

General Details

Dataset Title:	Life Expectancy in Scottish Council areas split by deprivation, 2011-2015
Time Period of Dataset:	2011-2015
Geographic Coverage:	Sub-Council
Supplier:	National Records of Scotland (NRS)
Department:	Demographic Statistics, Population and Migration Statistics Branch

Purpose

This workbook contains life expectancy at birth for the most deprived (MD) areas and least deprived (LD) areas of each council area in Scotland based on the Scottish Index of Multiple Deprivation (SIMD) 2016. These statistics were originally produced to aid monitoring of the inequality gap between those living in the most and least deprived parts of Council areas, with the aim of improving the measurement of local level outcomes in support of Single Outcome Agreements. The National Records of Scotland undertook to produce these estimates and to publish them if they were shown to be suitable for this type of analysis.

Recommendations

Based on the results discussed below, The National Records of Scotland (NRS) advise that the type of analysis described above is unsuitable for Na h-Eileanan Siar, Orkney Islands and Shetland Islands. Users should bear in mind the confidence interval surrounding the estimate. Estimates for life expectancy at birth in sub-council areas are subject to random fluctuations in the number of deaths and the age at death. As a result, conclusions about time trends for any specific small area may not be reliable. The results should therefore be interpreted as providing a general indication of life expectancy estimates over time, rather than precise and robust figures, and users should avoid year-on-year comparisons.

In the last release of this data for 2009-2013, SIMD 2012 was used. Also life expectancy was calculated for age groups up to 85 years with the final age group of 85 years and older. The current release for 2011-2015 uses SIMD 2016 and life expectancy was calculated using the final age group of 90 years and older. More information about this can be found in the Life Expectancy for Administrative Areas within Scotland 2013-2015 publication on the NRS website

Important Points:

- Do not confuse a council's 'most deprived' data zones with their share of the 15% most deprived nationally.
- Comparison across councils is problematic and should be avoided.
- Comparison within a council can be problematic.
- Users should avoid annual year-on-year comparisons.

Method

The life tables are constructed according to the Chiang II methodology, and are consistent with the method used by The National Records of Scotland (NRS) and the Office for National Statistics (ONS) to calculate life expectancy at birth and 95% confidence intervals for national and other sub-national areas in the United Kingdom

Geography

The geography was constructed, by The National Records of Scotland (NRS), using the Scottish Index of Multiple Deprivation 2016 rank and data zones as building blocks. For example, the data zones within the City of Edinburgh council area were ordered by SIMD 2016 rank (from most to least deprived). The top 15% were then assigned to 'Edinburgh MD' (meaning Edinburgh's 15% most deprived areas) and the bottom 85% were assigned to 'Edinburgh LD' (Edinburgh's 85% least deprived areas).

Input Data

Small Area Population Estimates for 2011-2015 and death counts at the data zone level (obtained from NRS Vital Events) were used as input data. The population and death data was aggregated over a five year period (as opposed to the three year period used for other life expectancy statistics published by NRS) to ensure a higher level of statistical robustness.

The useful effects of increasing the size of the number of years used (n) needs to be weighed against the fact that the resultant life expectancy is an average (of 5 years) and assumes that the underlying life expectancy has not changed over the n years under investigation. For example, if n is equal to ten, then the implicit assumption is that life expectancy has not changed over those ten years. As n increases, the confidence interval decreases, but the validity of the assumption decreases too.

Results

Life expectancy (LE) figures - calculated by The National Records of Scotland (NRS) for SIMD 2016 deprivation deciles - show a smooth trend of decreasing LE with increasing deprivation.

The results of this analysis show that for each Scottish council area, LE at birth is usually higher in the least deprived areas compared to the most deprived areas. This is true for males and females in all areas with the exception of life expectancy in Na h-Eileanan Siar.

The gap between male and female LE is wider for those living in the most deprived parts when compared to those in the least deprived parts. This is true for all areas, apart from Clackmannanshire.

The gap between LE in the most deprived part and the least deprived part of a council varies by council area and gender. In all cases the inequality gap is more pronounced for males.

When interpreting life expectancy estimates, it is important to bear in mind confidence intervals, particularly when focusing on areas with small populations, i.e. Shetland Islands, Orkney Islands and Na h-Eileanan Siar. Overlapping confidence intervals indicate that differences in life expectancy between areas may not be statistically significant.

The confidence interval (CI) surrounding each life expectancy at birth estimate is shown in Table 1, Chart 1 and Chart 2. The average CI surrounding male LE is 1.8 years, with a maximum of 7.9 years; the average CI surrounding female LE is 1.6 years with a maximum of 6.7 years. The CI surrounding the life expectancy estimates for the most deprived areas in Na h-Eileanan Siar, Orkney Islands and Shetland Islands are large (as illustrated in Charts 1 and 2). This is mainly a result of the small numbers involved in calculating LE at this level of geography. Charts 1 and 2 show that the CI of the most deprived LE estimate overlaps with the CI of the least deprived LE estimate for females in Shetland Islands and for males and females in Na h-Eileanan Siar and Orkney Islands.

Limitations associated with using the SIMD in this manner

Firstly, care needs to be taken not to confuse a council's 'most deprived' data zones with their local share of the 15% most deprived nationally, e.g. 43% of the data zones in Glasgow lie in the 15% most deprived data zones in Scotland.

Secondly, comparison across councils is problematic and should be avoided. Life expectancy in Glasgow's '15% most deprived area' is very low as we are looking at data zones that fall within the 5% most deprived nationally (SIMD 2016 vigintile 1). Meanwhile Clackmannanshire's "15% most deprived area" consists of data zones split across the 15% most deprived nationally with 4 in vigintile 1, 4 in vigintile 2 and 2 in vigintile 3.

Lastly, comparison within a council can be problematic. Given the way that the SIMD is constructed it works best at the most deprived end of the distribution. At the least deprived end, it is measuring an absence of deprivation (e.g. low numbers of benefit claimants) rather than affluence so there is little differentiation (e.g. an area ranked 4,000 will not be much different to a rank of 5,000 but a rank of 100 will be very different to an area ranked 500). The 15% most deprived data zones in Glasgow fall within the most deprived 5% nationally and so will be areas with similar deprivation levels. For Perth & Kinross the 15% most deprived data zones in the council area include data zones within the 5-35% most deprived nationally - the four data zones in the 5-10% most deprived nationally (vigintile 2) will be very different to those in the 30-35% most deprived band (vigintile 7).

Expectation of Life at Birth, by Sex for each council Area within Scotland, split by level of deprivation (where MD=most deprived 15% and LD = least deprived 85%), for the period 2011-2015

	Males				Females			
	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI
Scotland	77.1	77.0	77.2	0.2	81.1	81.0	81.2	0.2
Scotland LD	78.1	78.0	78.2	0.2	81.8	81.7	81.8	0.1
Scotland MD	70.8	70.6	71.0	0.4	76.8	76.6	77.0	0.4
Aberdeen City	76.6	76.1	77.0	0.9	80.9	80.5	81.4	0.9
Aberdeen City LD	77.7	77.3	78.1	0.8	81.6	81.2	82.0	0.7
Aberdeen City MD	71.4	70.4	72.3	1.9	77.9	77.0	78.8	1.8
Aberdeenshire	79.2	78.7	79.6	0.8	82.2	81.9	82.6	0.8
Aberdeenshire LD	79.8	79.5	80.2	0.7	82.6	82.3	82.9	0.7
Aberdeenshire MD	75.6	74.8	76.5	1.7	79.9	79.1	80.7	1.6
Angus	78.6	77.9	79.2	1.3	81.9	81.3	82.5	1.2
Angus LD	79.3	78.8	79.8	1.0	82.2	81.6	82.7	1.0
Angus MD	74.0	72.6	75.3	2.7	78.9	77.7	80.2	2.6
Argyll and Bute	78.2	77.5	78.9	1.4	82.2	81.6	82.9	1.3
Argyll and Bute LD	78.8	78.2	79.4	1.2	82.4	81.8	82.9	1.1
Argyll and Bute MD	72.8	71.1	74.4	3.3	78.3	76.8	79.8	3.0
City of Edinburgh	78.0	77.6	78.3	0.6	82.2	81.9	82.5	0.6
City of Edinburgh LD	79.1	78.9	79.4	0.5	83.2	82.9	83.4	0.5
City of Edinburgh MD	70.5	69.8	71.2	1.4	76.0	75.4	76.7	1.3
Clackmannanshire	76.9	76.0	77.9	1.9	80.1	79.2	81.0	1.8
Clackmannanshire LD	77.6	76.8	78.4	1.6	81.0	80.2	81.7	1.5
Clackmannanshire MD	73.1	71.1	75.1	4.0	75.5	73.5	77.4	4.0
Dumfries and Galloway	78.1	77.6	78.7	1.1	81.3	80.8	81.9	1.0
Dumfries and Galloway LD	78.7	78.2	79.2	1.0	82.0	81.6	82.4	0.8
Dumfries and Galloway MD	74.2	72.9	75.4	2.5	78.4	77.4	79.5	2.1
Dundee City	75.1	74.5	75.7	1.2	80.1	79.5	80.6	1.1
Dundee City LD	76.0	75.4	76.5	1.0	80.3	79.8	80.7	0.9
Dundee City MD	68.8	67.5	70.1	2.6	76.3	75.0	77.5	2.5

Note

The red text indicates where the upper CI of the MD area overlaps the lower CI of the least deprived area.

Table 1 (continued)

	Males				Females			
	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI
Scotland	77.1	77.0	77.2	0.2	81.1	81.0	81.2	0.2
Scotland LD	78.1	78.0	78.2	0.2	81.8	81.7	81.8	0.1
Scotland MD	70.8	70.6	71.0	0.4	76.8	76.6	77.0	0.4
East Ayrshire	76.1	75.4	76.8	1.3	79.4	78.8	80.0	1.2
East Ayrshire LD	76.7	76.2	77.3	1.1	80.3	79.8	80.8	1.0
East Ayrshire MD	71.9	70.5	73.2	2.8	76.1	74.8	77.4	2.6
East Dunbartonshire	80.5	79.8	81.1	1.3	83.5	83.0	84.1	1.1
East Dunbartonshire LD	81.2	80.7	81.8	1.1	84.5	84.0	84.9	0.9
East Dunbartonshire MD	75.0	73.6	76.3	2.7	79.2	77.9	80.4	2.5
East Lothian	78.4	77.8	79.1	1.3	82.5	81.9	83.1	1.2
East Lothian LD	78.7	78.1	79.2	1.1	82.4	81.9	82.9	1.0
East Lothian MD	75.8	74.4	77.3	2.9	79.9	78.4	81.4	3.0
East Renfrewshire	79.3	78.5	80.0	1.5	83.4	82.8	84.1	1.3
East Renfrewshire LD	80.9	80.3	81.5	1.2	84.0	83.5	84.5	1.0
East Renfrewshire MD	72.7	71.0	74.3	3.3	78.6	77.1	80.1	3.0
Falkirk	77.4	76.9	78.0	1.1	80.9	80.4	81.4	1.0
Falkirk LD	78.1	77.7	78.6	0.9	81.1	80.6	81.5	0.8
Falkirk MD	71.7	70.5	73.0	2.5	78.8	77.6	80.0	2.4
Fife	77.7	77.3	78.0	0.7	81.5	81.1	81.8	0.7
Fife LD	78.3	78.0	78.6	0.6	81.8	81.5	82.1	0.6
Fife MD	72.9	72.1	73.7	1.6	78.4	77.7	79.1	1.4
Glasgow City	73.4	73.1	73.6	0.6	78.8	78.6	79.1	0.5
Glasgow City LD	74.2	73.9	74.4	0.5	79.4	79.2	79.7	0.5
Glasgow City MD	67.8	67.3	68.4	1.1	74.8	74.2	75.3	1.1
Highland	77.9	77.4	78.3	0.9	82.6	82.2	83.0	0.8
Highland LD	78.6	78.3	79.0	0.8	83.1	82.8	83.4	0.7
Highland MD	72.1	71.1	73.1	2.0	77.9	77.0	78.8	1.8

Note

The red text indicates where the upper CI of the MD area overlaps the lower CI of the least deprived area.

Table 1 (continued)

	Males				Females			
	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI
Scotland	77.1	77.0	77.2	0.2	81.1	81.0	81.2	0.2
Scotland LD	78.1	78.0	78.2	0.2	81.8	81.7	81.8	0.1
Scotland MD	70.8	70.6	71.0	0.4	76.8	76.6	77.0	0.4
Inverclyde	75.4	74.7	76.2	1.5	80.4	79.7	81.1	1.4
Inverclyde LD	76.3	75.7	76.9	1.3	80.9	80.3	81.4	1.1
Inverclyde MD	68.5	66.7	70.3	3.6	77.0	75.4	78.6	3.1
Midlothian	77.3	76.6	78.1	1.5	81.5	80.8	82.1	1.3
Midlothian LD	77.8	77.2	78.4	1.3	82.0	81.4	82.5	1.1
Midlothian MD	74.2	72.6	75.9	3.3	78.7	77.3	80.1	2.8
Moray	78.7	78.1	79.4	1.4	81.7	81.0	82.4	1.4
Moray LD	78.7	78.1	79.2	1.1	82.0	81.5	82.5	1.1
Moray MD	75.0	73.2	76.7	3.5	79.4	77.7	81.2	3.5
Na h-Eileanan Siar	76.7	75.4	78.1	2.7	82.9	81.8	84.0	2.3
Na h-Eileanan Siar LD	76.6	75.6	77.7	2.1	81.1	80.0	82.3	2.3
Na h-Eileanan Siar MD	77.2	74.5	79.8	5.3	84.4	81.1	87.8	6.7
North Ayrshire	76.1	75.5	76.7	1.2	80.8	80.3	81.3	1.0
North Ayrshire LD	77.2	76.7	77.7	1.0	81.4	81.0	81.9	0.9
North Ayrshire MD	69.7	68.3	71.1	2.7	77.6	76.5	78.6	2.1
North Lanarkshire	75.3	75.0	75.7	0.8	79.6	79.2	79.9	0.7
North Lanarkshire LD	76.2	75.9	76.5	0.6	80.1	79.8	80.3	0.5
North Lanarkshire MD	70.2	69.4	71.0	1.7	75.7	74.9	76.5	1.6
Orkney Islands	78.8	77.3	80.3	3.0	82.8	81.4	84.3	2.9
Orkney Islands LD	79.8	78.5	81.0	2.5	83.0	81.9	84.1	2.2
Orkney Islands MD	75.2	71.6	78.7	7.0	80.2	77.0	83.3	6.3
Perth and Kinross	79.8	79.2	80.3	1.1	82.6	82.1	83.2	1.1
Perth and Kinross LD	80.4	80.0	80.8	0.9	83.1	82.7	83.5	0.9
Perth and Kinross MD	73.7	72.5	75.0	2.5	79.5	78.3	80.7	2.4

Note

The red text indicates where the upper CI of the MD area overlaps the lower CI of the least deprived area.

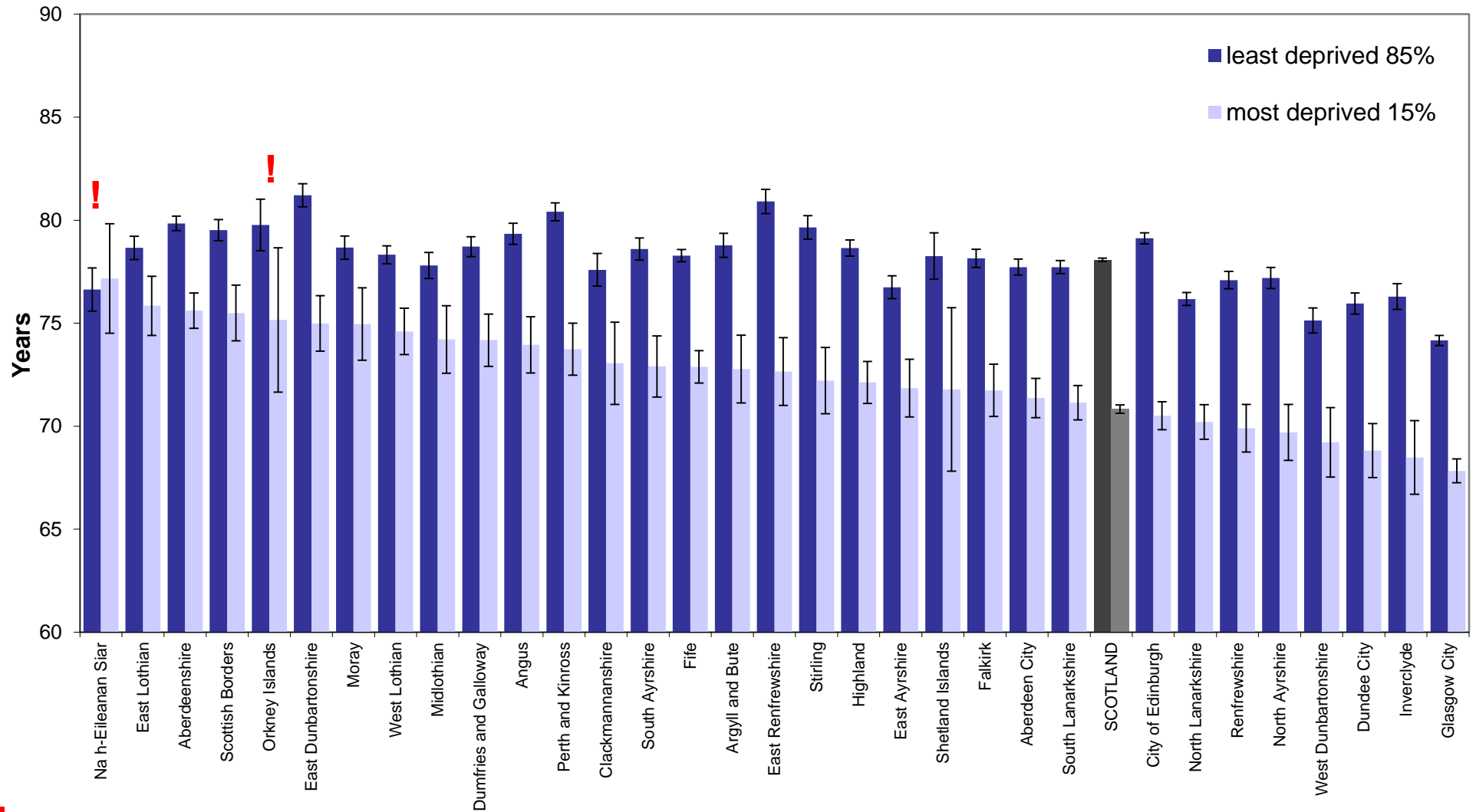
Table 1 (continued)

	Males				Females			
	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI
Scotland	77.1	77.0	77.2	0.2	81.1	81.0	81.2	0.2
Scotland LD	78.1	78.0	78.2	0.2	81.8	81.7	81.8	0.1
Scotland MD	70.8	70.6	71.0	0.4	76.8	76.6	77.0	0.4
Renfrewshire	76.3	75.8	76.8	1.0	80.6	80.1	81.1	0.9
Renfrewshire LD	77.1	76.7	77.5	0.9	81.2	80.9	81.6	0.8
Renfrewshire MD	69.9	68.7	71.1	2.3	75.9	74.8	77.0	2.2
Scottish Borders	78.8	78.2	79.4	1.2	82.5	82.0	83.1	1.1
Scottish Borders LD	79.5	79.0	80.0	1.0	82.8	82.3	83.3	1.0
Scottish Borders MD	75.5	74.1	76.8	2.7	79.6	78.5	80.7	2.3
Shetland Islands	77.6	76.3	79.0	2.7	81.9	80.6	83.2	2.6
Shetland Islands LD	78.3	77.1	79.4	2.2	82.4	81.4	83.4	2.0
Shetland Islands MD	71.8	67.8	75.8	7.9	79.9	76.9	82.9	6.0
South Ayrshire	77.7	77.1	78.4	1.3	81.0	80.4	81.6	1.2
South Ayrshire LD	78.6	78.1	79.1	1.1	81.3	80.8	81.8	1.0
South Ayrshire MD	72.9	71.4	74.4	3.0	78.5	77.1	79.9	2.8
South Lanarkshire	77.0	76.6	77.4	0.8	80.8	80.5	81.1	0.7
South Lanarkshire LD	77.7	77.4	78.0	0.6	81.2	81.0	81.5	0.6
South Lanarkshire MD	71.1	70.3	72.0	1.7	77.6	76.9	78.3	1.5
Stirling	78.5	77.9	79.2	1.4	82.0	81.4	82.6	1.2
Stirling LD	79.7	79.1	80.2	1.2	82.8	82.3	83.3	1.1
Stirling MD	72.2	70.6	73.8	3.2	77.5	76.2	78.8	2.6
West Dunbartonshire	74.8	74.0	75.5	1.5	78.7	78.0	79.4	1.4
West Dunbartonshire LD	75.1	74.5	75.7	1.2	79.2	78.6	79.8	1.1
West Dunbartonshire MD	69.2	67.5	70.9	3.4	77.1	75.5	78.6	3.1
West Lothian	78.2	77.7	78.7	1.0	80.8	80.3	81.3	1.0
West Lothian LD	78.3	77.9	78.8	0.9	80.8	80.4	81.2	0.8
West Lothian MD	74.6	73.5	75.7	2.3	78.5	77.5	79.5	2.0

Note

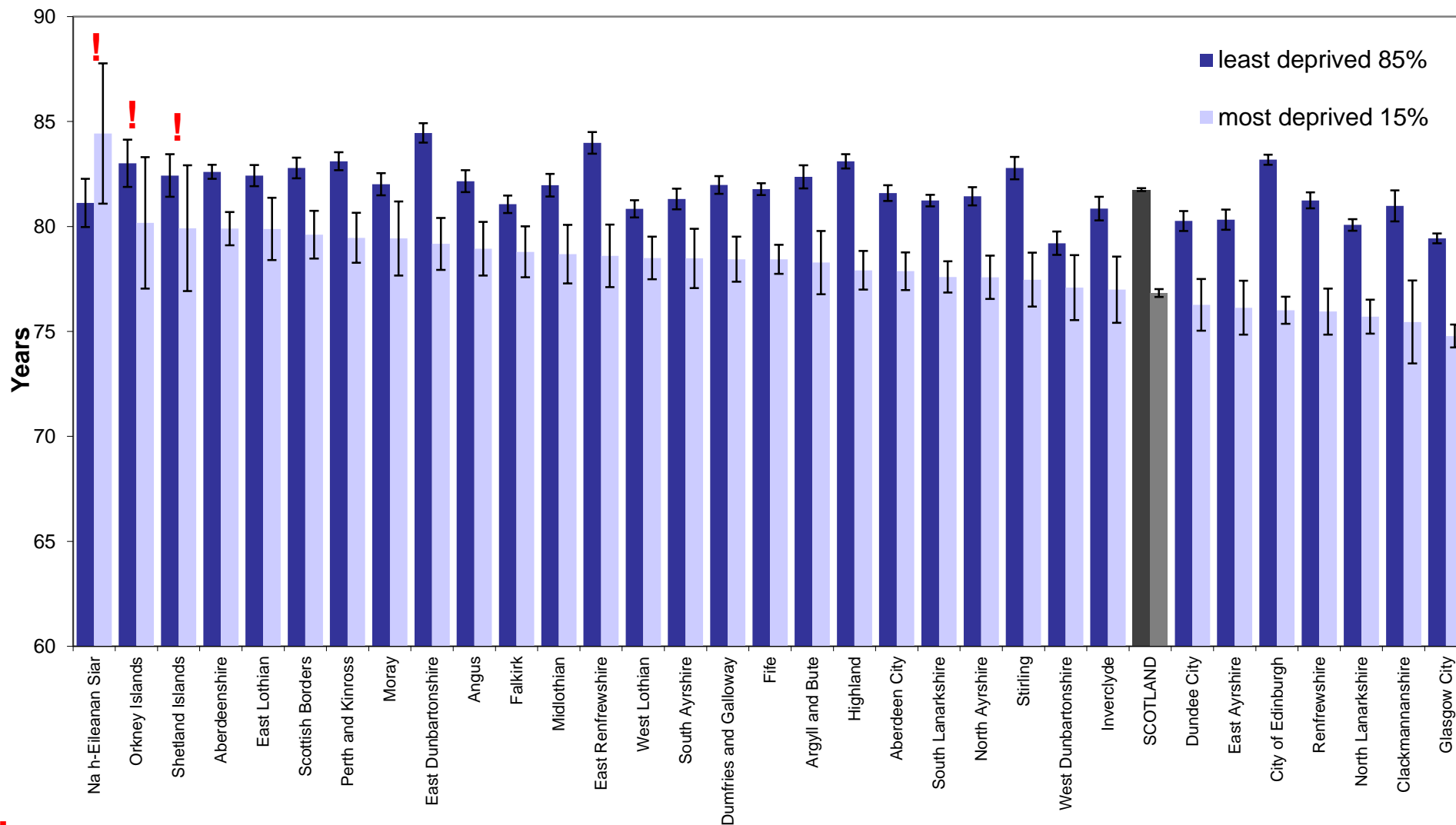
The red text indicates where the upper CI of the MD area overlaps the lower CI of the least deprived area.

Male Life Expectancy at birth in Council areas (most deprived and least deprived), 2011-2015



! indicates where the confidence intervals overlap for the most and least deprived areas within a council and therefore any differences may not be statistically significant.

Female Life Expectancy at birth in Council areas (most deprived and least deprived), 2011-2015



! indicates where the confidence intervals overlap for the most and least deprived areas within a council and therefore any differences may not be statistically significant.