Research Trends

Suicide and Other External-Cause Mortality Statistics in Ireland

A Comparison of Registration and Occurrence Data

Paul Corcoran, Ella Arensman, and Desmond O'Mahony

National Suicide Research Foundation, Cork, Ireland

Abstract. There are two sets of annual mortality statistics released by the Central Statistics Office (CSO) in Ireland, one based on deaths registered in the particular year and the other based on the deaths that occurred in that year. We compared the registration and occurrence figures for suicide and for other deaths by an external cause for the years 1987–2003. The occurrence figures were, on average, 6% higher than the registration figures. There was evidence that the extent of the discrepancy increased over the study period, reaching almost 20% in recent years. The findings suggest that caution needs to be taken in the media reporting of registration figures for suicide and other external causes of death in Ireland and in the interpretation of these figures by health professionals.

Keywords: mortality statistics, suicide, external cause of death, Ireland

Introduction

The vast majority of deaths are the result of internal causes such as heart disease and cancer. In Ireland, as in most countries, these deaths are registered within days of occurring. Consequently, for internal causes of death, mortality statistics based on the number of deaths that occurred in a year would be almost identical to the statistics based on the number of deaths that were registered in that year. In Ireland, the vast majority of deaths by external causes such as suicide and accidents are referred to coroners and result in inquests. These deaths are not registered until the inquest has been held and this is usually months or even a year after the death. As a result, one could expect to observe some differences between the mortality statistics based on year of occurrence and those based on year of registration. However, these differences would be expected to balance out over a period of years.

The Vital Statistics Section of the Irish Central Statistics Office (CSO) is responsible for the publication of mortality statistics in Ireland. Statistics relating to all deaths that occurred in a particular year are generally published within 24 months of the year's end. This time lag is primarily because of the procedures involved in registering certain deaths, in particular, deaths that result in a coroner's inquest. Another set of annual mortality statistics are released in a much shorter time period. Generally, within 6 months of the year's end, figures are released that relate to the number of deaths that were registered by the CSO in the previous year. Because of the timeliness of the year-of-registration figures, they generally receive greater attention and are considered to be more newsworthy with regard to causes of death that attract media coverage, such as suicide, homicide, and road traffic accidents.

Internationally, there is diversity as to whether annual mortality statistics are published based on the number of deaths registered in a year or the number that occurred in a year. The Office for National Statistics for England and Wales publishes three sets of annual mortality statistics: the first is released in May based on deaths registered in the previous year and the second is released in October based on deaths that occurred in the previous year. For deaths by external cause, such as suicide and accidents, a late extract is published in the following April in order to capture as many late-registered deaths as possible. This late extract generally adds 5% to the number of deaths (by external cause) previously reported as having occurred in a given year (Office for National Statistics, 2005).

There are also three releases of annual mortality data in the US: a monthly provisional release that reports raw counts of death certificates for the previous 12 months, a preliminary release that reports cause of death and demographic data for over 90% of the deaths that occurred in the previous calendar year, and a final release that also reports on the deaths that occurred in the previous calendar year

Crisis 2006; Vol. 27(3):130–134
DOI 10.1027/0227-5910.27.3.130

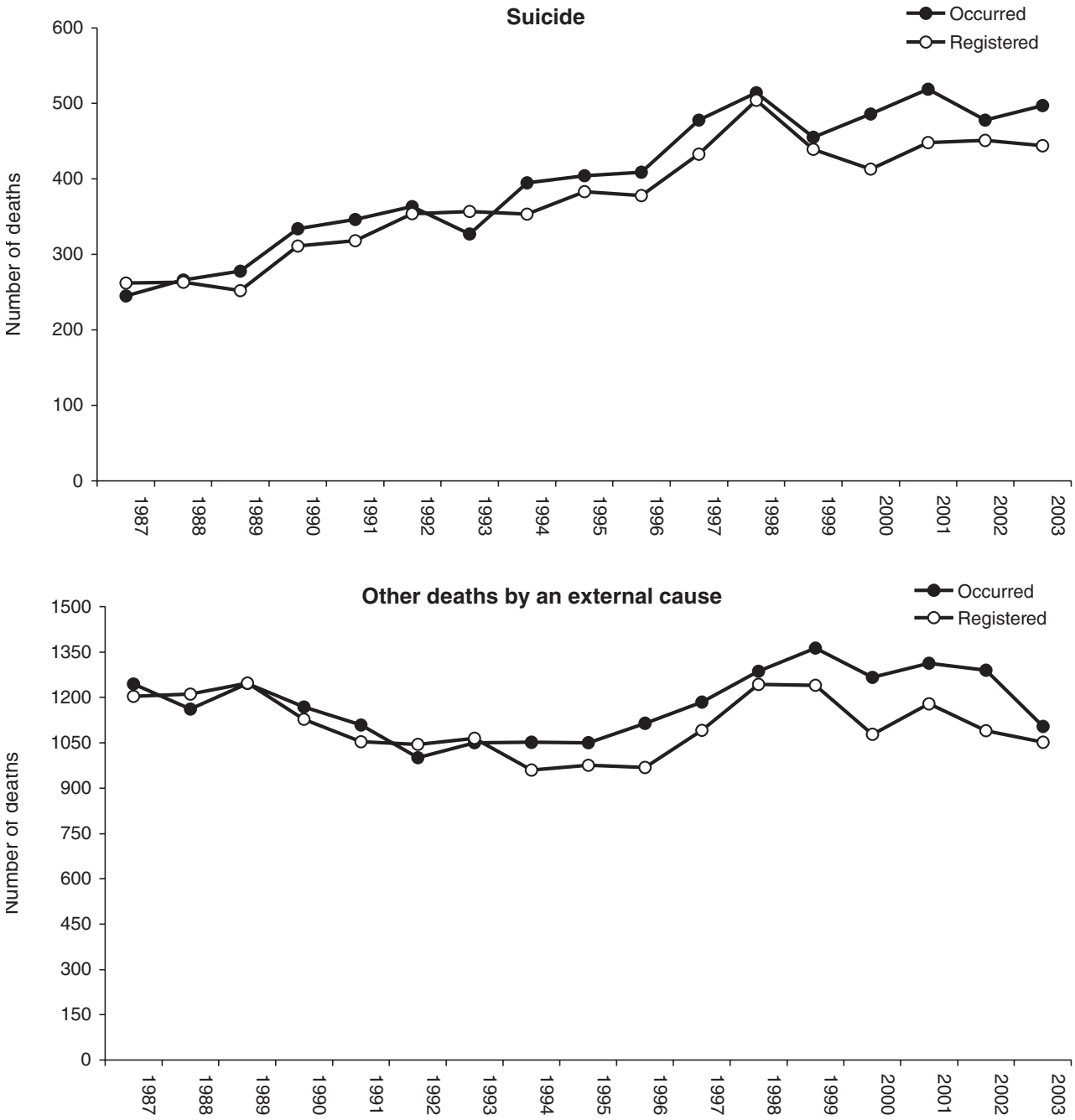

Figure 1. Suicide and other deaths by an external cause by year of occurrence and year of registration, 1987–2003.

but allows the inclusion of deaths that were registered too late to be included in the preliminary report. For the years 2000 through 2002, suicide figures in the final report were, on average, 3.7% higher than in the respective preliminary report (Hoyert, Kung, & Smith, 2005).

One of the key priorities of *Reach Out*, the National Strategy for Action on Suicide Prevention in Ireland (Health Service Executive & Department of Health and Children, 2005), is the improvement of data collection and data use in relation to suicidal behavior and suicide prevention. In this paper, we compared the mortality statistics based on year of occurrence and those based on year of registration for the years 1987–2003 in relation to suicide deaths and other deaths by an external cause.

Methods

With the appropriate ministerial permission, data relating to all deaths by an external cause (ICD-9 codes

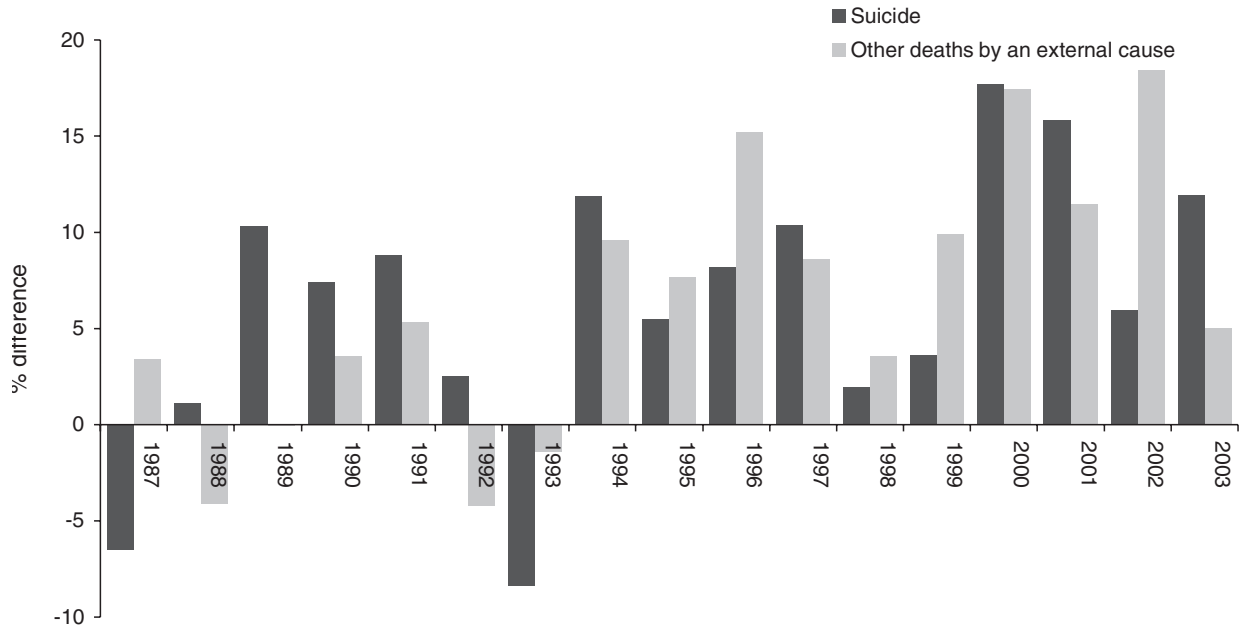

Figure 2. Percentage difference between the number of deaths that occurred in a year and the number that were registered in that year for suicide and other deaths by an external cause, 1987–2003.

E800–999) that occurred in the period 1987–2003 were obtained electronically from the Vital Statistics Section of the CSO. Data relating to the number of such deaths that were registered by the CSO in each year of this study period were obtained from the relevant reports (Central Statistics Office, 1988–2004).

Registration and occurrence figures were compared based on the raw counts and percentage differences. Evidence of a linear trend in the percentage difference between the two sets of figures over the study period was assessed using Pearson's correlation coefficient, *r*.

Results

The number of suicides in Ireland doubled between 1987 and 1998: from 245 to 478 (+110%) according to the occurrence data; and, from 262 to 451 (+92%) according to the registration data (Figure 1). The number of suicides appears to have leveled off in the relatively short period since 1998. The number of other deaths by an external cause fell by 15–20% from around 1200 in the late 1980s to approximately 1000 in the mid-1990s. This was followed by an increase of almost 30% so that the number of other deaths by an external cause at the end of the study period was similar to that at the start.

In 1987, fewer suicide deaths occurred than were registered (245 vs. 262, –6%) and this happened again in 1993 (327 vs. 357, –8%; Figure 2). In every other year, the number of suicides that occurred exceeded the number that were registered. On average, the percentage difference between the occurrence suicide figures and the registration figures was 6%. The correlation between the percentage difference and year ($r = 0.49$, $p = .044$) reached statistical significance, which suggests that the two sets of figures may be diverging. Consequently, the greatest differences appeared in recent years. Respectively, the number of suicides reported as having occurred in 2000 and 2001 was 18% and 16% greater than the number registered in those years.

For other deaths by an external cause, occurrence figures exceeded registration figures in all but 3 years (1988, 1992, and 1993). The average percentage difference over the study period was 6%. As with suicide, the greatest differences were in recent years (+17% in 2000 and +19% in 2002). Indeed, there was stronger evidence of an increasing gap over time between the occurrence and registration figures ($r = 0.68$, $p = .003$).

Discussion

For suicide and other deaths by an external cause in Ireland, the reported number of deaths registered in a year generally underestimated the number of deaths subsequently reported as having occurred in that year. Between 1987 and 2003, the occurrence figures were, on average, 6% higher but there was evidence that the extent of the underestimation increased over time, reaching almost 20% in some recent years. These findings suggest that caution needs to be taken in the media reporting of registration figures for suicide and other external causes of

death that receive news coverage, such as traffic-accident deaths and homicides. As well as being an underestimate of the occurrence figures, a yearly increase or decrease in registered deaths does not guarantee that the same change will be seen in the occurrence figures. While the overall trend in suicide and other deaths by an external cause, based on the registration figures, was not dissimilar to the trend based on the occurrence figures, this may not persist if the figures continue to diverge.

Suicide was decriminalized in Ireland in 1993 and, unusually, the number of suicides reported as having occurred in that year was lower than the registered number of suicide deaths. It is plausible that the decriminalization of suicide could alter national statistics by affecting the incidence of suicide or the practices used to record them. Either way, decriminalization would be presumed to lead to an increase in suicide, whereas the reported number of suicide deaths that occurred in 1993 was actually 10% lower than in 1992, a rare decrease. However, this was followed by a 21% increase in 1994. In these years the reported number of registered suicides remained stable. It should be noted that registration figures were also higher than occurrence figures for other deaths by an external cause and that 1987 was another year when registered suicide deaths exceeded the number of suicides that occurred.

The reason why the Irish CSO registration figures underestimate the occurrence figures for suicide and other deaths by an external cause is a simple one. In the recording of such deaths, data are received from a number of sources including coroners, registrars, and police. While the CSO may have been notified that a death has taken place, it will not be recorded in their registration figures until sufficient data have been gathered to fully classify the cause of death. If this does not happen before the deadline for the annual registered deaths report, then such pending cases will not be included in the report nor will they be included in the subsequent year's annual registered deaths report. However, all such deaths will be included in the annual report based on year of occurrence. Consideration should be given to resolving this inconsistency.

More prompt reporting of mortality statistics based on year of occurrence is likely to reduce the attention given to the "provisional" year-of-registration figures in Ireland. The Irish system of registering deaths has recently increased its use of electronic systems, though it is still largely a paper-based system based on manual coding of cause of death. In England and Wales, 80% of deaths are coded automatically based on a software system and this enables the release of occurrence figures within 9 months of the year's end. While coding the cause of deaths certified after inquest is still done manually by experienced coders, they are fully reported within 15 months of the year's end (Devis & Rooney, 1997, 1999).

Internationally, suicide and other external-cause mortality statistics are available from sources such as the World Health Organization's Statistical Information System (WHOSIS) and Eurostat, the Statistical Office of the European Communities. Unfortunately, data are often several years old when they become available. Eurostat is proposing a regulation that would set an 18-month deadline on the submission of cause of death data for a calendar year. Adoption of this by member states would significantly improve the timeliness of mortality statistics and would greatly benefit the broad range of professionals who use them.

Acknowledgments

We would like to acknowledge the Vital Statistics Section of the Irish Central Statistics Office for their work in compiling the data reported in this paper. In particular, we would like to thank Mr. Joseph Keating for his valuable comments on the paper.

References

Central Statistics Office. (1988–2003). *Vital statistics: Fourth quarter and yearly summary, 1987–2002*. Dublin: Stationery Office.

Devis, T., & Rooney, C. (1997). The time taken to register a death. *Population Trends, 88*, 48–55.

Devis, T., & Rooney, C. (1999). Death and the epidemiologist. *Health Statistics Quarterly, 1*, 21–33.

Health Service Executive & Department of Health and Children. (2005). *Reach out: National strategy for action on suicide prevention 2005–2014*. Kells: Health Service Executive.

Hoyert, D.L., Kung, H.C., & Smith, B.L. (2005). *Deaths: Preliminary data for 2003. National vital statistics reports; vol. 53 no. 15.* Hyattsville, Maryland: National Center for Health Statistics.

Office for National Statistics. (2005). *Review of the Registrar General on deaths attributed to injury and poisoning in England and Wales, 2003. Mortality statistics: Injury and poisoning. Series DH4 no.28*. London: Office for National Statistics.

About the authors

Paul Corcoran is Deputy Director/Senior Statistician at the National Suicide Research Foundation, Cork, Ireland, where he has worked since it was established 11 years ago. He is now completing a PhD in epidemiology with the Department of Epidemiology and Public Health at University College, Cork. He is also an Officer of Statistics to the Irish Central Statistics Office with responsibility for the analysis of the data recorded on every inquested death in the country.

Ella Arensman is Director of Research at the National Suicide Research Foundation and Honorary Senior Lecturer with the Department of Epidemiology and Public Health at University College, Cork, Ireland. Her specific research areas of interest are the

prediction of suicidal behavior, cross-cultural differences in deliberate self-harm and suicide, and efficacy of treatment programs for people who have engaged in deliberate self-harm as well as prevention of repeated suicidal behavior.

Desmond O'Mahony is a graduate in applied psychology of University College, Cork, Ireland, and is currently a researcher with the National Suicide Research Foundation.

Paul Corcoran

National Suicide Research Foundation
1 Perrott Avenue
College Road
Cork
Ireland
Tel. +353 21 4277499
Fax +353 21 4277545
E-mail paul.nsrf@iol.ie