

Trends in suicide in England and Wales, 1982-96

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This article, the first of two, updates previous analyses of suicides published in *Population Trends*. Suicide trends in England and Wales are analysed by age and sex. Analyses by method and occupation suggest a link between suicide rates and easy access to effective means of committing suicide. The steadily growing number of cars with catalytic converters may go some way to explain the decreasing suicide rates from ‘other gas poisoning’ for both men and women since the early 1990s. Indeed, it may also explain to some extent the decline in overall suicide rates for men since this time.

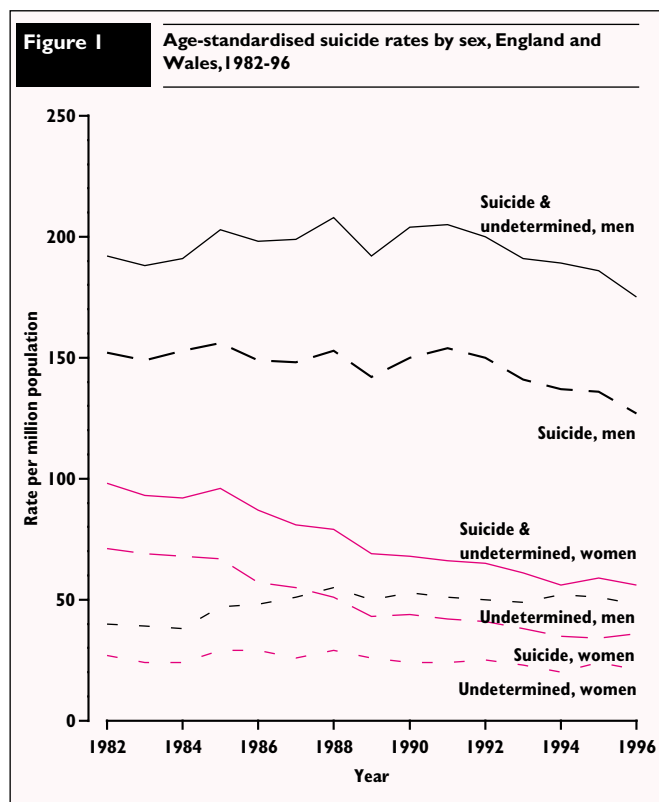
INTRODUCTION

This article describes trends in suicide in England and Wales from 1982 to 1996. It updates three previous *Population Trends* articles^{1,2,3}, which presented analyses up to 1990/1992. We present findings by age, sex, method of suicide and occupation. We also consider trends in factors associated with an increased risk of suicide. These include: marital status, drug and alcohol misuse, imprisonment, and AIDS.

Although suicide and undetermined deaths accounted for only 1.4 per cent of all male deaths and 0.4 per cent of female deaths in 1996, they are significant among premature deaths. They accounted for 9.5 and 4.4 per cent of years of life lost between the ages of 15 and 64 among men and women, respectively.

DEFINITIONS

In this article ‘suicides’ refers to ‘suicides and deaths from injury and poisoning undetermined whether accidentally or purposely inflicted’. This corresponds to codes E950–E959 and E980–E989, excluding E988.8, of the International Classification of Diseases Ninth Revision (ICD9)⁴. As explained in one of the earlier articles¹, it is likely that most undetermined deaths (open verdicts) among adults are cases where the harm was self-inflicted but there was insufficient evidence to prove that the deceased deliberately intended to kill themselves. The code E988.8 is excluded because, since 1979 in England and Wales, it has been used, although not exclusively, to accelerate the death registration in the case where a coroner adjourns an inquest⁵. Nearly all these cases that are resolved turn out to be homicide.



In using this broader definition of suicide, we have restricted our analyses to those aged 15 and over. However, in the next section on gender and in two sections on teenage suicides we consider suicide verdicts and undetermined deaths as distinct categories.

All annual data analysed in this article relate to the year in which the suicide occurred. For this reason, data for years prior to 1993 will not correspond exactly to figures published in OPCS/ONS annual reference volumes at the time. Before 1993 these volumes were based on year of registration⁶. Even figures for 1993-96 may differ very slightly, as every effort has been made to include as many valid records as possible from the ONS mortality database. We may therefore have included some deaths here which were registered too late to be included in the annual reference volumes. The standard datasets for these volumes are now extracted nine months after the end of the data year.

Age-standardised suicide rates presented in this article have been directly standardised to the European standard population⁷ aged 15 and over.

GENDER

The earlier analyses¹ showed that suicide trends for men and women followed the same pattern from 1911 until the early 1980s.

In 1982, in England and Wales, there were a total 5,655 suicides. By 1996 the number had fallen to 4,872. For men, there were 3,557 suicides in 1982, rising to a peak of 4,119 in 1988, and then falling back to 3,640 in 1996. In 1982 suicides amongst men accounted for 63 per cent of all suicides. For women, the number of suicides fell continuously from 2,098 in 1982, to 1,232 in 1996. By 1996, suicides amongst women accounted for just one quarter of all suicides.

Allowing for changes over time in the age structure of the population, the age-standardised suicide rate for men decreased from 191 per million in 1982, to 174 per million in 1996. This represented a fall of 9 per cent. The rate had, however, peaked at 207 per million in 1988. For women, the age-standardised suicide rate decreased steadily from 98 per million in 1982, to 56 per million in 1996, a fall of 43 per cent. Figure 1 shows trends in overall age-standardised suicide rates for men and women. It also shows corresponding trends for suicide verdicts and open verdicts separately.

AGE

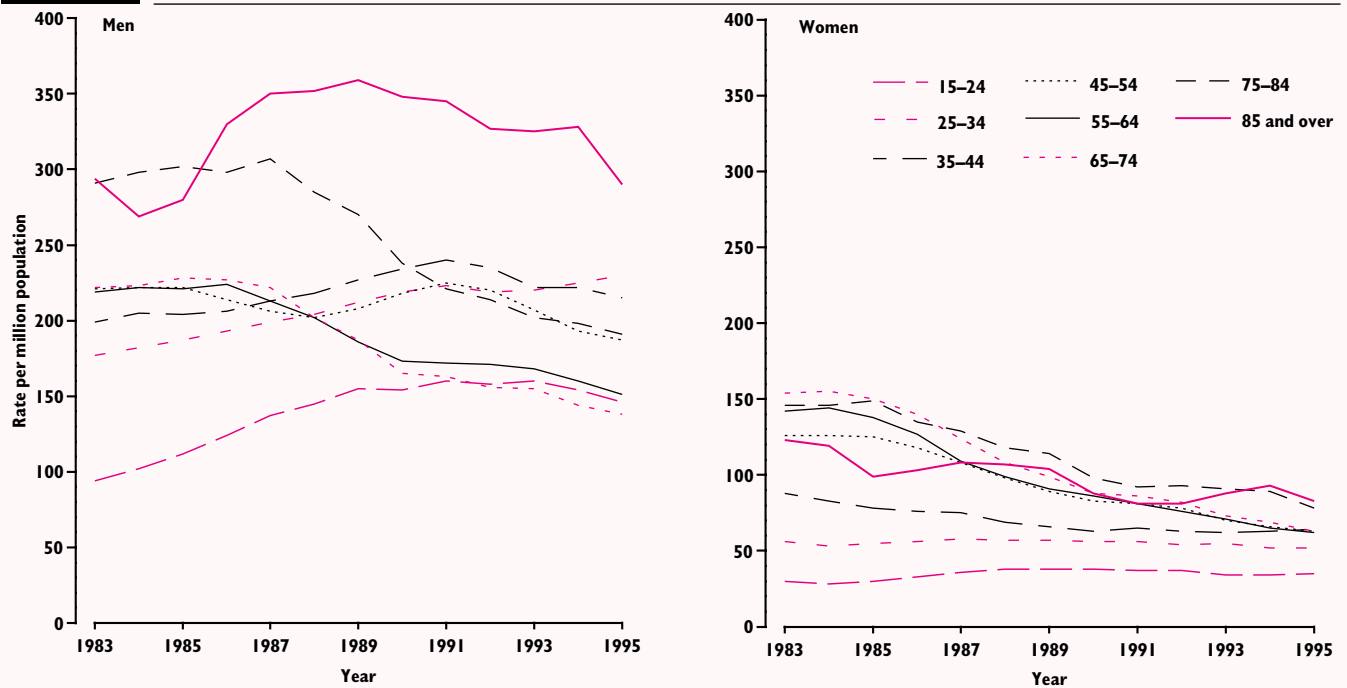
Our earlier analyses¹ also showed a striking convergence in age-specific suicide rates between 1946 and 1990. Figure 2 shows trends in age-specific suicide rates for men and women. These are presented in 10-year age-groups and on a 3-year moving average basis. For the three years centred on 1983, the highest suicide rates for men were in the oldest age-groups (age 45 and over). However, between 1983 and 1995, suicide rates for men decreased by between 30 and 40 per cent in the age-groups 55-64, 65-74 and 75-84. The rate for the 45-54 age-group fell by 15 per cent over the same period. Rates in the 25-34 age-group rose steadily, from 177 per million in 1983 to 230 per million in 1995, an increase of 30 per cent. This age-group now has the highest suicide rate for men outside the open-ended age-group of 85 and over. Rates in the age-groups 15-24 and 35-44 increased from 1983 to reach a peak in 1991. Since then the rates have fallen by about 10 per cent in each age-group. However, in 1995, the rate for the 15-24 age-group was 55 per cent higher than in 1983, at 150 per million. The rate for the 35-44 age-group was 8 per cent above its 1983 value, at 215 per million. These results only partly bear out the expectations of our earlier cohort analysis¹, that suicide rates in the under 45s may continue to rise for some years to come.

For women, between 1983 and 1995, suicide rates fell in all age-groups except for those aged 15-24. However, the falls were much more dramatic in the older age-groups. For women aged between 45 and 84, rates fell by between 45 and 60 per cent. In the 35-44 age-group, rates decreased by 27 per cent between 1983 and 1995, from 88 per million to 64 per million. Rates in the 25-34 age-group fell by 6 per cent, whilst in the 15-24 age-group rates rose by 16 per cent. This youngest age-group of women still has by far the lowest suicide rate, at 35 per million in 1995.

Teenage suicides

Amongst those aged under 20, a higher proportion of 'suicide and undetermined' deaths are in the undetermined category than for adults (39 per cent compared to 24 per cent for males, and 47 per cent compared to 33 per cent for females, over the period 1982-96). Table 1 gives the numbers of suicide verdicts and undetermined deaths, separately and combined, for males and females, by single year of age, from age 10 to 19. Data are presented for the combined period 1982-96, as we identified no obvious time trend in the annual data. Over the 15-year period there have been a total of 2,196 suicide and undetermined deaths in males aged 10-19, and 684 deaths among females aged 10-19. The number of suicides increases at each year of age. At ages under 16, the number of undetermined deaths exceeds the number of suicide verdicts except in 13 year old girls.

Figure 2 Age-specific suicide rates* by sex, England and Wales, 1982-96



* 3-year moving averages plotted on central year.

Hawton and Fagg⁸ have shown that attempted suicide by adolescents is primarily a problem in older teenagers, especially females. Over the period 1976-89, 2,282 individuals (1,662 females and 620 males) aged 10-19 were referred to the general hospital in Oxford following a total of 2,741 episodes of deliberate self-poisoning or self-injury. They found higher rates of repetition in adolescent attempters not admitted to a general hospital bed and in those not referred to the hospital psychiatric service. Relationship problems were common in adolescent attempters, particularly in females; and excessive drinking or drug abuse, or both, were quite common, especially in males. Unemployment rates of both male and female attempters were found to be considerably higher than local unemployment rates for older teenagers.

ACCESS AND METHOD

The likelihood of committing suicide will depend to some extent on the ease of access to, and knowledge of, effective means. The method used will depend on availability, ease of use and 'fashion'. Figure 3 shows, separately for men and women, the trends in age-standardised suicide rates for the four most commonly used methods. The data are presented on a 3-year moving average basis to smooth out year-on-year fluctuations.

Poisoning by solid or liquid substances

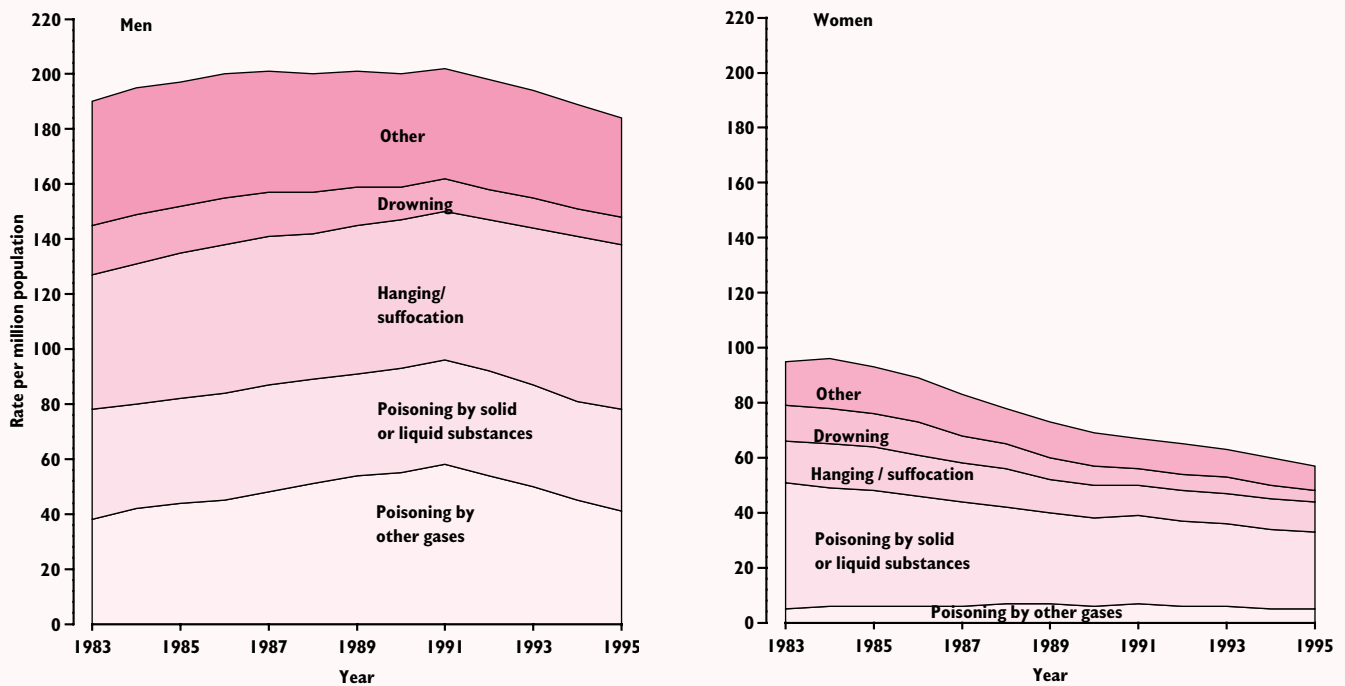
Poisoning by solid or liquid substances (ICD9 codes E950 and E980) is still by far the most common method of suicide for women, but is now only the third most common method for men. For women, this method still accounts for one half of the total suicide rate, whilst for men it represents one fifth. The suicide rate from this method has decreased for both men and women since 1983, by 8 and 39 per cent, respectively. For women aged 15-44 the suicide rate from this method is lower than for other age-groups, but this is the only age-group for which the rate is not declining. Men aged 15-44 had the lowest suicide rate from this method in 1983, but they now have the highest rate - this age-group being the only one for which male rates have increased. Over the period 1994-96 about 55 per cent of deaths from this method were actually given a suicide verdict, with 45 per cent being given an open verdict.

There is some evidence that changing patterns in prescribing have an impact on the drugs used for self-poisoning. Table 2 shows the distribution of poisoning deaths by substance (as identified in ICD9 codes), for the time periods 1982-84 and 1994-96, for men and women combined. The main changes have been a reduction in the

Table 1 Number of suicides and undetermined deaths by sex, ages 10-19, England and Wales, 1982-96

Age	10	11	12	13	14	15	16	17	18	19	Total 10-19
Males											
Suicide	0	2	3	9	24	50	114	234	392	505	1,333
Undetermined	9	9	16	33	42	61	90	142	228	233	863
Total	9	11	19	42	66	111	204	376	620	738	2,196
Females											
Suicide	0	0	1	11	11	31	42	64	83	117	360
Undetermined	2	3	5	6	23	38	42	56	71	78	324
Total	2	3	6	17	34	69	84	120	154	195	684

Figure 3 Age-standardised suicide rates* by sex and method, England and Wales, 1982-96



* 3-year moving averages plotted on central year.

Table 2 Suicides from poisoning by solid or liquid substances: distribution by substance, England and Wales, 1982-84 and 1994-96

Substance	1982-84		1994-96	
	Number of deaths	%	Number of deaths	%
Analgesics, antipyretics & antirheumatics	1,750	34	1,558	38
Barbiturates	735	14	85	2
Other sedatives & hypnotics	346	7	184	4
Tranquillizers & other psychotropic agents	1,026	20	1,072	26
Other specified drugs & medicaments	744	14	726	17
Unspecified drug or medicament	279	5	416	10
Agricultural & horticultural chemical & pharmaceutical preparations	138	3	24	1
Corrosive & caustic substances	64	1	19	0
Arsenic and its compounds	1	0	1	0
Other and unspecified	118	2	69	2
Total	5,201	100	4,154	100

use of barbiturates (ICD9 codes E950.1 and E980.1), for which prescriptions have been falling, and an increase in the proportion of suicides from this method using (other) tranquillisers and other psychotropic agents (ICD9 codes E950.3 and E980.3). This reflects a shift in prescribing patterns from barbiturates to benzodiazepines. The proportion of poisonings using analgesics, antipyretics and antirheumatics (which includes paracetamol) (ICD9 codes E950.0 and E980.0) has remained about the same. However, total female suicides using these drugs have decreased substantially between the time periods, whilst for men the number of suicides has increased. The Department of Health has introduced measures to restrict the sale of paracetamol (and aspirin). The law will come into effect from September 1998, and any impact this legislation has on the number of suicides from paracetamol poisoning will be monitored.

Poisoning by other gases and vapours

There are now less than 10 suicides per year from poisoning by gases in domestic use (ICD9 codes E951 and E981). The reduction in the number of suicides from this method paralleled the reduction in the carbon monoxide content of the domestic gas supply. Poisoning by other gases and vapours (ICD9 codes E952 and E982) is now the second most common method of suicide for men and the third most common method for women. In 1995, it accounted for 22 per cent of the overall suicide rate for men and 8 per cent of the rate for women. For both sexes, suicide rates from this method increased between 1983 and 1991 and then declined. Since their 1991 peak, rates for both men and women have fallen by just under one third. This method is far more common among those aged under 65. This category consists mainly of carbon monoxide poisoning from motor vehicle exhaust gas. Therefore the

previous observation is likely to be related to access, with those aged under 65 more likely to have access to, or drive, a vehicle, whether for work or pleasure (see also the next section on occupation). Over the period 1994–96 about 90 per cent of deaths from poisoning by other gases and vapours were actually given a suicide verdict.

If we look specifically at the motor vehicle exhaust deaths (ICD9 codes E952.0 and E982.0), we find that suicide rates reached a peak at the beginning of the 1990s and then fell dramatically in 1993. Part of this fall was due to a revised coroner's reporting form, introduced in May 1993^{9,10}. Because the form no longer includes specific questions about type of injury and parts of body injured in addition to the section on cause of death, coroners now often provide less detail than before. In 1993 the number of suicides coded to poisoning by motor vehicle exhaust gas declined substantially, while those from poisoning by other carbon monoxide (ICD9 codes E952.1 and E982.1) rose. What is interesting is that this method of suicide appears to be the only one for which there is a clear association between the suicide trend and the change in coroner's form. However, even after 1993, suicide rates from this method continued to fall. The decrease in suicide rates from poisoning by other gases and vapours accounts for most of the overall fall in suicide rates for men since 1991.

This fall may be explained to some extent by new legislation which, from January 1993, required all new petrol vehicles to be fitted with catalytic converters, which reduce carbon monoxide emissions. Of motorcars licensed at the end of 1994, 93 per cent were petrol vehicles¹¹. Of these, 14 per cent were first registered in 1993 or later. By the end of 1996, 90 per cent of licensed motorcars were petrol vehicles¹², of which 28 per cent were first registered in 1993 or later. Taking into consideration that, even before the introduction of the legislation, some cars with catalytic converters already existed, the steadily growing number of cars with catalytic converters may go some way to explain the decreasing suicide rate for this method since the early 1990s. The increased popularity of diesel cars, which emit much lower levels of carbon monoxide, may also have contributed to this fall. We need to observe whether the decrease in suicides from this method continues.

Öström *et al.*¹³ carried out a detailed study of carbon monoxide suicides from car exhausts in Sweden. They concluded that such suicides may be reduced by the introduction of catalytic exhausts, automatic idling stop, and exhaust pipes incompatible with vacuum cleaner tubes.

Hanging and suffocation

Hanging and suffocation (ICD9 codes E953 and E983) is the most common method of suicide among men. In 1995 this method accounted for one third of the overall male suicide rate, compared with one quarter in 1983. Suicide rates from hanging and suffocation have increased steadily for men since 1983. This increase is due entirely to a rise in the 15–44 age-group. Suicide rates for all other age-groups have decreased since 1983. Amongst women, hanging and suffocation remains the second most common suicide method, accounting for one fifth of the overall suicide rate for women in 1995. Suicide rates from this method for women have decreased since 1983. However, among 15–44 year olds, the age-specific death rate has been increasing. In 1983 the suicide rate from this method for women aged 15–44 was about one third of the rate in the older age-groups. But, by 1995, the suicide rates for all

but the oldest age-group (75 and over) were almost identical. Over the period 1994–96, 85 per cent of deaths from this method were actually given a suicide verdict.

Within the method group hanging and suffocation, a higher proportion of men than women hang themselves. Over the period 1982–84, hanging (ICD9 codes E953.0 and E983.0) accounted for 85 per cent of male suicides in this group and suffocation by plastic bag (ICD9 codes E953.1 and E983.1) accounted for 9 per cent. Over the same period, 49 per cent of female suicides in this group were due to hanging and 37 per cent to suffocation. By 1994–96 the proportions for men had changed little - 91 per cent for hanging and 3 per cent for suffocation. However, among women, the proportion of suicides in this group due to hanging had increased to 68 per cent, whilst the proportion due to suffocation had fallen to 20 per cent. This was mainly due to a large decrease in the number of female suicides by suffocation, though there was a small increase in the number of suicides from hanging.

Drowning

Drowning (ICD9 codes E954 and E984) is the fourth most common suicide method for both men and women. In 1983 it accounted for 9 and 13 per cent of the overall suicide rate, for men and women respectively. By 1995 these proportions had fallen to 5 per cent for men, and 7 per cent for women. Since 1983, for both men and women, suicide rates from this method have fallen more than for any other method. The suicide rate from this method has fallen in all age-groups, with the greatest fall in the 65–74 age-group. However, it is still the oldest age-groups which have the highest suicide rates from drowning. Over the period 1994–96 less than 30 per cent of deaths from this method were actually given a suicide verdict, with more than 70 per cent being given an open verdict. This is a much higher proportion of open verdicts than for the other common methods discussed above.

Table 3 Percentage distribution of 'other' methods of suicide by sex, England and Wales, 1982–84 and 1994–96

Method (ICD9 codes)	1982–84	1994–96
	%	%
Men		
Firearms & explosives (E955 and E985)	25	20
Cutting & piercing instruments (E956 and E986)	11	10
Jumping from high place (E957 and E987)	23	15
Jumping or lying before moving object (E958.0 and E988.0)	17	12
Burns, fires (E958.1 and E988.1)	6	8
Other and unspecified (E951 and E981 and E958.2–9 and E988.2–9 and E959 and E989)	18	35
Total 'other' methods (=100%)	2,561	2,223
Women		
Firearms & explosives (E955 and E985)	5	2
Cutting & piercing instruments (E956 and E986)	8	6
Jumping from high place (E957 and E987)	34	15
Jumping or lying before moving object (E958.0 and E988.0)	20	13
Burns, fires (E958.1 and E988.1)	13	15
Other and unspecified (E951 and E981 and E958.2–9 and E988.2–9 and E959 and E989)	20	49
Total 'other' methods (=100%)	976	551

Other methods

Other methods (ICD9 codes E951 and E981 and E955–E959 and E985–E989) account for about 15 per cent of the overall suicide rate for women, and 20 per cent of the rate for men. The proportions of deaths due to these other causes are summarised in Table 3 for the periods 1982–84 and 1994–96. There has been a large decrease in the proportion of other methods accounted for by jumping from a high place (ICD9 codes E957 and E987), and jumping or lying before a moving object (ICD9 codes E958.0 and E988.0). There has been a shift to the ‘other and unspecified means’ category (ICD9 codes E958.8 and E958.9 and E988.9). This is likely to be due to the changes to the coroner’s reporting form introduced in May 1993 (see above). The total number of suicides from unspecified means increased from about 100 per year in the 1980s, to a peak of 327 in 1993. By 1996, the number had reduced to 278.

Teenage suicides by method

Table 4 shows the distribution of suicides and undetermined deaths by method, for males and females aged 10–19, for the years 1982–96 combined. Compared with adult men, there were higher proportions of deaths from hanging and suffocation, jumping from a high place, and firearms. Among females aged 10–19 there was a much higher proportion of deaths from jumping from a high place than among adult women. These findings would support a link between suicide and access to means. Teenagers would have relatively easier access to high places than to, say, drugs or cars, for which the proportions of teenage deaths are much lower than among adults, except for female deaths from poisoning. For both teenage and adult women, poisoning by solid or liquid substances accounts for one half of all suicides.

OCCUPATION

Suicide data for two time periods, 1982–87 and 1991–96, were used to calculate proportional mortality ratios (PMRs) for both men and women by their own occupation. The selection of occupations was based on the number of deaths occurring in the first time period to men and women aged 20–74. For men we selected occupations with 20 or more suicide deaths and for women, who have fewer suicide deaths than men, we selected occupations with 10 or more suicide deaths. In addition we included occupations that had lower numbers of deaths but had been shown in our previous work³ to have high PMRs. For example, male and female veterinarians were included, despite having only 17 and 2 suicides

respectively between 1982 and 1987. It should be noted that the selection of occupations on these criteria mean that there may be other occupations which also have low numbers of suicides, and which have not previously been shown to have high PMRs, that were not selected. The selection of occupations on these criteria meant that we analysed 139 occupations for men and 47 occupations for women, out of about 350 possible occupation codes.

The PMR is a ratio of how much more or less likely a death in a given occupation is to be from suicide as opposed to other causes of death, than a death to someone of the same age and sex in England and Wales as a whole. A PMR of 100 means that there is no difference in the ratio of suicide deaths to all deaths in the given occupation compared to England and Wales. A value of 50 means that the chances of a death in a given occupation being certified as suicide are half that of England and Wales as a whole. Whereas, a value of 200 means that the given occupation has double the proportion of all deaths certified as suicide compared to England and Wales. PMRs should be interpreted with care because the proportion of deaths from the cause of interest is affected by the relative frequency of other causes of death. If mortality from all causes is low in a given occupation, a high PMR from suicide may be found, even if the suicide rate in that occupation is lower than the national rate. As a result, an observed excess may represent a true difference, but may also simply represent a deficit of deaths from other causes (see Box 1).

PMRs are presented only for those occupations whose ratios were significantly different from England and Wales at one or both of the time periods; that is where the 95% confidence interval excluded 100. In Tables 5–8 occupations are not ordered by the value of their PMR but by their confidence intervals. The occupations with the highest ratios of those analysed are presented in descending order of the lower confidence interval. Those occupations with the lowest ratios are presented in ascending order of the upper confidence interval. This means that the occupations with PMRs most significantly different from England and Wales are always presented at the top of the tables. This method of ordering PMRs ‘has the advantage of taking account of both the magnitude and level of statistical variability’¹⁴. It must be remembered that the initial selection of occupations was based on those having high numbers of suicides or those known to have high PMRs. Therefore, there may be other occupations which would have had lower PMRs for suicide than those which we selected for our analysis. However, occupations which have very low numbers of deaths are less likely to produce significant results.

Table 4 Percentage distribution of suicides and undetermined deaths by method and sex, ages 10–19, England and Wales, 1982–96

Method (ICD9 codes)	Males			Females		
	Suicides	Undetermined	Total	Suicides	Undetermined	Total
	%	%	%	%	%	%
Poisoning by solid or liquid substances (E950 and E980)	12	17	14	43	62	52
Poisoning by other gases and vapours (E952 and E982)	19	4	13	8	2	5
Hanging and suffocation (E953 and E983)	43	32	39	27	9	18
Drowning (E954 and E984)	1	10	4	0	5	2
Firearms and explosives (E955 and E985)	8	5	7	1	1	1
Cutting and piercing instruments (E956 and E986)	1	0	1	1	1	1
Jumping from high place (E957 and E987)	6	12	8	7	11	9
Other and unspecified (E951, E958, E959, E981, E988 and E989)	11	20	14	12	10	11

Note: Percentages may not add to 100 due to rounding.

Box I

Proportional mortality ratios (PMRs)

The PMR enables the impact of a disease upon an exposed population to be examined. In this paper we are interested in PMRs for suicide amongst different occupation groups, for men aged 20–64 and women aged 20–59. The PMR is calculated as follows:

$$\text{PMR} = \frac{\text{Observed deaths from suicide}}{\text{Expected deaths from suicide}} \times 100$$

The expected deaths are computed by applying the proportion of total deaths due to suicide in the comparison or general population (in this case, all men aged 20–64 or all women aged 20–59) to the total deaths in the occupation group of interest.

A PMR of 200 means that the given occupation has double the proportion of all deaths certified as suicide compared to England and Wales. PMRs should be interpreted with care because the proportion of deaths from the cause of interest is affected by the relative frequency of other causes of death. If mortality from all causes is low in a given occupation, a high PMR from suicide may be found, even if the suicide rate in that occupation is lower than the national rate. As a result, an observed excess may represent a true difference, but may also simply represent a deficit of deaths from other causes.

Analyses by occupation were restricted to men aged 20–64 and women aged 20–59. The upper age limit reflects the age of retirement and the lower limit was set to 20 rather than 16 because previous work has shown that over 40 per cent of men aged 16–19 are classified as unoccupied; by age 20–24 this has reduced to just over 10 per cent¹⁵.

Table 5 gives the PMR and number of suicides for occupations with the significantly highest ratios of suicide to all-cause mortality for men aged 20–64, in descending order of their lower confidence intervals, for the two time periods 1982–87 and 1991–96. Vets had the highest proportion of deaths from suicide in 1982–87, more than 3 times that for men aged 20–64 in England and Wales as a whole. The second most significantly high PMR was for the group comprising farmers, horticulturists and farm managers, which had twice the ratio of England and Wales. Two other occupations had ratios of more than twice England and Wales in the first time

period: librarians/information officers and pharmacists. By 1991–96, vets and farmers had the second and third most significantly high PMRs of those analysed, with dental practitioners becoming the occupational group with the most significantly high ratio. Although dentists had a lower PMR than vets in the second time period (249 and 324 respectively) the proportion of suicide deaths to dentists is more significant because it is based on a higher number of deaths.

For all but one of the 17 occupations that had a significantly high PMR in 1982–87 there was a decrease in the PMR by 1991–96. Only seven of the occupations with a significantly high PMR in the first time period still had a significantly high PMR in the second time period. The PMR for librarians/information officers showed the greatest decrease, of 63 per cent, between the two time periods, from 226 to 83. The only occupation which had a significantly high PMR in 1982–87 and for which the PMR increased by 1991–96

Table 5

Proportional mortality ratios by occupation, men aged 20–64, England and Wales, 1982–87 and 1991–96

Occupation [†]	1982–87			Number of suicides	Occupation [†]	1991–96		
	PMR	Lower	Upper			PMR	Lower	Upper
Veterinarians	349	(203 - 559)		17	Dental practitioners	249	(161 - 367)	25
Farmers, horticulturists, farm managers	202	(180 - 226)		311	Veterinarians	324	(148 - 615)	9
Librarians, information officers	226	(140 - 345)		21	Farmers, horticulturists, farm managers	144	(124 - 166)	190
Pharmacists	214	(140 - 313)		26	Sales representatives – property and services	151	(122 - 184)	97
Medical practitioners	175	(138 - 218)		78	Medical practitioners	147	(115 - 185)	71
Dental practitioners	192	(117 - 296)		20	Garage proprietors	155	(112 - 208)	43
Deck, engine-room hands, bargemen, lightermen, boatmen	144	(117 - 176)		95	Pharmacists	171	(111 - 252)	25
Teachers (not elsewhere classified)	132	(116 - 150)		233	Other motor drivers	124	(108 - 141)	221
Gardeners, groundsmen	134	(116 - 154)		197	Painters and decorators, french polishers	119	(108 - 132)	389
Hotel porters	171	(113 - 249)		27	Publicans	128	(107 - 152)	129
Other domestic and school helpers	175	(111 - 262)		23	Builders	119	(106 - 132)	332
Forestry workers	173	(107 - 264)		21	Cleaners, window cleaners, road sweepers	122	(105 - 139)	204
Shop salesmen and assistants	123	(106 - 141)		196	Shop salesmen and assistants	118	(105 - 133)	296
Driving instructors – (not HGV)	152	(106 - 213)		34	Carpenters and joiners	115	(103 - 127)	384
Chemical scientists	153	(105 - 215)		33	Gardeners, groundsmen	117	(102 - 133)	234
Sales representatives	116	(101 - 134)		203				
Farm workers	120	(101 - 141)		142				

* 95 per cent confidence interval does not include 100.

† Occupations listed in descending order of lower confidence interval.

Table 6 Proportional mortality ratios by occupation, women aged 20–59, England and Wales, 1982–87 and 1991–96

Occupation†	1982–87			Occupation†	1991–96		
	PMR	Confidence interval Lower Upper	Number of suicides		PMR	Confidence interval Lower Upper	Number of suicides
Medical practitioners	355	(236 - 513)	28	Medical practitioners	285	(185 - 421)	25
Therapists - (not elsewhere classified)	269	(147 - 452)	14	Domestic housekeepers	247	(141 - 402)	16
Pharmacists	274	(131 - 504)	10	Veterinarians	500	(136 - 1279)	4
Nurse administrators, nurses	146	(129 - 164)	276	Waitresses	187	(132 - 258)	37
Domestic housekeepers	210	(118 - 347)	15	Nurse administrators, nurses	137	(121 - 156)	240
Physiotherapists	256	(117 - 487)	9	Professional & related in education, welfare and health	183	(119 - 268)	26
Students	144	(113 - 182)	72	Students	139	(117 - 165)	132
Ambulancewomen	396	(108 - 1014)	4	Cleaners, window cleaners, road sweepers	138	(112 - 169)	95
Waitresses	148	(101 - 209)	32	Hospital ward orderlies	130	(109 - 153)	139

* 95 per cent confidence interval does not include 100.

† Occupations listed in descending order of lower confidence interval.

Table 7 Proportional mortality ratios by occupation, men aged 20–64, England and Wales, 1982–87 and 1991–96

Occupation†	1982–87			Occupation†	1991–96		
	PMR	Confidence interval Lower Upper	Number of suicides		PMR	Confidence interval Lower Upper	Number of suicides
Managers in building and contracting	35	(21 - 56)	18	Chemical, gas and petroleum plant operators	46	(31 - 66)	28
Permanently sick, mentally or physically handicapped	47	(36 - 60)	65	Labourers and unskilled workers n.e.c. – engineering and allied trades	53	(40 - 69)	53
Transport managers	40	(24 - 62)	19	Production, works and maintenance managers, foremen	61	(50 - 73)	122
Production, works and maintenance managers, works foremen	54	(45 - 64)	134	Vocational and industrial trainers	46	(27 - 73)	18
Centre lathe turners	47	(27 - 75)	17	Managers in building and contracting	50	(32 - 74)	24
Policemen	61	(47 - 78)	66	Teachers in establishments for further and higher education	50	(29 - 81)	16
Inspectors, viewers (metal, electrical goods)	60	(44 - 78)	51	Messengers	46	(23 - 82)	11
Labourers and unskilled workers n.e.c. – engineering and allied trades	71	(58 - 85)	115	Face-trained coal mining workers	41	(16 - 84)	7
Bus and coach drivers	68	(53 - 85)	73	Labourers and unskilled workers n.e.c (textiles – not textile goods)	52	(31 - 84)	17
Fork lift, mechanical truck drivers	67	(51 - 86)	60	Marketing and sales managers	71	(58 - 86)	109
Storekeepers and warehousemen	78	(69 - 88)	288	Moulders – coremakers, die casters	37	(12 - 86)	5
Vocational and industrial trainers	56	(33 - 88)	18	Scrap, general, rag and bone dealers	49	(24 - 87)	11
Drivers of road goods vehicles	83	(76 - 90)	568	Actors, entertainers etc	70	(53 - 92)	54
Building and civil engineering labourers	77	(66 - 90)	157	Restaurateurs	75	(59 - 93)	82
Deck, engineering and radio officers and pilots, ships	55	(31 - 90)	15	Permanently sick, mentally or physically handicapped	65	(44 - 93)	30
Marketing and sales managers and executives	74	(59 - 91)	83	Storekeepers and warehousemen	83	(74 - 93)	282
Metal plate workers, shipwrights, riveters	64	(43 - 92)	29	Building and civil engineering labourers	81	(70 - 94)	183
Metal working production fitters and fitters/machinists	85	(77 - 93)	428	Chefs, cooks	81	(69 - 94)	172
Managers in warehousing and materials handling n.e.c	63	(40 - 94)	23	Transport managers	67	(45 - 95)	30
Motor mechanics, auto engineers	83	(71 - 97)	172	Authors, writers and journalists	72	(53 - 97)	45
Face-trained coal mining workers	68	(46 - 97)	31	Buyers and purchasing officers – not retail	64	(40 - 97)	22
Stevedores, dockers	67	(44 - 98)	27	Managers in warehousing	67	(44 - 98)	27
UK armed forces	84	(71 - 98)	152	Metal plate workers, shipwrights, riveters	62	(37 - 99)	18
Welders	83	(70 - 99)	128	Electronic engineers	66	(42 - 99)	23
Plumbers, heating and ventilation fitters, gas fitters	85	(73 - 100)	160	Policemen	79	(63 - 99)	81
				Civil, municipal, mining engineers	76	(58 - 100)	55

* 95 per cent confidence interval does not include 100.

† Occupations listed in ascending order of upper confidence interval.

Table 8 Proportional mortality ratios by occupation, women aged 20–59, England and Wales, 1982–87 and 1991–96

Occupation†	1982–87			Occupation†	1991–96		
	PMR	Confidence interval Lower Upper	Number of suicides		PMR	Confidence interval Lower Upper	Number of suicides
Office machine operators	41	(21 - 71)	12	Chefs, cooks	36	(19 - 63)	12
Counter hands – assistants	53	(36 - 76)	31	Teachers in establishments for further and higher education	24	(3 - 88)	2
Chefs, cooks	52	(31 - 81)	19	Sewers, embroiderers	62	(39 - 93)	23
Permanently sick, mentally or physically handicapped	59	(40 - 85)	30				
Other domestic and school helpers	77	(61 - 96)	79				

* 95 per cent confidence interval does not include 100.

† Occupations listed in ascending order of upper confidence interval.

was dentists, with PMRs of 192 and 249 respectively, an increase of 30 per cent.

Table 6 gives the PMR and number of suicides for occupations with significantly high ratios for women aged 20–59, in descending order of their lower confidence intervals, for the two time periods. Of those analysed, medical practitioners had the highest PMR at both time periods, 355 and 285 respectively. As for men, the occupations with significantly high PMRs are dominated by the medical and associated professions, suggesting a link between occupation and access to, and knowledge of, methods of committing suicide. The PMR for vets, who had the highest ratio amongst men, is not significant for women in the first time period but is significant in 1991–96, despite being based on only 4 deaths. Women classified as students have significantly high PMRs at both time periods, 144 and 139 respectively, and are based on relatively high numbers of deaths. However, it must be reiterated that these PMRs show the likelihood that a death in a given occupation is from suicide rather than another cause. Because students are predominantly in the younger ages the likelihood of them dying from any cause is very low, so that if they do die it is more likely to be from external causes of death such as suicides or accidents than from natural causes. However, this is not to take away from the fact that there have been 1,256 suicides to women aged 20–24 and 5,645 suicides to men aged 20–24 over the last 15 years, which contribute significantly to the years of working life lost as a result of premature death.

Tables 7 and 8 give the occupations with the significantly lowest PMRs for men and women, from those which were initially selected. Men classified as chemical, gas and petroleum plant

operators had the lowest PMR in 1991–96, with a value of 46. For women, the occupational group chef and cooks had the lowest ratio, with a PMR of 36, meaning that deaths from suicide as a ratio of all deaths in this group is only one third that of all women aged 20–59 in England and Wales.

In both time periods and for both sexes the highest ranking occupations are dominated by those in Social Classes I and II. Although this has previously been found and is not unexpected, it serves to highlight the nature of PMRs. We know from other studies¹⁶ that men in Social Classes I and II have much lower rates of suicide than men in Social Class V. Thus the high PMRs found for doctors, vets and dentists reflect the fact that their overall mortality is low and therefore the proportion of deaths from suicide is high relative to other causes. However, it is interesting to note that the Social Class I/II occupations which have high PMRs are predominantly the medical and allied professions, rather than accountants or lawyers for example. This leads us to ask whether ease of access to, and knowledge of, drugs or other methods of suicide could be a contributory factor.

Access and method by occupation

The earlier section on methods of suicide and our previous articles noted that the probability of committing suicide will depend to some extent on the ease of access to effective methods. We have already noted above that the occupations with the highest proportional mortality ratios (PMRs) for both men and women are predominantly the medical and allied professions which have easy access to, and knowledge of, drugs. Tables 9 and 10 show for men and women the distribution of suicides by method for the

Table 9

Percentage distribution of suicides by method and occupation, men aged 20–64, England and Wales, 1982–96

Occupations with high PMRs (alphabetical order)	Poisoning by solid or liquid substances	Poisoning by other gases and vapours	Hanging and suffocation	Drowning	Firearms and explosives	Other	Number of suicides (=100%)
	(E950 and E980)	(E952 and E982)	(E953 and E983)	(E954 and E984)	(E955 and E985)		
Builders	13	37	28	4	7	10	675
Carpenters and joiners	14	27	34	6	5	14	830
Chemical scientists	38	17	20	6	4	14	69
Cleaners, window cleaners, road sweepers	21	25	28	6	2	18	444
Deck, engine-room hands, bargemen, lightermen, boatmen	27	14	21	21	3	14	168
Dental practitioners	24	24	28	4	7	13	54
Driving instructors - not HGV	10	61	21	4	2	2	84
Farm workers	11	24	34	7	16	8	317
Farmers, horticulturists, farm managers	6	18	33	4	36	3	609
Forestry workers	9	22	31	5	19	14	58
Garage proprietors	6	55	16	2	13	8	96
Gardeners, groundsman	23	21	30	6	5	15	554
Hotel porters	37	8	24	6	2	24	51
Librarians, information officers	17	14	28	17	3	22	36
Medical practitioners	50	10	16	4	6	14	185
Other domestic and school helpers	31	15	25	8	2	19	52
Other motor drivers	14	48	23	3	1	11	432
Painters and decorators, french polishers	22	25	29	5	3	16	856
Pharmacists	61	13	7	5	5	10	61
Publicans	17	36	21	3	12	11	304
Sales representatives	14	50	19	3	4	10	404
Sales representatives - property and services	15	49	16	4	5	11	255
Shop salesmen and assistants	19	37	21	4	3	16	623
Teachers - not elsewhere classified	16	30	22	8	4	21	518
Veterinarians	76	3	5	0	16	0	38
All men	20	27	27	6	5	16	45,445

Note: Percentages may not add to 100 due to rounding.

Table 10

Percentage distribution of suicides by method and occupation, women aged 20–59, England and Wales, 1982–96

Occupations with high PMRs (alphabetical order)	Poisoning by solid or liquid substances	Poisoning by other gases and vapours	Hanging and suffocation	Drowning	Other	Number of suicides (=100%)
	(E950 and E980)	(E952 and E982)	(E953 and E983)	(E954 and E984)		
Ambulancewomen	50	38	13	0	0	8
Cleaners, window cleaners, road sweepers	50	4	16	12	17	206
Domestic housekeepers	51	11	11	11	16	37
Hospital ward orderlies	60	9	13	4	13	210
Medical practitioners	67	8	14	3	9	66
Nurse administrators, nurses	59	12	13	5	11	672
Pharmacists	94	0	6	0	0	17
Physiotherapists	37	26	26	5	5	19
Professional & related in education, welfare and health	46	28	13	5	8	39
Students	32	11	22	6	30	250
Therapists - not elsewhere classified	31	24	28	3	14	29
Veterinarians	89	11	0	0	0	9
Waitresses	53	6	10	14	17	87
All women	46	10	17	9	18	14,082

Note: Percentages may not add to 100 due to rounding.

occupations which had significantly high PMRs, aggregated for the years 1982–96. The occupations are presented in alphabetical order. For both men and women the distribution is split between the most commonly used methods and a remainder category. The four most commonly used methods for both men and women were poisoning by solid or liquid substances (ICD9 codes E950 and E980), poisoning by other gases and vapours (ICD9 codes E952 and E982), hanging and suffocation (ICD9 codes E953 and E983) and drowning (ICD9 codes E954 and E984), although there was a sex difference in the percentage distribution of these methods. For men the additional category of firearms and explosives (ICD9 codes E955 and E985), the fifth most common method, has been included in the table because its use varies greatly with occupation. The ordering and percentage distribution in these tables differ from figures presented in the earlier section on methods since these latter figures were based on averages for the years 1982–84 and 1994–96.

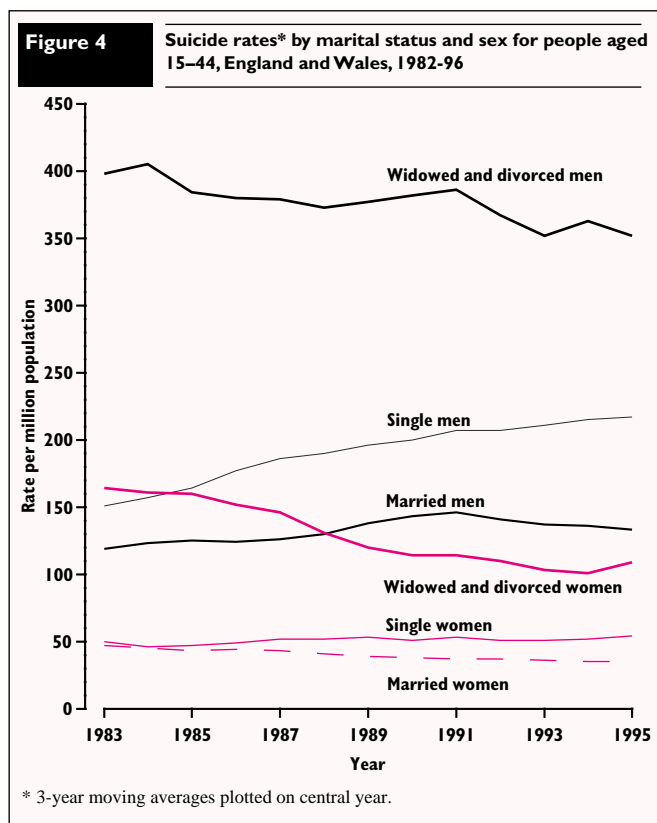
For men, there was little difference in the overall percentage using the three most common methods; each of which accounted for about one quarter of all suicides. However, there were big variations by occupation within each method. For example, for poisoning by solid or liquid substances, which accounted for 20 per cent of all suicides in men, the percentages amongst the medical and allied professions were much higher. Vets had the highest percentage of suicides using this method (76 per cent), followed by pharmacists (61 per cent) and medical practitioners (50 per cent).

Over 12,000 suicides between 1982 and 1996 to men aged 20–64 resulted from poisoning by other gases and vapours (which excludes poisoning by gases in domestic use, ICD9 codes E951 and E981), with an average of 95 per cent of these specifically attributable to motor vehicle exhaust gas (ICD9 codes E952.0 and E982.0). Poisoning by other gases and vapours accounted for about one quarter of all male suicides but around half of suicides in the occupation groups garage proprietors, driving instructors - non HGV, other motor drivers and sales representatives.

The percentage of suicides which resulted from hanging and suffocation varied little across occupations. For drowning, two of the occupations which had high PMRs had percentages much higher than the overall figure of 6 per cent. These were deck and engine room hands (seafarers) and librarians/information officers.

Some of the greatest differences by occupation were seen for the percentage of suicides resulting from firearms. Overall, firearms accounted for 5 per cent of suicides to men aged 20–64 between 1982 and 1996. However, among the occupation group farmers, horticulturists and farm managers, firearms accounted for 36 per cent of all suicides. Other occupations with high percentages of suicides from firearms included forestry workers, farm workers and vets. Following a literature review, including experiences from a few studies on gun control in the United States, Öström *et al.*¹³ concluded that a reduction in the availability of methods of committing suicide is a convincing and conceivable means of reducing the number of such deaths.

For women aged 20–59, nearly half of all suicides between 1982 and 1996 resulted from poisoning by solid or liquid substances. As with men, the occupations with the highest percentage of suicides resulting from this method were pharmacists (94 per cent) and vets (89 per cent). For the second most common method among women, hanging and suffocation, there was little variation by occupation - the percentages were low in pharmacists and vets because of the predominance of poisoning by solid or liquid substances. The percentage of suicides by occupation which resulted from poisoning by other gases and vapours was highest in the medical support professions, those classified as - ambulancewomen, professional and related in education, welfare and health (not elsewhere classified), therapists (not elsewhere classified) and physiotherapists. Drowning, the fourth most common method of suicide amongst women, showed little occupational variation.



For women, there was little occupational variation in the method used, mainly as a result of the predominance of a single method - poisoning by solid or liquid substances - which accounted for half of all suicides in women. For men, the method of suicide used was strongly related to their occupation and therefore their access to certain methods; for example, medical practitioners and drugs, and farmers and guns. The association between the method used and ease of access was also confirmed by the high percentage of teenage suicides which resulted from hanging and suffocation and from jumping from a high place; methods which are the most 'readily available' to teenagers. These findings pose the question as to whether people in these occupations are more likely than those in other occupations to 'attempt' suicide, or whether men and women in these occupations have easier access to, and better knowledge of, effective methods of suicide.

OTHER FACTORS

Marital status

The earlier section on age identified that suicide rates within the 15–44 age-group are either increasing, or declining at a slower rate, than among older adults. We calculated suicide rates in the combined 15–44 age-group by marital status, for men and women separately. These were calculated for the period 1982–96 on a three-year moving average basis, and are shown in Figure 4. Divorced and widowed men continue to have the highest suicide rates although they have been declining since 1983. Suicide rates for single men have been increasing continuously since 1983; whilst among married men, rates reached a peak in 1991, since when they have declined slowly. Rates have been decreasing for women in all marital status groups, except for those who are single. In 1996 a greater proportion of young people were single than in

1982, due to people delaying marriage and cohabiting or living alone¹⁷. Much has been written about the protective effect (on health) of marriage for men. People who live alone may suffer from a lack of emotional and other support provided by partners and families.

In 1982–84 the suicide rate for men aged 15–44 was 152 per million. By 1994–96 it had risen to 200 per million. Using the 1982–84 marital status distribution and 1994–96 suicide rates by marital status in ten-year age-groups, we calculated the expected suicide rate in 1994–96 if there had been no changes in the proportions of men in different marital status groups. The rate would have been 168 per million. This suggests that over two thirds of the increase in suicide rates in young men since 1982–84 may be related to the smaller proportions who are married. These calculations take no account of the increase in cohabitation among single men during this period, since death statistics do not record cohabitation as a marital status.

The same analysis was also carried out for women. Amongst those aged 15–44 the suicide rate decreased from 56 per million in 1982–84, to 51 per million in 1994–96. However, when we adjusted for the reduction in the proportion of women who were married between 1982–84 and 1994–96, the expected suicide rate in 1994–96 was even lower, at 43 per million. These findings still confirm the conclusions reached by Durkheim¹⁸ in 1897, that marriage reduced the chances of suicide owing to the greater social integration of married people.

Drug and alcohol misuse

It is well established that drug addicts and alcoholics are at an increased risk of suicide¹⁹. In an earlier article² we analysed trends in deaths from drug misuse and alcohol-related causes. Death rates from alcohol-related causes, both including and excluding cirrhosis, continued to increase between 1982 and 1996. This was true for both men and women, and in the age-groups 15–44 and 45 and over. Rates were much higher in men and at older ages. Previously we suggested that these rises explained to some extent the increase in young male suicide rates. This was based on the assumption that rises in the death rate from alcohol-related causes reflect increases in alcohol misuse nationally. However, death rates from alcohol-related causes have continued to increase whilst, for the broad age-groups 15–44 and 45 and over, suicide rates are now on the decline.

Death rates from drug abuse (ICD9 codes 304 and 305.2–.9) have continued to rise in the 15–44 age-group. Within this age-group, men were four times more likely than women to die from this cause in 1996. Since 1993 the rate among women has more than doubled. Rates for both men and women aged 45 and over are considerably lower than rates in the younger age-group. As with alcohol-related causes, death rates from drug abuse have continued to increase, whilst for the broad age-group 15–44 suicide rates are now on the decline.

These findings should not negate the fact that alcohol and other drug misuse are contributing factors in some individual suicides. Indeed, in-depth case-control studies of suicides, particularly in young people, have found alcohol and other drug abuse to be major factors in suicide trends.

Prison

The term employed by the Prison Service to refer to an apparent suicide is “self-inflicted death” (see footnote). Data from HM Prison Service show that the number of self-inflicted deaths amongst male prisoners in England and Wales increased from 23 in 1982, to 67 in 1997²⁰. Although the average size of the prison population also increased during this period, the self-inflicted death rate amongst men in prison doubled between 1982 and 1997, from 54 self-inflicted deaths per 100,000 prison population, to 115 per 100,000.

Most completed self-inflicted deaths and most self-harm attempts amongst prisoners occur during the remand stage. Liebling and Krarup²¹ analysed details of 305 incidents of self-harm carried out by 248 prisoners in 16 male establishments (selected to be reasonably representative of the prison system as a whole). They found that one third of the incidents examined occurred within 7 days of arrival. They attributed this to the fact that “the remand population contains all the vulnerable groups (the young, first timers, mentally disordered, etc) at the most stressful time of their custodial experience”. Their research shows that self-injury and attempted suicide are not only a function of individual vulnerability and circumstances, but are also influenced by the quality of prison regimes and the response of staff.

ONS is currently undertaking a survey (reporting in summer 1998), commissioned by the Department of Health, of prisoners in England and Wales. The main aims of the study are to measure the prevalence of mental health problems among prisoners, the impact and burden of these problems, and the need for and use of services. The impact on suicide trends in prison of any new initiatives introduced as a result of the findings of this survey will be monitored.

AIDS

Increased suicide rates for HIV positive individuals and people with AIDS have been recorded in numerous studies from around the world, including by Pugh *et al.*²² in the United Kingdom. Catalan and Pugh²³, however, describe some of the methodological pitfalls involved with some of these studies. In a case note audit in London²⁴, Sherr highlighted the complex mental health needs associated with HIV infection and AIDS.

AIDS incidence rates levelled in the mid-1990s and fell sharply in 1996 and 1997 with the introduction of improved pre-AIDS antiretroviral therapies. The number of newly diagnosed HIV infections reported to the Public Health Laboratory Service Communicable Disease Surveillance Centre remained at about two and a half thousand per year over the period 1991–97²⁵.

The two Thames regions, and North Thames in particular, reported the greatest numbers of newly diagnosed HIV infections and AIDS cases. The increase in suicide rates in the 1980s bore little correlation with the main high prevalence HIV areas. Over 80 per cent of newly diagnosed AIDS cases and almost 90 per cent of

Footnote

The term employed by the Prison Service to refer to an apparent suicide is ‘self-inflicted death’. This is broader than the former definition and includes all those deaths where it is clear that the person has acted specifically to take his/her own life. It is not restricted to the official verdict from the Coroner’s inquest, where verdicts of ‘suicide’, ‘open’ or ‘misadventure’ may be recorded, in cases where there was doubt about a person’s intent to end their life.

newly diagnosed HIV infections have been in the 15–44 age-group²⁵. However, suicide rates in London, where 60 per cent of AIDS patients live, showed the smallest percentage rise in 15–44 year olds between 1982–86 and 1992–96. London’s rate rose by 1 per cent, compared with at least a 13 per cent rise for every other Government Office Region. A detailed analysis of suicide trends by area will be presented in the next issue of *Population Trends*.

Other terminal illness

Several authors^{26,27} have noted that cancer diagnosis involves an increased suicide risk, with most agreeing that suicide risk is highest during the first to second year after diagnosis. Severe depression is particularly frequent among cancer patients, and is also a risk factor for suicide.

Ethnic origin/country of birth

Since ethnic origin is not collected at death registration, analyses of ethnic differences in mortality have to use country of birth as a proxy. Soni Raleigh²⁸ has used mortality data for England and Wales for 1988–92 and population denominators from the 1991 Census, to examine suicide rates in people of Indian subcontinent and Caribbean origin.

Seasonality

Monthly suicide data for the fifteen years 1982–96 were tested for seasonality. For men and women combined, and separately, there was no evidence of significant levels of seasonality although the peak months were March and April, and suicides were at their lowest in December. Similar peaks and troughs have been found in Belgium²⁹, whilst suicides in the United States have been found to peak in late spring³⁰.

CONCLUSIONS

Since 1982 female suicides have fallen continuously, whilst male suicides have only started to fall since 1988. Men aged 25–34 are now the only male age-group for which suicide rates continue to rise. Rates among women aged 15–24 have risen since 1982, but they remain at a relatively low level. Although the total number of suicides has declined in recent years, the contribution of suicides to total years of working life lost has increased. This is due to the increase in suicide in some younger age-groups.

Hanging is the most common method of suicide for teenage and adult men, whilst poisoning by solid and liquid substances is the most common method among teenage and adult women. Our analyses support the view that there is a link between suicide rates and access to, and knowledge of, effective means of committing suicide. For men, suicides from poisoning by other gases and vapours (principally motor vehicle exhaust gas) have fallen from a peak in the early 1990s. There is some indication that this may be due to the increasing numbers of cars fitted with catalytic converters. The reduction in suicides from this method is the major reason for the recent decline in overall suicide rates among men. The access link is also borne out by our occupational analyses. Men and women classified to the medical and allied professions had the highest proportions of suicides relative to other causes of death. Amongst these professions poisoning by solid or liquid substances was the predominant method. For men classified as farmers, a much higher proportion of suicides resulted from firearms compared to the national average.

Suicide rates have decreased for all marital status groups, except the single. The increase between 1982 and 1996 in the suicide rate for men aged 15–44 may be related to the decline in the proportions who are married. We also found that the self-inflicted death rate for men in prison doubled between 1982 and 1997.

In our second article, to be published in *Population Trends* 93, we look at the geographic variation in suicide mortality for 1982–96. Data will be presented for the constituent countries of the United Kingdom and, within England and Wales, for Government Office Regions and local authorities.

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References

- 1 Charlton J, Kelly S, Dunnell K, Evans B, Jenkins R, Wallis R. Trends in suicide deaths in England and Wales. *Population Trends* 69, 10–16, HMSO (1992).
- 2 Charlton J, Kelly S, Dunnell K, Evans B, Jenkins R. Suicide trends in England and Wales: trends in factors associated with suicide deaths. *Population Trends* 71, 34–42, HMSO (1993).
- 3 Kelly S, Charlton J, Jenkins R. Suicide deaths in England and Wales, 1982–92 : the contribution of occupation and geography. *Population Trends* 80, 16–25, HMSO (1995).
- 4 World Health Organisation. *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death*, volume 1, (Ninth Revision). WHO, Geneva, (1977).
- 5 Office for National Statistics. *Mortality statistics: injury and poisoning 1995*. Series DH4 no.20. The Stationery Office (1997).
- 6 Office for National Statistics. *Mortality statistics: cause 1993 (revised) and 1994*. Series DH2 no.21. HMSO (1996).
- 7 Waterhouse J *et al* (eds). *Cancer incidence in five continents*, vol 3, 456. International Agency for Research on Cancer, Lyon, (1976).
- 8 Hawton K and Fagg J. Deliberate self-poisoning and self-injury in adolescents: a study of characteristics and trends in Oxford, 1976–89. *British Journal of Psychiatry*, vol 161, 816–23, (1995).
- 9 Office for National Statistics. *Mortality statistics: injury and poisoning 1993 and 1994*. Series DH4 no.19. HMSO (1996).
- 10 Rooney C and Devis T. Mortality trends by cause of death in England and Wales 1980–94: the impact of introducing automated cause coding and related changes in 1993. *Population Trends* 86, 29–35, The Stationery Office (1996).
- 11 Department of Transport. *Transport Statistics Report, Vehicle Licensing Statistics:1994*.
- 12 Department of Transport. *Transport Statistics Report, Vehicle Licensing Statistics:1996*.
- 13 Öström M, Thorson J and Eriksson A. Carbon monoxide suicide from car exhausts. *Social Science and Medicine* 42, no.3, 447–51, (1996).
- 14 Roman E and Carpenter L. Cancer incidence in England 1981–1987. In: *Occupational Health - Decennial Supplement. Series DS no. 10*, ed F. Drever, pp. 77–102. HMSO.
- 15 Drever F. *How are census based mortality rates calculated?* In: Drever F and Whitehead M. (eds) *Health Inequalities*. The Stationery Office (1997).
- 16 Drever F and Bunting J. *Patterns and trends in male mortality*. In: Drever F and Whitehead M. (eds) *Health Inequalities*. The Stationery Office (1997).
- 17 Haskey J. Population review: (6) Families and households in Great Britain. *Population Trends* 85, 7–24, HMSO (1996).
- 18 Durkheim E. *Suicide: a study in sociology*. London, Routledge and Kegan Paul (1952) (first published 1897).
- 19 Hawton K. Assessment of suicide risk. *Br J of Psychiatry*, 150, 145–53, (1987).
- 20 Personal communication. HM Prison Service, March 1998.
- 21 Liebling A and Krarup H. *Suicide attempts and self-injury in male prisons - a summary*. Home Office Library, (1993).
- 22 Pugh K, O'Donnell I and Catalan J. Suicide and HIV disease. *AIDS Care*, 5, 391–400, (1993).
- 23 Catalan J and Pugh K. Suicidal behaviour and HIV infection - is there a link? *AIDS Care*, 7, S117–S121, (1995).
- 24 Sherr L. Suicide and AIDS: lessons from a case note audit in London. *AIDS Care*, 7, S109–S116, (1995).
- 25 PHLS AIDS and STD Centre - Communicable Disease Surveillance Centre, and Scottish Centre for Infection & Environmental Health. Unpublished AIDS/HIV Quarterly Surveillance Tables No.37, 97/3.
- 26 Bellini M and Capannini D. Increased suicide risk in cancer patients. *Minerva Psichiatrica*, 35(3), 175–86, (1994).
- 27 Allebeck P and Bolund C. Suicides and suicide attempts in cancer patients. *Psychological Medicine*, 21, 979–984, (1991).
- 28 Soni Raleigh V. Suicide patterns and trends in people of Indian Subcontinent and Caribbean origin in England and Wales. *Ethnicity & Health*, 1(1), 55–63, (1996).
- 29 Maes M, Cosyns P, Meltzer HY, De-Meyer F and Peeters D. Seasonality in violent suicide but not in nonviolent suicide or homicide. *Am J Psychiatry*, 150(9), 1380–5, (1993).
- 30 McCleary R, Chew KS, Hellsten JJ and Flynn-Bransford M. Age- and sex-specific cycles in United States suicides, 1973 to 1985. *Am J Public Health*, 81(11), 1494–7, (1991).

Key points

- Men aged 25–34 and women aged 15–24 are the only groups for which suicide rates continue to rise.
- Analyses by method of suicide and occupation suggest a link between suicide and access to, and knowledge of, effective means of committing suicide.
- A fall in suicides from poisoning by other gases and vapours (principally motor vehicle exhaust gas) since the early 1990s may be due to the increasing numbers of cars fitted with catalytic converters.
- Suicide rates have decreased for all marital status groups, except the single.
- The self-inflicted death rate for men in prison doubled between 1982 and 1997.