

General Details

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|--------------------------------|---|
| Dataset Title: | Life Expectancy in Scottish council areas split by deprivation, 2004-2008 |
| Time Period of Dataset: | 2004-2008 |
| 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, 2003-2007 |

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 SIMD2006). The second in the series of published statistics. They came about after a request for such data from a Scottish NHS board who were working with the Community Health Partnerships and councils within their NHS board area. Their intention was to use the estimates to monitor the inequality gap between those living in the most and least deprived parts of each of the council areas, in the aim to improve the measurement of local level outcomes in support of Single Outcome Agreements. The General Register Office decided to produce the estimates as part of an investigation to see whether this sort of analysis was appropriate. It was agreed that if found to be suitable the estimates would be disseminated along with their confidence intervals.

Recommendations

Based on the results discussed below GROS advise that analysis of this type is unsuitable for Shetland, Orkney and Eilean Siar. East Lothian, Argyll & Bute, Perth & Kinross, Moray and Angus Council should exercise caution when using female life expectancy as an indicator - users should bear in mind the confidence interval surrounding the estimate; and all Councils should concentrate on life expectancy at birth and refrain from using life expectancy at age 65 as a measure. 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' datazones 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 2006 rank and data zones as building blocks. For example, the data zones within the City of Edinburgh Council area were ordered by SIMD 2006 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 2004-2008 and death counts at the data zone level (obtained from GROS Vital Events) were used as input data. It was necessary to aggregate the population and death data over a five year period (as opposed to the normal 3 years used by GROS) in order to gain 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 GROS for SIMD2006 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 higher in the least deprived areas compared to the most deprived areas, this is true for males and female.

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 the island councils and is particularly pronounced for those living in Argyll & Bute and South Ayrshire.

The gap between LE in the most deprived part of a given council and LE the least deprived part of that same council varies by council area and gender. More often than not the inequality gap is most 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 can be seen in table 1, Chart 1 and Chart 2. The average CI surrounding male LE is 1.8 years, with a maximum of 6.9 years; the average CI surrounding female LE is 1.6 years with a maximum of 7.3 years. The CI surrounding the Shetland MD, Orkney MD and Eilean Siar MD life expectancy estimates are too large (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 East Lothian, Argyll & Bute, Perth & Kinross, Moray and Angus. 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' datazones with their share of the 15% most deprived nationally ie 50% 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. Glasgow 'most deprived' looks very bad but this is because we're looking at data zones that fall within the 3% most deprived nationally where as North Ayrshire's most deprived data zones are split across the 15% most deprived nationally with 9 in vigintile 1, 2 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) which is why analysis, funding etc has been focused on the most deprived 15% nationally. 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 33% 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 2004-2008**

| | 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 | 76.2 | 75.8 | 76.6 | 0.8 | 81.0 | 80.6 | 81.3 | 0.7 |
| Aberdeen CityMD | 69.7 | 68.6 | 70.7 | 2.1 | 75.7 | 74.7 | 76.7 | 2.0 |
| Aberdeen City | 75.2 | 74.9 | 75.6 | 0.7 | 80.2 | 79.9 | 80.6 | 0.7 |
| AberdeenshireLD | 78.2 | 77.8 | 78.5 | 0.8 | 81.5 | 81.1 | 81.8 | 0.7 |
| AberdeenshireMD | 72.8 | 71.8 | 73.8 | 2.1 | 79.4 | 78.5 | 80.3 | 1.8 |
| Aberdeenshire | 77.3 | 76.9 | 77.6 | 0.7 | 81.1 | 80.8 | 81.5 | 0.6 |
| AngusLD | 77.0 | 76.4 | 77.6 | 1.1 | 80.2 | 79.7 | 80.7 | 1.0 |
| AngusMD | 71.6 | 70.1 | 73.2 | 3.1 | 79.0 | 77.7 | 80.4 | 2.7 |
| Angus | 76.2 | 75.7 | 76.8 | 1.1 | 80.1 | 79.6 | 80.5 | 1.0 |
| Argyll & ButeLD | 76.7 | 76.1 | 77.3 | 1.2 | 80.5 | 79.9 | 81.0 | 1.2 |
| Argyll & ButeMD | 70.4 | 68.7 | 72.1 | 3.4 | 79.2 | 77.8 | 80.6 | 2.8 |
| Argyll & Bute | 75.8 | 75.2 | 76.4 | 1.2 | 80.3 | 79.8 | 80.8 | 1.1 |
| ClackmannanshireLD | 75.1 | 74.3 | 76.0 | 1.8 | 80.7 | 80.0 | 81.5 | 1.5 |
| ClackmannanshireMD | 67.5 | 65.5 | 69.6 | 4.1 | 74.5 | 72.7 | 76.3 | 3.5 |
| Clackmannanshire | 73.8 | 73.0 | 74.6 | 1.6 | 79.7 | 79.0 | 80.4 | 1.4 |
| Dumfries & GallowayLD | 77.1 | 76.7 | 77.6 | 1.0 | 80.9 | 80.5 | 81.3 | 0.8 |
| Dumfries & GallowayMD | 71.4 | 70.2 | 72.7 | 2.5 | 77.5 | 76.4 | 78.7 | 2.3 |
| Dumfries & Galloway | 76.3 | 75.9 | 76.8 | 0.9 | 80.4 | 80.0 | 80.8 | 0.8 |
| Dundee CityLD | 74.6 | 74.1 | 75.2 | 1.1 | 80.0 | 79.5 | 80.4 | 0.9 |
| Dundee CityMD | 68.5 | 67.1 | 69.9 | 2.8 | 75.8 | 74.5 | 77.0 | 2.6 |
| Dundee City | 73.7 | 73.2 | 74.2 | 1.0 | 79.3 | 78.9 | 79.8 | 0.9 |
| East AyrshireLD | 75.2 | 74.7 | 75.8 | 1.1 | 78.6 | 78.1 | 79.1 | 1.0 |
| East AyrshireMD | 69.5 | 68.1 | 71.0 | 3.0 | 76.2 | 75.0 | 77.4 | 2.4 |
| East Ayrshire | 74.4 | 73.9 | 75.0 | 1.0 | 78.3 | 77.8 | 78.7 | 0.9 |

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

(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 | 78.9 | 78.3 | 79.4 | 1.1 | 83.0 | 82.5 | 83.6 | 1.1 |
| East DunbartonshireMD | 72.5 | 71.2 | 73.8 | 2.7 | 78.0 | 76.9 | 79.2 | 2.3 |
| East Dunbartonshire | 77.9 | 77.3 | 78.4 | 1.0 | 82.1 | 81.6 | 82.6 | 1.0 |
| East LothianLD | 76.9 | 76.3 | 77.5 | 1.2 | 81.3 | 80.7 | 81.8 | 1.1 |
| East LothianMD | 73.5 | 72.0 | 75.0 | 3.0 | 79.5 | 78.2 | 80.7 | 2.6 |
| East Lothian | 76.5 | 75.9 | 77.0 | 1.1 | 81.0 | 80.5 | 81.5 | 1.0 |
| East RenfrewshireLD | 78.5 | 77.9 | 79.1 | 1.3 | 82.7 | 82.1 | 83.2 | 1.1 |
| East RenfrewshireMD | 71.7 | 70.2 | 73.2 | 3.0 | 77.7 | 76.2 | 79.2 | 3.0 |
| East Renfrewshire | 77.4 | 76.8 | 78.0 | 1.2 | 81.8 | 81.3 | 82.3 | 1.0 |
| Edinburgh, City ofLD | 77.6 | 77.3 | 77.9 | 0.5 | 81.9 | 81.6 | 82.1 | 0.5 |
| Edinburgh, City ofMD | 68.5 | 67.8 | 69.2 | 1.4 | 77.1 | 76.4 | 77.8 | 1.4 |
| Edinburgh, City of | 76.1 | 75.8 | 76.3 | 0.5 | 81.1 | 80.9 | 81.4 | 0.5 |
| Eilean SiarLD | 73.9 | 72.7 | 75.1 | 2.4 | 81.1 | 80.0 | 82.1 | 2.1 |
| Eilean SiarMD | 68.2 | 64.8 | 71.7 | 6.9 | 78.9 | 76.2 | 81.5 | 5.3 |
| Eilean Siar | 73.1 | 71.9 | 74.2 | 2.3 | 80.8 | 79.8 | 81.8 | 2.0 |
| FalkirkLD | 75.9 | 75.4 | 76.3 | 0.9 | 79.8 | 79.4 | 80.2 | 0.8 |
| FalkirkMD | 69.4 | 68.2 | 70.6 | 2.5 | 77.4 | 76.3 | 78.5 | 2.3 |
| Falkirk | 74.9 | 74.5 | 75.3 | 0.9 | 79.5 | 79.1 | 79.8 | 0.7 |
| FifeLD | 76.6 | 76.3 | 76.9 | 0.6 | 80.6 | 80.4 | 80.9 | 0.6 |
| FifeMD | 70.8 | 69.9 | 71.6 | 1.6 | 77.4 | 76.6 | 78.2 | 1.5 |
| Fife | 75.7 | 75.4 | 76.0 | 0.6 | 80.2 | 79.9 | 80.4 | 0.5 |
| Glasgow CityLD | 71.6 | 71.3 | 71.8 | 0.5 | 77.7 | 77.5 | 78.0 | 0.5 |
| Glasgow CityMD | 64.7 | 64.1 | 65.3 | 1.2 | 73.3 | 72.7 | 73.9 | 1.2 |
| Glasgow City | 70.6 | 70.4 | 70.8 | 0.5 | 77.1 | 76.9 | 77.3 | 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 | 76.6 | 76.2 | 77.0 | 0.8 | 81.2 | 80.8 | 81.6 | 0.7 |
| HighlandMD | 69.8 | 68.7 | 70.8 | 2.1 | 77.8 | 76.9 | 78.7 | 1.8 |
| Highland | 75.6 | 75.2 | 75.9 | 0.8 | 80.7 | 80.4 | 81.1 | 0.7 |
| InverclydeLD | 73.0 | 72.3 | 73.7 | 1.4 | 78.6 | 78.0 | 79.3 | 1.3 |
| InverclydeMD | 68.7 | 67.0 | 70.3 | 3.3 | 75.7 | 74.0 | 77.4 | 3.4 |
| Inverclyde | 72.4 | 71.7 | 73.0 | 1.3 | 78.2 | 77.6 | 78.8 | 1.2 |
| MidlothianLD | 76.8 | 76.2 | 77.5 | 1.3 | 80.7 | 80.1 | 81.2 | 1.1 |
| MidlothianMD | 70.8 | 69.1 | 72.5 | 3.4 | 77.2 | 75.8 | 78.6 | 2.8 |
| Midlothian | 75.9 | 75.2 | 76.5 | 1.3 | 80.1 | 79.6 | 80.6 | 1.0 |
| MorayLD | 76.8 | 76.2 | 77.4 | 1.2 | 80.5 | 80.0 | 81.1 | 1.1 |
| MorayMD | 72.3 | 70.7 | 73.9 | 3.2 | 78.6 | 77.0 | 80.1 | 3.1 |
| Moray | 76.2 | 75.7 | 76.8 | 1.2 | 80.3 | 79.7 | 80.8 | 1.1 |
| North AyrshireLD | 74.7 | 74.2 | 75.3 | 1.0 | 79.6 | 79.2 | 80.1 | 0.9 |
| North AyrshireMD | 69.2 | 67.9 | 70.5 | 2.6 | 75.3 | 74.1 | 76.6 | 2.5 |
| North Ayrshire | 73.9 | 73.4 | 74.4 | 1.0 | 79.0 | 78.5 | 79.4 | 0.9 |
| North LanarkshireLD | 74.1 | 73.7 | 74.4 | 0.6 | 78.7 | 78.4 | 79.0 | 0.6 |
| North LanarkshireMD | 67.7 | 66.9 | 68.5 | 1.7 | 75.8 | 75.0 | 76.5 | 1.5 |
| North Lanarkshire | 73.1 | 72.8 | 73.4 | 0.6 | 78.3 | 78.0 | 78.5 | 0.5 |
| Orkney IslandsLD | 75.7 | 74.4 | 77.0 | 2.7 | 82.3 | 81.1 | 83.4 | 2.3 |
| Orkney IslandsMD | 73.3 | 70.7 | 75.9 | 5.2 | 79.3 | 76.5 | 82.1 | 5.6 |
| Orkney Islands | 75.2 | 74.0 | 76.4 | 2.4 | 81.5 | 80.4 | 82.5 | 2.1 |
| Perth & KinrossLD | 78.0 | 77.5 | 78.4 | 0.9 | 81.7 | 81.2 | 82.1 | 0.8 |
| Perth & KinrossMD | 72.3 | 70.9 | 73.7 | 2.8 | 79.9 | 78.5 | 81.2 | 2.7 |
| Perth & Kinross | 77.2 | 76.7 | 77.6 | 0.9 | 81.3 | 80.9 | 81.7 | 0.8 |

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

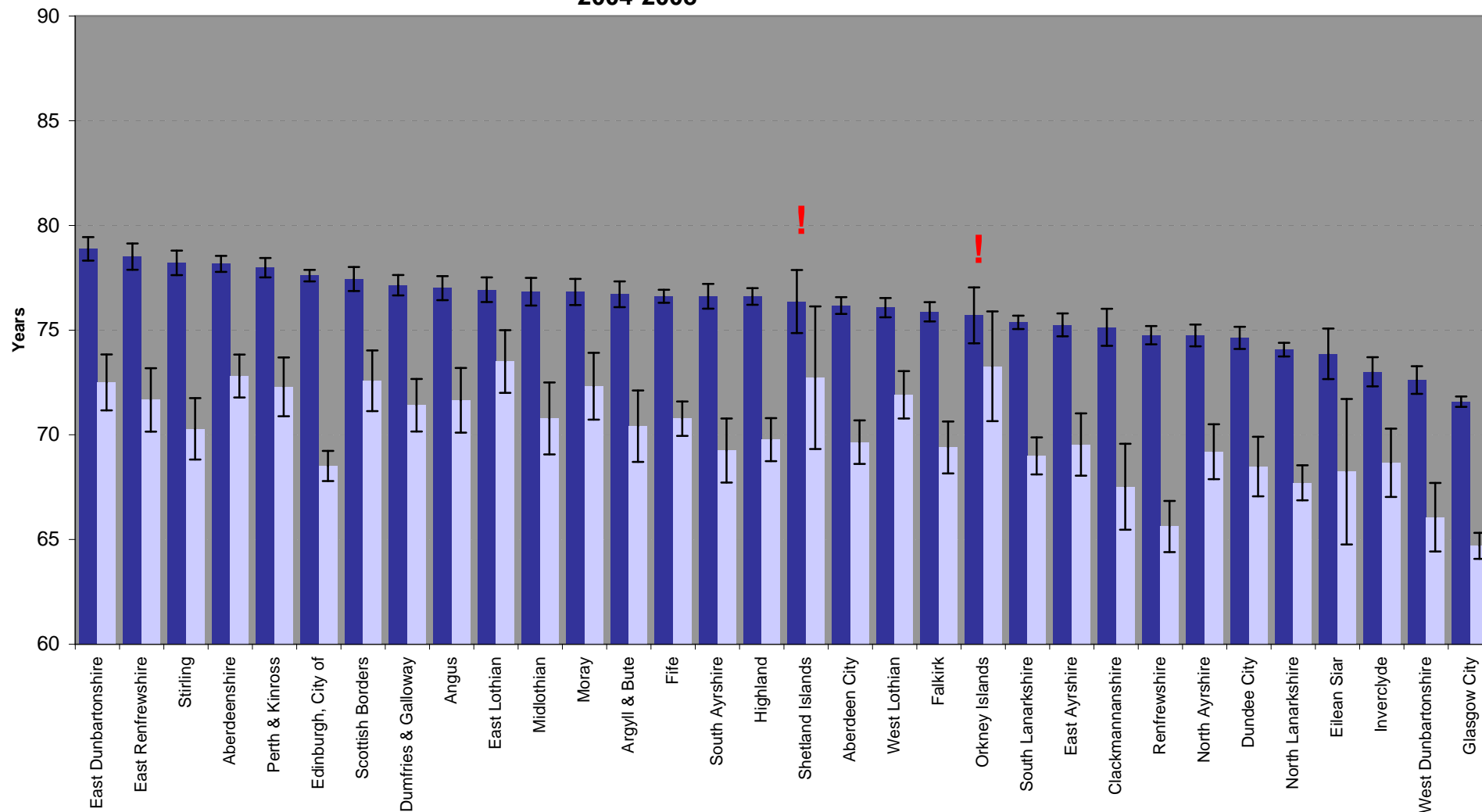
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| | Males | | | | Females | | | |
|----------------------------|------------------------------|--------------|--------------|--------------|------------------------------|--------------|--------------|--------------|
| | Expectation of Life at birth | Lower 95% CI | Upper 95% CI | Length of CI | Expectation of Life at birth | Lower 95% CI | Upper 95% CI | Length of CI |
| RenfrewshireLD | 74.8 | 74.3 | 75.2 | 0.9 | 79.3 | 78.9 | 79.7 | 0.8 |
| RenfrewshireMD | 65.6 | 64.4 | 66.8 | 2.4 | 74.1 | 73.0 | 75.3 | 2.2 |
| Renfrewshire | 73.5 | 73.0 | 73.9 | 0.8 | 78.6 | 78.3 | 79.0 | 0.7 |
| Scottish BordersLD | 77.4 | 76.9 | 78.0 | 1.2 | 81.2 | 80.7 | 81.7 | 1.0 |
| Scottish BordersMD | 72.6 | 71.1 | 74.0 | 2.9 | 77.8 | 76.6 | 78.9 | 2.3 |
| Scottish Borders | 76.7 | 76.2 | 77.3 | 1.1 | 80.7 | 80.2 | 81.1 | 0.9 |
| Shetland IslandsLD | 76.4 | 74.9 | 77.9 | 3.0 | 82.1 | 80.7 | 83.5 | 2.7 |
| Shetland IslandsMD | 72.7 | 69.3 | 76.1 | 6.8 | 78.0 | 74.3 | 81.6 | 7.3 |
| Shetland Islands | 75.8 | 74.4 | 77.2 | 2.7 | 81.4 | 80.1 | 82.7 | 2.6 |
| South AyrshireLD | 76.6 | 76.0 | 77.2 | 1.2 | 81.0 | 80.6 | 81.5 | 1.0 |
| South AyrshireMD | 69.2 | 67.7 | 70.8 | 3.1 | 78.5 | 77.2 | 79.8 | 2.5 |
| South Ayrshire | 75.5 | 75.0 | 76.1 | 1.1 | 80.7 | 80.3 | 81.1 | 0.9 |
| South LanarkshireLD | 75.4 | 75.0 | 75.7 | 0.6 | 80.1 | 79.8 | 80.4 | 0.6 |
| South LanarkshireMD | 69.0 | 68.1 | 69.9 | 1.8 | 76.1 | 75.3 | 76.8 | 1.5 |
| South Lanarkshire | 74.4 | 74.1 | 74.7 | 0.6 | 79.5 | 79.2 | 79.7 | 0.5 |
| StirlingLD | 78.2 | 77.6 | 78.8 | 1.2 | 81.7 | 81.2 | 82.3 | 1.1 |
| StirlingMD | 70.3 | 68.8 | 71.7 | 2.9 | 76.7 | 75.4 | 78.0 | 2.6 |
| Stirling | 76.9 | 76.3 | 77.4 | 1.1 | 81.0 | 80.5 | 81.5 | 1.0 |
| West DunbartonshireLD | 72.6 | 72.0 | 73.3 | 1.3 | 78.6 | 78.0 | 79.1 | 1.2 |
| West DunbartonshireMD | 66.1 | 64.4 | 67.7 | 3.3 | 74.5 | 73.0 | 75.9 | 2.9 |
| West Dunbartonshire | 71.7 | 71.1 | 72.3 | 1.2 | 77.9 | 77.4 | 78.5 | 1.1 |
| West LothianLD | 76.1 | 75.6 | 76.5 | 0.9 | 79.7 | 79.3 | 80.1 | 0.8 |
| West LothianMD | 71.9 | 70.8 | 73.0 | 2.3 | 76.1 | 75.1 | 77.1 | 2.0 |
| West Lothian | 75.4 | 75.0 | 75.9 | 0.9 | 79.1 | 78.8 | 79.5 | 0.7 |

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

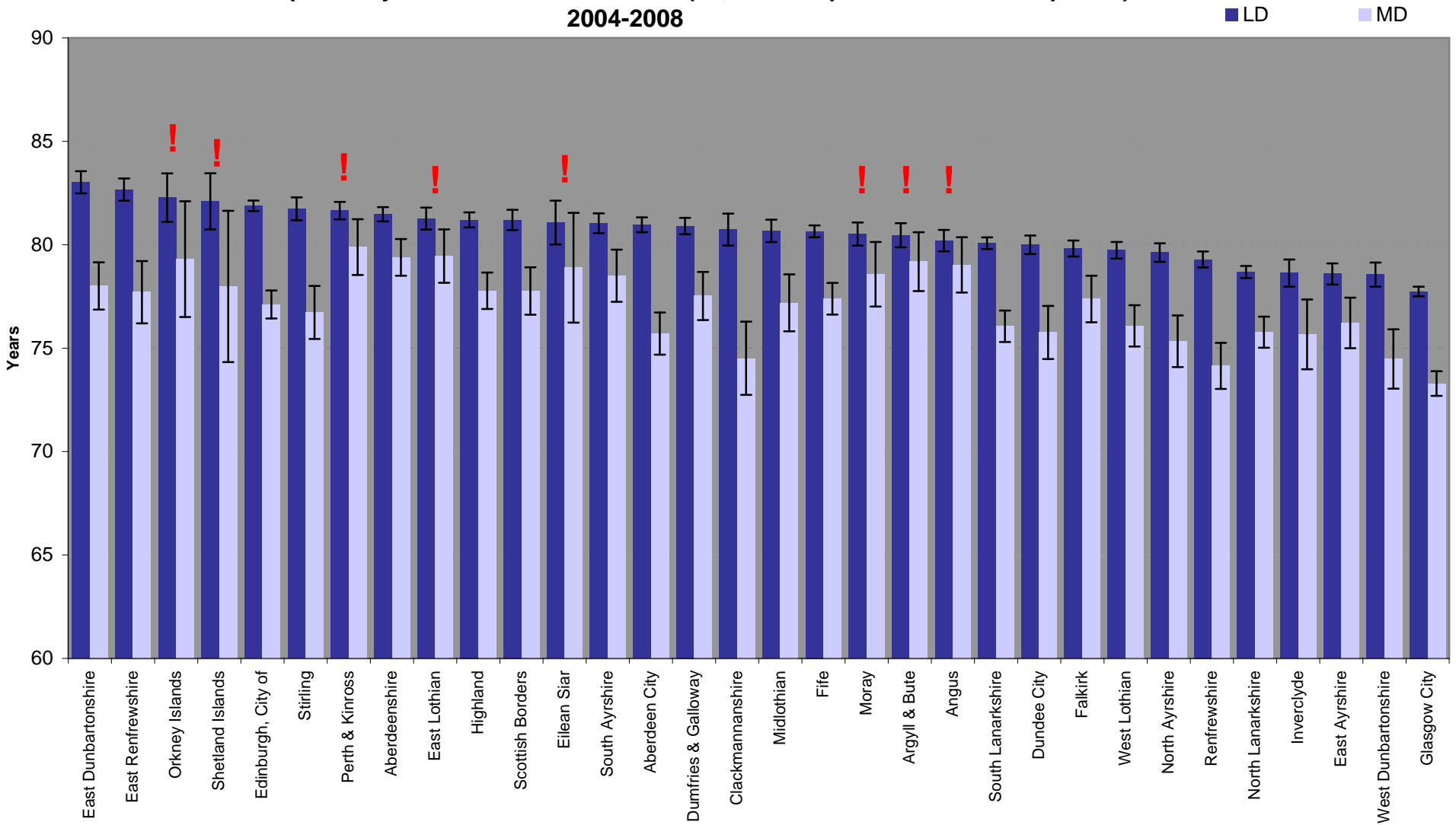
Male Life Expectancy at birth in Council areas (all, most deprived and least deprived) 2004-2008

■ LD ■ MD



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

Female Life Expectancy at birth in Council areas (all, most deprived and least deprived) 2004-2008



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