

General Details

Dataset Title:	Life Expectancy in Scottish council areas split by deprivation, 2005-2009
Time Period of Dataset:	2005-2009
Geographic Coverage:	Sub-council
Supplier:	General Register Office for Scotland (GROS)
Department:	Demography Division, Population and Migration Statistics Branch
Previous publication:	Life Expectancy in Scottish council areas split by deprivation based on the period 2004-2008 was published on the General Register Office for Scotland website: General Register Office for Scotland - Life Expectancy in Scottish Council Areas split by Deprivation, 2004-2008

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) 2009. These statistics, now in their third edition, 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 General Register Office for 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, GROS advise that the type of analysis described above is unsuitable for Eilean Siar, Orkney and Shetland. Estimates for Angus, Argyll & Bute, Falkirk, Midlothian, Moray and Perth & Kinross Council 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 GROS and 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 GROS, using the Scottish Index of Multiple Deprivation 2009 rank and data zones as building blocks. For example, the data zones within the City of Edinburgh Council area were ordered by SIMD 2009 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 2005-2009 and death counts at the data zone level (obtained from GROS 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 GROS) 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.

There were two deaths in both 2007 and 2009 in the zero age group for which the sex was unclassified, for the purposes of calculating these estimates these deaths were treated as male.

Results

Previous life expectancy (LE) figures - calculated by GROS for SIMD 2009 deprivation deciles, quintiles and vigintiles - 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 males in Orkney.

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 Orkney and Shetland and is particularly pronounced for those living in Argyll & Bute, Falkirk and 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 Orkney and Shetland 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 1.8 years, with a maximum of 8.0 years; the average CI surrounding female LE is 1.6 years with a maximum of 7.2 years. The CI surrounding the Shetland MD, Orkney MD and Eilean Siar 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. Chart 1 and 2 show that, for the island councils, 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 Angus, Argyll & Bute, Falkirk, Midlothian, Moray and Perth & Kinross. 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. 44% 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're looking at data zones that fall within the 3% most deprived nationally where as Clackmannanshire's most deprived data zones are split across the 15% most deprived nationally with 2 in vigintile 1, 5 in vigintile 2 and 3 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 includes 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 2005-2009**

	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	76.4	76.0	76.8	0.8	81.1	80.7	81.5	0.7
Aberdeen CityMD	69.7	68.7	70.8	2.1	76.7	75.7	77.7	2.0
Aberdeen City	75.4	75.1	75.8	0.7	80.5	80.1	80.8	0.7
AberdeenshireLD	78.7	78.3	79.1	0.7	81.8	81.5	82.1	0.7
AberdeenshireMD	72.8	71.7	73.8	2.0	79.2	78.3	80.1	1.8
Aberdeenshire	77.7	77.4	78.1	0.7	81.4	81.1	81.7	0.6
AngusLD	77.4	76.8	77.9	1.2	80.6	80.1	81.1	1.0
AngusMD	72.3	70.8	73.8	3.1	79.2	77.9	80.6	2.7
Angus	76.6	76.1	77.2	1.1	80.4	79.9	80.9	1.0
Argyll & ButeLD	77.6	77.0	78.2	1.2	80.6	80.0	81.2	1.2
Argyll & ButeMD	70.2	68.5	71.9	3.4	78.7	77.2	80.1	2.9
Argyll & Bute	76.6	76.0	77.1	1.1	80.4	79.9	80.9	1.1
ClackmannanshireLD	75.2	74.4	76.1	1.7	80.3	79.6	81.1	1.5
ClackmannanshireMD	69.9	67.8	72.0	4.2	77.0	75.0	79.0	4.1
Clackmannanshire	74.4	73.7	75.2	1.5	79.9	79.1	80.6	1.4
Dumfries & GallowayLD	77.3	76.8	77.8	1.0	81.2	80.8	81.6	0.8
Dumfries & GallowayMD	71.1	69.8	72.3	2.5	77.7	76.5	78.9	2.4
Dumfries & Galloway	76.5	76.0	76.9	0.9	80.6	80.2	81.0	0.8
Dundee CityLD	74.9	74.3	75.4	1.1	80.0	79.5	80.5	0.9
Dundee CityMD	67.5	66.0	69.1	3.0	75.9	74.6	77.3	2.6
Dundee City	73.8	73.3	74.3	1.0	79.3	78.9	79.8	0.9
East AyrshireLD	75.1	74.6	75.7	1.1	78.8	78.3	79.3	1.0
East AyrshireMD	69.8	68.4	71.2	2.8	76.1	74.9	77.3	2.5
East Ayrshire	74.4	73.9	74.9	1.0	78.4	77.9	78.9	1.0

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

(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
East DunbartonshireLD	79.5	79.0	80.0	1.1	83.7	83.2	84.2	1.0
East DunbartonshireMD	72.8	71.4	74.2	2.8	77.9	76.8	79.1	2.3
East Dunbartonshire	78.5	78.0	79.0	1.0	82.7	82.2	83.1	0.9
East LothianLD	77.3	76.7	77.8	1.2	81.5	80.9	82.0	1.1
East LothianMD	71.9	70.3	73.6	3.3	78.2	76.9	79.6	2.7
East Lothian	76.5	75.9	77.0	1.1	81.0	80.5	81.5	1.0
East RenfrewshireLD	78.8	78.1	79.4	1.2	83.0	82.5	83.6	1.1
East RenfrewshireMD	71.7	70.1	73.3	3.2	78.5	77.0	80.0	3.0
East Renfrewshire	77.6	77.0	78.2	1.2	82.3	81.8	82.8	1.0
Edinburgh, City ofLD	78.0	77.7	78.3	0.5	82.1	81.8	82.3	0.5
Edinburgh, City ofMD	68.9	68.2	69.6	1.4	77.3	76.6	78.0	1.4
Edinburgh, City of	76.5	76.2	76.7	0.5	81.3	81.1	81.5	0.5
Eilean SiarLD	73.3	72.1	74.6	2.5	81.0	79.9	82.0	2.2
Eilean SiarMD	71.9	68.4	75.5	7.1	80.0	77.4	82.5	5.1
Eilean Siar	73.2	72.0	74.3	2.3	80.9	79.9	81.8	2.0
FalkirkLD	76.2	75.7	76.6	0.9	79.9	79.5	80.3	0.8
FalkirkMD	70.5	69.3	71.7	2.5	78.7	77.6	79.9	2.3
Falkirk	75.3	74.9	75.8	0.9	79.7	79.4	80.1	0.7
FifeLD	76.8	76.4	77.1	0.6	80.8	80.5	81.1	0.6
FifeMD	71.2	70.4	72.1	1.6	77.5	76.8	78.3	1.6
Fife	75.9	75.6	76.2	0.6	80.3	80.1	80.6	0.5
Glasgow CityLD	72.1	71.8	72.3	0.5	77.9	77.7	78.1	0.5
Glasgow CityMD	65.1	64.5	65.7	1.2	73.9	73.3	74.5	1.2
Glasgow City	71.0	70.8	71.3	0.5	77.3	77.1	77.5	0.4

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

(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
HighlandLD	77.1	76.7	77.5	0.8	81.3	81.0	81.7	0.7
HighlandMD	70.2	69.2	71.3	2.1	78.7	77.9	79.6	1.7
Highland	76.1	75.7	76.5	0.8	81.0	80.6	81.3	0.7
InverclydeLD	74.0	73.3	74.6	1.3	78.9	78.2	79.6	1.3
InverclydeMD	67.1	65.2	69.0	3.7	76.1	74.3	77.8	3.5
Inverclyde	73.0	72.3	73.6	1.3	78.5	77.9	79.1	1.2
MidlothianLD	76.8	76.2	77.5	1.3	80.8	80.3	81.4	1.1
MidlothianMD	71.3	69.6	72.9	3.4	78.9	77.5	80.3	2.7
Midlothian	76.0	75.4	76.6	1.2	80.6	80.1	81.1	1.0
MorayLD	76.9	76.3	77.5	1.2	80.7	80.2	81.3	1.1
MorayMD	72.3	70.7	73.9	3.2	79.3	77.6	80.9	3.4
Moray	76.2	75.7	76.8	1.2	80.5	80.0	81.1	1.1
North AyrshireLD	74.9	74.3	75.4	1.1	79.8	79.4	80.3	0.9
North AyrshireMD	69.2	67.9	70.5	2.6	74.9	73.7	76.2	2.5
North Ayrshire	74.0	73.5	74.5	1.0	79.1	78.6	79.5	0.9
North LanarkshireLD	74.2	73.9	74.5	0.6	78.9	78.6	79.2	0.6
North LanarkshireMD	68.3	67.4	69.2	1.7	76.1	75.4	76.9	1.5
North Lanarkshire	73.4	73.0	73.7	0.6	78.5	78.2	78.8	0.5
Orkney IslandsLD	75.5	74.2	76.8	2.6	81.6	80.5	82.6	2.1
Orkney IslandsMD	75.7	71.7	79.7	8.0	81.4	77.9	84.9	7.1
Orkney Islands	75.6	74.4	76.8	2.5	81.7	80.7	82.7	2.0
Perth & KinrossLD	78.3	77.8	78.8	0.9	81.9	81.5	82.3	0.8
Perth & KinrossMD	72.8	71.4	74.1	2.7	80.3	78.9	81.7	2.8
Perth & Kinross	77.5	77.1	78.0	0.9	81.6	81.2	82.0	0.8

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

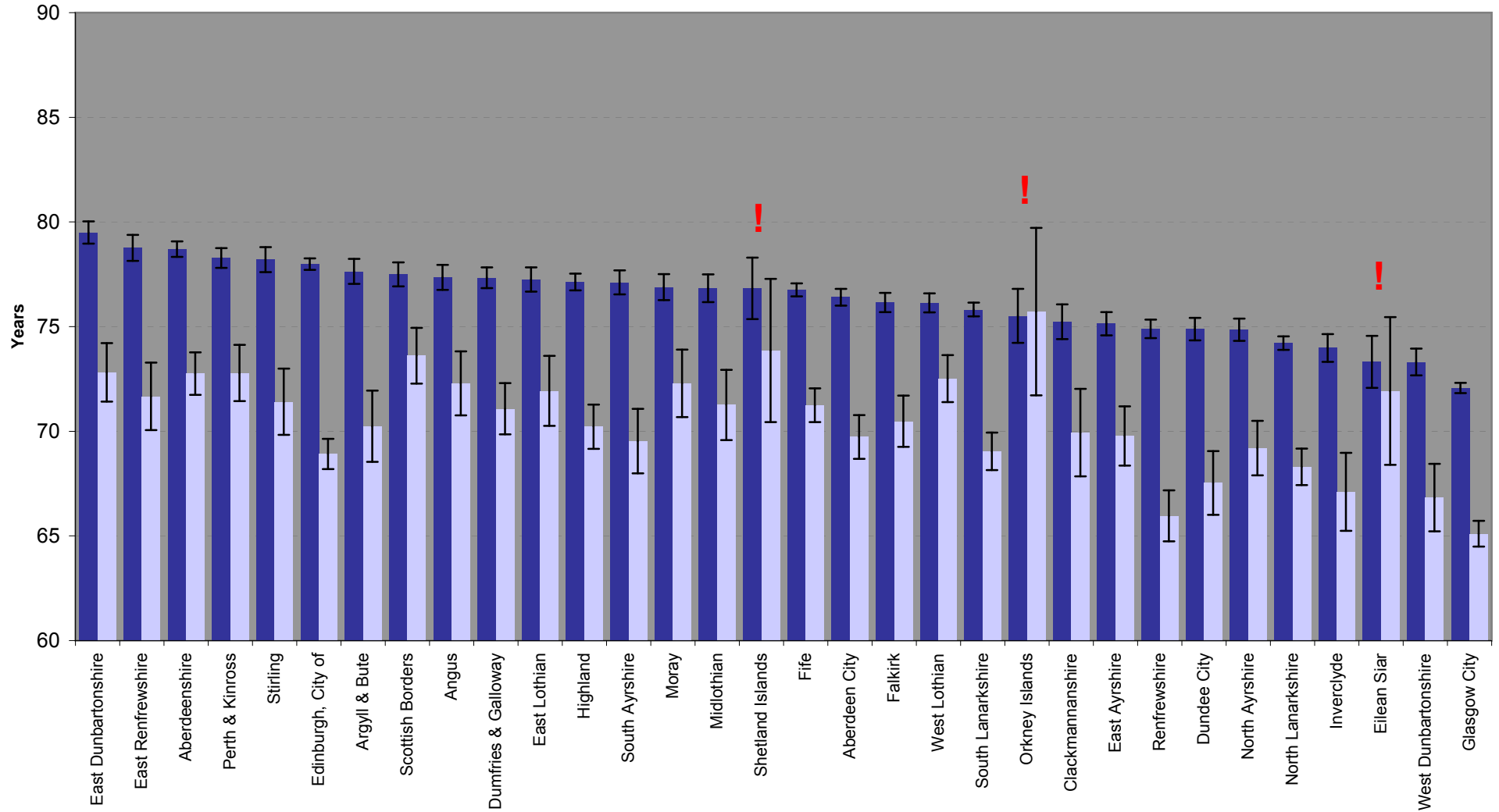
(continued)

	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
RenfrewshireLD	74.9	74.5	75.3	0.9	79.7	79.3	80.1	0.8
RenfrewshireMD	66.0	64.7	67.2	2.4	74.2	73.1	75.3	2.2
Renfrewshire	73.6	73.2	74.0	0.9	79.0	78.6	79.3	0.7
Scottish BordersLD	77.5	76.9	78.1	1.1	81.5	81.0	82.0	1.0
Scottish BordersMD	73.6	72.3	74.9	2.7	77.7	76.5	78.9	2.4
Scottish Borders	76.9	76.4	77.5	1.1	80.9	80.5	81.4	0.9
Shetland IslandsLD	76.8	75.4	78.3	2.9	82.7	81.4	83.9	2.5
Shetland IslandsMD	73.9	70.4	77.3	6.8	79.7	76.1	83.3	7.2
Shetland Islands	76.4	75.0	77.7	2.7	82.2	81.0	83.4	2.4
South AyrshireLD	77.1	76.5	77.7	1.1	81.1	80.6	81.6	1.0
South AyrshireMD	69.5	68.0	71.1	3.1	78.0	76.7	79.3	2.6
South Ayrshire	76.0	75.4	76.5	1.1	80.7	80.3	81.2	0.9
South LanarkshireLD	75.8	75.5	76.1	0.6	80.3	80.1	80.6	0.6
South LanarkshireMD	69.0	68.1	69.9	1.8	76.5	75.7	77.2	1.5
South Lanarkshire	74.8	74.5	75.1	0.6	79.8	79.5	80.0	0.5
StirlingLD	78.2	77.6	78.8	1.2	82.2	81.7	82.7	1.1
StirlingMD	71.4	69.8	73.0	3.2	76.6	75.3	78.0	2.7
Stirling	77.2	76.6	77.7	1.1	81.4	80.9	81.9	1.0
West DunbartonshireLD	73.3	72.7	73.9	1.3	78.9	78.3	79.4	1.1
West DunbartonshireMD	66.8	65.2	68.4	3.2	74.1	72.7	75.6	2.9
West Dunbartonshire	72.4	71.8	73.0	1.2	78.2	77.6	78.7	1.1
West LothianLD	76.1	75.7	76.6	0.9	79.8	79.4	80.2	0.8
West LothianMD	72.5	71.4	73.6	2.2	76.8	75.9	77.8	1.9
West Lothian	75.6	75.2	76.0	0.8	79.3	79.0	79.7	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 LE at birth in Council areas (most deprived and least deprived) 2005-2009

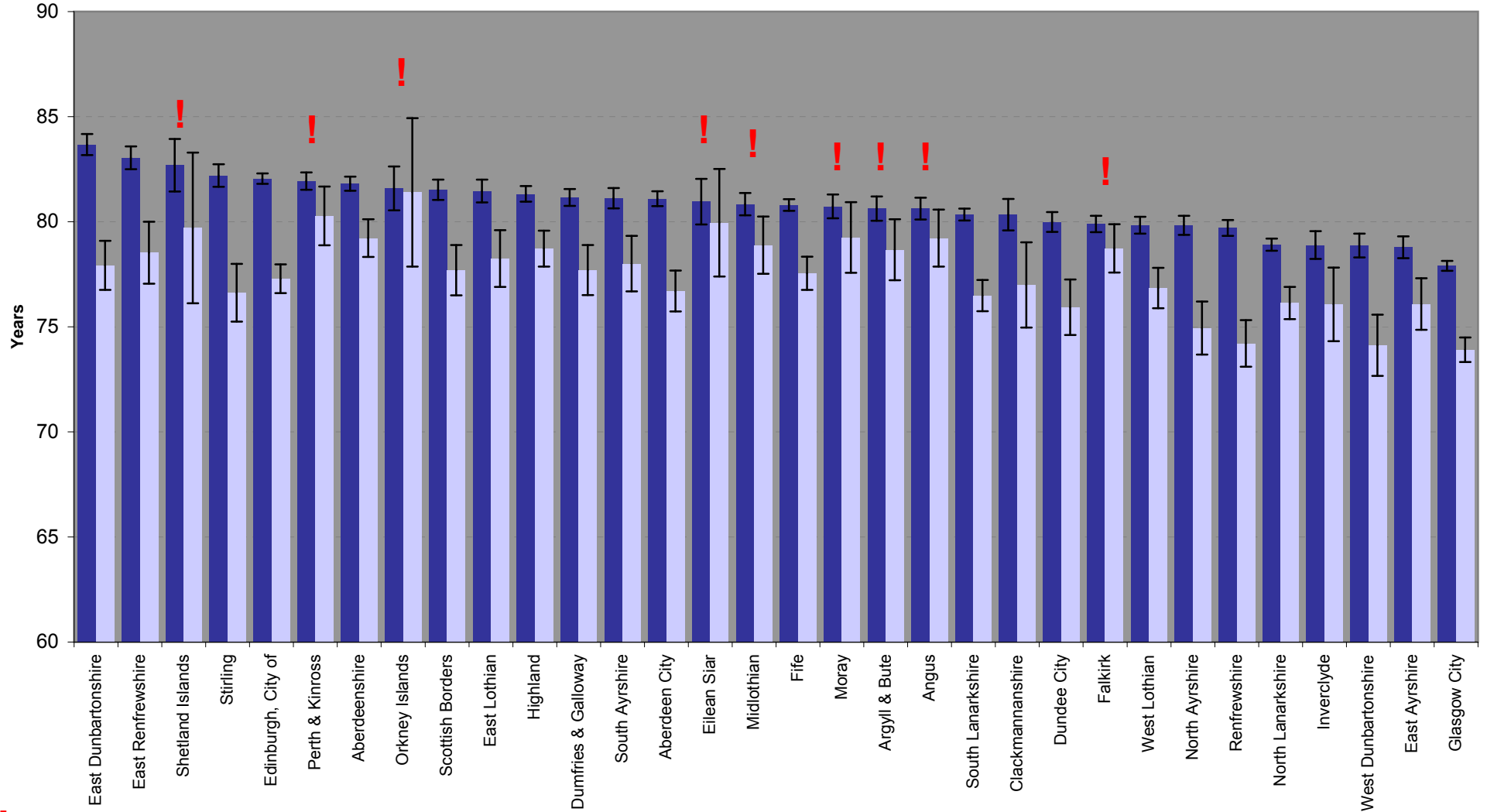
■ LD ■ MD



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

Female LE at birth in Council areas (most deprived and least deprived) 2005-2009

LD MD



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