

Regional Mortality Patterns In Ireland.

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There is a long tradition in Geography of investigations into spatial inequalities in the *quality* of life, whether the inequalities are perceived in narrow economic terms (e.g. regional economic disparities) or more broadly in social terms (e.g. social well-being). Geographers, however, have generally shown much less interest in spatial inequalities in the *quantity* of life (reflected, for example, in spatial disparities in life expectancy). However, if people living in certain areas can expect to live for fewer years than their counterparts in other areas, then surely this is a form of social injustice every bit as serious, if not more serious, than inequalities in living standards. Everyone has a reasonable idea of which parts of the country are the most prosperous and which parts are the most deprived, but how many people would be able to correctly identify which areas are characterised by the longest life expectancies?

Even a superficial consideration of international patterns reveals major disparities in life expectancy at a global level. Life expectancies in the developed countries are considerably higher than those found in the Third World, suggesting that life expectancy is related to economic development. However, the picture is not quite as clear-cut as many might imagine. The main reason for the low life expectancy found in many Third World countries is a high rates of infant and childhood mortality. If Third-World people survive childhood, their life expectancy is often not that much less than it is for people in developed countries. Indeed, life expectancy in rural Bangladesh (one of the poorest countries on earth) at most ages after infancy is actually higher than it is in Harlem, New York (in the heart of the largest city in one of the richest countries on earth) (McCord and Freeman, 1990; Wilkinson, 1996).

Regional disparities in life expectancy within developed countries often tend to reflect economic disparities. For example, life expectancy in the prosperous south-east of England (outside of inner London, which contains large areas of poverty) is approximately 4 years higher than it is in less prosperous areas in the north of England and Scotland (Howe, 1997). These patterns have remained virtually unchanged for decades (Barker, 1994). Similar patterns have been observed in many other countries, although they are not always as clear-cut, nor do they show the same degree of persistence over time, as in Britain.

This paper examines the regional patterns of mortality in Ireland for the period 1980-1999 using data extracted from the Public Health Information System, developed by the Information Management Unit in the Department of Health and Children.

CRUDE DEATH RATES

Figure 1 shows the crude death rate for each county averaged over the 20-year period 1980-1999. The crude death rate is simply the number of people who die each year

expressed as a 'percentage' of the number of people alive.¹ The map would appear to conform with what one might expect given a knowledge of economic disparities in Ireland – i.e. the areas with the highest death rates (and therefore, one might assume, the lowest life expectancies) are found in Kerry and the north-west of the country – areas generally assumed to be amongst the more economically disadvantaged in Ireland. Most of the counties with above average levels of mortality also tend to be found in the western half of the country. The counties with the lowest crude death rates are in the eastern half of the country and include those generally assumed to be the most prosperous.

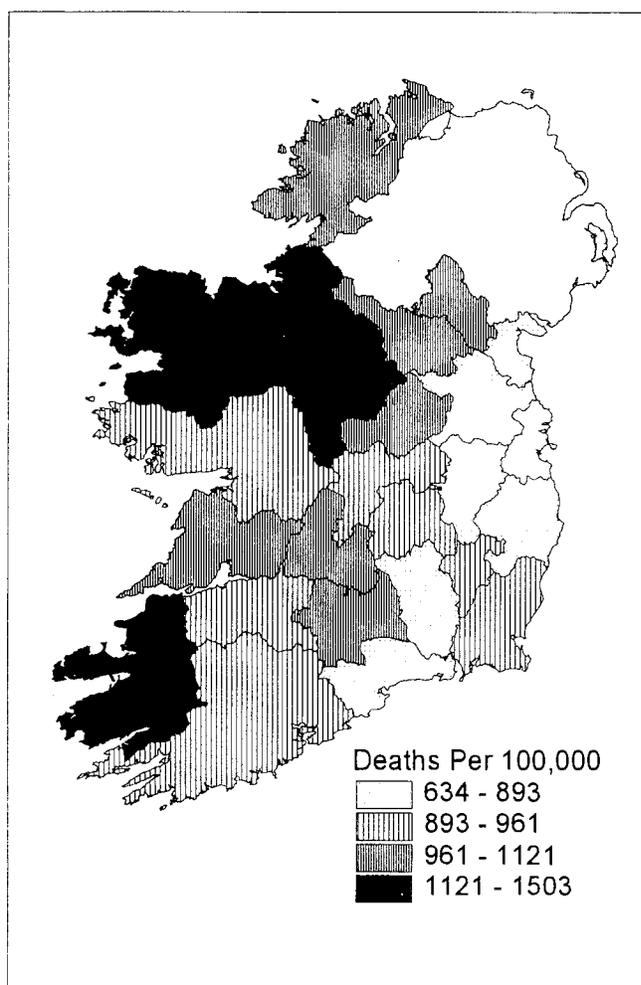


Figure 1: Crude Death Rates, 1980-1999

Figure 1 would appear to confirm a fairly straightforward relationship between the quantity of life and the quality of life. Crude death rates, however, can be extremely misleading, and this – as it turns out – is a case in point. The problem with crude death rates is that they are very strongly influenced by variations in the age composition of the population. The likelihood of dying increases very rapidly

¹ The rate, strictly speaking, is not expressed as a percentage (i.e. deaths per 100 people) but as deaths per 100,000 people, so as to produce numbers which are larger and therefore easier to interpret.

with advancing age – i.e. it almost doubles with each additional 5 years of life. Thus, although the percentage of elderly people may not differ too much between counties, those with a slightly higher percentages of elderly people will tend to have a much higher number of deaths and therefore a much higher crude death rate. Given the traditional pattern of migration of young people from the less affluent areas to the more affluent areas, the less affluent areas tend to be the ones with the lowest percentages of young people. They consequently tend to have the highest percentage of elderly people and therefore the highest crude death rates. When drawing maps to establish which areas have the highest risks of mortality, we must therefore take account of variations in the age composition of the population.

Similar considerations apply to gender. Women generally have a longer life expectancy than men, consequently if the natural balance of men and women is upset by differential migration, then the areas having higher percentages of women (traditionally the large urban areas) will, all other things being equal, tend to have a lower death rate than areas with higher percentages of men (traditionally the more rural counties in the west). This particular problem is easily resolved by considering the mortality rates for males and

females separately.

AGE SPECIFIC DEATH RATES

The simplest way to eliminate distortions arising from differences in age composition is to calculate age specific death rates – i.e. the number of deaths in a particular age group are expressed as a ‘percentage’ of the total number of people in that age group. Figures 2(a) and 2(b) show the age specific death rates for males and females respectively for the 65-69 age group averaged for the period 1980-99. Whilst maybe not quite a mirror image of Figure 1, it will be noted that these maps create a totally different impression of which areas have high or low mortality. The high mortality areas are found in two clusters in the south-east and south-west for both sexes, whilst there is a third cluster running in a belt from Westmeath to Leitrim for males. However, the most noticeable feature of these maps – and one that is repeated in numerous other maps – is the belt of low mortality counties in the west and Donegal. It will be noted that most the counties with moderately high mortality rates lie to the south and east of a line running from Dundalk to Limerick – i.e. the half of the country usually identified as the most prosperous by most economic indicators.

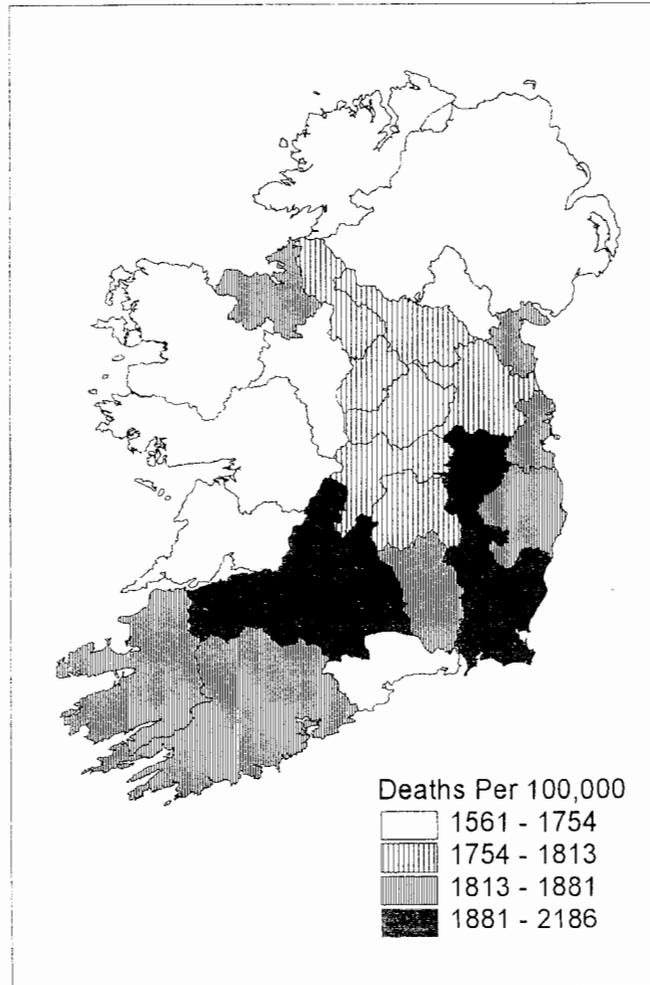
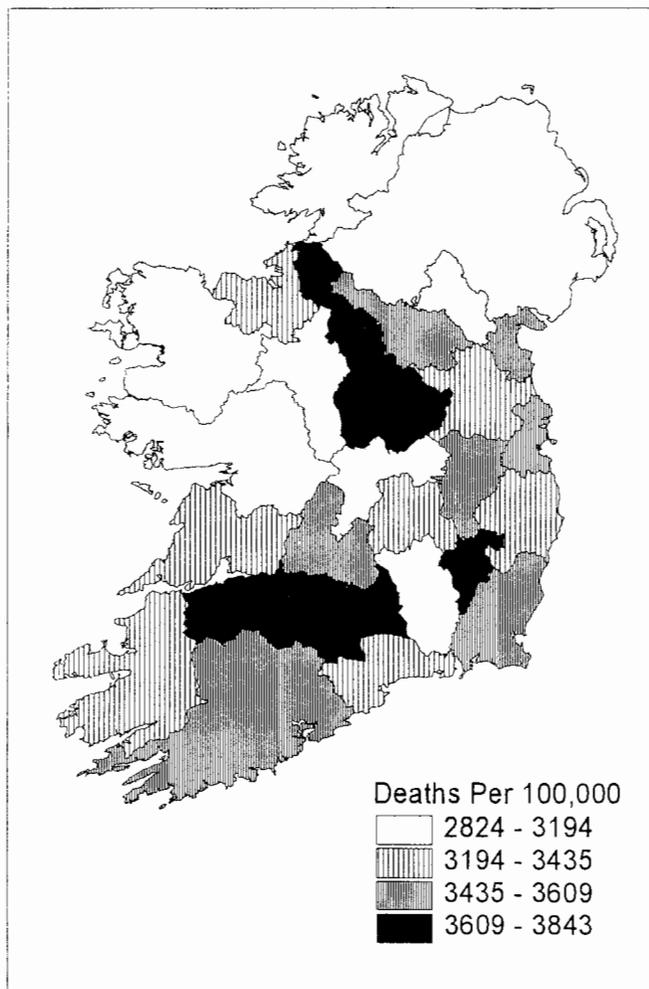


Figure 2: Age-Specific Death Rates for Males (a) and Females (b) Aged 65-69, 1980-1999.

The maps in Figure 2 show only the deaths in one particular age group. It is quite possible that the mortality patterns in this age group could be quite different to those for other age groups. To see the complete picture, it would therefore be necessary to draw similar maps for every other age group. Whilst this would be desirable for a meticulous analysis of mortality patterns in Ireland, the amount of information contained in the 36 or so maps could prove overwhelming. It is therefore desirable to construct some summary measure of mortality which takes account of variations in age composition. The normal procedure in medical geography is to calculate standardised mortality ratios.

STANDARDISED MORTALITY RATIOS

Standardised mortality ratios (SMRs) are calculated by expressing the actual number of deaths in an area as a 'percentage' of the number of deaths which would be expected if the area had the same death rate in each age group as the country as a whole. A SMR of 100 indicates that the death rate in the area is similar to the national average, whereas a SMR of 110 would indicate that the area has 10 per cent more deaths than would be expected given its age composition. Conversely, a SMR of 90 would indicate that it has 10 per cent fewer deaths than would be expected given its age composition.

Given that everyone must die sometime, SMRs could give a misleading impression if the calculations include deaths amongst the elderly. It is therefore normal to include only deaths below a certain age. In this study deaths above the age of 70 are excluded, so the analysis is based only upon deaths which can reasonably be regarded as premature.

Figures 3(a) and 3(b) shows the SMRs for males and females respectively. The patterns are broadly similar to the age specific death rates depicted in Figures 2(a) and 2(b), although there are a few noticeable differences. Limerick and the belt from Westmeath to Leitrim are again amongst the counties with the highest mortality rates for males, whilst Limerick and Tipperary North, and Carlow and Wexford again form little clusters of high mortality for females. However, they are joined by Louth as an area of high mortality for both sexes. At the other end of the scale, the western counties and Donegal again figure for both sexes, although Mayo is only moderately low in the case of males (see below). A second belt of low mortality for males may be observed in the south midlands running from Offaly to Kilkenny. Kilkenny also has a low SMR for females, whilst Meath has a low SMR for both sexes, whilst the neighbouring counties of Monaghan and Cavan also have low SMRs for females.

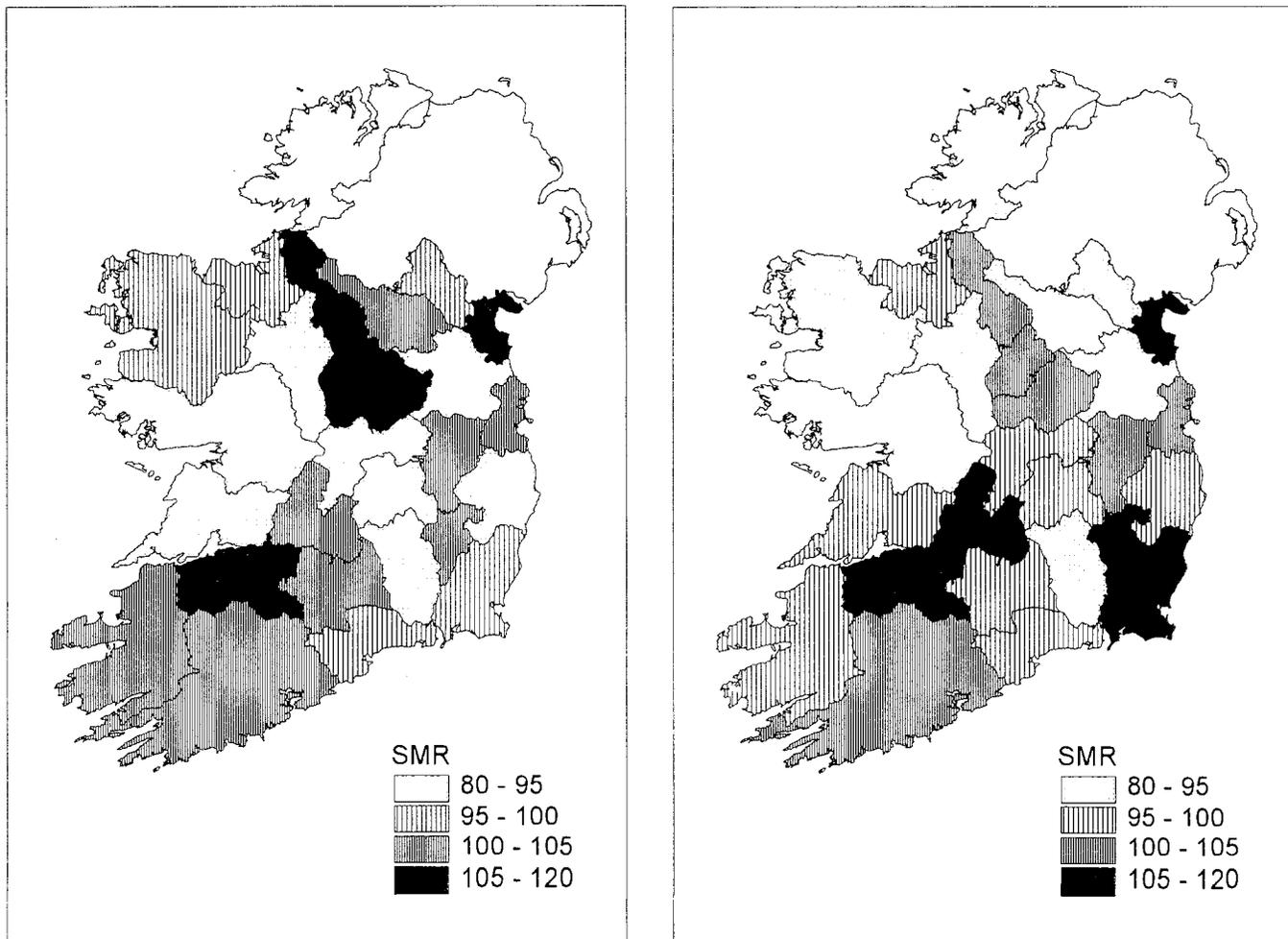


Figure 3: Standardised Mortality Ratios for Males (a) and Females (b) Aged Less Than 70, 1980-1999.

DISCUSSION

Although 'clusters' and 'patterns' can be detected in Figures 3(a) and 3(b), the patterns are by no means clear-cut. Whilst there may be a tendency for the low mortality areas to be located in the poorer half of the country, this generalisation would be much more convincing if the Westmeath to Leitrim cluster had low mortality, rather than high or moderately high mortality for both sexes. The maps would also be a more convincing if the high and low mortality areas formed large contiguous areas, rather than a series of small clusters. Indeed, one might question whether the SMR maps actually display any regular patterns at all.

There are a number of points however that indicate that the maps do display real inequalities in the quantity of life, even though the spatial patterns do not lend themselves to a simple geographical interpretation. First, there is a high degree of consistency in the patterns of mortality for males and females ($r=0.77$, $p<0.01$) – i.e. counties with high mortality for males also tend to have high mortality for females. Second, there is a remarkable degree of consistency in the mortality rates for certain counties: Louth had above average mortality for males for 20 years running, whilst Galway had below average mortality for 18 years out of the 20. Third, the counties at the high end of the scale had more than 10 per cent more deaths than would be expected over a 20 year period, whilst those at the low end of the scale had more than 10 per cent fewer deaths than would be expected. It would not be too surprising to find a county deviating from the national mean by 10 per cent in any given year, but to do so persistently over a 20 year period suggests that the differences are not simply a matter of chance. Finally, counties are far from ideal spatial units for investigating spatial variations in mortality. Previous studies found that Dublin County Borough had one of the highest mortality rates in the country whilst the rest of Dublin county had one of the lowest rates (Pringle, 1986). The effect of grouping the two areas together in this study as Dublin County therefore only serves to disguise both extremes through a process of 'averaging out'. Similar considerations apply to the other County Boroughs, especially Cork and Limerick, each of which had much higher mortality rates than the rest of their respective counties.

The most obvious question arising from this is why some areas should have a higher death rate than others. One possibility is that it could reflect different mortality rates for one particular disease, and that there are no major differences for all of the other causes of death. However, although the proportion of deaths attributed to each of the major causes shows some variations between counties, the prevailing impression is that an area which has a high rate of mortality from any one of the major causes of death also tends to have a high death rate for each of the other major causes. The causal factors responsible for the observed spatial variations (whatever they may be) would therefore appear to exercise a similar influence on a variety of different types of disease. There are of course exceptions. Cancer mortality in Dublin, for example, is well above the national average (especially for males), but deaths from diseases of the circulatory system (e.g. ischaemic heart disease, stroke) for both sexes and respiratory diseases for

men are unexceptional - which is perhaps surprising given that one might assume an association between these diseases and air pollution.

Finally, it should be noted that this paper, by averaging death rates over a 20 year period, may disguise some important changes in the geography of mortality which have occurred over the past 20 years. Mayo, for example, used to have one of the lowest death rates in the country for both males and females (forming part of the 'western bloc' still observable on the maps), but its death rate increased in recent years for both sexes. Carlow, which had one of the highest death rates for females in the 1980s, now has a death rate far in excess of any other county for females, whilst the death rate for males moved from close to the national average into the high category. Roscommon, in contrast, which began the period with a low death rate for females now has a female rate far lower than any other county. The high rates for Westmeath and Leitrim for males are also a recent phenomenon: both counties had fairly average death rates in the early 1980s, but now top the list. These trends clearly raise some important questions as to why these changes have occurred.

SUMMARY

Although the patterns of mortality reflected in the SMR maps may appear disjointed, they do actually indicate substantial disparities in death rates and consequently life expectancy. More detailed analysis than reported here indicates that the high mortality tends to be associated with urbanisation and social class (i.e. urban areas have higher mortality than rural areas, and areas with high percentages of working class people tend to have higher death rates than more affluent areas). These patterns replicate those found in other countries. There would also appear to be a regional pattern in Ireland, in so far as there is a tendency for counties in the north and west to have low mortality, and for those in the south and east to have high mortality. However, the pattern is not particularly clear-cut and would appear to be breaking down following a decline in the relative mortality status of certain counties in the north-west half of the country in the 1990s.

There is clearly a lot more research required to disentangle these patterns and trends at a descriptive level, let alone identify the causal factors and processes. However, inequalities in the quantity of life are too important to be ignored. It is hoped that this short paper may encourage some readers to research these patterns for themselves.

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Conclusion: Mortality of second generation Irish men and women was higher than that of all men and all women and for most major causes of death. Mortality varied depending on whether one or both parents were born in Ireland. Table 2 shows that the summary measure, based on those with at least one parent born in Ireland, may underestimate the mortality disadvantage of those with both parents born in Ireland. The difference between the standardised mortality ratios, however, did not reach formal significance. Table 2.

Britain's regional mortality: a legacy from disaster in the Celtic periphery? *Soc Sci Med* 1994; 39:189-99. 13. Hornsby-Smith M

CVD mortality rates have declined dramatically over the past 2 decades, yet the number of life years lost to premature CVD deaths is increasing in low- and middle-income regions. Ischemic heart disease and stroke remain the leading causes of premature death in the world; however, there is wide regional variation in these patterns. Some regions, led by Central Asia, face particularly high rates of premature death from ischemic heart disease. Sub-Saharan Africa and Asia suffer disproportionately from death from stroke. A report on all-Ireland mortality data. The Institute of Public Health in Ireland. Available at www.publichealth.ie. Google Scholar. Bryder, L. (1988). *Below the Magic Mountain. A Social History of Tuberculosis in Twentieth-Century Britain*. Clarendon Press, Oxford. Google Scholar. CMI (2004). Trends and Patterns in Cancer Mortality in Northern Ireland. *Journal of the Statistical and Social Inquiry Society of Ireland*, XXXIX, 186-210. Google Scholar. Dormandy, T. (1999). *The White Death. A History of Tuberculosis*. The Hambledon Press, London and Rio Grande. Google Scholar. Forfar, D.O., Smith, D.M. (1987). Yet differences exist in mortality levels, age patterns, and trends between countries and regions. Understanding the socioeconomic implications of the diverse mortality levels and age patterns and potential future trends is critical for the implementation of the 2030 Agenda for Sustainable Development. Sustainable Development Goal 3, "Global Health and Well-Being", comprises targets that contribute directly to rising life expectancy. This data booklet presents selected findings drawn from the latest mortality estimates and projections as published in *World Population Prospects 2019*. All information is available at www.unpopulation.org. Suggested citation: United Nations, Department of Economic and Social Affairs, Population Division (2019). Excess female mortality in Ireland emerged after the famine of the late 1840s to the highest level observed in Europe, while it began to fall in other European countries. This exceptionally high excess female mortality persisted in some age groups even until the mid twentieth century. In this paper, we examine the determinants of this female disadvantage in Ireland with county data from the Irish censuses from 1871 to 1926. We find that the pattern of determinants is similar to the pattern found in England at around the same time. In particular, women's mortality improves with a higher labor ma...