

General Details

Dataset Title:	Life Expectancy in Scottish Council areas split by deprivation, 2007-2011
Time Period of Dataset:	2007-2011
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) 2012. 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, NRS advise that the type of analysis described above is unsuitable for Eilean Siar and Shetland Islands. Estimates for Clackmannanshire, Moray and Orkney Islands should be treated with caution when using female life expectancy as an indicator, and 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 annual year on year comparisons.

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 thereby consistent with the method used by 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 NRS, using the Scottish Index of Multiple Deprivation 2012 rank and data zones as building blocks. For example, the data zones within the City of Edinburgh Council area were ordered by SIMD 2012 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 2007-2011 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

Previous life expectancy (LE) figures - calculated by NRS for SIMD 2012 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 for females in Eilean 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 except Dumfries & Galloway and Shetland Islands and is widest for those living in South Ayrshire.

The gap between LE in the most deprived part of a given Council and LE in the least deprived part of that same Council varies by Council area and gender. In most cases the inequality gap is more pronounced for males, however in Dumfries & Galloway and Shetland Islands the inequality gap is wider for females.

The confidence interval (CI) surrounding each life expectancy at birth figure is shown in Table 1, Chart 1 and Chart 2. The average CI surrounding male LE is 1.7 years, with a maximum of 6.7 years; the average CI surrounding female LE is 1.6 years with a maximum of 8.5 years. The CI surrounding the Eilean Siar MD and Shetland Islands MD life expectancy estimates are too large (as illustrated in Charts 1 and 2) for the data to be deemed fit for purpose. This is mainly a result of the small numbers involved in calculating LE at this level of geography. Charts 1 and 2 show that, for these Council areas, the upper CI of the most deprived LE estimate overlaps with the lower CI of the least deprived LE estimate.

Overlapping confidence intervals are also a problem for female LE in Clackmannanshire, Moray and Orkney Islands. These findings suggest that either deprivation has little impact on female life expectancy in these areas or they could be a result of problems associated with using the SIMD in this way (see 'limitations associated with using the SIMD in this manner' section).

Limitations associated with using the SIMD in this manner

Firstly, care needs to be taken to not confuse a Council's 'most deprived' data zones with their share of the 15% most deprived nationally, e.g. 42% 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 'most deprived' is very low but this is because we are looking at data zones that fall within the 3% most deprived nationally, whereas Clackmannanshire's most deprived data zones are split across the 11% most deprived nationally with 2 in vigintile 1, 6 in vigintile 2 and 1 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 as 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 3% 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 in the 35% most deprived nationally - the two data zones in the 5% most deprived nationally will be very different to those in the 30-35% band.

**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 2007-2011**

	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
Aberdeen CityLD	77.3	76.9	77.6	0.8	81.6	81.2	81.9	0.7
Aberdeen CityMD	70.8	69.8	71.8	2.0	76.9	76.0	77.9	1.9
Aberdeen City	76.3	75.9	76.6	0.7	80.9	80.5	81.2	0.7
AberdeenshireLD	79.2	78.9	79.6	0.7	82.2	81.9	82.6	0.7
AberdeenshireMD	73.3	72.3	74.3	2.0	79.1	78.2	79.9	1.7
Aberdeenshire	78.3	77.9	78.6	0.7	81.7	81.4	82.0	0.6
AngusLD	78.2	77.6	78.8	1.2	81.1	80.6	81.6	1.1
AngusMD	74.0	72.6	75.4	2.8	79.0	77.8	80.2	2.4
Angus	77.6	77.0	78.1	1.1	80.9	80.4	81.4	1.0
Argyll & ButeLD	77.7	77.1	78.3	1.2	81.4	80.8	81.9	1.1
Argyll & ButeMD	70.9	69.3	72.5	3.1	76.6	75.0	78.1	3.0
Argyll & Bute	76.7	76.1	77.2	1.1	80.7	80.2	81.2	1.1
ClackmannanshireLD	76.4	75.6	77.2	1.6	81.3	80.6	82.0	1.4
ClackmannanshireMD	71.4	69.3	73.5	4.2	78.7	76.5	80.8	4.2
Clackmannanshire	75.8	75.1	76.5	1.5	80.9	80.2	81.6	1.3
Dumfries & GallowayLD	77.7	77.2	78.2	1.0	81.8	81.4	82.2	0.8
Dumfries & GallowayMD	73.6	72.3	74.9	2.6	77.3	76.1	78.5	2.4
Dumfries & Galloway	77.1	76.7	77.6	0.9	81.2	80.8	81.5	0.8
Dundee CityLD	74.9	74.3	75.4	1.0	79.9	79.4	80.4	0.9
Dundee CityMD	68.3	66.9	69.7	2.8	75.3	74.0	76.6	2.6
Dundee City	73.8	73.3	74.3	1.0	79.2	78.7	79.6	0.9
East AyrshireLD	75.8	75.3	76.4	1.1	79.8	79.3	80.3	1.0
East AyrshireMD	71.5	70.2	72.8	2.7	76.0	74.8	77.2	2.5
East Ayrshire	75.2	74.7	75.7	1.0	79.3	78.8	79.7	0.9

Note

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

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	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
East DunbartonshireLD	80.1	79.6	80.7	1.1	83.9	83.4	84.4	1.0
East DunbartonshireMD	73.4	71.9	74.8	2.8	78.5	77.2	79.8	2.6
East Dunbartonshire	79.0	78.5	79.6	1.0	83.0	82.5	83.4	0.9
East LothianLD	77.8	77.2	78.4	1.2	81.8	81.3	82.3	1.0
East LothianMD	74.2	72.6	75.9	3.3	78.4	77.0	79.9	2.9
East Lothian	77.3	76.8	77.9	1.1	81.3	80.8	81.8	1.0
East RenfrewshireLD	79.8	79.2	80.5	1.2	83.4	82.8	83.9	1.1
East RenfrewshireMD	72.2	70.7	73.7	3.0	78.5	77.1	80.0	2.9
East Renfrewshire	78.6	78.0	79.1	1.2	82.6	82.1	83.1	1.0
Edinburgh, City ofLD	78.4	78.1	78.6	0.5	82.4	82.2	82.6	0.5
Edinburgh, City ofMD	69.8	69.1	70.5	1.4	76.8	76.2	77.5	1.3
Edinburgh, City of	76.9	76.7	77.2	0.5	81.5	81.3	81.7	0.5
Eilean SiarLD	74.9	73.7	76.0	2.2	81.2	80.1	82.3	2.2
Eilean SiarMD	74.6	71.7	77.6	5.9	83.1	80.4	85.8	5.3
Eilean Siar	74.8	73.8	75.8	2.1	81.5	80.5	82.5	2.0
FalkirkLD	77.2	76.8	77.6	0.9	80.3	79.9	80.7	0.8
FalkirkMD	71.6	70.3	72.8	2.4	78.3	77.2	79.4	2.3
Falkirk	76.4	76.0	76.8	0.8	80.0	79.6	80.4	0.8
FifeLD	77.2	76.9	77.5	0.6	81.1	80.8	81.3	0.5
FifeMD	71.8	71.0	72.6	1.6	77.6	76.8	78.4	1.5
Fife	76.5	76.2	76.7	0.6	80.6	80.3	80.8	0.5
Glasgow CityLD	72.6	72.3	72.8	0.5	78.6	78.3	78.8	0.5
Glasgow CityMD	66.5	65.9	67.1	1.2	74.3	73.7	74.8	1.1
Glasgow City	71.6	71.4	71.9	0.5	77.9	77.7	78.1	0.4

Note

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

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	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
HighlandLD	77.6	77.2	78.0	0.8	82.0	81.6	82.3	0.7
HighlandMD	70.7	69.7	71.8	2.1	77.8	76.9	78.7	1.8
Highland	76.6	76.2	77.0	0.8	81.4	81.1	81.7	0.6
InverclydeLD	74.0	73.3	74.6	1.3	79.9	79.3	80.5	1.2
InverclydeMD	67.9	65.9	69.9	4.0	75.6	73.8	77.4	3.6
Inverclyde	73.1	72.5	73.8	1.3	79.3	78.7	79.9	1.2
MidlothianLD	77.6	77.0	78.2	1.2	81.5	81.0	82.0	1.0
MidlothianMD	73.6	72.1	75.2	3.1	79.0	77.6	80.4	2.7
Midlothian	77.1	76.5	77.7	1.1	81.2	80.7	81.7	1.0
MorayLD	77.7	77.1	78.2	1.2	81.7	81.1	82.2	1.0
MorayMD	73.5	72.0	75.1	3.0	81.0	79.5	82.5	3.0
Moray	77.1	76.5	77.6	1.1	81.6	81.1	82.1	1.0
North AyrshireLD	75.7	75.2	76.3	1.0	80.4	80.0	80.8	0.9
North AyrshireMD	69.5	68.1	70.8	2.8	76.2	75.0	77.4	2.4
North Ayrshire	74.8	74.3	75.3	1.0	79.8	79.4	80.2	0.8
North LanarkshireLD	75.1	74.8	75.4	0.6	79.3	79.0	79.5	0.6
North LanarkshireMD	69.4	68.6	70.2	1.6	75.8	75.1	76.6	1.5
North Lanarkshire	74.2	73.9	74.5	0.6	78.8	78.5	79.0	0.5
Orkney IslandsLD	78.4	77.1	79.8	2.6	82.5	81.4	83.5	2.1
Orkney IslandsMD	73.2	70.0	76.3	6.3	79.5	76.9	82.2	5.3
Orkney Islands	77.5	76.3	78.7	2.5	81.9	80.9	82.8	2.0
Perth & KinrossLD	79.5	79.1	80.0	0.9	82.5	82.1	82.9	0.8
Perth & KinrossMD	74.1	72.9	75.3	2.4	80.5	79.1	81.8	2.7
Perth & Kinross	78.8	78.4	79.2	0.9	82.2	81.8	82.6	0.8

Note

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

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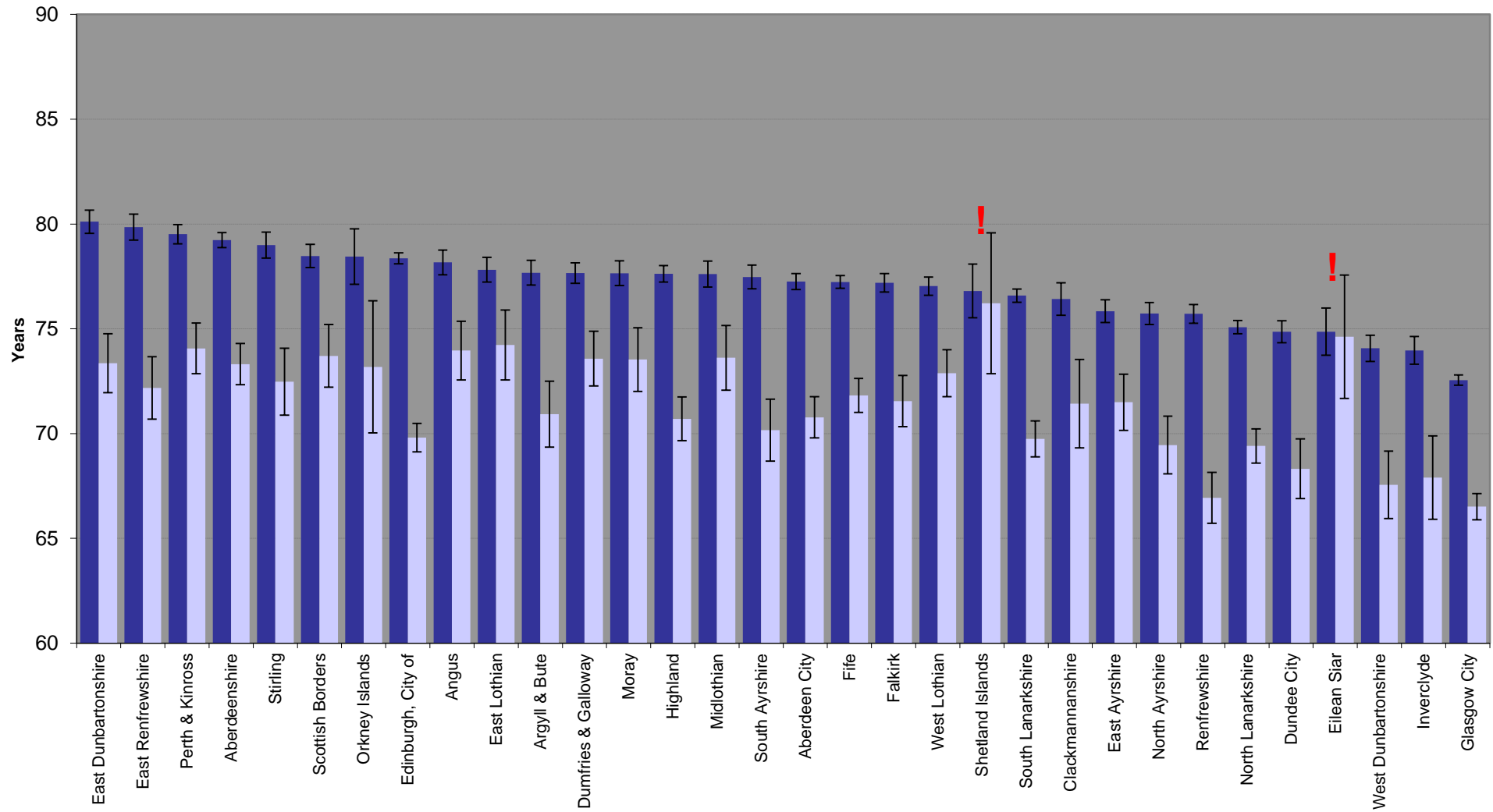
	Males				Females			
	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI	Expectation of Life at birth	Lower 95% CI	Upper 95% CI	Length of CI
RenfrewshireLD	75.7	75.3	76.2	0.9	80.7	80.3	81.1	0.7
RenfrewshireMD	66.9	65.7	68.2	2.4	74.9	73.8	76.0	2.2
Renfrewshire	74.3	73.9	74.8	0.9	79.9	79.5	80.2	0.7
Scottish BordersLD	78.5	77.9	79.0	1.1	82.2	81.7	82.7	1.0
Scottish BordersMD	73.7	72.2	75.2	3.0	78.8	77.6	80.1	2.4
Scottish Borders	77.8	77.3	78.3	1.0	81.7	81.3	82.2	0.9
Shetland IslandsLD	76.8	75.5	78.1	2.6	81.7	80.6	82.9	2.3
Shetland IslandsMD	76.2	72.9	79.6	6.7	76.9	72.6	81.1	8.5
Shetland Islands	76.7	75.5	77.9	2.4	81.1	79.9	82.2	2.3
South AyrshireLD	77.5	76.9	78.0	1.1	81.5	81.0	82.0	0.9
South AyrshireMD	70.2	68.7	71.6	2.9	78.1	76.9	79.4	2.5
South Ayrshire	76.3	75.8	76.8	1.1	81.0	80.6	81.5	0.9
South LanarkshireLD	76.6	76.3	76.9	0.6	80.7	80.4	81.0	0.6
South LanarkshireMD	69.7	68.9	70.6	1.7	76.6	75.8	77.3	1.5
South Lanarkshire	75.5	75.2	75.8	0.6	80.1	79.9	80.4	0.5
StirlingLD	79.0	78.4	79.6	1.2	82.4	81.9	83.0	1.0
StirlingMD	72.5	70.9	74.1	3.2	78.1	76.6	79.5	2.8
Stirling	78.0	77.4	78.6	1.2	81.8	81.3	82.3	1.0
West DunbartonshireLD	74.1	73.4	74.7	1.2	79.3	78.7	79.8	1.1
West DunbartonshireMD	67.6	65.9	69.2	3.2	74.6	73.1	76.2	3.1
West Dunbartonshire	73.2	72.6	73.8	1.2	78.6	78.1	79.2	1.0
West LothianLD	77.0	76.6	77.5	0.9	80.3	79.9	80.7	0.8
West LothianMD	72.9	71.8	74.0	2.2	76.6	75.5	77.6	2.1
West Lothian	76.4	76.0	76.8	0.8	79.7	79.4	80.1	0.7

Note

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

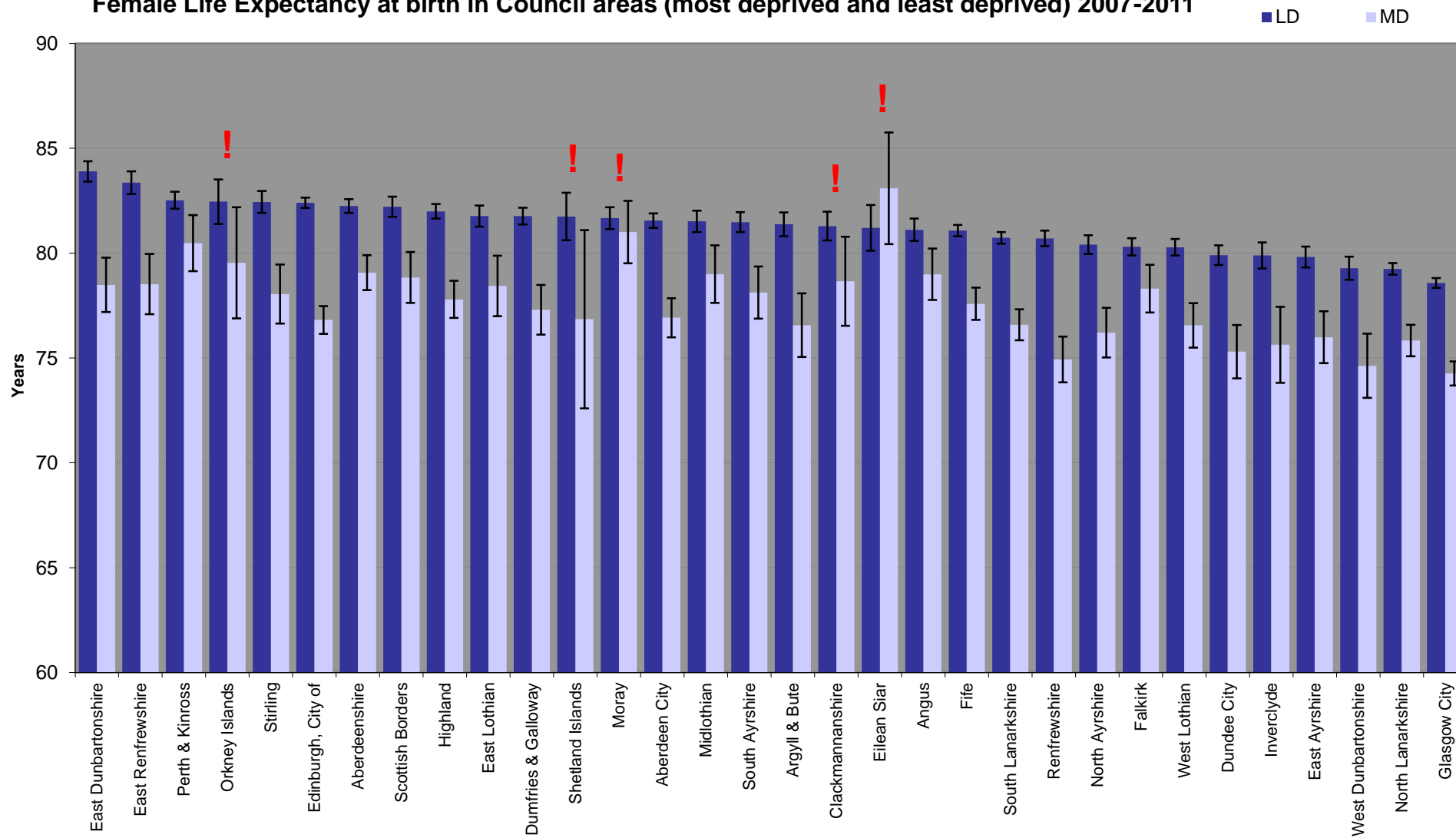
Male Life Expectancy at birth in Council areas (most deprived and least deprived) 2007-2011

■ LD ■ MD



! indicates where the MD upper CI overlaps with the LD lower CI

Female Life Expectancy at birth in Council areas (most deprived and least deprived) 2007-2011



! indicates where the MD upper CI overlaps with the LD lower CI