



# Does equality legislation reduce intergroup differences? Religious affiliation, socio-economic status and mortality in Scotland and Northern Ireland: A cohort study of 400,000 people



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## ABSTRACT

Religion frequently indicates membership of socio-ethnic groups with distinct health behaviours and mortality risk. Determining the extent to which interactions between groups contribute to variation in mortality is often challenging. We compared socio-economic status (SES) and mortality rates of Protestants and Catholics in Scotland and Northern Ireland, regions in which interactions between groups are profoundly different. Crucially, strong equality legislation has been in place for much longer and Catholics form a larger minority in Northern Ireland. Drawing linked Census returns and mortality records of 404,703 people from the Scottish and Northern Ireland Longitudinal Studies, we used Poisson regression to compare religious groups, estimating mortality rates and incidence rate ratios. We fitted age-adjusted and fully adjusted (for education, housing tenure, car access and social class) models. Catholics had lower SES than Protestants in both countries; the differential was larger in Scotland for education, housing tenure and car access but not social class. In Scotland, Catholics had increased age-adjusted mortality risk relative to Protestants but variation among groups was attenuated following adjustment for SES. Those reporting no religious affiliation were at similar mortality risk to Protestants. In Northern Ireland, there was no mortality differential between Catholics and Protestants either before or after adjustment. Men reporting no religious affiliation were at increased mortality risk but this differential was not evident among women. In Scotland, Catholics remained at greater socio-economic disadvantage relative to Protestants than in Northern Ireland and were also at a mortality disadvantage. This may be due to a lack of explicit equality legislation that has decreased inequality by religion in Northern Ireland during recent decades.

## 1. Introduction

There is strong evidence that religion influences mortality risk through several mechanisms, including by the direct effects of spirituality on health and also by means of shared social capital, values and health behaviours of coreligionists (Sullivan, 2010). Religious involvement and practice has been associated with increased life expectancy (Hummer et al., 1999; McCullough et al., 2000) and variation in mortality rates among religions has been widely reported which is not completely explained by underlying variation in socio-economic status (SES) (Räsänen et al., 1996; O'Reilly and Rosato, 2008; Lerch et al., 2010). Mortality differences have also been found among denominations of the same religion that share a broad ethnic grouping. For

example, there is significant variation in mortality among Christian denominations in Northern Ireland, with some conservative Protestant groups having reduced risk of alcohol and lung-cancer related deaths as a result of abstinence from alcohol and tobacco (O'Reilly and Rosato, 2008). Variation among religions extends to the experience of health conditions; some denominations report poorer health than others at a given level of clinical need (O'Reilly and Rosato, 2010) and there are interactions between the protective effects of religiosity and denomination (Sullivan, 2010). The balance between direct and indirect effects of religion on health varies and in some contexts religious affiliation acts primarily as an indicator of underlying sociological, cultural and ethnic identities and health behaviours, rather than as an indicator of religious practice (Field, 2014).

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Interactions between religious groups may also influence health outcomes regardless of whether affiliation indicates practice or simply group membership, most notably where there is violent conflict (Pedersen, 2002). In less extreme cases where tensions exist between groups it is difficult to untangle the relative influences of group characteristics and between group interactions. For example, migrant groups may face discrimination and difficulty assimilating into settled populations potentially leading to stress and mental health problems (Levecque and Van Rossem, 2015) but these may be offset by greater resilience and better physical health among those prepared to move (Lu and Qin, 2014). To further complicate matters, exposure to intergroup tensions is likely to vary with the distribution of minority and majority groups and there is evidence that health outcomes worsen with increasing dispersion of minority groups among the majority (Bosqui et al., 2014). Associations between group density and health have been investigated extensively in terms of ethnicity (Bécares et al., 2012) but similar mechanisms are likely to apply for other group indicators including religious affiliation.

Assessing the balance between intra- and intergroup influences could make a valuable contribution towards targeting of interventions to improve population health. Here we describe an experiment of history and geography comparing mortality rates in two regions of the UK, Scotland and Northern Ireland, sharing the same major religious groups but in which interactions between the groups are profoundly different. Religious affiliation and practice have played major roles in the cultural development of both regions and whilst practice has waned in recent decades, affiliation remains a strong indicator of socio-cultural identity. Geographical proximity has led to frequent mixing of these populations; Scotland is historically strongly Protestant, but with a substantial and somewhat localised Catholic minority (16% of the population at the 2011 Census) descended from mass Irish immigration during the 19th century (Williams, 1994). In recent decades levels of religious affiliation among Protestants have declined sharply and a large proportion of the population describe themselves as having no religion (Raab and Holligan, 2012). In Northern Ireland a large proportion of the Protestant population is descended from Scottish migrants who moved as part of the planned colonisation (Plantation) of Ulster during the 17th Century. Following the partition of Ireland in 1921, Catholics formed a minority in Northern Ireland that has increased in subsequent decades (Catholics formed 45% of the population at the 2011 Census).

In both regions there is a long history of tension along Protestant/Catholic lines, the recent manifestations of which differ. In Northern Ireland, civil unrest partly fuelled by discrimination against Catholics escalated into a violent sectarian conflict ('The Troubles') that lasted from 1969 for almost 30 years and in which over 3600 people were killed and many more wounded (Morrissey et al., 1999). Throughout this period several pieces of legislation were introduced to promote equality; the Fair Employment (Northern Ireland) Acts (1976, 1989) required employers to adopt fair recruitment and employment practices and regularly report the composition of the workforce by religion. These were superseded by the Fair Employment and Treatment Order (1998 - FETO) that also prohibited discrimination in the provision of goods and services. Following the Good Friday peace agreement of 1998 the Northern Ireland Act was introduced, requiring public bodies to explicitly consider the impact of new policies on equality (Section 75). Composition of the workforce changed over these decades to more closely match the mix of Protestants and Catholics available for work but inequalities in provision of social housing (covered by other legislation) were not reduced to the same extent (Russell, 2012; Cunningham, 2015) and residential segregation of Protestants and Catholics remained widespread (Boal, 2002; Lloyd and Shuttleworth, 2012; Shuttleworth et al., 2013; Doherty and Poole, 1997). In Scotland, although widespread violent conflict has been avoided, debate regarding the prevalence of sectarianism prompted the late introduction of religion questions to the 2001 Census. It has been suggested that

prejudice against the minority Catholic population in the employment market has restricted upward social mobility, leading to higher levels of health problems associated with economic deprivation (Walls and Williams, 2004, 2003). Equality legislation of the type seen in Northern Ireland was not enacted in Scotland or the rest of Great Britain until the Equality Act of 2010 and there remains no analogue to the FETO. In neither region have the longer term impacts of equality legislation on population health been assessed.

We aimed to assess the relative influence of interactions between and characteristics of religious groups on health, quantifying variation in SES and mortality rates in Scotland and Northern Ireland by religion. In doing so we informally tested the hypothesis that equality legislation has been beneficial in terms of reducing health inequalities between denominations in Northern Ireland. There is evidence that Catholics in both Scotland and Northern Ireland have greater mortality risk than non-Catholics, largely explained by lower SES (O'Reilly and Rosato, 2008; Millard et al., 2015) but we expected that the differentials between groups in both SES and mortality risk would be larger in Scotland. We addressed the following research questions: a) Is there evidence Catholics are more disadvantaged relative to Protestants in Scotland than in Northern Ireland? b) Are there differences in mortality risk among religious groups in Scotland and Northern Ireland? c) To what extent might these be explained by differences in SES between groups?

## 2. Methods

### 2.1. Data sources

The Scottish Longitudinal Study (SLS) and Northern Ireland Longitudinal Study (NILS) are prospective record-linkage studies, derived from health card registrations and Census returns to which vital event data (births, marriages and deaths) have been linked. The SLS and NILS contain 5.3% and 28% samples of the respective populations (approximately 274,000 members in Scotland and 500,000 in Northern Ireland) and began with the 1991 and 1981 Censuses respectively. Details of the SLS, NILS and linkage processes are described elsewhere (O'Reilly et al., 2012; O'Reilly et al., 2008; Boyle et al., 2009). SLS and NILS data are held in secure environments at the General Register Office for Scotland (GROS) and Northern Ireland Statistics and Research Agency (NISRA) and the use of these data were approved by the ethics committees of the School of Geography and Geosciences, University of St. Andrews and the Office for Research Ethics Northern Ireland respectively.

### 2.2. Characteristics of the cohort

The cohort consisted of 156,448 people from the SLS and 248,255 people from the NILS, aged between 25 and 74 at the 2001 Census. The follow-up period lasted 6 years 8 months and the cohort experienced a total of 15,955 deaths during follow-up. People living in communal establishments and those reporting a non-Christian religion (1.6% in Scotland and 0.4% in NI) were excluded.

In addition to age and sex we selected covariates from Census returns that have previously been associated with variation in mortality risk. Four indicators of socio-economic status were included. Social class was derived using the National Statistics Socio-economic Classification (NS-SEC) (Rose and Pevalin, 2002) of occupations to create seven categories (professional, intermediate, small employers/self-employed, lower supervisory, semi-routine/routine, never worked/long term unemployed, full-time student). A six category classification of educational attainment was used (university degree or equivalent, foundation degree/HNC, A-level/Higher, GCSE/Standard grade/O-Grade, no recorded qualifications) along with three categories describing household car access (no access, one car, two or more). Finally, three categories of household tenure were defined (owner occupied, social rented, other).

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