Office for National Statistics

Statistical bulletin

Health state life expectancies by national deprivation quintiles, Wales: 2018 to 2020

Life expectancy and years expected to live in "Good" health and disability-free using national indices of deprivation to measure socioeconomic inequalities in Wales.

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1 . Main points

- In 2018 to 2020, male life expectancy at birth in the most deprived areas in Wales was 74.1 years compared with 81.6 years in the least deprived areas; the same comparison among females was 78.4 years and 84.7 years respectively.

- Female life expectancy at birth in the most deprived areas significantly decreased by 0.7 years between 2015 to 2017 and 2018 to 2020.

- Male healthy life expectancy (HLE) at birth in 2018 to 2020 was 54.2 years in the most deprived areas compared with 67.6 years in the least deprived areas; for females, the same comparison was 53.3 and 70.2 years, respectively.

- There was a statistically significant increase in female HLE at birth of 2.1 years in the least deprived areas between 2015 to 2017 and 2018 to 2020.

- In 2018 to 2020, females in the most deprived areas were expected to live more than a third of their lives with activity-limiting illness.

- In 2018 to 2020, the Slope Index of Inequality (SII) showed males in the most deprived areas were living 9.1 years fewer than those in the least deprived areas; the time spent in good health was 16.9 years fewer, and the time spent disability-free was 16.3 years fewer.

- In 2018 to 2020, the SII showed females in the most deprived areas were living 7.7 years fewer than in the least deprived areas; the time spent in good health was 20.2 years fewer, and the time spent disability-free was 20.0 years fewer.

Please note health state life expectancy data include 2020 data, which means 2020 coronavirus (COVID-19) deaths are included. The data cannot show the full impact of COVID-19 deaths on inequalities.

2 . Life expectancy at birth, by the Welsh Index of Multiple Deprivation

All figures in this bulletin have been rounded to 1 decimal place, statistical significance has been determined using unrounded figures.

In the period 2018 to 2020, life expectancy (LE) at birth among males living in the most deprived areas was 74.1 years, compared with 81.6 years in the least deprived areas (Figure 1). Female LE at birth in the most deprived areas was 78.4 years, compared with 84.7 years in the least deprived areas. Area deprivation in this release is based on the Welsh Index of Multiple Deprivation (WIMD) 2019. Deprivation areas have been split into quintiles, from the 20% most deprived through to the 20% least deprived. Previous releases have examined area deprivation in deciles.

Figure 1: Male life expectancy in the most deprived areas of Wales was fewer than 75 years

Life expectancy, Wales, 2018 to 2020

Figure 1: Male life expectancy in the most deprived areas of Wales was fewer than 75 years

Life expectancy, Wales, 2018 to 2020
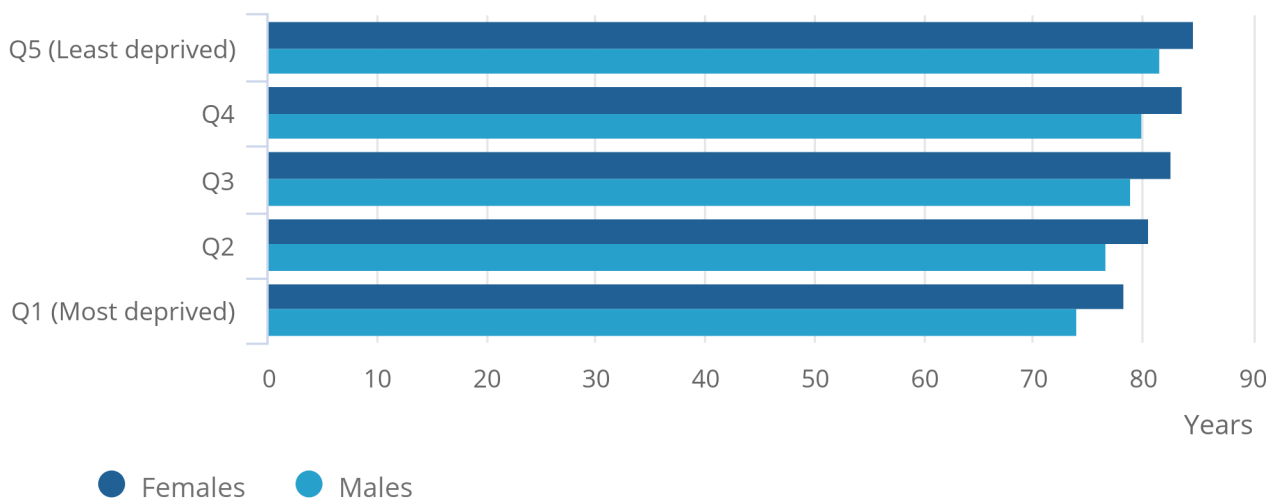
Source: Office for National Statistics

Notes:

1. Life expectancy (LE) includes all usual residents.

2. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales and Quintile 5 represents the least deprived 20%.

Figure 1 shows a regular pattern of significant improvement in LE as deprivation lessens for both males and females. In addition, the female advantage in LE is influenced by area deprivation. Females living in the most deprived areas (Quintile 1) had significantly lower LE than males living in more advantaged areas (Quintiles 4 and 5).

Since 2015 to 2017 female LE significantly fell by 0.7 years in the most deprived areas (Figure 2). All other changes were not statistically significant.

The mortality increase in 2020 associated with the coronavirus (COVID-19) pandemic have affected LE changes; the most deprived areas experienced the highest rates of death involving COVID-19.

Figure 2: Female life expectancy in the most deprived areas was 0.7 years shorter in 2018 to 2020 compared with 2015 to 2017

Life expectancy, Wales, 2015 to 2017 and 2018 to 2020

Figure 2: Female life expectancy in the most deprived areas was 0.7 years shorter in 2018 to 2020 compared with 2015 to 2017

Life expectancy, Wales, 2015 to 2017 and 2018 to 2020
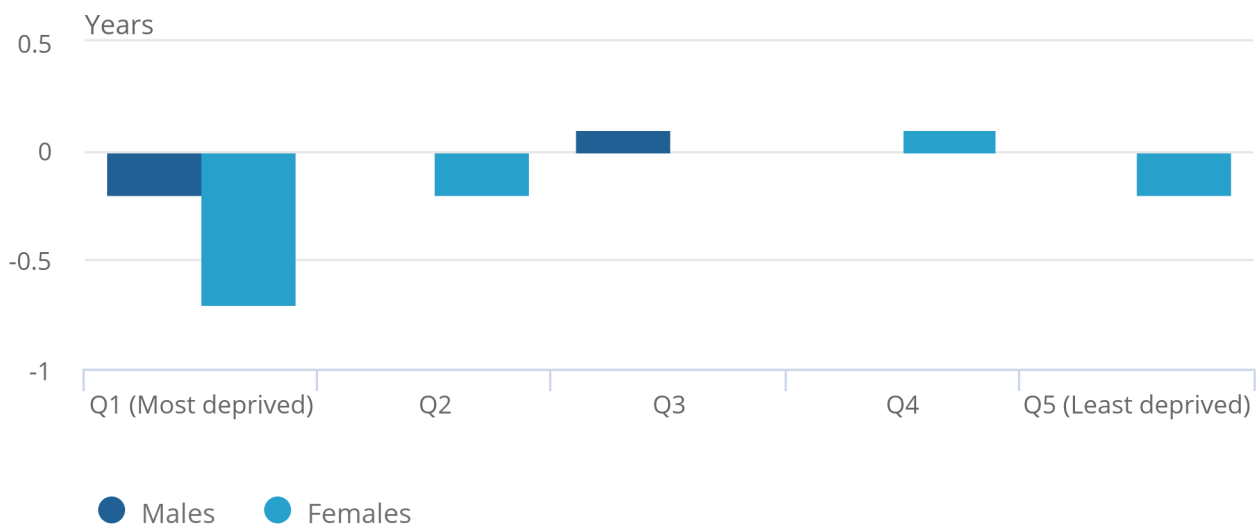
Source: Office for National Statistics

Notes:

1. Life expectancy (LE) includes all usual residents.

2. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales, and Quintile 5 represents the least deprived 20%.

3. The absence of columns indicates no change in life expectancy rounded to 1 decimal place.

3 . Healthy life expectancy at birth, by the Welsh Index of Multiple Deprivation
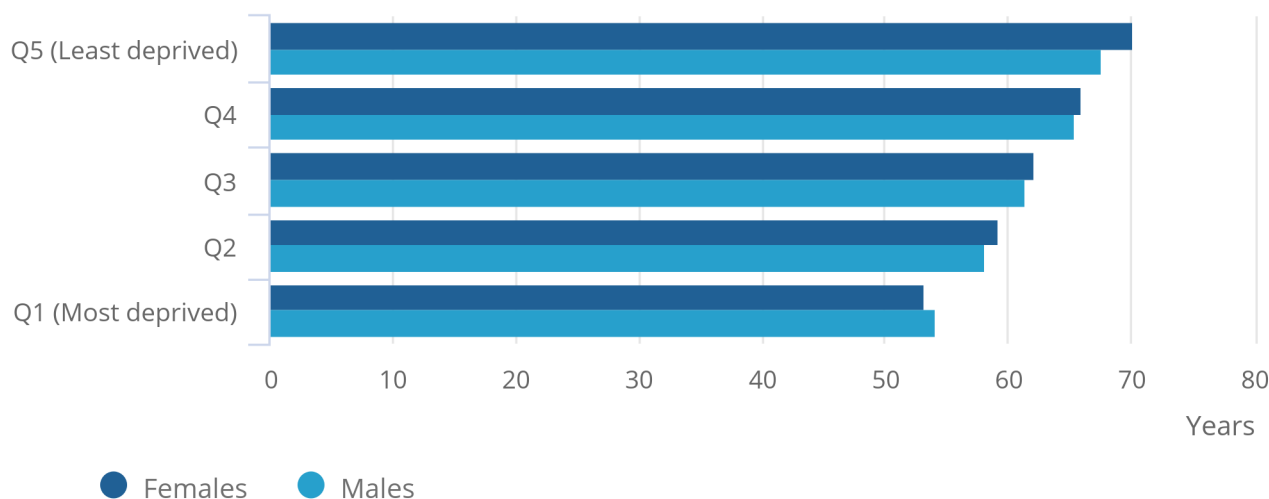
Male healthy life expectancy (HLE) at birth in 2018 to 2020 was lowest in the most deprived areas; males across their life course were expected to spend 54.2 years on average in good general health (Figure 3). This compares with 67.6 years in the least deprived areas. For females it was 53.3 years and 70.2 years, respectively.

Figure 3: Males and females living in the most deprived areas were living fewer than 55 healthy years over their lifetimes

Healthy life expectancy at birth, Wales, 2018 to 2020

Figure 3: Males and females living in the most deprived areas were living fewer than 55 healthy years over their lifetimes

Healthy life expectancy at birth, Wales, 2018 to 2020

Source: Office for National Statistics – Annual Population Survey, 2011 Census

Notes:

1. Mortality data include all usual residents.

2. The health state prevalence estimates used to estimate healthy life expectancy (HLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments, except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

3. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales, and Quintile 5 represents the least deprived 20%.

Females mostly had higher HLE than males, but this was reversed in the most deprived areas. Unlike life expectancy, only Quintile 5 had significantly higher female HLE at birth than for males, showing differences in HLE between males and females for a given level of deprivation is smaller than life expectancy.

Only males and females living in the least deprived areas (Quintiles 4 and 5) were expected to live more than 65 years in "good" general health.
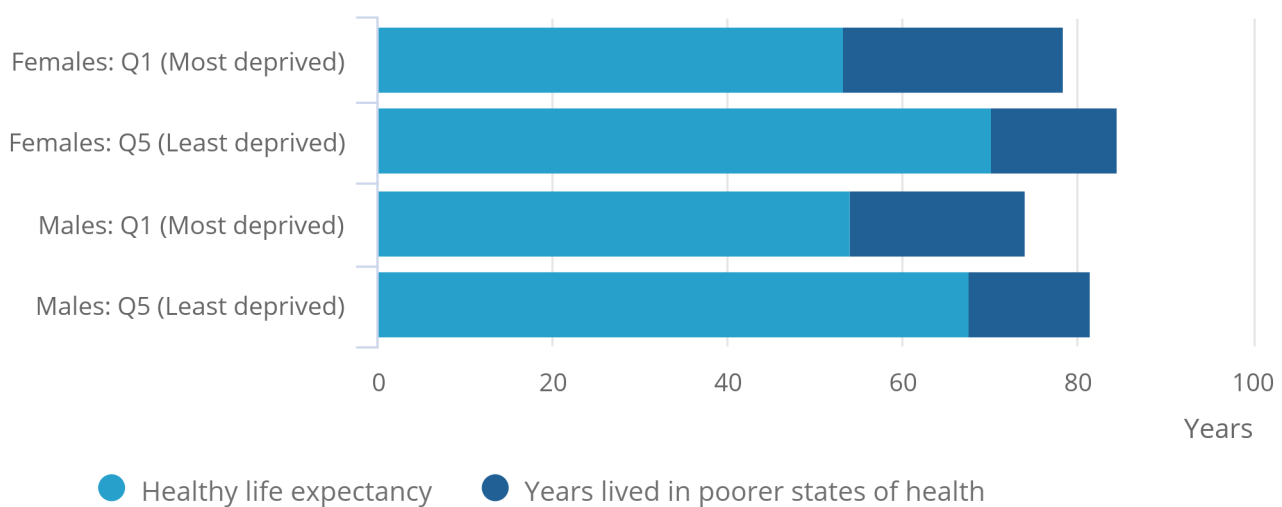
Those living in the most deprived areas had lower HLE and life expectancy, they also were expected to spend substantially more years in "poorer states of health" (See Glossary for definition). For females, this amounted to more than 25.1 years (Figure 4).

Figure 4: Females living in the most deprived areas were expected to spend 25.1 years of their lives in poorer states of health

Healthy life expectancy at birth and years lived in poorer states of health, Wales, 2018 to 2020

Figure 4: Females living in the most deprived areas were expected to spend 25.1 years of their lives in poorer states of health

Healthy life expectancy at birth and years lived in poorer states of health, Wales, 2018 to 2020

Source: Office for National Statistics – Annual Population Survey, 2011 Census

Notes:

1. Mortality data include all usual residents.

2. The health state prevalence estimates used to estimate healthy life expectancy (HLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments, except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

3. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales, and Quintile 5 represents the least deprived 20%.

Between 2015 to 2017 and 2018 to 2020 female HLE at birth significantly increased by 2.1 years in the least deprived areas, but all other changes were not statistically significant.

4 . Disability-free life expectancy at birth, by the Welsh Index of Multiple Deprivation

Female disability-free life expectancy (DFLE) at birth was lowest in the most deprived areas, where females across their life course were expected to spend 49.8 years on average free of activity-limiting illness compared with 66.1 years in the least deprived areas (Figure 5).
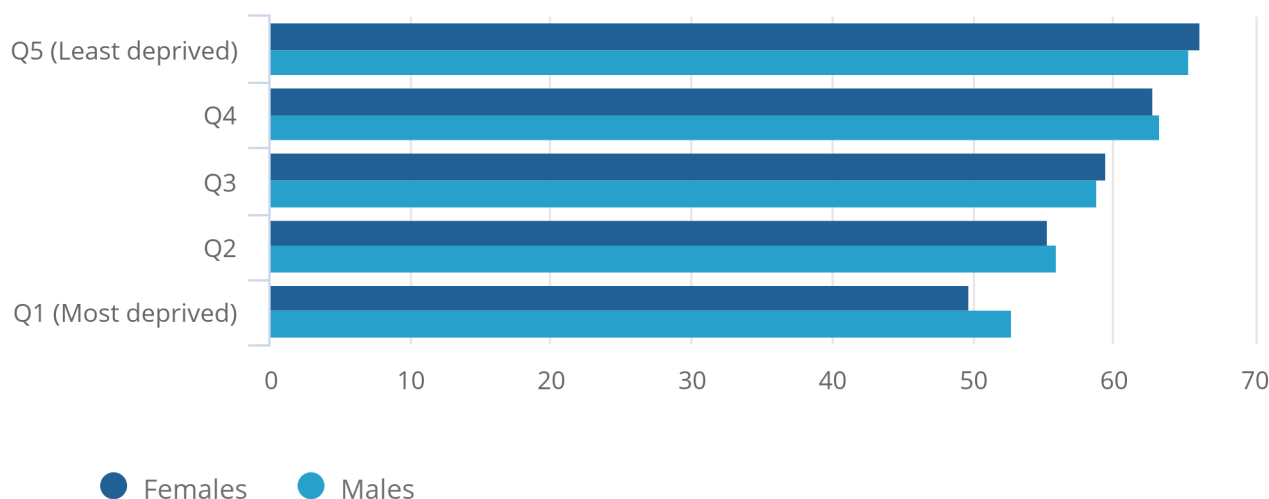
For males the same comparison was 52.7 years and 65.4 years, respectively.

Figure 5: Females in the most deprived areas lived fewer than 50 years disability-free

Disability-free life expectancy at birth, Wales, 2018 to 2020

Figure 5: Females in the most deprived areas lived fewer than 50 years disability-free

Disability-free life expectancy at birth, Wales, 2018 to 2020

Source: Office for National Statistics – Annual Population Survey, 2011 Census

Notes:

1. Mortality data include all usual residents.

2. The health state prevalence estimates used to estimate disability-free life expectancy (DFLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments, except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

3. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales, and Quintile 5 represents the least deprived 20%.
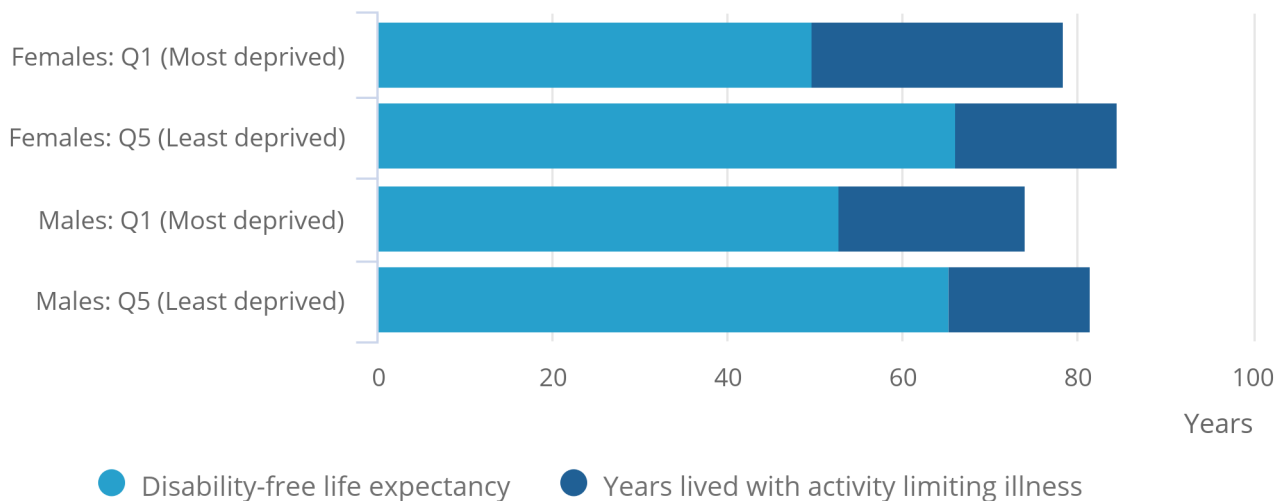
Those living in the most deprived areas had lower DFLE and life expectancy, they also spent substantially more years with activity-limiting illness than those living in the least deprived areas (Figure 6).

Figure 6: Females in the most deprived areas were expected to live more than a third of their lives with activity-limiting illness

Disability-free life expectancy at birth and years lived with activity limiting illness, Wales, 2018 to 2020

Figure 6: Females in the most deprived areas were expected to live more than a third of their lives with activity-limiting illness

Disability-free life expectancy at birth and years lived with activity limiting illness, Wales, 2018 to 2020

Source: Office for National Statistics – Annual Population Survey, 2011 Census

Notes:

1. Mortality data include all usual residents.

2. The health state prevalence estimates used to estimate disability-free life expectancy (DFLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments, except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

3. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation 2019 (WIMD19). Quintile 1 represents the most deprived 20% of small areas in Wales, and Quintile 5 represents the least deprived 20%.

Females living in the most deprived areas were expected to live 28.6 years on average with activity limiting illness across their life course of 78.4 years (more than a third of lifespan), compared with 18.6 years in the least deprived areas (approximately a fifth of lifespan).

5 . The Slope Index of Inequality for life expectancy and health state life expectancies

The Slope Index of Inequality (SII) measures the absolute difference in life expectancy (LE) and each health state life expectancy (see Glossary). The higher the SII, the more unequal the population is with regard to the outcome of interest.

In 2018 to 2020, the inequality in male LE at birth stood at 9.1 years (Figure 7), 1.4 years wider than the female gap (7.7 years).

Figure 7: Females in the most deprived areas were living 20.2 years fewer in good general health than those in the least deprived areas

Slope Index of inequality, life expectancy and health state life expectancies, Wales 2018 to 2020

Figure 7: Females in the most deprived areas were living 20.2 years fewer in good general health than those in the least deprived areas

Slope Index of inequality, life expectancy and health state life expectancies, Wales 2018 to 2020
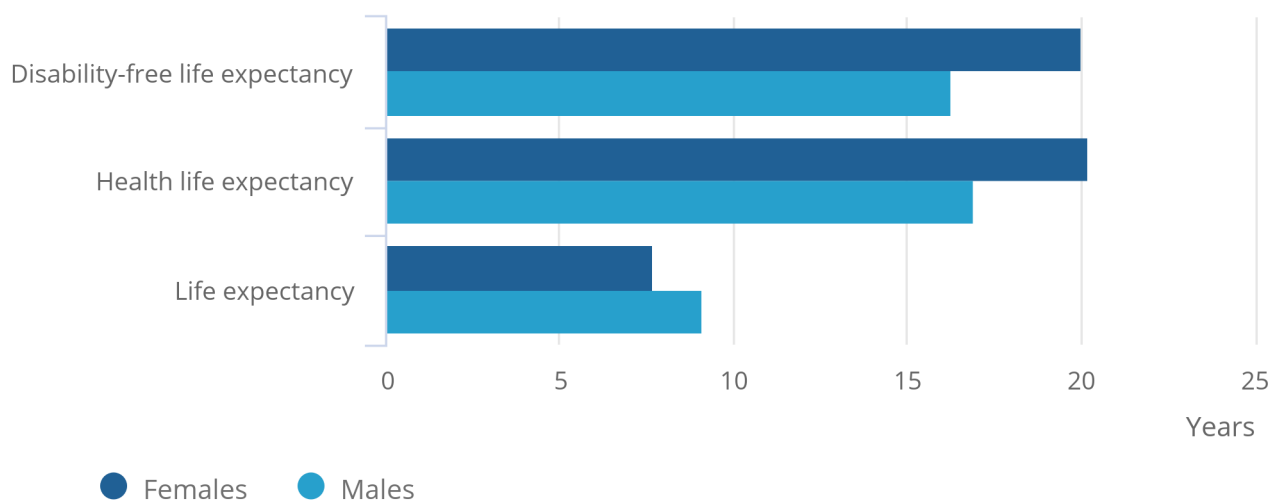
Source: Office for National Statistics – Annual Population Survey, 2011 Census

Notes:

1. Mortality data include all usual residents.

2. The health state and disability prevalence estimates used to estimate healthy life expectancy (HLE) and disability-free life expectancy (DFLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments, except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

3. Slope Index of Inequality (SII) is calculated by taking the difference between the extremes of a population weighted regression line of best fit.

Healthy life expectancy (HLE) at birth had a more substantial gap; for females it was 20.2 years, compared with 16.9 years for males. The SII in male disability-free life expectancy at birth was 16.3 years, while for females it was 20.0 years. For all measures, the changes in the SII since 2015 to 2017 were not statistically significant.

Table 1: Slope Index of Inequality in life expectancy and healthy life expectancy at birth for males and females Wales, between 2015 to 2017 and 2018 to 2020

	2015 to 2017	2018 to 2020		
	SII (Years)	SII (Years)	SII Difference	Range Difference
Males at birth				
LE	8.8	9.1	0.3	0.2
HLE	17.9	16.9	-1.0	-1.8
DFLE	16.9	16.3	-0.6	-1.3
Females at birth				
LE	7.1	7.7	0.6	0.5
HLE	18.4	20.2	1.8	2.1
DFLE	17.6	20	2.4	2.4

Source: Source: Office for National Statistics - Annual Population Survey, 2011 Census

Notes

1. The health state and disability prevalence estimates used to estimate healthy life expectancy (HLE) and disability-free life expectancy (DFLE) are sourced from Annual Population Survey (APS) data and data from the 2011 Census. The APS excludes residents of communal establishments except NHS housing and students in halls of residence where inclusion takes place at their parents' address.

2. Range is calculated by taking the difference between Quintile 1 (most deprived) and Quintile 5 (least deprived). The range difference is then calculated by taking the difference between the ranges from 2015 to 2017 and 2018 to 2020.

3. Slope Index of Inequality (SII) is calculated by taking the difference between the extremes of a population weighted regression line of best fit.

6 . Health state life expectancies data

[Health state life expectancies by deprivation quintiles, Wales](#)
Dataset | Released 25 March 2022
Life expectancy (LE), healthy life expectancy (HLE), disability-free life expectancy (DFLE), Slope Index of Inequality (SII) and range by national deprivation quintiles (WIMD 2019), Wales, 2015 to 2017 and 2018 to 2020.

[Health state life expectancies by Welsh Index of Multiple Deprivation (WIMD 2014 and WIMD 2019), Wales, all ages](#)
Dataset | Released on 22 March 2021
Life expectancy (LE), healthy life expectancy (HLE), disability-free life expectancy (DFLE) by national deprivation deciles (WIMD 2014 and WIMD 2019), Wales, 2017 to 2019.

[Health state life expectancies by Welsh Index of Multiple Deprivation (WIMD 2014 and WIMD 2019), Wales, at birth and age 65 years](#)
Dataset | Released on 22 March 2021
Life expectancy (LE), healthy life expectancy (HLE), disability-free life expectancy (DFLE), Slope Index of Inequality (SII) and range at birth and age 65 years by national deprivation deciles (WIMD 2014 and WIMD 2019), Wales, 2011 to 2019.

[Health state life expectancies by Welsh Index of Multiple Deprivation Quintile (WIMD 2019), Wales, all ages](#)
Dataset | Released on 22 March 2021
Life expectancy (LE), healthy life expectancy (HLE), disability-free life expectancy (DFLE), Slope Index of Inequality (SII) and range at all ages by national deprivation deciles (WIMD 2014 and WIMD 2019), Wales, 2017 to 2019.

7 . Glossary

Period life expectancy

The life expectancy (LE) estimates reported in this bulletin are period-based. Period life expectancy at a given age for a quintile is the average number of years a person would live, if they experienced the quintile's age-specific mortality rates for that time period throughout their life.

Health state life expectancy

A generic term for summary measures of health that add a quality dimension to estimates of life expectancy by dividing expected lifespan into time spent in different states of health. In this release health state life expectancy encompasses measures based on health-related wellbeing (Healthy Life Expectancy) and functional health status (Disability-free Life Expectancy).

Healthy life expectancy

An estimate of lifetime spent in "very good" or "good" health, based on how individuals perceive their general health.

Poorer states of health

An individual perceiving their general health as 'Fair', 'Bad' or 'Very Bad'.

Disability-free life expectancy

An estimate of lifetime free from a limiting persistent illness that limits day-to-day activities. It is based upon a self-rated assessment of how health conditions and illnesses reduce an individual's ability to carry out day-to-day activities, including washing and dressing and shopping for essentials.

Confidence intervals

A measure of the uncertainty around a specific estimate. It is expected that the interval will contain the true value on 95 occasions if repeated 100 times. As intervals around estimates widen, the level of uncertainty about where the true value lies increases. The confidence intervals for the Slope Index of Inequality (SII) are calculated using a simulation program. Simulation is a method used to estimate the degree of uncertainty for measures where the statistical distributions underpinning the measure are too complex to analyse mathematically.

Statistical significance

The term "significant" refers to statistically significant changes or differences. Significance has been determined using the 95% confidence intervals, where instances of non-overlapping confidence intervals between estimates indicate the difference is unlikely to have arisen from random fluctuation.

Indices of Multiple Deprivation

The Welsh Indices of Multiple Deprivation 2019 (WIMD19) are a score based on the area as a whole and not everyone within a Lower layer Super Output Area (LSOA) necessarily experiences the same level or type of deprivation. For example, some unemployed individuals live in less deprived LSOAs, while some higher-income individuals live in more deprived LSOAs. Similarly, quintiles are a broad grouping and the levels of deprivation and the underlying factors determining the LSOA-level deprivation score will vary within it. Those LSOAs at the higher and lower end of each specific quintile may vary considerably from each other. Quintiles are calculated by ranking the LSOAs from most deprived to least deprived and dividing them into five equal groups. These range from the most deprived 20% (Quintile 1) of small areas nationally to the least deprived 20% (Quintile 5) of small areas nationally.

Slope Index of Inequality

The Slope Index of Inequality (SII) was used to assess the absolute inequality in life expectancy (LE) and each health state life expectancy between the least and most deprived quintiles. This indicator measures the gaps by taking account of the inequality across all adjacent quintiles of relative deprivation, rather than focusing only on the differencing of the two extremes.

8 . Measuring the data

This statistical bulletin presents estimates of life expectancy, healthy life expectancy and disability-free life expectancy for the Wales by deprivation quintiles.

Data sources

Life expectancy uses death registrations data held by the Office for National Statistics (ONS), which are compiled from information supplied when deaths are certified and registered as part of civil registration. Mid-year population estimates by age, sex and geographical area are used in combination with death registrations to calculate age-specific mortality rates used in life tables.

In addition, health state life expectancies use data collected as part of the Annual Population Survey (APS) and Census 2011 data. Health state prevalence rates are obtained from the three-year reweighted APS data set used in healthy life expectancy and disability-free life expectancy calculations.

As the method requires imputation and modelling, Census 2011 data are used to produce imputation adjustment factors and census-based health state prevalence.

See the Health state life expectancies, UK QMI for further details on the:

- data sources

- method for estimating health state life expectancies

- method for calculating the Slope Index of Inequality (SII)

- method for calculating confidence interval details for SII indicators

9 . Strengths and limitations

Strengths

- Health state life expectancies are estimated using the same sources of data, namely death registrations, the APS and the 2011 Census.

- Estimates based on abridged life tables have been shown to closely align with those based on complete life tables.

- The mortality data used give complete population coverage and ensure the estimates are of high precision, and representative of the underlying population at risk.

- The provision of health state life expectancy summary measures provide a quality of life dimension to length of life, which is useful for assessing health and social care needs and fitness for work to changing state pension ages.

Limitations

- Survey data are not routinely collected for those aged under 16 years and only sparsely for those aged 85 years and above, requiring imputation of prevalence for these age groups.

- Census 2011-based imputation adjustments and prevalence used in the modelling are temporal and therefore prone to change as they are applied further away from the census.

- The measures of health status are subjective self-reports and may be affected in their perception by demographic, cultural and socioeconomic factors.

10 . Related links

Welsh Index of Multiple Deprivation: index guidance
Webpage | 3 November 2021
Report outlining the Welsh Index of Multiple Deprivation.

Method changes to life and health state expectancies
Methodology | 26 November 2016
Report outlining the changes to life expectancy, healthy life expectancy and disability-free life expectancy.

Proposed method changes to UK health state life expectancies
Methodology | 7 December 2017
This report assesses three methods for future estimation of health state life expectancies and is consulting on these methods.

Health state life expectancies, UK: 2018 to 2020
Bulletin | Released 4 March 2022
The number of years people are expected to spend in different health states in constituent countries and local areas of the UK

Life expectancy for local areas of the UK: between 2001 to 2003 and 2018 to 2020
Bulletin | Released 23 September 2021
Subnational trends in the average number of years people will live beyond their current age measured by "period life expectancy".

Health state life expectancies by national deprivation deciles, Wales: 2017 to 2019
Bulletin | Released 22 March 2021
Life expectancy and years expected to live in "Good" health and disability-free using national indices of deprivation to measure socioeconomic inequalities in Wales.