# The Service Implications of Regional Differences in Suicide Rates in the Republic of Ireland

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This paper examines variations in suicide within the Republic of Ireland in order to determine if the services, as currently available, require redistribution. The rates of suicide and undetermined death in the four provinces, 26 counties and five cities of Ireland are examined for the years 1976 to 1994, with the age and gender distributions of local populations taken into consideration. Marked variations between areas are noted with a threefold difference between the counties with the highest and lowest rates. Counties tend to be similarly ranked for men and women but the male suicide rate, overall, was almost three times that for women. The male:female ratio was 2.3:1 for the first half of the study, but this increased to 3.4:1 for the second half; a reflection of increasing numbers of male suicides. Surprisingly, the male suicide rate in Dublin city has stayed steady at 12 per 100,000 over the entire study period, while the national male rate has more than doubled reaching approximately 18 per 100,000 in recent years. There is a need for improved services in rural Ireland. If the various available services are to help reduce the suicide rate, then a mechanism must be found to deliver these in areas of low population density where the need could well be greatest.

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**Introduction**

If there are spatial or temporal differences in the frequency of disease, then it is reasonable to seek similar differences in the prevalence of other factors, which may be of either a causative or protective nature. From the organisational point of view, it is also both reasonable and desirable to focus services on areas of greatest need. This paper applies these considerations to the topic of suicide.

Several studies have confirmed the rise in Irish suicide rates, which was first identified in 1987.[1,2,3] The reasons for the rise have never been clearly identified. Attention has already been drawn to regional and inter-county differences in the apparent frequency of suicide.[4] Up to now, however, it has not been shown whether these differences can be attributed to local variations in recording practices and whether they remain once the age and gender distributions of the local populations are taken into consideration. The present study investigates whether there are consistent age-standardised, provincial, inter-county and urban differences in rates of suicide for Irish men and women, and if so, what the service implications are.

**Materials and Methods**

The years studied were 1976 (the first year that data are comprehensively available on computer) to 1994, the last available year. There were four national population censuses taken during that time, in the years 1979, 1981, 1986 and 1991.[5] According to the 1991 census, the Republic of Ireland has a population of 3,525,719. The country is split into four provinces: Connacht, Leinster, Munster and Ulster; and at a lower level into twenty-six counties. These are historical divisions dating back to the twelfth century[6] which are still of cultural relevance in Ireland today. There are five cities (county boroughs) with populations varying from 40,000 in Waterford to 478,000 in Dublin. Counties which included county boroughs were treated as two separate areas - the city and the rest of the county. This gave a total of thirty-one areas.

For each province, county and city, the annual number of suicides was tabulated into five-year age groups for each sex, using data supplied by the Central Statistics Office. Rates, age-adjusted to the European Standard Population[7] were calculated according to the nearest previous census, except for 1976-1978 when the 1979 data were used.

The rate of undetermined death which is the commonest alternative verdict given in cases of probable suicide, was similarly derived for each area and these were added to the suicide rates. A ratio of the rates of suicide to undetermined death, for each area over the time period, was also calculated. The non-parametric Wilcoxon Matched-Pairs Signed-Ranks Test was used to make gender comparisons between the areas. The similarity of the order of the areas for males and females was assessed using Spearman's Rank Correlation Coefficient (rs).

**Results**

**Gender variations**

The average national suicide rate for males over the years 1976 to 1994, is almost three times that of the females (12.9 and 4.5 per 100,000 for males and females, respectively). Between 1976 and 1985, the male:female ratio was 2.3:1. This increased to 3.4:1 during the second half of the study period; a reflection of the increasing numbers of male suicides. For each of the thirty-one areas studied (twenty-six counties and five cities), the age-standardised rate of suicide is lower for females than for males (Wilcoxon test, $p<0.0001$) (Figures 1 and 2).

**Undetermined death rate variations**

The rate of undetermined death has fallen sharply in Ireland over the last twenty years.[8] The ratio of suicide to undetermined death has risen more than tenfold for both sexes, from 2.2 to 28.6 for males and from 2.3 to 26.9 for females. There have been some notable exceptions to this trend, one example being Limerick city. The average rate of undetermined death there is three times the national average for both sexes. It is important also, to note that this significantly alters the position of Limerick city in the table of male suicide rates, in that it jumps from 13th to 2nd place (Figure 1). Furthermore, Limerick city's undetermined death rate has been consistently high over a period when the national rate has greatly fallen. In all thirty-one areas, the male rate of undetermined death is higher than the female rate (Wilcoxon test, $p<0.0001$). On average, the ratio of suicide to undetermined death is higher for males (Wilcoxon test, $p=0.0061$) meaning that males are more likely than females to be given a verdict of suicide as opposed to undetermined death.

**Variations by area**

For men, since 1982 the province of Leinster has returned the lowest rate of suicide (Figure 3). Munster has had the highest rate for females since 1984, although these rates are volatile due to the smaller numbers of female suicides (Figure 4).

The male suicide rate in Dublin city has remained steady at 12 per 100,000 for almost the entire study period. This lack of increase is especially striking when one considers that during this time, the national male rate has more than doubled.[9] Male rates in the other four cities have fluctuated widely, but show a general increase over the time period. There is no trend apparent in the female city rates, again, largely due to small numbers. In general, cities are ranked higher for females than males.

There are striking differences in inter-county suicide rates for both genders (Figures 1 and 2). There is a threefold difference between the counties with the highest and lowest rates. Counties tend to be similarly ranked for men and women (Table 1). As could be predicted from above, most of the lower rates for both genders are returned by Leinster counties. Leitrim has the highest rate for both men and women.

**Table 1. Similarity of the ranking of the areas for males and females by suicide; undetermined death; suicide plus undetermined death; and the ratio of suicide to undetermined death**

| | Spearman's Rank Correlation Coefficient, rs | P-value |
|---|---|---|
| Suicide | 0.544 | 0.002 |
| Undetermined death | 0.495 | 0.005 |
| Suicide plus undetermined death | 0.514 | 0.003 |
| Ratio of suicide to undetermined death | 0.467 | 0.008 |

**Discussion**

The results show that inter-provincial and inter-county differences in suicide rates exist in Ireland, even when age and sex distributions are standardised. In all counties, the female rate is lower than that of the male; by a ratio of 1:3 on average. A number of areas (especially the small counties) exhibit wide fluctuations in their suicide rate from year to year, but the majority retain their rank order over the whole study period. The counties with the highest rates in the present study are predominantly rural, and those with the lowest rates are predominantly urban or suburban. Leinster, which is the most urbanised province of all, has the lowest rate for men. The possibility that these differences are explicable in terms of variation in the rapidity of social change in rural versus urban areas of Ireland, will be explored in a sister article.[10] The situation with regard to Limerick city presents a particular problem which requires more research. Here, the focus is on the organisation of services.

The report of the special Task Force on Suicide, which was set up by the Minister for Health, is due to be published in the near future and is likely to recommend that each health board area appoint a specific resource person(s) with a special interest in suicidal behaviour as it occurs in the particular health board area.[9] It is envisaged that such a person would consult with the various voluntary and statutory services which exist for the care of the psychologically distressed. This person would also have a responsibility to report to the Review Group, also to be set up, which will oversee the response to changes in suicide and parasuicidal rates at a national level.

There are specific difficulties in delivering services, whether voluntary or statutory, in rural areas of low population density which are often far removed from highly specialised centres of care. There may be considerable problems of transport, including financial and professional time costs. Vulnerable individuals in country areas find it more expensive and more difficult to make use of available services. The psychiatric services are, generally speaking, of low cost in comparison with high technology medicine. However, within psychiatric catchment areas, it is more expensive to deliver services in sectors of low population density than it is in more highly populated areas.

Many health boards do not provide adequate travelling expenses to allow the delivery of services to remote areas. Among the reasons given for this, is the possibility of abuse. Nevertheless, there is a responsibility to deliver care to the populations in need, even when the per-capita cost is higher.

Another aspect of care delivery which should be mentioned, is the very low level of attendance at services of young male suicides prior to their deaths. This is the group with the highest rate of increase in suicide.[11,12] This phenomenon has also been noted in other countries. It is obvious that this group do not see the services, as presently structured and delivered, as being relevant to them. In order that more effective use be made of the services, it is necessary that they should be altered to make them more accessible and acceptable to younger male members of our community. Further work, with the co-operation of youth groups and other agencies, is needed to identify ways in which this could be achieved.

The uneven distribution of care, however, is not confined to consultant-led services. It also affects general practice. Most rural general practices are centred in small towns. The periphery is less well-endowed. Similarly, voluntary services of all sorts are increasingly a small town phenomenon, if not that of a city. It can be argued that the reason the rate for the Dublin area has not increased, may be because of the ready availability of services there. This may also apply to other Leinster areas in its hinterland. This highlights the necessity for improved services in more remote areas. If the various available services, whether consultant-led or given by general practitioners or voluntary agencies, are to be of benefit in reducing the number of suicides, then a mechanism must be found to deliver these in rural areas of low population density where the need could well be greatest.

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