

A profile of deaths by suicide in Scotland 2009-2014

A report from the Scottish Suicide Information Database (ScotSID)

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Acknowledgements

The Scottish Suicide Information Database (ScotSID) was initiated by Dr Laurence Gruer OBE, former Director of Public Health Science, NHS Health Scotland. He chaired the ScotSID Steering Group until May 2012, when Stephen Platt, Professor Emeritus of Health Policy Research at the University of Edinburgh, took over that role. The ISD ScotSID project team is funded by Scottish Government's Mental Health and Protection of Rights Division.

The database is held in ISD. The compilation and management of the database is currently undertaken by Chris Cunningham and Angela Prentice. Data analysis and preparation of this report was mainly by Chris Deans and Chris Black.

We would like to take this opportunity to thank the past and present members of the ScotSID Steering Group who have provided valuable support and advice. Present membership is indicated in [Appendix 1](#).

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Introduction

Suicide and non-fatal self-harm are important issues for public health policy and practice in Scotland. The suicide rate appears to be higher in Scotland than in England and Wales. [Scottish Public Health Observatory \(ScotPHO\) website suicide topic](#)^{Ref.1} and [Appendix 2](#) provides more detail, outlining the epidemiology of suicide in Scotland, including comparisons with other countries. [Appendix 3](#) provides further detail on the policy context. This introduction describes the Scottish Suicide Information Database (ScotSID).

The Scottish Suicide Information Database (ScotSID)

The overall purpose of ScotSID is to provide a central repository for information on all probable suicide deaths in Scotland, in order to support epidemiology, policy-making and preventive activity. The database covers demographic information, contact with health services and related health data, and will eventually (through inclusion of information from other data sources) provide further details relating to the suicide event and the wider social circumstances of the deceased.

This report presents data on deaths due to probable suicides *registered* with the National Records of Scotland (NRS) during the six-year period 2009 to 2014.

Definition of a probable suicide

The National Records of Scotland (NRS) define probable suicides as deaths resulting from:

- intentional self-harm (codes X60–X84, Y87.0 of the International Classification of Diseases, Tenth Revision (ICD10)); and
- events of undetermined intent (ICD10 codes Y10-Y34, Y87.2).

'Events of undetermined intent' are cases where it is not clear whether the death was the result of intentional self-harm, an accident or an assault. In view of the research evidence most of these deaths are likely to be self-inflicted (Adelstein & Mardon 1975)^{Ref.2}, NRS combines intentional self-harm and undetermined deaths in their operational definition of 'probable suicide'. It should be noted that some 'undetermined intent' deaths may not have been suicides; inclusion of these cases, therefore, probably leads to an over-estimation of the 'true' (but unknowable) number of suicide deaths. For this reason the cohort of deaths in this report is described as 'probable suicides' but for simplicity this is sometimes shortened to 'suicides'.

In 2011, NRS changed its coding practice to take account of changes made by the World Health Organization (WHO) to coding rules for certain causes of death. As a result there is a difference in how deaths data were coded for 2011 to 2014 compared to previous years, with some deaths previously coded under 'mental and behavioural disorders due to psychoactive substance use' now being classified as 'self-poisoning of undetermined intent' and consequently as suicides. NRS publish their [annual mortality statistics](#)^{Ref.3} for 'probable suicides' based on both the old and the new coding rules for 2011 onwards. For consistency across the time period 2009-2014, only old coded suicide deaths are included in this report.

More information on the coding of suicides and how the ScotSID cohort compares to the NRS figures is available in [Appendix 4](#).

Data held in ScotSID

At the time of compiling this report, ScotSID contained the finalised NRS death records of all probable suicides registered in Scotland from 1 January 2009 to 31 December 2014. It also included linked records from the following data sources held by ISD:

- General acute hospital inpatient and daycase records (SMR01) (from January 1981)
- Psychiatric hospital inpatient and daycase records (SMR04) (from January 1981)
- Outpatient appointments (SMR00) (from January 2008)
- Maternity hospital records (SMR02) (from April 1993)
- Scottish Drug Misuse Database (SMR25) (from April 2005)
- Accident and Emergency (A&E) attendances (from September 2009)
- Prescriptions dispensed in the community (Prescribing Information System, PIS) (from January 2009).

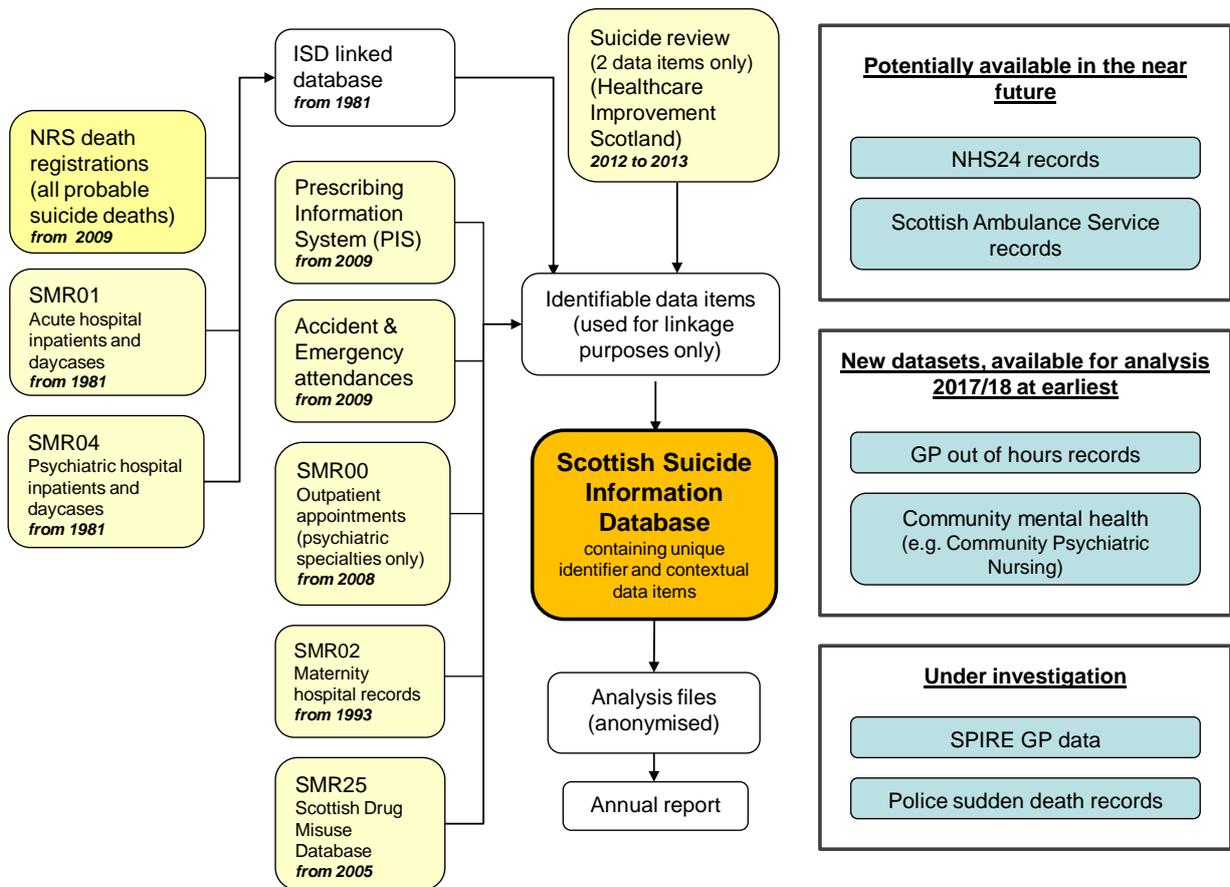
A list of the current ScotSID data items can be found in [Appendix 5](#). More information on the ISD data sets can be found on the [ISD website](#).

In addition to the data sources listed above, it is intended that, over time, relevant information from other data sources will be linked to ScotSID so that it becomes more comprehensive and holds a greater depth of information on individuals' circumstances, the nature of their deaths, and their contact with services. Figure 1 shows the range of data sources included in ScotSID now and those planned for the future. Further details of planned ScotSID developments can be found in [Appendix 6](#).

Linkage process

NRS death records are electronically linked to other databases held by ISD. Information on the record linkage methods used, data confidentiality and information governance, can be found in [Appendix 7](#).

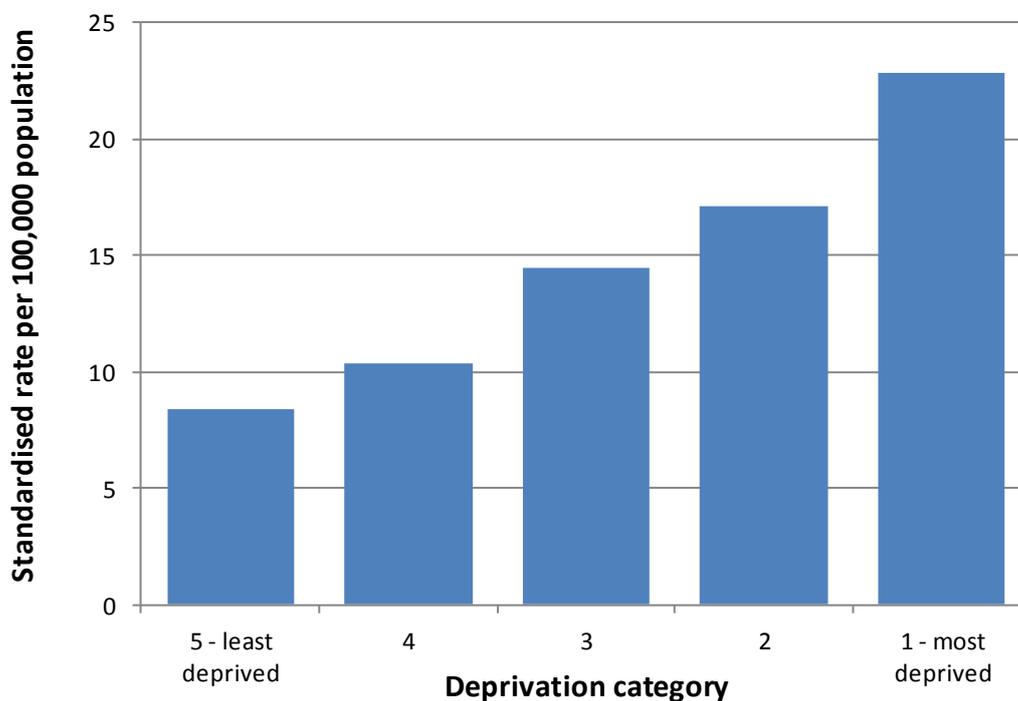
Figure 1: Data sources for the Scottish Suicide Information Database, at August 2016



Main points

- Between 2009 and 2014 nearly 4,500 individuals died from suicide in Scotland, equivalent to 15 suicides for every 100,000 people per year, after allowing for age and sex.
- Around three-quarters of the deaths were in men (73%), in those unmarried/not partnered (71%), and in those who were employed (71%). Almost half (47%) were aged 35-54 at the time of their suicide.
- Suicides were around three times more likely in those from the most deprived areas than those in the least deprived areas.

Suicide rate by deprivation category, 2009-14



- Of women who died by suicide in Scotland, one in four had given birth to one or more children in the previous 16 years.
- 5% of individuals who died by suicide had been discharged from a mental health hospital, and 6% had a mental health outpatient appointment in the 30 days before their death.
- One in four people who died by suicide attended A&E in the three months before they died, and 9% of people attended A&E multiple times within the same window.
- The majority (60%) of individuals who died by suicide had been prescribed a mental health drug in the year prior to their death.
- Hanging and strangulation were the most common methods of suicide among men and young women, while poisoning was the most common method for women of other ages.

Results

1 The Scottish Suicide Information Database (ScotSID) cohort

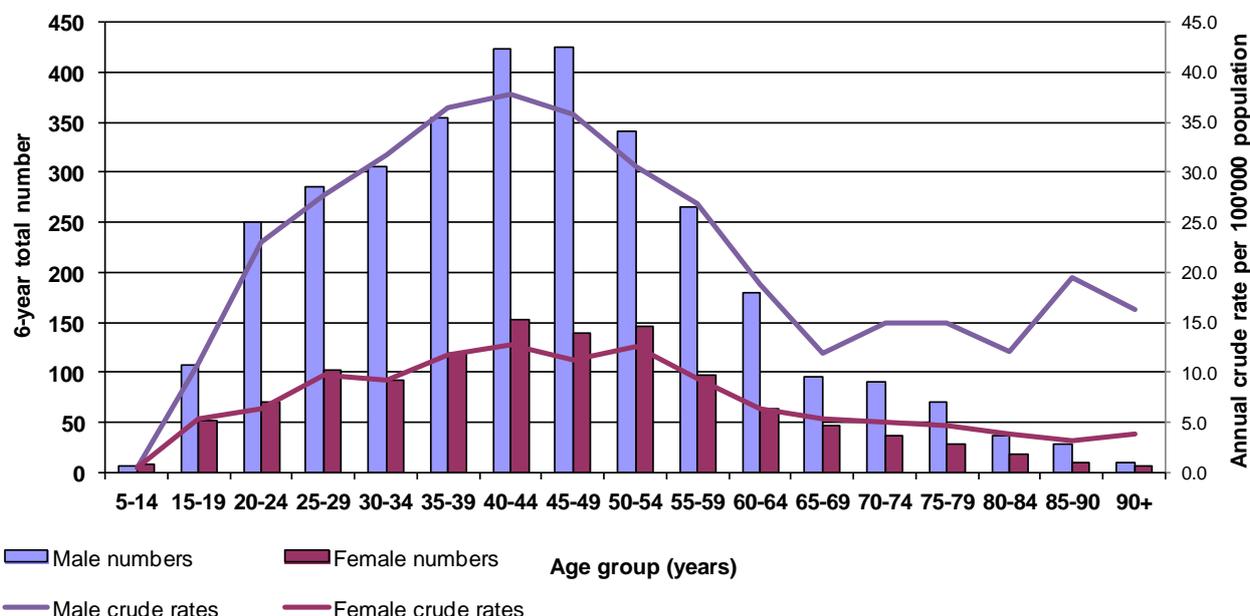
This publication focuses on the 4,464 ‘probable suicide’ deaths registered in Scotland in those aged 5 and over during the six-year period 2009-14, known here as the ‘ScotSID cohort’. Of the total 4,464 deaths, 3,383 (76%) were classified by NRS as deaths due to intentional self-harm, while 1,081 (24%) were classified as deaths due to events of undetermined intent (using the old coding).

1.1 Socio-demographics

1.1.1 Age and sex

The age and sex breakdown of the ScotSID cohort is shown in Figure 2. Almost three-quarters of the total cohort were males (3,277, 73%). The median age at death was 43 years for men and 44 years for women. Almost half of all deaths (2,103, 47%) were among people aged 35-54 years. Among men, the largest **numbers** of deaths for males occurred in the 45-49 and 40-44 year age groups (425 and 424 deaths, respectively), while for women, the largest **numbers** of deaths were in the 40-44 and 50-54 year age groups (152 and 146 death, respectively). For both men and women, these age groups also had the highest suicide **rates**.

Figure 2: Deaths caused by probable suicide¹ – six-year total numbers and annual age-specific rates per 100,000 population, by age group and sex, Scotland, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

1.1.2 Marital status

Marital status was known for 4,427 of the 4,440 ScotSID cases aged 16 and over. Over two-thirds (71%) of cases were reported as single, widowed or divorced at the time of their death; the remaining 29% were reported as married or in a civil partnership (Table 3).

Figures from [Scotland's Census 2011](#)^{Ref.4} on the marital status of all adults aged 16 years or over are included in the table for comparison purposes. The ScotSID cohort was more likely to be single and divorced/dissolved civil partnership, and less likely to be married/in a civil partnership, than the general population.

Table 1: Deaths caused by probable suicide¹, by marital status – persons aged 16 and over, Scotland, 2009-14

Marital Status	Number	%	Census ² 2011
Single	2,244	50.7%	35.4%
Married/Civil Partnership	1,279	28.9%	48.6%
Divorced/Civil Partnership Dissolved	641	14.5%	8.2%
Widowed/Surviving Civil Partner	263	5.9%	7.8%
Total	4,427	100.0%	100.0%
Not Known	13	-	-

Source: NRS

¹ ScotSID cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Scotland's Census 2011 (www.scotlandscensus.gov.uk), Table KS103SC.

1.1.3 Employment status and occupation

Of the 4,464 cases, 3,965 (89%) were of working age (16-64 years), and employment status was known in 3,962 cases (Table 4). Just under one-third (29%) of the cohort comprised people who were unemployed, unable to work due to a long-term condition, or of independent means and a small number were students (3%). The remaining 71% were in employment at the time of their death. Over half (56%) of those with known employment status were classed as 'employees, apprentices, armed forces (non-officer ranks)'.

Table 2: Deaths caused by probable suicide¹ by employment status² – 16-64 year olds, Scotland, 2009-14

Employment Status	Number	%
Employees, apprentices, armed forces – non-officer ranks	2,210	55.8%
Self-employed, without employees	190	4.8%
Managers, superintendants, armed forces - officers	162	4.1%
Students	121	3.1%
Self-employed, with employees	71	1.8%
Foremen	46	1.2%
Independent means, no occupation, disabled	1,283	29.3%
Total	3,962	100.0%
Unknown	3	-

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Employment status codes derived from NRS socio-economic code list:

<http://www.gro-scotland.gov.uk/statistics/theme/vital-events/general-bckgr-info/code-lists.html>.

The last known occupation was available for 3,124 (79%) of the individuals of working age in the full ScotSID cohort. Given the vast range of different occupations in the ScotSID cohort, occupations have been grouped using the [Standard Occupational Classification 2000](#) (SOC 2000)^{Ref.5} for deaths registered between 2009 and 2010, and [Standard Occupation Classification 2010](#) (SOC 2010)^{Ref.6} for deaths in 2011 onwards. Occupations are combined into several hundred 'unit' occupational groups, e.g. 'painters and decorators', forming the base tier of the classification, and these are combined further to form nine 'major' occupational groups, e.g. 'skilled trades occupations', which form the top tier of the classification. Due to differences between SOC 2000 and SOC 2010 the codes cannot be directly compared. For this reason, the results presented here relate only to the more recent (2011-14) subset of the ScotSID cohort.

Table 3 shows the numbers of probable suicides by 'major' occupational group with some of the most frequently occurring 'unit' occupational groups nested within them. Suicides were most common in the 'skilled trades occupations' (513 cases, 25%) and 'elementary occupations' group (339 cases, 17%). 'Students' are not included in the SOC 2010 classification as a major occupational group but they have been added to the table for comparison. Of the 'unit' occupational groups, the highest number of suicides were in 'Elementary construction occupations' (85 cases, 4%) and 'care workers and home carers' (74 cases, 4%).

Table 3: Deaths caused by probable suicide¹, by occupational group^{2,3} – 16-64 year olds, Scotland, 2011-14⁴

Occupational Group ²	Number	%
Skilled trades occupations	513	24.9%
- Carpenters and joiners	61	3.0%
- Gardeners and landscape Gardeners	36	1.8%
- Vehicle technicians, mechanics and electricians	35	1.7%
Elementary occupations ⁵	339	16.5%
- Elementary construction occupations	85	4.1%
- Elementary storage occupations	46	2.2%
- Cleaners and domestics	45	2.2%
Process, plant and machine operatives	251	12.2%
Professional occupations	180	8.8%
Associate professional and technical occupations	169	8.2%
Caring, leisure and other service occupations	164	8.0%
- Care workers and home carers	74	3.6%
Managers, directors and senior officials	136	6.6%
Sales and customer service occupations	121	5.9%
- Sales and retail assistants	54	2.6%
Students ⁶	97	4.7%
Administrative and secretarial occupations	87	4.2%
Total	2,057	100.0%
Not Employed	531	-

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² 'Major' occupation groups as defined in the [Standard Occupational Classification 2010](#).

³ Note that some individuals may be unemployed at the time of death but identified as having an occupation (last known occupation).

⁴ Note that SOC 2000 occupation codes were used in 2009-2010 data, and SOC 2010 coded in 2011-14 data. They are not comparable due to differences in codes for some 'unit' occupations; therefore pre-2011 data are excluded from this table.

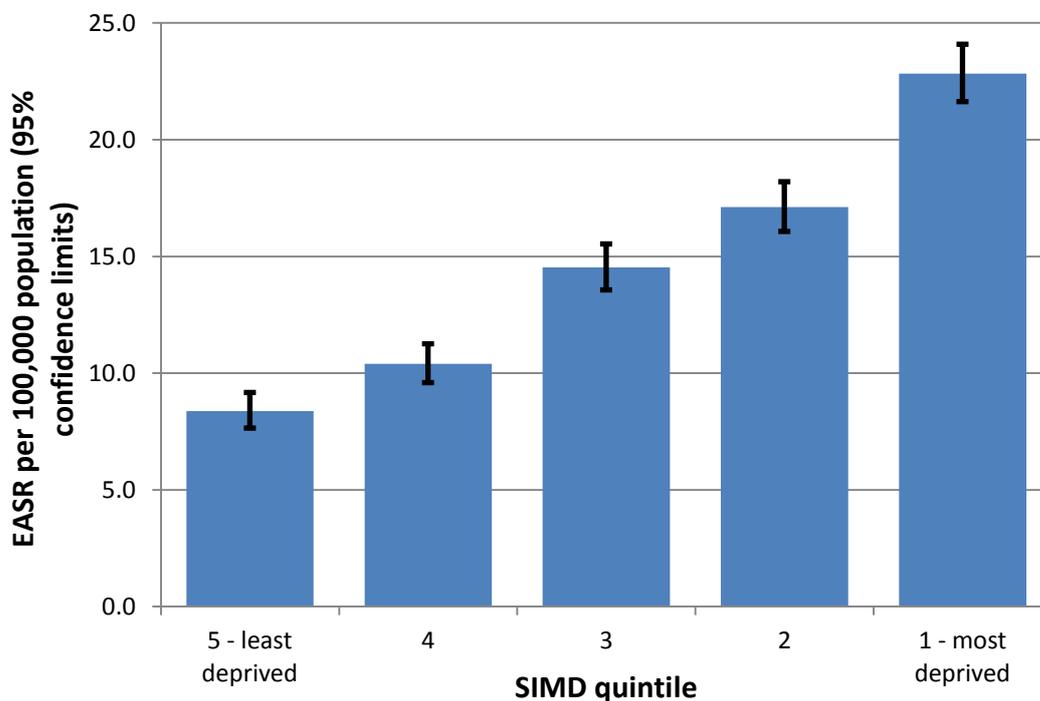
⁵ Elementary occupations consist of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort.

⁶ 'Students' are not included as a major group in the SOC 2010 classification but have been added to the table.

1.1.4 Socio-economic deprivation

Figure 3 shows numbers and age-sex standardised rates for probable suicides by deprivation quintile, based on the [Scottish Index of Multiple Deprivation \(SIMD\) published in 2012](#) ^{Ref.7}. There is almost a linear association between deprivation quintile and suicide: at each level of increasing deprivation the probable suicide rate is higher than the rate at the level below it. Indeed, probable suicides were around three times more likely in the most deprived quintile than in the least deprived quintile. A similar pattern has been observed in the [ScotPHO suicide webpage on deprivation](#) ^{Ref.8}.

Figure 3: Deaths caused by probable suicide¹ – EASRs² (including 95% confidence limits), Scotland by SIMD 2012 quintile³, persons aged 5 years and over, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² EASRs are European age-sex standardised rates. The rates in this table are directly standardised to the European Standard Population (ESP) 2013. Note that the population denominators for SIMD quintiles are NRS mid-year population estimates for ages 5+ years, based on the 2011 Census. For further details on standardising: see [ScotPHO Methodology](#).

³ Scottish Index of Multiple Deprivation (SIMD) release published in 2012. Individuals were allocated to a SIMD quintile (fifth of the Scottish population) based on their postcode of residence at the time of death.

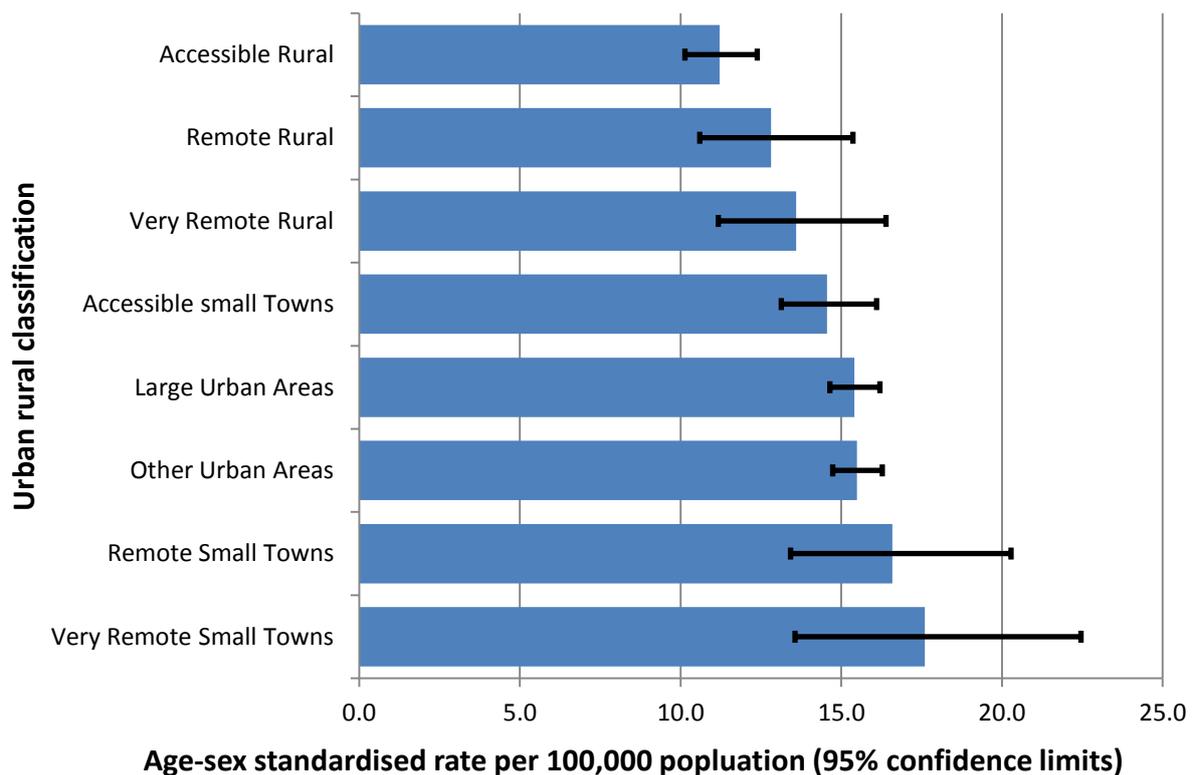
⁴ The Scotland EASR and its confidence limits are calculated for all deaths, including the 76 individuals not resident in Scotland/unknown.

1.1.5 Urban rural classification

The [Scottish Government \(SG\) urban rural classification](#) ^{Ref.9} provides a standard definition of urban and rural areas in Scotland, based on settlement size and drive times. Figure 4 shows the number of probable suicides by urban rural category.

The rates ranged from 11 per 100,000 population in accessible rural areas to 18 per 100,000 in very remote small towns. The tendency towards lower rates in accessible rural areas, and higher rates in very remote/remote small towns as well as large urban areas, has been noted in previous work by [Stark et al](#) ^{Ref.10}. In addition, the [December 2015 ScotSID report](#) ^{Ref.11} looked at the percentage of patients in each urban rural classification who had contact with selected healthcare services prior to suicide.

Figure 4: Deaths caused by probable suicide¹ – Numbers and EASRs² (including 95% confidence limits), Scotland by eight-fold 2013-14 urban rural classification³, persons aged 5 years and over, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² EASRs are European age-sex standardised rates. The rates in this table are directly standardised to the European Standard Population (ESP) 2013. Note that the population denominators for urban rural classifications are NRS mid-year population estimates for ages 5+ years, based on the 2011 Census. For further details on standardising: see [ScotPHO Methodology](#).

³ Scottish Government urban rural classification identifies urban and rural areas based on settlement size and drive times. Individuals were allocated to an urban rural category by ISD, based on their postcode of residence at the time of death. For further detail see the [Scottish Government website](#).

⁴ The Scotland EASR and its confidence limits are calculated for all deaths, including the 76 individuals not resident in Scotland/unknown.

1.1.6 Geographical area

Of the total 4,464 deaths, 4,388 (98%) were of Scottish residents. For these people, the NHS Board reflects where the individual lived at the time of death. Seventy-six individuals were either not resident in Scotland (74) or country of residence was not known (2). Of the non-residents of Scotland, over half of them (44) were from England. For all 76 cases, the NHS Board reflects where the individual died. These deaths occurred across the mainland NHS Board areas.

Table 4 shows the numbers and rates of probable suicides for Scotland (15 per 100,000 population aged 5+ years) and by NHS Board area (based on the new NHS Board boundaries as at 1 April 2014). The crude rate indicates whether an NHS Board area has a comparatively high or low overall rate of deaths in the six-year period compared with other NHS Boards and Scotland as a whole, but takes no account of differences between NHS Boards in their population’s age and sex composition.

Table 4: Deaths caused by probable suicide¹ – Numbers, rates (crude² and EASRs³ including 95% confidence limits) by NHS Board area^{4,5} in Scotland, persons aged 5 years and over, 2009-14

NHS Board ^{4,5}	6-year number of probable suicides ¹	Annual crude rate per 100,000 population ²	EASR per 100,000 population (95% confidence limits)
Scotland	4,464	14.9	15.0 (14.5-15.4)
Ayrshire & Arran	264	12.5	12.9 (11.4-14.6)
Borders	95	14.7	15.4 (12.4-18.9)
Dumfries & Galloway	130	15.1	16.6 (13.8-19.8)
Fife	307	14.9	15.4 (13.7-17.2)
Forth Valley	220	13.0	13.2 (11.5-15.1)
Grampian	447	13.8	13.7 (12.5-15.1)
Greater Glasgow & Clyde	1,048	16.3	16.2 (15.3-17.3)
Highland	309	17.0	17.1 (15.2-19.2)
Lanarkshire	551	15.0	14.8 (13.5-16.0)
Lothian	722	15.2	15.4 (14.3-16.6)
Orkney	19	15.6	16.2 (9.7-25.4)
Shetland	29	22.2	21.9 (14.6-31.4)
Tayside	302	13.0	13.3 (11.8-14.9)
Western Isles	21	13.4	14.0 (8.6-21.5)

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² The denominators for rates are NRS mid-year population estimates for 2009-14 for ages 5+ years, rebased following the 2011 Census. Populations for 2012-2014 are revised following the release of corrected population estimates in April 2016 ([NRS April 2016 correction](#)).

³ EASRs are European age-sex standardised rates per 100,000. The data in this table are directly standardised to the European Standard Population (ESP) 2013, excluding ages <5. (Note that the last ScotSID report standardised to the ESP 1976). For further details on standardising: see [ScotPHO Methodology](#).

⁴ These are the NHS Boards based on the new boundaries as at 1 April 2014.

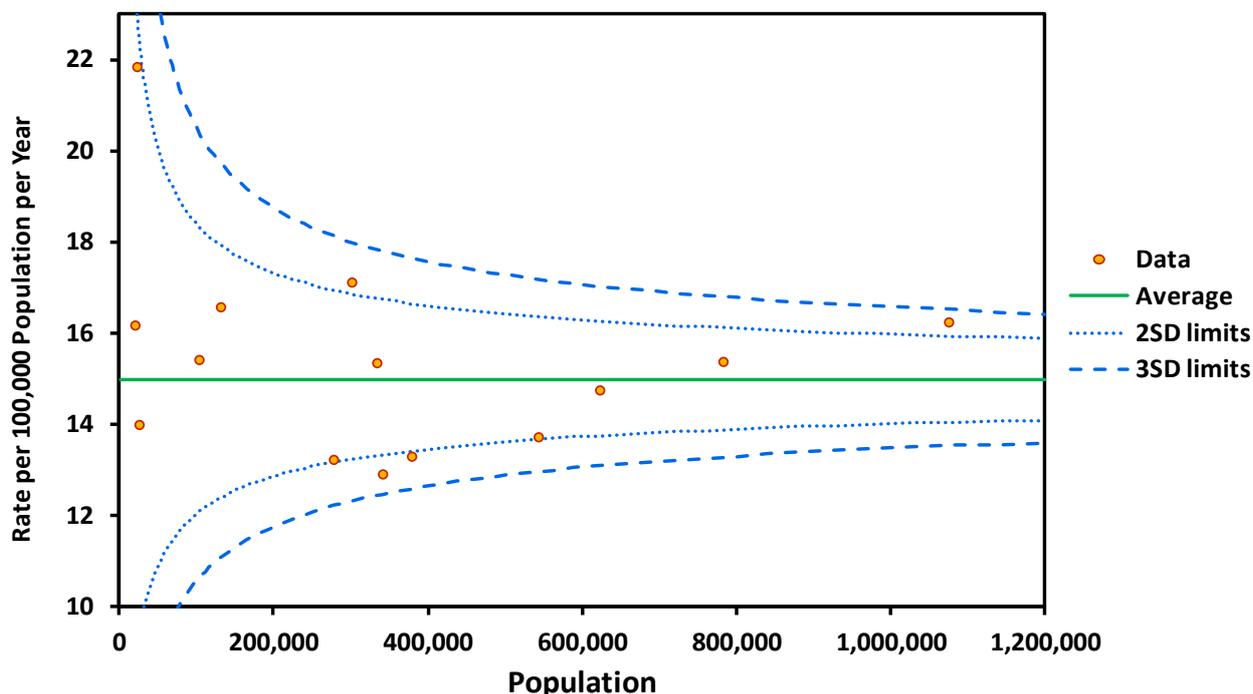
⁵ For Scottish residents, this is the NHS Board of residence at the time of death. For individuals resident outwith Scotland or where the country of residence is unknown, the NHS Board reflects where the individual died (76 cases).

European age-sex-standardised rates (EASRs) permit more meaningful comparisons between NHS Board areas. These are also shown in Table 4, along with the 95% confidence interval in brackets (see Glossary). The EASRs, which were broadly similar to the crude rates for suicide, ranged from 12 per 100,000 population in Ayrshire and Arran NHS Board area to 17 in Highland and 22 in Shetland. The 95% confidence limits show a range within which the true EASR for each NHS Board area is likely to lie. Smaller NHS Boards tend to have wider confidence limits than larger population areas: a small increase in the number of suicides in these areas can have a relatively large effect on the EASR. The wider confidence intervals indicate that caution should be taken when interpreting the EASRs for these areas. All NHS Board areas have confidence limits which overlap with the confidence intervals for Scotland's rate.

Figure 5 illustrates in a funnel plot the variation in EASRs for persons across the NHS Boards, ordered by population size. Each data point represents an NHS Board, and the average rate for all NHS Boards, ie Scotland, is shown by the green line. Expected variation around the Scotland average is illustrated by limits for both 2 standard deviations ([SDs] see [Glossary](#)) (equivalent to approximately 95% confidence intervals) and 3 SDs (equivalent to approximately 99.8% confidence intervals). It is these lines that give the chart its funnel shape.

No NHS Board falls outwith the 3 SD limit, indicating that at the 99.8% confidence level no NHS Boards have an unexpectedly high or low suicide rate. However, some NHS Boards lie outwith the 2SD (95% confidence interval) limit. NHS Highland and Greater Glasgow and Clyde are above the 2 SD limit and Tayside and Ayrshire & Arran are below the 2 SD limit, suggesting these have higher rates than Scotland.

Figure 5: Deaths caused by probable suicide¹ – EASRs^{2,3} for persons aged 5 years and over, by NHS Board area^{4,5} in Scotland, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² The denominators for rates are NRS mid-year population estimates for 2009-14 for ages 5+ years, rebased following the 2011 Census. Populations for 2012-2014 are revised following the release of corrected population estimates in April 2016 ([NRS April 2016 correction](#)).

³ EASRs are European age-sex standardised rates per 100,000 population. The data in this figure are directly standardised to the European Standard Population (ESP) 2013, excluding ages <5.

⁴ These are the NHS Boards based on the new boundaries as at 1 April 2014.

⁵ For Scottish residents, this is the NHS Board of residence at the time of death. For individuals resident outwith Scotland or where the country of residence is unknown, the NHS Board reflects where the individual died (76 cases).

Table 5 presents the number, crude rates and age-sex standardised rates of suicide for Scotland and individual local authority areas. The EASRs ranged from 10 per 100,000 population in East Renfrewshire to 21 in Inverclyde and 22 in Shetland Islands. The 95% confidence limits show a range within which the true EASR for each local authority area is likely to lie. Four local authority areas (Glasgow City, Highland, Inverclyde and Moray) have confidence limits which are above, and do not overlap with, the confidence intervals for Scotland’s rate. Five local authority areas (Aberdeenshire, East Renfrewshire, Perth & Kinross, South Ayrshire and Stirling) have confidence limits which are below, and do not overlap with, the confidence intervals for Scotland’s rate.

Table 5: Deaths caused by probable suicide¹ – Numbers, rates (crude² and EASRs³ including 95% confidence limits) by local authority area⁴ in Scotland, persons aged 5 years and over, 2009-14

Local authority ⁴	6-year number of probable suicides ¹	Annual crude rate per 100,000 population ²	EASR per 100,000 population (95% confidence limits)
Scotland	4,464	14.9	15.0 (14.5-15.4)
Aberdeen City	172	13.6	13.5 (11.5-15.7)
Aberdeenshire	174	12.1	12.2 (10.4-14.2)
Angus	84	12.7	13.4 (10.6-16.6)
Argyll and Bute	69	13.7	13.4 (10.4-17.0)
Clackmannanshire	46	15.8	15.6 (11.4-20.9)
Dumfries and Galloway	130	15.1	16.6 (13.8-19.8)
Dundee City	127	15.2	15.3 (12.7-18.2)
East Ayrshire	92	13.3	13.4 (10.8-16.4)
East Dunbartonshire	68	11.3	12.0 (9.2-15.3)
East Lothian	91	16.1	16.4 (13.2-20.2)
East Renfrewshire	50	9.7	10.3 (7.6-13.6)
Edinburgh City	419	15.4	15.8 (14.3-17.5)
Falkirk	118	13.4	13.5 (11.2-16.2)
Fife	307	14.9	15.4 (13.7-17.2)
Glasgow City	585	17.5	17.1 (15.7-18.6)
Highland	240	18.2	18.4 (16.2-21.0)
Inverclyde	92	20.0	20.5 (16.5-25.2)
Midlothian	68	14.4	14.7 (11.4-18.7)
Moray	101	19.0	19.0 (15.5-23.1)
Na h-Eileanan Siar	21	13.4	14.0 (8.6-21.5)
North Ayrshire	105	13.4	14.1 (11.5-17.1)
North Lanarkshire	305	16.0	15.7 (13.9-17.5)
Orkney Islands	19	15.6	16.2 (9.7-25.4)
Perth and Kinross	91	10.9	11.2 (9.0-13.7)
Renfrewshire	164	16.6	16.7 (14.2-19.5)
Scottish Borders	95	14.7	15.4 (12.4-18.9)
Shetland Islands	29	22.2	21.9 (14.6-31.4)
South Ayrshire	67	10.4	10.9 (8.4-13.8)
South Lanarkshire	245	13.8	13.7 (12.0-15.5)
Stirling	56	10.9	10.8 (8.1-14.1)
West Dunbartonshire	89	17.4	17.3 (13.9-21.4)
West Lothian	145	14.7	15.0 (12.5-17.7)

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

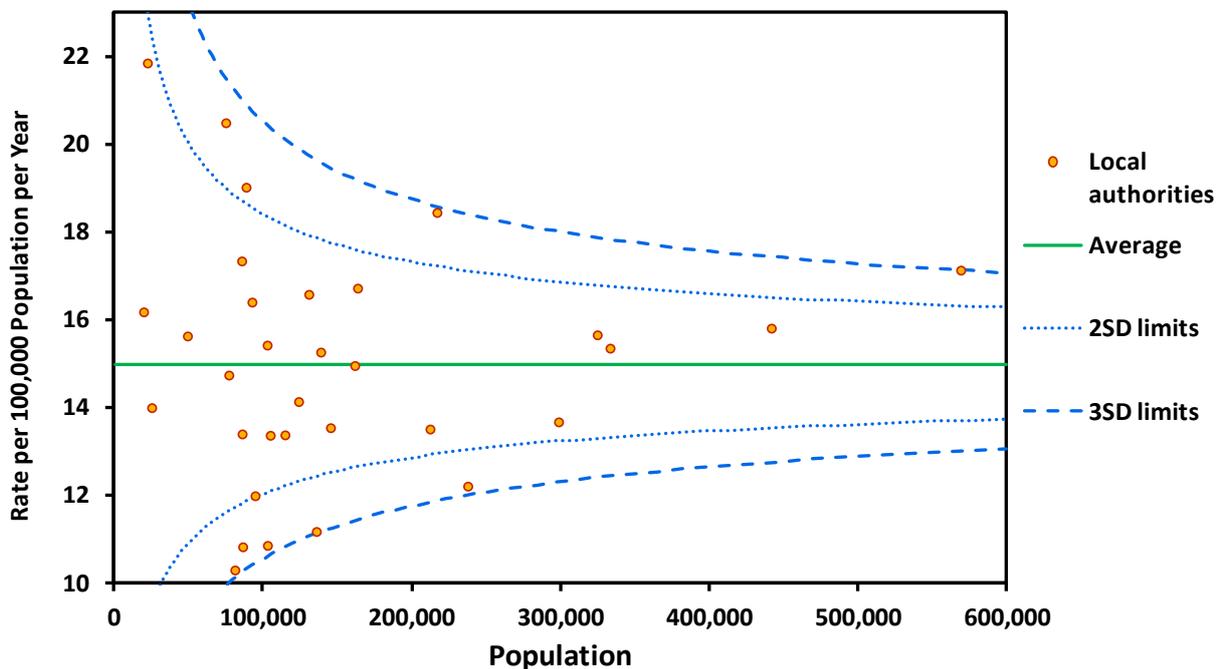
² The denominators for rates are NRS mid-year population estimates for 2009-14 for ages 5+ years, rebased following the 2011 Census. Populations for 2012-2014 are revised following the release of corrected population estimates in April 2016 ([NRS April 2016 correction](#)).

³ EASRs are European age-sex standardised rates. The data in this table are directly standardised to the European Standard Population (ESP) 2013, excluding ages <5. (Note that the last ScotSID report standardised to the ESP 1976). For further details on standardising: see [ScotPHO Methodology](#).

⁴ For Scottish residents, this is the local authority of residence at the time of death. For individuals resident outwith Scotland or where the country of residence is unknown, the local authority reflects where the individual died (76 cases).

Figure 6 illustrates in a funnel plot the variation in EASRs for persons across Scotland’s local authority areas, ordered by population size. No local authority falls outwith the 3 SD limit, indicating that at the 99.8% confidence level, no local authorities have an exceptionally high or low suicide rate. However, some local authorities lie outwith the 2SD (95% confidence interval) limit. These are the same local authorities that were mentioned above when comparing confidence limits to the Scotland rate (Table 5).

Figure 6: Deaths caused by probable suicide¹ – EASRs^{2,3} for persons aged 5 years and over, by local authority area⁴ in Scotland, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² The denominators for rates are NRS mid-year population estimates for 2009-14 for ages 5+ years, rebased following the 2011 Census. Populations for 2012-2014 are revised following the release of corrected population estimates in April 2016 ([NRS April 2016 correction](#)).

³ EASRs are European age-sex standardised rates per 100,000 population. The data in this figure are directly standardised to the European Standard Population (ESP) 2013, excluding ages <5.

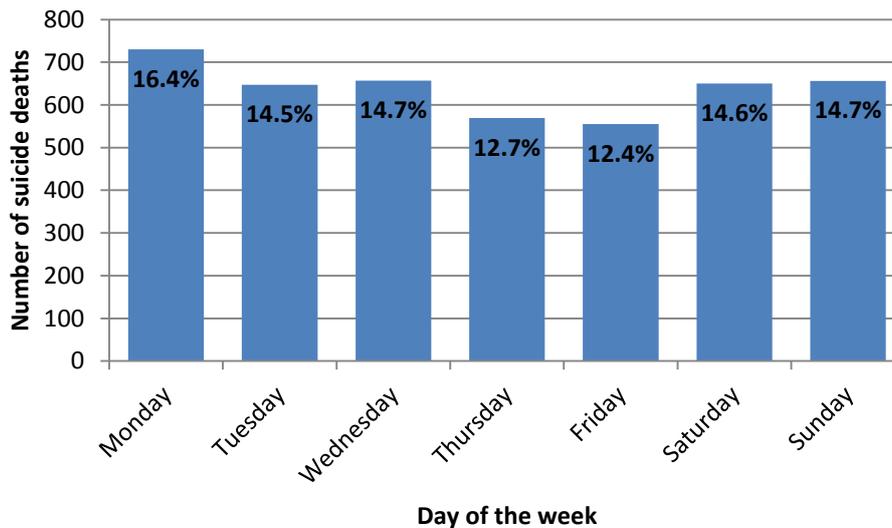
⁴ For Scottish residents, this is the local authority of residence at the time of death. For individuals resident outwith Scotland or where the country of residence is unknown, the local authority reflects where the individual died (76 cases).

1.2 Circumstances of death

1.2.1 Date and time of death

In the [December 2012 ScotSID report](#) ^{Ref.12}, it was noted that, for deaths registered in 2009-10, there was no significant association between occurrence of suicide and either the day of the week or the month of the year. With the introduction of four additional years of data, this analysis has now been repeated. Figure 7 shows the number and percentage of suicides which occurred on each day of the week.

Figure 7: Deaths caused by probable suicide¹ by day of the week, Scotland, 2009-14



Source: NRS

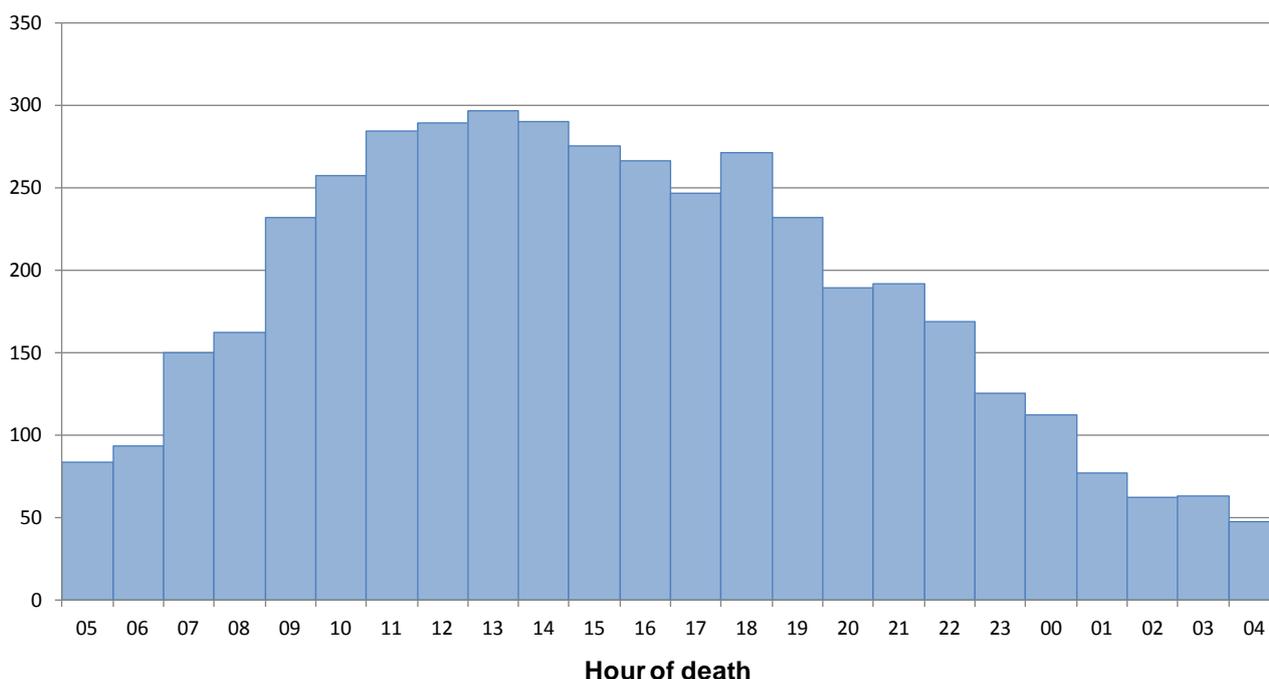
¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

More suicides occurred on Mondays and fewer suicides on Thursdays and Fridays. The difference is statistically significant, though relatively small. There were a third more suicides on Mondays than on Fridays.

In contrast, there was no association between suicide rates and month of the year, nor were there significantly more or fewer suicides during the Christmas period or around New Year.

Figure 7 shows the number of suicides by the hour during which the death was recorded to have occurred. Time of death is taken from the Medical Certificate of the Cause of Death (MCCD) in which doctors are advised to record the time of death as accurately as possible. It does not relate to the time the death was confirmed by the doctor, nor when the body was discovered. There is a clear pattern, with a peak in the number of suicides towards the middle of the day, in the hour between 1 and 2pm. Fewer deaths by suicide occur during the night.

Figure 8: Deaths caused by probable suicide¹ by hour of death, Scotland, 2009-14



Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Based on the estimated time of death.

1.2.2 Place where suicidal act and death occurred

NRS death registration records include information from the death certificate and from the person registering the death. The place where the suicidal act occurred was not known for 639 (14%) of the total ScotSID cohort. For those where location was known, the majority of events that caused death occurred in a private dwelling (71%) (Table 6). The second most frequent category was ‘other specified place’ (24%), which includes locations such as a beach, campsite, railway line, river, school and sports area.

Table 6: Place where the suicidal act occurred¹, deaths caused by probable suicide² Scotland, 2009-14

Place of Occurrence ¹	Number	%
Private dwelling ³	2,725	71.2%
Street or highway	66	1.7%
Trade and service area	61	1.6%
Residential Unit	35	0.9%
Industrial and construction area	35	0.9%
Other Specified Place	903	23.6%
Total	3,825	100.0%
Not known - unspecified place	639	-

Source: NRS

¹ Based on the ICD10 codes for the place of occurrence of the event which caused the death.

² ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

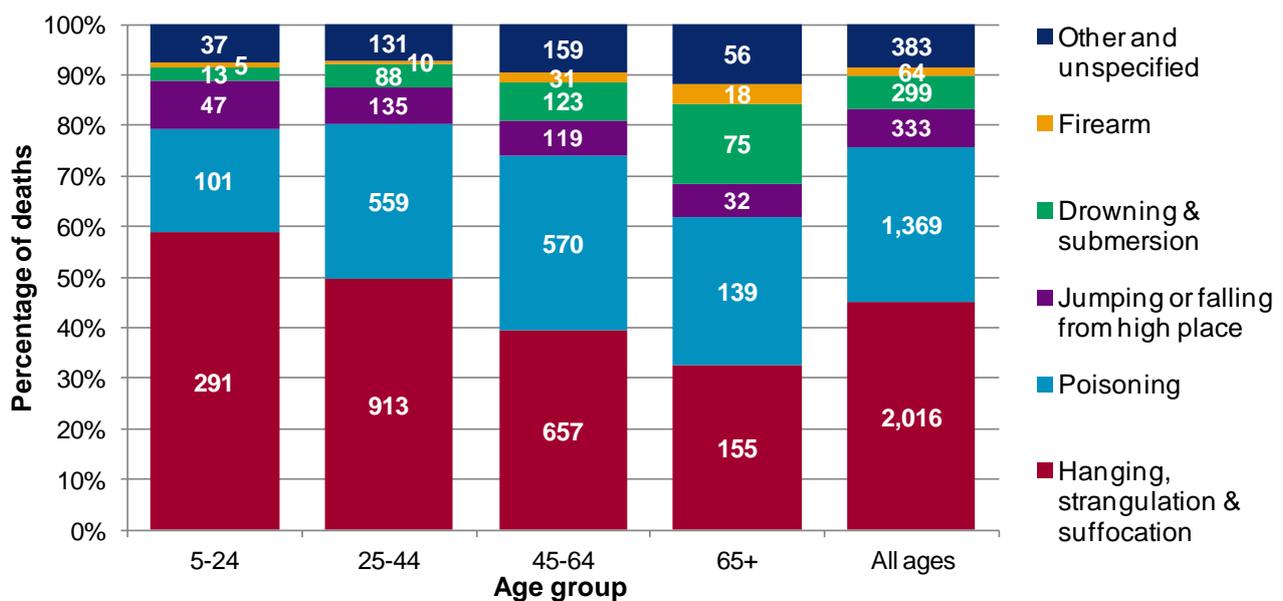
³ Private dwelling refers to a person’s home, or someone else’s home, garage, garden, driveway, etc.

It should be noted that hospital was the place of death for 661 (15%) individuals, although the location where the suicidal act occurred was unspecified in the majority of these cases (88%), perhaps because it was not known by the hospital doctor who completed the death certificate. The remaining 85% of ScotSID cases whose death took place outside hospital are likely to have died at the location where the suicidal act occurred. It is rare for the suicidal act to be initiated in hospital. The National Confidential Inquiry into Suicides and Homicides ^{ref.13} (NCISH) reported that 190 suicides were of patients who were inpatients in a psychiatric ward in hospital at the time, over the period 2003-2013 in Scotland. However, 51 of these people had absconded from the ward at the time of their suicide.

1.2.3 Method of suicide

The most common method of suicide across the whole cohort was ‘hanging, strangulation & suffocation’ (2,016 cases, 45% of the cohort), followed by ‘poisoning’, a category which includes drug overdose (1,369 cases, 31% of the cohort). Figure 9 shows the breakdown by age group and method of suicide.

Figure 9: Deaths caused by probable suicide¹, by age and method of suicide², Scotland, 2009-14



NB Numbers in white show numbers of deaths for each method, not percentages.

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

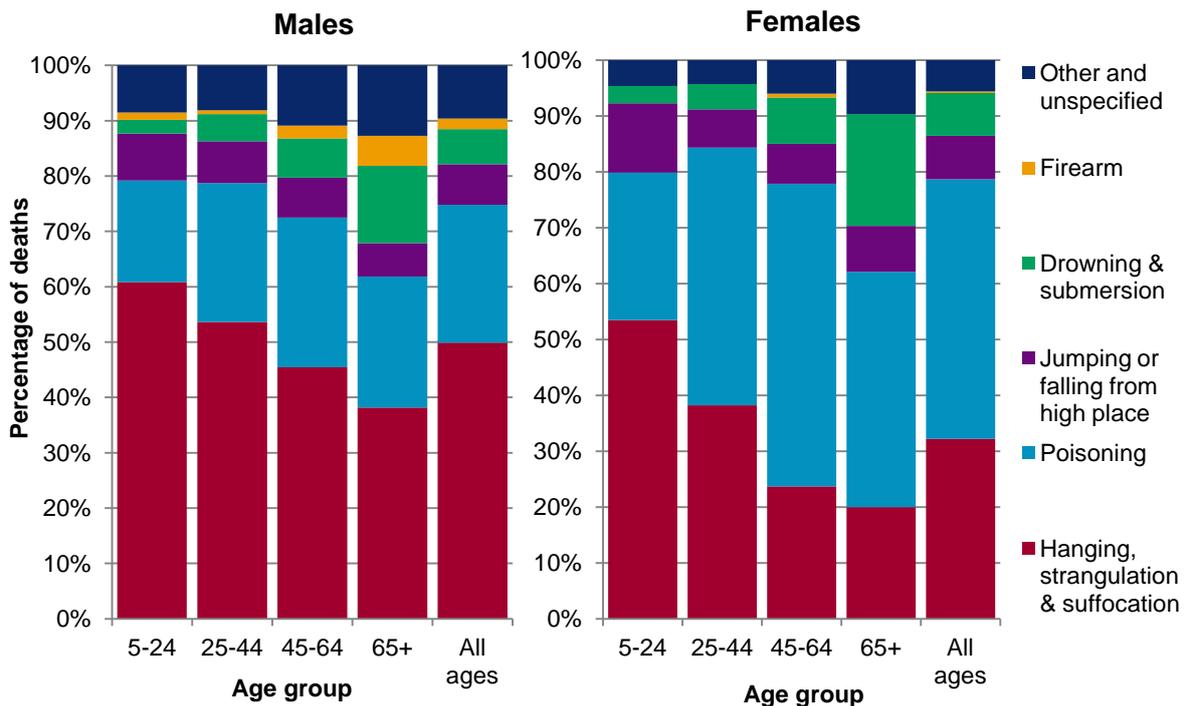
² The methods are defined by groupings of ICD10 codes for the underlying cause of death.

³ *Other and unspecified* includes deaths caused by smoke and fire, sharp objects (e.g. knives), moving objects (e.g. trains) and unspecified events (e.g. the death certificate stated simply ‘head injury’, with no indication of its cause).

A sex-specific breakdown of the methods used (Figure 10) shows that ‘hanging, strangulation & suffocation’ was also the most common method among males (1,634 cases, 50% of the male cohort), while ‘poisoning’ was the most common among females (552 cases, 47% of the female cohort). This concurs with previous findings by [Platt et al](#) in 2007 ^{Ref.14}.

'Hanging, strangulation & suffocation' was the most common method among males in each age group. However, the proportion of deaths using this method decreased with age, from 61% among those aged 5-24 years to 38% among those aged 65+ years. 'Poisoning' was the most common method among females in each age group except those under 25 years, among whom 'hanging, strangulation & suffocation' was the most common method (used in over half the cases [53%]). Among males the second most common method was 'poisoning' (817 cases, 25%) and among females it was 'hanging, strangulation & suffocation' (382 cases, 32%).

Figure 10: Deaths caused by probable suicide¹, males and females by age and method of suicide², Scotland, 2009-14



NB Numbers in white show numbers of deaths for each method, not percentages.

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² The methods are defined by groupings of ICD10 codes for the underlying cause of death.

³ *Other and unspecified* includes deaths caused by smoke and fire, sharp objects (e.g. knives), moving objects (e.g. trains) and unspecified events (e.g. the death certificate stated simply 'head injury', with no indication of its cause).

1.2.4 Post mortem examinations

In Scotland, sudden and unexpected deaths must be referred to the Procurator Fiscal for investigation to determine the cause of death. The Procurator Fiscal may require a post mortem examination to be carried out as part of this process. In addition, even if a post mortem is not formally required, this may be carried out as part of local procedures for deaths occurring in hospital.

In the ScotSID cohort, a post mortem examination was known to have been carried out on 3,978 cases (90% of the total with known post mortem status on the death record; Table 7).

In 27 cases, it was not possible to determine whether a post mortem was undertaken. This situation may occur where a case was recorded as 'may be performed' but the outcome is unknown when the NRS death records for the year are finalised.

Table 7: Deaths caused by probable suicide¹ – post mortem indicator status, Scotland, 2009-14

Post Mortem Indicator	Number	%
Has been performed	3,978	89.7%
Not performed	459	10.3%
Total	4,437	100.0%
Not Known ²	27	-

Source: NRS.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Recorded as 'may be performed' but outcome was not known when the NRS death records for the year were finalised.

2 Contact with health services

This section examines probable suicide deaths in relation to previous contact with a wide range of health services in Scotland, including: general acute hospital inpatient/ daycase care, psychiatric outpatient appointments, births in hospital, contact with drug services, mental health drug prescribing in the community, and Accident & Emergency (A&E) attendances.

It is unlikely that the 76 individuals who died of probable suicide and who were resident outwith Scotland or their country of residence was unknown would have had contact with health services in Scotland prior to death. These persons were therefore excluded from all the tables in this section. The age and sex breakdown of the 4,388 Scottish residents in ScotSID is shown in Table 8.1 in [Appendix 8](#). Figures from this table are used as the denominator figures for many of the tables in sections 2.1 – 2.3.

2.1 General acute hospital discharge episodes

ScotSID links the death records for probable suicides with data on inpatient and daycase discharges from non-obstetric, non-psychiatric specialties in general acute hospitals in Scotland (SMR01). More information on these data can be found on ISD's [Inpatient and Day Case Activity](#) webpage ^{Ref.15}.

It should be noted that, in compiling Tables 8 to 11 below, hospital discharges with a discharge date matching the date of death were **excluded** from the analysis: such admissions were likely to have resulted from the suicidal act rather than being for care prior to the suicide. A total of 382 individuals had such a record and, of these, 99 had no other hospital discharge within the five years prior to death.

Tables 8, 9, and 10 show the number and percentage of cases who had at least one general acute hospital discharge within the last 30 days, 12 months and 5 years, respectively, before death. These figures are cumulative. Of the 4,388 individuals who were resident in Scotland at the time of death, 324 (7%) had been an inpatient/daycase and discharged within 30 days of death, while 1,343 (31%) had been discharged within one year and over half (2,548 (58%)) had been discharged within five years of their death. The remaining 1,840 individuals (42%) had no record of a general acute hospital discharge during the five years before their death.

The percentage of probable suicide deaths with prior hospitalisations increased with age and was generally higher for females than males (although sex differences among those aged 65+ years at death were very small). The [December 2015 ScotSID report](#) ^{Ref.11} included a comparison of the rates of prior hospitalisations for suicide cases with those for the general population and found that people who died by suicide were more than twice as likely as the general population of Scotland to have been in contact with general hospital services in the year prior to death.

Table 8: Deaths caused by probable suicide¹ – patients discharged from a general acute hospital within 30 days prior to death, by age and sex, Scottish residents, 2009-14

Sex	Number	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
		Number	% ²	Number	% ²	Number	% ²	Number	% ²	Number	% ²
Males	7	1.9%	82	6.1%	88	7.4%	42	12.9%	219	6.8%	
Females	7	5.6%	36	7.8%	45	10.2%	17	11.7%	105	9.0%	
Total	14	2.9%	118	6.5%	133	8.2%	59	12.5%	324	7.4%	

Source: NRS; SMR01.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 9: Deaths caused by probable suicide¹ – patients discharged from a general acute hospital within 12 months prior to death, by age and sex, Scottish residents, 2009-14

Sex	Number	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
		Number	% ²								
Males	67	18.6%	329	24.4%	348	29.4%	131	40.2%	875	27.2%	
Females	38	30.4%	190	41.3%	181	41.1%	59	40.7%	468	40.0%	
Total	105	21.6%	519	28.7%	529	32.6%	190	40.3%	1,343	30.6%	

Source: NRS; SMR01.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 10: Deaths caused by probable suicide¹ – patients discharged from a general acute hospital within 5 years prior to death, by age and sex, Scottish residents, 2009-14

Sex	Number	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
		Number	% ²								
Males	161	44.7%	688	51.0%	655	55.4%	239	73.3%	1,743	54.2%	
Females	70	56.0%	336	73.0%	293	66.6%	106	73.1%	805	68.8%	
Total	231	47.6%	1,024	56.6%	948	58.4%	345	73.2%	2,548	58.1%	

Source: NRS; SMR01.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

The main diagnosis at discharge of the 2,548 individuals who died by suicide and had at least one general acute hospital discharge within five years before death is presented in Table 11. In cases where an individual had multiple discharges, the diagnosis relates to the most recent stay (excluding stays occurring on the day of death).

Table 11 includes the diagnosis 'Injury, poisoning and other external causes', coded as either a result of intentional self-harm or not. Some of these cases may have been

intentional self-harm but this was not recorded on the discharge record. The boundary between intentional and unintentional injuries is not always clear ^{Ref.16,17} and hospitals vary in their use of the intentional self-harm codes. When considering these two categories it is useful to bear in mind that those 'not coded as intentional self-harm' may include some self-harm injuries in addition to accidents and assaults.

'Injury, poisoning and other external causes' (from self-harm, accidents and assault combined) was the most common reason for prior hospitalisation of ScotSID cases as an inpatient/daycase. A total of 130 individuals were discharged with this diagnosis within the 30 days prior to death. This number increased to 538 for the 12 months prior to death, and 993 for the 5 years prior to death; the percentage of those with a general hospital discharge who had an injury hospitalisation was stable at around 40% within each time period. If these percentages are expressed as a fraction of the ScotSID cohort as a whole (4,388), 3% of ScotSID cases had an injury hospitalisation within 30 days, 12% within 12 months and 23% within 5 years of death.

Table 11: Deaths caused by probable suicide¹ – patients discharged² from a general acute hospital within the last 30 days, 12 months and 5 years before death, by main diagnosis, Scottish residents, 2009-14

Main Diagnosis	ICD10 Codes (main position unless stated)	Most recent general acute hospital discharge within:					
		30 days		12 months		5 years	
		Number	%	Number	%	Number	%
<u>Injury, poisoning and other external causes – Intentional Self Harm</u>	S00-T99 and a secondary code X60-84	99	30.6%	335	24.9%	560	22.0%
<u>Injury, poisoning and other external causes – not coded as Intentional Self Harm</u>	S00-T99 without a secondary code X60-84	31	9.6%	203	15.1%	433	17.0%
Diseases of the digestive system	K00-K99	29	9.0%	137	10.2%	296	11.6%
Diseases of the respiratory system	J00-J99	15	4.6%	64	4.8%	132	5.2%
Diseases of the musculoskeletal system and connective tissue	M00-M99	7	2.2%	55	4.1%	126	4.9%
Mental and behavioural disorders ³	F00-F99	31	9.6%	77	5.7%	107	4.2%
Diseases of the circulatory system	I00-I99	11	3.4%	50	3.7%	105	4.1%
Diseases of the genitourinary system	N00-N99	7	2.2%	42	3.1%	81	3.2%
Malignant and non-malignant neoplasms	C00-D49	11	3.4%	38	2.8%	72	2.8%
Diseases of the skin and subcutaneous tissue	L00-L99	4	1.2%	26	1.9%	63	2.5%
Diseases of the nervous system	G00-G99	8	2.5%	35	2.6%	58	2.3%
Other		71	21.9%	281	20.9%	515	20.2%
Total with a general acute hospital discharge		324	100.0%	1,343	100.0%	2,548	100.0%
Number of individuals with no general acute hospital discharge		4,064	-	3,045	-	1,840	-
Total deaths caused by probable suicide (Scottish residents only)		4,388	-	4,388	-	4,388	-

Source: NRS; SMR01.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14

² Most recent discharge, excluding discharges occurring on the day of death.

³ Note that this table relates only to general acute hospitals (SMR01 data), not psychiatric hospitals or units (SMR04 data), and therefore the numbers are not high for the diagnosis 'mental and behavioural disorders'.

The frequency and order of diagnoses recorded for hospital discharges among the ScotSID cohort differed from those recorded for all discharges from acute hospitals. Among all acute hospital discharges in 2014/15, 'neoplasms' made up 13% of all discharges, while 8% were discharges with a diagnosis of 'Injury, poisoning and certain other consequences of external causes' (unfortunately not further differentiated to show how many were due to intentional self harm). These figures and further information on all acute hospital discharges are available on the [hospital care section of the ISD website](#) ^{Ref.18}.

2.2 Psychiatric hospital discharge episodes

ScotSID links the death records for probable suicides with data on inpatient and day case discharges from psychiatric specialties in Scottish hospitals (SMR04).

Tables 12, 13 and 14 show the number and percentage of cases who had at least one psychiatric hospital discharge within the last 30 days, 12 months and 5 years, respectively, before death. These figures are cumulative. In cases where an individual had multiple discharges, only the most recent discharge before death was considered. The denominators for these tables can be found in Table 8.1 in [Appendix 8](#).

In contrast to the general acute hospital analysis, episodes with a date of discharge matching the date of death are **included** in the tables because patients are unlikely to be admitted to a psychiatric unit immediately following an act of significant self-harm. Eighty-eight cases had a date of death that matched the date of discharge. This could indicate that the individual died whilst in hospital, very shortly after discharge, or while absent on pass from an inpatient unit or ward.

Of the 4,388 individuals who were resident in Scotland at the time of death, 209 (5%) had been a psychiatric inpatient/day case discharged within 30 days prior to death, including the 88 who died on the same day as the discharge. A total of 550 individuals (13%) were discharged within 12 months prior to death and 923 (21%) within 5 years prior to death. The remaining 3,465 individuals (79%) had no record of a psychiatric hospital discharge in the 5 years before their death.

For each time period, there was a higher proportion of probable suicides with a prior discharge from a psychiatric hospital among females than males. This sex difference was found in all age and sex combinations, apart from males aged 65+ years dying within 30 days of discharge. There was a lower percentage of probable suicides with a previous psychiatric discharge among those aged under 25 years compared to those aged 25 years and over.

Table 12: Deaths caused by probable suicide¹ occurring within 30 days of discharge from a mental health specialty, by age and sex, Scottish residents, 2009-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ²	Number	% ²	Number	% ²	Number	% ²	Number	% ²
Males	4	1.1%	59	4.4%	50	4.2%	16	4.9%	129	4.0%
Females	3	2.4%	33	7.2%	38	8.6%	6	4.1%	80	6.8%
Total	7	1.4%	92	5.1%	88	5.4%	22	4.7%	209	4.8%

Source: NRS; SMR04.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 13: Deaths caused by probable suicide¹ occurring within 12 months of discharge from a mental health specialty, by age and sex, Scottish residents, 2009-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ²	Number	% ²	Number	% ²	Number	% ²	Number	% ²
Males	19	5.3%	144	10.7%	138	11.7%	26	8.0%	327	10.2%
Females	11	8.8%	97	21.1%	89	20.2%	26	17.9%	223	19.1%
Total	30	6.2%	241	13.3%	227	14.0%	52	11.0%	550	12.5%

Source: NRS; SMR04

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 14: Deaths caused by probable suicide¹ occurring within 5 years of discharge from a mental health specialty, by age and sex, Scottish residents, 2009-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ²	Number	% ²	Number	% ²	Number	% ²	Number	% ²
Males	35	9.7%	263	19.5%	219	18.5%	46	14.1%	563	17.5%
Females	18	14.4%	162	35.2%	142	32.3%	38	26.2%	360	30.8%
Total	53	10.9%	425	23.5%	361	22.3%	84	17.8%	923	21.0%

Source: NRS; SMR04

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

As shown in Table 14, around one in five (21%) probable suicides had a discharge from a mental health specialty in the five years prior to death. Patients may also have been treated in primary and specialist community-based mental health care services. Information on these services is currently not centrally collected and therefore not yet available in ScotSID. Opportunities for intervention/prevention may not always be easy to determine, and future suicide prevention initiatives need to take into account all the contacts that an ‘at risk’ individual may have in the period prior to a suicide attempt.

The main diagnosis at discharge of the 923 individuals who had a psychiatric discharge within 5 years prior to death is presented in Table 15. In cases where an individual had multiple hospital stays, the diagnosis relates to the most recent stay.

For all time periods (30 days, 12 months, 5 years) the most frequent condition at discharge was ‘mood (affective) disorders’ (31%, 33% and 33%, respectively, of diagnoses). For discharges within 30 days the second most frequent condition was ‘schizophrenia, schizotypal and delusional disorders’ (22%), whereas within 12 months and 5 years before death the second most frequent condition was ‘mental and behavioural disorders due to psychoactive substance use’ (19% and 23%, respectively). Other common conditions were ‘neurotic, stress related and somatoform disorders’ and ‘disorders of adult personality and behaviour’.

The frequency and order of diagnoses recorded for psychiatric hospital discharges among the ScotSID cohort was quite similar to those recorded for all discharges from psychiatric hospitals. Among psychiatric patients discharged in 2014/15, the most common diagnosis was ‘mood affective disorders’ (25% of discharges) followed by ‘schizophrenia, schizotypal and delusional disorders’ (22% of discharges) and ‘mental and behavioural disorders due to psychoactive substance use’ (17% of all discharges). These figures and further information on all psychiatric hospital discharges are available on the [mental health section of the ISD website](#) ^{Ref.19}.

Table 15: Deaths caused by probable suicide¹ – patients discharged² from a mental health specialty within the last 30 days, 12 months and 5 years before death, by main diagnosis on discharge, Scottish residents, 2009-14

Main Diagnosis	ICD10 Codes (main position unless stated)	Most recent psychiatric hospital discharge within:					
		30 days		12 months		5 years	
		Number	%	Number	%	Number	%
Mood (affective) disorders	F30-F39	65	31.1%	179	32.5%	306	33.2%
Mental and behavioural disorders due to psychoactive substance use	F10-F19	27	12.9%	106	19.3%	208	22.5%
Schizophrenia, schizotypal and delusional disorders	F20-F29	46	22.0%	105	19.1%	161	17.4%
Neurotic, stress related and somatoform disorders	F40-F49	24	11.5%	62	11.3%	97	10.5%
Disorders of adult personality and behaviour	F60-F69	24	11.5%	55	10.0%	81	8.8%
Organic, including symptomatic, mental disorders	F00-F09	10	4.8%	18	3.3%	24	2.6%
Other		13	6.2%	25	4.5%	46	5.0%
Total		209	100.0%	550	100.0%	923	100.0%
Number of individuals with no psychiatric hospital discharge		4,179	-	3,838	-	3,465	-

Source: NRS; SMR04.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Most recent discharge, including discharges occurring on the day of death.

The majority of admissions to a psychiatric hospital were informal in status, i.e. the individual was voluntarily admitted (Table 16). Within 5 years prior to death, 116 individuals (13%) were formally admitted, i.e. detained under the provisions of the Mental Health (Scotland) Acts 1960 and 1984 or the Mental Health (Care and Treatment) (Scotland) Act 2003. Among patients with multiple admissions, only the status of the most recent admission was included in the table.

Patients admitted on a formal basis who had their status changed to informal while in hospital are counted as a formal admission in the table.

Table 16: Deaths caused by probable suicide¹ – patients discharged from a mental health specialty within the last 30 days, 12 months and 5 years before death, by status on admission, Scottish residents, 2009-14

Status on admission	Most recent psychiatric hospital discharge within:					
	30 days		12 months		5 years	
	Number	%	Number	%	Number	%
Informal admission ²	177	84.7%	478	86.9%	807	87.4%
Formal admission ³	32	15.3%	72	13.1%	116	12.6%
Total	209	100.0%	550	100.0%	923	100.0%
Number of individuals with no psychiatric hospital discharge	4,179	-	3,838	-	3,465	-

Source: NRS; SMR04.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Voluntary mental health hospital admission.

³ Patient detained under the provisions of the Mental Health (Scotland) Acts 1960 & 1984 and the Mental Health (Care and Treatment) (Scotland) Act 2003.

2.3 Psychiatric outpatient appointments

ScotSID links the death records for probable suicides with SMR00 data on outpatient appointments (new and return/follow-up, whether the patient attended or not). Not all hospitals submit data for return appointments, as completion of this information is not mandatory. Therefore, the true number of outpatient appointments offered is likely to be underestimated. More information on outpatient data can be found on ISD's [Outpatient Activity](#) webpage ^{Ref.20}.

Bearing in mind this likely under-recording, at least 277 individuals (6% of the 4,388 individuals who died of probable suicide and who were resident in Scotland) were allocated an outpatient appointment in the specialty of psychiatry within the last 30 days before their death (Table 17). At least 886 individuals (20%) were allocated such an appointment within the 12 months prior to death (Table 18). Thus, up to eight out of 10 people who died from suicide did not have a psychiatric outpatient appointment in the year before death.

The percentages allocated appointments were generally higher for females than males for each age group shown in Tables 17 and 18. Note that these data include appointments where the patient did not attend; the percentages of patients seen are even lower. The denominators for these tables can be found in Table 8.1 in [Appendix 8](#).

Table 17: Deaths caused by probable suicide¹ occurring within 30 days after a psychiatric outpatient appointment^{2,3}, by age and sex, Scottish residents, 2009-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ⁴	Number	% ⁴	Number	% ⁴	Number	% ⁴	Number	% ⁴
Males	6	1.7%	97	7.2%	62	5.2%	9	2.8%	174	5.4%
Females	5	4.0%	45	9.8%	43	9.8%	10	6.9%	103	8.8%
Total	11	2.3%	142	7.8%	105	6.5%	19	4.0%	277	6.3%

Source: NRS; SMR00.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14

² Includes DNAs (people who 'did not attend').

³ Not all hospitals submit an SMR00 for return appointments, as completion of this information is optional. Therefore, the numbers presented here may be an underestimate of the true number of outpatient appointments offered.

⁴ Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 18: Deaths caused by probable suicide¹ occurring within 12 months after a psychiatric outpatient appointment^{2,3}, by age and sex, Scottish residents, 2009-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ⁴	Number	% ⁴	Number	% ⁴	Number	% ⁴	Number	% ⁴
Males	57	15.8%	272	20.1%	195	16.5%	42	12.9%	566	17.6%
Females	19	15.2%	141	30.7%	124	28.2%	36	24.8%	320	27.4%
Total	76	15.7%	413	22.8%	319	19.7%	78	16.6%	886	20.2%

Source: NRS; SMR00.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14

² Includes DNAs (people who 'did not attend').

³ Not all hospitals submit an SMR00 for return appointments, as completion of this information is optional. Therefore, the numbers presented here may be an underestimate of the true number of outpatient appointments offered.

⁴ Percentages are calculated using denominators from the total suicides figures for Scottish residents in table 8.1 in [Appendix 8](#).

Table 19 shows that, of the 886 individuals allocated an appointment within the year before death, almost half (403 or 45%) were new appointments, while the rest (55%) were follow-up/return appointments. This finding should be treated with caution, however, as return appointments may be underestimated in this record system. Of these 886 individuals, 183 (21%) did not attend (DNA) their most recent appointment and did not cancel it. Among the 183 DNAs, 49 were in the group of 277 individuals who had an appointment allocated 30 days before death (Table 17).

Table 19: Deaths caused by probable suicide¹ occurring within 12 months after a psychiatric outpatient appointment – Appointment type by clinic attendance status², Scottish residents, 2009-14

Appointment Type	Attended		Did not attend		Total	
	Number	%	Number	%	Number	%
New outpatient	333	82.6%	70	17.4%	403	100.0%
Follow-up/ return outpatient ³	370	76.6%	113	23.4%	483	100.0%
Total	703	79.3%	183	20.7%	886	100.0%

Source: NRS; SMR00

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Attendance status at most recent appointment.

³ Not all hospitals submit an SMR00 for return appointments, as completion of this information is optional. Therefore, the numbers presented here may be an underestimate of the true number of outpatient appointments offered.

Considering only the more reliable data for *new* psychiatric outpatient appointments in Table 19, and using the 4,388 Scottish residents as the denominator, 403 (9%) were offered such appointments, of whom 333 (8%) attended and 70 (2%) did not attend.

2.4 Births in hospital

ScotSID links the death records for probable suicides with maternity and birth data. Records are only available on births within a Scottish maternity unit; therefore, details of home births or children born outwith Scotland are not captured. Records on the baby born fourth or later in a multiple delivery are also not captured. More information on these data can be found on ISD’s [Maternity and Births](#) webpage ^{Ref.21}.

Of the 1,170 female Scottish residents in the ScotSID cohort for the whole period, 2009-14, maternity records indicated that 288 (25%) had given birth to one or more children who (assuming they were still alive) would be under the age of 16 at the time of their mother’s suicide (Table 20). Of these 288 women, 45 had had three or more children. Twenty four women had given birth within the twelve months before death; all of these were live births.

Table 20: Female deaths caused by probable suicide¹ – number of known births of children who would be under 16 years old at the time of their mother’s suicide^{2,3}, Scottish residents, 2009-14

Number of children each mother had under 16 years ^{2,3}	Number of mothers	%
0	882	75.4%
1	152	13.0%
2	91	7.8%
3+	45	3.8%
Total number of female probable suicides	1,170	100.0%

Source: NRS; SMR02

¹ ScotSID cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Excludes home births, children born outwith Scotland, and babies born fourth or later in a multiple delivery.

³ Stillbirths and neonatal deaths recorded on SMR02 were excluded, but it is not known if the other children were all still living at the time of their mother’s suicide.

2.5 Contact with specialist drug treatment services

The [Scottish Drug Misuse Database](#) (SDMD) offers a profile of individuals with problem drug use, based on information provided at various points before and during specialist drug treatment. The majority of information is collected during an individual’s initial assessment for specialist drug treatment. There are recognised issues with the data quality and completeness of SDMD; as a result, some questions are known to be poorly recorded. For further information, see the [2014/15 Scottish Drug Misuse Database Annual Report](#) ^{Ref.22}.

In 2008, SDMD was extended to allow the collection of information at 12 week, annual and ad-hoc follow-up time points. However, due to the low compliance of services submitting follow-up information to the SDMD, ScotSID only links to the data collected in the initial assessment part of the SDMD. The information presented in this section relates to the client’s most recent initial assessment prior to death from suicide. Details on the method used to link these data to the ScotSID cohort can be found in [Appendix 7](#).

Of the 4,388 Scottish residents in the whole ScotSID cohort, 326 (6%) were known to specialist drug treatment services. Self-reported information on previous injecting behaviour was available for 291 of these individuals, of whom 156 (54%) reported that they had injected drugs at some point in their lives.

Fifty-six individuals were known to have undergone an initial assessment by specialist drug treatment services within 6 months prior to their death, while a further 36 had undergone assessment 6-12 months before death (Table 21). Note that these data do not include any follow-up contact the client may have had following initial assessment, and cannot therefore be used to determine how recently individuals were in contact with drug treatment services. Additional information on drug-related deaths and contact with specialist drug treatment services can be found in the [National Drug-Related Deaths Database \(NDRDD\) \(Scotland\) report](#) ^{Ref.23}.

Table 21: Deaths caused by probable suicide¹ registered in 2009-14 – Timing of last known initial assessment by specialist drug treatment services before death², Scottish residents

Months/Years	Number	%
< 6 months	56	17.2%
6 months to < 1 year	36	11.0%
1 year to < 2 years	62	19.0%
2 years & over	172	52.8%
Total	326	100.0%
Number of individuals with no record on SDMD	4,062	-

Source: NRS; Scottish Drug Misuse Database

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

² Based on date of client’s initial assessment; does not reflect any follow-up treatment.

2.6 Mental health drug prescribing in the community

The Prescribing Information System (PIS) is a comprehensive database of details of NHS prescriptions dispensed in the community in Scotland. The data include prescribing by GPs,

nurses, dentists and pharmacists, and also hospital prescribing where items are dispensed in the community. Hospital dispensed prescriptions are not included. The available data cannot identify what proportion of the drugs dispensed are actually consumed or when they were consumed, and do not include products purchased ‘over the counter’. [Appendix 9](#) gives details of the PIS and its suitability for analysis of mental health drug prescribing in the community.

Patient-based analysis has been made possible through the recent availability of comprehensive patient-identifiable data using the Community Health Index (CHI) number. Nearly all patients in NHS Scotland have a unique CHI number which makes it possible to link a patient’s records in different datasets, and to identify which prescription items have been dispensed for an individual. The CHI number has only been reliably captured on the PIS since April 2009.

Therefore, analyses of prescriptions dispensed in the community are presented for probable suicides during 2010-2014 only. The denominator information for Table 23 – the age and sex breakdown of the ScotSID cohort of Scottish residents for the period 2010-2014 – is shown in Table 8.2 in [Appendix 8](#).

Of the 3,657 Scottish residents included in ScotSID whose deaths were registered in 2010-14, 2,150 (59%) had at least one mental health drug prescription dispensed within the 12 months prior to their death.

Table 22 shows the breakdown of drug types for these 2,150 individuals. Note that an individual might have had prescriptions for more than one mental health drug, in which case they would be counted only once per row in the table, but could be counted in more than one row (eg under hypnotics and under antidepressants). Around four out of five of these individuals (1,752, 82%) had been prescribed an antidepressant drug in the 12 months prior to death, and almost two-thirds (1,348, 63%) had received a prescription for hypnotics or anxiolytics. The latter may represent treatment for increased levels of anxiety and/or agitation in individuals at greater risk of self-harm or suicide. In addition, prescription of hypnotics or anxiolytics may indicate treatment of an underlying alcohol or drug dependency in some individuals, which in itself may increase suicide risk. The high rate of hypnotic/anxiolytic use within the ScotSID cohort is consistent with previous studies that have reported high rates of benzodiazepine use amongst people who die by suicide or who self-harm ^{Ref.24}.

Table 22: Deaths caused by probable suicide¹ – Individuals with mental health drug prescriptions dispensed within 12 months² prior to death, by British National Formulary (BNF) sub-section, Scottish residents, 2010-14

BNF sub section³	Number	%
Hypnotics and Anxiolytics (BNF 04.01)	1,348	62.7%
Drugs used in psychoses and related disorders (BNF 04.02)	609	28.3%
Antidepressant drugs (BNF 04.03)	1,752	81.5%
Total number of individuals	2,150	100.0%
Number of individuals with no mental health prescriptions within 12 months prior to death	1,507	-
Total deaths caused by probable suicide	3,657	-

Source: NRS; PIS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

² Based on the date the individual received the prescription note. In records where this date is absent this date defaults to the date the prescription was processed by PSD for payment.

³ Individuals may be counted in more than one row (BNF sub-section).

The age and sex breakdown of these 2,150 individuals is shown in Table 23. Just over half of the males (52%) and three-quarters of the females (77%) had received mental health drug prescriptions dispensed within the year before death. The proportion with mental health drug prescriptions was higher among females than males in all age groups, but it was, however, lower in the under 25 years age group, for both sexes.

Prescribing rates in the general population of Scotland show that just over a quarter (28%) of females and one sixth (16%) of males had received a prescription for one of these drugs in 2011. In the general population 3% of people aged under 25 had a mental health prescription in 2011. Percentages were 18% in the 25-44 age group, 23% in the 45-64 age group and 27% among those aged over 65.

Table 23: Deaths caused by probable suicide¹ – Individuals with mental health drug prescriptions dispensed within 12 months² prior to death, by age group and sex, Scottish residents, 2010-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ³	Number	% ³						
Males	84	29.5%	598	54.1%	564	56.6%	149	51.2%	1,395	52.1%
Females	45	43.7%	304	81.3%	320	84.2%	86	71.1%	755	77.2%
Total	129	33.2%	902	60.9%	884	64.2%	235	57.0%	2,150	58.8%

Source: NRS; PIS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

² Based on the date the individual received the prescription note. In records where this date is absent this date defaults to the date the prescription was processed by PSD for payment.

³ Percentages are calculated using denominators from the total suicides figures for Scottish residents in 2010-14 in Table 8.2 in [Appendix 8](#).

2.7 Accident & Emergency attendances

Information on Emergency Department attendances across Scotland is collected and maintained by ISD. All sites which provide emergency care are required to submit data. The A&E database contains data from June 2007 on patient attendances at Emergency Departments, Minor Injuries Units and community hospital A&E departments across NHS Scotland.

There are two levels of data submitted: episode and aggregate-level. All hospitals with Emergency Departments submit episode level data containing a detailed record for each patient attendance. Some smaller sites such as minor injury units and community hospitals only submit aggregate level data as they do not have the information systems and support to enable collection of detailed patient-based information. The proportion of episode level data varies by NHS board: NHS Greater Glasgow & Clyde, NHS Forth Valley, NHS Tayside, NHS Shetland and NHS Orkney submit episode level data for all their sites, while

NHS Highland submit episode level data for just over 50% of attendances. It is estimated that 94% of all A&E attendances are to sites which supply episode level data

Data can only be linked for records where the CHI number has been recorded within those sites recording episode level data, Completeness of CHI for A&E attendances varies across A&E departments. Recording of CHI number for A&E attendances became mandatory only from September 2009, and CHI completeness for Scotland as a whole increased from 85% in 2010 to 91% in 2014. Therefore, analysis is presented for attendances within three months prior to death for probable suicides occurring in calendar years 2010-2014 only (Tables 24-26). The denominator information for these tables is again the age and sex breakdown of the ScotSID cohort of Scottish residents for the period 2010-2014, shown in Table 8.2 in [Appendix 8](#). However, as CHI is not 100% complete, these statistics may underestimate the true number of attendances at A&E.

Please note that, in the remainder of this section on A&E attendances, 185 attendances were **excluded** from the analysis as they were likely to have resulted from the suicidal act itself rather than been for care prior to the suicide. These 185 were identified as attendances of people whose A&E discharge date matched their NRS death record's date of death *and* their A&E discharge destination was coded as either 'death' or 'admitted to the same NHS healthcare provider' (where they were assumed to have died later that day). The 185 exclusions were of A&E attendance records, *not* individuals. If one of these individuals had another A&E attendance in the period before death then they will still be included in this analysis.

Of the 3,657 Scottish residents in the ScotSID cohort who died in 2010-14, 637 (17%) attended A&E within 30 days prior to death, and 978 (27%) attended within three months prior to death. These figures are cumulative and exclude attendances which were likely to have resulted from the suicidal act. The age and sex breakdown for the A&E attendances within three months of death is shown in Table 24.

Table 24 shows that the percentage of females attending A&E was higher than that of males, overall and in all age groups except those aged 45-64 years. In the general population, however, attendance rates for the year ending in June 2015 tended to be higher for males in all age groups. For more information, see ISD's [Emergency Care](#) webpage Ref.25

Table 24: Deaths caused by probable suicide¹ – Individuals with at least one A&E attendance² within 3 months prior to death³, by age and sex, Scottish residents, 2010-14

Sex	Age <25		Age 25-44		Age 45-64		Age 65+		Total	
	Number	% ⁴								
Males	61	21.4%	266	24.1%	248	24.9%	80	27.5%	655	24.4%
Females	41	39.8%	153	40.9%	89	23.4%	40	33.1%	323	33.0%
Total	102	26.3%	419	28.3%	337	24.5%	120	29.1%	978	26.7%

Source: NRS; A&E attendances

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

² Not all sites submit episode level data and CHI completeness rates vary; therefore, this may be an underestimate of the true number of A&E attendances.

³ 185 A&E attendances were excluded from the analysis because they were likely to have resulted from the suicidal act rather than been for care prior to the suicide.

⁴ Percentages are calculated using denominators from the total suicides figures for Scottish residents in 2010-14 in Table 8.2 in [Appendix 8](#).

Table 25 shows how often ScotSID cases attended A&E within the three months prior to their death from suicide. A total of 2,679 individuals (73% of Scottish residents dying by suicide in 2010-14) had not attended. A further 644 (18%) had attended once, and 334 (9%) had visited at least twice.

Table 25: Deaths caused by probable suicide¹, by frequency of A&E attendances^{2,3} within 3 months prior to death, Scottish residents, 2010-14

Number of A&E attendances ^{2,3}	Number	%
0	2,679	73.3%
1	644	17.6%
2	185	5.1%
3	73	2.0%
4+	76	2.1%
Total	3,657	100.0%

Source: NRS; A&E attendances

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

² Not all sites submit episode level data and CHI completeness rates vary, therefore this may be an underestimate of the true number of A&E attendances.

³ 185 A&E attendances were excluded from the analysis because they were likely to have resulted from the suicidal act rather than been for care prior to the suicide.

Table 26 gives further detail on the individual's *most recent* A&E attendance (excluding attendances where this was likely to have resulted from the suicidal act). Of the 978 individuals attending within the three months before their death, more than a third (358) had died within 7 days of leaving A&E, 193 (20%) within 2 days, and 165 (17%) later that week (Table 32).

Table 26: Deaths caused by probable suicide¹ – People attending A&E within the 3 months before death: days between most recent attendance^{2,3} and death, Scottish residents, 2010-14

Number of days	Number	%
0 to 1 days	127	13.0%
2 days	66	6.7%
3 to 7 days	165	16.9%
>1 to <4 weeks	265	27.1%
4 to <8 weeks	193	19.7%
8 to 13 weeks	162	16.6%
Total	978	100.0%
Number of individuals with no A&E attendances within 3 months prior to death	2,679	-
Total deaths caused by probable suicide	3,657	-

Source: NRS; A&E attendances

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

² Not all sites submit episode level data and CHI completeness rates vary; therefore some A&E attendances may not be captured.

³ 185 A&E attendances were excluded from the analysis because they were likely to have resulted from the suicidal act rather than been for care prior to the suicide.

All the data in the above results section are available to download in an [Excel spreadsheet](#) with details of the tables [here](#). In addition, further information presented by NHS Board and Local Authority is available in a second [Excel spreadsheet](#).

Commentary

Socio-demographic and socio-economic factors

- Currently, Scotland's suicide rate is fairly similar to that of other Western European countries. However, suicides still occur disproportionately among certain socio-demographic groups, specifically, males, people of 'middle age', and those who are not married/partnered. The increased risk from being male is generally much higher than the risk of being single. Many of these risk factors are related; for example, impulsive men may be less likely to marry.
- The considerably higher rate of suicide among males in Scotland is found in high income countries across the world (World Health Organization 2014 ^{Ref.26}). There are many possible reasons for men's excessive suicide risk, including: societal expectations of men's behaviour and social role performance; differences in socially acceptable methods of dealing with stress; availability of, and preference for, different means of suicide (with differential lethality); availability and patterns of use of alcohol and drugs; and differences in help-seeking for psychological distress and mental health problems (Samaritans 2012 ^{Ref.27}). The tendency of males to use more lethal methods, such as hanging, may also reflect a higher level of suicidal intent or greater impulsivity.
- Peak suicide rates in the ScotSID cohort occur in the middle years (35-44 among males, 45-54 among females). Charts on the [ScotPHO suicide webpage for Scottish trends](#) ^{Ref.28} show that, over the twenty year period 1991-95 to 2011-15, male rates fell in all age groups (ScotPHO chart 2), while female rates fell in all age groups except for those aged 35-54 years (ScotPHO chart 3). These changes may reflect the impact of cultural, social and economic changes ('period effects') which have interacted with birth cohort effects.
- In line with findings from other studies, non- or never-married (single and divorced) people are over-represented in the ScotSID cohort. One interpretation that has been advanced for this finding is that non-married people are more likely to be socially isolated and 'disconnected' from their local community and wider social networks, situations which give rise to a higher risk of suicide.
- A major suicide prevention challenge is to increase social integration and social capital, especially among vulnerable, socially-excluded men. More research is needed to understand how to achieve this goal.
- Suicide rates are typically higher in more socio-economically deprived areas. For example, in the ScotSID cohort the suicide rate in the most socio-economically deprived 20% of the population is approximately three times that of the least deprived 20% of the population. We know from other research that there is also an inverse relationship between occupational social class and suicide risk at the individual level: the lower the social class position, the higher the suicide rate (Platt 2016 ^{Ref.29}). Deprivation is thus a significant determinant of suicide (as it is of the general health of the population and all-cause mortality). It is unclear whether this impact arises as a result of increased prevalence of mental ill-health (a strong risk factor for suicide – see below) in more deprived populations or whether poverty itself is an independent risk factor. More generally, the ScotSID findings highlight the importance of recognising that suicide has to be addressed as an issue of equity, as well as of mental health.

- While there was no statistically significant difference in suicide rates between health boards, some local authority areas were found to have rates that were significantly higher (Glasgow City, Highland, Inverclyde and Moray) and lower (Aberdeenshire, East Renfrewshire, Perth & Kinross, South Ayrshire and Stirling) than the rate in Scotland as a whole. These variations may arise as a result of compositional differences (i.e., the social, psychological or other characteristics of residents) between areas or contextual differences (i.e., physical, cultural, economic, social or other ecological characteristics) between areas or some mix of compositional or contextual differences.
- The ScotSID findings serve as a timely reminder that, in addition to targeting those who are unemployed as an important risk group, suicide prevention efforts need to focus attention on the workplace: while unemployed people are over-represented in the ScotSID cohort, the majority of the cohort is employed at the time of death. Effective suicide prevention action is required to raise employers' awareness of work-related threats to mental health and to promote positive mental health in the workplace. There is good evidence that improved occupational health in the workplace can reduce sickness absence, recognise mental illness earlier, and perhaps address some of the factors that may increase suicide risk.
- A quarter of the women who died by suicide had children who, assuming they were still alive, would be aged under the age of 16 at the time of their mother's death. It is not known how many of these children were still resident with their mother, nor do we know how many of the ScotSID cohort were fathers with parental responsibilities. The NCISH special report into suicide by young people aged under 20 in England^{Ref.30} found that 13% of this group had been bereaved by the suicide of a family member or friend. There needs to be more consideration about how to support young people who are bereaved, in order to reduce inter-generational mental health problems and suicidal behavior.

Circumstances of death

- Reducing access to the means commonly used to complete suicide in a particular socio-cultural context is one of the most effective suicide prevention strategies (Yip et al 2012^{Ref.31}). In Scotland, hanging is the most common method of suicide overall and among men. It is particularly difficult to prevent such deaths, given the ubiquity of materials that can be used. As noted by Yip et al (2012): 'Hanging, jumping from heights (particularly from individuals' own apartments or houses), and fatal shooting with firearms in countries with relatively non-restrictive gun laws ... cannot be readily restricted'.
- Poisoning is the second most common cause of death by suicide in the ScotSID cohort. There has already been some success in reducing suicides by paracetamol overdose associated with reduction in the number of tablets in packs (Hawton et al 2013^{Ref.32}). There may be other opportunities for effective intervention targeting prescribed medicines that are commonly used in suicide, such as opiates^{Ref.13}.

Contact with health services

- The majority (86-97%) of those who die by suicide have a diagnosed or undiagnosed mental health problem at the time of death (Cavanagh et al 2003^{Ref.33}). The lifetime risk of suicide (probability that an individual will at some point die from this cause) is estimated to be around 4-5% among those with mood disorders, schizophrenia and borderline personality disorder, and 10%-15% in people with bipolar disorder. This compares with an estimated lifetime risk of less than 1% in the general population

(Nordentoft et al 2011 ^{Ref.34}). A review of 28 studies found that, during an average of 10 years follow-up, the risk of suicide among patients diagnosed with bipolar illness was 22 times the risk of suicide in the general population (McGirr & Turecki 2011 ^{Ref.35}; Rhimer 2011 ^{Ref.36}).

- According to evidence from the ScotSID study and the *National confidential inquiry into suicide and homicide among people with mental illness (NCISH)* ^{Ref.13}, most people who die by suicide in Scotland have no contact with *specialist* mental health services in the 12 months before they die. Among Scottish residents in the ScotSID cohort, over half (59%) had at least one mental health drug prescription dispensed in the community within the year prior to their death, indicating that they were receiving medication for psychiatric symptoms or a mental illness from their GP or at an outpatient clinic. However, only one in five (20%) had been offered a psychiatric outpatient appointment and one in eight (13%) had been discharged from psychiatric inpatient care, within the year prior to death.
- These figures are likely to represent high levels of unmet need. Current systems of care (e.g. risk-oriented services) might not always represent the best responses to complex needs, however (Smith et al 2015 ^{Ref.37}).
- Anxiety and poor impulse control might be important mediators of the elevated risk of suicide among those with mental health problems (Fawcett 2009; Busch 2003; Ribeiro 2015 ^{Ref.38,39 & 40}). This might explain why many completed suicides are taking medications (e.g., antidepressants, benzodiazepines) which are used to treat anxiety disorders, sleep problems and agitation.
- Reducing suicide at population level is complex and there are no simple solutions. However, evidence from ScotSID supports other reports that significant numbers of people who die by suicide have no recent contact with health services. This suggests that intervening only within these services may have limited benefit, and action must be more widespread and diverse. There is good evidence from systematic reviews (e.g. Mann et al 2005 ^{Ref.41}; Zalsman et al 2016 ^{Ref.42}) that earlier recognition and effective treatment of depression can lead to a reduction in the overall suicide rate. Such approaches require coordinated interventions across all settings where individuals seek or receive health or social care.
- The ScotSID data support the view that periods shortly after discharge and after contact with A&E represent increased risk periods for suicide (although the absolute rates remain low). About one in six (17%) of the ScotSID cohort attended A&E within 30 days of death, and about one in four (27%) within three months of death (figures exclude attendances which were likely to have resulted from the suicidal act). Although there is a paucity of evidence to guide specific interventions that can reduce suicide in such situations, it is possible to identify a higher-risk group for whom interventions (not necessarily based within standard healthcare settings) might be useful and where further research is needed. Health professionals and early responders need to be well trained to recognise and intervene successfully where people present in pre-suicidal crisis and distress.

Conclusion

- ScotSID represents one of the most extensive linked datasets relating to suicide in the world and its findings have the potential to inform and guide Scotland's suicide prevention strategy and action plan. While there is increasing evidence that specific

interventions can have population-level effects, the impacts of inequality and socio-economic deprivation require solutions at a national level.

- At a local level the creation of Health and Social Care Partnerships presents an opportunity for improved communication and cross-sectoral collaboration in order to ensure that people and communities at high risk of suicide are offered effective, flexible and person-centred support, regardless of the service with which they come into contact.

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Glossary

Accident and emergency (A&E) attendance	The presence of a patient at an Accident & Emergency service seeking unplanned medical attention.
Acute hospital records	'Acute' hospital inpatient and daycase activity is recorded on Scottish morbidity record 01 (SMR01) discharge records. It includes care in major teaching hospitals, district general hospitals and community hospitals, but excludes obstetric and psychiatric care.
British National Formulary (BNF)	A standard classification of drugs into conditions of primary therapeutic use. The aim is to provide prescribers, pharmacists and other healthcare professionals with sound up-to-date information about the use of medicines.
Coding rules	<p>'Probable suicide' deaths are defined using the following ICD10 codes:</p> <p>Intentional self-harm: X60-X84, Y87.0 and Undetermined intent: Y10-Y34, Y87.2.</p> <p>New rules for coding causes of death were introduced in 2011 by NRS. Some deaths caused by drug misuse which were coded under the old rules as 'mental and behavioural disorders' are classified under the new rules as 'self-poisoning of undetermined intent' and consequently as probable suicides. A note on the changes to the way in which causes of death are coded is available in the Death Certificates and Coding the Causes of Death section of the NRS website.</p> <p>The main ScotSID analyses in this report are all based on old coding rules for consistency: for further information see the 'Data held in ScotSID' section of the Introduction and Appendix 4.</p>
Community Health Index (CHI)	The Community Health Index or CHI number is the unique national number for any health communication for a given patient. It is a ten-digit number created from a patient's date of birth and four other numbers. All patients who register with a GP will be allocated a CHI number.
Confidence interval for a European age-sex standardised rate (EASR)	The difference between the upper and lower confidence limit defines the confidence interval. The 95% confidence interval indicates the degree of uncertainty around the EASR; 95 times out of 100, the interval will include the true underlying rate. The width of the confidence interval depends on the size of the population and the underlying variability in the data.
Continuous inpatient stay (CIS)	An unbroken period of time that a patient spends as an inpatient. A patient may change consultant, significant facility, specialty and/or

or 'stay')	hospital during a continuous inpatient stay.
Deterministic matching	Used to link datasets for an individual when there is a common unique identifier in both datasets, for example the CHI number.
Discharge	A hospital discharge marks the end of an episode of care. Discharges include deaths, transfers to other specialties/significant facilities and hospitals, and routine discharges home.
European age-sex standardised rate (EASR)	European age-sex standardised rate, usually expressed per 100,000 population. For details on standardising, see ScotPHO Methodology .
European standard population (ESP) 1976	European Standard Population (ESP), a theoretical population which is defined as having a particular distribution by age and sex. The first version of the ESP was introduced in 1976, and the second in 2013.
European standard population (ESP) 2013	See above.
Funnel plot	A type of chart where the indicator of interest is plotted against the denominator or sample size - this gives it the characteristic funnel shape. For more information on the use of statistical process control charts in public health, please see APHO Technical Briefing 2 .
ICD10	The International Classification of Diseases and Related Health Problems, Tenth Revision (World Health Organization).
Intentional self-harm	A cause of death or morbidity defined by ICD10 codes X60-X84.
Information Services Division (ISD)	Information Services Division of NHS National Services Scotland. (From 1 June 2013, ISD became part of the Public Health and Intelligence Strategic Business Unit.)
Lifetime risk of suicide	Probability that an individual will at some point die from this cause.
New coding rules	See Coding rules above.
National drug-related deaths database (NDRDD)	The National Drug-related Deaths Database (see ISD Drugs and alcohol misuse publications).
National Records of Scotland (NRS)	National Records of Scotland (established on 1 April 2011, following the merger of the General Register Office for Scotland (GROS) and the National Archives of Scotland).

Old coding rules	See Coding rules above.
Office for National Statistics (ONS)	Office for National Statistics are the UK's largest independent producer of official statistics and its recognised national statistical institute. They are responsible for collecting and publishing statistics related to the economy, population and society at national, regional and local levels. They also conduct the census in England and Wales every 10 years.
Population estimates	NRS publish annual mid-year estimates of the Scottish population. These estimates are based on the Census, which is carried out every 10 years. In this report 'rebased populations' refer to those updated in light of the 2011 Census. 'Unrebased populations' are still based on the 2001 Census.
Probability matching	In linking data from different datasets for an individual, probability matching uses a set of identifiers to estimate the <i>probability</i> that two records correspond.
'Probable suicide'	Death for which the underlying cause is classified as 'intentional self-harm' or 'event of undetermined intent'.
Specialty	A division of medicine or dentistry covering a specific area of clinical activity.
SMR00	Scottish Morbidity Record 00 is an episode based patient record relating to all outpatients (new and follow-up) in specialties other than Accident & Emergency (A&E), and Genito-Urinary Medicine.
SMR01	Scottish Morbidity Record 01 – an episode-based patient record relating to all inpatients and day cases from NHS acute specialties in Scotland.
SMR02	Scottish Morbidity record 02 - an episode based patient record relating to all inpatients and day cases discharged from Obstetric specialties in Scotland.
SMR04	Scottish Morbidity Record 04 – an episode-based patient record relating to all inpatients and day cases admitted to and discharged from NHS mental health (psychiatric) specialties in Scotland.
Standard Deviation (SD)	A quantity expressing by how much the members of a group differ from the mean value for the group. In this case how much NHS Boards or Local Authorities differ from Scotland.
Undetermined intent	A cause of death defined by ICD10 codes; Y10-Y34, Y87.2. Events where available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm and assault.

List of Tables & Figures

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2	Deaths caused by probable suicide by employment status – 16-64 year olds, Scotland, 2009-14	2009-2014	
3	Deaths caused by probable suicide, by occupational group – 16-64 year olds, Scotland, 2011-14	2011-2014	
4	Deaths caused by probable suicide – Numbers, rates (crude and EASRs including 95% confidence limits) by NHS Board area in Scotland, persons aged 5 years and over, 2009-14	2009-2014	
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6	Place where the suicidal act occurred, deaths caused by probable suicide Scotland, 2009-14	2009-2014	
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Table No.	Name	Time period	File & size
14	Deaths caused by probable suicide occurring within 5 years of discharge from a mental health specialty, by age and sex, Scottish residents, 2009-14	2009-2014	Excel [325kb]
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22	Deaths caused by probable suicide – Individuals with mental health drug prescriptions dispensed within 12 months prior to death, by British National Formulary (BNF) sub-section, Scottish residents, 2010-14	2010-2014	
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Table No.	Name	Time period	File & size
25	Deaths caused by probable suicide, by frequency of A&E attendances within 3 months prior to death, Scottish residents, 2010-14	2010-2014	Excel [325kb]
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Figure No.	Name	Time period	File & size
1	Data sources for the Scottish Suicide Information Database, at August 2016	at August 2016	
2	Deaths caused by probable suicide – six-year total numbers and annual age-specific rates per 100,000 population, by age group and sex, Scotland, 2009-14	2009-2014	Excel [325kb]
3	Deaths caused by probable suicide – EASRs (including 95% confidence limits), Scotland by SIMD 2012 quintile, persons aged 5 years and over, 2009-14	2009-2014	
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B1-B14 & Figures B1-B2	Various breakdowns by NHS Board and Local Authority area	2009-2014	HB & LA tables [112kb]

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Further Information

Further information can be found on the [ISD website](#)

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Appendices

A1 – ScotSID Steering Group membership, June 2016

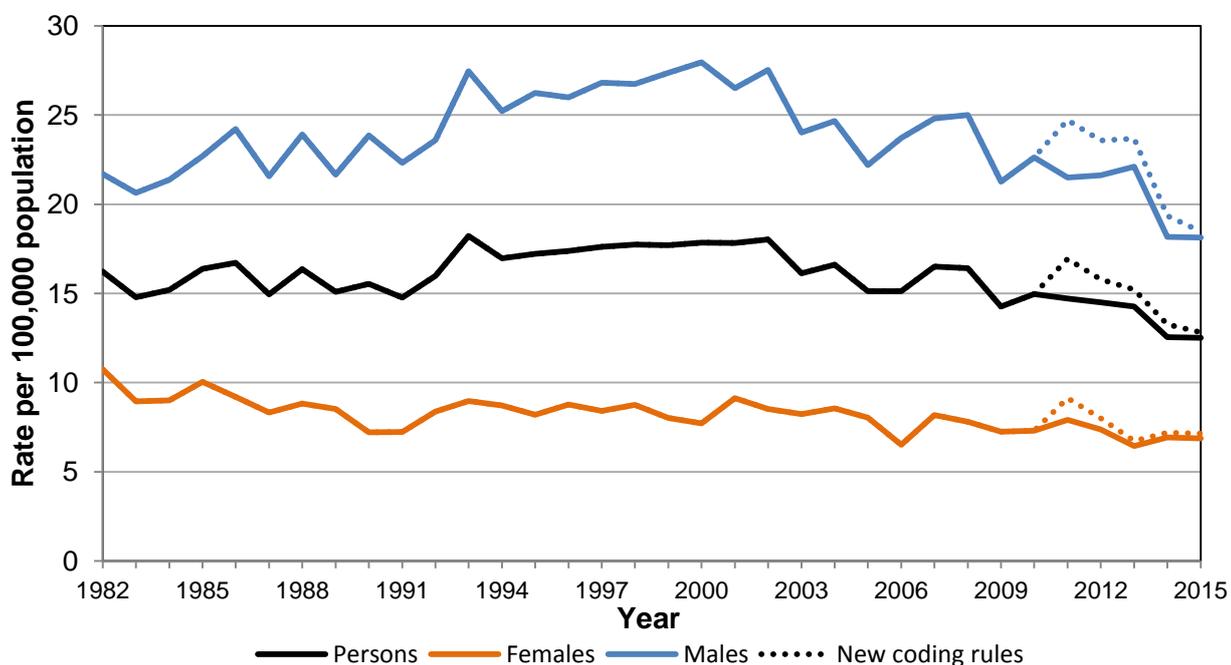
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A2 - Suicide in Scotland

The [Scottish Public Health Observatory \(ScotPHO\) website suicide topic](#)^{Ref.1} provides comprehensive data on suicide trends in Scotland by age, sex, geographical area and level of deprivation, as well as UK and international comparisons.

Chart 1 on the [ScotPHO suicide webpage for Scottish trends](#)^{Ref.1} (also Figure A2.1 below) shows European age-sex-standardised rates (EASRs) per 100,000 population between 1982 and 2015. For all persons, there was a peak in 1993 and again in 2002, after which there was a general downwards trend; this pattern is largely driven by suicides in males. For females, rates have tended to decrease slightly over the period.

Figure A2.1: Suicides¹ registered in Scotland², European age-sex-standardised rates³ per 100,000 population⁴, 1982-2015.



Source: NRS

¹ The solid lines represent suicide deaths based on old WHO coding rules to ensure consistency across the time period (see [Definition of a probable suicide](#)). The dotted lines represent suicide deaths based on the new coding rules.

² Includes all suicide deaths occurring in, and registered in, Scotland. This will include a small proportion of deaths for persons who were not resident in Scotland, and exclude deaths of residents of Scotland occurring outwith Scotland.

³ EASRs are European age-sex standardised rates per 100,000 population. The data in this table are directly standardised to the European Standard Population (ESP) 2013. For further details on standardising: see [ScotPHO Methodology](#).

⁴ Populations: In the calculation of rates, this publication uses mid-year population estimates for 1982 to 2015. For the period 2002 to 2010 populations that were rebased to take account of the 2011 census have been used.

Scottish suicide rates compared to other countries

Rates of probable suicides (intentional self-harm and events of undetermined intent combined) appear higher in Scotland than in England and Wales, but the rates for England and Wales

may be under-estimated due to differences in recording procedures. For further details, please see the [ScotPHO suicide webpage for UK comparisons](#)^{Ref.1}.

Potential differences in recording procedures between countries should also be borne in mind when looking at international comparisons. Mortality rates from suicide (defined as intentional self-harm only) are published annually by the Organisation for Economic Co-operation and Development (OECD), and the latest (2015) [Health at a Glance report](#)^{Ref.43} shows that the UK rate was lower than the OECD average in 2013. The [Scotland and European Health for All Database 2012](#)^{Ref.44} shows that between 1980 and 2010 the Scottish suicide rate (intentional self-harm only) has generally been lower than or around the European Union average.

A3 - Policy context

Choose Life

The Scottish Government's [Choose Life strategy and action plan](#) ^{Ref.45} was launched in December 2002. This ten year action plan had seven objectives, including:

'Knowing What Works: improving the quality, collection, availability and dissemination of information on issues relating to suicidal behaviour (and self-harm) and on effective interventions to ensure the better design and implementation of responses and services and use of resources.'

As part of the action plan, Choose Life set an NHS HEAT (Health improvement, Efficiency, Access to services and Treatment) target to reduce suicides in Scotland by 20% between 2002 and 2013. Over the last few years, a wide range of actions have been implemented to support people at risk of suicide. Whilst claims of a direct causal link through these actions cannot be made, there was a 19% reduction in the suicide rate in Scotland between 2000-02 and 2011-13.

During the 2008 'Choose Life' summit, NHS Health Scotland made a commitment to lead work to establish a Scottish Suicide Information Database, in order to address the dearth of contextual information available within a central resource. This led to ISD being commissioned by NHS Health Scotland to develop, analyse and maintain such a database (ScotSID).

Suicide Prevention Strategy 2013-2016

The Scottish Government developed and published a new [suicide prevention strategy](#) ^{Ref.46} in December 2013.

The strategy is structured around five themes, with 11 specific commitments for action. The key theme most pertinent to ScotSID is: *Developing the evidence base*, where commitment 9 states:

'We will continue to fund the work of ScotSID and the Scottish element of the National Confidential Inquiry into Suicide and Homicide and we will also contribute to developing the national and international evidence base. In doing so we will work with statutory, voluntary sector and academic partners.'

A suicide prevention implementation and monitoring group has overseen the progress of the strategy. As the implementation period comes to an end, work is ongoing to review the strategic direction and plan how to maintain progress, taking account of the experience of the past few years, any relevant new evidence, and the broader context of mental health priorities.

The Scottish Government's next mental health strategy, due for publication in late 2016, will contain a framework and list of priorities to transform mental health in Scotland. In addition to transforming mental health, progress on the priorities set out in the new strategy will also contribute to reducing death by suicide. The Scottish Government will also build on these priorities in a separate Suicide Prevention Strategy which is due for publication in 2017.

A4 - ScotSID cohort and suicide coding rules

The ScotSID cohort

The number of 'probable suicide' deaths included in ScotSID differs slightly from the number published by National Records of Scotland (NRS). Both use the same definition and old coding rules, and are based on the year in which a death is registered. However, unlike NRS, ScotSID excludes deaths of children aged less than 5 years. This is on the basis that deaths in this age group are more likely to be due to accidents or assault, and highly unlikely to be actual suicides. There were two such cases for deaths registered in the period 2009-2014, and therefore the total number of probable suicides quoted in this publication (4,464) is two fewer than the number published by NRS (4,466). The ScotPHO website suicide topic publishes the same numbers as NRS.

Changes in suicide coding rules

In 2011, NRS changed its coding practice to take account of changes made by the World Health Organization (WHO) to coding rules for certain causes of death. As a result there is a difference in how deaths data were coded for 2011 to 2014 compared to previous years, with some deaths previously coded under 'mental and behavioural disorders due to psychoactive substance use' now being classified as 'self-poisoning of undetermined intent' and consequently as suicides. NRS publish their [annual mortality statistics](#)^{Ref.3} for 'probable suicides' based on both the old and the new coding rules for 2011 onwards.

Based on NRS figures for all ages, the new coding rules increased the Scotland 'probable suicide' total by 117 deaths (from 772 to 889) in 2011, by 68 deaths (from 762 to 830) in 2012, 49 in 2013 (from 746 to 795) and 37 in 2014 (from 659 to 696). This ScotSID report presents 2011 to 2014 data based on the old rules (as estimated by NRS), ensuring consistency with the 2009 and 2010 data and facilitating the exploration of temporal trends. Full details on changes to the coding of causes of death between 2010 and 2011 can be found in the main points on the following page of the [NRS website](#).

A5 - ScotSID data items

National Records of Scotland (NRS)
Date of death
Date of registration
Registration district number
Sex
Employment status
Occupation code
Marital status
Place of occurrence
Institution
Primary cause of death
Secondary cause of death
Post mortem
NHS Board of residence
CHP code
Local government region
Local government district
Age
Council area
Country of residence code
SIMD quintile, based on postcode at time of death
SIMD decile, based on postcode at time of death
Time of death
SG Urban rural code
Ethnicity code
Outpatient attendances (SMR00)
Specialty
Clinic date
Referral type
Clinic attendance (attendance status)
Date referral received
Referral reason 1
Referral reason 2
Referral reason 3
Referral reason 4
SG Urban rural code 2004
General acute hospital inpatient and day case records (SMR01)
Ethnic group
Main condition

Other condition 1
Other condition 2
Other condition 3
Other condition 4
Other condition 5
Admission date
Admission type
Old admission type code
Admission reason
Discharge date
Continuous inpatient stay
Length of stay
NHS Board of residence
NHS Board of treatment
SG Urban rural code 2004
Discharge/transfer to code
Maternity records (SMR02)
Outcome of pregnancy, baby 1
Outcome of pregnancy, baby 2
Outcome of pregnancy, baby 3
Date of delivery
SG Urban rural code 2004
Discharges from mental health specialties (SMR04)
Ethnic group
Main condition at discharge
Other condition at discharge 1
Other condition at discharge 2
Other condition at discharge 3
Other condition at discharge 4
Other condition at discharge 5
Date of admission
Admission reason
Specialty
Date of discharge
Discharge type
Admission/transfer from
Waiting list type
Discharge/transfer to
Admission - referral from
Admission type
Treatment NHS Board

Status on admission
SG Urban rural code 2004
Arrangements for aftercare 1
Arrangements for aftercare 2
Arrangements for aftercare 3
Arrangements for aftercare 4
Prescriptions dispensed in the community (Prescribing Information System, PIS)
Calendar year (from paid date)
Month (from paid date)
Approved name
Prescribable item name
Item code
Item description
Product description
Item strength
Item strength unit of measure
Drug formulation code
BNF chapter code
BNF section
BNF sub section
Defined daily dose conversation
Number of dispensed items
Number of defined daily doses dispensed
Dispensed quantity
Dispensed date
Prescriber type
Scottish Drug Misuse Database (SMR25)
Known illicit drug user - initial assessment completed date
IV drug use
Contact with drug services
Recent illicit drug user (used in the past month)
Illicit drug used in past month 1
Illicit drug used in past month 2
Illicit drug used in past month 3
Illicit drug used in past month 4
Illicit drug used in past month 5
Frequency drug 1
Frequency drug 2
Frequency drug 3
Frequency drug 4
Frequency drug 5

A&E attendances - September 2009 onwards
Location/hospital code
Case reference number
Arrival mode
Referral source
Diagnosis 1
Diagnosis 2
Diagnosis 3
Diagnosis text 1
Diagnosis text 2
Diagnosis text 3
Disease 1
Disease 2
Disease 3
Discharge destination
Referred to 1
Referred to 2
Referred to 3
Arrival date
Arrival time
Date of discharge, admission or transfer
Time of discharge, admission or transfer
Intent of injury
Presenting complaint
Health Improvement Scotland (HIS) - 2012 onwards
Review undertaken by NHS Board (Y/N)
Referred to the Mental Welfare Commission for Scotland (Y/N)

Information from Healthcare Improvement Scotland's Suicide Reporting and Learning System is contained in the ScotSID database, however this report does not include this data. More information about Mental Health service's suicide reviews can be found on the [Suicide Reviews website](#) ^{Ref.47}.

A6 - Future ScotSID developments

The overall purpose of the Scottish Suicide Information Database is to provide a central repository for information on all probable suicide deaths in Scotland, in order to support epidemiology, preventive activity, and policy making. Further investigation into additional data sources will help inform how ScotSID continues to develop and capture a wider range of information on the health and wider social circumstances of individuals. Over the next 12 months, the Working Group will undertake further exploration of the potential to incorporate information from the following data sources into ScotSID:

Scottish Primary Care Information Resource (SPIRE)

[Scottish Primary Care Information Resource \(SPIRE\)](#) ^{Ref.48} is a new tool for extracting data from GP systems, which is currently being rolled out across Scotland. It is hoped that this will provide an efficient way of accessing relevant primary care data for record linkage for the individuals who died from suicide.

Unscheduled care

There are a number of sources of information available relating to use of unscheduled care services, including use of Scottish Ambulance Service, NHS24 and GP out of hours services. Linking data from these sources into ScotSID requires relevant agreements to be set up, and further work to accommodate different approaches to data recording and coding.

Community Health Activity Dataset

ScotSID would be enhanced by the inclusion of information on contacts with Community Mental Health Teams, but until recently such data has not been collected at a national level. The Community Health Activity Dataset (CHAD) for mental health will include activity and cost data from all community mental health services, with the exception of Addictions, Child and Adolescent Mental Health Services (CAMHS) and Learning Disabilities. This includes Primary Care Mental Health Teams, Community Mental Health Teams and specialist teams such as Forensic Community Teams and Esteem Teams. It will include information for both NHS and non-NHS care.

A draft dataset has been agreed and data from a handful of NHS Boards has been submitted for the period April to June 2016. The ISD team are now looking at the quality and completeness of the data that's been received. For further information see the [Community Health Activity Data pages of the ISD website](#).

A7 - Record linkage, data confidentiality and information governance

Record linkage

[Record linkage](#) is a means of identifying records in different databases that relate to the same individual. For the purposes of the ScotSID database, two approaches were employed in order to link the different records together:

- Deterministic (or exact) matching – uses a common unique identifier (e.g. Community Health Index (CHI) number)
- Probability matching – uses a set of personal identifiers to estimate the *probability* that the two records correspond and to decide the threshold (level) of agreement for matching of records.

Deterministic matching was used when there was a common unique identifier between the datasets to be linked, for example the CHI number. In some datasets where the completeness of CHI number is poor, a process called CHI seeding is carried out to add CHI numbers to records where it is missing. This involves using probability matching to a central CHI database.

For linkage to the Scottish Drug Misuse Database, probability matching was used as there is no common identifier available to allow a deterministic match. Probability matching takes account of typing errors, movement of individuals between geographical areas and other issues that may arise during data recording. This allows the 'linker' to quantify levels of agreement and disagreement between records.

CHI became mandatory for A&E attendances in September 2009, and therefore ScotSID (deterministic) linkage with A&E data was only possible for records after this date. There are not enough identifiers in the A&E database to allow CHI seeding to be used.

Data confidentiality and information governance

ScotSID links existing information relating to individuals who are thought to have died by suicide, from a range of sources. The specific data elements that were linked for this report include individuals' death records, hospital emergency, outpatient and inpatient attendance records, prescriptions dispensed in the community, and adverse event reviews for individuals who are thought to have died by suicide within a year of being under the care of NHS Scotland mental health services. It is envisaged that future linkages will extend to records from NHS24 and the Scottish Ambulance Service, and eventually also to GP records and records from the Crown Office and Procurator Fiscal Service. The linkage of this information will enable as complete a picture as possible to be built up of those individuals who are thought to have died by suicide and will help identify high risk groups.

Full Privacy Advisory Committee (PAC) approval was obtained for the linkage of data items from individuals' ISD health records into ScotSID.

The person identifiable information used for linkage purposes and contained within ScotSID includes:

- Forename
- Surname
- Previous name
- Community Health Index (CHI) number
- Sex
- Postcode

- Date of birth
- Date of death/Date death registered

ScotSID is held within ISD in accordance with established information security and data protection/ confidentiality procedures. Access is limited to authorised ISD personnel only. Although information on those who have died is not directly covered by the Data Protection Act 1998, ISD considers that such data are protected by a Duty of Confidence and their confidentiality needs to be protected. ISD produced the document 'How the Scottish Suicide Information Database project meets the six Caldicott Guardian principles' which was disseminated to all NHS Board Caldicott Guardians.

The person-identifiable data are stored separately from any contextual information and used only for linkage purposes to incorporate other datasets. For the purposes of this report, analysis was undertaken on a pseudo-anonymised dataset (data for which the personal identifiers had been removed and replaced with a unique identifier).

A8 – Age sex breakdowns

This appendix contains age and sex breakdowns of the ScotSID cohort for 2 different time periods (2009-14 and 2010-14). These are used as denominator figures for some of the percentages displayed in tables in section 2 of the main report.

The table below shows the age and sex breakdown for suicides of Scottish residents in the period 2009-14. This is used as the denominator figures for various tables in sections 2.1, 2.2 and 2.3.

Table 8.1: Deaths caused by probable suicide¹, by age and sex– Scottish residents, 2009-14

Sex	Age <25	Age 25-44	Age 45-64	Age 65+	Total
Males	360	1,350	1,182	326	3,218
Females	125	460	440	145	1,170
Total	485	1,810	1,622	471	4,388

Source: NRS.

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2009-14.

The table below shows the age and sex breakdown for suicides of Scottish residents in the period 2010-14. This is used as the denominator figures for tables 23 to 27 in sections 2.6 and 2.7.

Table 8.2: Deaths caused by probable suicide¹, by age and sex – Scottish residents, 2010-14

Sex	Age <25	Age 25-44	Age 45-64	Age 65+	Total
Males	285	1,106	997	291	2,679
Females	103	374	380	121	978
Total	388	1,480	1,377	412	3,657

Source: NRS

¹ ScotSID cohort excludes <5 year olds. Cohort is based on old WHO coding rules to ensure consistency across 2010-14.

A9 - Prescribing Information System

The Prescribing Information System (PIS) is a comprehensive database of details of NHS prescriptions dispensed in the community in Scotland. ISD maintains the system, and the data come from [Practitioner Services](#) which processes NHS prescriptions for payment. The data include prescribing by GPs, nurses, dentists and pharmacists, and also hospital prescribing where items are dispensed in the community. Hospital dispensed prescriptions are not included in the figures. The data available cannot identify what proportion of the drugs dispensed are actually consumed or when they were consumed, and do not include products purchased 'over the counter'.

The following mental health medicines prescribed from the British National Formulary (BNF) were included in ScotSID:

- Hypnotics and anxiolytics indicated for the treatment of anxiety and insomnia (BNF 4.1)
- Drugs used in psychoses and related disorders (BNF 4.2)
- Antidepressant drugs (BNF 4.3).

Patient-based analysis has been made possible through the recent availability of comprehensive patient-identifiable data using the Community Health Index (CHI) number. Prior to April 2009, the proportion of prescriptions with a valid CHI number recorded was generally not comprehensive enough to make patient-based analysis possible. For medicines used in mental health, CHI capture rates have improved, becoming high enough to permit accurate patient analyses for financial years 2009/10 to 2014/15.

ScotSID analyses have been carried out for prescriptions dispensed within 12 months prior to death for probable suicides occurring in the period 2010-2014. Prior to April 2009, CHI capture rates were slightly lower which may have resulted in a slight undercount for patients who died in January to March 2010, but these patients are likely to have been included in patient counts through items dispensed to them later on. Table A6 shows the CHI recording completeness, calculated as the percentage of dispensed items that have a valid CHI number attached and are therefore included in the analysis.

Table A6: CHI recording completeness for Scotland, by drug type, 2009/10 to 2014/15

Topic ¹	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Hypnotics and anxiolytics (BNF 04.01)	90.8%	92.7%	93.2%	94.5%	96.0%	96.4%
Drugs used in psychoses and related disorders (BNF 04.02)	91.1%	93.8%	94.3%	95.1%	96.5%	97.0%
Antidepressant drugs (BNF 04.03)	93.4%	95.4%	95.9%	97.0%	98.2%	98.6%

¹ BNF – British National Formulary sub-section.

Note that the date used to identify prescriptions for ScotSID cases was the prescription date, however in the absence of a prescription date this defaults to the 'paid date'. This is the last day of the month in which the prescription was processed by Practitioner Services and payment issued to the dispenser. In some cases, the 'paid month' may not be the same month that the prescription was prescribed and/or dispensed.

A10 - Publication metadata (including revisions details)

Metadata Indicator	Description
Publication title	The Scottish Suicide Information Database Report 2016
Description	This publication describes the development of the Scottish Suicide Information Database (ScotSID) and presents detailed information on deaths due to 'probable suicide' (intentional self-harm and undetermined intent) registered between January 2009 and December 2014.
Theme	Health and Social Care
Topic	Public Health
Format	PDF Document
Data source(s)	Linked data in ScotSID are from: death registrations (National Records of Scotland; NRS), general hospital inpatient and daycase records (SMR01), psychiatric hospital inpatient records (SMR04), outpatient attendances (SMR00), maternity records (SMR02), Scottish Drug Misuse Database (SMR25), Accident and Emergency (A&E) attendances and prescriptions dispensed in the community (Prescribing Information System; PIS).
Date that data are acquired	Range of dates up to 16 May 2016
Release date	10 August 2016
Frequency	Annual
Timeframe of data and timeliness	Data based on 2009-14 finalised death registrations. The most recent (2014 calendar year) finalised registrations were released by NRS in August 2015. ISD then linked in a range of other datasets as they became available, with the latest being SMR25 data in May 2016.
Continuity of data	In 2011, NRS made a change to the way deaths are classified, to match changes in World Health Organization coding rules. The new coding rules resulted in some drug misuse deaths previously coded under 'mental and behavioural disorders' being classified as 'self-poisoning of undetermined intent' and therefore included as 'probable suicides'. To ensure consistency across the four years of data in the main report, only those undetermined intent deaths classified using the old coding criteria are included. HIS suicide review data are linked in the ScotSID database but have not been analysed in this 2016 publication.
Revisions statement	The inclusion of additional datasets into ScotSID over time will help develop the database to capture a wider range of information on the health and social circumstances of individuals. In the coming year, consideration will be given to incorporating information from the Scottish Ambulance

	service, NHS24 and, when available, GP information from the developing Scottish Primary Care Information Resource (SPIRE) project.
Revisions relevant to this publication	<p>Data relating to suicide reviews from HIS has not been reported on in this report.</p> <p>For the SMR01 and SMR04 sections analysis is based on continuous inpatient stays rather than episodes in this report. This impacts on the acute hospital section when removing discharges on the day of death. Previously the last episode of the stay was removed thus keeping any previous episodes in the same stay included in the analysis. In this report the whole of the stay ending on the day of death is removed.</p>
Concepts and definitions	<p>The definition of a probable suicide for ScotSID is based on the NRS classification of deaths due to intentional self-harm or undetermined intent based on old coding rules. (Further details under Continuity of data above.) Full details on changes to the coding of causes of death between 2010 and 2011 can be found on the NRS website.</p> <p>As deaths of people aged less than 5 are not likely to be suicides, these have been excluded from the statistics in this publication.</p>
Relevance and key uses of the statistics	The overall purpose of ScotSID is to provide a central repository for information on all probable suicide deaths in Scotland, in order to support epidemiology, policy-making and suicide prevention.
Accuracy	Quality checks are conducted by ISD. Figures are compared to previously published data and expected trends.
Completeness	Completeness rates of the SMRs held by ISD and contained in ScotSID can be found on ISD's SMR completeness webpage.
Comparability	Some data contained in the report are comparable to those of other European countries and studies carried out in England and Wales. Comments on this are made where relevant throughout the report.
Accessibility	It is the policy of ISD Scotland to make its web sites and products accessible according to published guidelines .
Coherence and clarity	All ScotSID tables and charts are accessible via ISD's Mental Health webpage.
Value type and unit of measurement	Numbers, percentages, crude and European age-sex standardised rates per 100,000 population, and 95% confidence intervals.
Disclosure	ISD's Statistical Disclosure Control Protocol is followed. The likelihood and impact of disclosure were assessed as low and medium risk respectively, and no disclosure control

	was applied.
Official Statistics designation	Official Statistics
UK Statistics Authority Assessment	Not submitted for assessment
Last published	15 December 2015
Next published	August 2017
Date of first publication	20 Dec 2011
Help email	nss.isdmentalhealth@nhs.net
Date form completed	03 June 2016

A11 – Early Access details (including Pre-Release Access)

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", ISD are obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:

- Scottish Government Health Department
- NHS Board Chief Executives
- NHS Board Communication leads

Early Access for Management Information

These statistics will also have been made available to those who needed access to 'management information', ie as part of the delivery of health and care:

None

Early Access for Quality Assurance

These statistics will also have been made available to those who needed access to help quality assure the publication:

ScotSID steering group members (See [Appendix 1](#))

A12 – ISD and Official Statistics

About ISD

Scotland has some of the best health service data in the world combining high quality, consistency, national coverage and the ability to link data to allow patient based analysis and follow up.

Information Services Division (ISD) is a business operating unit of NHS National Services Scotland and has been in existence for over 40 years. We are an essential support service to NHSScotland and the Scottish Government and others, responsive to the needs of NHSScotland as the delivery of health and social care evolves.

Purpose: To deliver effective national and specialist intelligence services to improve the health and wellbeing of people in Scotland.

Mission: Better Information, Better Decisions, Better Health

Vision: To be a valued partner in improving health and wellbeing in Scotland by providing a world class intelligence service.

Official Statistics

Information Services Division (ISD) is the principal and authoritative source of statistics on health and care services in Scotland. ISD is designated by legislation as a producer of 'Official Statistics'. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Official Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within ISD.

ISD's statistical publications are currently classified as one of the following:

- National Statistics (ie assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (ie legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (ie still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on ISD's statistics, including compliance with the Code of Practice for Official Statistics, and on the UK Statistics Authority, is available on the [ISD website](#).

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.