Socioeconomic inequality in recent adverse mortality trends in Scotland

Supplementary appendix 2: Sensitivity Analysis

Introduction

The results presented in the main paper compare the first and last year in two six year periods, 2006-2011, and 2012-2017. This approach might lead to unrepresentative results if the ASMR values in the first or last year of either period were unusual or uncharacteristic of the period as a whole. In order to assess whether this is an important issue, the values shown in figure 1B and table 1 were replicated using an alternative method. The alternative method, and results, are shown in this appendix.

Method

For the alternative method, linear regression was used to regress ASMR against year for males and females overall, and in each deprivation quintile, for both the 2006-2011 period, and the 2012-2017 period. This meant a total of 24 regression models (two sexes, five SIMD quintiles, plus overall, and two time periods) were produced, each regressing a group's ASMRs against time for six years. For each group the fitted values for ASMRs in the first and last year of each period were calculated, and used in place of the observed values in the analyses described in the main report. The results using the fitted values instead of observed values are shown below.

Results

Supplementary figure 1B shows the percentage change in ASMR by period, sex and SIMD quintile, using the within-period fitted values rather than the observed values; horizontal dashed lines indicate the overall percentage change within the period. The results shown in the figure are similar to that produced using the main method, though more clearly suggest that a linear socioeconomic gradient in ASMR improvement was established only in the 2012-2017 period, with a broadly flat (males) or U-shaped (females, total) relationship observed in the 2006-2011 period.

Supplementary table 1 shows the data presented in Table 1, but using the fitted rather than observed values. Although there are some differences, the overall conclusions that may be drawn are the same.

Discussion

This conclusion has shown the effects of using an alternative strategy for calculating ASMR change in two periods, using fitted rather than observed values for the first and last year of each period. Although specific values are not identical, the overall conclusion that can be drawn from the analyses is the same.

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Supplementary table 1: Percentage change in ASMR (calculated by linear model of values across period) for two time periods (2006 to 2011 and 2012 to 2017) by sex, SIMD quintile (Q), and results of linear model

		Differences						Model results		
Sex	Period	Q.1 (Most deprived)	Q.2	Q.3	Q.4	Q.5 (Least deprived)	Overall	R. sq.	Gradient (95% confidence interval)	Intercept (95% confidence interval)
Percentage change (%)										
Female	2006-2011	-7.35	-9.09	-13.32	-13.59	-9.76	-10.94	0.29	-0.93 (-2.58, 0.72)	-8.76 (-12.80, -4.72)
Female	2012-2017	**1.6**	-2.38	-0.75	-4.5	-7.6	-2.47	0.85	-2.05 (-3.03, -1.07)	1.38 (-1.03, 3.78)
Male	2006-2011	-11.9	-13.14	-12.62	-13.06	-12.4	-13.11	0.08	-0.09 (-0.44, 0.26)	-12.44 (-13.29, -11.59)
Male	2012-2017	**2.69**	-1.92	-0.42	-5.06	-3.76	-1.4	0.71	-1.60 (-2.78, -0.43)	1.51 (-1.36, 4.39)
Total	2006-2011	-9.63	-10.73	-12.82	-12.76	-10.45	-11.67	0.16	-0.37 (-1.31, 0.58)	-10.55 (-12.85, -8.24)
Total	2012-2017	**2.22**	-1.85	-0.19	-4.54	-5.73	-1.72	0.83	-1.86 (-2.80, -0.92)	1.70 (-0.60, 4.01)

Note: Overall = whole of Scotland; Total = male and female; R.sq.= R-squared for model; Gradient = Increase in % change per unit increase in quintile; Intercept = Predicted % change in most deprived quintile. For gradient and intercept values in parentheses show lower and upper 95% confidence intervals of coefficients.