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**Forecasting future co-morbidity prevalence and dependency in West Sussex**

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This report models future co-morbidity prevalence and dependency of older people to 2035 by applying findings from a UK study (the Population Ageing and Care Simulation study [1]) to the local population. Some caution is needed when applying findings from a study undertaken elsewhere in the UK to the local population as there will be differences in health status and local context; the projections should be considered as indicative of general trends, rather than precise predictions.

#### Key findings:

* In 2035 most residents between the ages of 65-85 are expected to remain independent with 28% projected to have dependency needs.
* Growth in the number of people with dependency could be greatest among women and the oldest age groups. Four out of five residents aged 85 and above could have at least some dependency needs. As an increasingly ageing local authority, a larger population in these groups will increase total numbers in each category of dependency even if the proportion of those with dependency remains stable.
* The number of people with low dependency needs will increase by 16,700 by 2035, an increase of 31% on 2022.
* The number with medium or high dependency (substantial) needs will increase by 3,700, up 14% from 2022.
* By 2035 there could be an increase of 5,700 people living with dementia and at least two other long-term health conditions, an increase of 71% on 2022. It will be less common than now for dementia to be the only condition that residents have. This will increase the complexity of care required. There will be an increase of 2,200 residents with substantial dependency and 3+ long-term health conditions, excluding dementia.

## Contents

[Contents 3](#_Toc158650890)

[Key points for strategic planning and commissioning 4](#_Toc158650891)

[Using population estimates and subnational projections 5](#_Toc158650892)

[Population ageing 6](#_Toc158650893)

[Changes in population structure across West Sussex districts and boroughs 7](#_Toc158650894)

[Multi-morbidity 7](#_Toc158650895)

[Population and Care Simulation Study 8](#_Toc158650896)

[Sociodemographic 8](#_Toc158650897)

[Lifestyle behaviours 9](#_Toc158650898)

[Diseases and impairments 9](#_Toc158650899)

[Defining dependency 9](#_Toc158650900)

[Changes in dependency over time 10](#_Toc158650901)

[Dependency by sex 10](#_Toc158650902)

[Substantial dependency by sex and age 11](#_Toc158650903)

[Substantial dependency and long-term conditions 11](#_Toc158650904)

[Substantial dependency for those with dementia and other long-term conditions 12](#_Toc158650905)

[Limitations 13](#_Toc158650906)

[References 13](#_Toc158650907)

## Key points for strategic planning and commissioning

1. Changes in the population structure imply that there will be fewer working-age friends and family members to provide unpaid care to older relatives, and challenges in health and care workforce recruitment.
2. These changes will in part need to be filled by a greater number of ageing carers who will in many cases also have long-term conditions. Support for unpaid carers will need to adapt further to support people to co-care with chronic conditions.
3. This change in the availability of unpaid carers and the health and care workforce may be most acute in Chichester and Arun which have the highest proportions of older residents as a ratio of working-age adults.
4. There will be an increase in residents with low and high dependency needs, but not in those with medium dependency.
5. Consideration will need to be given as to how combinations of long-term conditions can be managed by individuals, their carers, and professionals. Dementia care will have to increasingly incorporate care of long-term conditions. This will require greater coordination between the NHS and social care, and different specialisms within the NHS.
6. Particular attention should be paid to supporting women to maintain their independence, given that there are projected to be more than double the number of women than men with dependency needs by 2035.

### Using population estimates and subnational projections

Annual population estimates are best guesses of the demographics of the resident population of an area. They are most accurate at the time of a national Census and then get more and more uncertain until the next one.

Sub-national projections have historically been published every two years, although the most recently available projections are based on mid-2018 data [2]; this does not consider the recent changes in population (migration, deaths, and births) due to the COVID-19 pandemic, nor does it take into account the most recent 2021 Census.

As such, we have adjusted the 2018-based population projections to account for what we now know about the demographics of residents in 2022. This means that projected estimates in this report may differ from those published elsewhere.

In this report 2022 population data is based on estimates, 2025 onwards are projections. Percentage change is calculated using unrounded values, However, totals in the text are rounded to the nearest 100 to emphasise the uncertainty inherent in these population estimates.

## Population ageing

West Sussex has an older population structure compared to England overall. Those aged 65 and over currently comprise 23% of the resident population (2022 estimate, 205,800). This is expected to increase to 28% of the total population by 2035 (267,200). The working age population will decrease proportionally from 60.4% (539,000) of the resident population in 2022 to 57.4% (546,000) in 2035. The number of people aged 65+ in West Sussex is projected to increase from 205,800 in 2022 to 267,200 in 2035, an increase of 29%. The largest percentage growth will be in those aged 85-89.

The following data describes changes in the number of people in 5-year age brackets in West Sussex between 2022 and 2035:

* The number of people aged 65-69 is expected to grow from 50,000 in 2022 to 65,500 in 2035, an increase of 30.9%.
* The number of people aged 70-74 is expected to grow from 49,800 in 2022 to 63,300 in 2035, an increase of 27%.
* The number of people aged 75-79 is expected to grow from 46,000 in 2022 to 51,300 in 2035, an increase of 11.4%.
* The number of people aged 80-84 is expected to grow from 28,800 in 2022 to 39,300 in 2035, an increase of 36.5%.
* The number of people aged 85-89 is expected to grow from 18,900 in 2022 to 31,000 in 2035, an increase of 63.7%.
* The number of people aged 90+ is expected to grow from 12,200 in 2022 to 16,800 in 2035, an increase of 38%.

Overall the number of people aged 65+ is expected to grow from 205,800 in 2022 to 267,200 in 2035, an increase of 29.8%.

## Changes in population structure across West Sussex districts and boroughs

The old age dependency ratio is the number of older people (aged 65+) compared to the number of working-age people (aged 16-64) in a population. In the UK overall there are currently about 300 people of state pension age for every 1,000 working-age (or roughly three working-aged people for every state pensioner). The population in West Sussex is older than nationally. In 2023, the old-age dependency ratio in West Sussex was 411 and projected to rise to 502 by 2033 and 563 by 2043. An increase in the older-age population in relation to the working-age population in an area means there may be fewer paid carers to support older people. For unpaid carers, the burden will shift more onto those who are also aged 65 and over.

Chichester and Arun have the highest proportion of older residents to working age adults. Currently there is around one older person for each two working age adults in these two districts. This is projected to rise to almost three older people for every four working-age adults by 2043.

Horsham, Adur, Worthing and Mid Sussex also have higher proportions of older people than the national and South East average. Crawley has a relatively low proportion of older residents, projected to rise to 320 per 1,000 older adults by 2043.

## Multi-morbidity

As we age, we are likely to have or develop one or more long term health conditions. This is called co-morbidity. Whilst multi-morbidity is not solely a phenomenon for older age, the number of long-term conditions increases with age. The prevalence of multi**-**morbidity is statistically significantly higher among females in every age group.

Public Health England published estimates of the number of people with multi-morbidities in each local authority using data from Barnett et al 2012[3]**.**

The following data describes the estimated percentage of males and females in each age bracket with at least two long-term health conditions:

* 13.2% of females aged 25-44
* 8.8% of males aged 25-44
* 32.4% of females aged 45-64
* 26.5% of males aged 45-64
* 64.7% of females aged 65-84
* 63.5% of males aged 65-84
* 82.1% of females aged 85+
* 80.1% of males aged 85+

It is important to note that these figures represent the prevalence estimates we would expect if the estimates observed in the study were also observed in the local area. It is not counts of diagnoses in West Sussex.

## Population and Care Simulation Study

PACSim is the first dynamic microsimulation model forecasting dependency profiles of future older populations for England. It is based on longitudinal data from three nationally representative large scale cohort studies of adults aged 35 years or older.

The variables included in the model were:

### Sociodemographic

Age, sex, education, marital status, occupation (socioeconomic status) and retirement status.

### Lifestyle behaviours

Smoking, physical activity and BMI.

### Diseases and impairments

Twelve chronic diseases and geriatric conditions: cognitive impairment, coronary heart disease, stroke, hypertension, diabetes, arthritis, incontinence, depression, respiratory disease, cancer, visual impairment, and hearing impairment.

Most diseases were considered chronic. The exceptions were depression, vision and hearing impairments, and mild cognitive impairment where the probability of recovery was also estimated. To note: multi-morbidity is not equivalent to frailty.

We took these interval time-period values and interpolated the incremental changes between years allowing us to create an annual dependency prevalence estimate for 2015-2035 for those aged 65 and over. This could then be applied to our adjusted population projections for West Sussex local authorities.

### Defining dependency

The four categories of dependency used in the PACSim model are defined as follows:

Independent: supervision or help for any activity is not essential.

Low: care is less than daily but needs help with at least one of washing or bathing; cutting toenails; shopping or doing housework.

Medium: care at regular times each day to prepare a meal or put on socks and shoes.

High: 24 hour care, including at least one of getting to or using the toilet; getting out of a bed or chair; feeding; dressing. Individuals with this level of dependency are often incontinent and have severe cognitive impairments.

## Changes in dependency over time

PACSim forecasts the total number in each dependency category will broadly increase in proportion to the increase in the old-age population with the exception of Medium dependency. Below the forecast changes in the number of people aged 65 and over in each dependency category are described:

* The number of residents who will remain independent could grow from 125,300 in 2022 to 166,100 in 2035, an increase of 32.6%.
* The number of residents with low dependency could grow from 54,700 in 2022 to 71,400 in 2035, an increase of 30.4%.
* The number of residents with medium dependency is forecast to remain similar to now with 9,800 in 2022 and 10,100 in 2035, an increase of just 3.4%.
* The number of residents with high dependency could grow from 16,000 in 2022 to 19,500 in 2035, an increase of 22.4%.

Breakdowns of dependency by age bracket, sex and lower-tier local authority are available upon request. Please contact [henry.mclaughlin@westsussex.gov.uk](mailto:henry.mclaughlin@westsussex.gov.uk) to request this information.

### Dependency by sex

There is projected to be an additional 4,700 female residents with medium or high dependency by 2035.

The number of male residents with medium and high dependency needs is forecast to remain stable over the period.

### Substantial dependency by sex and age

Substantial dependency is used to jointly consider those with medium and high dependency, and allow comparison with other characteristics such as sex and age. Much of the growth in substantial dependency is due to women aged 85+. On average women live longer, but with fewer years without disability. The model suggests men moving into old-age will do so with improving health. While there are greater numbers of men living to older ages, the number that are dependent may not increase proportionately.

Breakdowns of substantial dependency by sex, age bracket and lower-tier local authority are available upon request. Please contact [henry.mclaughlin@westsussex.gov.uk](mailto:henry.mclaughlin@westsussex.gov.uk) to request this information.

## Substantial dependency and long-term conditions

The PACSim study suggests, that in 2022 5.4% of males and 8.6% of females aged 65+ will **three or more conditions** and substantial dependency needs**.** By 2035, this could reach 5.5% and 11% for males and females respectively.

* The number of people with zero or one disease is forecast to fall from 4,600 in 2022 to 2,300 in 2035, a decrease of -50.5%.
* The number of people with two diseases is forecast to fall from 6,100 in 2022 to 5,500 in 2035, a decrease of -9.6%.
* The number of people with three or more diseases is forecast to grow from 14,700 in 2022 to 22,500 in 2035, an increase of 52.9%.

### Substantial dependency for those with dementia and other long-term conditions

We could expect the number of residents with dementia and at least two other long-term conditions to increase from 8,000 in 2022 to 13,700 in 2035. For both those with substantial dependency as well as with and without dementia, there is a shift from having none or just one disease to having multiple long-term conditions.

For those residents aged 65 and over with dementia it is forecast that:

* The number whose only condition is dementia could fall from 740 in 2022 to 650 in 2035, a decrease of 11.1%.
* The number with one other health condition could increase from 2,100 in 2022 to 2,500 in 2035, an increase of 19%.
* The number with two or more other health conditions could increase from 8,000 in 2022 to 13,700 in 2035, an increase of 70.2%.

For those residents aged 65 and over who do not have dementia it is forecast that:

* The number with zero to 1 health condition could fall from 3,900 in 2022 to 1,600 in 2035, a decrease of -57.8%.
* The number with two diseases could fall from 4,000 in 2022 to 3,000 in 2035, a decrease of -24.8%.
* The number with three or more diseases could grow from 6,700 in 2022 to 8,900, an increase of 32.6%.

## Limitations

PACSim is based on data which is now over a decade old. Prevalence of conditions and lifestyle behaviours may have changed in the intervening period. The 12 conditions and impairments included in the study are not exhaustive and do not include severe mental illness, drug and alcohol use or learning disabilities which may benefit from separate examination. Stalling increases in life expectancy since this model was produced and the effect of Covid-19 may have impacted dependency projections.

# References

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