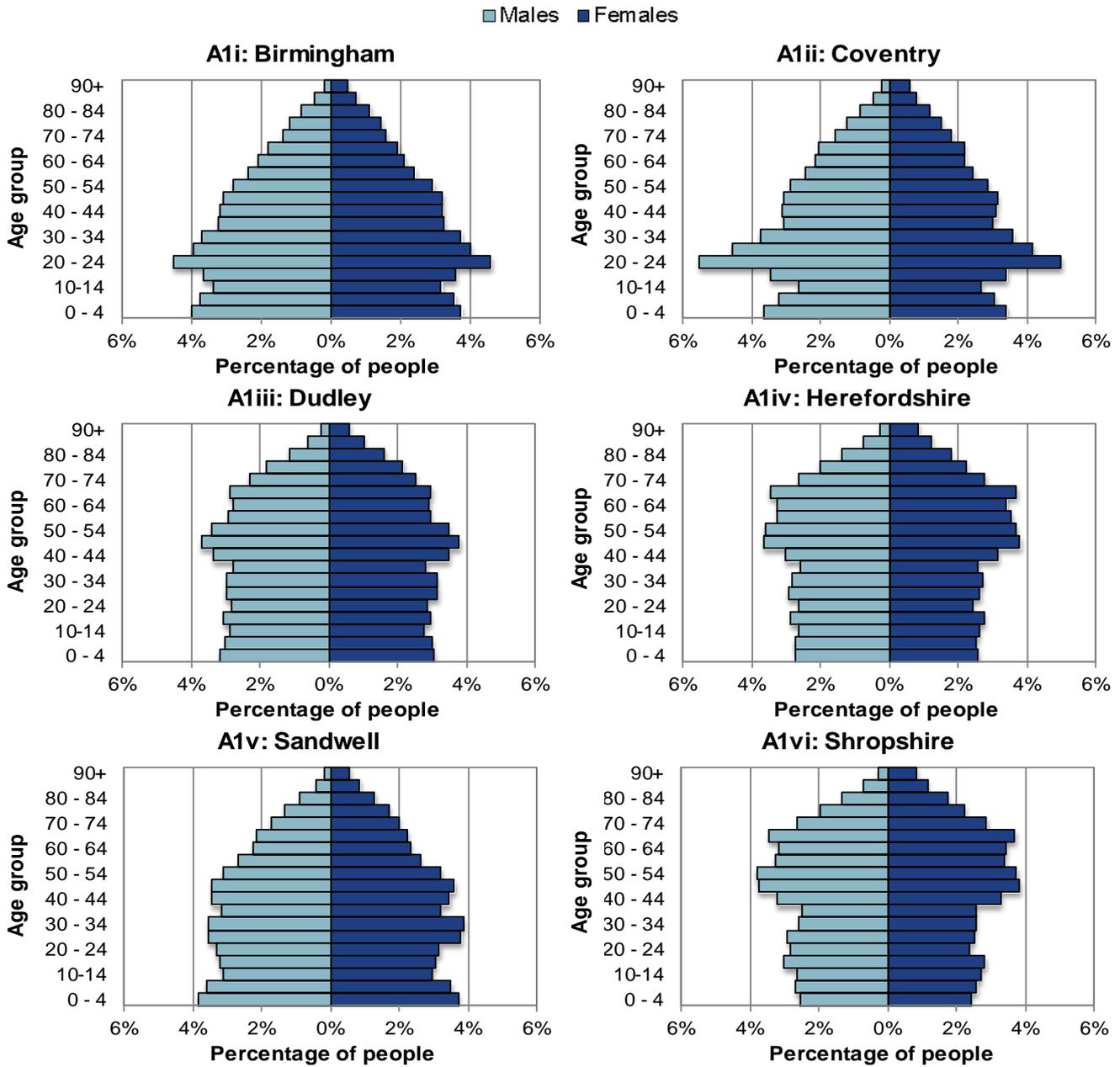
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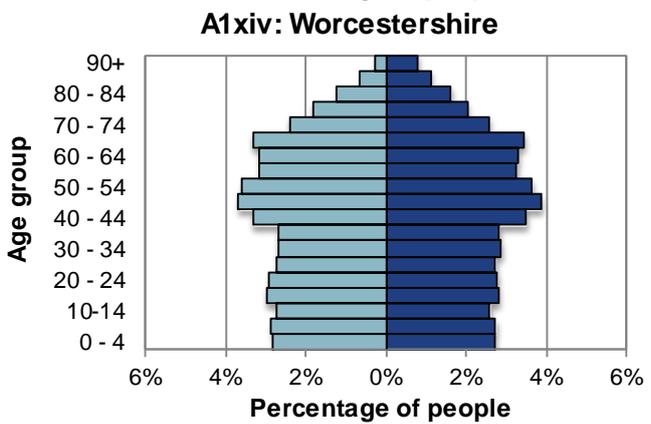
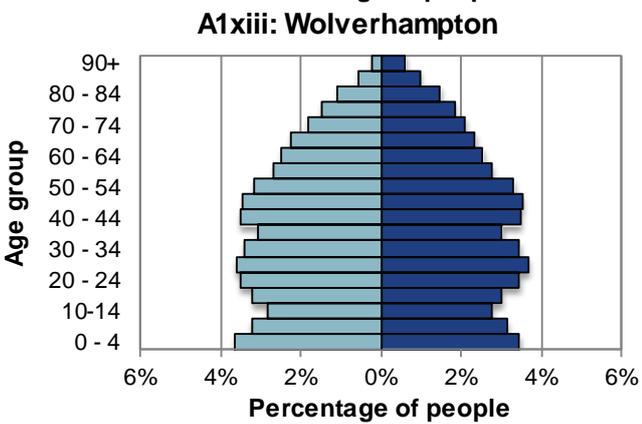
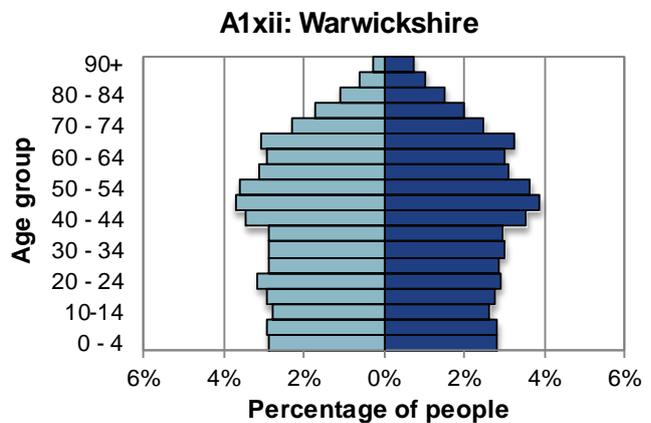
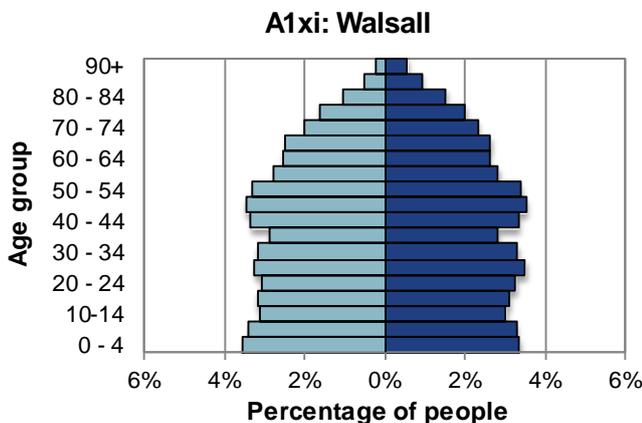
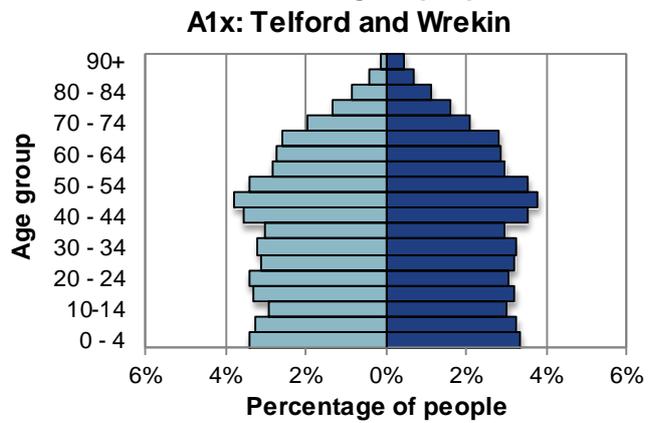
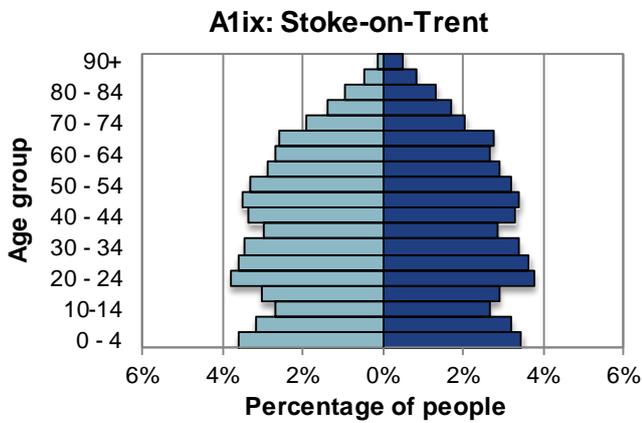
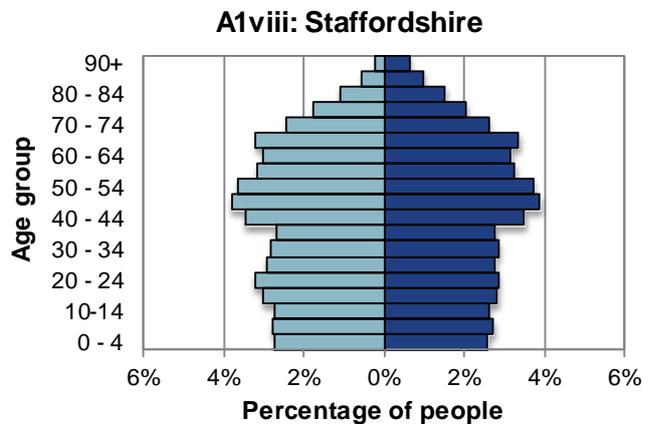
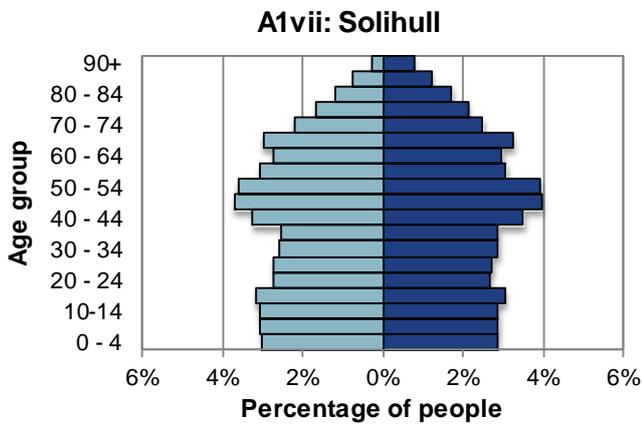
Appendices

Appendix A1. Population pyramids – local authorities in the West Midlands



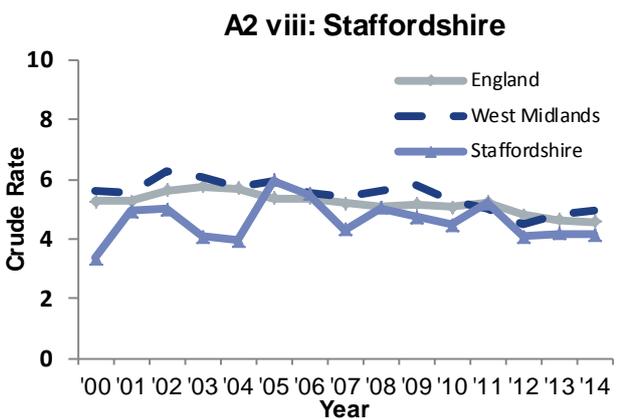
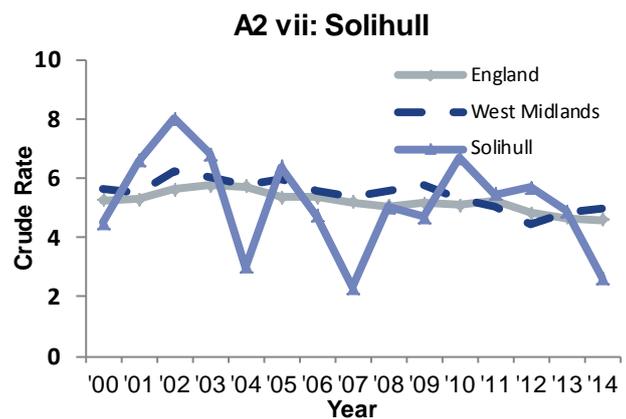
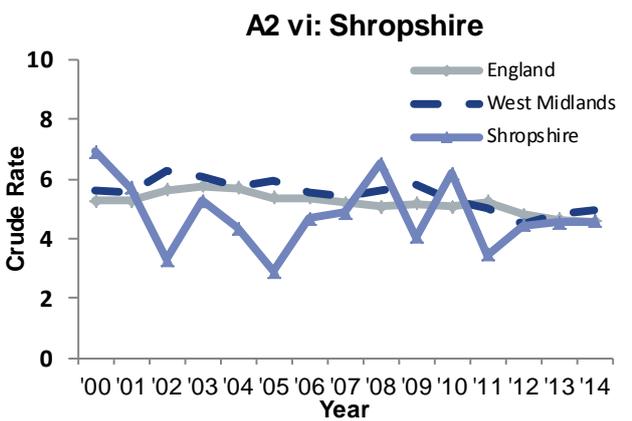
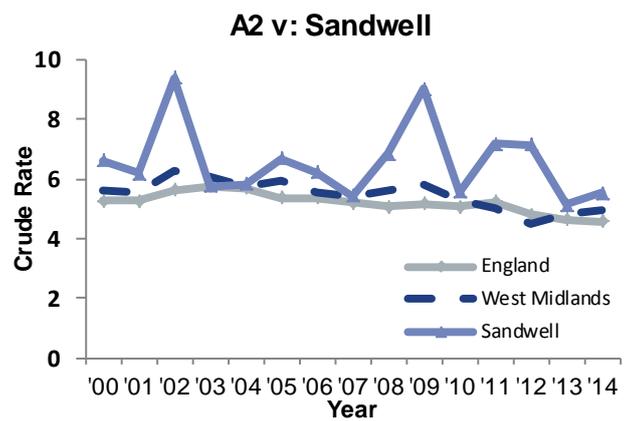
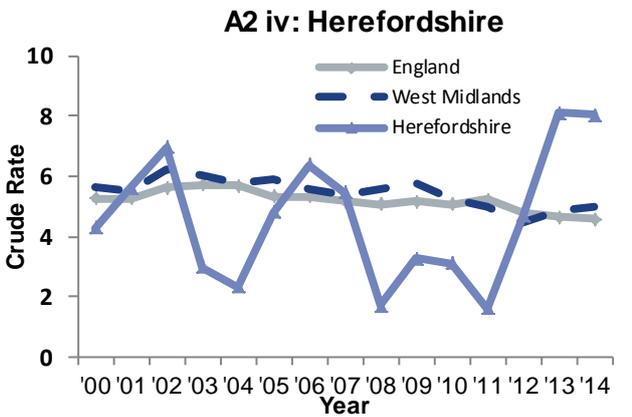
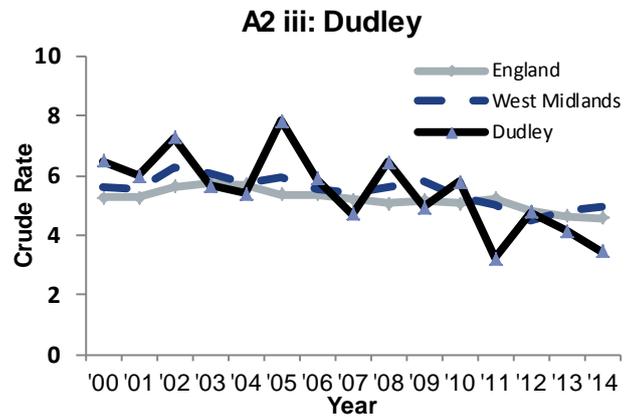
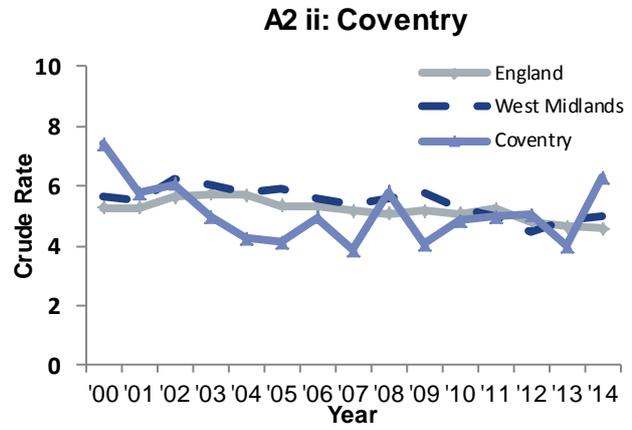
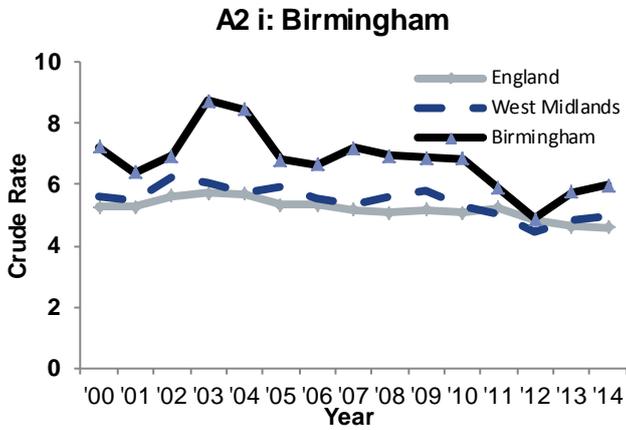
Appendix A1 (continued). Population pyramids – local authorities in the West Midlands

■ Males ■ Females

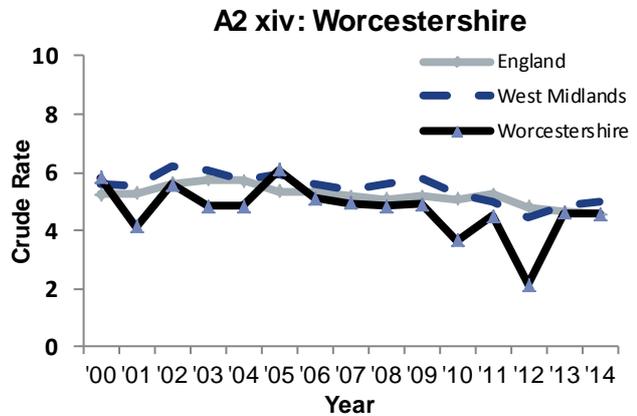
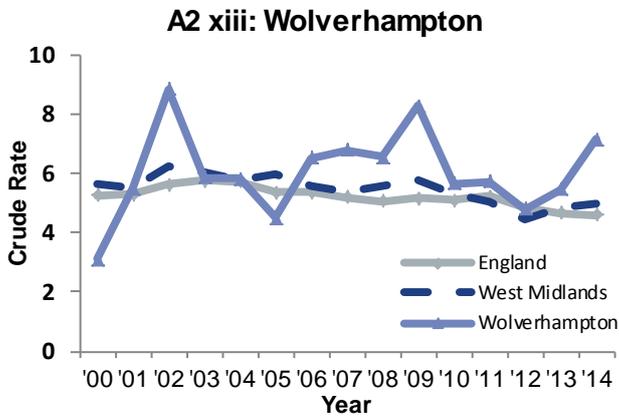
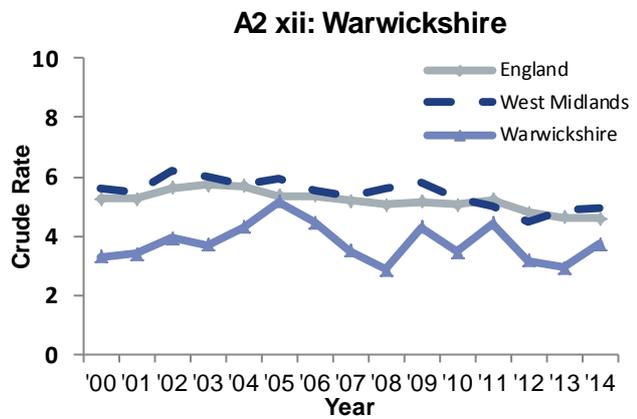
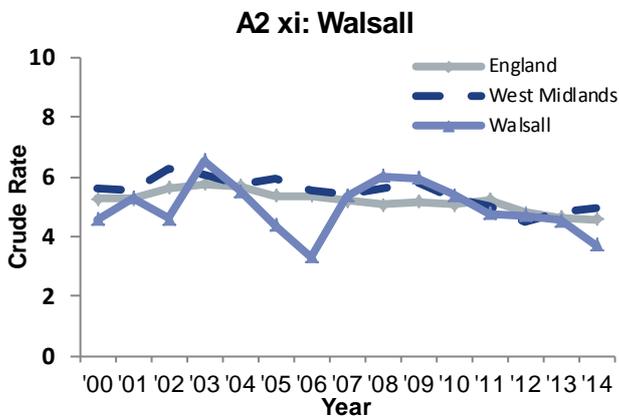
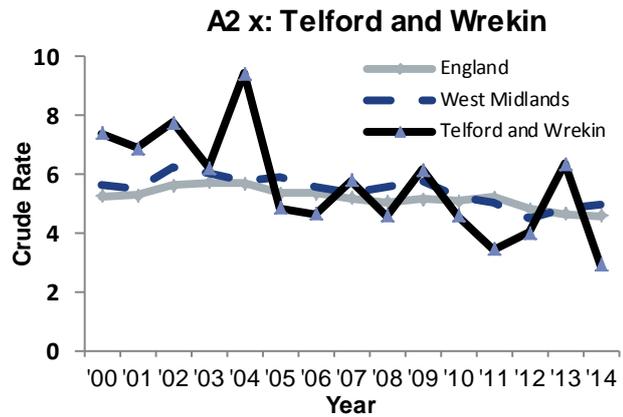
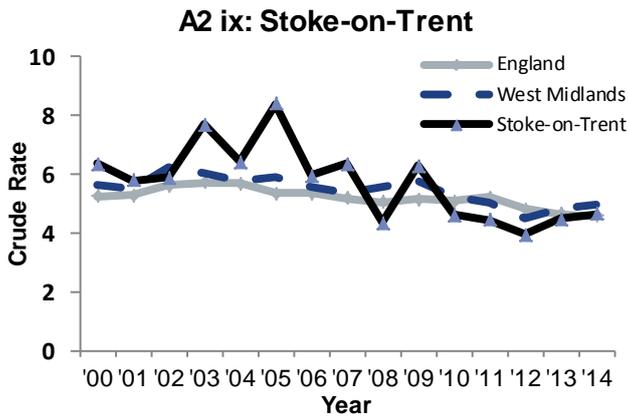


Appendix A2. Stillbirth rates – West Midlands local authorities*

*A solid black line indicates where a local authority observed a statistically significant declining trend

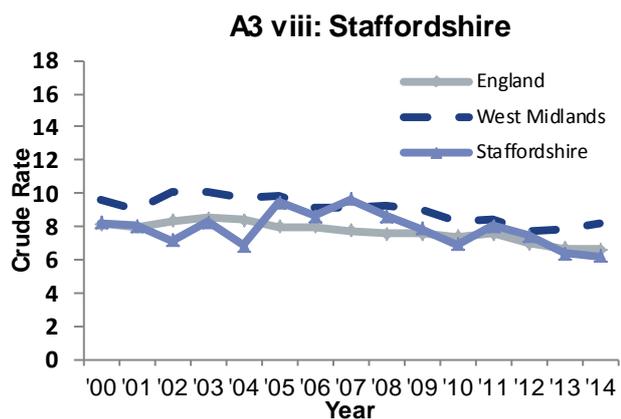
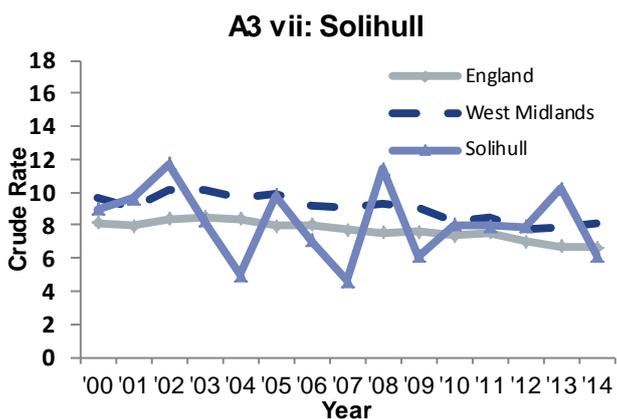
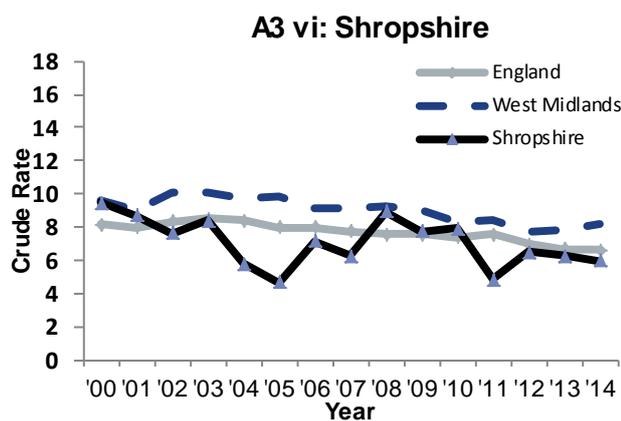
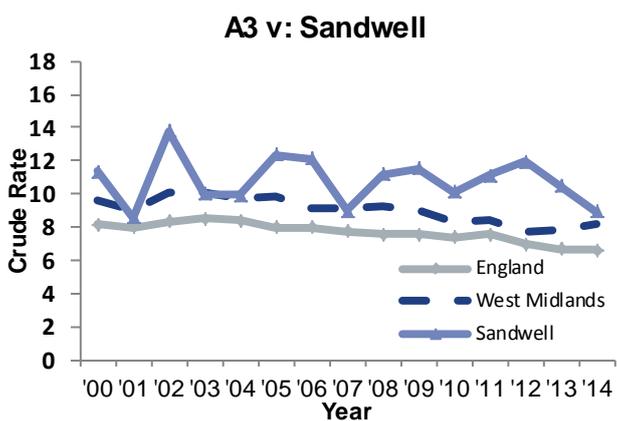
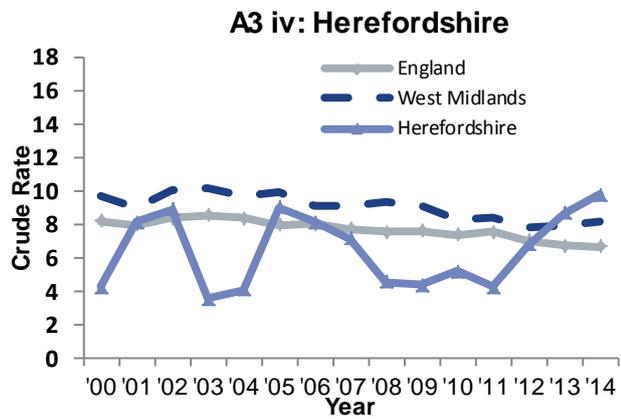
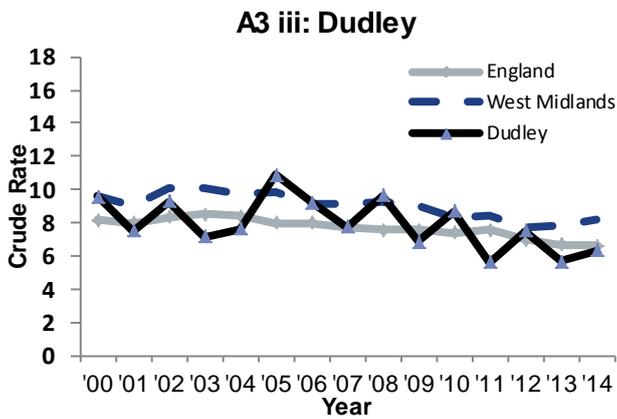
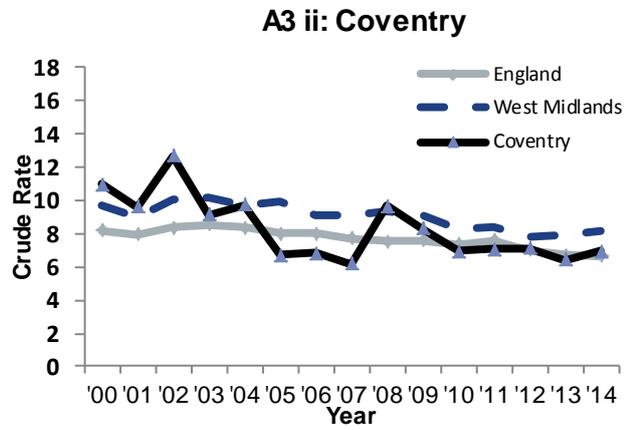
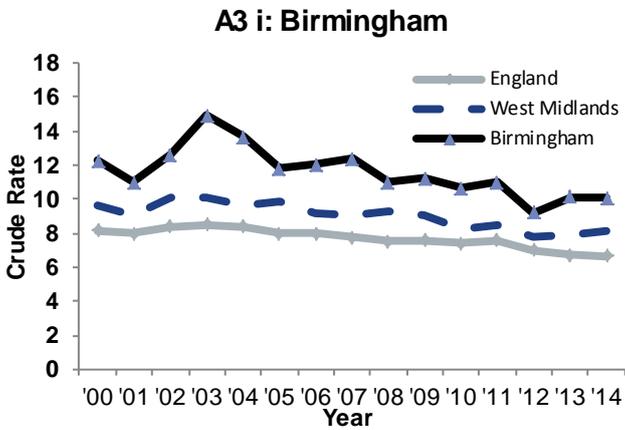


Appendix A2 (continued). Stillbirth rates – West Midlands local authorities



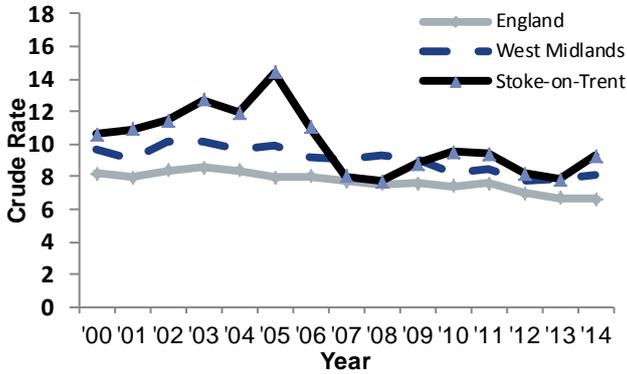
Appendix A3. Perinatal rates – West Midlands local authorities*

*A solid black line indicates where a local authority observed a statistically significant declining trend

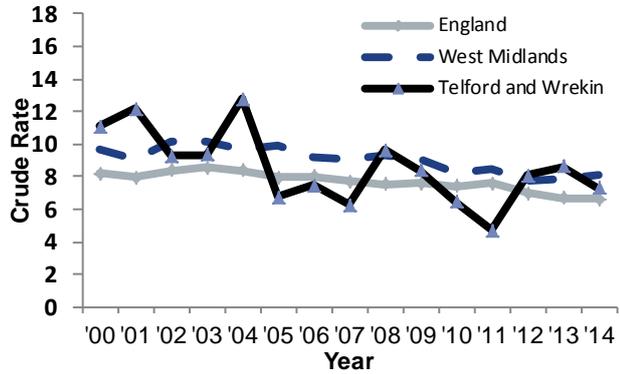


Appendix A3. Perinatal rates continued – West Midlands local authorities

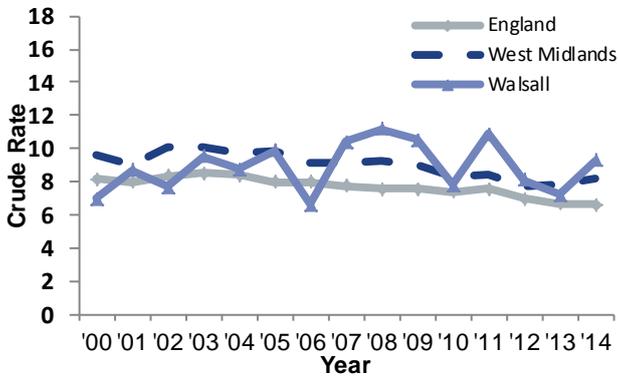
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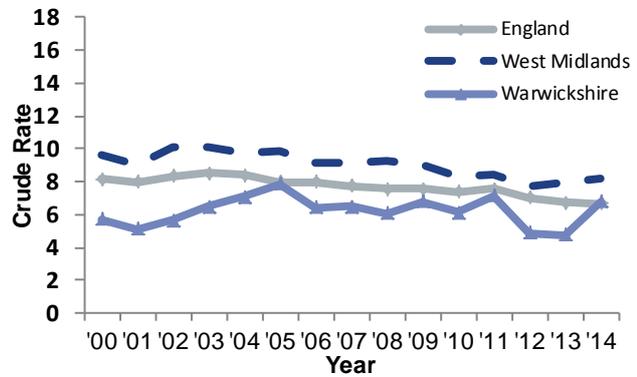
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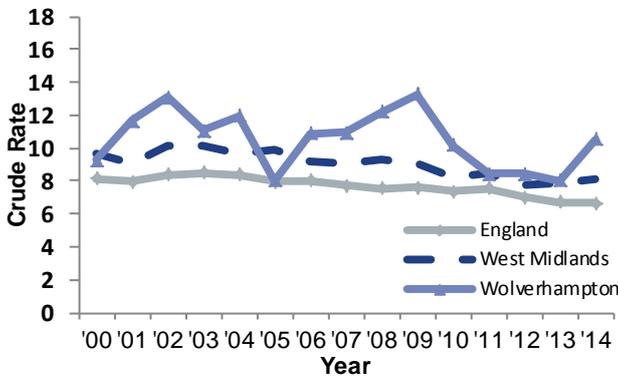
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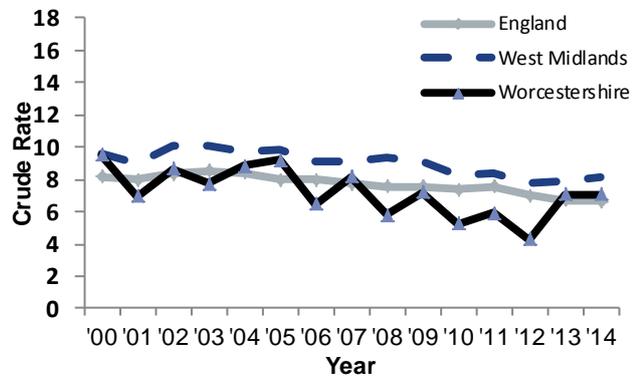
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A3 xiii: Wolverhampton

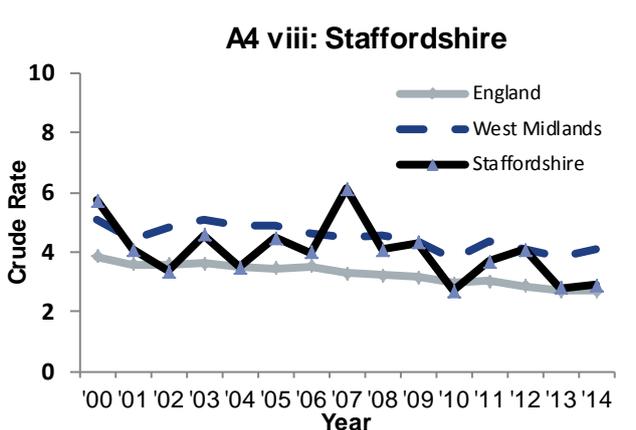
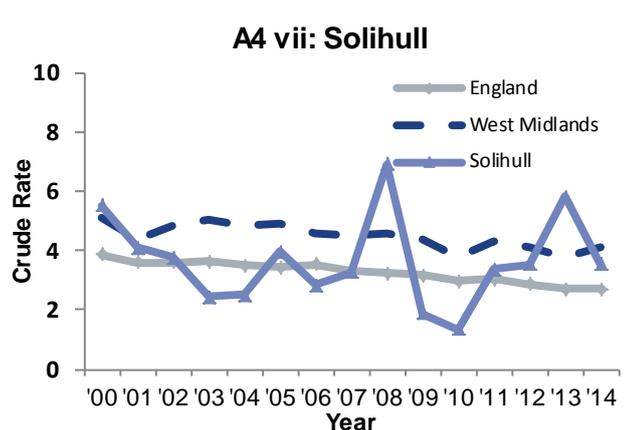
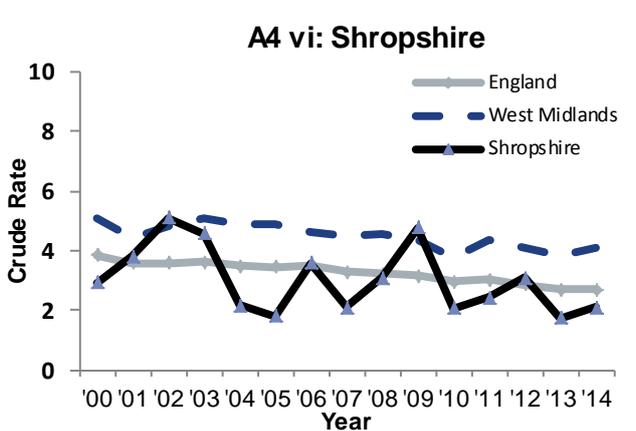
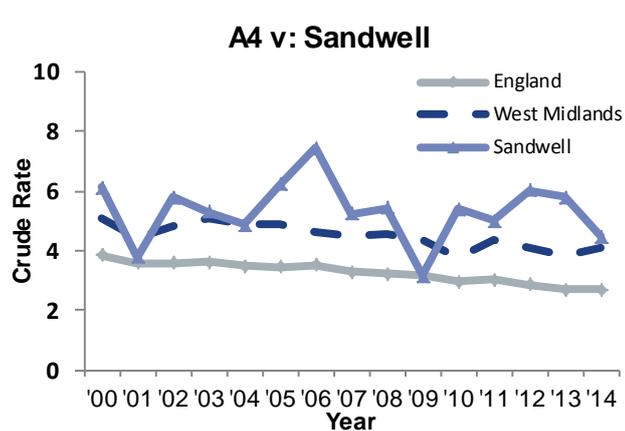
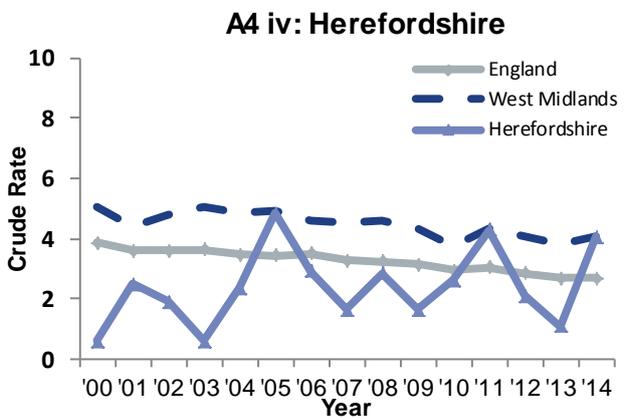
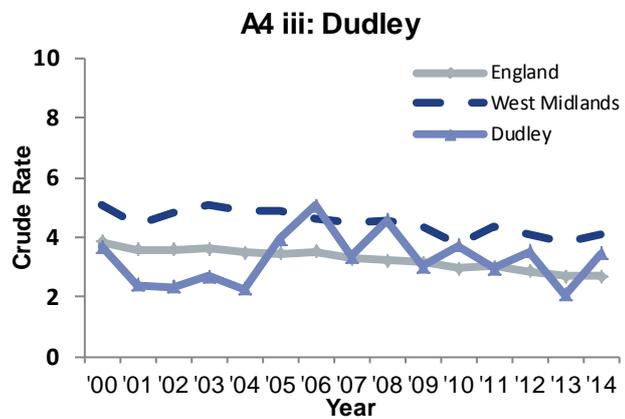
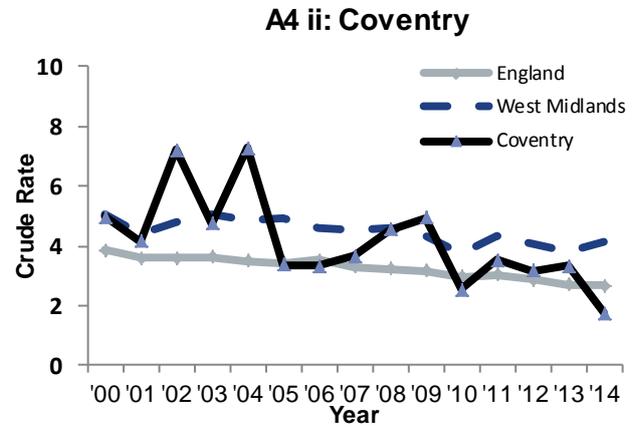
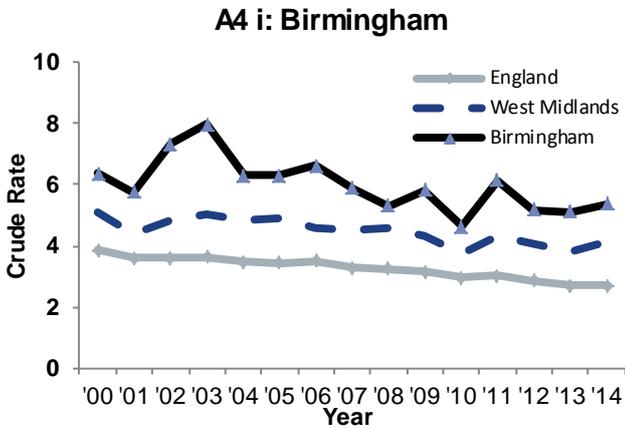


A3 xiv: Worcestershire

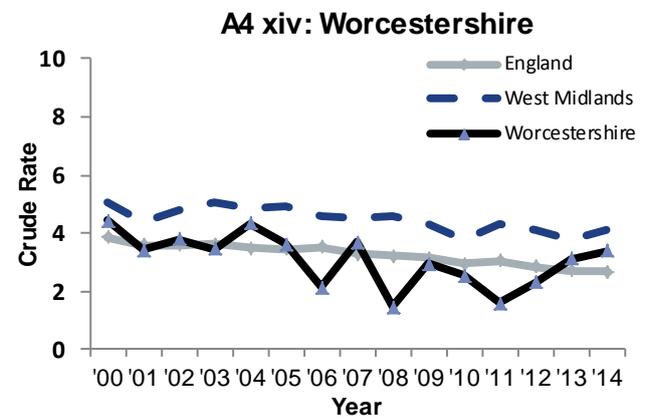
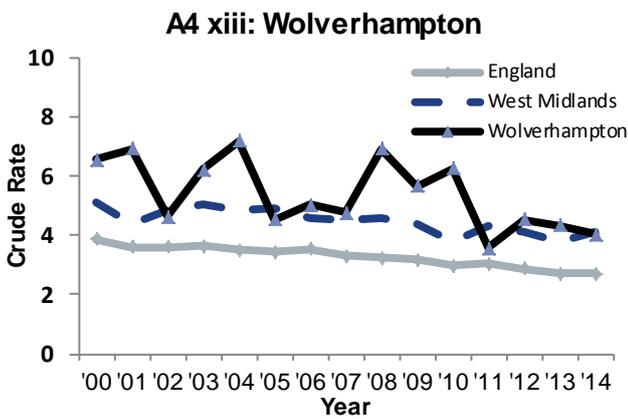
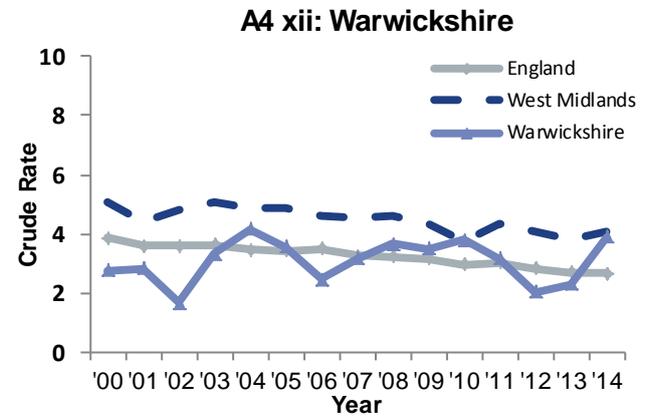
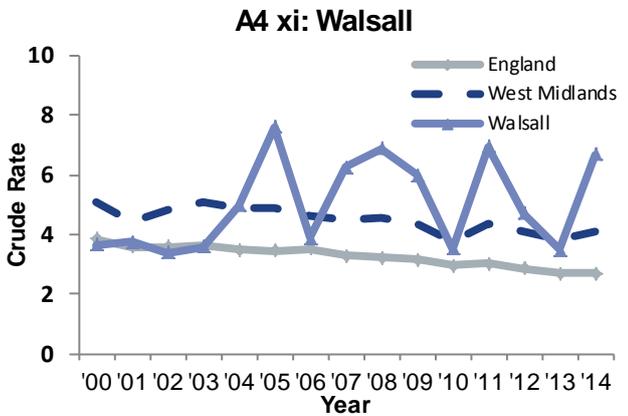
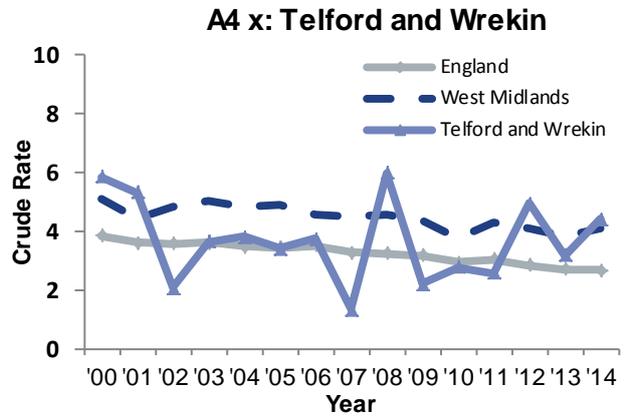
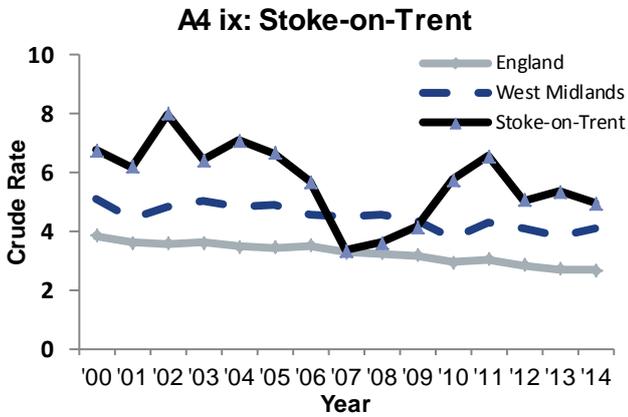


Appendix A4. Neonatal mortality rates – West Midlands local authorities*

*A solid black line indicates where a local authority observed a statistically significant declining trend

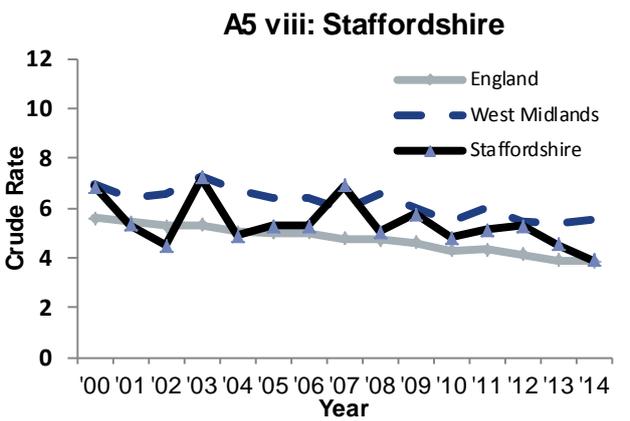
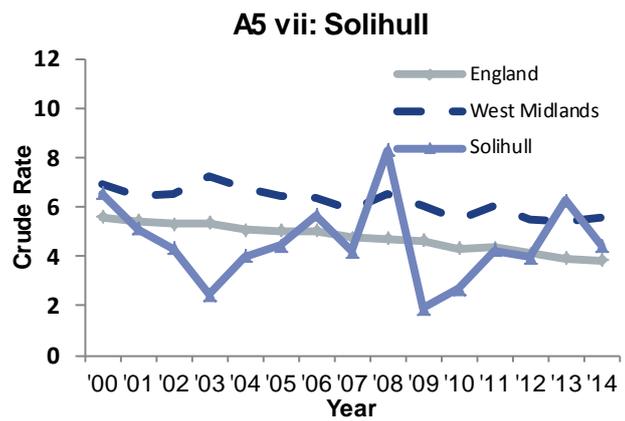
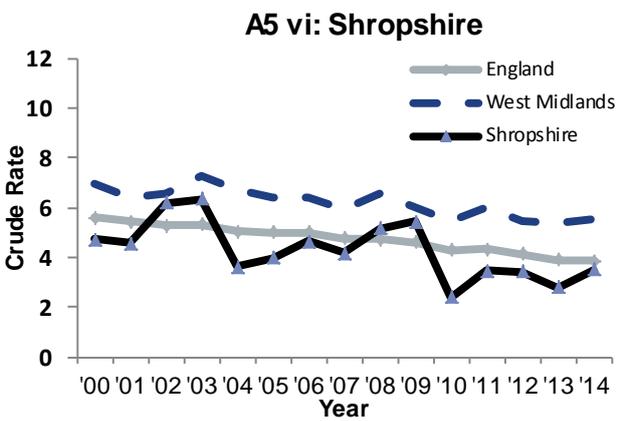
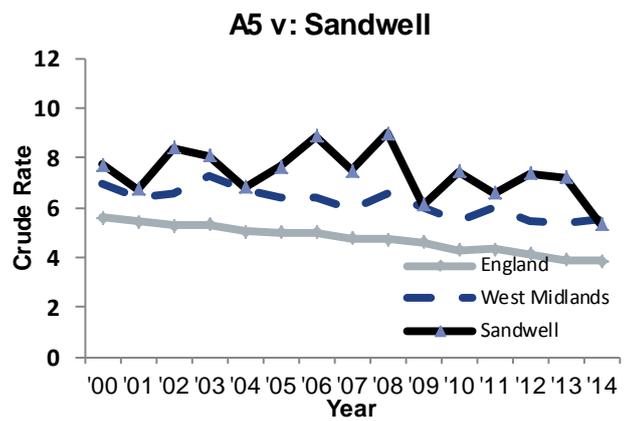
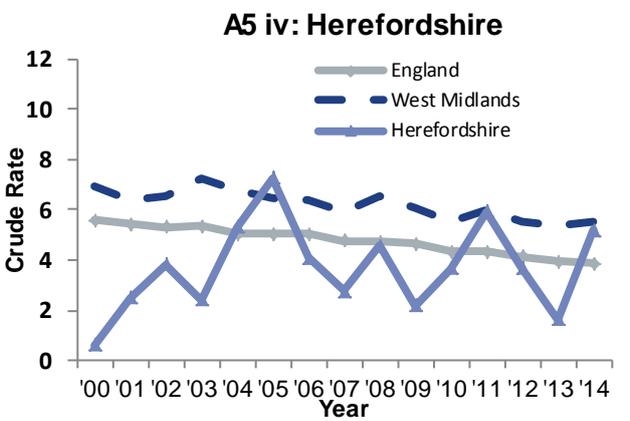
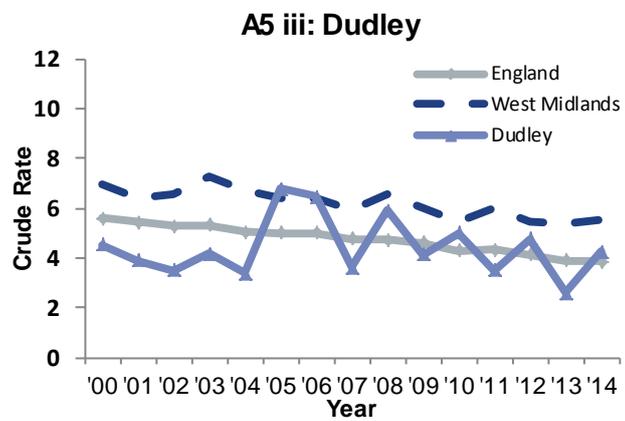
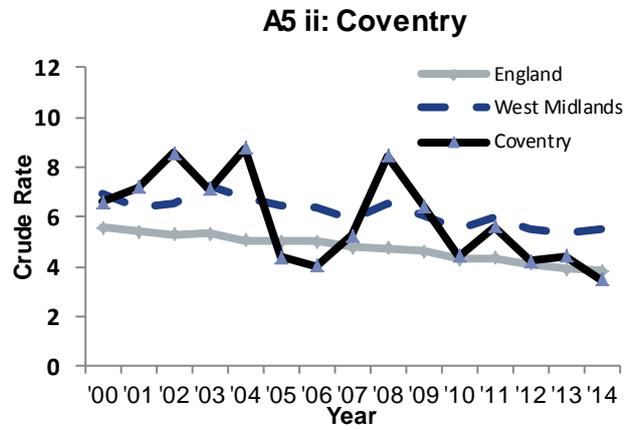
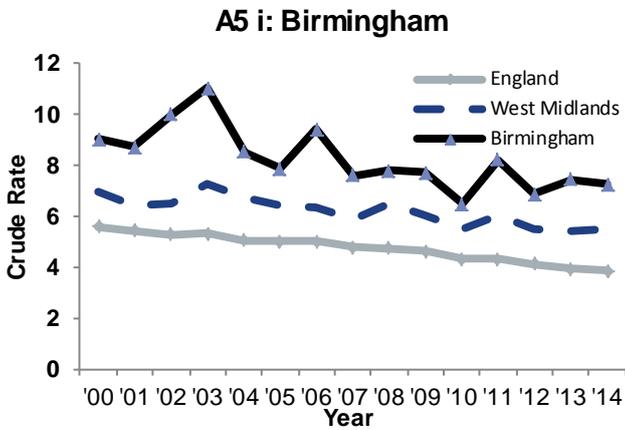


Appendix A4 (continued). Neonatal mortality rates - West Midlands local authorities



Appendix A5. Infant mortality rates – West Midlands local authorities*

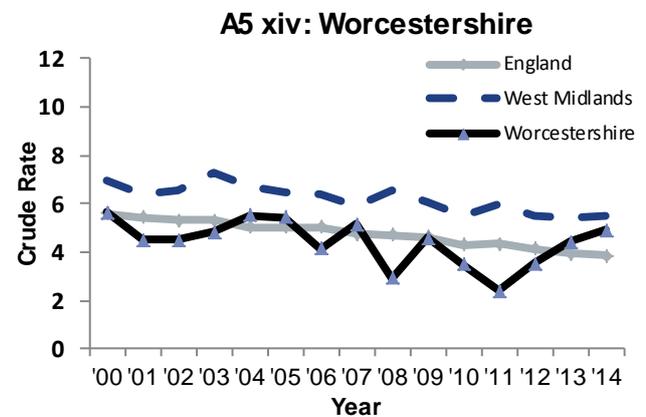
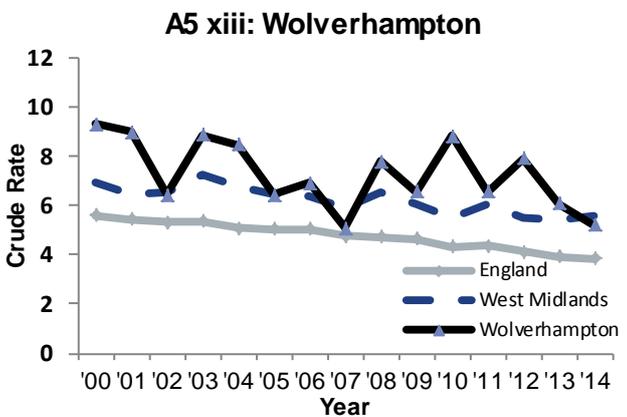
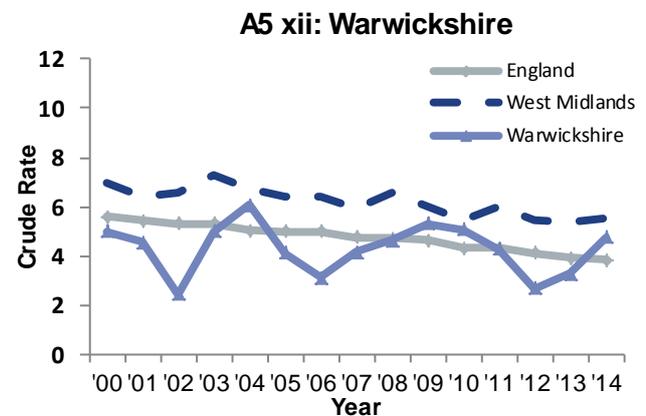
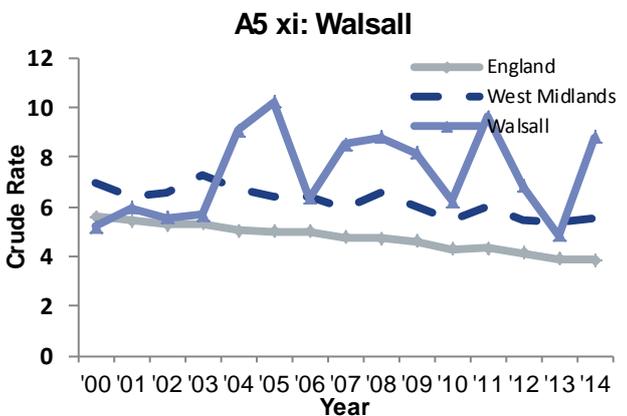
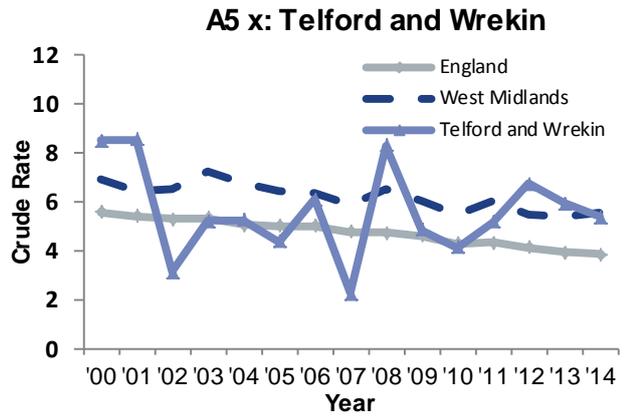
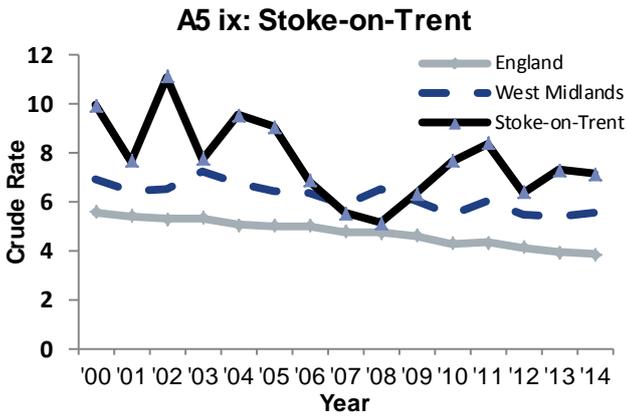
*A solid black line indicates where a local authority observed a statistically significant declining trend



A5 ix: Stoke-on-Trent

A5 x: Telford and Wrekin

Appendix A5 (continued). Infant mortality rates – West Midlands local authorities



Appendix A6. Mother's country of birth – local authorities in the West Midlands

Upper tier local authority (UTLA)	Country of birth of mother	2012-2014		
		Number of births in UTLA	Percentage (%) of all live births in UTLA	Percentage (%) of all stillbirths in UTLA
BIRMINGHAM	1 Pakistan	6,453	12.30	14.48
	2 Bangladesh	1,750	3.34	3.10
	3 India	1,407	2.67	4.48
	4 Somalia	1,246	2.37	3.10
	5 Poland	1,027	1.96	2.07
	6 Romania	654	1.25	1.38
	7 Jamaica	543	1.04	1.03
	8 Nigeria	431	0.82	1.72
	9 Yemen	414	0.78	1.72
	10 Afghanistan	396	0.75	1.38
	Total Mothers born outside the UK	20,546	39.18	44.14
	Total Mothers born in UK	31,857	60.82	55.86
COVENTRY	1 Poland	696	5.02	5.63
	2 India	624	4.49	5.63
	3 Pakistan	434	3.13	2.82
	4 Romania	244	1.75	2.82
	5 Nigeria	239	1.72	1.41
	6 Bangladesh	185	1.33	1.41
	7 Zimbabwe	183	1.31	2.82
	8 Iraq	166	1.19	2.82
	9 Somalia	157	1.13	1.41
	10 Afghanistan	156	1.12	1.41
	Total Mothers born outside the UK	5,126	36.96	36.62
	Total Mothers born in UK	8,743	63.04	63.38
DUDLEY	1 Pakistan	549	4.72	4.17
	2 Poland	123	1.06	0.00
	3 Yemen	101	0.87	0.00
	4 India	98	0.85	0.00
	5 Zimbabwe	52	0.45	0.00
	6 Bangladesh	30	0.25	2.08
	7 China	28	0.24	0.00
	8 Germany	26	0.22	0.00
	9 Iraq	24	0.21	0.00
	10 Ireland	21	0.17	2.08
	Total Mothers born outside the UK	1,488	12.81	10.42
	Total Mothers born in UK	10,137	87.19	89.58
HEREFORDSHIRE	1 Poland	339	6.18	2.63
	2 Lithuania	73	1.32	2.63
	3 Germany	48	0.88	0.00
	4 Slovakia	33	0.60	0.00
	5 Romania	32	0.59	0.00
	6 Latvia	26	0.48	0.00
	7 Hungary	26	0.48	0.00
	8 India	26	0.46	2.63
	9 Bulgaria	24	0.42	2.63
	10 South Africa	21	0.38	0.00
	Total Mothers born outside the UK	876	15.84	26.32
	Total Mothers born in UK	4,629	84.16	73.68

Appendix A6 (continued). Mother's country of birth – local authorities in the West Midlands

Upper tier local authority (UTLA)	Country of birth of mother	2012-2014		
		Number of births in UTLA	Percentage (%) of all live births in UTLA	Percentage (%) of all stillbirths in UTLA
SANDWELL	1 India	1,000	6.77	7.95
	2 Pakistan	728	4.92	6.82
	3 Poland	569	3.87	1.14
	4 Bangladesh	314	2.14	0.00
	5 Jamaica	197	1.32	3.41
	6 Iraq	161	1.09	1.14
	7 Afghanistan	128	0.87	0.00
	8 Zimbabwe	110	0.74	1.14
	9 Nigeria	105	0.72	0.00
	10 Latvia	100	0.68	0.00
	Total Mothers born outside the UK	4,624	31.35	26.14
	Total Mothers born in UK	10,139	68.65	73.86
SHROPSHIRE	1 Poland	182	2.11	2.56
	2 Germany	85	0.99	0.00
	3 Bulgaria	41	0.48	0.00
	4 South Africa	36	0.40	5.13
	5 Philippines	26	0.30	0.00
	6 India	25	0.29	0.00
	7 Ireland	23	0.27	0.00
	8 United States	20	0.23	0.00
	9 Australia	19	0.21	2.56
	10 China	18	0.21	0.00
	Total Mothers born outside the UK	772	8.92	15.38
	Total Mothers born in UK	7,856	91.08	84.62
SOLIHULL	1 India	119	1.76	0.00
	2 Pakistan	99	1.40	13.33
	3 Poland	60	0.89	0.00
	4 Ireland	28	0.41	0.00
	5 Germany	26	0.38	0.00
	6 China	20	0.30	0.00
	7 South Africa	19	0.28	0.00
	8 Hungary	18	0.27	0.00
	9 United States	18	0.27	0.00
	10 Bangladesh	14	0.21	0.00
	Total Mothers born outside the UK	763	11.22	13.33
	Total Mothers born in UK	6,034	88.78	86.67
STAFFORDSHIRE	1 Poland	564	2.13	2.75
	2 Pakistan	390	1.47	1.83
	3 India	170	0.65	0.00
	4 Latvia	147	0.55	1.83
	5 Germany	145	0.55	0.92
	6 China	65	0.25	0.00
	7 South Africa	62	0.24	0.00
	8 Lithuania	57	0.22	0.00
	9 Hungary	55	0.21	0.00
	10 Iraq	54	0.21	0.00
	Total Mothers born outside the UK	2,613	9.89	10.09
	Total Mothers born in UK	23,808	90.11	89.91

Appendix A6 (continued). Mother's country of birth – local authorities in the West Midlands

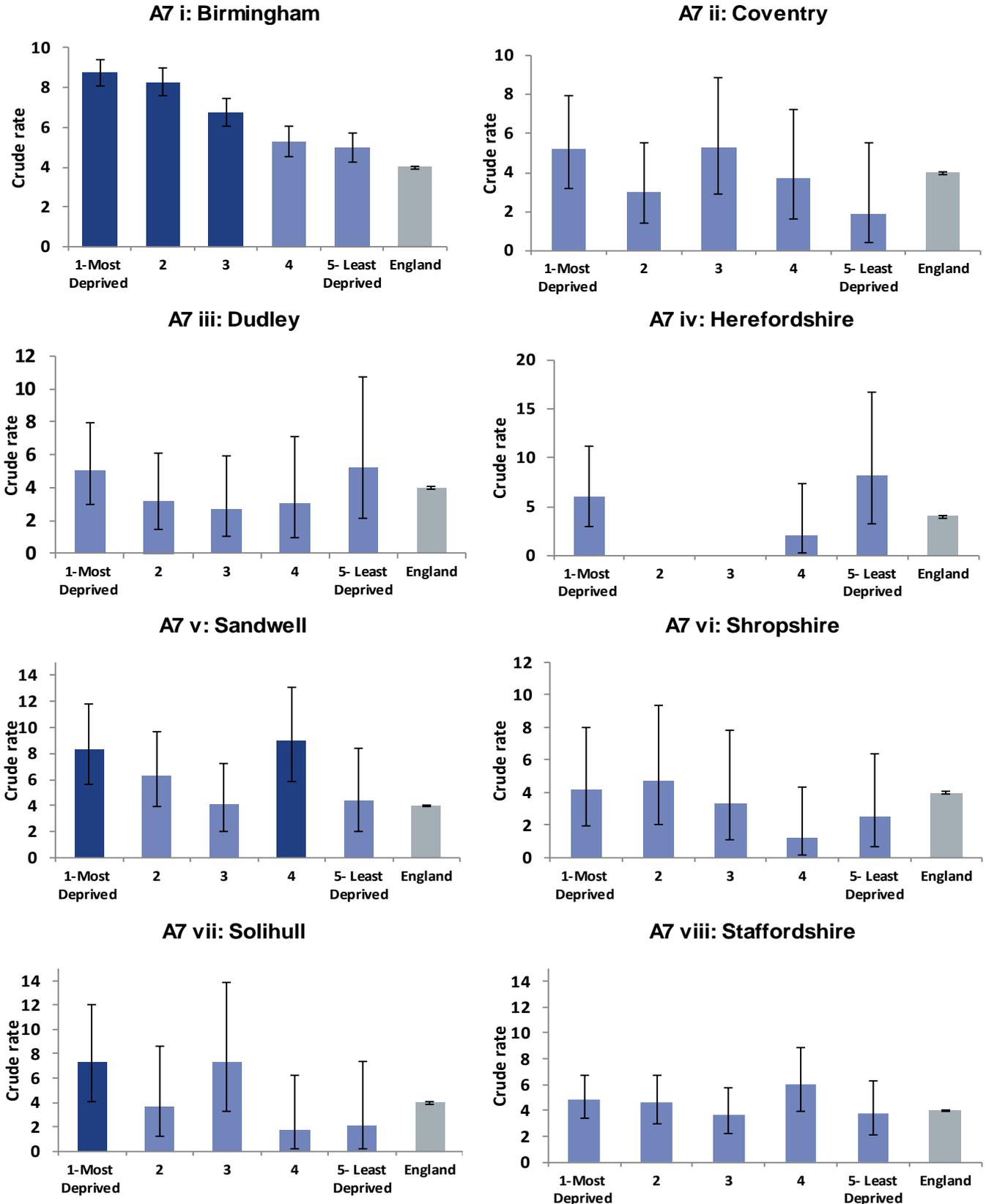
Upper tier local authority (UTLA)	Country of birth of mother	2012-2014		
		Number of births in UTLA	Percentage (%) of all live births in UTLA	Percentage (%) of all stillbirths in UTLA
STOKE ON TRENT	1 Pakistan	652	5.91	8.33
	2 Poland	213	1.93	2.08
	3 Iraq	119	1.09	0.00
	4 India	99	0.90	0.00
	5 Slovakia	87	0.78	2.08
	6 Bangladesh	73	0.67	0.00
	7 Afghanistan	56	0.51	0.00
	8 Czech Republic	56	0.50	2.08
	9 China	55	0.50	0.00
	10 Germany	54	0.48	2.08
	Total Mothers born outside the UK	2,152	19.55	18.75
	Total Mothers born in UK	8,859	80.45	81.25
TELFORD & WREKIN	1 Poland	249	3.78	17.24
	2 Pakistan	138	2.10	6.90
	3 Ghana	114	1.75	3.45
	4 India	80	1.24	0.00
	5 Germany	65	1.01	0.00
	6 Latvia	42	0.65	0.00
	7 Lithuania	19	0.29	0.00
	8 South Africa	18	0.28	0.00
	9 Slovakia	17	0.26	0.00
	10 China	16	0.25	0.00
	Total Mothers born outside the UK	970	14.87	31.03
	Total Mothers born in UK	5,520	85.13	68.97
WALSALL	1 Pakistan	648	5.72	6.12
	2 India	368	3.25	2.04
	3 Bangladesh	225	1.98	4.08
	4 Poland	219	1.94	0.00
	5 Zimbabwe	74	0.66	0.00
	6 Slovakia	55	0.49	0.00
	7 Czech Republic	44	0.39	0.00
	8 Nigeria	40	0.35	0.00
	9 Jamaica	35	0.31	0.00
	10 Ghana	34	0.29	2.04
	Total Mothers born outside the UK	2,204	19.46	18.37
	Total Mothers born in UK	9,124	80.54	81.63
WARWICKSHIRE	1 Poland	778	4.23	6.67
	2 India	347	1.88	5.00
	3 Germany	121	0.66	0.00
	4 Latvia	110	0.60	0.00
	5 South Africa	83	0.45	0.00
	6 Pakistan	77	0.42	0.00
	7 Ireland	69	0.38	0.00
	8 Portugal	64	0.34	1.67
	9 Slovakia	59	0.32	0.00
	10 China	58	0.32	0.00
	Total Mothers born outside the UK	2,903	15.83	16.67
	Total Mothers born in UK	15,436	84.17	83.33

Appendix A6 (continued). Mother's country of birth – local authorities in the West Midlands

Upper tier local authority (UTLA)	Country of birth of mother	2012-2014		
		Number of births in UTLA	Percentage (%) of all live births in UTLA	Percentage (%) of all stillbirths in UTLA
WOLVERHAMPTON	1 India	741	7.03	6.56
	2 Poland	242	2.31	0.00
	3 Iraq	231	2.19	1.64
	4 Pakistan	207	1.97	1.64
	5 Lithuania	152	1.42	4.92
	6 Latvia	127	1.20	1.64
	7 Zimbabwe	126	1.18	3.28
	8 Nigeria	121	1.15	0.00
	9 Jamaica	98	0.94	0.00
	10 Afghanistan	69	0.66	0.00
	Total Mothers born outside the UK	2,944	27.95	24.59
Total Mothers born in UK	7,597	72.05	75.41	
WORCESTERSHIRE	1 Poland	826	4.45	5.80
	2 Pakistan	281	1.49	8.70
	3 Germany	104	0.56	0.00
	4 India	98	0.53	0.00
	5 South Africa	82	0.44	0.00
	6 Slovakia	79	0.43	0.00
	7 Bangladesh	76	0.41	0.00
	8 Lithuania	75	0.41	0.00
	9 Latvia	54	0.29	0.00
	10 Ireland	49	0.27	0.00
	Total Mothers born outside the UK	2,528	13.60	20.29
Total Mothers born in UK	16,031	86.40	79.71	

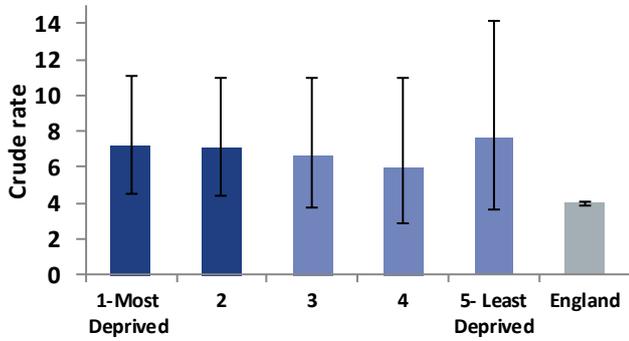
Appendix A7. Infant mortality and deprivation – local authorities in the West Midlands

Significantly worse than England
 Significantly better than England
 No significant difference to England

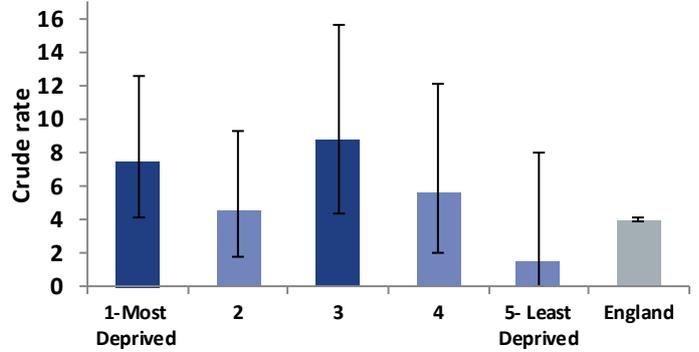


Appendix A7. Infant mortality and deprivation – local authorities in the West Midlands

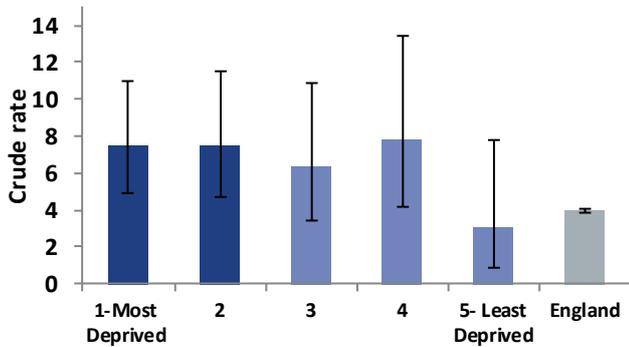
A7 ix: Stoke-on-Trent



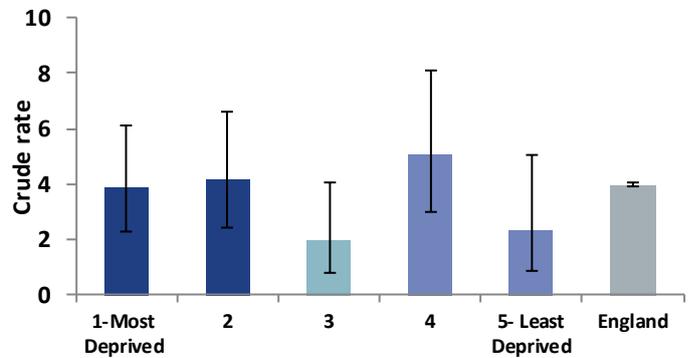
A7 x: Telford and Wrekin



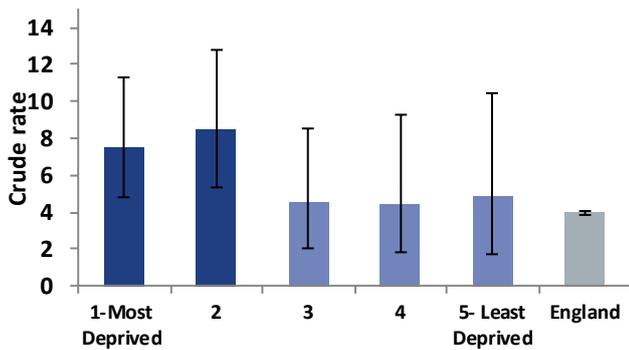
A7 xi: Walsall



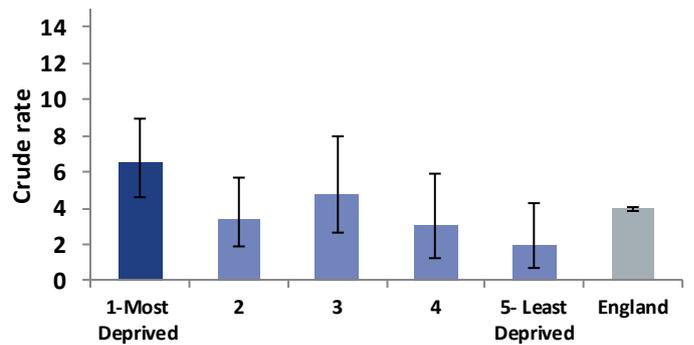
A7 xii: Warwickshire



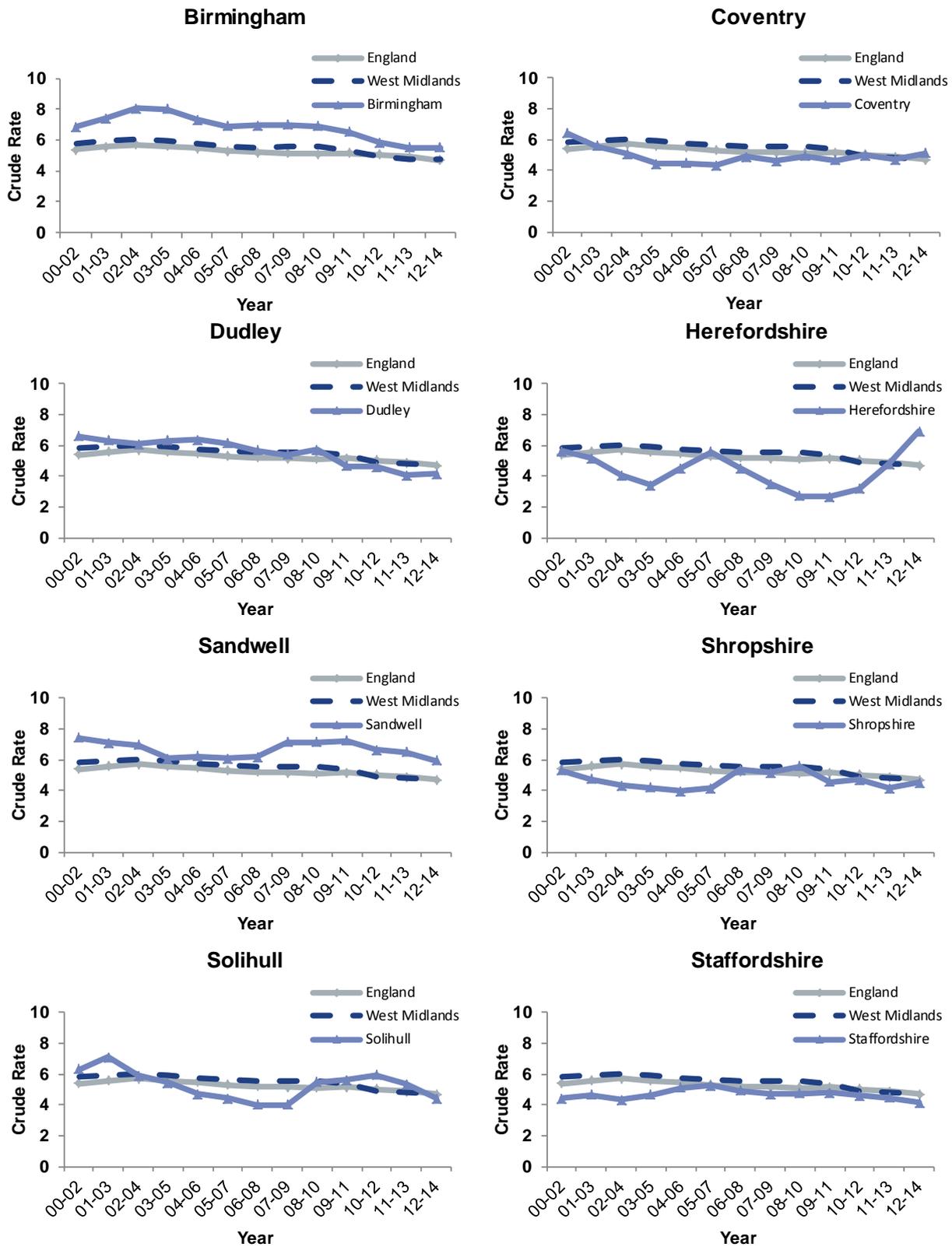
A7 xiii: Wolverhampton



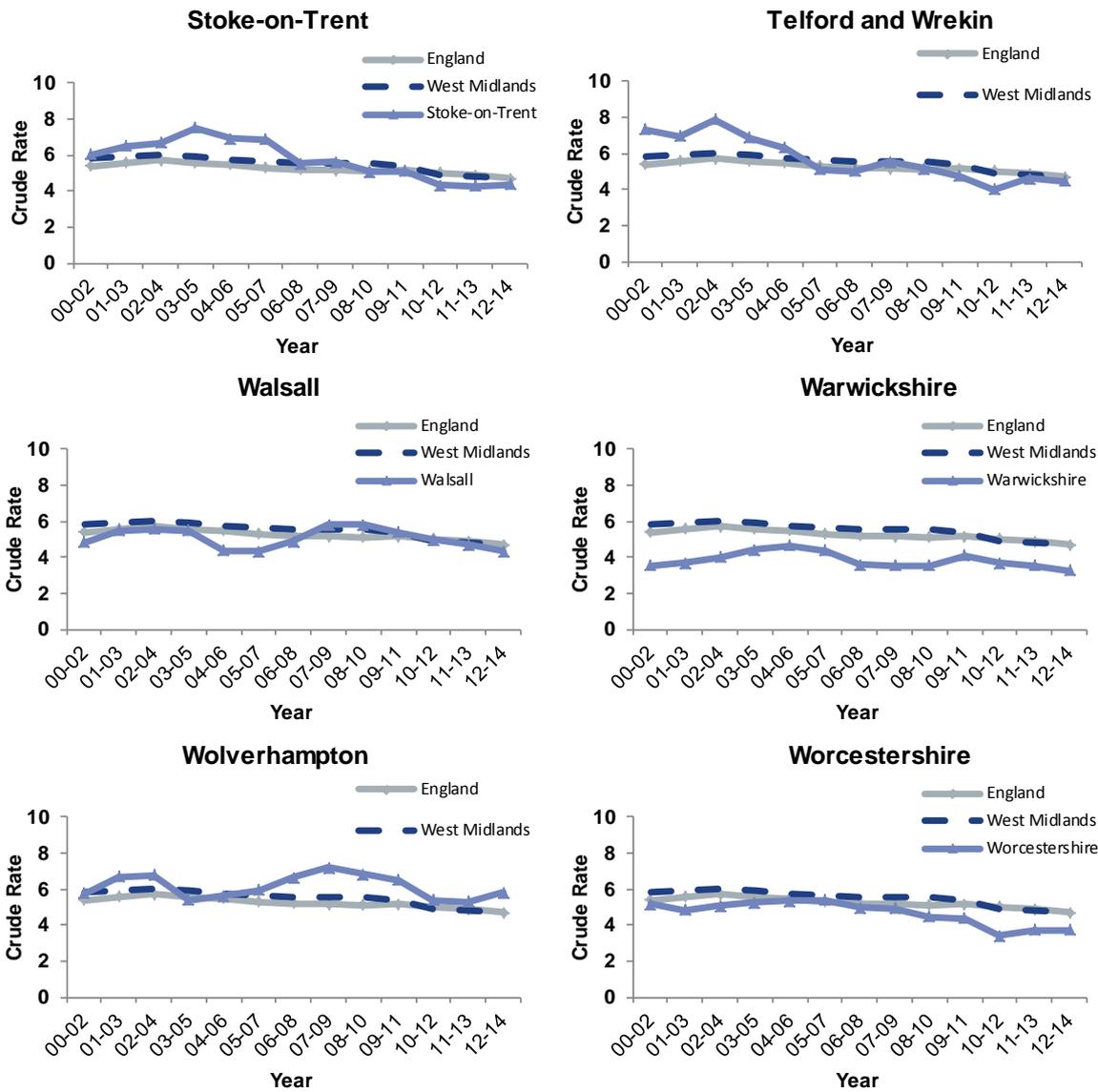
A7 xiv: Worcestershire



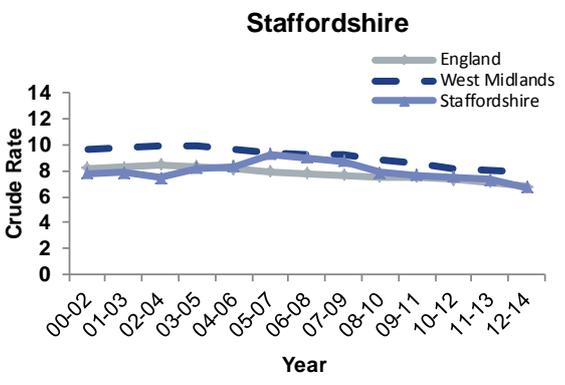
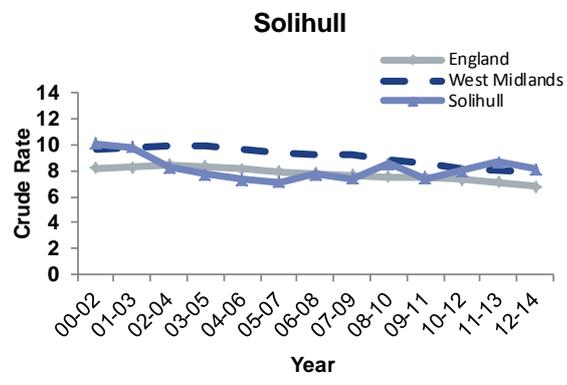
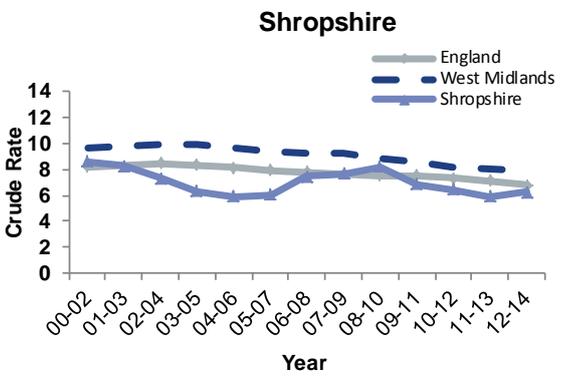
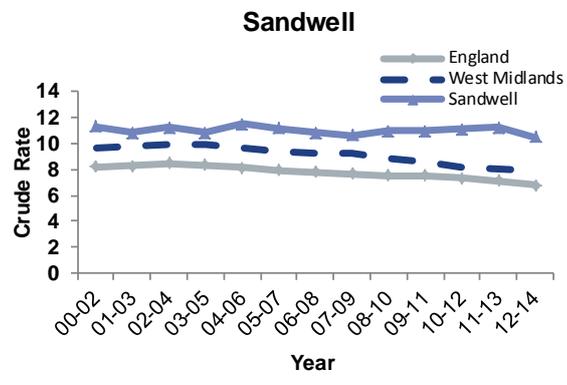
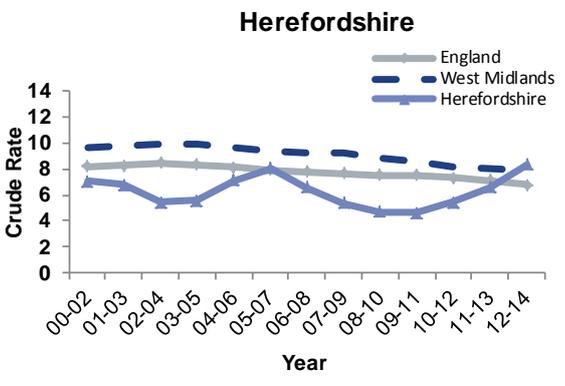
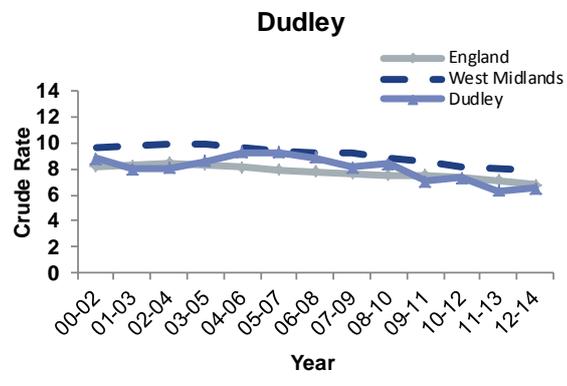
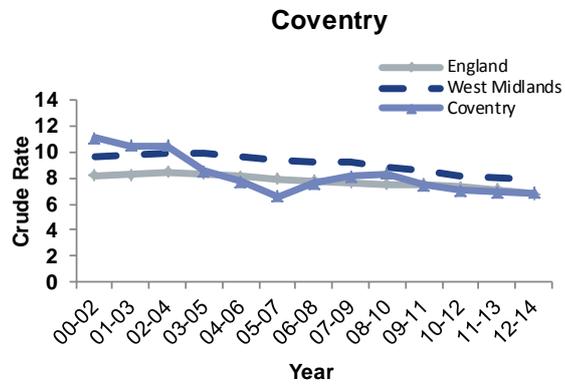
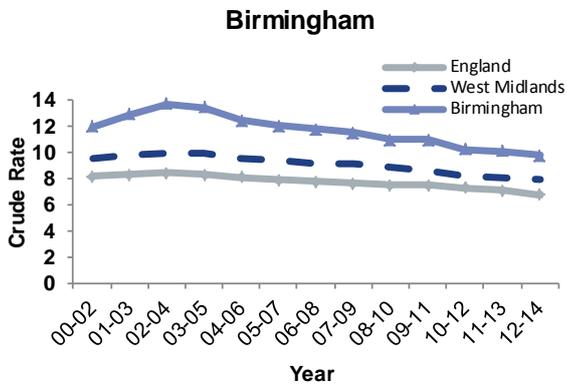
Appendix A8. Stillbirth rates three year rolling averages – West Midlands local authorities*



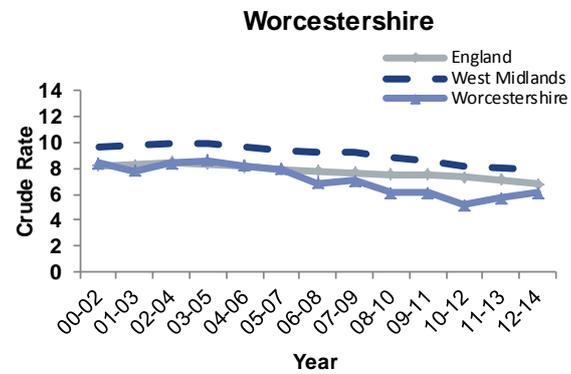
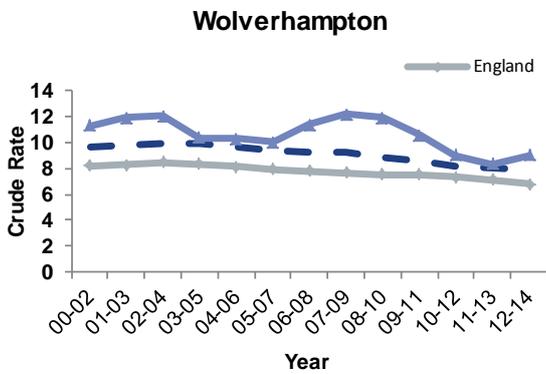
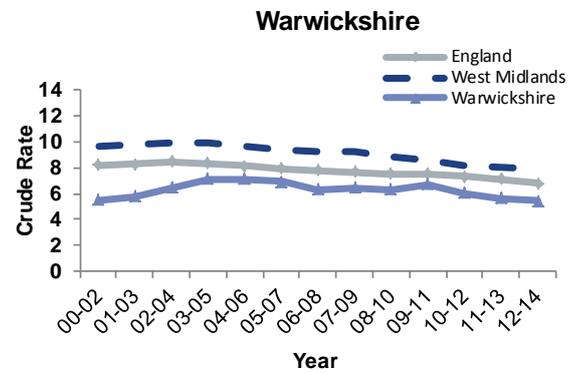
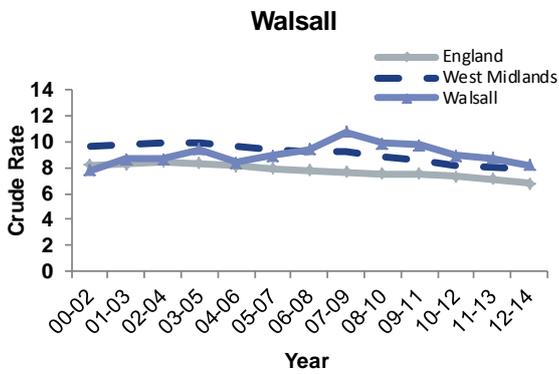
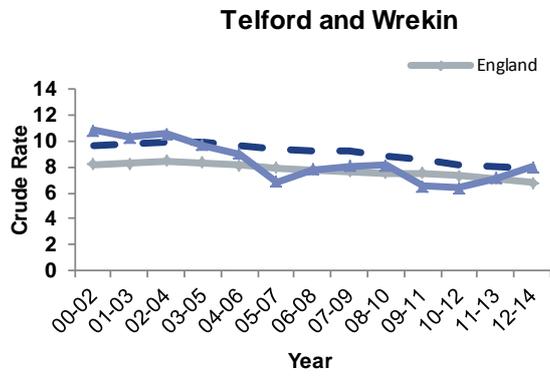
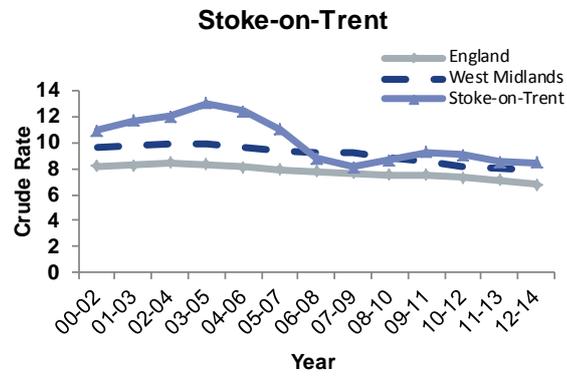
Appendix A8 (continued). Stillbirth rates three year rolling averages – West Midlands local authorities*



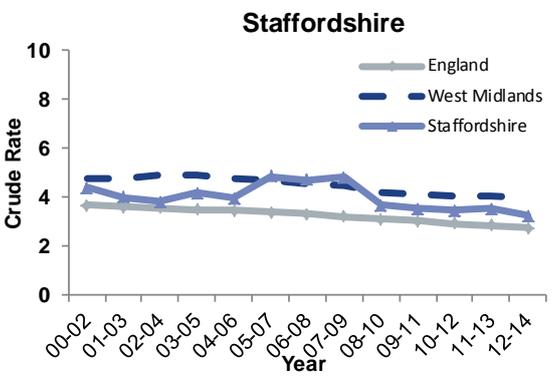
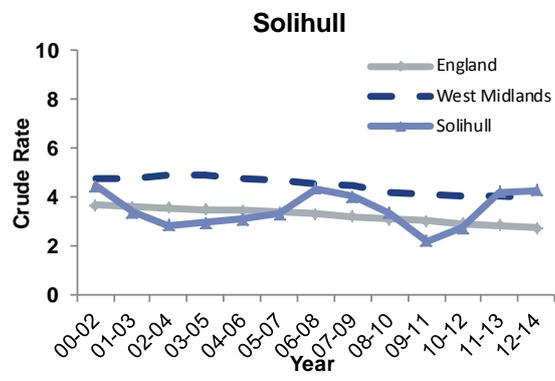
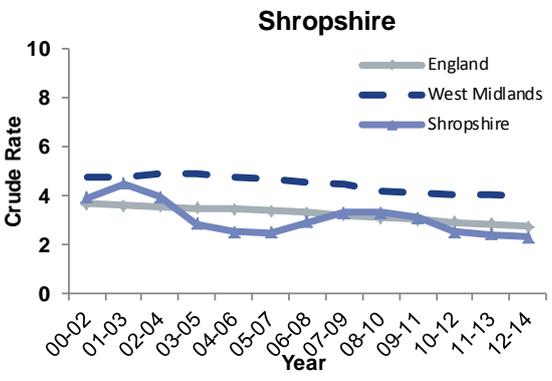
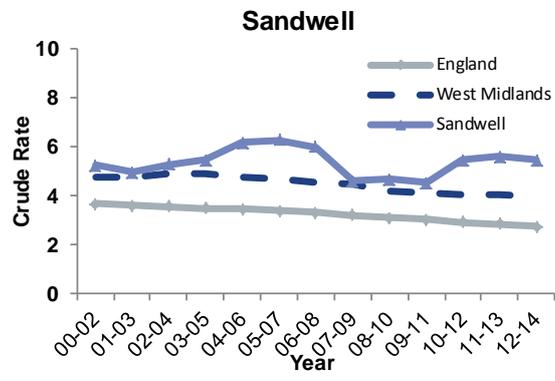
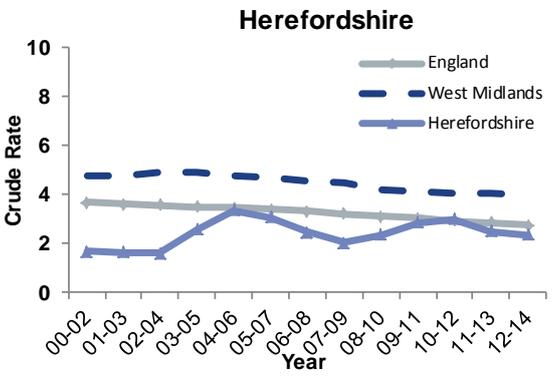
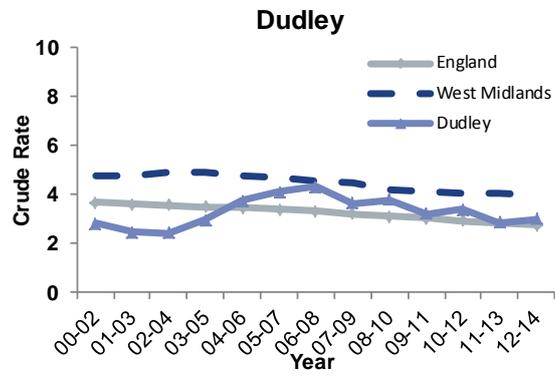
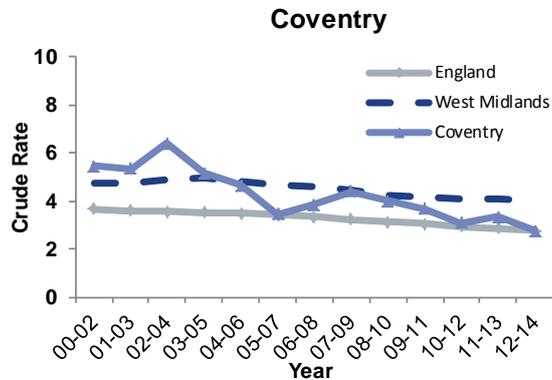
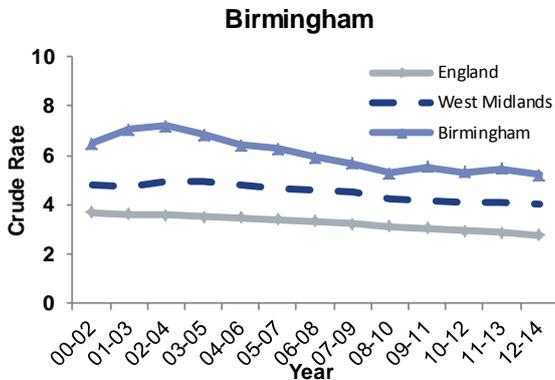
Appendix A9. Perinatal mortality rates three year rolling averages – West Midlands local authorities*



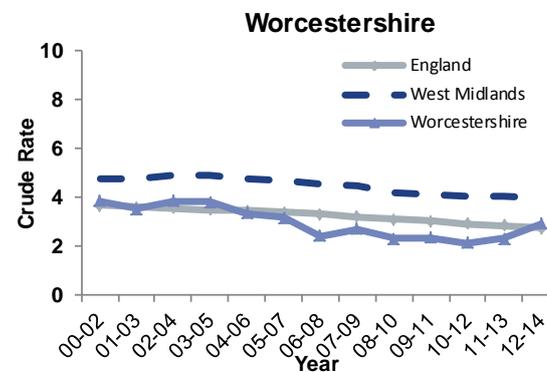
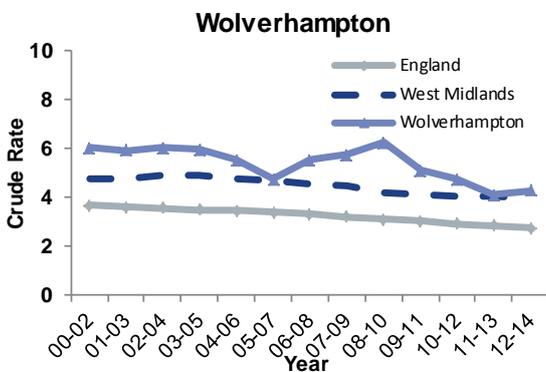
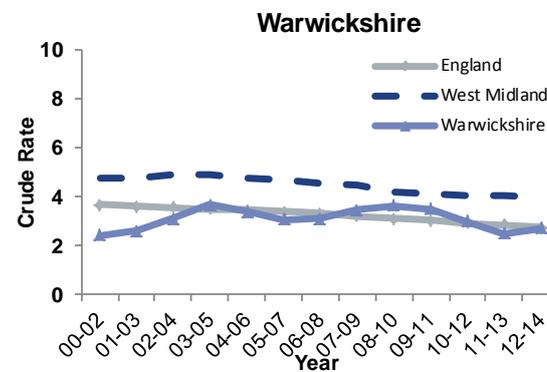
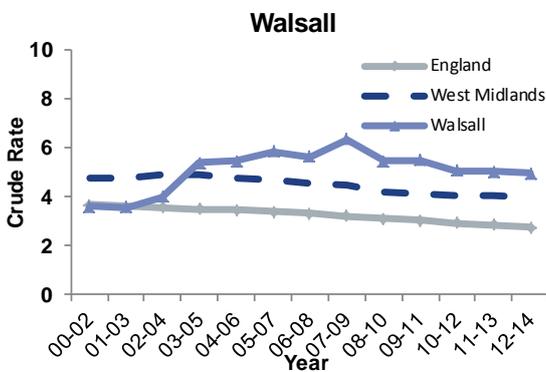
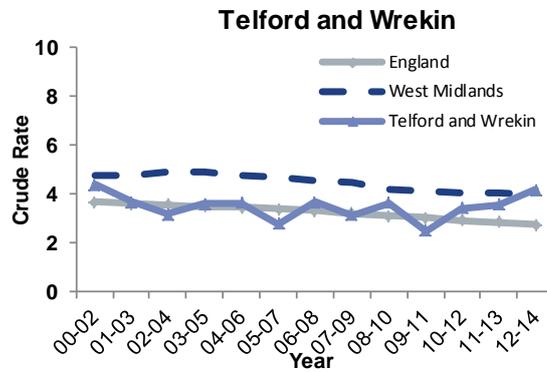
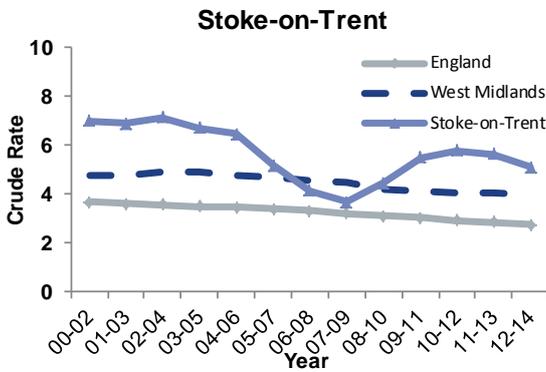
Appendix A9 (continued). Perinatal mortality rates three year rolling averages – West Midlands local authorities*



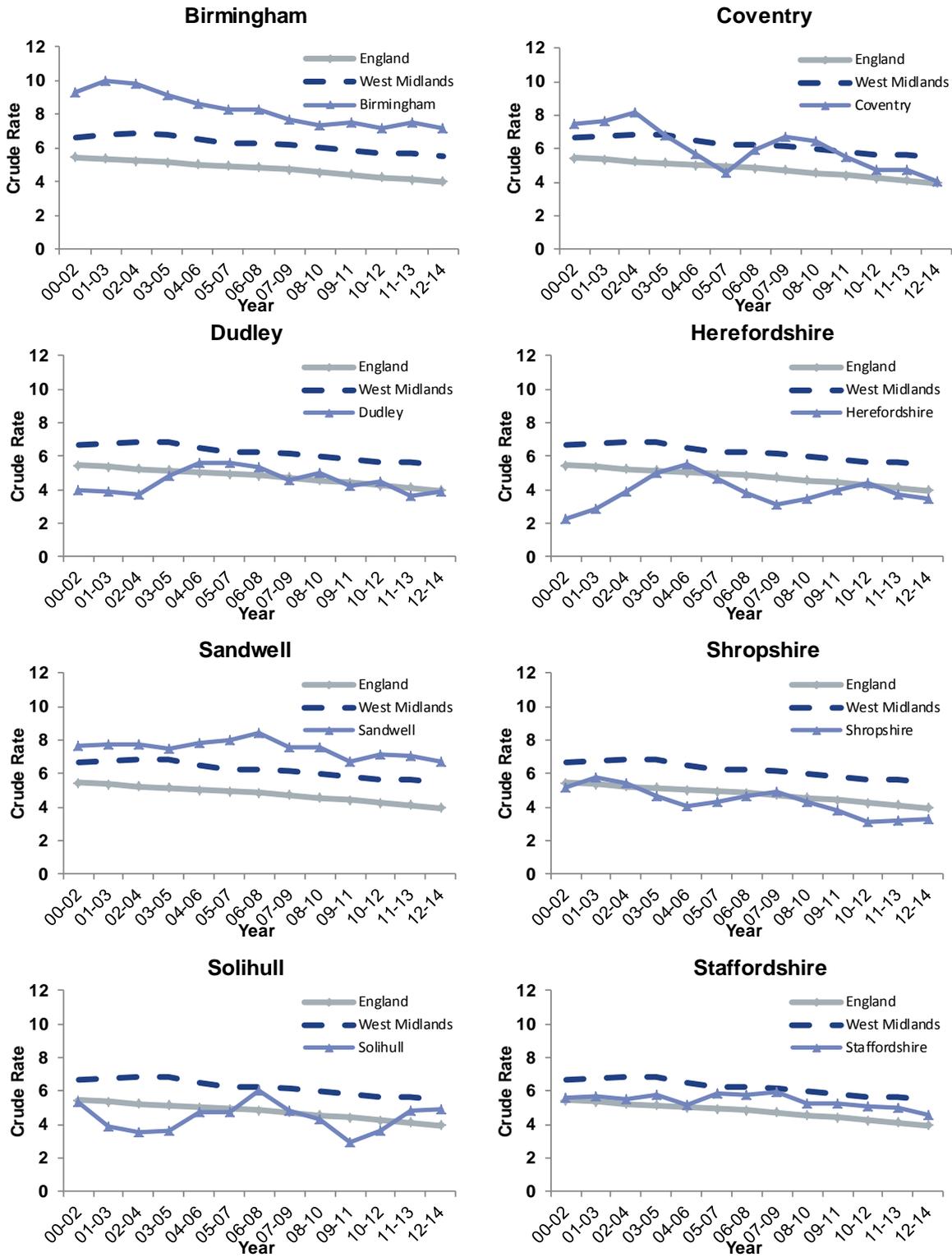
Appendix 10. Neonatal mortality rates three year rolling averages – West Midlands local authorities*



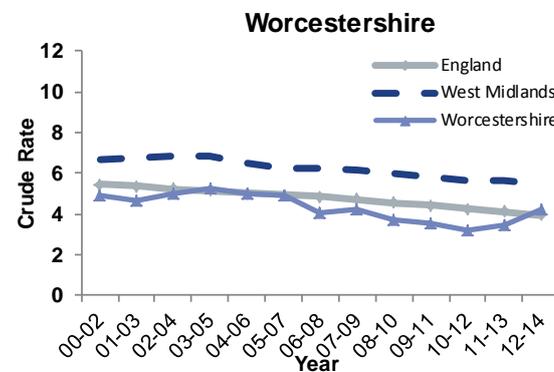
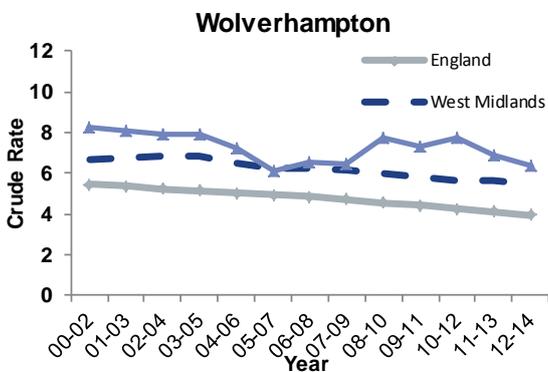
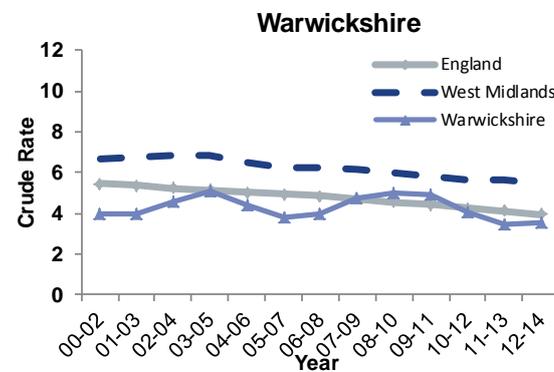
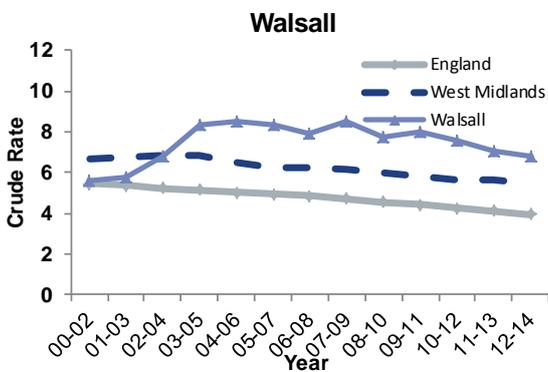
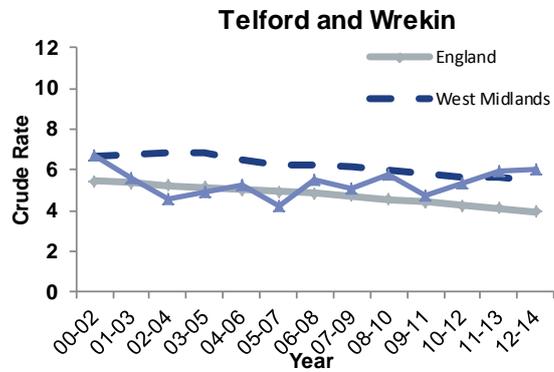
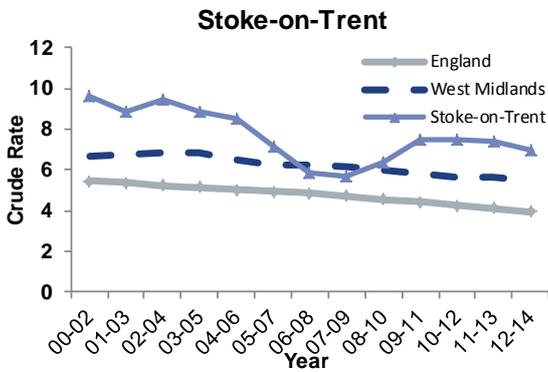
Appendix 10 (continued). Neonatal mortality rates three year rolling averages – West Midlands local authorities*



Appendix A11. Infant mortality rates three year rolling averages – West Midlands local authorities*



Appendix A11 (continued). Infant mortality rates three year rolling averages – West Midlands local authorities*



Appendix 12. Neonatal and post neonatal deaths by cause – local authorities in the West Midlands; 2012 to 2014

Local authority	Cause of deaths	Neonatal	Proportion of neonatal cause of death	Post neonatal	Proportion of post neonatal deaths
Birmingham	Antepartum Infections	1	0%	0	0%
	Congenital Anomalies	40	15%	42	41%
	External Conditions	1	0%	8	8%
	Immaturity Related Conditions	168	62%	8	8%
	Infections	10	4%	11	11%
	Intrapartum(Asphyxia,Anoxia or Trauma)	26	10%	0	0%
	Other Specific Conditions	7	3%	1	1%
	Others	19	7%	23	22%
Sudden Infant Deaths	0	0%	10	10%	
Birmingham Total		272	100%	103	100%
Coventry	Antepartum Infections	0	0%	1	6%
	Congenital Anomalies	8	21%	6	33%
	External Conditions	0	0%	1	6%
	Immaturity Related Conditions	21	55%	3	17%
	Infections	0	0%	0	0%
	Intrapartum(Asphyxia,Anoxia or Trauma)	5	13%	2	11%
	Other Specific Conditions	2	5%	0	0%
	Others	2	5%	4	22%
Sudden Infant Deaths	0	0%	1	6%	
Coventry Total		38	100%	18	100%
Dudley	Antepartum Infections	1	3%	0	0%
	Congenital Anomalies	8	23%	1	10%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	11	31%	2	20%
	Infections	2	6%	1	10%
	Intrapartum(Asphyxia,Anoxia or Trauma)	6	17%	0	0%
	Other Specific Conditions	1	3%	0	0%
	Others	5	14%	3	30%
Sudden Infant Deaths	1	3%	3	30%	
Dudley Total		35	100%	10	100%
Herefordshire	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	2	15%	1	17%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	9	69%	0	0%
	Infections	0	0%	3	50%
	Intrapartum(Asphyxia,Anoxia or Trauma)	1	8%	0	0%
	Other Specific Conditions	1	8%	0	0%
	Others	0	0%	1	17%
Sudden Infant Deaths	0	0%	1	17%	
Herefordshire Total		13	100%	6	100%
Sandwell	Antepartum Infections	1	1%	0	0%
	Congenital Anomalies	12	15%	1	6%
	External Conditions	0	0%	1	6%
	Immaturity Related Conditions	50	63%	4	22%
	Infections	3	4%	3	17%
	Intrapartum(Asphyxia,Anoxia or Trauma)	6	8%	0	0%
	Other Specific Conditions	2	3%	0	0%
	Others	6	8%	6	33%
Sudden Infant Deaths	0	0%	3	17%	
Sandwell Total		80	100%	18	100%

Appendix 12 (continued). Neonatal and post neonatal deaths by cause – local authorities in the West Midlands; 2012 to 2014

Local authority	Cause of deaths	Neonatal	Proportion of neonatal cause of death	Post neonatal	Proportion of post neonatal deaths
Shropshire	Antepartum Infections	0	0%	1	13%
	Congenital Anomalies	2	10%	3	38%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	10	50%	1	13%
	Infections	1	5%	1	13%
	Intrapartum (Asphyxia, Anoxia or Trauma)	4	20%	0	0%
	Other Specific Conditions	2	10%	0	0%
	Others	1	5%	0	0%
	Sudden Infant Deaths	0	0%	2	25%
Shropshire Total		20	100%	8	100%
Solihull	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	5	17%	1	25%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	18	62%	2	50%
	Infections	1	3%	0	0%
	Intrapartum (Asphyxia, Anoxia or Trauma)	2	7%	0	0%
	Other Specific Conditions	1	3%	0	0%
	Others	1	3%	0	0%
	Sudden Infant Deaths	1	3%	1	25%
Solihull Total		29	100%	4	100%
Staffordshire	Antepartum Infections	1	1%	0	0%
	Congenital Anomalies	12	14%	9	26%
	External Conditions	0	0%	2	6%
	Immaturity Related Conditions	45	52%	4	11%
	Infections	3	3%	3	9%
	Intrapartum (Asphyxia, Anoxia or Trauma)	12	14%	1	3%
	Other Specific Conditions	4	5%	1	3%
	Others	8	9%	14	40%
	Sudden Infant Deaths	1	1%	1	3%
Staffordshire Total		86	100%	35	100%
Stoke-on-Trent	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	8	14%	5	25%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	25	45%	3	15%
	Infections	2	4%	3	15%
	Intrapartum (Asphyxia, Anoxia or Trauma)	10	18%	0	0%
	Other Specific Conditions	2	4%	2	10%
	Others	8	14%	5	25%
	Sudden Infant Deaths	1	2%	2	10%
Stoke-on-Trent Total		56	100%	20	100%
Telford and Wrekin	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	5	19%	3	25%
	External Conditions	0	0%	1	8%
	Immaturity Related Conditions	13	48%	2	17%
	Infections	1	4%	0	0%
	Intrapartum (Asphyxia, Anoxia or Trauma)	4	15%	1	8%
	Other Specific Conditions	2	7%	0	0%
	Others	2	7%	2	17%
	Sudden Infant Deaths	0	0%	3	25%
Telford and Wrekin Total		27	100%	12	100%

Appendix A12 (continued). Neonatal and post neonatal deaths by cause – local authorities in the West Midlands; 2012 to 2014

Local authority	Cause of deaths	Neonatal	Proportion of neonatal cause of death	Post neonatal	Proportion of post neonatal deaths
Walsall	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	6	11%	11	52%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	38	68%	4	19%
	Infections	2	4%	1	5%
	Intrapartum(Asphyxia,Anoxia or Trauma)	6	11%	0	0%
	Other Specific Conditions	2	4%	0	0%
	Others	2	4%	2	10%
	Sudden Infant Deaths	0	0%	3	14%
Walsall Total		56	100%	21	100%
Warwickshire	Antepartum Infections	1	2%	0	0%
	Congenital Anomalies	7	14%	5	33%
	External Conditions	0	0%	0	0%
	Immaturity Related Conditions	27	54%	3	20%
	Infections	2	4%	2	13%
	Intrapartum(Asphyxia,Anoxia or Trauma)	7	14%	1	7%
	Other Specific Conditions	3	6%	0	0%
	Others	3	6%	2	13%
	Sudden Infant Deaths	0	0%	2	13%
Warwickshire Total		50	100%	15	100%
Wolverhampton	Antepartum Infections	0	0%	1	5%
	Congenital Anomalies	6	13%	7	32%
	External Conditions	0	0%	1	5%
	Immaturity Related Conditions	26	58%	0	0%
	Infections	2	4%	1	5%
	Intrapartum(Asphyxia,Anoxia or Trauma)	3	7%	0	0%
	Other Specific Conditions	3	7%	0	0%
	Others	5	11%	8	36%
	Sudden Infant Deaths	0	0%	4	18%
Wolverhampton Total		45	100%	22	100%
Worcestershire	Antepartum Infections	0	0%	0	0%
	Congenital Anomalies	10	19%	7	28%
	External Conditions	0	0%	2	8%
	Immaturity Related Conditions	29	54%	1	4%
	Infections	4	7%	4	16%
	Intrapartum(Asphyxia,Anoxia or Trauma)	5	9%	0	0%
	Other Specific Conditions	2	4%	0	0%
	Others	3	6%	5	20%
	Sudden Infant Deaths	1	2%	6	24%
Worcestershire Total		54	100%	25	100%
West Midlands	Antepartum Infections	5	1%	3	1%
	Congenital Anomalies	131	15%	102	32%
	External Conditions	1	0%	16	5%
	Immaturity Related Conditions	490	57%	37	12%
	Infections	33	4%	33	10%
	Intrapartum(Asphyxia,Anoxia or Trauma)	97	11%	5	2%
	Other Specific Conditions	34	4%	4	1%
	Others	65	8%	75	24%
	Sudden Infant Deaths	5	1%	42	13%
West Midlands Total		861	100%	317	100%