

Technical Supplement

How would meeting the Minimum Income Standard affect life expectancy?

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Background

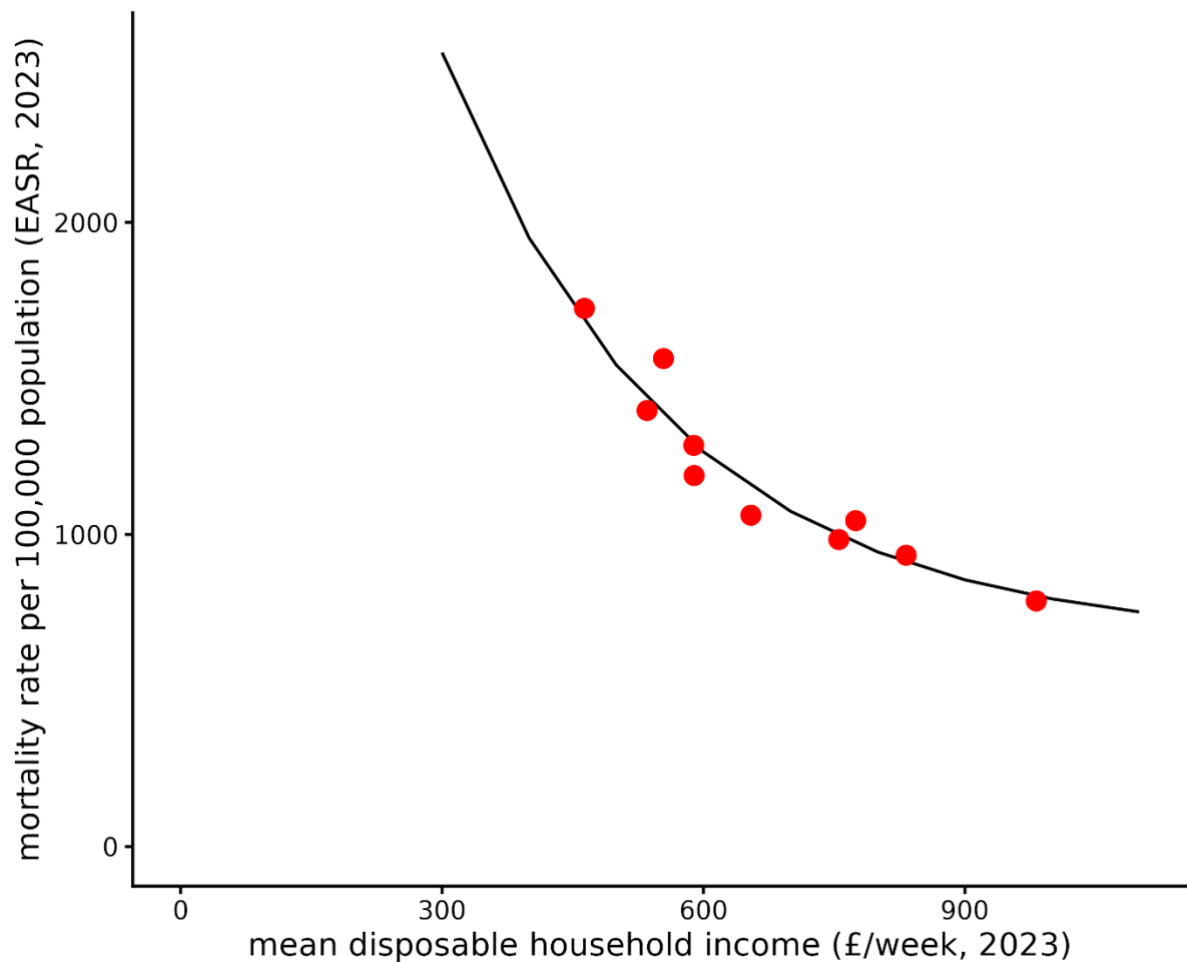
This analysis explores the impact of raising all incomes in Scotland to the JRF Minimum Income Standard (MIS) on life expectancy and inequalities in life expectancy. It applies a similar approach as in previously published modelling work ([Richardson et al. 2023](#), [Richardson et al. 2025](#)).

Methods

- We obtained anonymised microdata on individuals in the 2023/24 Family Resources Survey (FRS) from the UK Data Service. We calculated net disposable income for each household, after tax, housing, and childcare costs, and after receipt of disability benefits.
- Advice on calculating disposable household income and assigning the FRS households to household types, so that the correct MIS budget (as of April 2023) could be assigned to each, was provided by the Centre for Research in Social Policy at Loughborough University.
- We quantified the composition of each FRS 2023/24 household based on numbers of babies (0-2y), pre-schoolers (3-4y), primary school children (5-11y), secondary school children (12-18y), working age adults (19-65y) and pensioners (66y+).
- Each household was assigned to one of 108 MIS household types based on combinations of household members.
- Disposable household incomes were equivalised using the OECD modified equivalence scale.
- European age-standardised rates (EASRs) of all-cause mortality were calculated for each Scottish Index of Multiple Deprivation (SIMD) decile in 2023 (using 2022 populations from NRS as these were the latest available).
- The relationship between disposable household income and mortality rates was estimated by fitting a non-linear least squares logistic model to cross-sectional SIMD decile data. It makes sense that the relationship is not linear (see Figure 1), as the same absolute increase in income would be expected to be more beneficial for the health of lower income households than higher income households.
- This relationship was used to estimate mortality rates in each SIMD decile if those households with incomes below the MIS received an uplift to meet the MIS for their household type (the policy intervention).

- Life expectancy at birth was calculated for each SIMD decile and Scotland overall, before and after the MIS uplift. It should be noted that an increase in income would not result in an immediate increase in life expectancy, and that the timescale for realising these benefits is uncertain.

Figure 1. The modelled relationship between disposable household income and mortality rate (line) plotted through the data used to fit the model (red dots; 2023/24 income figures from FRS and 2023 mortality rates from NRS for SIMD 2020 deciles).



Results

- Our analysis estimated that 32.4% of the UK population (28.8% of the Scottish population, approximately 786,680 households) lived below the MIS in 2023/24 (Table 1). As SIMD is an area-based deprivation measure we see households below the MIS in all deciles, including 13% of the households in the least deprived decile.
- The average annual net income uplift required to ensure every household in Scotland met the 2023 MIS was £1,915, or £160 per month; across all 786,680 households this amounts to £1.5 billion per annum.
- If all households below the MIS in 2023/24 had an income uplift to meet the 2023 MIS we estimated that life expectancy would increase by 1.0 years (1.2%) for females and 1.1 years (1.5%) for males (Figures 2 and 3).
- If the income-mortality relationship was 50% weaker than we had estimated, the increase in life expectancy due to the income uplift would be estimated as 0.5y for females (0.6%) and 0.6y for males (0.7%).

- Inequalities in life expectancy would decrease under the MIS uplift scenario, compared to baseline. The absolute gap in female life expectancy would fall from 10.7 to 8.3 years (22%), and the relative gap would fall by 3%. For males, the reductions would be 19% in the absolute gap, and 4% in the relative gap. If the income-mortality relationship was 50% weaker than estimated, these reductions would be approximately halved.

Table 1. Distribution of households in Scotland below the UK Minimum Income Standard by SIMD 2020 decile.

SIMD 2020 decile	% households below 2023 MIS	Mean equivalised disposable household income per week, 2023/24		Mean income uplift required for households below 2023 MIS (unequalised, per week)
		Baseline	After uplift to meet 2023 MIS	
1 (most deprived)	51	463	558	174
2	42	554	622	150
3	40	535	602	155
4	35	589	653	168
5	40	589	640	119
6	31	654	706	157
7	20	775	801	131
8	21	755	802	200
9	17	833	862	186
10 (least deprived)	13	982	1007	219
Scotland	29	672	724	160

Note: Disposable household income defined here as after tax, housing, and childcare costs, and after receipt of disability benefits.

Figure 2. Female life expectancy at birth in the baseline and MIS uplift scenario, by SIMD 2020 decile.

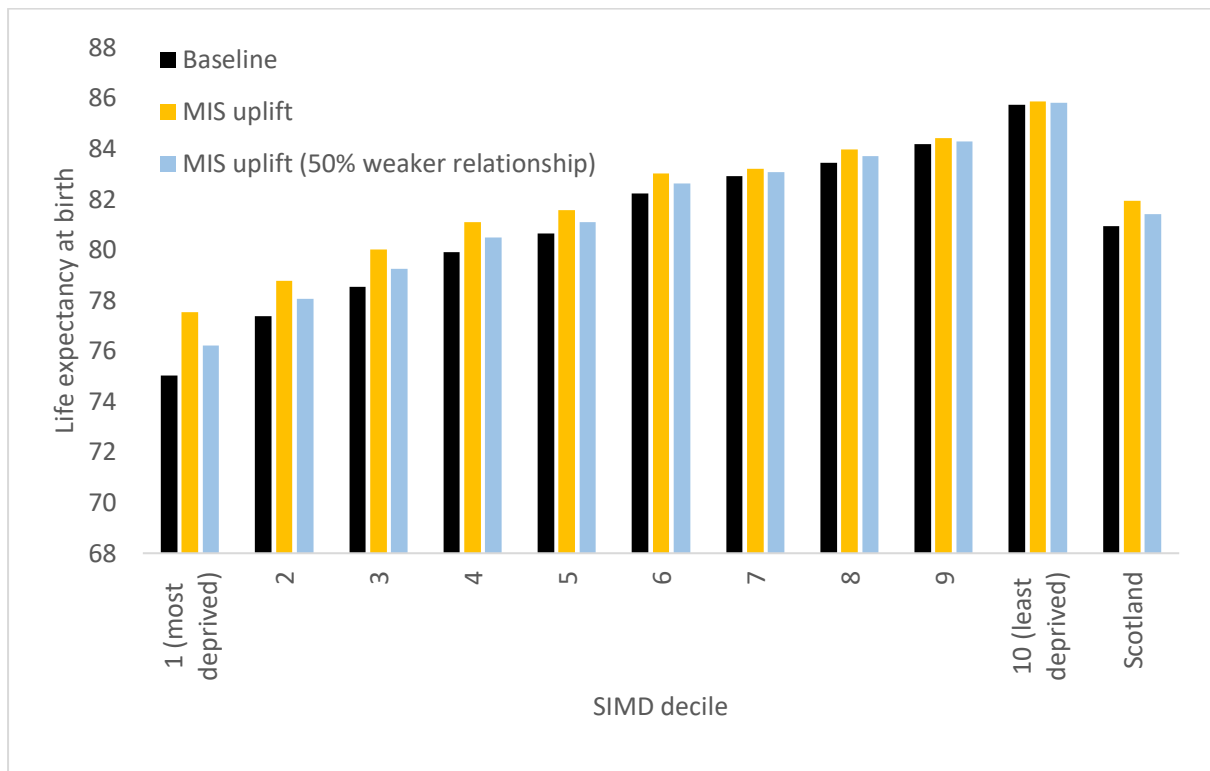
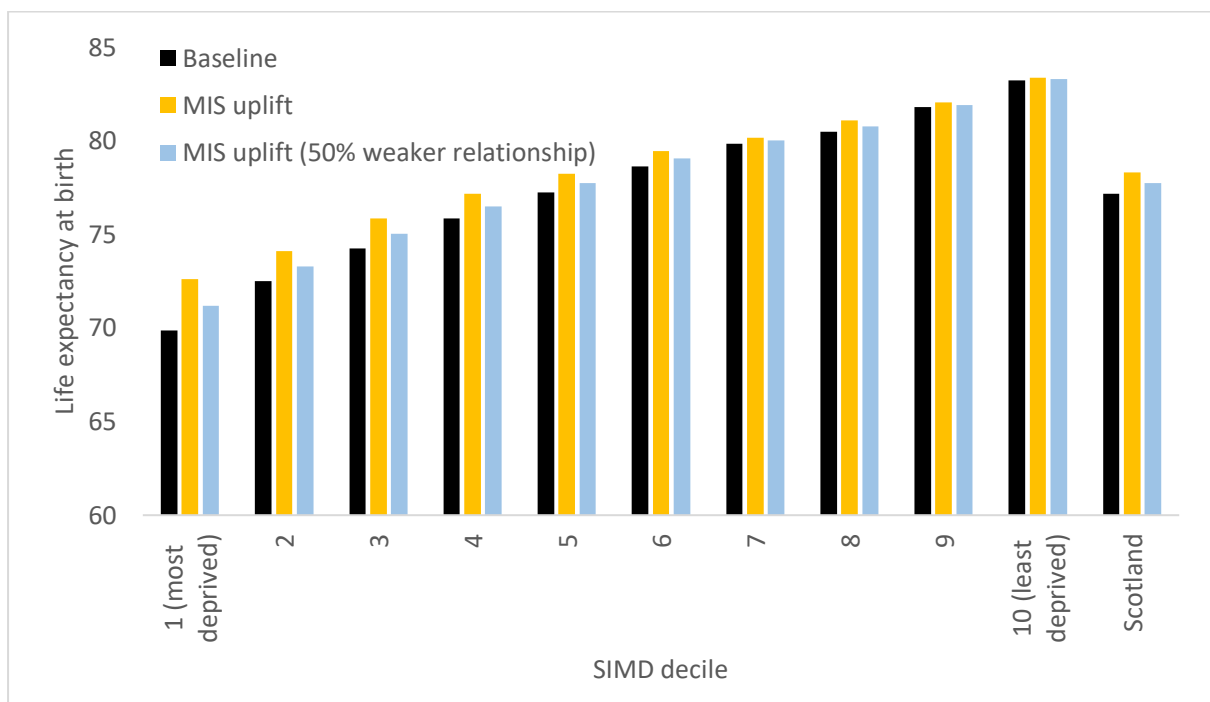


Figure 3. Male life expectancy at birth in the baseline and MIS uplift scenario, by SIMD 2020 decile.



Discussion

The results clearly illustrate that life expectancy would be expected to improve, and inequalities in life expectancy would be expected to narrow, if all households in Scotland met the minimum income standard. Households currently not meeting the MIS would need an increase in annual disposable income of £1,915 on average, which would amount to £1.5 billion across the affected households.

Under such a scenario we estimate that life expectancy would increase by 1.0 years for females and 1.1 years for males, and absolute inequalities would narrow by 22% and 19% for females and males, respectively. This narrowing is substantial, considering that more than 10% of households in all SIMD deciles were below the MIS and would therefore receive the income uplift, and the subsequent improvement in life expectancy. We were unable to estimate life expectancy change by income decile, but the MIS uplift scenario would produce greater narrowing of inequalities by income decile than deprivation decile.

Limitations

We have used the best available data and methods, but our findings still represent estimates with uncertainty relating to the MIS budget for some households, and the strength of the relationship between income and mortality.

A small proportion of households were difficult to assign to an MIS household type based on the available data. In these cases, we assumed the adults in the household were related, which will have introduced a small degree of under-estimation of the MIS for the households in which this was not the case. We estimated that 32.4% of the UK population lived below the MIS in 2023/24, whereas the JRF estimate for 2022/23 (the latest available estimate) was 35.9%. This also suggests our analysis has slightly under-estimated the scale of the problem: as such our MIS uplift scenario would necessitate larger income uplifts and larger impacts on life expectancy and inequalities. Additionally, the FRS data we used had a lower sample size than intended, leading to uncertainty in the income estimates.

We used a relationship between income and mortality that was derived from cross-sectional data: in reality the health benefits of an increase in income will not be immediate, and the timescale for realising these benefits is uncertain. To account for the uncertainty around the relationship between income and mortality we also explored the effect if the relationship was 50% weaker. Our results are likely to represent the upper limit of the potential effect.