



**Exploring the impact of
selective migration on the
deprivation-mortality gap
within Greater Glasgow**

 **RESEARCH TEAM**

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KEY FINDINGS

The mortality gap between the least and most deprived areas in Greater Glasgow has widened in recent years. However, over the same period, Greater Glasgow's most deprived areas have seen a significant loss of population, and it has been suggested that the widening mortality gap could be, in part, due to internal migration of healthier and wealthier individuals away from these areas rather than a relative worsening of health per se in these areas.

This idea was tested using data from the Scottish Longitudinal Study that links a 5.3% sample of the 1991 and 2001 Scottish censuses to each other and to mortality and other administrative records. The results showed that:

- Between 1991 and 2001, the most deprived areas experienced high losses of population amongst those aged 15 to 64 (mainly to other areas in Greater Glasgow). However, this population movement was found among both high and low socio-economic groups, and amongst those with and without a limiting illness in 1991.
- This meant that net migration did not greatly change the composition of the areas' populations according to characteristics examined (although there was some variation by measure used: for example, those with a limiting illness became slightly more concentrated in deprived areas).
- The study confirmed that the mortality gap was wider in 2001-06 compared to 1991-96 and found that migration may have played a small role in this widening. However, even when accounting for migration, the mortality gap had still widened.
- Although it is important to investigate the potential role of migration in the widening mortality gap, this study suggests that in the case of Greater Glasgow selective migration between deprivation quintiles is not the sole or most important explanation for the widening mortality gap.

INTRODUCTION

Within Greater Glasgow, there is a wide variation in mortality rates across the spectrum of deprivation and the gap between the most and least deprived areas has widened in recent years. For example, in line with national trends, affluent areas have seen life expectancy rise since 1981, whilst the most deprived areas within Greater Glasgow have seen very small average improvements in life expectancy for women and a slight decline for men. Thus, the gap has increased between the best- and worst-off areas.

AIMS

The main aim was to assess whether the widening inequalities seen in mortality in Greater Glasgow¹ from 1991 to 2001 were due to selective internal migration.

There were four specific research questions:

1. Is selective internal migration (within Scotland) responsible for widening socio-economic differences within Greater Glasgow?
2. Have the increasing socio-economic differences within Greater Glasgow's population been due primarily to a net gain of more deprived individuals or to a net loss of more affluent residents?
3. Is there a difference in the mortality experience of those people who migrate from and to the most deprived areas within Greater Glasgow compared to those who remain?
4. To what extent does selective internal migration contribute to widening inequalities assessed by area deprivation within Greater Glasgow?

APPROACH AND METHODS

Data on the characteristics of residents of Greater Glasgow came from the Scottish Longitudinal Study (SLS). This is based on a 5.3% sample of the Scottish population linking people through time from the 1991 to 2001 censuses and also linking them to vital events (such as mortality records). Our analysis was based on 31,695 people living in the NHS Greater Glasgow and Clyde area in 1991 (aged 15 to 64) who also appeared in the 2001 census.

A move was defined as a change of deprivation quintile in 2001 from 1991 with quintiles defined by the Carstairs deprivation score in 2001².

We looked at the distribution of the people's characteristics reported in the 1991 census by the deprivation quintile of where they lived in 1991 and 2001. The characteristics studied were **housing tenure, car access, higher education and limiting illness**. To summarise the *distribution of characteristics* and how this was changed by migration we calculated a measure of segregation. This measures how evenly different types of people were distributed in the different deprivation quintiles.

To examine the mortality gradient we calculated age and sex standardised death rates for people living in each deprivation quintile for deaths post 1991 census to the end of 1996 (for all those aged 25 to 74 in 1991) and deaths post 2001 census to the end of 2006. To assess the changes in the mortality gradient we used a summary measure, the relative index of inequality.

¹ Defined by the boundaries of the Greater Glasgow & Clyde NHS Board area.

² Note, however, that the analyses were in fact carried out in three separate ways, based on three methods of classifying deprivation. These were: deprivation quintiles based on Carstairs scores in 1991; deprivation quintiles defined by Carstairs in 2001; and deprivation quintiles defined by Carstairs in both 1991 and 2001. Only the results of the second definition (deprivation measured in 2001) are reported here.

FINDINGS AND CONCLUSIONS

Redistribution of people by internal migration

The impact of net migration on the redistribution of people - by their 1991 characteristics - in each deprivation quintile between 1991 and 2001 was small, and its impact on levels of segregation of the socio-economically worse off was limited (although results varied depending on the measure used). Although the most deprived areas experienced high losses of population amongst those aged 15 to 64, this population loss involved both high and low socio-economic groups (and those with and without a limiting illness): this meant that net migration did not greatly change the composition of the areas' population.

In terms of housing tenure and car access, the segregation of people from a social renting or no car access background actually decreased between 1991 and 2001, while for limiting illness and higher education there were slight increases in segregation.

It appears, therefore, that any deterioration in the socio-economic characteristics of the most deprived areas, and the relative widening of the gap in relation to the best off areas, cannot be solely attributed to the redistribution of people between 1991 and 2001.

Impact on death rates.

In the most deprived areas-

Generally in- and out-migrants to/from the most deprived quintile had slightly lower mortality rates (2001-06) than those who remained in the quintile. As out-migrants had lower mortality than in-migrants, the impact was to slightly increase the mortality rate in 2001 in the most deprived quintile compared to what it would have been if we put people back to their 1991 residence. However, the inclusion of migrants also reduced the mortality rate compared to what it would have been if we had assessed it for those who stayed in the quintile only.

On the overall gradient-

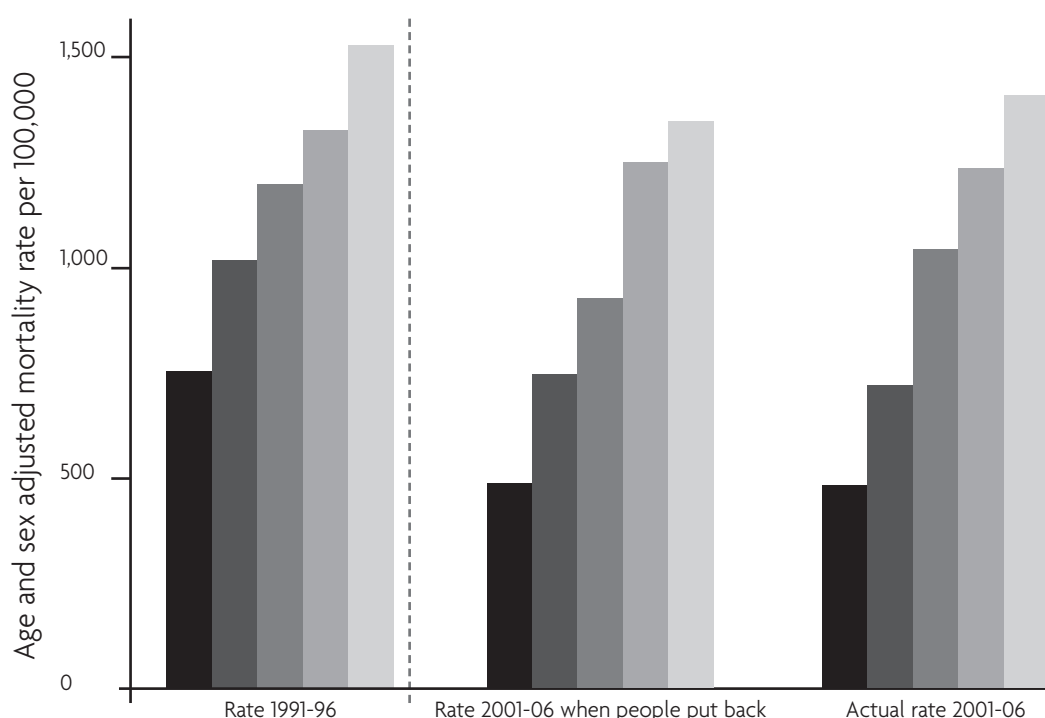
First, there was evidence that the mortality gradient had widened from 1991-96 to 2001-06 confirming previous research. The first part of Figure 1 on the far left hand side shows the mortality rates 1991-96 by deprivation quintile. This can be compared to the last part of the figure, on the far right hand side, that shows the mortality rates 2001-06 by deprivation quintile. The visual comparison suggests a widening of the gradient as mortality rates decreased more in better off areas than poorer areas. This was confirmed statistically by an increase in the size of the mortality gradient across the deprivation quintiles in 2001-06 compared to 1991-96.

Second, there was evidence that the deprivation mortality gradient would have been slightly less in 2001-06 if people had been put back to where they were living in 1991 (i.e. if we remove the effects of migration). This can be seen by comparing the second (middle part) of the figure (2001-06 rate if people were put back to their 1991 residence) to the last part of the figure (actual 2001-06 rate). Here we can see the lower mortality rate in the most deprived quintile when people were put back to their 1991 area of residence. Our statistical analysis of the mortality gradient confirmed that the 2001-06 gradient would have been lower if we

returned people to where they lived in 1991 compared to the actual 2001-06 gradient. However, even when people were returned to their 1991 residence the mortality gradient for 2001-06 was still wider than the 1991-96 gradient.

Figure 1

Age and sex adjusted mortality 2001-2006 by deprivation in 2001 and residence in 1991 (when people put back) and 2001 (actual rate) compared to 1991-1996 mortality for deprivation and residence in 1991



(Source: Scottish Longitudinal Study)

Overall, we conclude that the mortality gradient had widened in Greater Glasgow over time and that this widening of the mortality gap appears not only to be due to health-selective internal migration between deprivation quintiles.

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