Life Expectancy and Mortality in Wales

Introduction

The Life Expectancy and Mortality in Wales publication describes trends in life expectancy, healthy life expectancy and mortality, along with life expectancy decomposition analysis in Wales.

Key messages relating to each indicator are included in the slide banner. The notes sections provide further guidance on the indicator definition, any caveats, and the methods and data sources used.

Contents

Public Health Wales Observatory

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Definitions

Life expectancy is an estimate of the average number of years that newborn babies could expect to live, assuming that current mortality rates for the area in which they were born applied throughout their lives.

Healthy life expectancy is the average number of years a person can expect to live in good health, assuming that current mortality rates and levels of good health for the area in which they were born applied throughout their lives.

Life expectancy gap: This is defined as the difference between life expectancy estimates, either between two populations at a given point in time, or within a single population between two points of time.

Life expectancy decomposition method and interpretation for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. The Arriaga III method has been used, as described by Ponnapalli[1]. The method is based on a life table divided into 5-year age groups. The contributions of each age group are then distributed into causes of death using a method described by Preston and others[2]. Contributions are distributed proportionately according to the difference in mortality between time periods by cause of death within each age group.

Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

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1. Ponnapalli, K., A comparison of different methods for decomposition of changes in expectation of life at birth and differentials in life expectancy at birth. Demographic Research 2005. 12: p. 31.
2. Preston, S.H., P; Guillot, M, Demography: Measuring and Modelling Population Processes. 2005: Blackwell Publishing.

Good to know (2)

Life expectancy decomposition method and interpretation for age and cause of death (continued): The same decomposition method can also be used to assess the contribution of different age bands or causes of death to differences (or the gap) between areas with different levels of deprivation.

Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a given age group or cause of death was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Deprivation: The Welsh Index of Multiple Deprivation (WIMD) 2014 classification has been used in this report. WIMD is a measure of multiple deprivation at lower super output area level. A WIMD deprivation score is calculated using eight domains i.e. income, employment, health, education, access to services, housing, physical environment and community safety. It is an area-based rather than individual-based measure. It must therefore be noted that not everyone living in a deprived area is necessarily living in deprived circumstances and, equally, some people living in an area classed as least deprived may experience deprivation.

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Good to know (3)

Crude rate: A crude rate is the number of events occurring in a population over a specific time period, often expressed as the number of events per 100,000 of the population. Both the numerator (number of events) and denominator (usually mid-year population estimate) are based on the same geographical area and time period.

Age-specific rate: An age-specific rate provides a rate for a given age group. It is calculated in the same way as a crude rate with both the numerator (number of events) and denominator (usually mid-year population estimate) based on the same (usually quinary) age group.

Age-standardised rate: Age-standardisation allows comparison of rates across different populations while taking account of the different age structures of those populations. Failure to take account of differing age structures can be very misleading when comparing rates in different populations.

European age-standardised rate (EASR): The European age-standardised rate represents the overall rate you would get if the population had the same age-structure as a theoretical standard European population (direct age-standardisation). In order to calculate this we apply the rates which occur in each age band to the new (standard) population structure. The measure only allows for comparison between rates which have been standardised; it is not a proportion or risk of an event occurring and does not, of itself, involve a comparison with rates across Europe. The standard used throughout this report is the European Standard Population 2013.

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Male life expectancy in Wales increased by 2.6 years between 2001-03 and 2010-12. Since 2010-12, improvement has slowed down to 0.2 years.

Life expectancy at birth, years, males, United Kingdom and Wales, 2001-03 to 2015-17
Produced by Public Health Wales Observatory, using PHM & MYE (ONS)
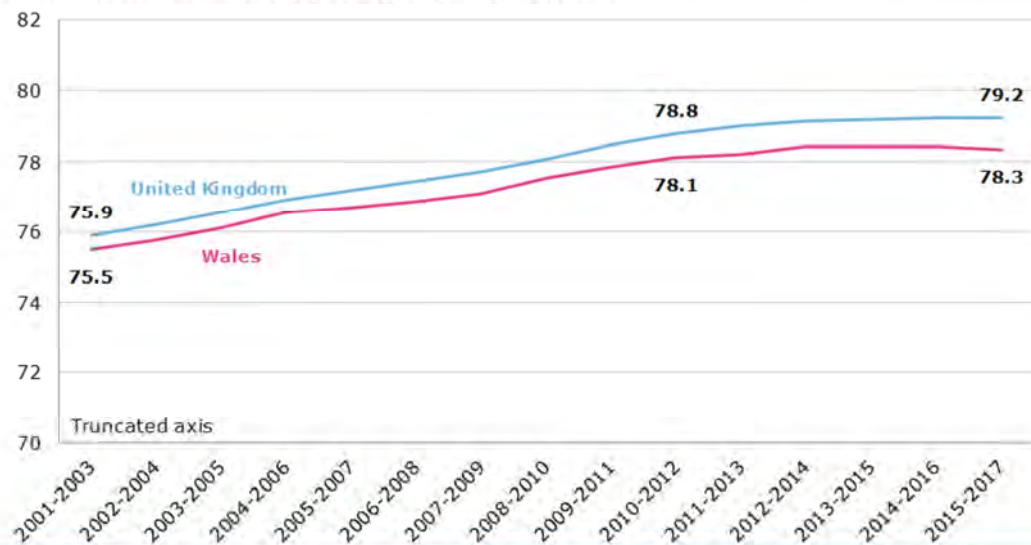
Life expectancy and healthy life expectancy   8

Indicator definition:
• Life expectancy at birth

Data source, demography, geography & period:
• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Males
• Wales & United Kingdom
• 2001-03 to 2015-17

Female life expectancy in Wales increased by 2 years between 2001-03 and 2010-12. Since 2010-12, improvement has slowed down to 0.1 years.

Life expectancy at birth, years, females, United Kingdom and Wales, 2001-03 to 2015-17
Produced by Public Health Wales Observatory, using PHM & MYE (ONS)

Life expectancy and healthy life expectancy — 9
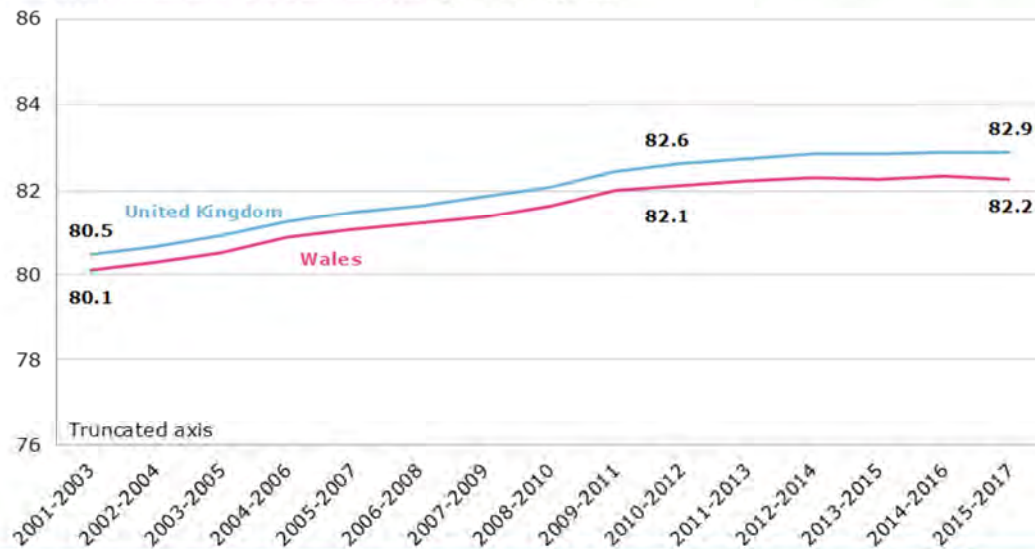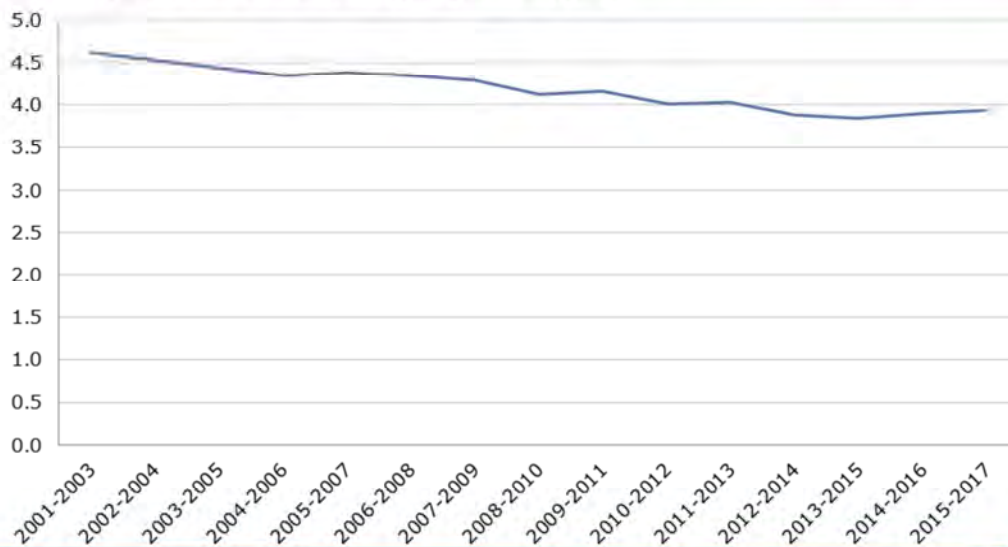
Indicator definition:
- Life expectancy at birth

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females
- Wales & United Kingdom
- 2001-03 to 2015-17

The life expectancy gap between males and females was 4.6 years in 2001-03. This has steadily narrowed since then to 3.9 years in 2012-14, due to greater increases in male life expectancy.

Gap in life expectancy at birth, years, males and females, Wales, 2001-03 to 2015-17
Produced by Public Health Wales Observatory, using PHM & MYE (ONS)

Life expectancy and healthy life expectancy   10

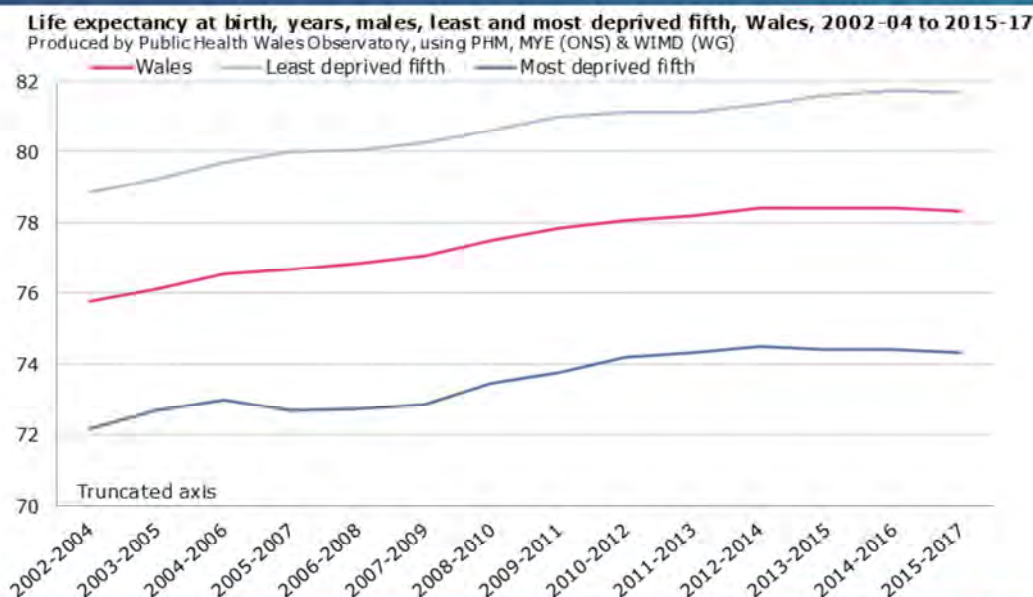**Indicator definition:**
- Gap in life expectancy at birth - a measure of the absolute difference in years of life expectancy at birth between the males and females.

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males & females
- Wales
- 2001-03 to 2015-17

There has been a greater increase in male life expectancy in the least deprived fifth over the whole period. Both saw a slight decrease in life expectancy in the last period, with life expectancy decreasing in the most deprived fifth in two out of the last three periods.

Life expectancy at birth, years, males, least and most deprived fifth, Wales, 2002-04 to 2015-17
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales   — Least deprived fifth   — Most deprived fifth

Life expectancy and healthy life expectancy   11

Indicator definition:
- Life expectancy at birth

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Males
- Wales, least and most deprived fifth
- 2002-04 to 2015-17

Female life expectancy in the least deprived fifth has improved by almost one year more than in the most deprived fifth over the whole period. In the last period, life expectancy in the most deprived fifth decreased by almost 20 weeks.

Life expectancy at birth, years, females, least and most deprived fifth, Wales, 2002-04 to 2015-17
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

Wales   Least deprived fifth   Most deprived fifth

Truncated axis

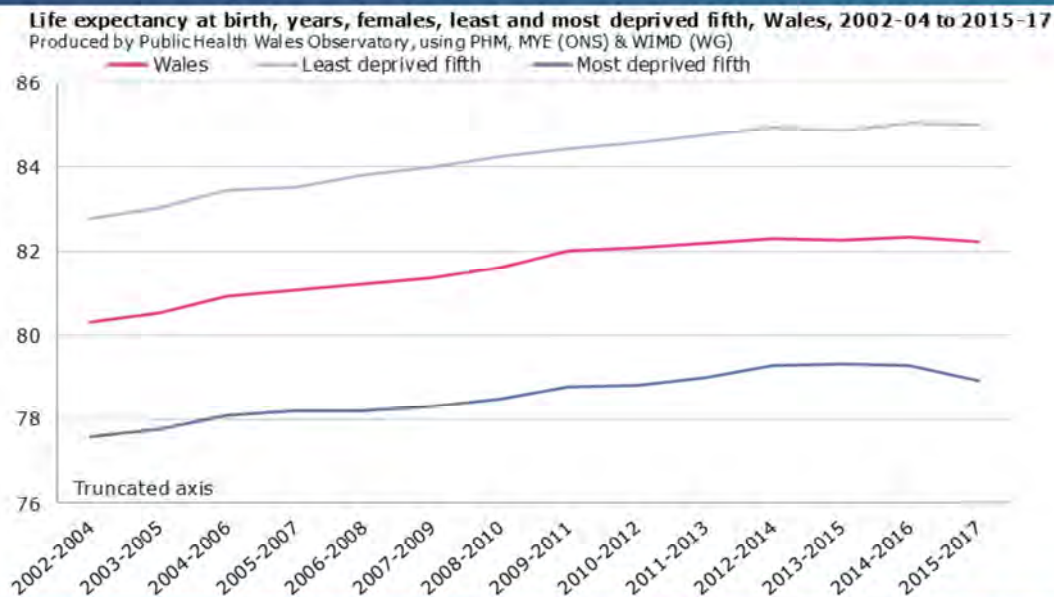Life expectancy and healthy life expectancy   12
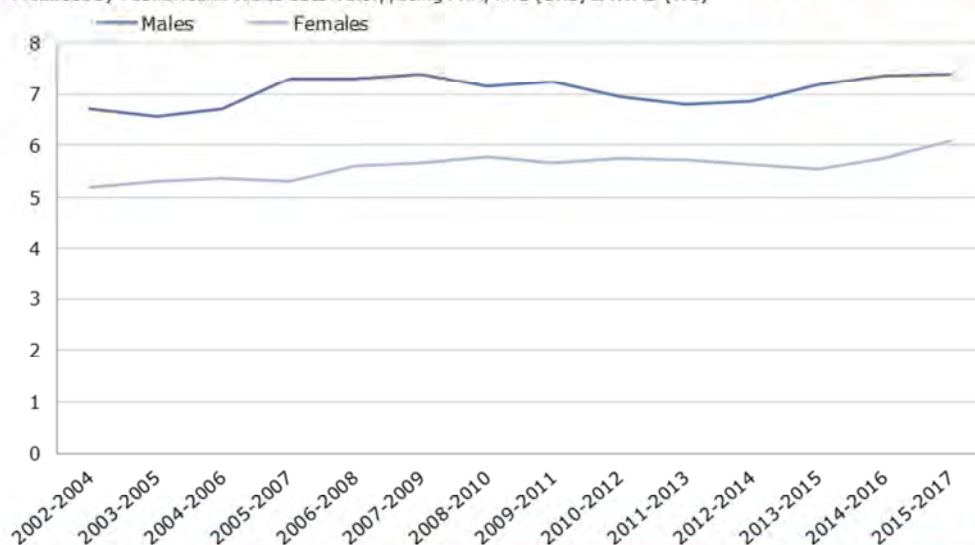
Indicator definition:
- Life expectancy at birth

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Females
- Wales, least and most deprived fifth
- 2002-04 to 2015-17

Deprivation gap in life expectancy at birth, years, males and females, Wales, 2002-04 to 2015-17
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

Life expectancy and healthy life expectancy   13

Indicator definition:

- Life expectancy at birth - a measure of the absolute difference in years of life expectancy at birth between the least and most deprived areas.

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Males & females
- Wales, least and most deprived fifth
- 2002-04 to 2015-17

Of all UK nations, male life expectancy in Wales increased the least over the period. Scotland saw the most improvement (3.5 years), but still has the lowest life expectancy of all UK nations. England remains with the highest life expectancy, with the gap between Wales increasing by 0.5 years to 1.2 years since 2001-03.

Life expectancy at birth, years, males, UK nations, 2001-03 to 2015-17
Produced by Public Health Wales Observatory, using PHM & MYE (ONS)

Life expectancy and healthy life expectancy   14

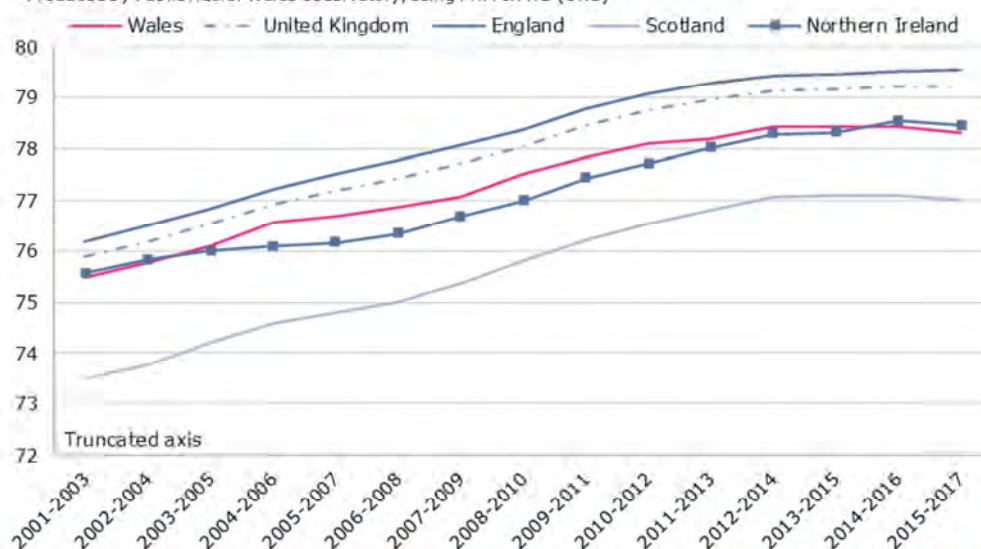**Indicator definition:**
- Life expectancy at birth

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males
- United Kingdom nations
- 2001-03 to 2015-17

Female life expectancy in England increased the most over the period (2.4 years). The life expectancy gap between Wales and England increased by 0.28 years, from 0.60 years in 2001-03 to 0.88 years in 2015-17.

Life expectancy at birth, years, females, UK nations, 2001-03 to 2015-17
Produced by Public Health Wales Observatory, using PHM & MYE (ONS)

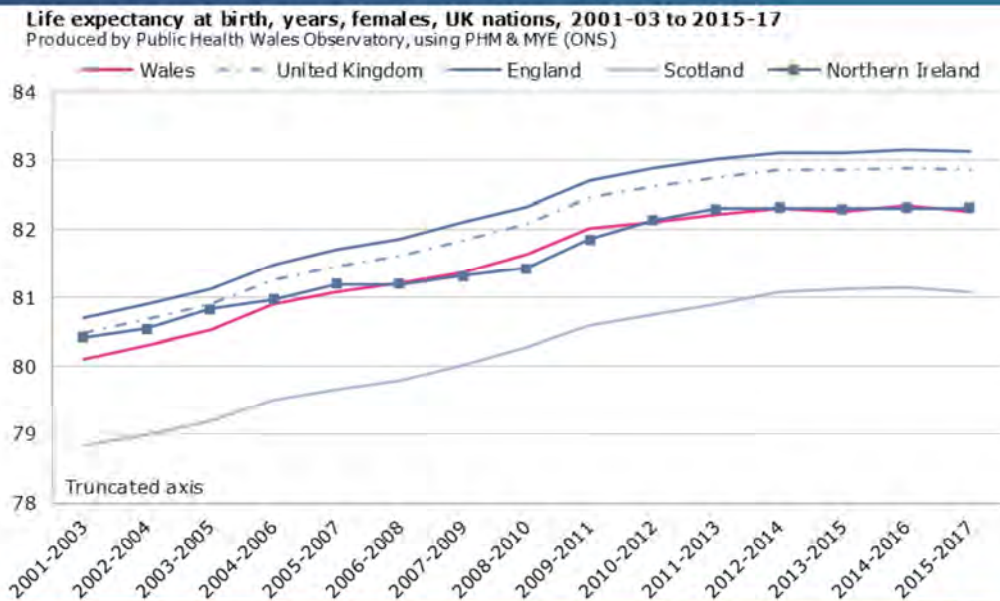Life expectancy and healthy life expectancy   15

Indicator definition:
• Life expectancy at birth

Data source, demography, geography & period:
• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Females
• United Kingdom nations
• 2001-03 to 2015-17

All UK nations, and many others across Europe, have seen a plateau in life expectancy since the turn of the decade. This plateau hasn't been observed in Japan or Sweden though.

Life expectancy at birth, years, UK nations, Iceland, Japan, Sweden and the United States, 1990-2017
Produced by Public Health Wales Observatory, using Global Health Data Exchange (IHME)

Life expectancy and healthy life expectancy   16

Indicator definition:
• Life expectancy at birth

Data source, demography, geography & period:
• Global Health Data Exchange (IHME)
• Persons
• UK nations and other select countries
• 1990 to 2017

Male healthy life expectancy in Wales has shown very little change since 2009-11. In 2009-11, healthy life expectancy in Wales was 0.3 years higher than Scotland, by 2015-17 this had reversed to being 0.9 years lower. The gap between England has also increased to almost 2 years.

Healthy life expectancy at birth, years, males, UK nations, 2009-11 to 2015-17
Produced by Public Health Wales Observatory, using PHM, MYE & APS (ONS)

Life expectancy and healthy life expectancy   17

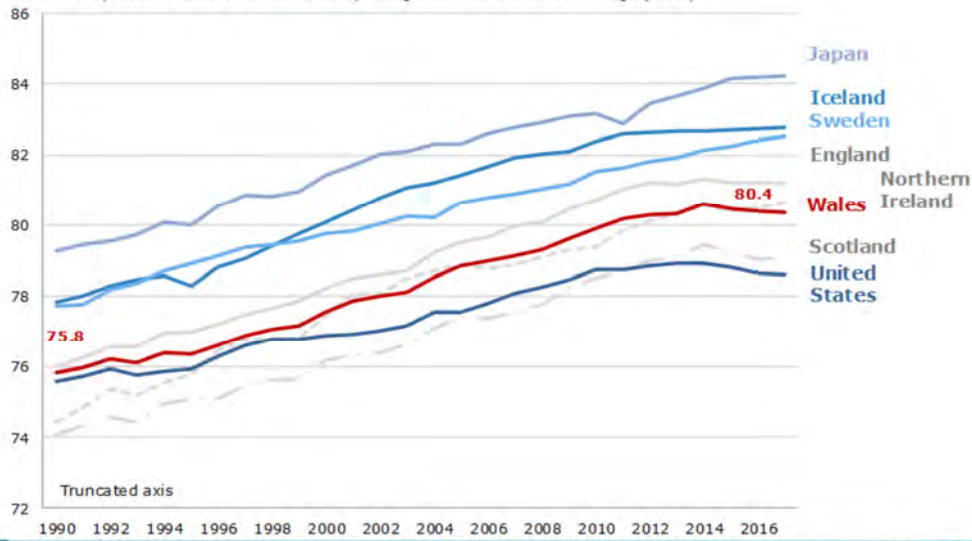**Indicator definition:**
- Healthy life expectancy at birth

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Annual Population Survey (APS), Office for National Statistics (ONS)
- Males
- United Kingdom nations
- 2009-11 to 2015-17

Overall, female healthy life expectancy in Wales has shown very little change since 2009-11, and remains the lowest in the UK. All UK nations, except Northern Ireland, saw a decrease in healthy life expectancy in the last period.

Healthy life expectancy at birth, years, females, UK nations, 2009-11 to 2015-17
Produced by Public Health Wales Observatory, using PHM, MYE & APS (ONS)

Life expectancy and healthy life expectancy   18

Indicator definition:
• Healthy life expectancy at birth

Data source, demography, geography & period:
• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Annual Population Survey (APS), Office for National Statistics (ONS)
• Females
• United Kingdom nations
• 2009-11 to 2015-17

There has been no substantial change in the gap between male life expectancy and healthy life expectancy over the whole period.

Healthy life expectancy at birth, life expectancy at birth and difference, years, males, Wales, 2009-11 to 2015-17
Produced by Public Health Wales Observatory, using PHM, APS & MYE (ONS)

Life expectancy and healthy life expectancy   19

Indicator definition:
- Gap between life expectancy & healthy life expectancy at birth - a measure of the absolute difference in years between life expectancy and healthy life expectancy.
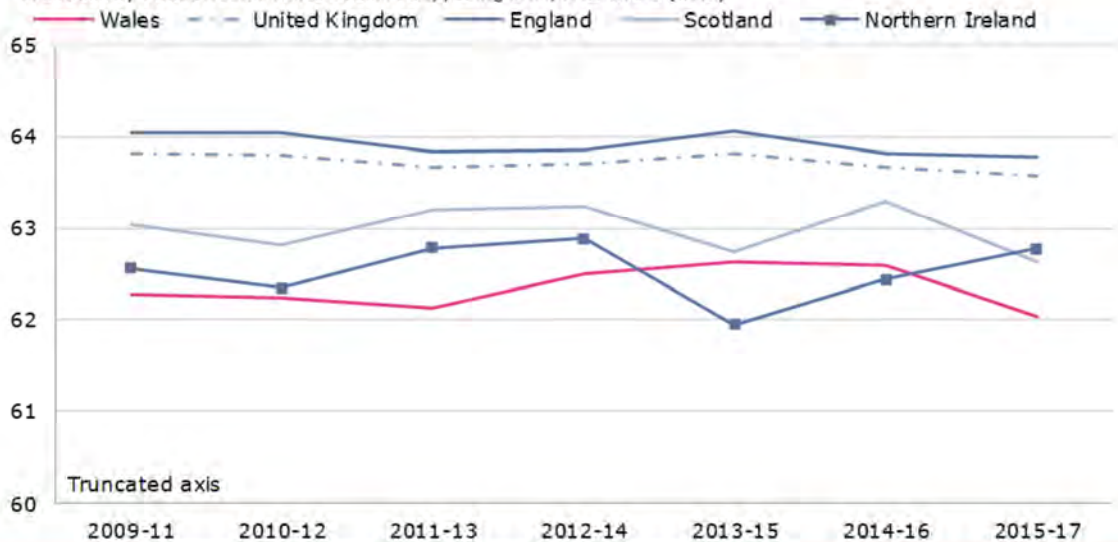
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Annual Population Survey (APS), Office for National Statistics (ONS)
- Males
- Wales
- 2009-11 to 2015-17

There has been no substantial change in the gap between female life expectancy and healthy life expectancy over the whole period.

Healthy life expectancy at birth, life expectancy at birth and difference, years, females, Wales, 2009-11 to 2015-17
Produced by Public Health Wales Observatory, using PHM, APS & MYE (ONS)

■ Healthy Life Expectancy ■ Life Expectancy

	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017
Difference	19.7	19.9	20.1	19.8	19.6	19.7	20.2
Healthy Life Expectancy	62.3	62.2	62.1	62.5	62.6	62.6	62.0
Life Expectancy	82.0	82.1	82.2	82.3	82.3	82.3	82.2
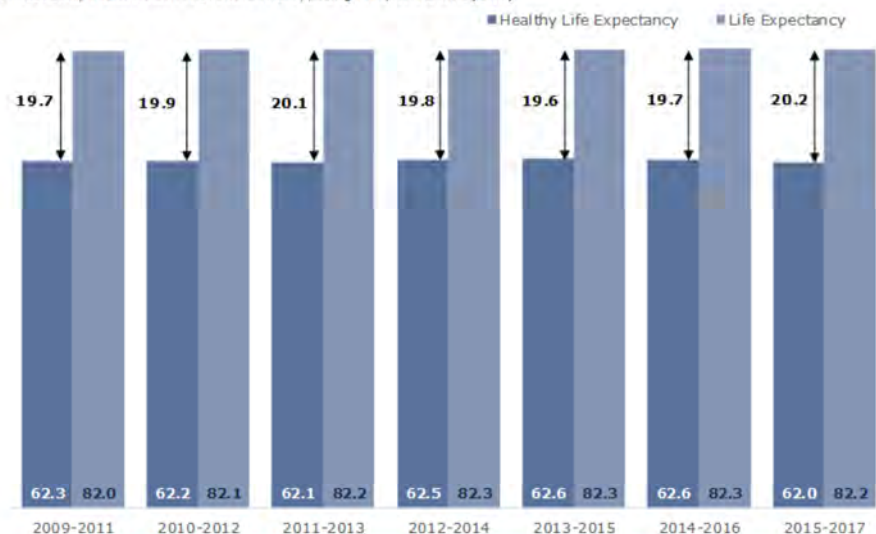
Life expectancy and healthy life expectancy   20

Indicator definition:
- Gap between life expectancy & healthy life expectancy at birth - a measure of the absolute difference in years between life expectancy and healthy life expectancy.
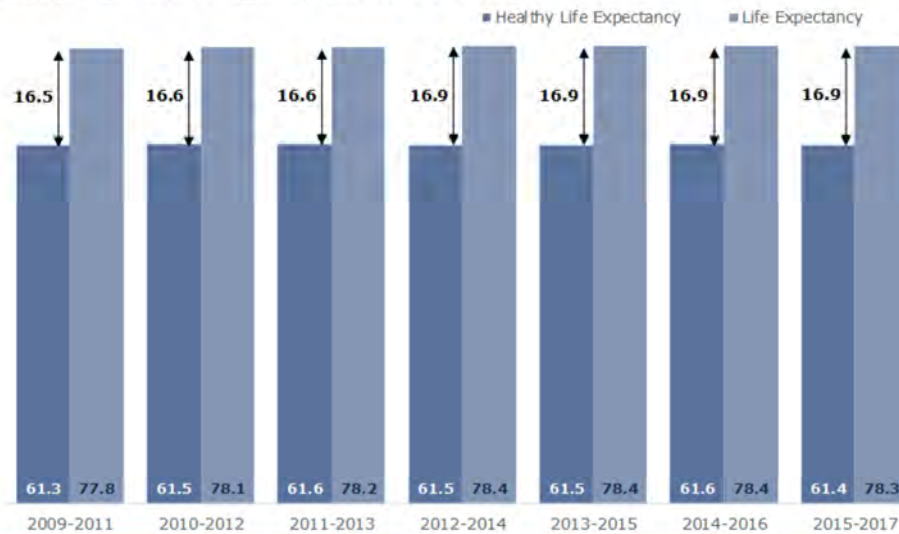
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Annual Population Survey (APS), Office for National Statistics (ONS)
- Females
- Wales
- 2009-11 to 2015-17

Mortality

Improvement in mortality rates have slowed markedly since 2011, although 2014 was the lowest mortality rate over the whole period. This pattern is also seen in the UK rates, although the Wales rate is consistently higher.

All cause mortality, European age-standardised rate (EASR) per 100,000, persons all ages, United Kingdom and Wales, 1991–2017
Produced by Public Health Wales Observatory, using Office for National Statistics (ONS)

Mortality — 22

Indicator definition:
- European age-standardised mortality rate per 100,000 persons

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Persons, all ages
- Wales & United Kingdom
- 1991-2017

The trend seen in the Wales mortality rates is also reflected by the deprivation fifths. The Wales rate decreased by almost 20% between 2002 and 2011. Since 2011, there's been very little overall change, with a 4.1% decrease in 2014 followed by 4.7% increase in 2015. The gap in mortality rates between the least and most deprived fifth have slightly increased over the whole period.

All cause mortality, European age-standardised rate (EASR) per 100,000, persons all ages, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales   — Least deprived fifth   — Most deprived fifth

Mortality   23

Indicator definition:
- European age-standardised mortality rate per 100,000 persons
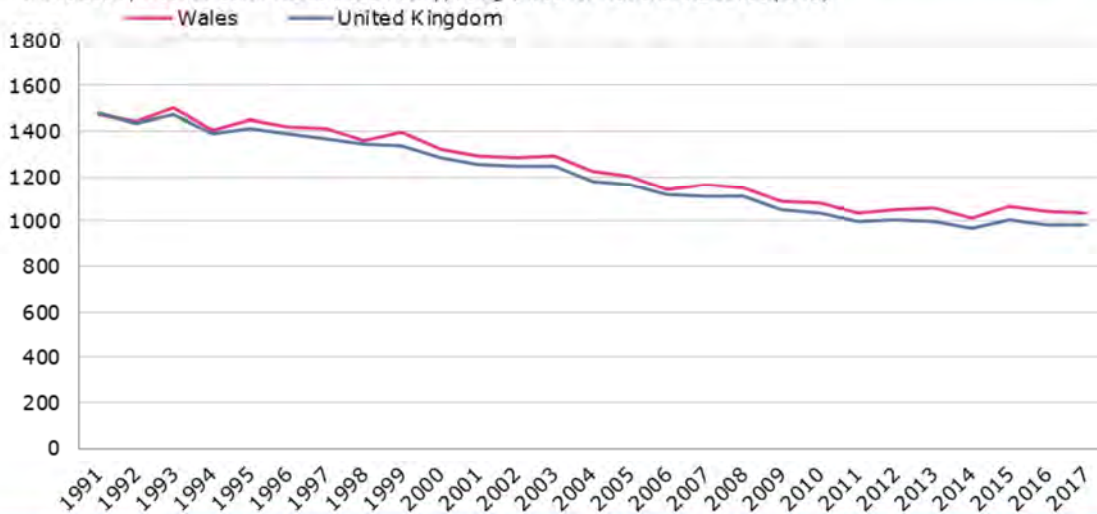
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons, all ages
- Wales, least and most deprived fifth
- 2002-2017

All cause mortality, European age-standardised rate (EASR) per 100,000, persons aged under 75, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

Mortality 24

Indicator definition:
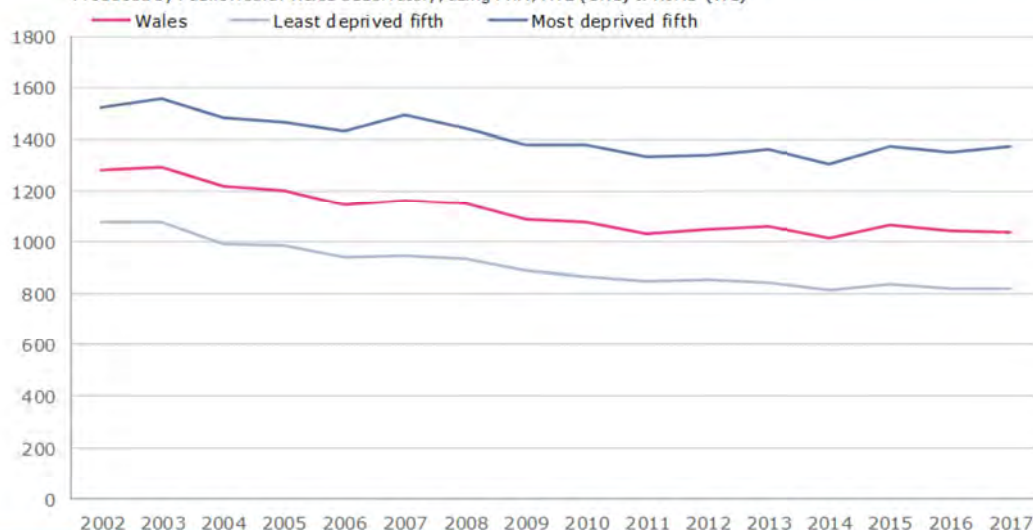• European age-standardised mortality rate per 100,000 persons

Data source, demography, geography & period:
• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
• Persons aged under 75
• Wales, least and most deprived fifth
• 2002-2017

Mortality rates in the 75+ year olds living in the least deprived fifth improved by over 20% between 2002 and 2011. Improvements in the most deprived fifth, were under half of this. Since 2011, rates in the most deprived fifth have increased by 5%, leading to a widening of the gap compared to the least deprived fifth.

All cause mortality, European age-standardised rate (EASR) per 100,000, persons aged 75+, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales — Least deprived fifth — Most deprived fifth

Indicator definition:
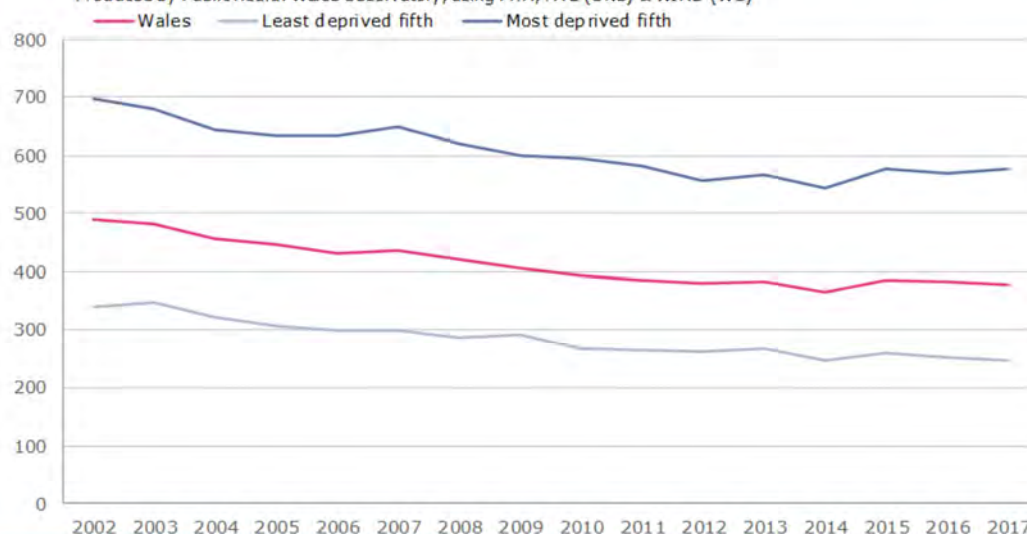- European age-standardised mortality rate per 100,000 persons

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons aged 75+
- Wales, least and most deprived fifth
- 2002-2017

Circulatory disease mortality rates have shown a decreasing trend over the whole period. Again, improvements have slowed down since 2011. This is most evident in the most deprived fifth, where improvements since 2011 are over two thirds lower than they were between 2002-2011.

Circulatory disease mortality, European age-standardised rate (EASR) per 100,000, persons all ages, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales — Least deprived fifth — Most deprived fifth

Mortality 26

Indicator definition:
- European age-standardised mortality rate per 100,000 persons
- Deaths were counted with an underlying cause of death of circulatory disease (ICD-10 codes: I00-I99)
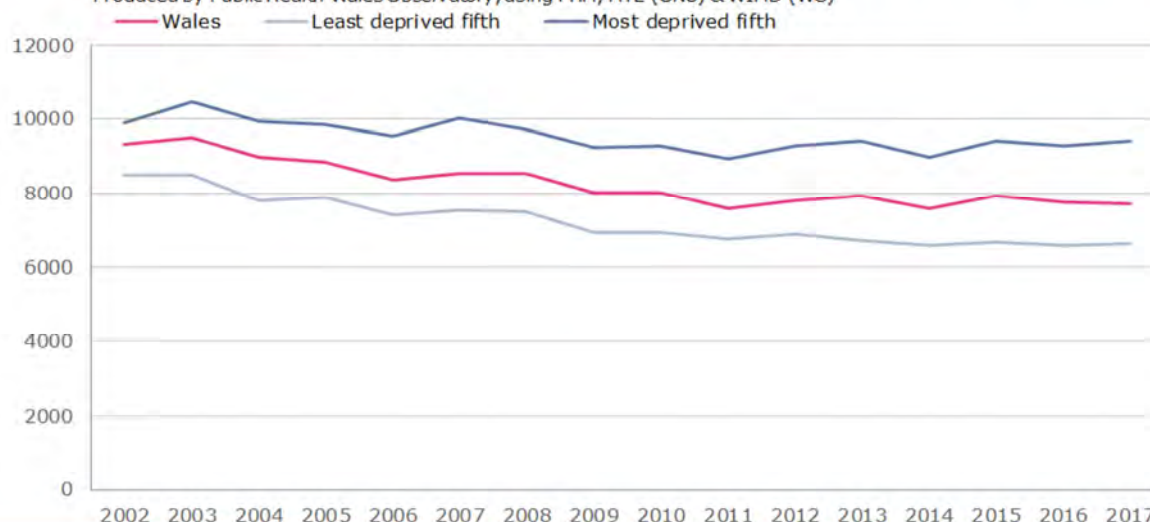
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons, all ages
- Wales, least and most deprived fifth
- 2002-2017

Improvements in premature circulatory disease mortality rates have decreased by over three quarters since 2011, compared to the period preceding this. The mortality rate in the most deprived fifth has now increased to 2.7 times the rate in the least deprived fifth, despite showing signs of narrowing at the start of the period.

Circulatory disease mortality, European age-standardised rate (EASR) per 100,000, persons aged under 75, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales   — Least deprived fifth   — Most deprived fifth

Indicator definition:
- European age-standardised mortality rate per 100,000 persons
- Deaths were counted with an underlying cause of death of circulatory disease (ICD-10 codes: I00-I99)
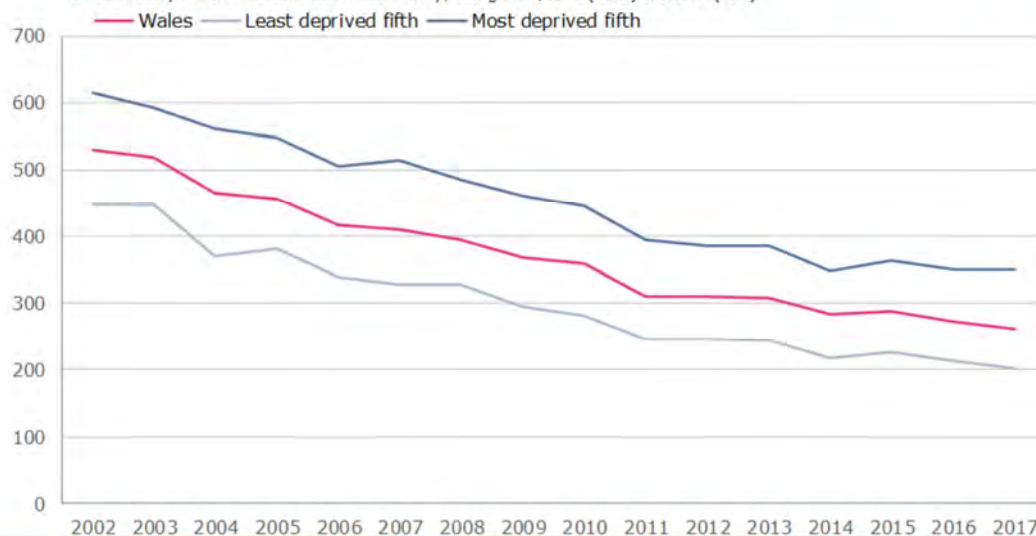
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons aged under 75
- Wales, least and most deprived fifth
- 2002-2017

Improvements in circulatory disease mortality rates in those aged 75+ have halved since 2011, compared to the period preceding this.

Circulatory disease mortality, European age-standardised rate (EASR) per 100,000, persons aged 75+, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)

— Wales ——— Least deprived fifth ——— Most deprived fifth

Indicator definition:
- European age-standardised mortality rate per 100,000 persons
- Deaths were counted with an underlying cause of death of circulatory disease (ICD-10 codes: I00-I99)

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons aged 75+
- Wales, least and most deprived fifth
- 2002-2017

Dementia and Alzheimers mortality, European age-standardised rate (EASR) per 100,000, persons all ages, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)
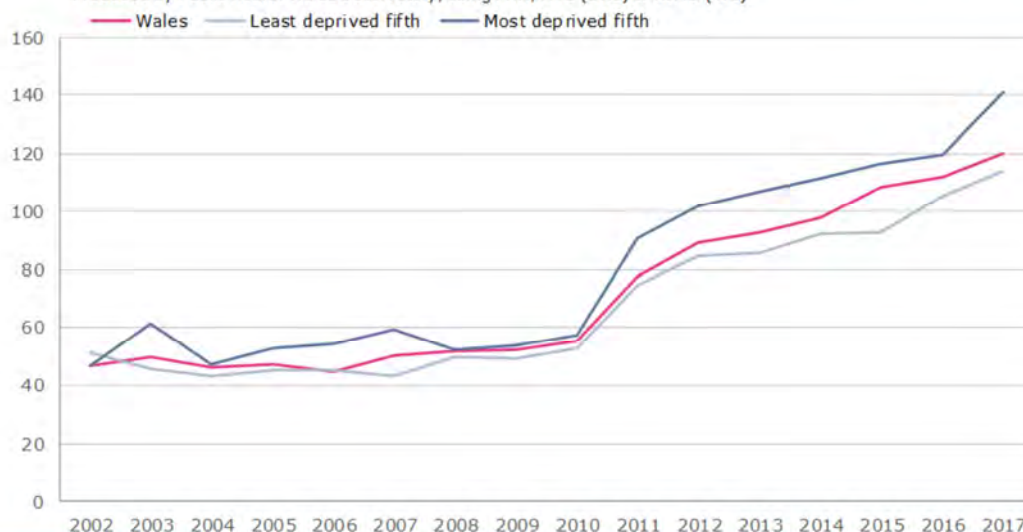
Mortality   29

Indicator definition:
- European age-standardised mortality rate per 100,000 persons
- Deaths were counted with an underlying cause of death of dementia and Alzheimers (ICD-10 codes: F00, F01, F03, G30)
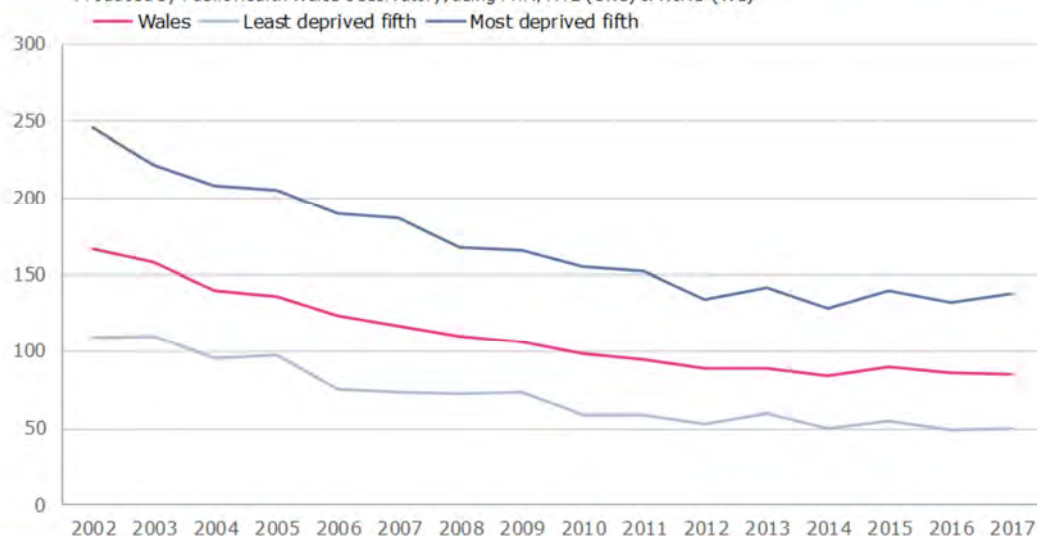
Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons, all ages
- Wales, least and most deprived fifth
- 2002-2017

Over 90% of deaths from dementia and Alzheimer disease occur in those aged 75+. There were over 2,100 more deaths from dementia and Alzheimer disease in 2017 compared to 2010, when there was a change to the cause of death coding.

Dementia and Alzheimers mortality, European age-standardised rate (EASR) per 100,000, persons aged 75+, least and most deprived fifth, Wales, 2002-2017
Produced by Public Health Wales Observatory, using PHM, MYE (ONS) & WIMD (WG)
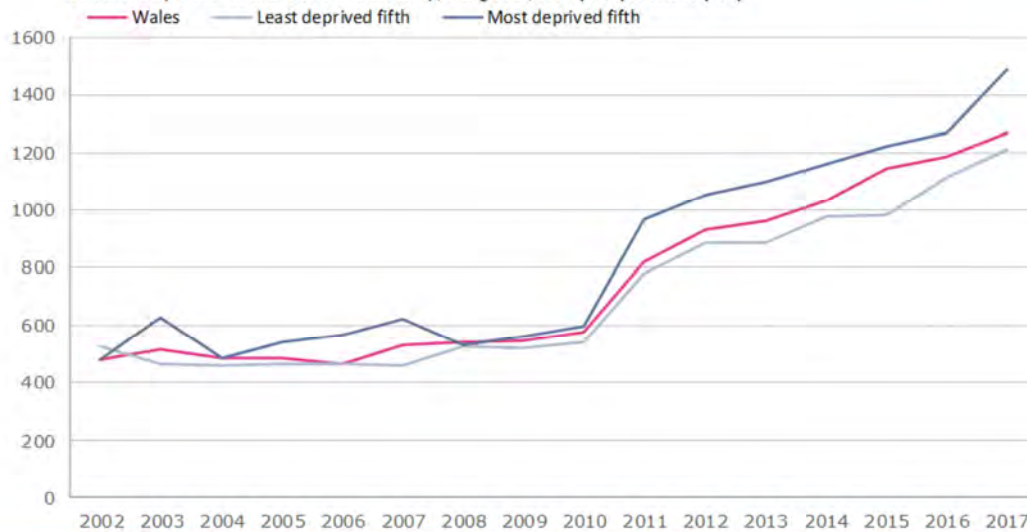
Mortality 30
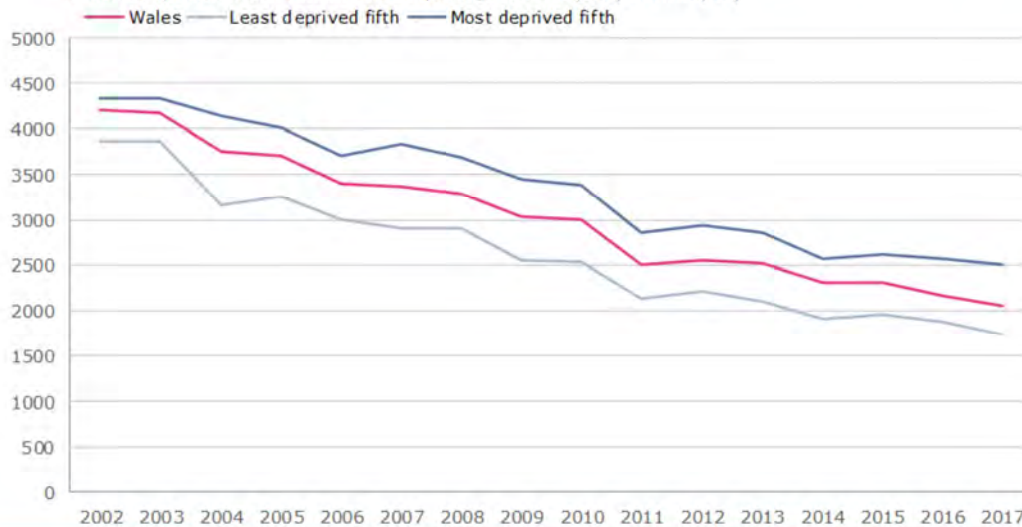
Indicator definition:
- European age-standardised mortality rate per 100,000 persons
- Deaths were counted with an underlying cause of death of dementia and Alzheimers (ICD-10 codes: F00, F01, F03, G30)

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Persons aged 75+
- Wales, least and most deprived fifth
- 2002-2017

Infant* and neonatal** mortality, crude rates per 1,000 live births, Wales, 1991-2017
Produced by Public Health Wales Observatory, using Office for National Statistics (ONS)

*Infant mortality rate (deaths under 1 year per 1,000 live births)
**Neonatal mortality rate (deaths under 28 days per 1,000 live births)
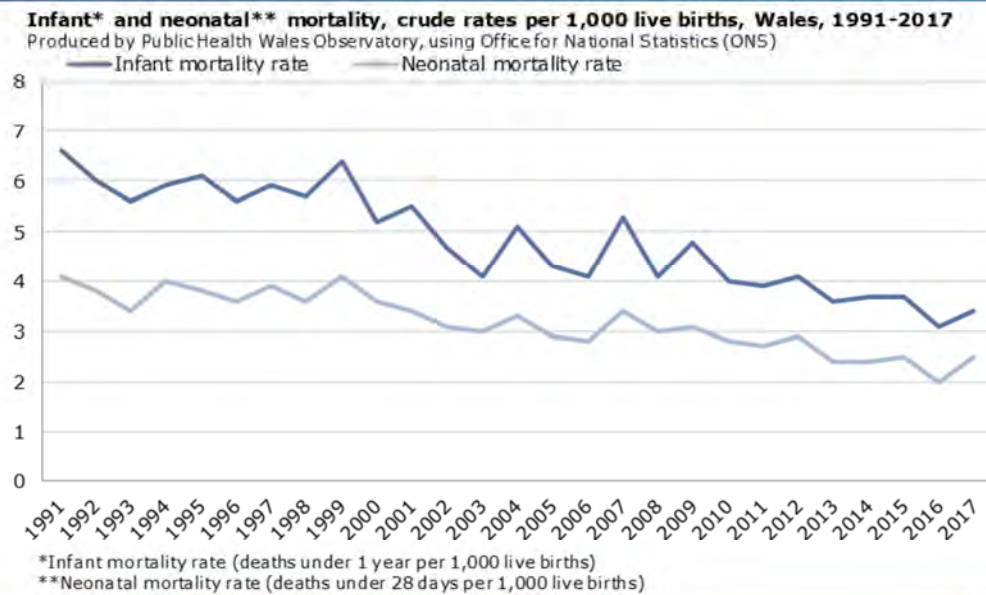
Mortality   31

Indicator definition:
- Crude rate per 1,000 live births
- Infant mortality are deaths that occur before the age of one
- Neonatal mortality are deaths that occur under 28 days

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Public Health Births (PHB), Office for National Statistics (ONS)
- Persons aged under 1 and 28 days
- Wales and United Kingdom
- 1991-2017

Despite falling mortality rates, age-specific rates did slightly increase in some younger age groups, particularly between 2002 and 2007. The improvements seen in the older age groups between 2002 and 2007, continued between 2007 and 2011. However, there's been a notable slowdown in improvement across all age groups between 2011 and 2017, with the 90+ in particular worsening for females.

Average annual absolute change in age-specific mortality rates per 100,000, males and females, 2002 to 2007, 2007 to 2011, 2011 to 2017

	Males			Females		
	2002-2007	2007-2011	2011-2017	2002-2007	2007-2011	2011-2017
00-00	31.0	-50.0	-8.5	-4.0	-24.9	-5.8
01-04	-1.1	-1.5	-0.2	0.7	-0.4	-0.7
05-09	-0.1	0.4	-0.5	-1.0	-0.6	0.9
10-14	1.4	-1.6	-0.3	1.2	-1.2	-0.3
15-19	-0.7	-1.6	-1.8	2.3	-3.0	0.1
20-24	-6.5	-2.2	-2.1	-1.6	0.2	1.5
25-29	0.1	-5.7	1.9	3.5	-3.1	2.6
30-34	3.2	-12.6	1.9	0.8	-3.3	-0.5
35-39	4.7	-1.7	-3.3	-1.5	2.4	-2.6
40-44	5.2	-1.8	-0.1	2.7	-2.4	-0.4
45-49	-2.9	-0.9	1.5	-7.1	1.5	-1.9
50-54	-5.1	-13.6	2.0	0.5	-0.8	-1.7
55-59	-3.5	-25.5	1.6	-6.3	-19.1	-3.3
60-64	-43.3	-27.8	-2.8	-16.1	-12.6	1.0
65-69	-60.9	-89.2	9.2	-57.5	-33.2	8.9
70-74	-157.2	-44.2	-49.4	-47.1	-79.8	-14.6
75-79	-187.2	-278.6	-29.6	-94.4	-144.2	-11.8
80-84	-149.4	-226.7	-74.1	-131.7	-168.8	-29.8
85-89	-310.2	-279.6	-41.2	-289.8	-186.2	-13.6
90+	43.2	-167.0	-1.2	-220.5	-804.3	419.2

Produced by Public Health Wales Observatory, using PHM & MYE (ONS)
*A negative value implies an improvement in mortality rates

Indicator definition:
- Average annual absolute change in age-specific mortality rates within each period
- A negative value implies an improvement in mortality rates

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males and Females, all ages
- Wales
- 2002-2017

Male life expectancy increased by 1.40 years between 2005-07 and 2010-12. However, between 2010-12 and 2015-17 the increase was only 0.23 years. The main contributors to the increase in the earlier period were those aged 60-84 years. In total, these contributed to 0.92 years improvement. In the latter period, the improvements seen in those aged 60-84 years have slowed down, with their contribution decreasing to 0.18 years. Very few age groups improved their contribution in the latter period, with only those aged 20-24 seeing an improvement of any note.

Decomposition of male life expectancy improvement by age group, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

- 2005-07 to 2010-12: growth in LE = 1.40 years
- 2010-12 to 2015-17: growth in LE = 0.23 years

Life expectancy decomposition: change over time

34

Indicator definition:

- Life expectancy decomposition method for age: The contribution of different age bands to changes in life expectancy over time (due to changes in age-specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Improvements in circulatory disease mortality rates contributed to an increase of 0.89 years in male life expectancy between 2005-07 and 2010-12. This improvement had slowed to 0.35 years in the latter period. Increasing mortality rates from dementia and Alzheimer disease, external causes and respiratory diseases have also stalled improvement.

Decomposition of male life expectancy improvement by cause of death, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

■ 2005-07 to 2010-12: growth in LE = 1.40 years
■ 2010-12 to 2015-17: growth in LE = 0.23 years

Life expectancy decomposition: change over time

35

Indicator definition:

• Life expectancy decomposition method for cause of death: The contribution of different causes of death to changes in life expectancy over time (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:

Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive: K00-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: G00-G99
Perinatal conditions: P00-P96
Residual: All D, other E, all H, all L, all O, all M, all Q codes
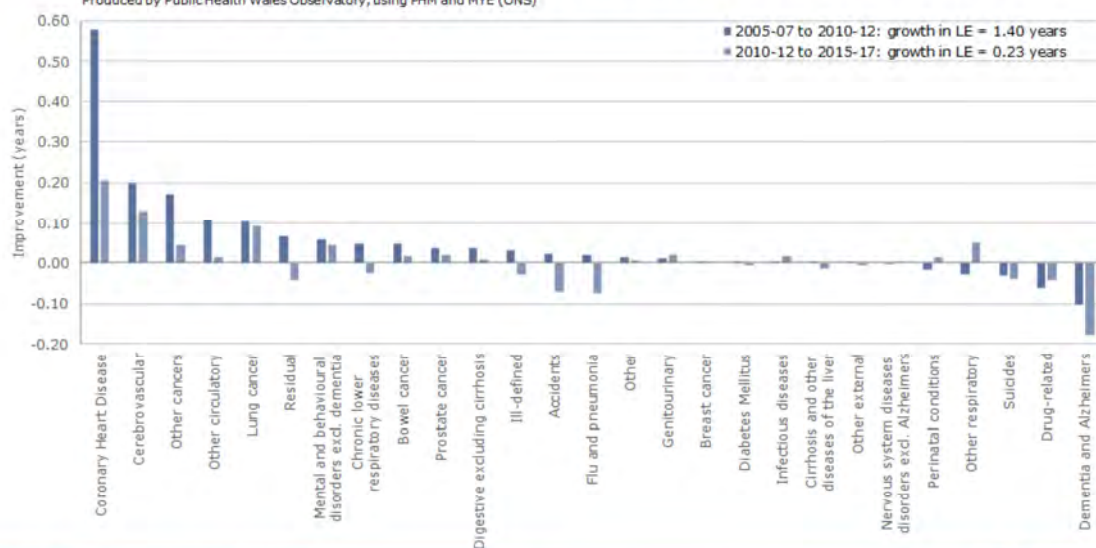Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:

• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Males, all ages
• Wales
• 2005-07 to 2010-12; 2010-12 to 2015-17

Over a third of improvement in male life expectancy in the first period was due to decreased coronary heart disease mortality rates. A slowing down of improvements in death rates from coronary heart disease, cerebrovascular and some cancer sites, along with increasing death rates from accidents, flu and pneumonia, and dementia and Alzheimer disease, led to male life expectancy only increasing by 0.23 years between 2010-12 and 2015-17.

Decomposition of male life expectancy improvement by cause of death, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

- 2005-07 to 2010-12: growth in LE = 1.40 years
- 2010-12 to 2015-17: growth in LE = 0.23 years

Indicator definition:
- Life expectancy decomposition method for cause of death: The contribution of different causes of death to changes in life expectancy over time (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:
Accidents: V01-X59
Bowel cancer: C18-C21
Cerebrovascular: I60-I69
Chronic lower respiratory diseases: J40-J47
Cirrhosis and other diseases of the liver: K70-K76
Coronary heart disease: I20-I25
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive excluding cirrhosis: K00-K69, K77-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
Flu and Pneumonia: J09-J18
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Lung cancer: C33-C34
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: All other G codes
Other cancer: All other C codes excluding C44
Other circulatory: All other I codes
Other external: All other X & Y codes
Other respiratory: All other J codes
Perinatal conditions: P00-P96
Prostate cancer: C61
Residual: All D, other E, all H, all L, all O, all M, all Q codes
Suicides: X60-84 & Y10-34 excluding Y339 before 2007
Other: All other remaining codes including Y339 before 2007

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Female life expectancy increased by 1.04 years between 2005-07 and 2010-12. However, between 2010-12 and 2015-17 the increase was only 0.14 years. Decreased mortality rates in females aged 55+ contributed to 0.94 years of the increase in the earlier period, with ages 70-84 years contributing to over half of this. In the latter period, improvement in the older age groups has reduced or reversed. In those aged 90+, a positive contribution of over 0.1 years has reversed to a negative contribution of 0.1 years.

Decomposition of female life expectancy improvement by age group, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

- 2005-07 to 2010-12: growth in LE = 1.04 years
- 2010-12 to 2015-17: growth in LE = 0.14 years

Life expectancy decomposition: change over time

37

Indicator definition:

- Life expectancy decomposition method for age: The contribution of different age bands to changes in life expectancy over time (due to changes in age-specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.
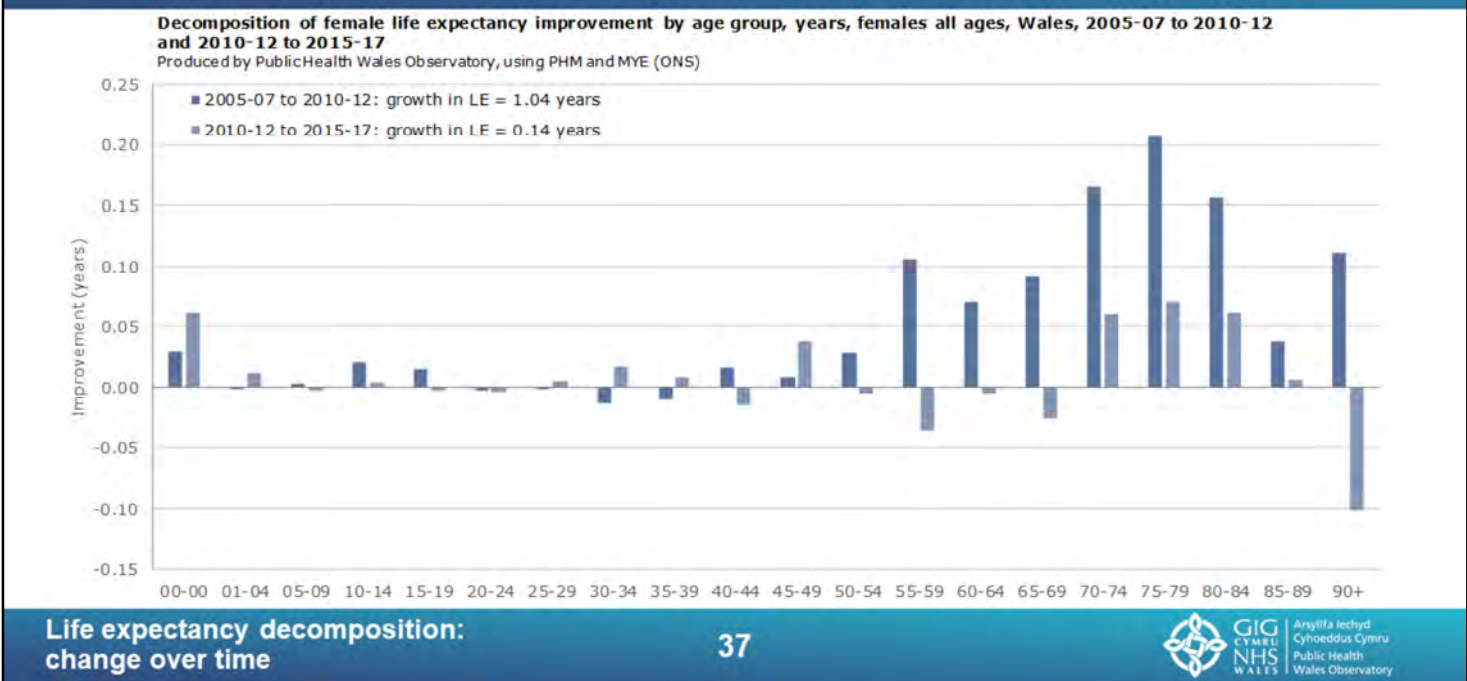
Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Similar to males, increased female life expectancy due to improved mortality from circulatory disease has declined. Increased mortality from respiratory diseases and dementia and Alzheimer disease have had a larger, negative impact between 2010-12 and 2015-17.

Decomposition of female life expectancy improvement by cause of death, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

- 2005-07 to 2010-12: growth in LE = 1.04 years
- 2010-12 to 2015-17: growth in LE = 0.14 years
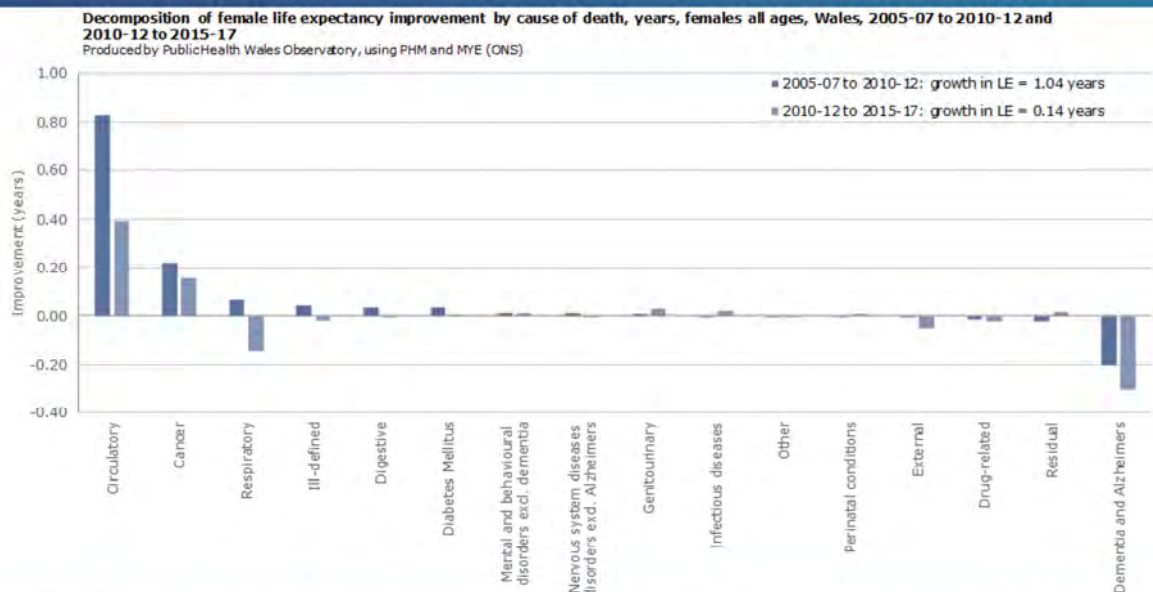
Life expectancy decomposition: change over time

38

Indicator definition:

- Life expectancy decomposition method for cause of death: The contribution of different causes of death to changes in life expectancy over time (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive: K00-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: G00-G99
Perinatal conditions: P00-P96
Residual: All D, other E, all H, all L, all O, all M, all Q codes
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

A similar pattern is seen for female life expectancy, as is seen for male life expectancy. A stalling of improvements in mortality rates from coronary heart disease, cerebrovascular and some cancer sites, has also been met with increased mortality rates from flu and pneumonia, chronic lower respiratory diseases and dementia and Alzheimer disease.

Decomposition of female life expectancy improvement by cause of death, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

- 2005-07 to 2010-12: growth in LE = 1.04 years
- 2010-12 to 2015-17: growth in LE = 0.14 years
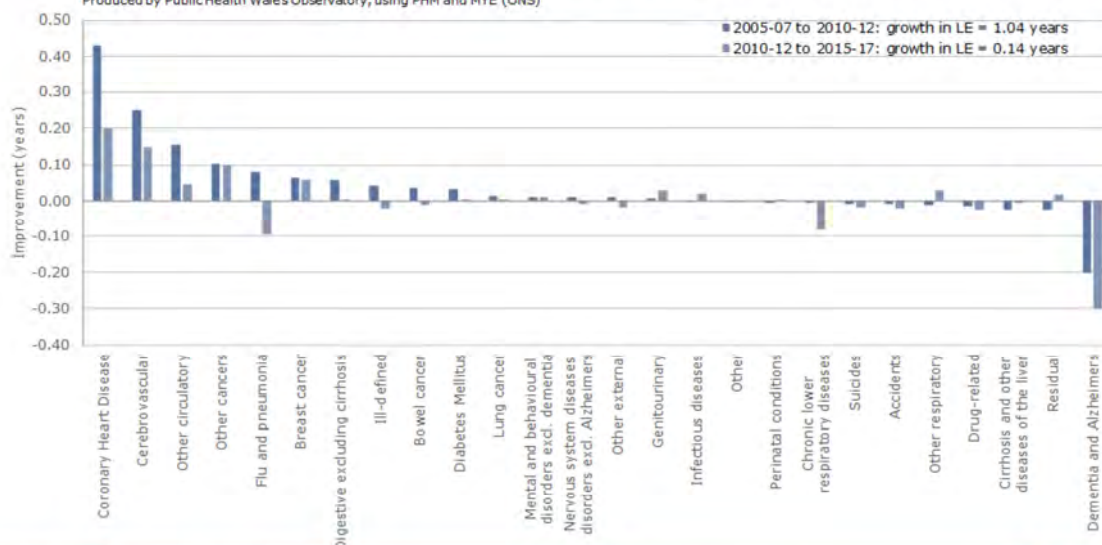
Life expectancy decomposition: change over time

39

Indicator definition:

- Life expectancy decomposition method for cause of death: The contribution of different causes of death to changes in life expectancy over time (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:
Accidents: V01-X59
Bowel cancer: C18-C21
Breast cancer: C50
Cerebrovascular: I60-I69
Chronic lower respiratory diseases: J40-J47
Cirrhosis and other diseases of the liver: K70-K76
Coronary heart disease: I20-I25
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive excluding cirrhosis: K00-K69, K77-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
Flu and Pneumonia: J09-J18
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Lung cancer: C33-C34
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: All other G codes
Other cancer: All other C codes excluding C44
Other circulatory: All other I codes
Other external: All other X & Y codes
Other respiratory: All other J codes
Perinatal conditions: P00-P96
Residual: All D, other E, all H, all L, all O, all M, all Q codes
Suicides: X60-84 & Y10-34 excluding Y339 before 2007
Other: All other remaining codes including Y339 before 2007

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

In males aged under 35, drug-related deaths made a negative contribution in the first period but this reversed to a positive contribution in the latter period – indicating a decrease in mortality rates from drug-related deaths. Increased mortality rates from circulatory disease in males aged 35-54 and respiratory disease in males aged 55-74 and 75-89 led to a negative contribution in the latter period, reversing the previous positive contributing to increased male life expectancy in the earlier period.

Decomposition of male life expectancy improvement by cause of death and age group, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

40

Indicator definition:

- Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.
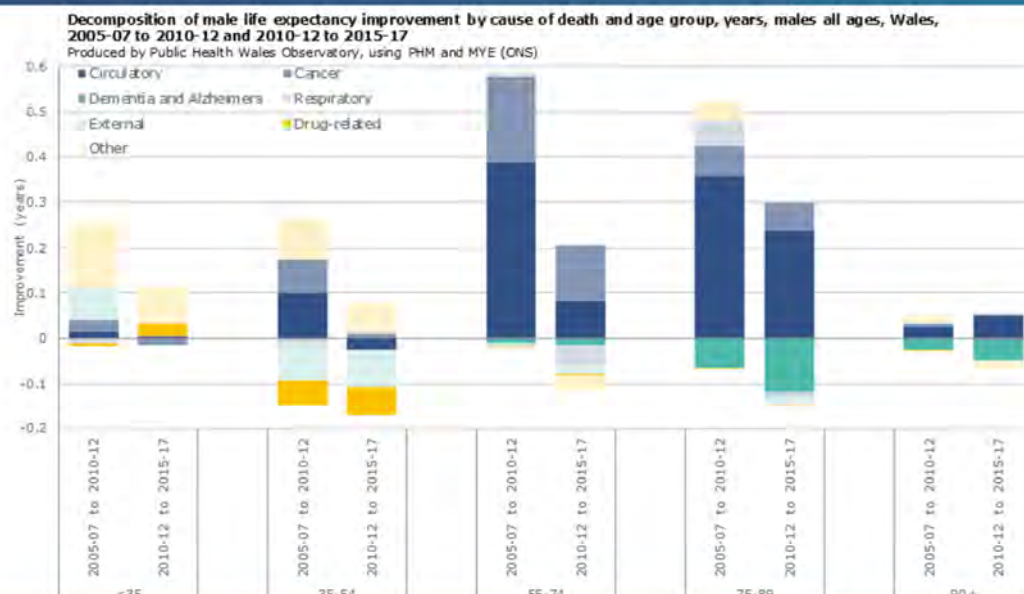
Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Improvements in circulatory disease mortality rates made a substantial contribution to improvements in male life expectancy in all age groups above 35+ in the first period. This contribution has slowed down in the second period, particularly in the 55-74 age group, with mortality rates actually increasing for those aged 35-54, leading to a negative contribution towards male life expectancy.

Decomposition of male life expectancy improvement by cause of death and age group, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

41

Indicator definition:
- Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

The negative contribution to male life expectancy from dementia and Alzheimers increased between the two periods.

Decomposition of male life expectancy improvement by cause of death and age group, years, males all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

42

Indicator definition:

- Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:

Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
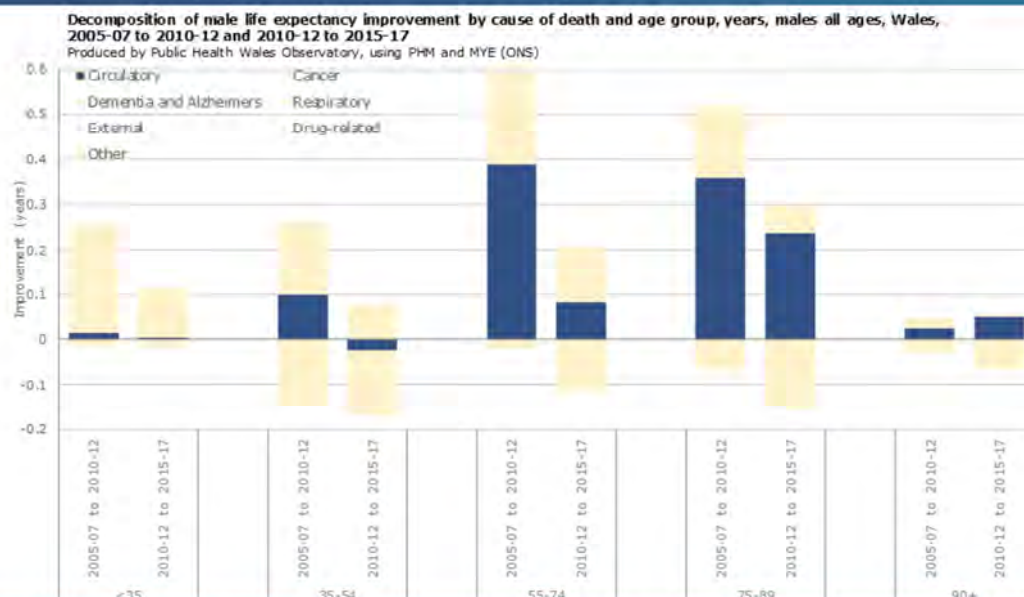External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Males, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

For females aged 55-74, 75-89 and 90+, improvement in respiratory disease mortality rates made a positive contribution towards increasing female life expectancy between 2005-07 and 2010-12. However, in all three age groups, respiratory disease mortality rates have increased since 2010-12 leading to a negative contribution towards female life expectancy.

Decomposition of female life expectancy improvement by cause of death and age group, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

43

Indicator definition:

- Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of deaths to change in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:

Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
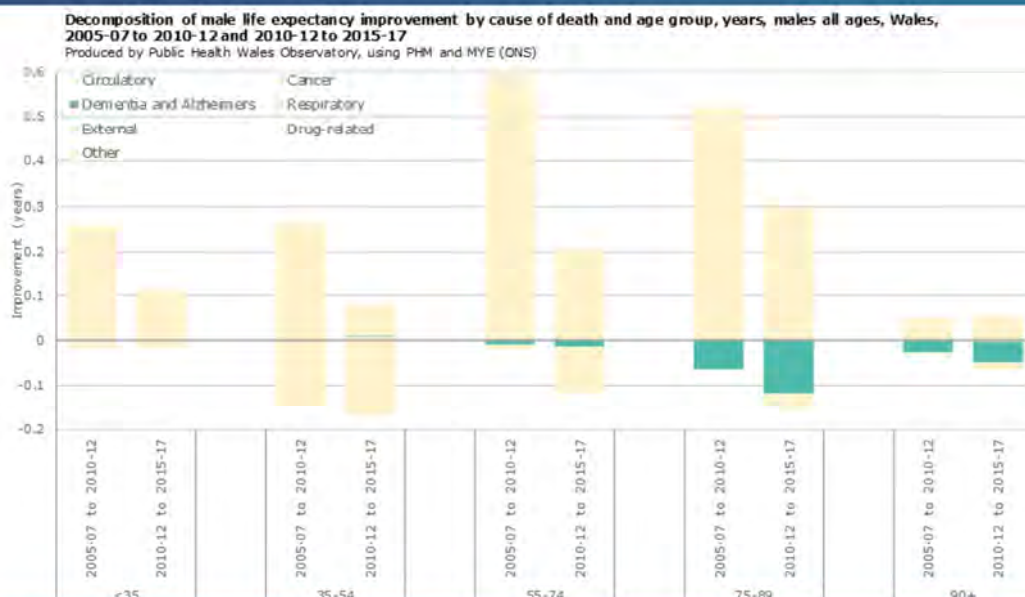External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Improvements in circulatory disease mortality rates was the greatest contributor to improvement in female life expectancy for those aged 55+ in both periods. However, despite continuing decreasing circulatory disease mortality rates in those aged 55+, those improvements have decreased across all age groups in the second period.

Decomposition of female life expectancy improvement by cause of death and age group, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

44

Indicator definition:

• Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:

Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
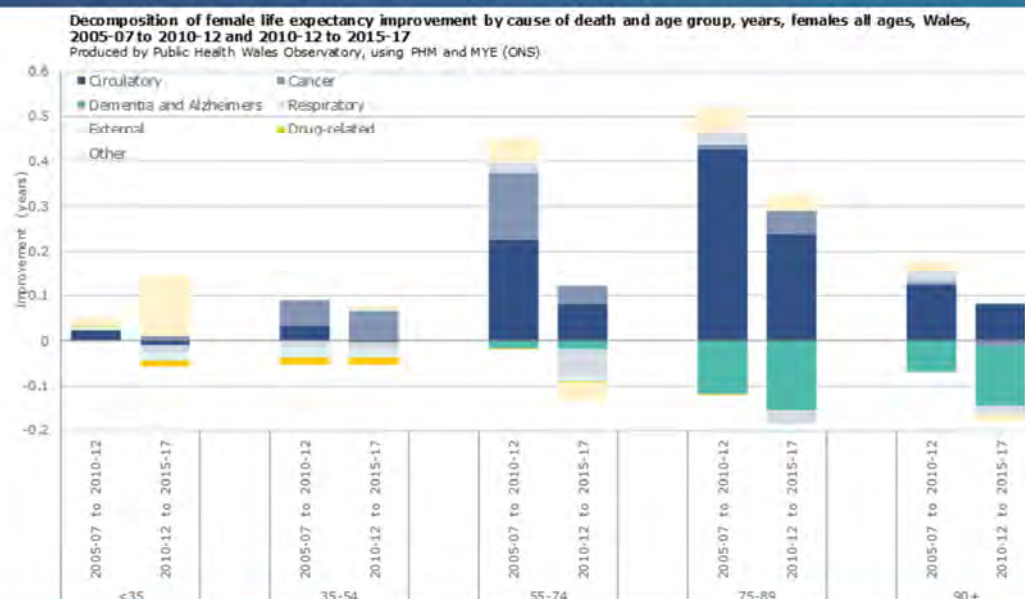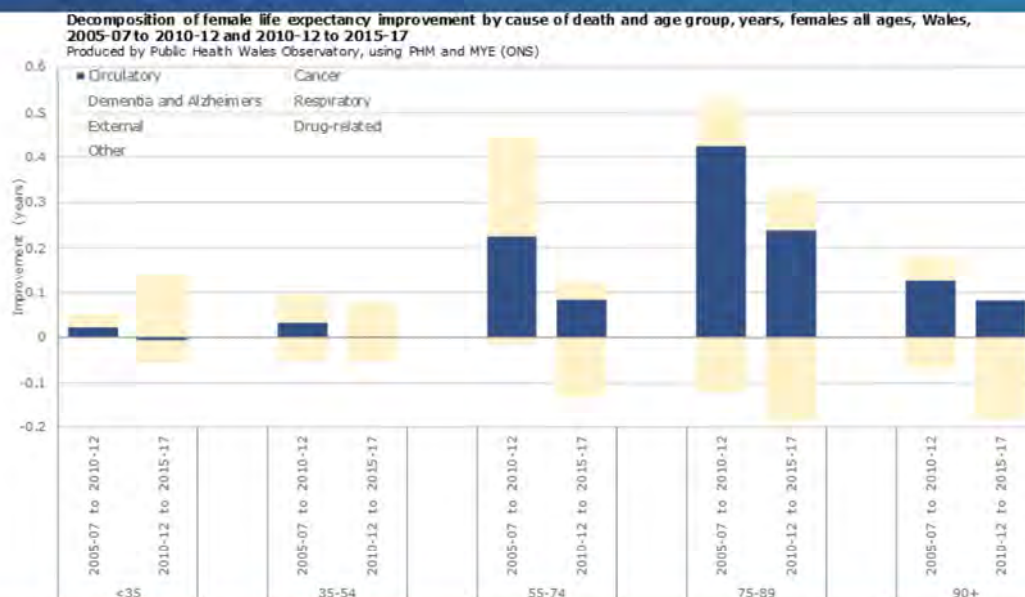External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:

• Public Health Mortality (PHM), Office for National Statistics (ONS)
• Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
• Females, all ages
• Wales
• 2005-07 to 2010-12; 2010-12 to 2015-17

Deaths from dementia and Alzheimer disease have had a greater negative contribution to life expectancy for females compared to males. For females aged 90+ in the first period, dementia and Alzheimers contributed wholly to offsetting improvements in life expectancy. This negative contribution doubled for females aged 90+ in the second period.

Decomposition of female life expectancy improvement by cause of death and age group, years, females all ages, Wales, 2005-07 to 2010-12 and 2010-12 to 2015-17
Produced by Public Health Wales Observatory, using PHM and MYE (ONS)

Life expectancy decomposition: change over time

45

Indicator definition:

- Life expectancy decomposition method for age and cause of death: The contribution of different age bands or causes of death to changes in life expectancy over time (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to changes in life expectancy over time show the amount that life expectancy has increased in the later time period due to changes in the mortality rate since the earlier time period in a given age group or cause of death, assuming all other rates remained constant. Contributions that increased life expectancy (that is, where mortality rate has reduced over time) have a positive value, while contributions that offset the life expectancy increase (that is, where mortality rate has increased over time) have a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
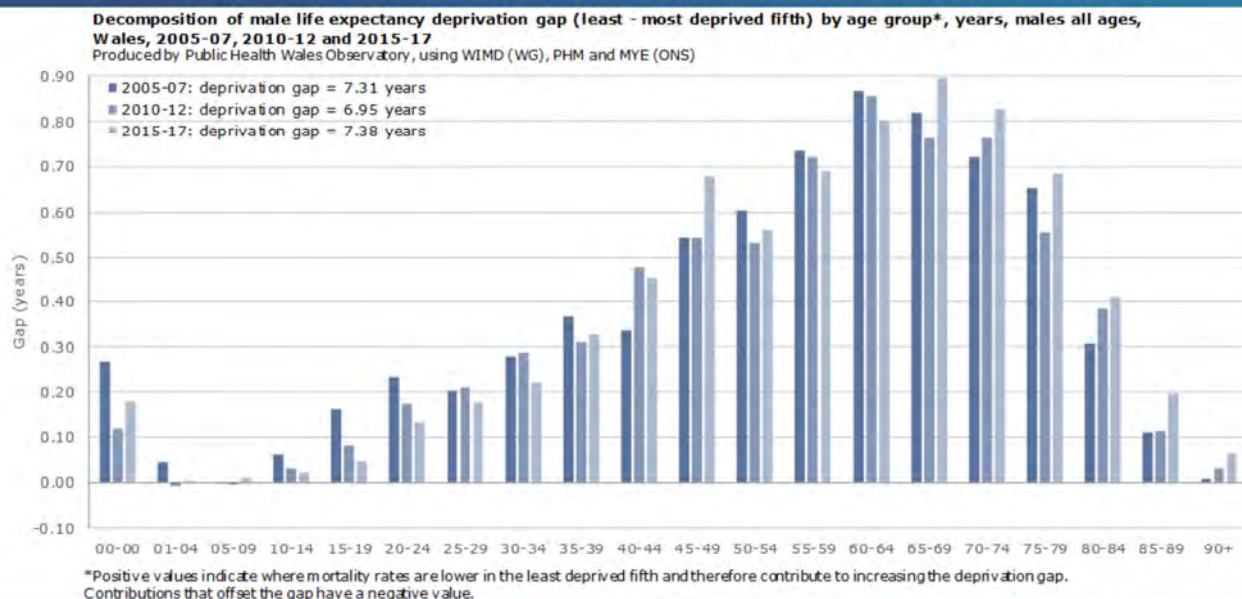Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Females, all ages
- Wales
- 2005-07 to 2010-12; 2010-12 to 2015-17

Life expectancy decomposition: deprivation gap analysis

The male deprivation gap was at its widest in 2015-17 at 7.38 years, with the contribution of all age bands above 65 years old larger than in any of the other two periods. Those aged between 60-74 years contributed to a third of the gap. The deprivation gap was at its narrowest in those aged under 30 years and over 85 years old.

Decomposition of male life expectancy deprivation gap (least - most deprived fifth) by age group*, years, males all ages, Wales, 2005-07, 2010-12 and 2015-17
Produced by Public Health Wales Observatory, using WIMD (WG), PHM and MYE (ONS)

- 2005-07: deprivation gap = 7.31 years
- 2010-12: deprivation gap = 6.95 years
- 2015-17: deprivation gap = 7.38 years

*Positive values indicate where mortality rates are lower in the least deprived fifth and therefore contribute to increasing the deprivation gap. Contributions that offset the gap have a negative value.

Life expectancy decomposition: deprivation gap analysis

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Indicator definition:

- Life expectancy decomposition method for age: The contribution of different age bands to the gap in life expectancy between levels of deprivation (due to changes in age-specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a given age group was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Males, all ages
- Wales, least and most deprived fifth
- 2005-07; 2010-12; 2015-17

Circulatory disease and cancer contributed to half the male deprivation gap in 2015-17. In 2015-17, the contribution of circulatory disease was at its smallest, however cancer was at its largest. This reigned true for external causes and digestive system too. Although mortality from dementia and Alzheimer disease has significantly increased, it contributes very little to the male deprivation gap.

Decomposition of male life expectancy deprivation gap (least - most deprived fifth) by cause of death*, years, males all ages, Wales, 2005-07, 2010-12 and 2015-17
Produced by Public Health Wales Observatory, using WIMD (WG), PHM and MYE (ONS)

- 2005-07: deprivation gap = 7.31 years
- 2010-12: deprivation gap = 6.95 years
- 2015-17: deprivation gap = 7.38 years

*Positive values indicate where mortality rates are lower in the least deprived fifth and therefore contribute to increasing the deprivation gap. Contributions that offset the gap have a negative value.

Life expectancy decomposition: deprivation gap analysis

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Indicator definition:
- Life expectancy decomposition method for cause of death: The contribution of different causes of death to the gap in life expectancy between levels of deprivation (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a cause of death was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive: K00-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: G00-G99
Perinatal conditions: P00-P96
Residual: All D, other E, all H, all L, all O, all M, all Q codes
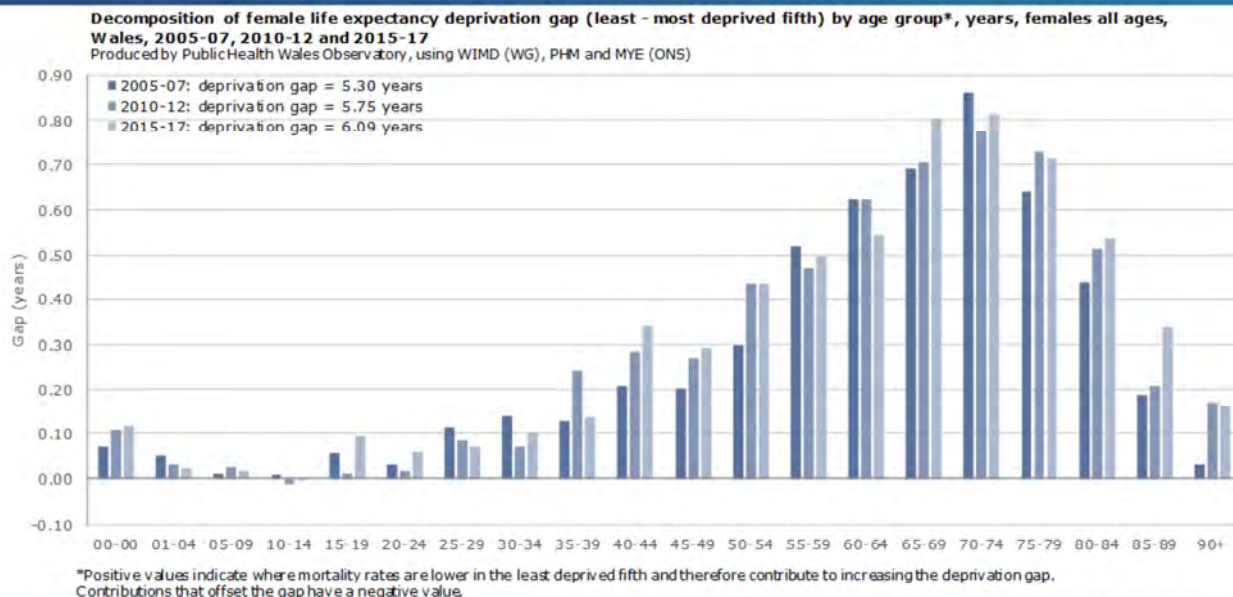Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Males, all ages
- Wales, least and most deprived fifth
- 2005-07; 2010-12; 2015-17

The female deprivation gap increased over the three periods observed, with the gap almost 0.80 years wider in 2015-17 compared to 2005-07. Age groups 65-69, 70-74 and 75-79 years were the three largest contributors to the gap. Those aged under 40 years contribute very little to the gap for females. However, compared to males, those aged 85+ years contribute notably more to the gap.

Decomposition of female life expectancy deprivation gap (least - most deprived fifth) by age group*, years, females all ages, Wales, 2005-07, 2010-12 and 2015-17
Produced by Public Health Wales Observatory, using WIMD (WG), PHM and MYE (ONS)

- 2005-07: deprivation gap = 5.30 years
- 2010-12: deprivation gap = 5.75 years
- 2015-17: deprivation gap = 6.09 years

*Positive values indicate where mortality rates are lower in the least deprived fifth and therefore contribute to increasing the deprivation gap. Contributions that offset the gap have a negative value.
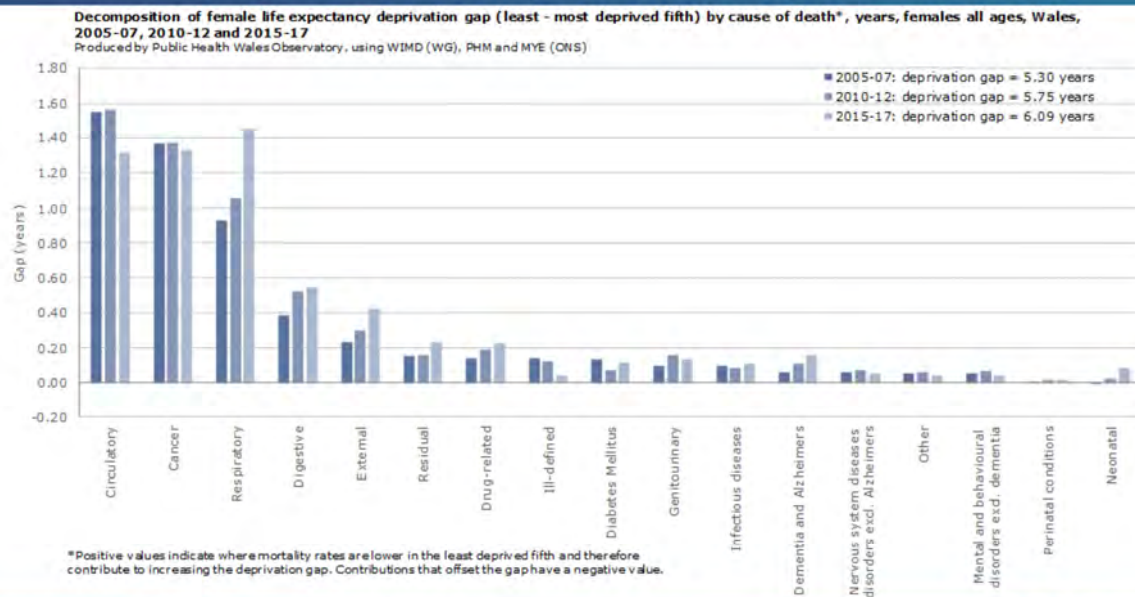
Indicator definition:

- Life expectancy decomposition method for age: The contribution of different age bands to the gap in life expectancy between levels of deprivation (due to changes in age-specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a given age group was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Data source, demography, geography & period:

- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Females, all ages
- Wales, least and most deprived fifth
- 2005-07; 2010-12; 2015-17

Whilst the contribution of circulatory disease and cancer was at its smallest in 2015-17, respiratory disease was the largest contributor to the female deprivation gap, increasing to 1.45 from 0.90 in 2005-07. Respiratory disease, circulatory disease and cancer contributed to two thirds of the gap in 2015-17.

Decomposition of female life expectancy deprivation gap (least - most deprived fifth) by cause of death*, years, females all ages, Wales, 2005-07, 2010-12 and 2015-17
Produced by Public Health Wales Observatory, using WIMD (WG), PHM and MYE (ONS)

2005-07: deprivation gap = 5.30 years
2010-12: deprivation gap = 5.75 years
2015-17: deprivation gap = 6.09 years

*Positive values indicate where mortality rates are lower in the least deprived fifth and therefore contribute to increasing the deprivation gap. Contributions that offset the gap have a negative value.

Life expectancy decomposition: deprivation gap analysis

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Indicator definition:
- Life expectancy decomposition method for cause of death: The contribution of different causes of death to the gap in life expectancy between levels of deprivation (due to changes in cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a cause of death was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimer: F00, F01, F03, G30
Diabetes Mellitus: E10-E14
Digestive: K00-K99
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Genitourinary: N00-N99
Ill-defined: R00-R99
Infectious diseases: A00-B99
Mental and behavioural disorders excluding dementia: All other F codes
Nervous system diseases excluding Alzheimer: G00-G99
Perinatal conditions: P00-P96
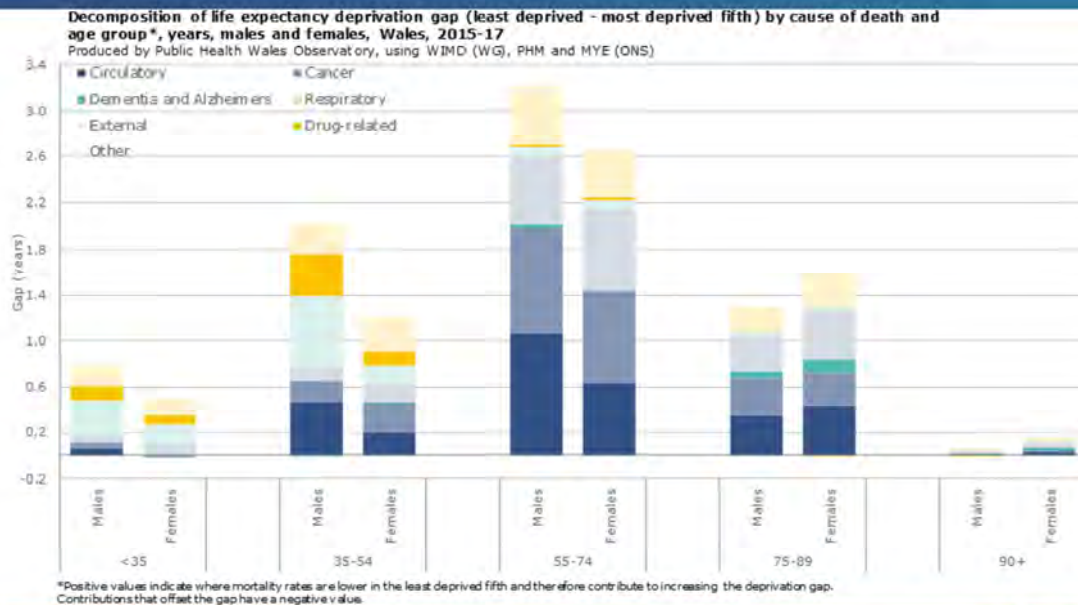Residual: All D, other E, all H, all L, all O, all M, all Q codes
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Females, all ages
- Wales, least and most deprived fifth
- 2005-07; 2010-12; 2015-17

The largest contributors to the deprivation gap for both males and females are in the middle age. Whilst circulatory diseases, cancer and respiratory diseases make a substantial contribution in those aged 35+ years, external causes and drug-related causes contribute at younger ages.

Decomposition of life expectancy deprivation gap (least deprived - most deprived fifth) by cause of death and age group*, years, males and females, Wales, 2015-17
Produced by Public Health Wales Observatory, using WIMD (WG), PHM and MYE (ONS)

*Positive values indicate where mortality rates are lower in the least deprived fifth and therefore contribute to increasing the deprivation gap. Contributions that offset the gap have a negative value.

Life expectancy decomposition: deprivation gap analysis

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Indicator definition:
- Life expectancy decomposition method for age and cause of death: The contribution of different age groups or causes of death to the gap in life expectancy between levels of deprivation (due to changes in age or cause specific death rates) can be calculated using a method of 'life expectancy decomposition'. Contributions to the gap show the amount that life expectancy would increase in the most deprived area if its mortality rate for a cause of death was changed to that of the least deprived area, assuming all other rates remained constant. Contributions that widen the inequality gap (that is, where mortality rate is higher in the most deprived area) are represented with a positive value, while contributions that offset the gap (that is, where mortality rate is higher in the least deprived area) are represented with a negative value.

Causes of death ICD-10 codes:
Cancer: C00-C97 excluding C44
Circulatory: I00-I99
Dementia and Alzheimers: F00, F01, F03, G30
Drug-related: F11-F16; F18-F19; X40-X44; X60-X64; X85; Y10-Y14
External: V00-Y99 excluding Y339 before 2007
Respiratory: J00-J99
Other: All other remaining codes

Data source, demography, geography & period:
- Public Health Mortality (PHM), Office for National Statistics (ONS)
- Mid-Year Population Estimates (MYE), Office for National Statistics (ONS)
- Welsh Index of Multiple Deprivation (WIMD) 2014, Welsh Government (WG)
- Males and Females, all ages
- Wales, least and most deprived fifth
- 2005-07; 2010-12; 2015-17

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