

# Deaths from suicide and undetermined injury in Derby and Derbyshire

[Deaths registered in 2016]

This short report provides information on deaths registered in 2016 from suicide and undetermined injury in people living in Derby and Derbyshire



# Deaths from suicide and undetermined injury in Derby and Derbyshire

2017 Report

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| Author          | Richard Flint<br>Research Analyst, Public Health Intelligence<br><br>Helen Johnston<br>Specialty Registrar in Public Health<br><br>Public Health<br>Derbyshire County Council<br>County Hall<br>Matlock<br>Derbyshire<br>DE4 3AG<br><br>☎ Tel: (01629) 536182<br>✉ Email: <a href="mailto:richard.flint@derbyshire.gov.uk">richard.flint@derbyshire.gov.uk</a> |

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# 1 INTRODUCTION

The aim of this report is to present the information from descriptive analysis of the most recent data on deaths from suicide and undetermined injury in Derby and Derbyshire. It is intended to describe the patterns for the deaths registered in 2016, including benchmarking against national trends, and to inform further analysis for the Derby and Derbyshire Suicide Prevention Partnership Forum. Previous reports are available on the Derbyshire Observatory.<sup>1</sup>

The report focusses on data for residents of Derby and Derbyshire. Derby City is an urban area, with a Unitary Authority. The population of 256,233 (ONS 2016 population estimate) in Derby is characterised by significant levels of socioeconomic deprivation and poorer health outcomes compared with East Midlands and England (Public Health Outcomes Framework). Derbyshire County extends over a large rural area, with a population of 785,765 (ONS 2016 population estimate) residents in the market towns, villages, and more rurally. Many of the indicators of health for Derbyshire are similar to the East Midlands and England averages, although there is notable variation between the districts, and areas such as Bolsover and Chesterfield have higher levels of socioeconomic deprivation. Further descriptions of the populations and health needs for Derby and Derbyshire are available in the JSNAs and Health Profiles.<sup>2</sup>

## 2 METHODOLOGY

This report describes the data for Derby and Derbyshire residents pertaining to deaths from suicide or undetermined injury which were registered in 2016. The data within this report are sourced from the Primary Care Mortality Database.

The data analysis for this report follows the methodology of previous reports, and aligns with the methodology used by the Office of National Statistics. The Primary Care Mortality Database data is populated from death certificates. In cases of suicide and undetermined injury there is often a delay between the date of death and date of registration due to the length and timing of Coroners' Inquest; this report is specifically for deaths registered in 2016. The categorisation of a 'Death from Suicide and Undetermined Injury' is where the primary cause of death is due to one of the following codes from ICD10 X60-84 (age 10+ only), Y10-Y34 (age 15+ only). Of note, only deaths of undetermined intent in adults age 15 years and over are included. Age standardised rates have been calculated using 10+ years as the denominator, and are presented per 100,000 population.

It is generally acknowledged that official records may underestimate the exact numbers and rates of suicides; coroners must establish the case 'beyond reasonable doubt' to ascribe a verdict of suicide, and ascertaining intention to die is not possible in many cases. Deaths from undetermined injury are included in this dataset where intent in the circumstances of the death was unclear. Furthermore, coroners may return narrative verdicts, and it is noted that where these are 'hard-to-code', the death may be registered as an accidental death and not included in the count of deaths from suicide and undetermined injury.

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<sup>1</sup> See: <https://observatory.derbyshire.gov.uk/IAS/Custom/Pages/health/lifestyle/MentalHealth.aspx>

<sup>2</sup> For Derby City, see <https://info4derby.derby.gov.uk/>; for Derbyshire, see <https://observatory.derbyshire.gov.uk/IAS/>

## 3 DATA

### 3.1 Numbers of deaths from suicide and undetermined injury

The number of deaths by suicide and undetermined injury registered in 2016 totalled 18 for Derby City and 55 for Derbyshire County. Table 1 shows the number of deaths for both areas by the underlying cause of death. For deaths registered in 2016, 11% were deaths from undetermined injury, where the intent in the circumstances of the death was unclear.

**Table 1: Numbers of deaths registered in 2016**

| Area       | Number of deaths from suicide | Number of deaths from undetermined injury | Total number of deaths from suicide and undetermined injury |
|------------|-------------------------------|---|---|
| Derby City | 16                            | 2   | 18  |
| Derbyshire | 49                            | 6   | 55  |
| Total      | 65 (89%)                      | 8 (11%)                                   | 73 (100%)   |

Source: Primary Care Mortality Database

The number of deaths by suicide and undetermined injury is monitored annually. Table 2 shows how the total numbers of deaths registered in 2016 for Derbyshire and Derby City compares with previous years. The number of deaths registered in 2016 was slightly lower than the preceding two years for both Derbyshire and Derby.

**Table 2: Numbers of deaths from suicide and undetermined injury by year of registration**

| Area       | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------|------|------|------|------|------|------|
| Derby City | 21   | 20   | 20   | 25   | 19   | 18   |
| Derbyshire | 50   | 56   | 46   | 86   | 83   | 55   |
| Total      | 71   | 76   | 66   | 111  | 102  | 73   |

Source: Primary Care Mortality Database

The number of deaths by suicide and undetermined injury is reported by the year in which the death was registered. Table 3 presents the data comparing the year the death occurred with the year that the death was registered. The majority (94.5%) of deaths registered in 2016 were for deaths that occurred in 2015 and 2016.

**Table 3: Comparison between the year that the death was registered, with the year that death occurred, for deaths from suicide and undetermined injury**

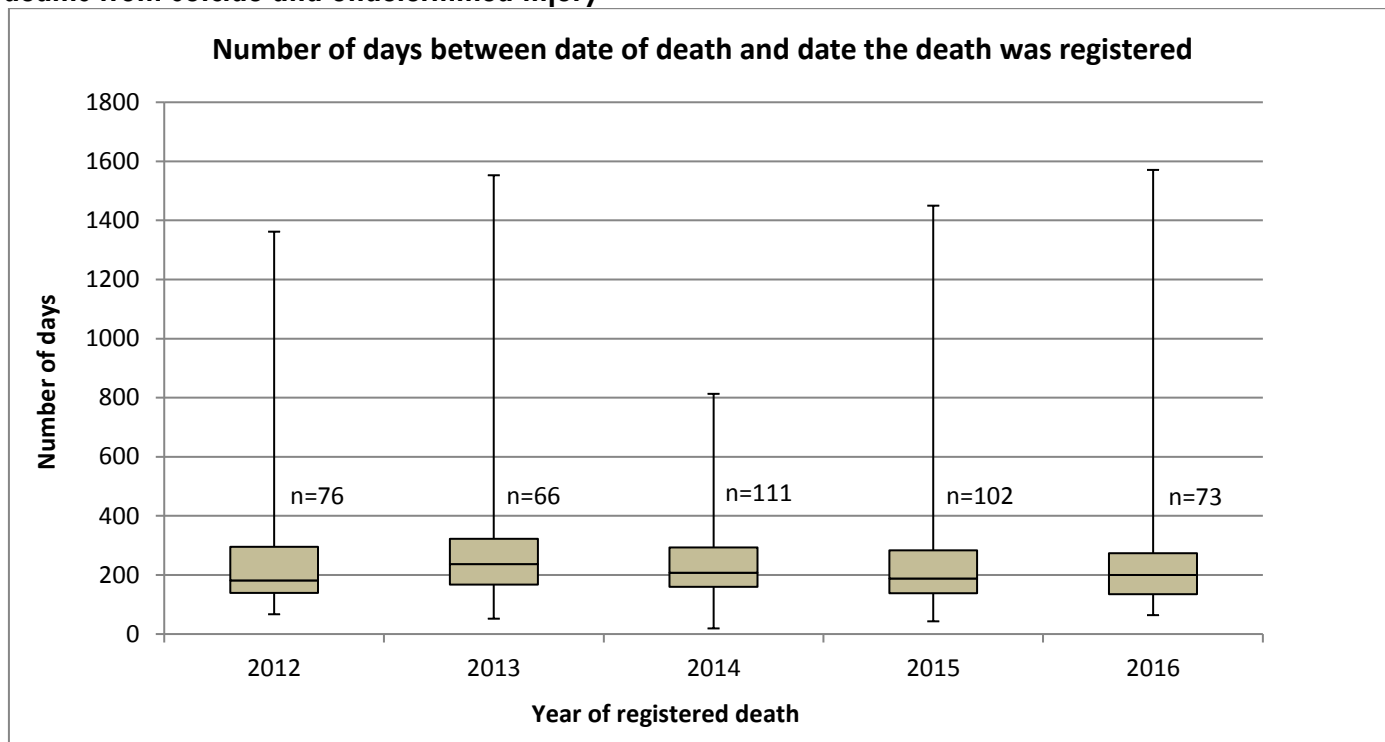
| Year Death Registered | Total number of deaths | Percentage of Deaths by the Year Death Occurred |      |      |      |      |      |      |       |
|-----------------------|------------------------|---|------|------|------|------|------|------|-------|
|                       |                        | 2010  | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | Total |
| 2013                  | 66                     | 3%  | 5%   | 52%  | 41%  | -    | -    | -    | 100%  |
| 2014                  | 111                    | -   | 0%   | 5%   | 57%  | 38%  | -    | -    | 100%  |
| 2015                  | 102                    | -   | 1%   | -    | 5%   | 52%  | 42%  | -    | 100%  |
| 2016                  | 73                     | -   | 1%   | -    | 1%   | 3%   | 48%  | 47%  | 100%  |

Source: Primary Care Mortality Database

For deaths by suicide and undetermined injury registered in 2016, the median time difference between date of death and date of registration was 200 days, with a range from 64 days to 1571 days (Figure 1). This is

similar to the median number of days in previous years, and there have been no significant changes in the time lag between date of death and date of death registration observed in this time period.

**Figure 1: Time interval in number of days between the date of death and date of death registration for deaths from suicide and undetermined injury**



Horizontal line shows median time, box shows interquartile range, vertical lines show range.  
Source: Primary Care Mortality Database

### 3.2 Rates of deaths from suicide and undetermined injury

The age-standardised rates of deaths from suicide and undetermined injury are presented in Table 4, and displayed in Figure 2. These age-standardised rates allow comparison over time and between areas. The rates are presented as three-year rolling averages to allow for the yearly fluctuations associated with the relatively small numbers of deaths compared to the population size. The error bars in Figure 2 show the 95% confidence intervals around each data point. As these are small numbers, particularly for Derby City, even with pooled year data there is an inherent and important level of uncertainty, such that caution should be taken in interpreting trends.

Overall, there is no statistical difference in the rates between Derby City and Derbyshire.

In Derbyshire County, deaths registered in 2014-16 at 10.7 per 100,000 were the highest rates observed since 2001-03. This rate for 2014-16 was significantly higher than the three year pooled average from 2010-12 through to 2011-13, but was not higher than the most recent years (2013-15, 2014-16). The larger number of deaths registered in 2014 and in 2015 (see Table 2) will have contributed to the increased rates calculated for 2013-15 and for 2014-16. The long term trends (Figure 2) show that historically Derbyshire County had lower rates of deaths from suicide and undetermined injury than the national rate, but since 2012-14, the rates in Derbyshire are statistically similar to the rates for England.

In Derby city the rate for deaths registered in 2014-16 is similar to previous years. The number of deaths registered in 2015 for Derby City (25) was larger than in other recent years (see Table 2), so the rates

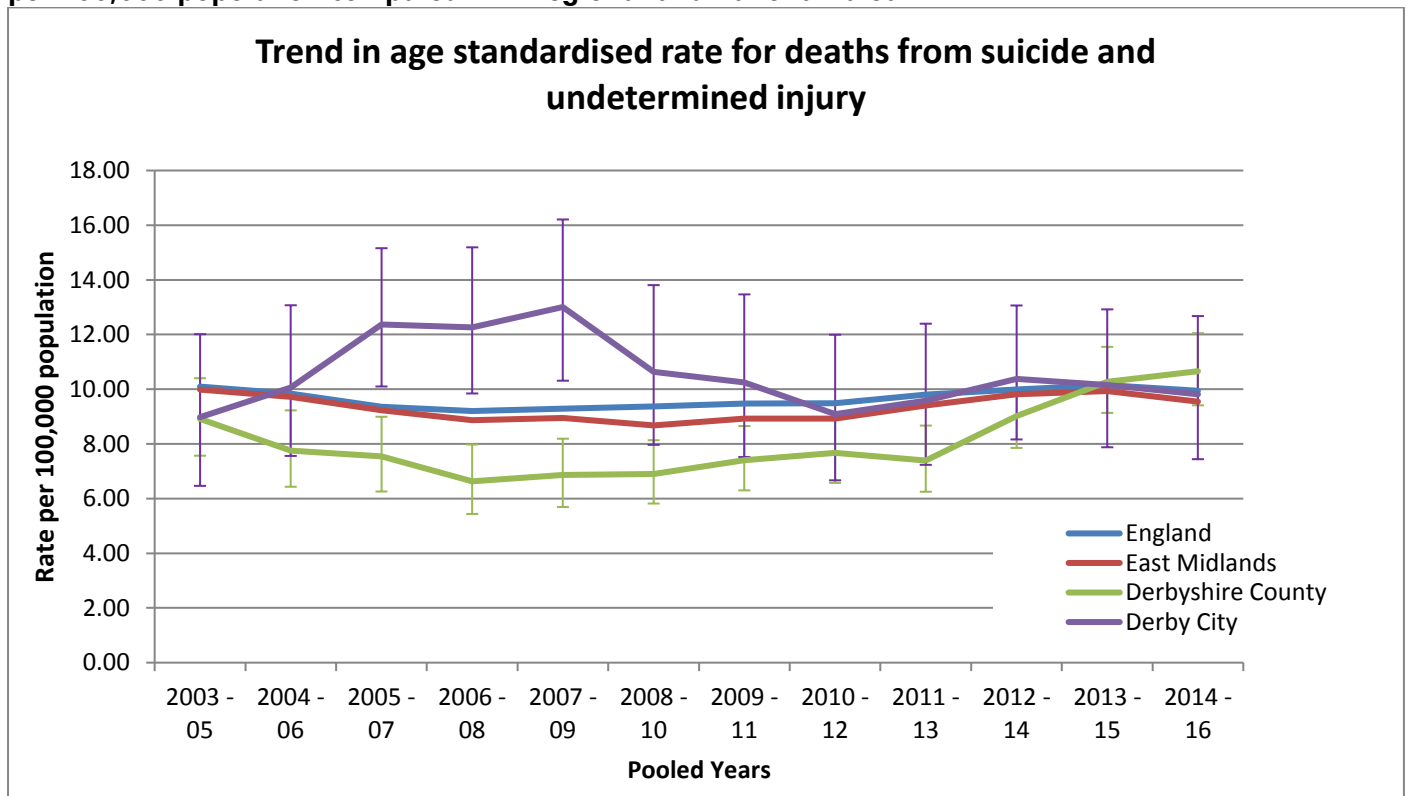
including 2015 will be influenced by this. Since 2008-10, the rates for Derby City have remained similar to the England average.

**Table 4: Age-standardised rates of deaths from suicide and undetermined injury per 100,000 population in Derby and Derbyshire.**

|                   | Rate of death per 100,000 population<br>(95% Confidence Intervals) |                     |                      |                      |                      |
|-------------------|--|---------------------|----------------------|----------------------|----------------------|
|                   | 2010 - 12  | 2011 - 13           | 2012 - 14            | 2013 - 15            | 2014 - 16            |
| Derbyshire County | 7.7<br>(6.5 – 9.0)   | 7.4<br>(6.3 – 8.7)  | 9.0<br>(7.8 – 10.4)  | 10.3<br>(8.9 – 11.8) | 10.7<br>(9.3 – 12.2) |
| Derby City        | 9.1<br>(6.9 – 11.8)  | 9.6<br>(7.3 – 12.3) | 10.4<br>(8.0 – 13.2) | 10.2<br>(7.8 – 13.0) | 9.8<br>(7.5 – 12.6)  |

Age Standardised Rates calculated from 2013-15 onwards using revised PHE methodology with 10years+ at the population denominator  
Source: Public Health Outcomes Indicator Tool

**Figure 2: Longer term trends in age-standardised rates of deaths from suicide and undetermined injury per 100,000 population compared with regional and national rates.**



Error bars represent 95% confidence Intervals for the rates.  
Source: Public Health Outcomes Indicator Tool

### 3.3 Deaths from suicide and undetermined injury by demographic characteristics

#### 3.3.1 Gender

There is a clear national pattern with higher numbers of deaths from suicide and undetermined injury occurring in men than women. Derbyshire County and Derby City mirror this pattern, with rates of deaths in females statistically significantly lower than the rates in males. For deaths registered in 2016, the breakdown by gender is shown in Table 5, in the numbers of deaths and age-standardised rates of deaths.

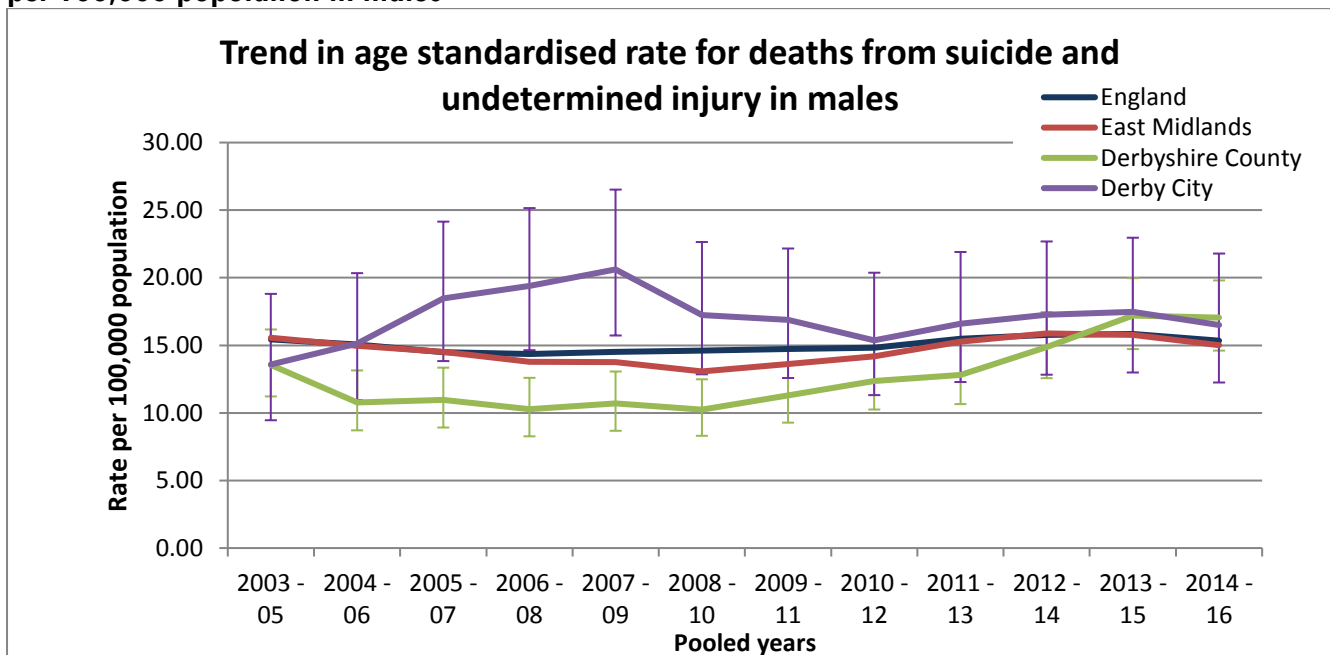
**Table 5: Deaths from suicide and undetermined injury registered in 2016, by gender**

| Gender | Derby City |                                     | Derbyshire County |                                     | Total (%) |
|--------|------------|-------------------------------------|-------------------|-------------------------------------|-----------|
|        | Number (%) | Rate per 100,000 population (95%CI) | Number (%)        | Rate per 100,000 population (95%CI) |           |
| Male   | 15 (83%)   | 13.4 (6.6 - 20.2)                   | 38 (69%)          | 11.3 (7.7 - 14.9)                   | 53 (73%)  |
| Female | 3 (17%)    | 2.9 (0.0 - 6.2)                     | 17 (31%)          | 4.6 (2.4 - 6.8)                     | 20 (27%)  |
| Total  | 18 (100%)  | 8.1 (4.4 - 11.9)                    | 55 (100%)         | 7.9 (5.9 - 9.9)                     | 73 (100%) |

Source: Primary Care Mortality Database

Figures 3 and 4 show the trends over time in the rates of deaths from suicide and undetermined injury in males and females. These are 3 year pooled rates which are more stable to allow comparisons over time. An age standardised rate for deaths in females in Derby city from suicide and undetermined injury cannot be reliably calculated due small numbers; similarly the rates for females in Derbyshire in 2011-13 could not be calculated (Figure 4). There is no statistical difference in the rates for males between Derbyshire and Derby city, and both areas report rates similar to the gender specific national rates. There is no local evidence of changes in trends among males or females associated with the 2016 data.

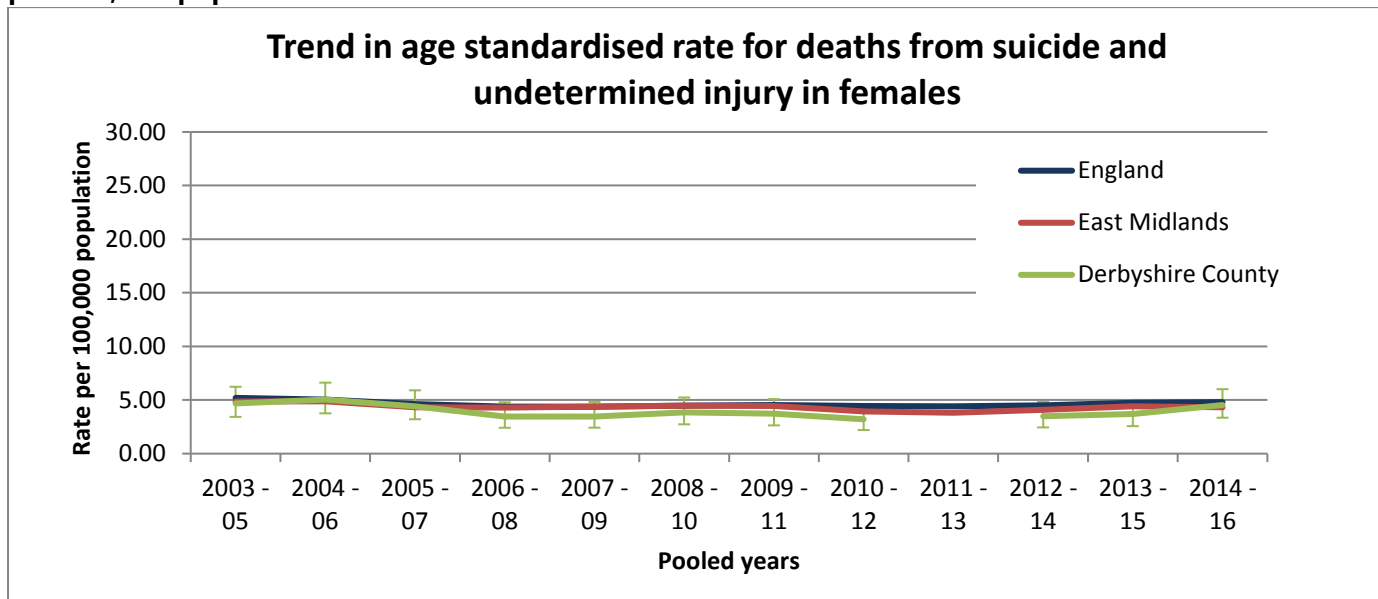
**Figure 3: Longer term trends in age-standardised rates of deaths from suicide and undetermined injury per 100,000 population in males**



Error bars represent 95% confidence Intervals for the Rates.  
Source: Public Health Outcomes Indicator Tool



**Figure 4: Longer term trends in age-standardised rates of deaths from suicide and undetermined injury per 100,000 population in females**

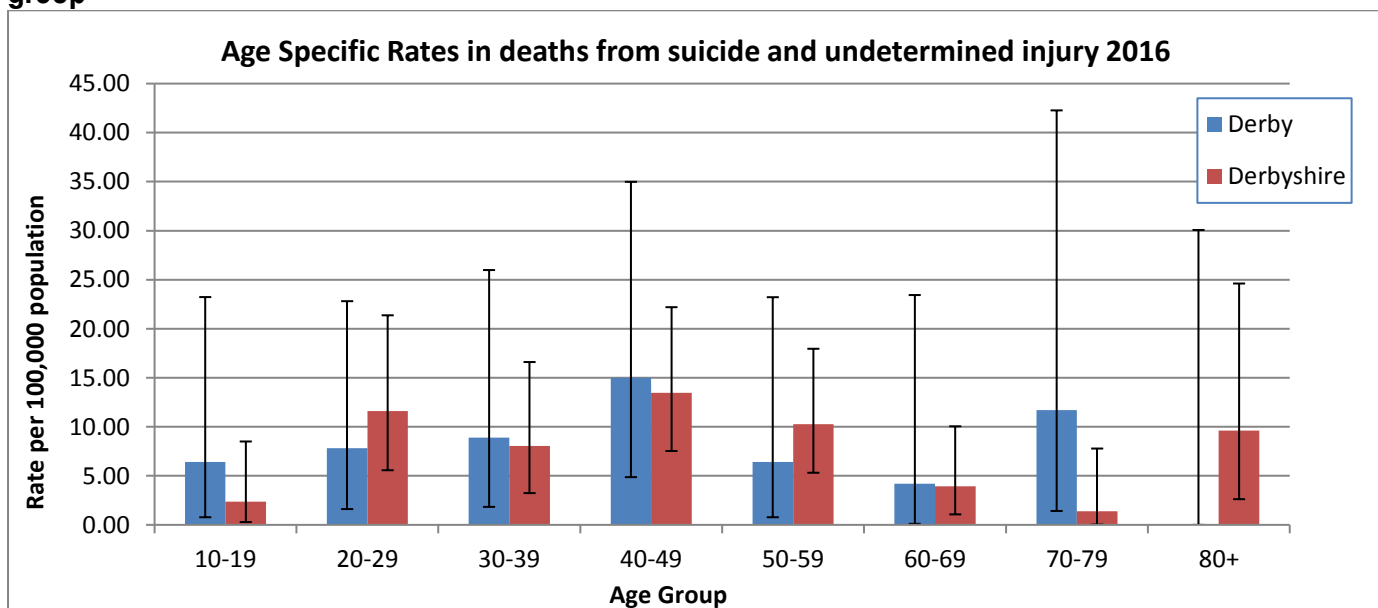


Error bars represent 95% confidence Intervals for the Rates.  
Source: Public Health Outcomes Indicator Tool

### 3.3.2 Age

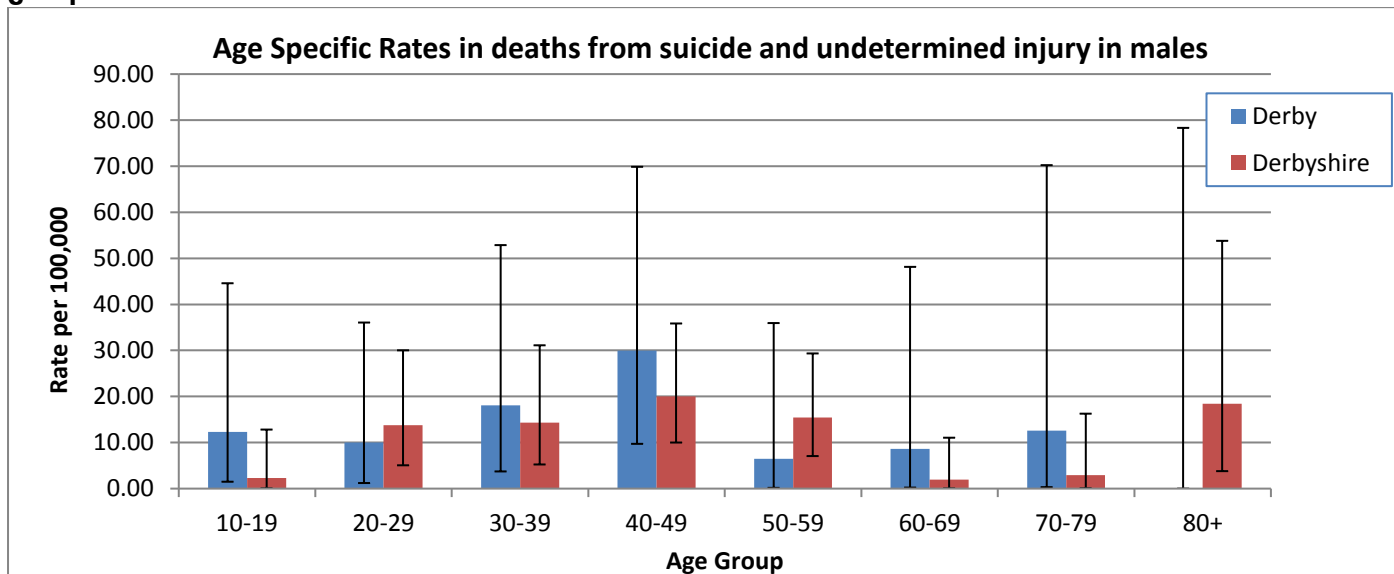
For deaths registered in 2016, Figure 5 shows the age specific rates of deaths from suicide and undetermined injury. The highest rate of deaths were in the 40-49 year age group for both Derbyshire and Derby city, although rates did not differ statistically by age group. Derbyshire and Derby city show a similar pattern; this aligns with national patterns of a peak in mid-life age groups. Although not statistically significant, there were a number of deaths in the 80 and over age group in Derbyshire, with lower numbers in the 60-69 and 70-79 age groups. The pattern across age groups is primarily influenced by the data for the deaths of men (Figure 6), as the number of deaths for women is small and no clear pattern is evident in females alone (Figure 7).

**Figure 5: Rates in deaths from suicide and undetermined injury for deaths registered in 2016, by age group**



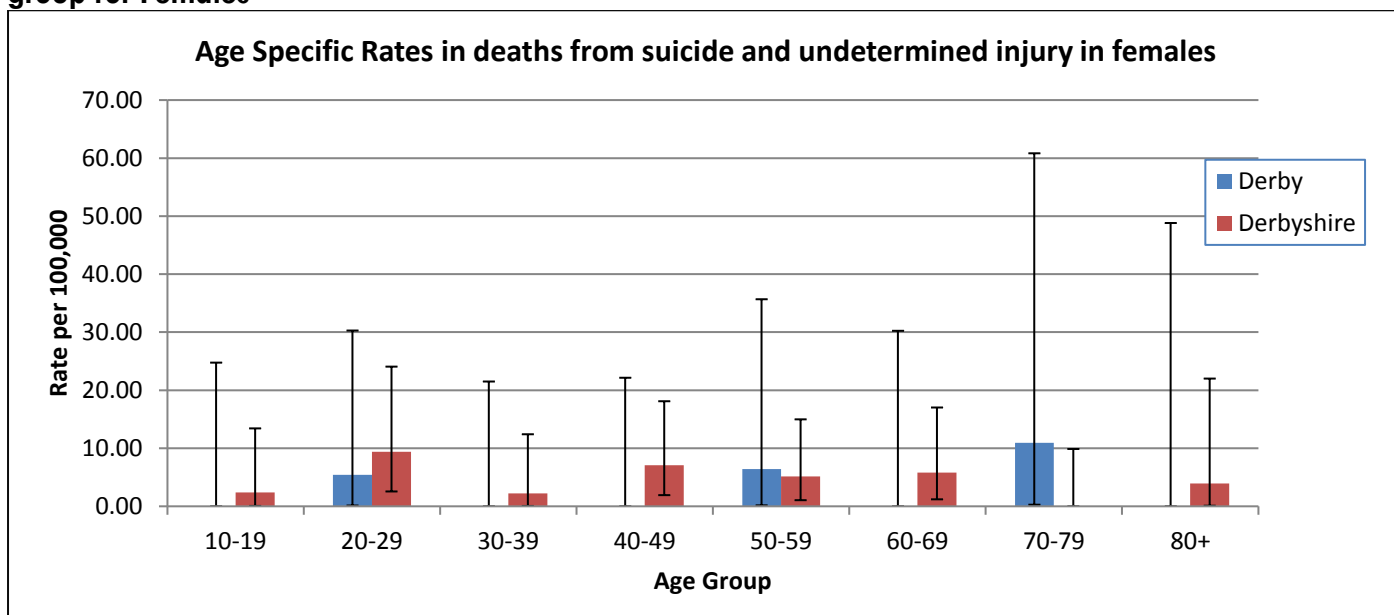
Error bars represent 95% Confidence Intervals  
Source: Primary Care Mortality Database

**Figure 6: Rates in deaths from suicide and undetermined injury for deaths registered in 2016, by age group for Males**



Error bars represent 95% Confidence Intervals  
Source: Primary Care Mortality Database

**Figure 7: Rates in deaths from suicide and undetermined injury for deaths registered in 2016, by age group for Females**



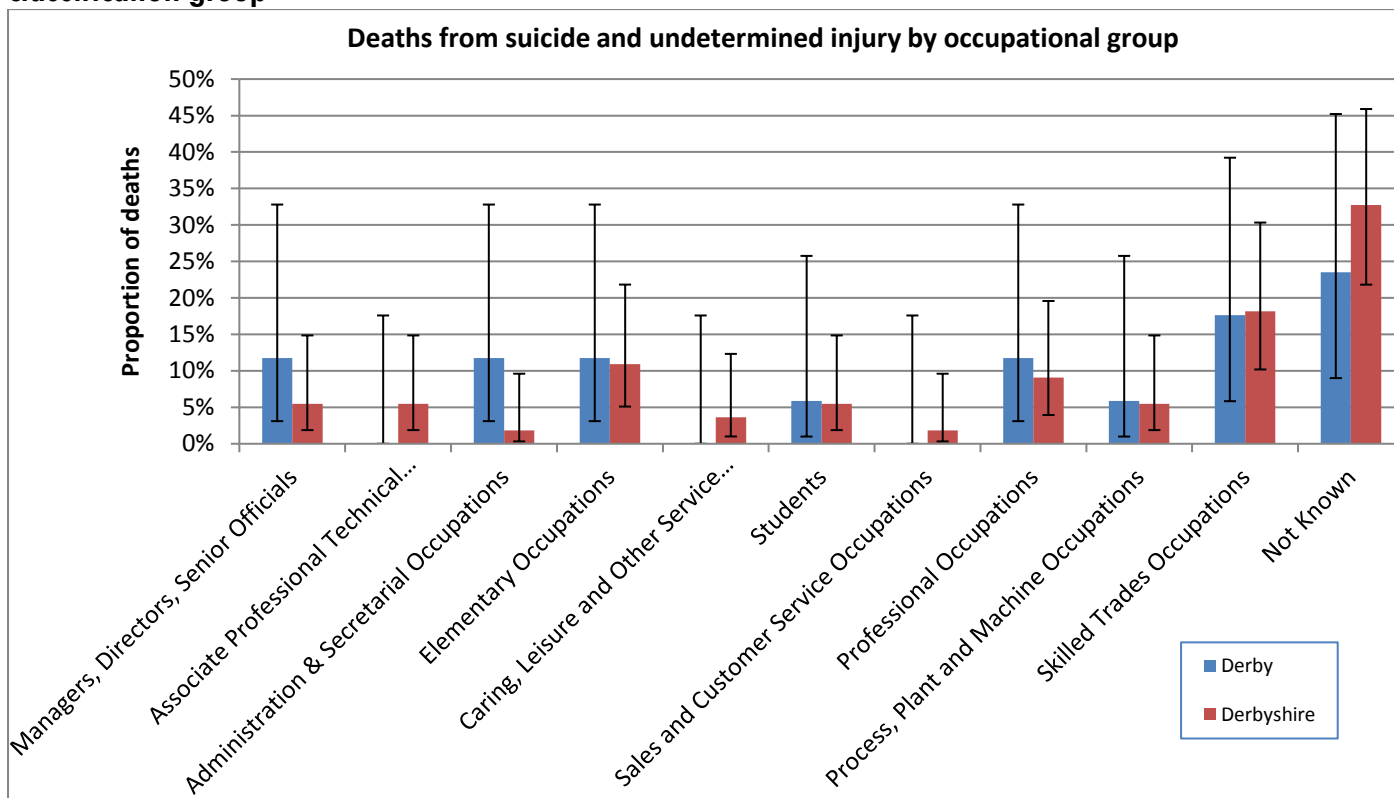
Error bars represent 95% Confidence Intervals  
Source: Primary Care Mortality Database

### 3.3.3 Occupational group

Occupational group is considered as an indicator of socioeconomic status. Where data has been recorded in the death registration, this has been assigned within the Office of National Statistics (ONS) standard occupational classifications<sup>3</sup>. Figure 8 shows the proportions of suicide and undetermined injury by occupational groups, for deaths registered in 2016. Of note, these are the proportions of the deaths that were registered, and are not rates adjusted to the baseline numbers of each occupational group in the population.

<sup>3</sup> <https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc>

**Figure 8: Proportion of deaths registered in 2016 from suicide and undetermined injury by occupational classification group**



Error bars represent 95% Confidence Intervals  
 Source: Primary Care Mortality Database

Similarly to the data for 2015 reported previously, the highest percentage of the deaths registered in 2016 were for individuals with 'skilled trades occupations'. Skilled trades occupations include skilled forms of agricultural and related trades, metal, electrical and electronic trades, construction and building trades, textile, printing and other skilled trades.

Of note, the occupational group was not known or not recorded for 22 deaths from suicide and undetermined injury registered in 2016 comprising 22% of deaths in Derby, and 33% of deaths in Derbyshire.

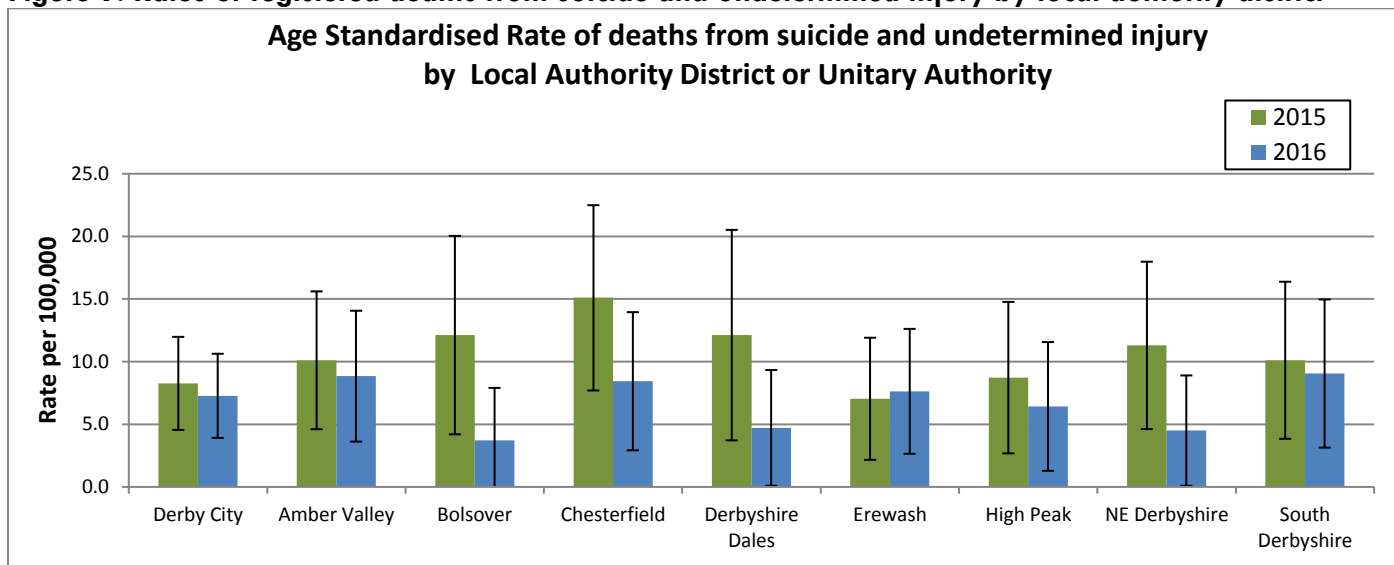
### 3.4 Deaths from suicide and undetermined injury by geographical area

The Primary Care Mortality Database includes the usual recorded address for registered deaths allowing analysis of the data by geographical area.

#### 3.4.1 District

Figure 9 shows the rates for deaths from suicide and undetermined injury registered in 2016, compared with rates for deaths registered in 2015. There were no statistically significant differences in the rate of deaths from suicide and undetermined injury across the Districts for 2016 compared with 2015, and the rates between the areas remain similar. The highest rates for deaths registered in 2016 were in South Derbyshire (9.1 per 100,000), Amber Valley (8.8 per 100,000) and Chesterfield (8.4 per 100,000). The lowest rates were registered for 2016 in Bolsover (3.7 per 100,000) followed by North East Derbyshire (4.5 per 100,000).

**Figure 9: Rates of registered deaths from suicide and undetermined injury by local authority district**

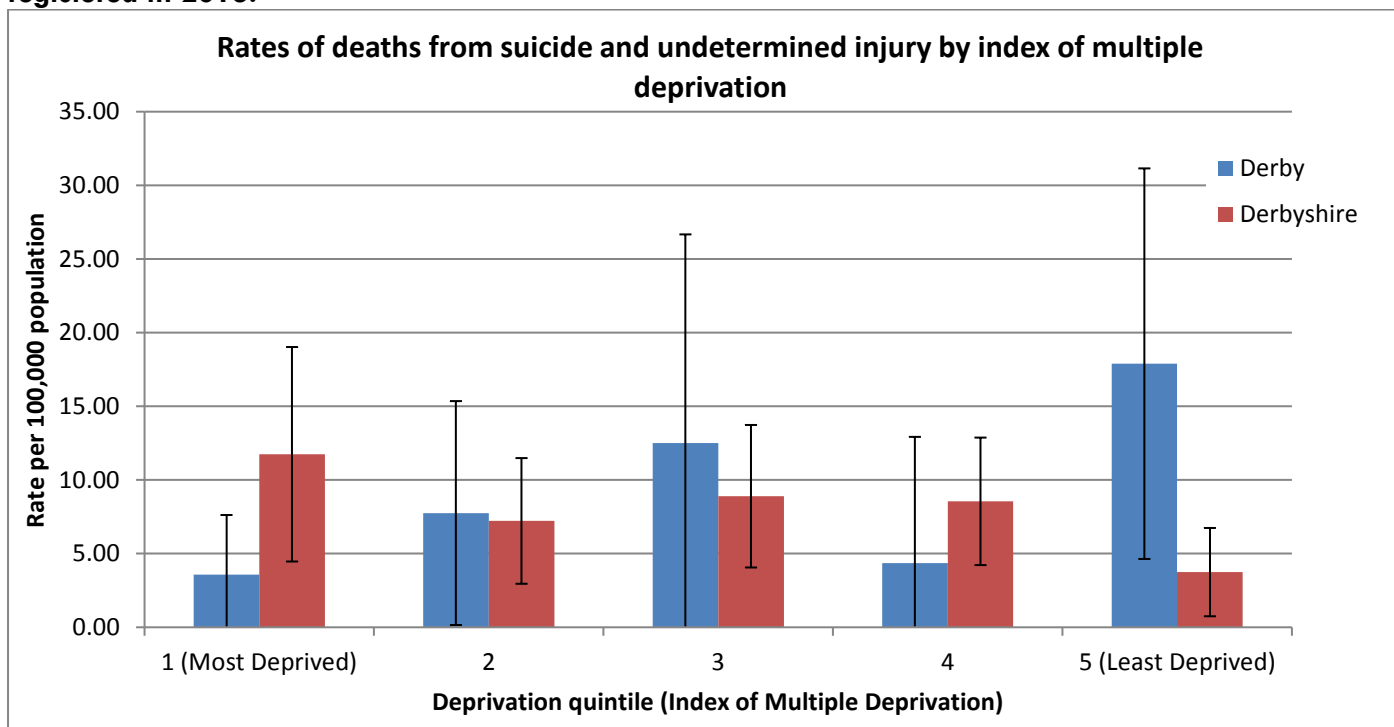


Error bars represent 95% Confidence Intervals  
 Source: Primary Care Mortality Database

### 3.4.2 Deprivation

An analysis of the data on deaths from suicide and undetermined injury by resident super output area (a population of approximately 1500 people) was compared with Index of Multiple Deprivation scores, ranked in quintiles. The rates of deaths registered in 2016 for Derbyshire County and Derby City is presented by the deprivation quintile in Figure 10. There are no statistically significant differences in the rates of suicide between the quintiles of deprivation in this dataset. There is a high level of uncertainty around the data due to the smaller numbers of deaths used to calculate the rates for each quintile. This is particularly evident by the large error bars for Derby City.

**Figure 10: Rates of death from suicide and undetermined injury by national deprivation quintile, deaths registered in 2016.**

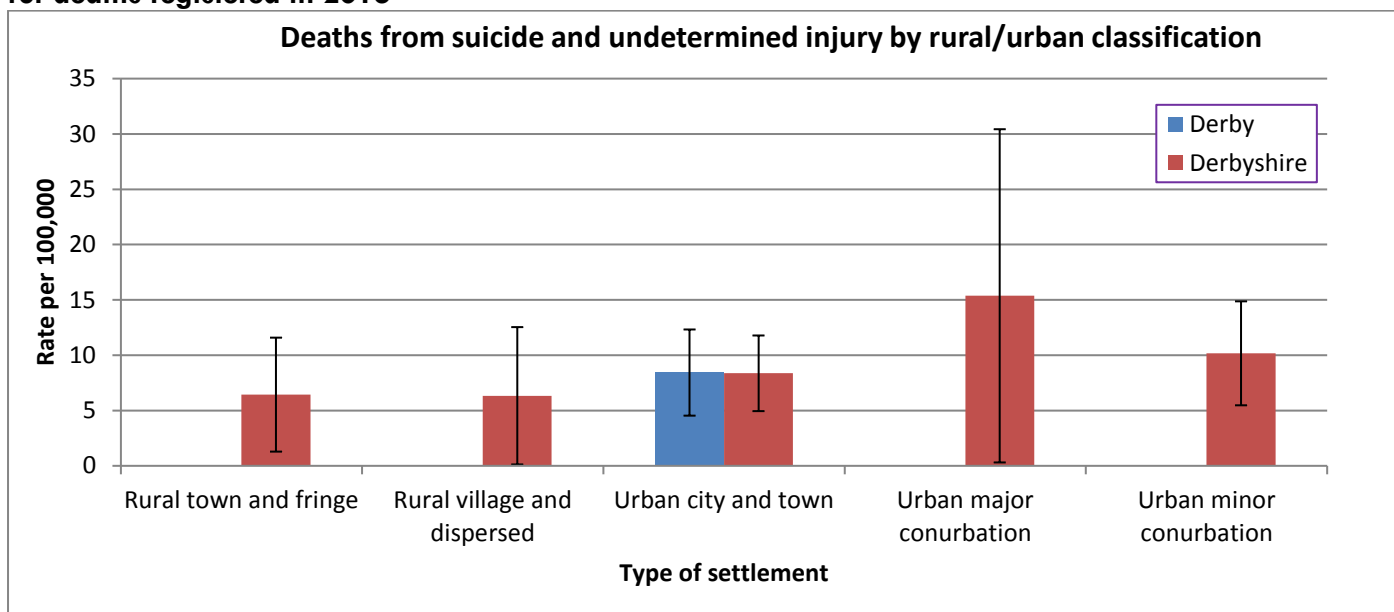


Calculated using Index of Multiple Deprivation 2015. Age standardised rates. Error bars represent 95% Confidence Intervals.  
 Source: Primary Care Mortality Database and Office of National Statistics,

### 3.4.3 Rural/Urban Classification

An additional comparison by geographic area is the rurality of an area, such as calculated by applying the ONS classifications to Ordnance Survey mapping categories. The Derby city area is classified fully within the Urban City and Town category, whilst Derbyshire County spans across all settlement types. Figure 11 shows the rates for deaths registered in 2016 across Derby and Derbyshire. There were no statistically significant differences in the rates by settlement types, across Derbyshire. There are indications of a slightly higher rate in the urban major conurbation settings, although this difference is not statistically significant.

**Figure 11: Rates of deaths from suicide and undetermined injury by types of rural and urban settlement, for deaths registered in 2016**



Settlement types classified in 2011. Age Standardised Rates. Error bars show 95% Confidence Intervals.  
Source: Primary Care Mortality Database and Office of National Statistics,

## 3.5 Deaths from suicide and undetermined injury by location and means of death

### 3.5.1 Place of death

Table 6 shows the locations of the deaths registered in 2016 across both Derbyshire and Derby. In line with previous years and with national patterns, the majority of deaths from suicide and undetermined injury occurred within the home environment. For 2016 31 (43%) of the deaths occurred outside of Home and Hospital settings. The median distance travelled to these outdoor locations from the home residence was 13 miles.

**Table 6: Deaths from suicide and undetermined injury registered in 2016 by place of death**

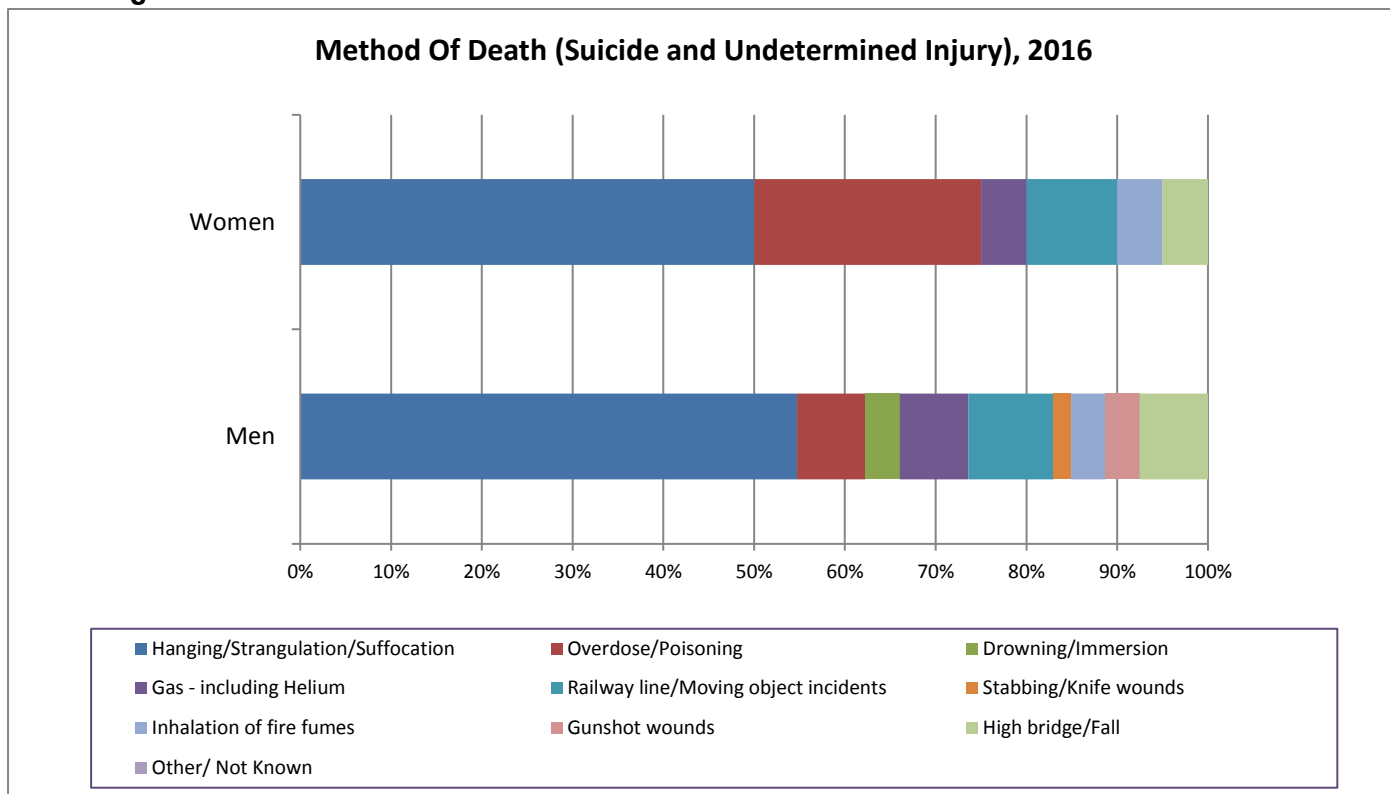
| Place of Death              | Number (% <sup>3</sup> ) |
|-----------------------------|--------------------------|
| Home                        | 38 (52%)                 |
| Hospital <sup>1</sup>       | 4 (6%)                   |
| Railway                     | 6 (8%)                   |
| River                       | 2 (3%)                   |
| Highway                     | 2 (3%)                   |
| Other outdoors <sup>2</sup> | 21 (29%)                 |
| Total                       | 73 (100%)                |

Source: Primary Care Mortality Database; <sup>1</sup> Hospital category does not distinguish between deaths which occurred in hospital following conveyance from another location, or a suicide attempt on the hospital site; <sup>2</sup> Includes parks and open spaces, car parks, commercial buildings, and other residential locations. <sup>3</sup> Percentage does not total 100% due to rounding of values.

### 3.5.2 Method of death

National data and the literature indicate there are differing patterns in the methods of suicide between males and females. Figure 12 shows the proportions of deaths in Derby and Derbyshire, by gender. Approximately half of the deaths in both sexes were caused by hanging, strangulation or suffocation (55% deaths in men, 50% deaths in women). The differing proportions were seen particularly in deaths by overdose or poisoning which represented 25% of deaths in females, compared with 8% for the same methods in men. No women died of suicide or undetermined injury due to drowning/immersion, stabbing/knife wounds or gunshot wounds.

**Figure 12: Method used in death and undetermined Injury Derbyshire and Derby, by percentage of deaths registered in 2016**



Source: Primary Care Mortality Database

## 4 KEY FINDINGS

- The number of deaths by suicide and undetermined injury registered in 2016 was 18 for Derby City and 55 for Derbyshire County. 95% of the deaths registered in 2016 occurred in either 2015 or 2016, with a median time interval of 200 days between date of death and date of registration.
- The age-standardised rates of deaths from suicide and undetermined injury in Derby and Derbyshire for deaths registered in 2016 were similar across a 3-year trend analysis to rates in previous years, and have been in line with the national and regional average. Despite smaller numbers, the 3-year rates have shown less variation in Derby City compared with Derbyshire. The rates for Derbyshire County have increased since 2010-12, although 2014-16 was not significantly higher than the rates for 2013-15. Recent rates may be influenced by higher numbers of deaths registered in 2014 and 2015 in the County, and it is not yet possible to determine if there is a trend of increased rates or whether the rates in the County are levelling.
- Overall the data reported for deaths registered in 2016 for Derby and Derbyshire follow similar patterns to the data for deaths registered in 2015 in terms of the demographics, geographical characteristics, and location and method of death for deaths from suicide and undetermined injury.
- Of note for Derby and Derbyshire in 2016:
  - 73% of the deaths from suicide and undetermined injury registered in 2016 were for males
  - There were more deaths from suicide and undetermined injury occurring in the 40-49 age group, although the rates were statistically similar compared with other age groups
  - The highest percentage of deaths from suicide and undetermined injury were from the skilled trades occupational group, though occupation was not known for 31% deaths registered in 2016
  - There were no statistically significant differences in the rate of deaths from suicide and undetermined between Districts; the highest rates were in South Derbyshire (9.1 per 100,000) and Amber Valley (8.8 per 100,000); the lowest rates were in Bolsover (3.7 per 100,000) followed by North East Derbyshire (4.5 per 100,000).
  - There was no clear pattern with rates of death and level of deprivation, particularly in Derby City where there were small numbers, though the highest rates of death in the least deprived quintile. In Derbyshire the rates were similar between quintiles, although there was an indication of slightly higher rates in most deprived quintile.
  - 52% of the deaths registered in 2016 occurred within the home environment, 29% occurred in other outdoor setting which included parks and open spaces, car parks, commercial buildings and other residential locations
  - Half of the deaths (55% in males, 50% in females) were caused by hanging, strangulation or suffocation; a quarter of the deaths in females were due to overdose/poisoning
- There may be opportunities for further analysis related to this data, including:
  - To compare the recent data for Derby and Derbyshire against the 2016 national and regional trends when the data is released
  - Where the rates and patterns of deaths continue to be similar over time, to pool several years of data in order to answer specific analytic questions in regards to demographic and geographical characteristics as well as in regards to place and method of death where there are small numbers in each category for one year of death registrations.