



**WIRRAL
INTELLIGENCE
SERVICE**

Infant Mortality in Wirral

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Service**

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Infant Mortality in Wirral

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Key Messages

- Infant mortality is a reliable indicator as to the health of the overall population (along with life expectancy)
- Causes and risk factors for infant mortality are complex, but are often associated with deprivation and other factors which can be preventable
- Wirral performs worse than England on several important risk factors for infant deaths including deprivation, maternal obesity, maternal smoking and breastfeeding, but performs better than England on other measures, such as early access to maternity care and the proportion of new mothers who receive a birth visit within 2 weeks
- The infant mortality rate in Wirral in 2018-20 was 3.5 per 1,000 live births; this was a lower rate than both England and the North West overall
- In terms of actual numbers, Wirral's rate of 3.5 for the period 2018-20 equates to a total of 33 infant deaths: 15 in 2018, 6 in 2019 and 12 in 2020
- Nationally, reductions in infant mortality have stalled for the last 6 time periods; the rate per 1,000 in England overall has been 3.9 since 2013-15
- ONS have stated this is due to, "a continued increase in babies born under 24 weeks [which] has continued to affect the overall neonatal and infant mortality rates"
- In Wirral, infant mortality continued to decrease in 2018-20 compared to the previous 2 time periods
- In 2020 (single year data only), Wirral had a lower stillbirth rate than the North West, England, Merseyside nearest statistical neighbour Sefton, but a higher infant mortality rate than all comparator areas (except for Merseyside overall)

Introduction

Infant mortality is widely considered to be an important Public Health measure because it acts as an indication for the health of the population.

This is because, similarly to [Life Expectancy](#), it reflects the impact of wider determinants such as economic, social and environmental conditions on the health of the population.

Deaths occurring during the first 28 days of life (the neonatal period) in particular, are considered to reflect the health and care of both mothers and new-borns [1].

No current national or local targets have been set for infant mortality, but it is a [Public Health Outcomes Framework indicator \(4.01\)](#), highlighting its importance as a measure of the health of the population.

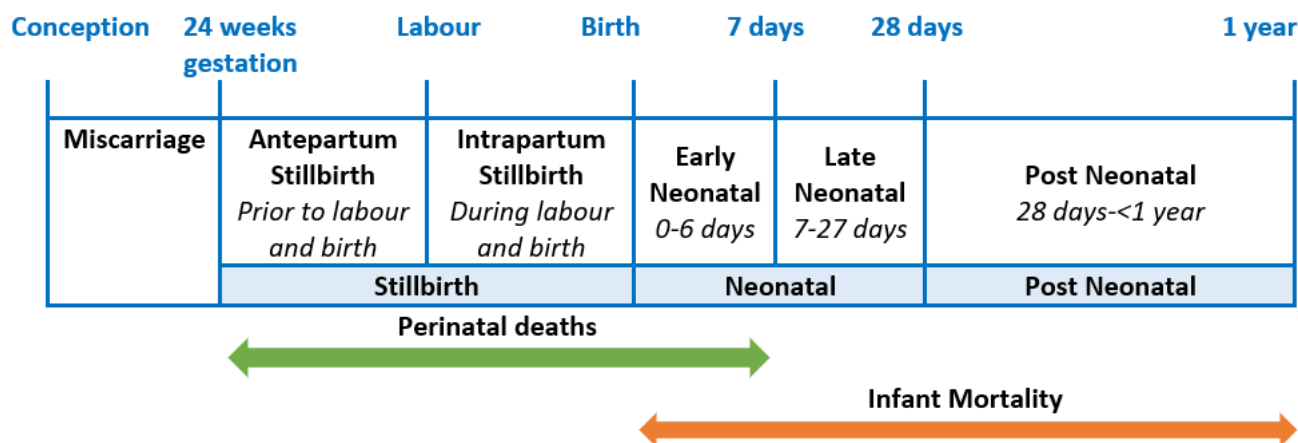
Definition of Infant Mortality

The infant mortality rate is the number of deaths in babies aged under 1 year, per 1,000 live births. It can also be split into two components:

1. The neonatal mortality rate: The number of neonatal deaths (those occurring during the first 28 days of life) per 1,000 live births
2. The post-neonatal mortality rate: The number of infants who die between 28 days and less than one year, per 1,000 live births

Figure 1 below shows the timeline by which infant deaths are defined and categorised in the UK.

Figure 1: Definitions and timeline for infant deaths



Note: The above definitions are for the UK only. Other countries vary on timescales.

Risk Factors

ONS (Office for National Statistics), PHE (Public Health England was dissolved in 2021 and some of its functions have now been taken over by OHID, or the Office for Health Improvement and Disparities) and the Royal College of Paediatrics and Child Health and the Marmot Review report the following as risk factors for infant mortality; many of these risk factors are complex, inter-related and/or show a socio-economic gradient, see **Table 1** [1,2,3,4,6]

Table 1: Risk factors for infant mortality

Risk factor	Association with infant mortality
<i>Parental/pre-birth</i>	
Ethnicity	Infants of Black, Asian and minority ethnic (BAME) parents show the highest rates of infant mortality.
Infection during pregnancy	Contracting infections such as influenza increase the risk of infant mortality.
Maternal age	Mothers under 20 and over 35 years old have the highest risk of infant mortality.
Maternal education	Higher level of maternal education is associated with lower levels of infant mortality.
Maternal obesity	Maternal obesity is associated with conditions that increase the risk of infant mortality such as gestational diabetes and pre-eclampsia.
Maternal smoking	Smoking during pregnancy exposes the foetus to harmful chemicals such as nicotine and carbon monoxide, reduces nutrient and oxygen availability and increases the risk of infant mortality.
Maternal substance misuse	Alcohol and illicit substances consumed during pregnancy increase the risk of infant mortality.
Maternity/health services	Booking in after 12 weeks gestation and/or non-attendance are risk factors of infant mortality.

Parental socioeconomic status	Infants born to parents in the most deprived areas are the most likely to experience infant death. Deprivation is also associated with many other risk factors for infant mortality.
Parents marital status	Births outside marriage increase the risk of infant mortality.
Previous stillbirth	If a previous stillbirth has been experienced the risk of infant mortality is increased.
Congenital anomalies	Congenital anomalies (particularly in preterm births) are associated with a higher rate of pregnancy complications, neonatal morbidity and perinatal mortality.
Infant/post-birth	
Birthweight	Low birthweight increases the risk of infant mortality.
Exclusive breastfeeding	Breastfeeding reduces the risk of infant mortality.
Infant immunisations	Lack of infant immunisations increases the risk of infant mortality.
Multiple births	Multiple births increase the risk of infant mortality and are associated with low birthweight and prematurity.
Prematurity	Prematurity increases the risk of infant mortality.
Gender of infant	Male gender of the infant is independently associated with an increased risk of infant mortality.

Sources: [1,2,3,4,6]

Table 2 below shows the comparison of infant mortality risk factors between Wirral, England, the North-West and Wirral's nearest statistical neighbour, Sefton. Wirral performs worse than England on several important risk factors for infant deaths including deprivation, maternal obesity, maternal smoking and breastfeeding.

The borough does, however, perform better than England on several other measures, such as early access to maternity care and the proportion of new mothers who receive a birth visit within 2 weeks.

On other measures, Wirral did not differ (significantly) from England, e.g. premature births, low birth weight and some immunisations. The RAG ratings in the table below are all in comparison to England and can be viewed here on the [OHID Child & Maternal Health Profile](#).

Table 2: Comparison of infant mortality risk factors in Wirral, England, North-West and Sefton¹

Risk factor	Period	Wirral	England	North West	Sefton
Deprivation score (IMD 2019)	2019	29.6	21.7	28.1	27.0
% Teenage mothers (aged <18 years) ²	2019/20	0.9%	0.7%	0.8%	0.6%
Obesity in early pregnancy ²	2018/19	26.4%	22.1%	23.6%	21.8%
Early access to maternity care ²	2018/19	61.4%	57.8%	56.8%	68.8%
% Deliveries to women aged 35+ ²	2019/20	21.1%	22.8%	20.1%	20.9%

% Deliveries to mothers from Black and Minority Ethnic (BAME) groups ²	2019/20	4.8%	20.5%	18.4%	4.2%
Premature births (less than 37 weeks gestation) (rate per 1,000)	2016-18	83.3	81.2	86.3	79.8
% New birth visits conducted within 14 days ²	2020/21	91.8%	88.0%	87.9%	92.6%
% Smoking at time of delivery ²	2020/21	12.1%	9.6%	11.0%	10.0%
% Low birthweight of <i>all</i> babies (<2,500g) ²	2018	6.9%	7.4%	7.6%	6.7%
% Low birthweight of <i>term</i> babies (<2,500g) ²	2020	2.4%	2.9%	2.7%	2.4%
Multiple births (rate per 1,000) ²	2018	14.0	15.4	14.0	15.8
% Breastfeeding initiation ²	2018/19	58.7%	67.4%	62.4%	56.4%
% Breastfeeding prevalence at 6-8 weeks after birth ²	2019/20	36.1%	48.0%	*	31.8%
% Coverage of Dtap/IPV/Hib ³ (1 year old) by age 1 year ¹	2020/21	94.2%	92.0%	94.7%	90.4%
% Coverage of PCV ⁴ by age 1 year ¹	2019/20	94.9%	93.2%	93.5%	91.7%

Sources & Notes:

* Not shown due to data quality issues

1: Colour coding using RAG ratings (Red = significantly worse than England; Amber = not significantly different to England; Green = significantly better than England). Where there is no RAG rating, its because these indicators are not suitable for classification into 'better' or 'worse'

2: Source is Office for Health Improvement & Disparities (formerly Public Health England) <https://fingertips.phe.org.uk/profile-group/child-health/profile/child-health-overview>

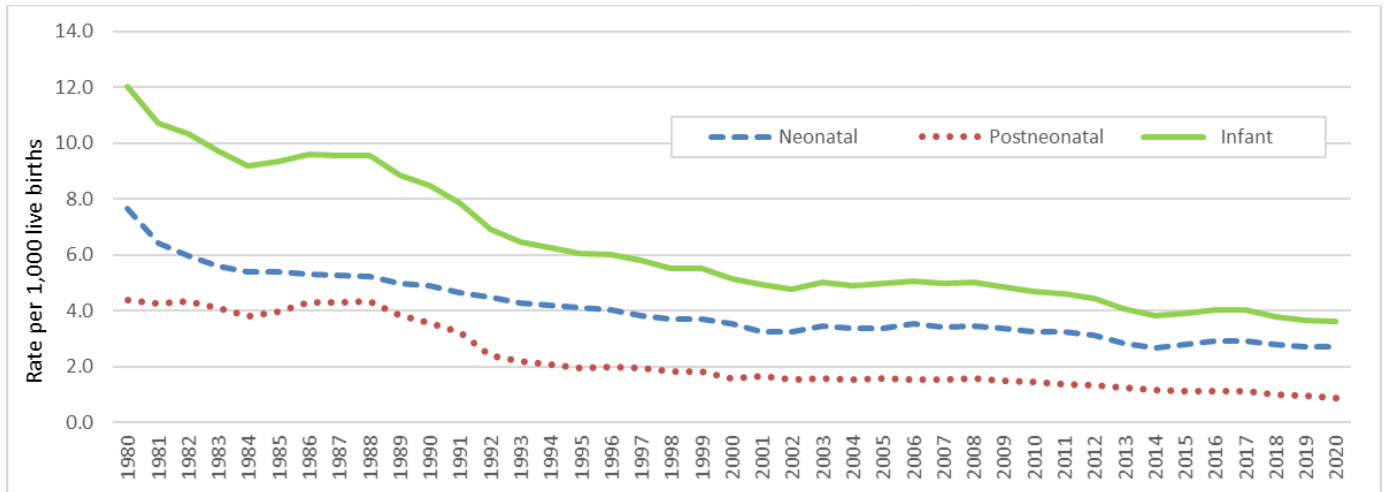
3: DTaP/IPV/Hib is the first in a course of vaccines offered to babies to protect them against diphtheria, pertussis (whooping cough), tetanus, Haemophilus influenzae type b (an important cause of childhood meningitis and pneumonia) and polio (IPV is inactivated polio vaccine)

4: PCV vaccine protects against pneumococcal infections that can cause pneumonia, septicaemia or meningitis

National picture

Nationally, there were 2,226 infant deaths (aged under 1 year) which occurred in England and Wales in 2020, the most recent year for which data is available. This was the lowest numbers of infant and child deaths since records began in 1980.

Figure 2: Neonatal, post-neonatal and infant mortality rates, England and Wales, 1980-2020



Source: [Office for National Statistics \(ONS\)](https://www.ons.gov.uk), 2022

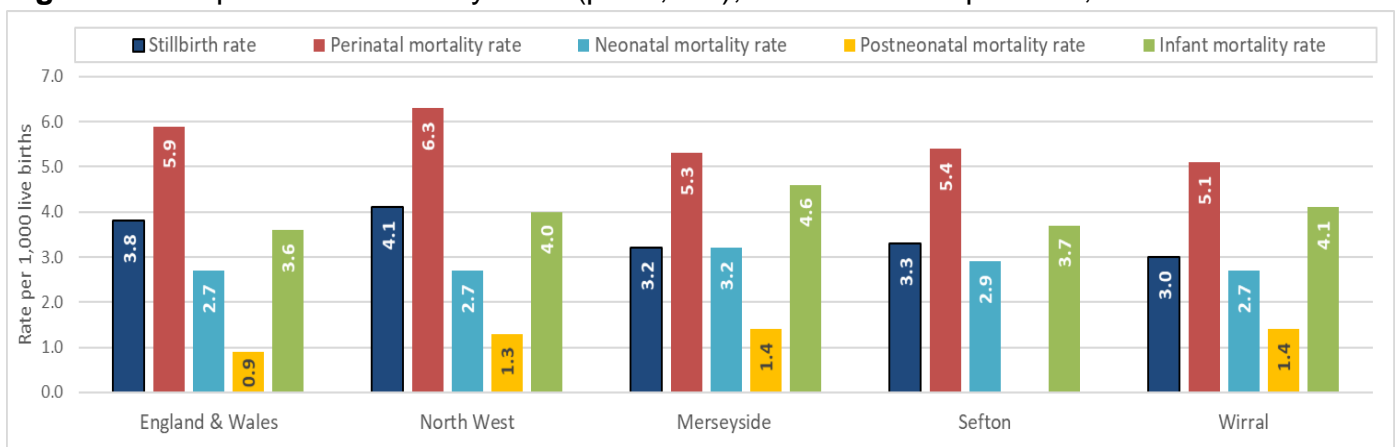
Figure 2 above shows the rate of infant mortality (along with the 2 components of the overall rate - neonatal and post-neonatal mortality) in England and Wales. Infant mortality has shown a decreasing trend over the last 40 years, although the rate of decrease appears to have plateaued somewhat in recent years overall. According to ONS, this is because:

“Infant mortality is affected by a combination of risk factors such as gestation length and mother’s age, which can have an impact on the health of mothers and their babies...this analysis shows that a continued increase in babies born under 24 weeks in 2019 has continued to affect the overall neonatal and infant mortality rates. Understanding how these factors affect trends in infant mortality is important for policymakers and health practitioners to target interventions and monitor”.

Current local picture

Although stillbirths do not contribute to the overall infant mortality rate, they are included in **Figure 3** below as they are also an important indicator of maternal health.

Figure 3: Comparison of mortality rates (per 1,000); Wirral and comparators, 2020



Source: [Child & Infant Mortality in 2020, ONS \(February 2022\)](https://www.ons.gov.uk)

Note: Although 2020 data has now been published by ONS (delayed following COVID-19), combined rates for 2018-20 for the component mortality types for infant mortality (e.g. perinatal, neonatal, post-neonatal) have not yet been published, so only single year of data for these elements is currently available. No available data for post-neonatal deaths in Sefton.

As **Figure 3** shows, during 2020, the infant mortality rate in Wirral was higher than England, the North West and nearest statistical neighbour Sefton but was lower than Merseyside overall. In terms of actual numbers, there were 9 stillbirths and 12 infant deaths in Wirral in 2020 (this compares to 6 infant deaths in 2019 and 15 in 2018 – these fluctuations are the reason it is useful to use 3-year rolling averages, particularly when looking at overall trends – see **Figure 4**).

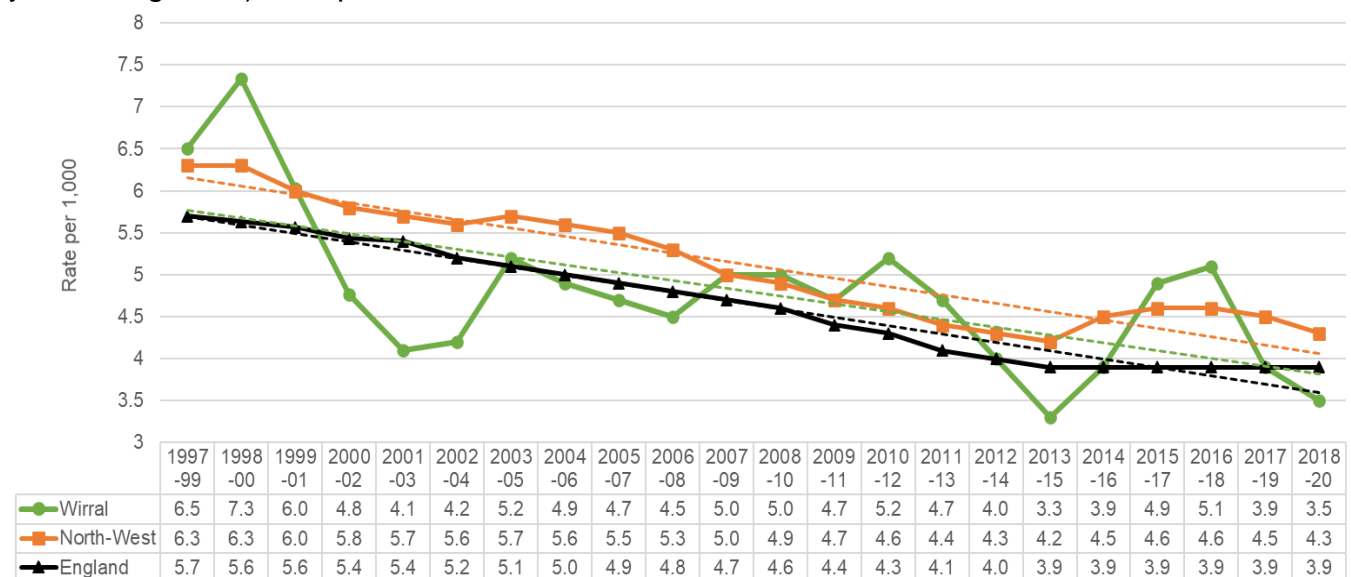
Trend

Figure 4 shows that infant mortality rates have, in general, been declining nationally, regionally and locally for a long period of time. National rates have shown a steady decrease from 5.7 deaths per 1,000 live births in 1997-99 to 3.9 per 1,000 live births in 2018-20.

Wirral rates have shown more fluctuation due to small numbers (even when using 3-year pooled averages as shown here to attempt to smooth out random year on year fluctuations), peaking in 1998-00 with 7.3 deaths per 1,000 live births, but then sharply decreasing to 3.3 in 2013-15.

In 2018-20, Wirral had the 2nd lowest the rate since records began and was below both England and the North West overall. It is interesting to note that reductions in infant mortality have stalled in England for the past 6 time periods; the rate per 1,000 has been 3.9 since 2013-15.

Figure 4: Trend in infant mortality rate; Wirral, North West and England; 1997-99 to 2018-20 (3 year rolling rates), rate per 1,000 live births



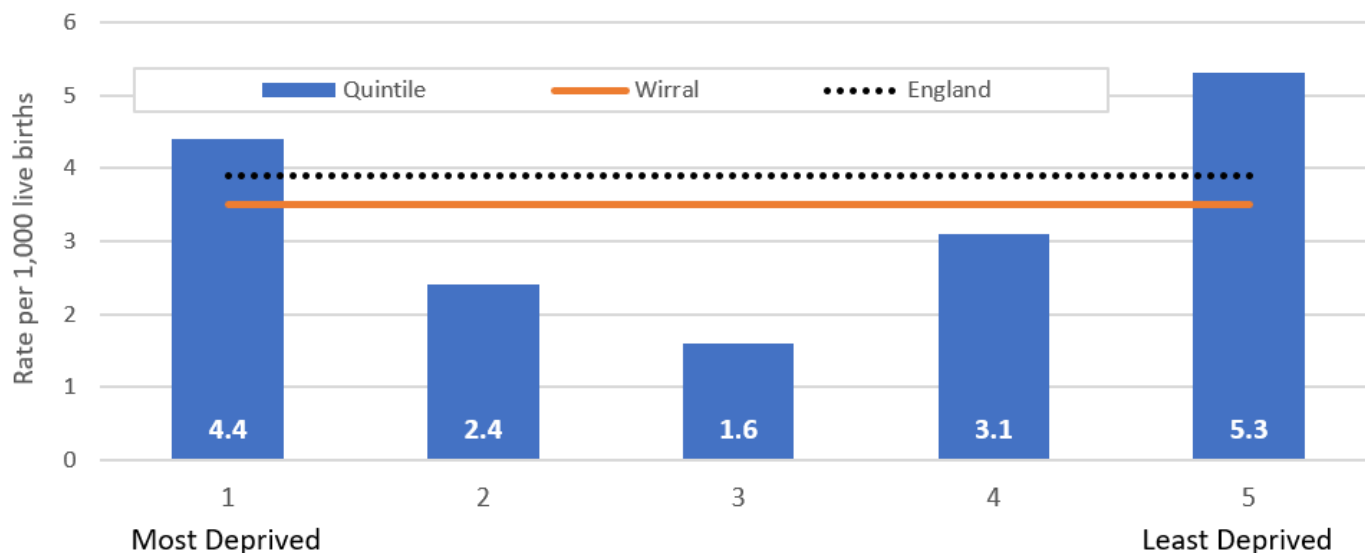
Source: [Child and Maternal Health Fingertips Profile](#)

In terms of actual numbers, Wirral's rate of 3.5 (per 1,000 live births) for the period 2018-20 equates to a total of 33 infant deaths; 15 in 2018, 6 in 2019 and 12 in 2020.

Deprivation

At a national level, deprivation is associated with infant mortality (higher deprivation areas showing higher rates of infant deaths). **Figure 5** below shows the rate of infant mortality in Wirral by deprivation quintile.

Figure 5: Infant mortality in Wirral, by deprivation quintile, 2018-20

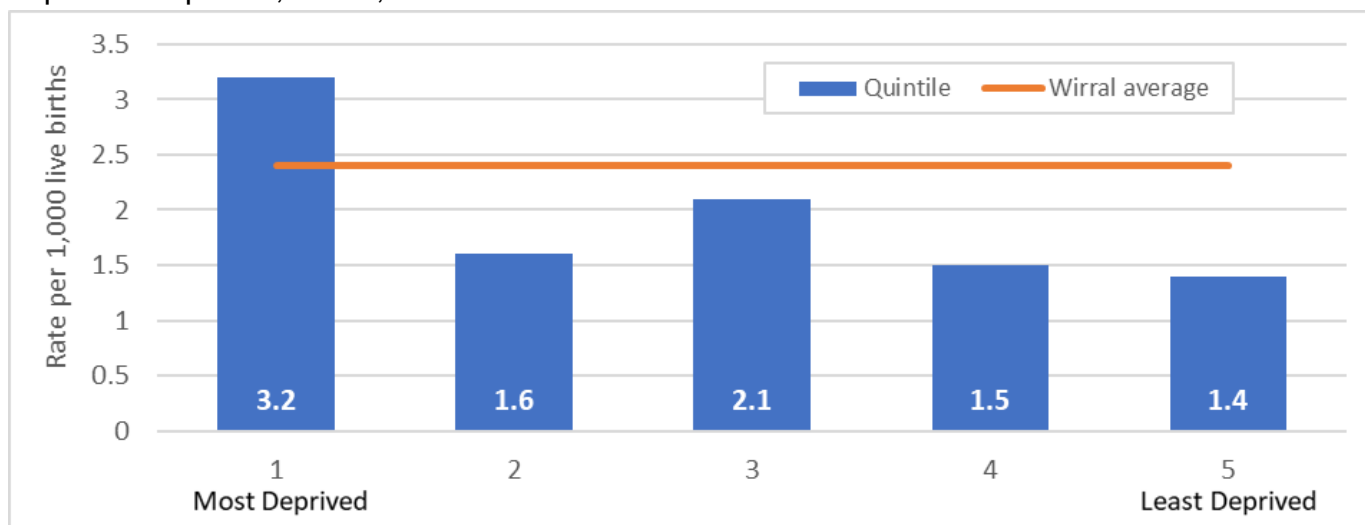


Source: PCMD (Primary Care Mortality Dataset – restricted dataset), ONS

Figure 5 shows that the rate of infant mortality in Wirral differs from the national picture, as the quintile with the highest rate of infant mortality is Quintile 5, the least deprived quintile. Reasons for this are likely to be related to this quintile experienced the smallest number of births of any quintile in Wirral, combined with the overall low number of infant deaths (n=33 for all areas of Wirral for the 3 pooled years of 2018-20). Quintile 1 contained the largest number of these infant deaths (n=19), while three of the other four quintiles had less than 5 deaths. These small numbers can sometimes result in large fluctuations. It is also possible that maternal age is a factor, i.e. according to ONS, less deprived areas tend to have a higher proportion of older mothers which ONS believe may be a significant factor in the recent plateauing of infant mortality rates in England overall.

Both deprivation and low birth weight (term births with a stated birth weight of less than 2,500 grams/5lb 8oz) are some of the most important risk factors for infant mortality. See **Figure 6** below which shows the proportion of term births in which the infant was of low birth weight.

Figure 6: Percentage of low-birth-weight babies (as a percentage of all term births) by deprivation quintile, Wirral, 2018-20



Source: PCMD (Primary Care Mortality Dataset – restricted dataset), ONS

Notes: 1 = most deprived quintile, 5 = least deprived quintile. Term classed as those pregnancies of at least 37 weeks gestation

As **Figure 6** shows – around 1 in 30 babies born in the most deprived areas of Wirral are of a low birth weight, compared to around 1 in 70 in the least deprived quintile. Overall, 2.4% of term babies born in Wirral were of a low birth weight in 2018-20 (or 1 in 42 babies). In numbers, there were 205 babies born in Wirral during in 2018-20 who were of low birth weight; over half of these were in the most deprived quintile of the Wirral population (126 in Quintile 1).

Public Health Interventions

In 2015, NHS England commissioned a [National Maternity Review](#) [5] report to further drive these improvements and meet the changing needs of women and babies. Seven key priorities were highlighted:

1. Personalised care
2. Continuity of carer
3. Better postnatal and perinatal mental health care
4. A payment system to fairly compensate providers for delivering different types of care
5. Safer care
6. Multi-professional working
7. Working across boundaries

A number of national and local public health interventions are provided in Wirral to reduce the health inequalities in infant mortality and improve infant and maternal outcomes, summarised in **Table 3**.

Table 3: National and local interventions to target infant mortality

Intervention	Description
<i>National</i>	
Infant Mortality National Support Team	Established in 2008 to help disadvantaged local areas address inequalities in infant mortality and improve infant and maternal health outcomes.
National Childbirth Trust	A UK-based charity offering information and support during pregnancy, childbirth and early parenthood.
The Lullaby Trust	The Lullaby Trust raises awareness of sudden infant death syndrome (SIDS), provides expert advice on safer sleep for babies and offers emotional support for bereaved families.
<i>Local</i>	
Koala NW	Provides a range of services and support to children and their families in the first critical 1,001 days, e.g. Antenatal and Postnatal Breastfeeding Peer Support and Parent & Infant Mental Health Service. Tailored to need using a responsive and user-led approach.
Infant Feeding Team	Provides information, support and training to healthcare professionals to ensure a high standard of care for pregnant women and breastfeeding mothers and babies.
0-19 Health and Wellbeing Service	Offers services starting in the antenatal period including support from the Health Visiting and Family Nurse Partnership (FNP) team, regular health reviews and infant feeding support. Safe sleep guidance is shared with all families when visited for targeted antenatal and universal birth visits.

	Care of Next Infant (CONI) for parents who have experienced an infant death a CONI support plan is offered which provides access to weekly contacts, regular weight monitoring and specific resources through the Lullaby Trust with a focus on reducing anxiety and tailored support for up to 6 months postnatally.
Parentcraft (Antenatal) Sessions	Practical guidance and advice for the first few months of parenthood. Takes place in the community, often in local Children's Centres.
Early Childhood Services	Brings together a range of services for families and children from pre-birth to five. The services give families access to universal and targeted help at the earliest opportunity from accessing universal groups to targeted family support. They empower families to access community services.

Source: Wirral Strategic Maternity Group, 2022

In November 2017 there was an [announcement](#) from the government that from April 2018 every stillbirth, early neonatal death and severe brain injury cases will be referred to the Healthcare Safety Investigation Branch, a new NHS safety investigator led by safety experts.

It was hoped they would help drive the goal of halving the overall rate of stillbirths, deaths and brain injuries by 2025. It is unknown when a progress report regarding this announcement will be published but it is expected to be released [here](#).

References

- 1) Public Health England, Child and Maternal Health Fingertips Profile <https://fingertips.phe.org.uk/profile/child-health-profiles>
- 2) Tackling Health Inequalities in Infant and Maternal Health Outcomes Report, Department of Health (2010) <https://www.gov.uk/government/publications/tackling-health-inequalities-in-infant-and-maternal-health-outcomes-report-of-the-infant-mortality-national-support-team>
- 3) The Marmot Review (2010). Fair Society, Healthy Lives: The Marmot Review <http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review>
- 4) Maternal and Fetal Risk Factors for Stillbirth: Population Based Study (2013) <https://www.bmj.com/content/346/bmj.f108>
- 5) National Maternity Review: Better Births – Improving outcomes of maternity services in England, NHS England (2016) <https://www.england.nhs.uk/wp-content/uploads/2016/02/national-maternity-review-report.pdf>
- 6) [Child and infant mortality in England and Wales - Office for National Statistics \(ons.gov.uk\), 2020](#)

Further Reading/Links

- Wirral JSNA: <https://www.wirralintelligenceservice.org/>

- Saving Babies' Lives: A care bundle for reducing stillbirth: <https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf>

Glossary of terms

Antepartum infections: An infection that occurs just before birth

Congenital anomalies: Structural or functional anomalies caused by single gene defects, chromosomal disorders, multifactorial inheritance, environment teratogens and/or micronutrient deficiencies

Early neonatal mortality rate: number of deaths occurring under 7 days per 1,000 live births

Infant mortality rate: number of deaths of infants (aged under one year) per 1,000 live births

Late neonatal mortality rate: number of deaths between 7 and 27 days per 1,000 live births

Neonatal mortality rate: number of deaths occurring under 28 days per 1,000 live births

Perinatal mortality rate: number of stillbirths and early neonatal deaths per 1,000 live and stillbirths

Post-neonatal mortality rate: number of deaths in infants aged between 28 days and under one year, per 1,000 live births

Statistical Neighbours: Other local authorities deemed to have similar characteristics to Wirral (used for benchmarking); Wirral tend to use Sefton as it is also the closest geographically to Wirral

Stillbirth: Babies born after 24 weeks of completed gestation who did not breathe or show signs of life

Contact Us

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