

# Differences in Mortality Rates in Northern Ireland 2002-2005: A Section 75 and Social Disadvantage Perspective

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## Summary

The Northern Ireland Mortality Linkage study (NIMLS) links mortality data from the General Register Office to 2001 Census returns enabling a broader analyses of age standardised mortality rates (ASMR) than has been possible previously.

Analyses conducted were designed to reflect both the categories identified under the statutory equality duty (Section 75 of the Northern Ireland Act 1998), and measures associated with relative social disadvantage.

In general, mortality rates across most dimensions examined are gendered. In particular, there are strong relationships between ASMR and measures of relative social disadvantage. The relationship of ASMR with social disadvantage along non-housing dimensions appears disproportionately stronger for males compared to females.

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## 1. Introduction

### 1.1 Why difference?

Differences in individual health outcomes, collectively reflected by morbidity and mortality rates are, as with many other social and economic outcomes, impacted upon by a complex array of health-related behaviours, biological, familial, societal and environmental factors.

Much evidence exists in relation to differences between population groups across specific social and economic dimensions in terms of their respective health outcomes. For example, recent publication by the Department of Health Social Services and Public Safety (DHSSPS) of an update to the Health and Social Care Inequalities Monitoring System (DHSSPS, 2007) provides an extensive overview of inequalities in mortality, morbidity and service usage in Northern Ireland.

The term 'inequality' is often used as a generic catch-all to describe observed differences between such groups. As previously indicated however, (DHSSPS, 2004) subsumed within the general term 'inequality', particularly from an analysts' perspective, can be at least three distinct comparative processes:

- Variation: which generally refers to differences between groups which are not preventable in nature whether biological or social;
- Inequality: which refers to differences in outcomes between population groups on the basis of the impact of various social or economic factors; and
- Inequities: inequality dimensions impacting differentially which are deemed to be unfair and possibly avoidable

Given that the vast majority of statistical measures used for equality and social need purposes are outcome measures, it is invariably difficult to state the impact of these three respective processes with any degree of precision. In addition, and in relation to observed inequalities in outcome, it is often difficult to determine how much of the observed 'inequality' is attributable to differences in opportunity or process or indeed individual choice (Jamison et al., 2007)

### 1.2 What difference?

Determining whether observed difference is due to 'natural' variation, inequality or inequities, or indeed some combination of all three, is not a straightforward matter whether in relation to the analysis of the available data, or to the interpretation of that analysis.

The first step in considering difference between groups and determining causative factors is to quantify that difference.

In that respect, mortality rates are one of the most commonly used health statistic. However, analysis of mortality rates to date in Northern Ireland has been limited by the coverage of the data to analysis by sex, age and marital status (NISRA, 2007).

On that basis, existing mortality data was limited in terms of addressing two key social policy issues namely: the Statutory Equality duty on Public Authorities (Section 75 of the Northern Ireland 1998 Act); and the poverty and social inclusion concerns reflected by the development of an anti-poverty and social inclusion strategy for Northern Ireland.

The Northern Ireland Mortality Linkage Study (NIMLS), developed in 2006, links mortality data from the General Register Office (GRO) to 2001 Census returns. On that basis, the potential to examine a broader range of social, economic and geographical factors and their relationship with mortality rates became possible.

A number of papers have been produced to date using NIMLS data to examine differences in mortality rates.

O'Reilly and Rosato (2008) examined religious affiliation and mortality in Northern Ireland. The authors reported that, whilst Catholics had higher mortality rates than non-Catholics, the difference disappeared after adjusting for social and economic status. Of particular interest, O'Reilly and Rosato found wider differences between denominations within the Protestant community than were evident between the Protestant and Catholic communities. The authors concluded that their findings indicated an association between religious affiliation, behaviour and lifestyle.

In the context of examining issues of mortality, equality and social need, O'Reilly and Rosato's paper highlights three important issues. First, differences between two (or more) groups may be mediated by underlying social and economic group differences. That is, the difference in mortality rates between Catholics and non-Catholics reflected the differential impact of relative social and economic disadvantage. Secondly, differences between groups may be mediated by differences in behaviours and lifestyle which may, or may not, in turn be associated with relative social and economic disadvantage. This second finding, reflected by differences within the broad Protestant community in cause-specific mortality, pointed importantly to the influence of smoking and alcohol.

The third, and in this context, possibly most important issue raised by the research, is the potential of 'simple' group comparisons to mislead in the absence of additional analysis and considerations of the evidence.

The potential of simple group on group comparisons to mislead, was further highlighted by research published by the Department for Social Development into temperature and mortality in Northern Ireland (Morris, 2007). In addressing the research question, the author constructed a comprehensive database containing household, housing and geographic data attached to NIMLS data. Sophisticated multinomial logistic regression analyses was used to attempt to unpick the relative contributory factors and the extent to which these varied by region (East and West Northern Ireland). Supplementary follow-up research (DSD, 2008) extended the factors analysed to include data relating to deprivation, distance from medical services, illness and disability.

The analysis conducted here therefore is primarily descriptive in identifying, as a first step, observable differences between groups. The groups identified for analysis are those which appear most relevant to the issues of social need and the statutory Section 75 duty.

## **2. Aims, objectives and methods**

### **2.1 Aims and objectives**

The broad aim of the current paper is to describe differences in age standardised mortality rates (ASMR) between categories of people along various social and economic dimensions corresponding as far as possible to: (1) those groups detailed under Section 75 of the Northern Ireland Act 1998; and (2) social and economic characteristics reflecting relative social need or disadvantage.

The specific objectives of the current paper include:

- identifying distinct differences between the groups selected for analysis
- assessing, on that basis, the extent to which the NIMLS is amenable for equality and social need analyses

- highlighting areas of future potential investigation
- stimulating further equality and social need research utilising the NIMLS and the Northern Ireland Longitudinal Study<sup>1</sup>

## 2.2 Methodology

The NIMLS links mortality data from the General Register Office to 2001 Census returns. The mortality rates refer to the 2002-2005 period and are age-standardised to the 2001 Census population for comparative purposes. These anonymised data were held in a safe setting by NISRA and made available to the researchers for the purposes of this study.

The NIMLS dataset contains all deaths occurring between 2002 and 2005 except for children who were born after the 2001 Census. Other mortality records for which Census information is unavailable relate to immigrants after the 2001 Census and people who were not enumerated in the 2001 Census. Deaths among those not enumerated in the Census had categories set to “unknown” with these unknowns redistributed among the known categories based upon the distribution dictated by the known categories.

Given the population change between 2001 and subsequent years, the population for each Section 75 and socio-economic group has been weighted to account for increases/decreases in the population of each five-year group based on mid-year population estimates. This adjustment assumes that the population of each sub-group has changed by the same amount.

To make appropriate comparisons between groups and their respective mortality rates, the rates themselves must be adjusted to compensate for any different age structures between groups. This is done because the age structure of the population can affect the number of deaths and thereby the crude death rate may be an inaccurate comparison.

<sup>1</sup> The NIMLS is funded by the Department of Health, Social Services and Public Safety and the Health and Social Care Research and Development Office. For further information see: [www.nisra.gov.uk/nimls/default.asp.htm](http://www.nisra.gov.uk/nimls/default.asp.htm)

As the London Health Observatory indicates<sup>2</sup>, the common approach to this issue is to adjust or standardise the mortality rates to take account of differences between the age structures of the groups being compared. One of the main methods of standardisation is to produce Age Standardised Mortality Rates (ASMR).

The ASMR for a group is the number of deaths, usually expressed per 100,000, that would occur in that group if the group had the same age structure as the standard population.

Tables in Annex A provide the respective mortality rates of the groups analysed in addition to confidence intervals around these rates and estimates of life expectancy.

## 3. Results

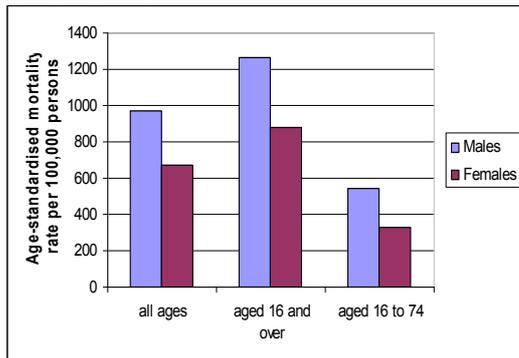
### 3.1 Section 75 and mortality rates

Section 75(1) of the Northern Ireland Act 1998 requires that public authorities, in carrying out their functions relating to Northern Ireland, have due regard to the need to promote equality of opportunity: between persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation; between men and women generally; between persons with a disability and persons without; and between persons with dependants and persons without.

Of these 9 discrete population categories, the linked NIMLS database enables derivations of: age, community background (for religious belief), racial group, limiting long-term illness (for disability), marital status, and households with dependent children to be examined.

<sup>2</sup> [www.lho.org.uk/DATAANDMETHODS/Methods/Age\\_Standardised\\_Rates.aspx#Indirect](http://www.lho.org.uk/DATAANDMETHODS/Methods/Age_Standardised_Rates.aspx#Indirect)

Figure 1: Age-standardised mortality rates by age group and sex



Unsurprisingly, Figure 1 indicates that ASMR are highest for both males and females in the age 16 and over category and lowest in the aged 16 to 74 category.

Importantly, Figure 1 indicates how, over three broad age categories, male ASMR are significantly higher than females. Overall, this translates into a life expectancy which is 4.4 years longer for females than males. Whilst the greater longevity of females compared to males has been a well rehearsed finding, the extent of the sex difference within the 16 to 74 age group, which is well within the respective average life expectancy of both sexes, is notable.

Figure 2: Age-standardised mortality rates by marital status and sex

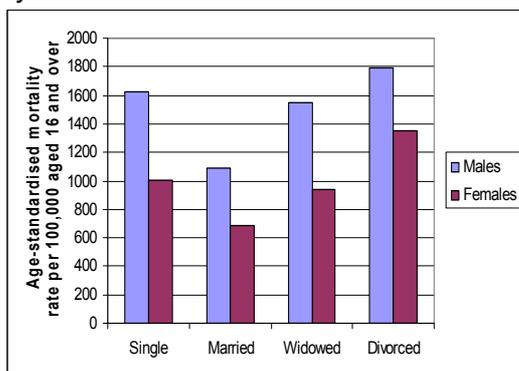


Figure 2 indicates interesting differences in ASMR by marital status for those aged 16 and over.

For both males and females, the lowest ASMR are found amongst those who are married. By contrast, the highest ASMR for both sexes are found amongst the divorced.

In terms of the relationship of ASMR with marital status, the difference between

those who are single and those married is greater for males than females. By contrast, the difference in ASMR between the single and those divorced is greater for females than for males.

Crudely put, in relation to marital status and all other things being equal, being married would appear related to lower ASMR - particularly for men, whilst divorce and the impact of divorce is related to worse ASMR - particularly for females.

Figure 3: Age-standardised mortality rates by sex and presence of dependent children in household

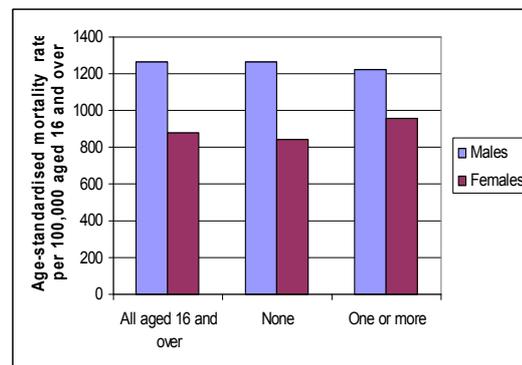
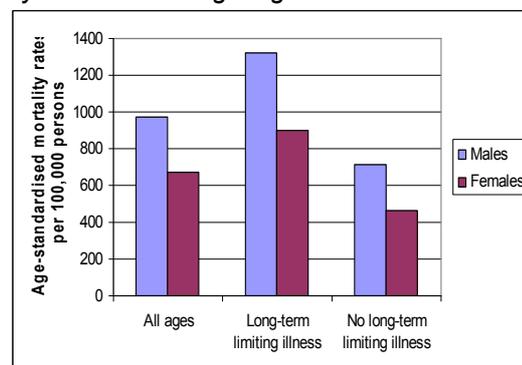


Figure 3 indicates that the ASMR for males do not differ significantly whether there are dependent children present in the household or not. By contrast, the ASMR for females with one or more dependent children is significantly higher compared to either females in households with no dependent children present or indeed to all females aged 16 and over.

Figure 4: Age-standardised mortality rates by sex and limiting long-term illness



The 2001 Census contained a question relating to limiting long-term illness which, in this context, can serve as an adequate proxy measure for disability. The Census question was essentially a self assessment of whether the person had a

limiting long-term illness, health problem or disability which limited their daily activities or the work they could do and included problems that are due to old age<sup>3</sup>.

Figure 4 indicates that having a limiting long-term illness is associated with a significantly elevated ASMR for both sexes. However, the absolute difference in ASMR between those with and those without a limiting long-term illness is greater for males than for females.

Figure 5: Age-standardised mortality rates by sex and community background

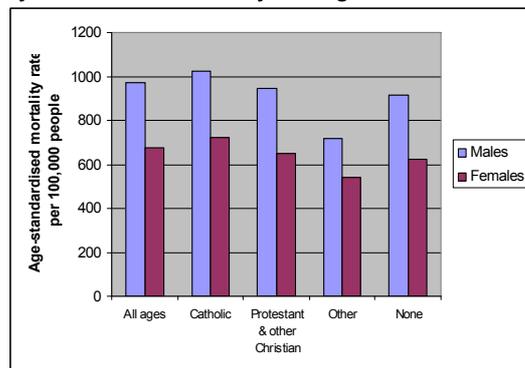


Figure 5 replicates the previous findings of O'Reilly and Rosato (2008) that those with a Catholic community background, both male and female, have the highest ASMR. The lowest ASMR are found amongst those with an 'other' community background, or none.

Due to the small numbers enumerated within the 2001 Census, it was only possible to examine ethnicity in terms of a bimodal classification of 'white' and 'non-white'. Whilst those classified as 'non-white' had slightly lower ASMR, the difference, driven by the relatively small numbers of people categorised as 'non-white', did not prove statistically significant.

Table 1 indicates the respective life expectancy of those analytical groups used to mirror the categories specified under Section 75.

The largest differentials in life expectancy between males and females are found amongst those who are: single; married;

widowed; or with a limiting long-term illness.

For males, higher life expectancies are found amongst those: married; those with an 'other' community background; and those with no limiting long-term illness. Lower male life expectancies amongst Section 75 groups are found amongst: the single; the widowed; and those with a limiting long-term illness.

Amongst females, higher life expectancies are found amongst: the married; those with an 'other' and 'none' community background; and those with no limiting long-term illness. Lower life expectancies amongst females in the Section 75 analyses are found amongst: the single; those divorced; those with a limiting long-term illness; and those with one or more dependent children.

Table 1: Life expectancy by Section 75 groups (2002 – 2005)

	Male	Female
All ages	76.9	81.3
Aged 16 and over	76.4	81.2
<b>Marital Status (people aged 16 and over)</b>		
Single	72.2	79.1
Married	79.1	84.8
Widowed	74.0	80.7
Divorced	72.2	77.2
<b>Community Background</b>		
Catholic	76.2	80.7
Protestant & Other Christian	77.2	81.7
Other	80.9	83.7
None	77.5	82.1
<b>Ethnicity</b>		
White	76.9	81.3
Non-white	78.0	82.4
<b>Limiting long-term illness</b>		
LLTI	70.1	76.0
No LLTI	80.6	85.5
<b>Dependent children in household (people aged 16 and over)</b>		
None	76.5	81.7
One or more	76.3	80.0

### 3.2 Section 75 and mortality rates discussion

The findings of difference in ASMR between the three broad age groupings examined: all ages; those aged 16 and over; and those aged 16 to 74 are entirely expected. The result emphasizes the

<sup>3</sup>www.nisranew.nisra.gov.uk/census/metadata/glossary.html#Limiting%20Long-Term%20Illness

primacy of the age profile of the group being examined in calculating their respective ASMR. That is, we would expect the group comprised of those aged 16 and over to exhibit higher ASMR compared to, say, those of all ages given the former group's exclusion of those aged below 16.

In terms then of difference, we can be certain that this age analysis reflects the variation in age profile of the groups and is unlikely to represent issues of equality or inequality.

The persistent difference, across all groups examined, between male and female ASMR is a well reported finding. This finding reflects the impacts of a mix of factors including health-related risk behaviours, psychological, biological, social, environmental and occupational factors. On that basis, the observed difference would appear to represent both variation and inequality but possibly less likely to substantively reflect the impact of inequity of treatment between males and females.

The difference in mortality rates between different marital status groups requires some consideration. Compared to those aged 16 and over who are single, those married and those divorced have lower and higher mortality rates respectively. This difference between the married and the single is also reflected in the relative risk of these two groups in experiencing poverty and disadvantage. A household comprised of a married couple have a much lower risk of poverty and social exclusion compared to the single given the more economically efficient and effective nature of a partnered relationship (DSD, 2007; Hillyard et al., 2003).

The lower mortality rates amongst the married may also represent pre-dispositional factors to a certain extent. That is, married males and females may be more likely to have, or exhibit, fewer risk behaviours and lifestyles compared to those who are single. The supportive nature of a relationship (marital in this case) may also be translated into better, or more appropriate, health-related behaviours in, for example, response to emerging health issues and seeking appropriate medical intervention at an earlier opportunity. On that basis, the

immediate emotional and psychological support within a partnered relationship must also exert a positive impact on the relative mortality rates. Whatever the mix of factors involved, it is an interesting point that whilst both sexes who are married enjoy lower mortality rates compared to singles, married males in particular appear to benefit.

Divorce, in contrast, is associated with higher mortality rates for both males and females. Again, there may be pre-dispositional factors at work here. Those males and females who divorce may be, through their behaviours and lifestyles, more likely to both experience earlier mortality and to divorce. Whilst the mortality rates of both divorced males and females are higher than those who are single, divorced females in particular appear to fare less well.

Difference in mortality rates between marital status groups is certainly likely to reflect variation. Given the supporting evidence of social and economic disadvantage between these groups, and the negative social and economic impacts of divorce or relationship failure, these differences are also likely to reflect inequalities. It appears possible, particularly in relation to the relationship of mortality with divorce, that inequities may also exert an impact.

Explanations for the relationship of mortality rates with the presence or absence of dependent children in the household, and the difference between sexes appear difficult to identify. The presence or absence of dependent children in the household appears to have no relationship with male mortality rates. The mortality rates for females with dependent children in the household however are significantly higher than those for females without dependent children. This may, in part, reflect the impact of lone parenthood, the vast majority of who are female. It is likely that restricting the analysis here to dependent children present within the household restricts the analytical view and that the results reflect the analysis more than an underlying difference.

The relationship of limiting long-term illness with mortality rates was expected. However, the absolute difference in

mortality rates between males with and without a limiting long-term illness was greater compared to females. On that basis then, the differences observed certainly reflect the effect of variation and inequality, and potentially inequities as well.

The analysis of difference in ASMR between religious groups confirmed that previously published by O'Reilly and Rosato (2008). Given their detailed analysis, the differences certainly reflect variation and inequality. It is less clear how these differences might reflect inequities.

As would be expected, calculation of life expectancy on the basis of the Section 75 analysis conducted reflects the outcome of the analysis of respective mortality rates for those groups.

### 3.3 Social disadvantage and mortality rates

The relationships between social disadvantage and health outcomes are well rehearsed although causation comprises a complex array of inter-related factors.

Analysis here is limited to those variables enumerated in the Census or subsequently attached and which can act as suitable proxy measures for social disadvantage. These measures include: housing tenure; accommodation type; qualifications; economic activity; socio-economic classification; and geographic area of relative multiple deprivation.

Figure 6: Age-standardised mortality rates by sex and housing tenure

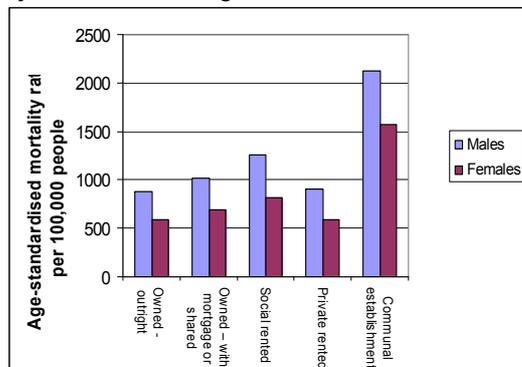
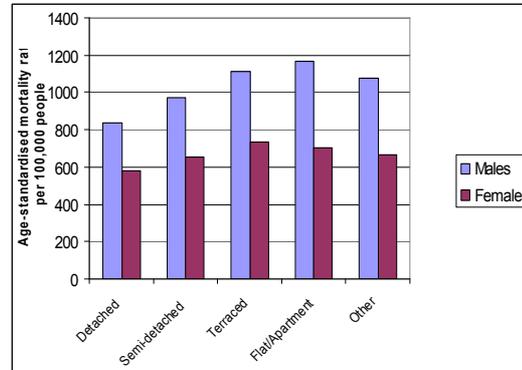


Figure 6 indicates that the lowest ASMR, for both males and females, are found amongst those living in accommodation owned outright or in the private rented

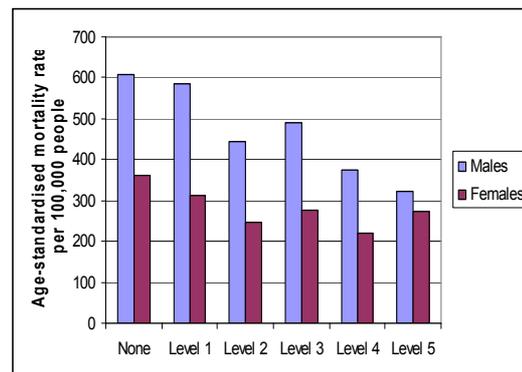
sector. By contrast, the highest ASMR are found amongst those living in communal establishments and in social rented housing.

Figure 7: Age-standardised mortality rates by sex and accommodation type



In terms of accommodation type, the highest ASMR are found in flats or apartments and terraced houses.

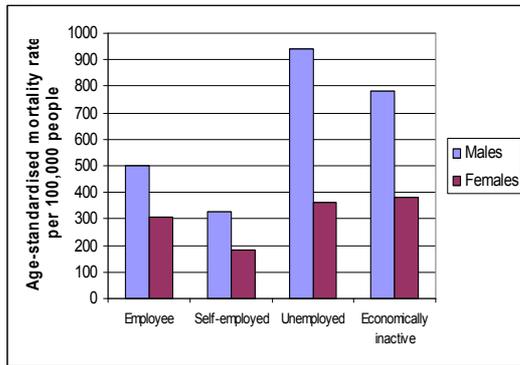
Figure 8: Age-standardised mortality rates by sex and qualifications for those aged 16 to 74



As Figure 8 indicates, the highest mortality rates are amongst those with no qualifications whilst the lowest mortality rates are amongst those with a level 4 or 5 (degree or above) qualification. Qualification level is strongly associated with social class and is therefore a good proxy measure for disadvantage.

It is interesting to note, assuming that the range of no qualifications to level 5 qualifications represents a scale measure, that the relationship of qualification level to mortality rate is much stronger for men than for women.

Figure 9: Age-standardised mortality rates by sex and labour market status for those aged 16-74



In relation to labour market status, the highest mortality rates are found amongst the unemployed and those who are economically inactive whilst the lowest rates are found amongst the employed (Figure 9).

As with the result for educational qualifications, the relationship of labour market status to ASMR is greater for men than for women. The ASMR differential between men and women is greatly pronounced amongst the unemployed and the economically inactive.

On that basis, whatever the directions and mechanisms underpinning the causal relationship, labour market status appears to be a much more significant factor in mortality rates for men than for women.

Figure 10: Age-standardised mortality rates by sex and socio-economic classification for those aged 16-74

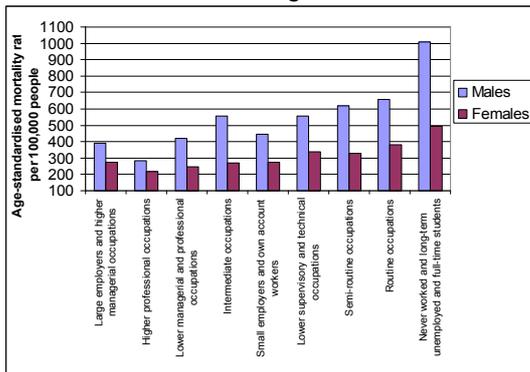
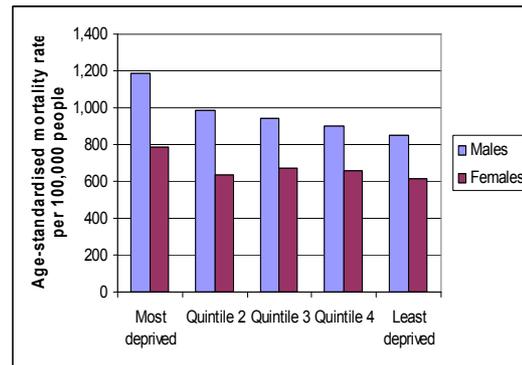


Figure 10 indicates that the highest mortality rates were found amongst those who had never worked, were long-term unemployed or were full-time students. The lowest mortality rates were found amongst the socio-economic groups which

included large employers and higher managers, and higher professionals.

As with economic activity, the gradient of ASMR between the highest and lowest socio-economic classification, as a general proxy for social and economic disadvantage, is steeper for males compared to females.

Figure 11: Age-standardised mortality rates by sex and quintile of multiple deprivation



The Northern Ireland Multiple Deprivation measure (NIMDM) ranks Census-based Super Output Areas within Northern Ireland along combined dimensions of social need (NISRA, 2005).

When mortality rates are examined by splitting the population into 5 quintiles on the basis of the relative multiple deprivation measure ranking of Super Output Areas, the relationship between disadvantage and mortality is clearly illustrated (Figure 11).

The highest mortality rates are found amongst the 20% of males and females living in the most deprived areas. By contrast, the lowest mortality rates are found amongst the 20% of the population living in the least deprived.

Significantly, the difference in mortality rates between the quintile of people living in the most and least deprived areas is much greater for males than for females.

### 3.4 Social disadvantage and mortality rates discussion

The difference in ASMR between those living in social rented housing and those who are owner occupiers reflects the differential characteristics of these groups

on a diverse range of social and economic measures.

Accommodation type also appears to be related to ASMR of both males and females. Disregarding mortality rates for those in 'other' accommodation given the large confidence intervals, those in detached accommodation have significantly lower ASMR compared to those living in flats/apartments or terraced housing.

Both housing tenure and accommodation type are useful proxy measures for social and economic disadvantage and appear to reflect the well established linkage between disadvantage and mortality.

Whilst the difference in ASMR between males and females holds in both the housing tenure and accommodation type analysis, variation in male ASMR do not appear, in contrast to other analyses reported, more related to position along the dimension. That is, the relative relationship between housing tenure or accommodation type and ASMR appears to generally hold for both males and females.

Analysis of mortality rates by qualification level extends this social need analysis further. Whilst clearly there is a strong relationship between presence and level of qualification, of more interest perhaps, is the stronger relationship between these factors for males compared to females.

At the highest qualification level (level 5 – higher degree or equivalent), there is no significant difference between the ASMR of males and females although confidence intervals for both estimates are relatively large. Differences between the ASMR of males and females appear at level 4 qualifications and below. For example, the absolute difference in ASMR between males and females amongst those with a level 4 qualification is three times greater than the absolute difference between them at level 5.

Unsurprisingly perhaps, given the strong relationship between presence and level of qualifications and labour market status, a strong relationship exists between ASMR and labour market status.

The lowest ASMR are found amongst both males and females in employment whilst the highest rates are found amongst the unemployed and economically inactive.

The extent of the difference in ASMR between those in employment and the unemployed or economically inactive is particularly surprising although the relatively large confidence intervals for the unemployed ASMR should be noted. Of interest in particular, is the strength of the relationship of labour market status to ASMR for males as compared to females. The ASMR for unemployed and economically inactive males are hugely elevated compared to their female counterparts.

The differential gradient of male compared to female ASMR along the labour market status dimension is further replicated by analysis of ASMR by the occupationally-derived socio-economic classification. As expected, the highest ASMR of both sexes are found amongst the never worked, whilst the lowest rates are found amongst the higher socio-economic groups. As with the previous analyses, male ASMR exhibit a stronger relationship with socio-economic classification compared to that for females.

In terms of geographic analysis by multiple measures of deprivation, the analysis of ASMR by quintile of NIMDM indicated clearly the linkage between relative deprivation and ASMR. The highest rates were found amongst the 20% of both sexes living in the most relatively deprived areas whilst the lowest rates are found amongst those 20% living in the least relatively deprived areas. As with the previous analyses reported above, the relationship between ASMR and quintile of NIMDM is much stronger for males than for females. For example, the male rates in the most deprived quintile are around 40% higher than those in the least deprived quintile. For females, the corresponding differential is 28%.

In considering these findings in the round, it should be borne in mind that analyses of the ASMR of those aged 16 to 74 in contrast to those aged 16 and over, will inevitably reflect the impact of the greater longevity of women in the latter age group. That is, the 16 to 74 age group will contain

a higher proportion of all male deaths (47%) than all female deaths (29%).

Nevertheless, the social need analyses reported here indicates two clear issues. Firstly, the evidence relating various dimensions of social need or disadvantage to ASMR is strong although the causal factors, their inter-relationships, and their relative strengths are unexplored here. As the recent World Health Organisation Report (2008) indicates, “health gradients” between and within countries are based largely on social determinants resulting from the social environment where people are born, live, grow, work and age. On that basis, health inequities and a resulting gradient of health outcomes were found within all countries related to the distribution of wealth and living standards.

Secondly, whatever the mechanism(s) involved, it is clear that the relationship to male ASMR, specifically of position along the non-housing dimensions examined, is stronger than that for the respective female rates. This finding corroborates previous research (O’Reilly, 2002) which had indicated that measures of deprivation were more closely associated with male than female mortality rates.

The current analyses, arguably, represents an apparent contradiction in terms of the relationship of sex to income poverty and social disadvantage. On income poverty measures, women tend to experience higher rates or levels of poverty risk compared to men (DSD, 2007). This outcome reflects the various impacts of lone parenthood, marital and relationship failure, and the greater longevity of women, particularly in terms of their (over) representation within the widower and single pensioner groups. This sex differential on measures of income poverty is not, however, translated into the analyses of ASMR by the non-housing dimensions of social need examined, where the relationship for males along these dimensions appears stronger.

The paradox presented by these analyses therefore is that women are disproportionately represented amongst those categorised as ‘poor’. Men, in contrast, are under-represented amongst those categorised as ‘poor’ but clearly have mortality rates which exhibit a stronger relationship with their position

along selected non-housing dimensions of social disadvantage.

On that basis, a plausible and inherently testable theory is that, whatever the nature of the mechanisms underpinning the population-wide difference in the ASMR of males and females, social disadvantage exacerbates the impact of those mechanisms, particularly for males.

## 4. Conclusion

The forgoing analyses have described observed differences in the ASMR of groups along both social disadvantage and Section 75 dimensions. The pattern of differences identified has both reflected the relationship of those dimensions to ASMR, and the often gendered nature of those relationships.

On that basis, and especially given the descriptive nature of this paper, the NIMLS has proved an extremely suitable and powerful tool for examining near contemporary issues of equality and social need.

Further analysis of the NIMLS could usefully examine, in much more detail, the characteristics associated with the distinctive differences highlighted here. In particular, differences in cause-specific mortality within and between these various groups would help to unpick the relative mix of contributory behaviours and lifestyle to ASMR. Of particular note, further work examining the differential relationship of dimensions of social disadvantage to male and female ASMR would be timely.

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## ANNEX A

**Table 1: Age-standardised mortality rates (ASMR) per 100,000 persons by section 75 and socio-economic group: 2002-2005**  
(Standardised to NI 2001 Census population)

	MALE			FEMALE		
	Deaths per year**	ASMR	95% CI*	Deaths per year*	ASMR	95% CI*
<b>All persons</b>						
All ages	6,706	969.0	957.7, 980.2	7,333	673.0	665.5, 680.5
Aged 16 and over	6,676	1,264.0	1,249.3, 1,278.8	7,316	878.5	868.7, 888.3
Aged 16 to 74	3,141	540.9	531.5, 550.2	2,123	326.4	319.5, 333.3
<b>Marital status (16 and over)</b>						
Single	1,256	1,624.8	1,579.3, 1,670.2	1,168	1,006.5	975.9, 1,037.1
Married	3,593	1,091.1	1,072.0, 1,110.1	1,768	685.2	666.2, 704.2
Widowed	1,547	1,550.3	1,446.8, 1,653.9	4,170	936.3	907.0, 965.6
Divorced	281	1,793.3	1,645.8, 1,940.7	211	1,356.2	1,243.8, 1,468.5
<b>Community background</b>						
Catholic	2,323	1,024.7	1,003.8, 1,045.6	2,471	720.4	706.7, 734.1
Protestant & other Christian	4,308	943.1	929.5, 956.7	4,821	651.2	642.1, 660.3
Other	13	715.4	514.0, 916.7	8	539.5	363.4, 715.7
None	62	914.2	783.9, 1,044.5	32	621.4	508.7, 734.1
<b>Ethnicity</b>						
White	6,686	969.3	958.0, 980.6	7,319	673.2	665.7, 680.7
Non-white	19	947.1	713.4, 1,180.8	13	616.0	447.4, 784.7
<b>Limiting long-term illness</b>						
LLTI	4,546	1,320.7	1,299.0, 1,342.4	5,660	903.0	886.9, 919.0
No LLTI	2,160	714.0	697.4, 730.7	1,672	464.1	452.7, 475.6
<b>Dependent children in household (16 and over)</b>						
None	5,602	1,265.9	1,249.4, 1,282.3	5,567	841.5	830.2, 852.9
One or more	578	1,220.2	1,146.4, 1,293.9	472	957.6	902.1, 1,013.1
Communal establishment	497	2,635.0	2,472.4, 2,797.7	1,277	2,053.9	1,890.4, 2,217.4
<b>Tenure</b>						
Owned - outright	3,092	876.1	860.6, 891.6	2,815	589.5	578.4, 600.7
Owned – with mortgage or shared	1,071	1,012.9	974.5, 1,051.3	871	690.8	665.9, 715.7
Social rented	1,650	1,256.6	1,227.0, 1,286.1	1,910	814.6	796.0, 833.1
Private rented	396	900.9	857.7, 944.1	459	585.8	557.4, 614.2
Communal establishment***	497	2,118.5	1,899.9, 2,337.1	1,277	1,568.8	1,443.9, 1,693.7
<b>Accommodation type</b>						
Detached	2,273	839.9	822.9, 857.0	1,940	581.7	569.2, 594.2
Semi-detached	1,625	970.0	946.7, 993.3	1,575	652.2	636.6, 667.8

Terraced	1,749	1,111.3	1,085.4, 1,137.1	1,832	731.3	715.1, 747.5
Flat/Apartment	494	1,168.0	1,116.7, 1,219.2	649	704.8	669.9, 739.6
Other	68	1,074.1	947.0, 1,201.2	60	666.1	576.7, 755.6
<b>Qualifications**** (Aged 16-74)</b>						
None	2,385	608.1	595.1, 621.2	1,608	362.6	352.6, 372.7
Level 1	208	585.9	533.9, 637.9	159	313.5	284.7, 342.3
Level 2	212	442.8	410.9, 474.7	180	246.0	227.4, 264.7
Level 3	81	490.2	422.0, 558.3	51	274.7	227.7, 321.6
Level 4	177	373.4	345.1, 401.8	88	219.0	194.7, 243.3
Level 5	78	323.5	286.6, 360.4	37	273.9	215.1, 332.8
<b>Economic activity (Aged 16-74)</b>						
Employee	566	498.5	464.0, 533.0	313	304.6	276.3, 332.9
Self-employed	218	327.0	299.9, 354.0	31	185.5	146.8, 224.2
Unemployed	123	941.6	763.6, 1,119.6	25	360.4	236.3, 484.6
Economically inactive	2,233	781.9	761.1, 802.8	1,754	381.8	371.9, 391.7
<b>Socio-economic classification (Aged 16-74)</b>						
Large employers and higher managerial occupations	78	391.4	347.7, 435.1	15	275.0	203.2, 346.8
Higher professional occupations	90	283.9	254.5, 313.3	18	216.5	164.7, 268.3
Lower managerial and professional occupations	452	419.2	399.4, 439.0	305	246.9	233.0, 260.8
Intermediate occupations	181	558.7	518.1, 599.3	255	269.0	252.5, 285.5
Small employers and own account workers	440	442.8	417.7, 468.0	78	273.0	242.5, 303.5
Lower supervisory and technical occupations	442	557.9	532.0, 583.7	127	339.5	310.1, 368.8
Semi-routine occupations	397	621.3	590.9, 651.7	447	327.2	312.1, 342.3
Routine occupations	726	657.0	633.3, 680.8	526	379.6	363.0, 396.2
Never worked and long-term unemployed and full-time students	334	1,010.0	952.9, 1,067.1	352	492.7	464.6, 520.8

\* Confidence Interval

\*\* Born at the time of the 2001 Census

\*\*\*Communal establishment: A communal establishment is defined as an establishment providing managed residential accommodation. Managed means full-time or part-time supervision of the accommodation. In most cases (for example, prisons, large hospitals, hotels) communal establishments can be easily identified. However, difficulties can arise with small hotels, guesthouses and sheltered accommodation. Special rules apply in these cases: Small hotels and guesthouses are treated as communal establishments if they have the capacity to have 10 or more guests, excluding the owner/manager and his/her family. Sheltered housing is treated as a communal establishment if less than half the residents possess their own facilities for cooking. If half or more possess their own facilities for cooking (regardless of use) the whole establishment is treated as separate households.

\*\*\*\*Qualifications:

Level 1: GCSE (grades D-G), CSE (grades 2-5), 1-4 CSEs (grade 1), 1-4 GCSEs (grades A-C), 1-4 'O' level passes, NVQ level 1, GNVQ Foundation or equivalents

Level 2: 5+ CSEs (grade 1), 5+ GCSEs (grades A-C), 5+ 'O' level passes, Senior Certificate, 1 'A' level, 1-3 AS levels, Advanced Senior Certificate, NVQ level 2, GNVQ Intermediate or equivalents

Level 3: 2+ 'A' levels, 4+ AS levels, NVQ level 3, GNVQ Advanced or equivalents

Level 4: First degree, NVQ level 4, HNC, HND or equivalents

Level 5: Higher degree, NVQ level 5 or equivalents

**Table 2: Age-standardised mortality rates (ASMR) per 100,000 persons by quintile of Northern Ireland Measure of Multiple Deprivation: 2002-2005 (all ages)**

(Standardised to NI 2001 Census population)

Deprivation quintile	MALE			FEMALE		
	Deaths* per year	ASMR	ASR 95% CI	Deaths per year	ASMR	ASR 95% CI
<b>Most deprived</b>	1,514	1,185.1	1,155.6, 1,214.6	1,597	786.3	767.5, 805.0
<b>Quintile 2</b>	1,418	985.6	960.5, 1,010.6	1,401	637.1	620.7, 653.4
<b>Quintile 3</b>	1,342	945.7	921.2, 970.1	1,479	671.6	654.8, 688.3
<b>Quintile 4</b>	1,248	901.9	877.7, 926.2	1,416	659.9	643.2, 676.6
<b>Most affluent</b>	1,185	848.5	825.3, 871.7	1,439	612.5	597.0, 628.0

\*Born at the time of 2001 census

**Table 3: Life expectancy by section 75 groups: 2002-2005**

	MALE		FEMALE	
	Life expectancy	95% CI	Life expectancy	95% CI
<b>All persons</b>				
All ages	76.9	76.8, 77.0	81.3	81.2, 81.5
Aged 16 and over	76.4	76.2, 76.6	81.2	81.1, 81.4
<b>Marital status (16 and over)</b>				
Single	72.2	71.9, 72.6	79.1	78.6, 79.5
Married	79.1	78.9, 79.3	84.8	84.5, 85.0
Widowed	74.0	72.0, 75.9	80.7	80.1, 81.2
Divorced	72.2	71.6, 72.9	77.2	76.5, 77.8
<b>Community background</b>				
Catholic	76.2	76.0, 76.5	80.7	80.5, 80.9
Protestant & other Christian	77.2	77.0, 77.4	81.7	81.5, 81.9
Other	80.9	78.2, 83.5	83.7	81.0, 86.4
None	77.5	76.2, 78.7	82.1	80.5, 83.8
<b>Ethnicity</b>				
White	76.9	76.7, 77.0	81.3	81.2, 81.5
Non-white	78.0	75.5, 80.5	82.4	80.2, 84.5
<b>Limiting long-term illness</b>				
LLTI	70.1	69.6, 70.6	76.0	75.6, 76.5
No LLTI	80.6	80.4, 80.8	85.5	85.3, 85.6
<b>Dependent children in household (16 and over)</b>				
None	76.5	76.2, 76.8	81.7	81.5, 81.9
One or more	76.3	75.8, 76.9	80.0	79.4, 80.6
Communal establishment	64.7	63.4, 66.0	67.9	66.0, 69.9