



Llywodraeth Cymru
Welsh Government

Estimates of burden of disease in 2040, Wales

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Science Evidence Advice (SEA)

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Providing evidence and advice for Health and Social Services
Group on behalf of the Chief Scientific Advisor for Health

Headline results

- The proportion of the adult Welsh population living with a major illness is estimated to increase from almost 1 in 6 in 2019 to nearly 1 in 5 by 2040.
- This would mean that in Wales the number of people living with major illness is estimated to increase to 556,000 by 2040; an increase of 137,000 which is more than a third.¹

Background

The aim of this paper is to estimate the number of people living with major illness in Wales in 2030 and 2040 using the projections produced by the Health Foundation for England. The report focused on 20 health conditions that account for 65% of the burden of illness in England and projected patterns of ill health over the next two decades using an epidemiological model that is based on existing evidence and the impact of key risk factors – such as smoking and alcohol.

The Health Foundation has published a report; “Health in 2040: projected patterns of illness in England”.¹ The proportion of England's population living with major illness, almost 1 in 6 of the adult population in 2019, was projected to reach nearly 1 in 5 of the adult population by 2040. We assumed that a similar proportion of the population in Wales would be living with a long-term illness.

Related Downloads were published as part of the report and can be accessed lower down the page linked to above. One of those downloads (“Insight report datasheet”) provides England-specific data on the number of adults (aged 20 or over) living with major illness in 2019, 2030 and 2040 which we use to estimate the figures for Wales.

Methodology

The estimated number of people living with major illnesses in England was obtained from the “Health in 2040: projected patterns of illness in England” report:¹

Table 1: Estimated number of people living with major illness in England, by age group (in 2019, 2030, and 2040)

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	3,040,585	3,506,619	3,543,279
70 years and older	3,646,669	4,585,279	5,597,905
Total (aged 20 years and older)	6,687,254	8,091,898	9,141,183

Source: The Health Foundation Health in 2040 report, their Figure E2

¹ This estimate was calculated using The Health Foundation report and applying the estimates to Wales using the 2021 Census population data for adults (aged 20 or over) in Wales projected to 2040. [Health in 2040: projected patterns of illness in England - The Health Foundation](#)

To calculate the percentage of people with major illnesses, 2021-based population estimates/projections were used from the ONS. The percentage of people with major illnesses is estimated to rise from 48.80% in 2019 to 51.66% in 2030 and 52.13% in 2040 for people aged 70 and above. An increase is seen in people aged 20-69 where the percentage with a major illness is estimated to increase from 8.52% in 2019 to 9.82% in 2030, and to 10.32% in 2040.

Using ONS population data², we obtained the following 2019 population estimates, plus population projections³ to 2030 and 2040 for England: ⁴ :

Table 2: Population of England, by age group (in 2019, 2030, and 2040)

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	35,701,918	35,713,684	34,339,800
70 years and older	7,472,456	8,875,368	10,738,243
Total (20 years and older)	43,174,374	44,589,052	45,078,043

Source: ONS population (projections are 2021-based)

Table 3: Percentage of the population living with major illness, England, by age group (in 2019, 2030, and 2040)

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	8.52%	9.82%	10.32%
70 years and older	48.80%	51.66%	52.13%
Total (20 years and older)	15.49%	18.15%	20.28%

Source: Calculations based on table 1 and 2.

The ONS similarly produced population estimates and projections for Wales⁵:

Table 4: Population of Wales, by age group (in 2019, 2030, and 2040)⁶

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	1,926,857	2,058,427	2,093,521
70 years and older	471,395	555,113	652,101
Total (aged 20 years and older)	2,398,252	2,613,540	2,745,622

Source: StatsWales population (projections are 2021-based)

² [National level population estimates by year, age and UK country \(gov.wales\)](https://www.gov.uk/government/statistics/national-level-population-estimates-by-year-age-and-uk-country)

³ [National population projections table of contents - Office for National Statistics](https://www.gov.uk/government/statistics/national-population-projections-table-of-contents)

⁴ We assumed that the Health Foundation Report used the 2020-based ONS projections for the England population data, and so we used the identical set in our calculations.

⁵ [Population projections by year and age \(gov.wales\)](https://www.gov.uk/government/statistics/population-projections-by-year-and-age)

⁶ We have 2021-based projections for Wales. It is best to calculate Wales using Wales' latest projections, the 2021 projections.

Results

Using the population estimates and projections for Wales (Table 4), we can estimate the number of people in Wales who may be living with major illness in Wales in future years. We used the percentages of the England population living with major illness in the age-groups provided (Table 3) and assumed the same percentage applied in Wales: To estimate the number of people living with major illness in Wales, the percentage of people living with major illness in England was multiplied with population projections/estimates for Wales in the “20-69 years” and “70 years and over” age bands, for 2019, 2030 and 2040. The following results were obtained:

Table 5: Estimated number of people living with major illness in Wales, by age group (in 2019, 2030, and 2040)

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	164,102	202,111	216,015
70 years and older	230,048	286,788	339,944
Total (aged 20 and older)	394,150	488,899	555,959

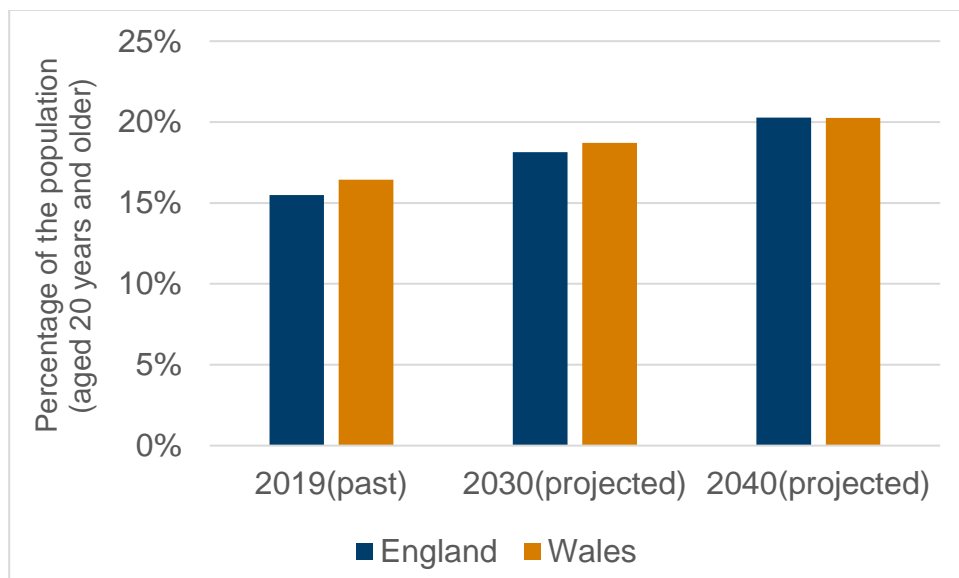
Source: Tables 3 and 4

Table 6: Estimated percentage of people living with major illness in Wales, by age group (in 2019, 2030, and 2040)

Age group	2019 (past)	2030 (projected)	2040 (projected)
20-69 years old	8.52%	9.82%	10.32%
70 years and older	48.80%	51.66%	52.13%
Total (aged 20 and older)	16.43%	18.71%	20.25%

Source: Tables 4 and 5

Figure 1: Percentage of people aged 20 years and older living with major illness in 2019, 2030, and 2040



Source: Tables 3 and 5

Since Wales has a greater proportion of the population who are aged 70 years and older compared with England, when the “20-69 years” and “70 years and older” age groups are weighted, they are more heavily weighted towards the older age group in Wales than England. Since this older age group has a higher percentage of the population with a major illness, this results in an overall higher percentage of people in Wales with major illness aged 20 years and over.

The proportion of England's adult population (of those aged 20 years and older) living with major illness was estimated as almost 1 in 6 of the adult population in 2019 (15.5%) and was projected to reach nearly 1 in 5 of the adult population by 2040 (20.3%). It is possible to make an equivalent statement for Wales: Wales' adult population (of those aged 20 years and older) living with major illness was estimated as almost 1 in 6 of the adult population in 2019 (16.4%) and was projected to reach nearly 1 in 5 of the adult population by 2040 (20.3%).

Discussion

Our paper estimated 488,899 and 555,959 adults aged 20 and above to be living with major illness in the years 2030 and 2040 respectively. To be able to replicate the analysis of the Health Foundation Report for Wales, we would need to obtain data of the number or percentage of the population in Wales living with the 20 health conditions used in the Health Foundation estimation.

In England, the proportion of people reporting bad health decreased from 4.6% in 2011 to 4.1% in 2021, and the percentage of those reporting very bad health declined from 1.4% in 2011 to 1.2% in 2021. Meanwhile, in Wales, approximately 164,000 people (5.1%) reported bad health in 2021 (compared to 6.0% in 2011), and around 52,000 people (1.6%) reported very bad health (compared to 1.9% in 2011). Wales

has a slightly higher percentage of the population self-reporting bad health/very bad health compared to England. As a result, our projections may be conservative and potentially underestimate the health challenges faced by the Welsh population.⁷

Wales' 2019 population may also have some second variable, other than age, affecting its major illness burden versus England. We have not applied any adjustment in our calculations to allow for any such difference. This may lead to an underestimation in our burden of disease estimate for the known year 2019. Be aware that any additional variable relevant in 2019 may no longer be relevant in 2040.

Next steps

In the future, we could carry out our own modelling to estimate the number of people in Wales both now and in the future who may be considered to have a major illness. This could involve (with permission or collaboration) replicating the methods used in the Health Foundation report or by carrying out our own modelling internally.

⁷ [General health, England and Wales - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk)