Projecting the economic benefits of the NHS Elective Recovery Plan

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Contents

Reducing the waiting lists sooner could result in an £80bn+ economic improvement

LCP powering possibility

- Due to reduced capacity over the Covid-19 pandemic, waiting lists have increased by **60%** since February 2020.
- In order to address this increasing backlog, the NHS's Elective Recovery Plan aims to increase capacity for inpatient and outpatient treatments by 30% by 2025, relative to pre-Covid levels.
- We aimed to quantify the number of patients that could be treated if capacity was increased and the wider societal benefit that could be observed due to increased quality of life following treatment.
- If the plan is successfully implemented, we estimate that waiting times for elective treatments will reduce by a total of 17m patient-years over the five years to 30 September 2027.
- We estimate that this could result in an economic benefit of around £80bn due to increased productivity and reduced consumption of medical care.
- We estimate the most impacted group would be those aged 55-74 who make up a large proportion of the waiting list.
- This work highlights the importance of facilitating the NHS's Elective Recovery Plan to ensure that patients benefit individually from living in better health sooner, and that wider society benefits too.

The NHS aims to increase elective treatment capacity by 2025

- The NHS waiting list for elective care **increased by 60%** between 29 February 2020 (4.4m) and 30 September 2022 (7.1m)[1]. This was largely driven by **reduced treatment capacity** during the Covid-19 pandemic.
- In response to this backlog, the NHS launched its Elective Recovery Plan[2] in February 2022, which aims to **increase elective activity by 30%** (compared to before the pandemic) by 2024/25.
- The number of people on the waiting list continues to grow and indicates **increasing numbers of people living in poor health**. Treating these patients will have a benefit to the patient as an individual and a **wider societal benefit** if the patient's health is improved enough to return to previous activities of daily living.
- While the number of patients on the 'known waiting list' is increasing, there is also an increasing number of **'hidden need'**[3], those that require treatment but have not yet been referred due to the pandemic changing behaviours or limiting access to care.
- This project aimed to quantify the economic impact that could be realised if the NHS Elective Recovery plan is implemented successfully by:
  - Projecting the number of people (both known and hidden) on the waiting list to 2027 if treatment rates are increased under three scenarios
  - Quantifying the economic benefit of a reduced time waiting for care

References
1. Waiting List Tracker (lcp.com)
2. NHS Elective Recovery Plan
3. The Elephant in the NHS Waiting Room (lcp.uk.com)

Projecting changes in time on the waiting list was translated into increases in economic productivity

Waiting list projections

- We have used a multiple state model to project the size of the NHS waiting list into the future, allowing for "hidden need" built up in respect of patients not coming forward for treatment during the pandemic. Further detail on the calculation of "hidden need" can be found here.
- Our projections are based on NHS waiting list data to 30 September 2022 and cover the five-year period from 1 October 2022 to 30 September 2027.
- We have considered three scenarios, all of which involve NHS capacity for inpatient and outpatient procedures increasing linearly over the period to 1 May 2025 and plateauing thereafter. The scenarios differ with respect to the assumed capacity reached in 2025, as described in the following slide.
- Each scenario is compared with a "counterfactual" scenario in which NHS capacity does not increase above the levels seen immediately before the pandemic.

Conversion into economic benefits

- Under each scenario, we calculate the total reduction in time spent waiting for treatment (measured in *patient-years*) relative to the counterfactual scenario.
- The total gain in patient-years is split by age, gender and treatment speciality, based on the distribution of the current waiting list between treatment specialities and the demographic profile of patients being admitted for treatment.
- The patient's quality of life (QoL) before and after treatment is calculated relative to the speciality the patient is requiring treatment for (slide 8).
- We have used the Wider Societal Benefits model developed by the Department of Health (DoH) to estimate the increase in net production associated with clearing a patient off the waiting list. Assumptions used within the model are as set out in NICE's methodology, adjusted as required for inflation (see Appendix).

Three scenarios were used to vary the increase in elective treatment capacity

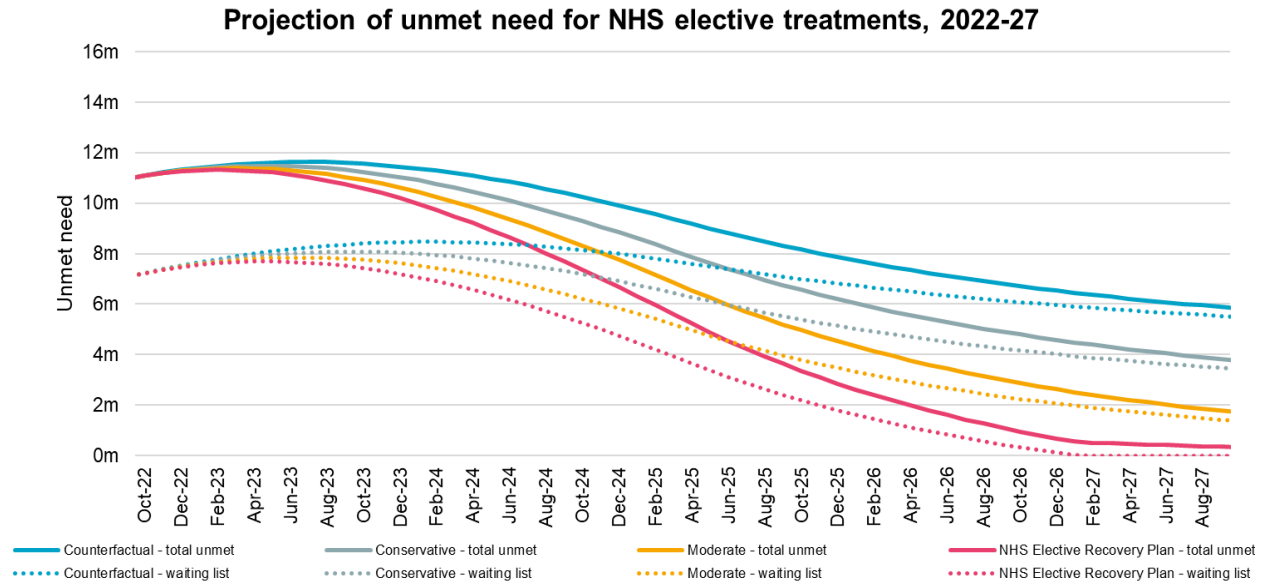
- All three scenarios assume that treatment capacity increases linearly from the current rate (1.33m per month) over the period to 1 May 2025, after which capacity is assumed to remain constant.
- The difference between the scenarios is in the assumed capacity reached in 2025, which we have measured relative to the average number of patients treated each month over the pre-Covid-19 period from 1 January 2019 to 29 February 2020 (1.39 per month).
- The most ambitious scenario assumes that the NHS Elective Recovery Plan of a 30% increase in capacity is achieved, and we have included two less ambitious scenarios which assume 10% and 20% uplifts to capacity, representing situations where the Elective Recovery Plan is partially successful.
- Each scenario is compared to the **counterfactual** scenario, which assumes no increase in capacity above the 2019 baseline.

	Increase in capacity relative to pre-Covid baseline (1.39m treated per month)	Number of patients treated per month from 1 May 2025	Increase relative to current treatment levels (1.33m treated per month)
Counterfactual	**0%**	1.39m	4%
Conservative	**10%**	1.52m	15%
Moderate	**20%**	1.66m	25%
NHS Elective Recovery Plan	**30%**	1.80m	36%

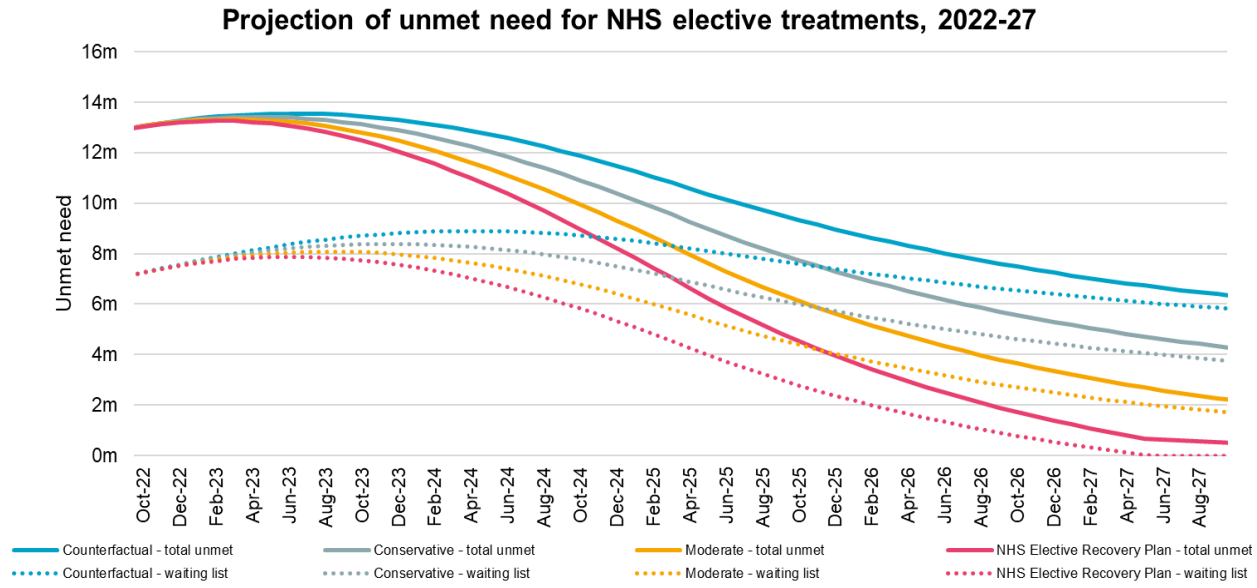
Projections include hidden need to show the total unmet need 2022-2027

- The following charts show our waiting list projections under each scenario, including the counterfactual scenario where capacity returns to the 2019 baseline in 2025 (an increase of 4% from the current level).
- "Total unmet need" consists of the known waiting list (7.1m at 30 September 2022) plus "hidden need" in respect of patients not coming forward for care during the pandemic (total of 7.8m since the start of the pandemic). We have projected the total unmet need to 2027 assuming that either 50% (left hand chart) or 75% (right hand chart) of these 7.8m patients with hidden need come forward for treatment going forwards, and are therefore included in the total unmet need at 30 September 2022. The dotted lines in both charts illustrate the projected known waiting list only, i.e. excluding projected hidden need; the solid lines show total unmet need, i.e. including projected hidden need.
- Our hidden need projections do not vary by scenario; all the variation is driven by changes in the projected known waiting list.
- For the analysis we have assumed 50% of the hidden need is referred to the waiting list, in line with the central assumption used by the IFS*. However, in practice the economic impact of this assumption is negligible: the total gain in net production under all scenarios is broadly similar when rounding to £bn.

Assuming 50% of hidden need is referred to the waiting list



Assuming 75% of hidden need is referred to the waiting list



* The NHS backlog recovery plan and the outlook for waiting lists | Institute for Fiscal Studies (ifs.org.uk)

Calculation of pre and post treatment QoL scores varied by speciality

- To model the **pre-treatment quality of life** (QoL) for a patient on the waiting list for a given condition, we have relied on analysis undertaken by the University of York[1] which grouped patients by age bands based on the ICD-10 chapter of their condition. We have mapped the waiting list treatment specialities onto ICD-10 chapters, as shown below.
- To calculate the **"baseline" QoL** we have relied on data from the Health Survey for England 2014[2] to model a patient's baseline QoL, in line with the 2022 NICE Methods Guide.
- The charts on the following slide set out the pre-treatment and baseline QoL scores we have used.
- To model the **post-treatment QoL**, following discussion with IPPR, we have applied a scaling factor for each condition to represent the extent to which patients move towards their baseline QoL score following treatment. The scaling factors are set out below.

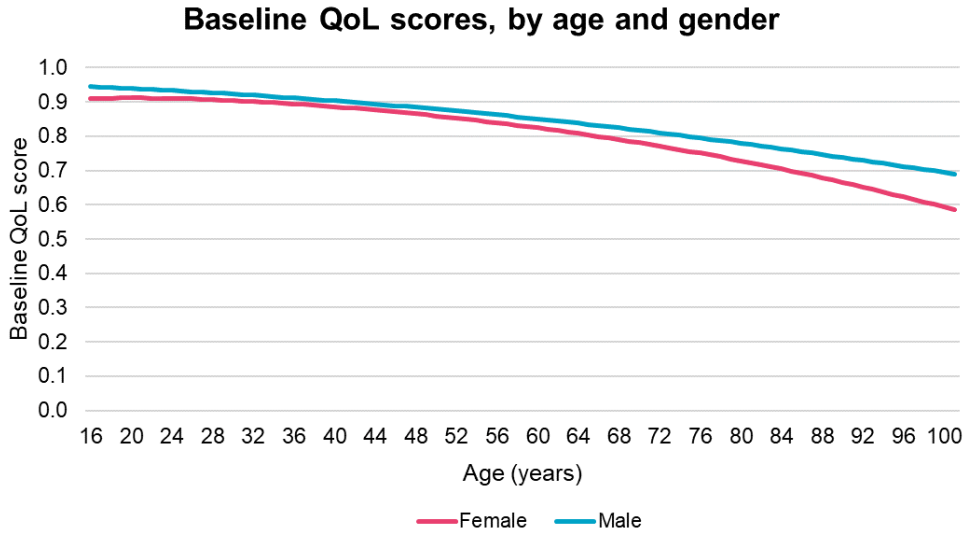
ICD-10 chapter	Description	Specialities included
H	Diseases of the eye and adnexa; diseases of the ear and mastoid process	Ear nose and throat (ENT), Ophthalmology
K	Diseases of the digestive system	Gastroenterology
L	Diseases of the skin and subcutaneous tissue	Dermatology
N	Diseases of the genitourinary system	Urology
O	Pregnancy, childbirth and the puerperium	Gynaecology
S	Injury	Orthopaedics
Other		All other specialities

Type of surgery	Specialities included	Scaling factor
Minimal	Dermatology Ear nose and throat (ENT), Ophthalmology Oral Surgery Plastic Surgery	**100%**
Major	Cardiothoracic Surgery General Surgery Neurosurgery Orthopaedics	**50%**
Minor	All other specialities	**75%**

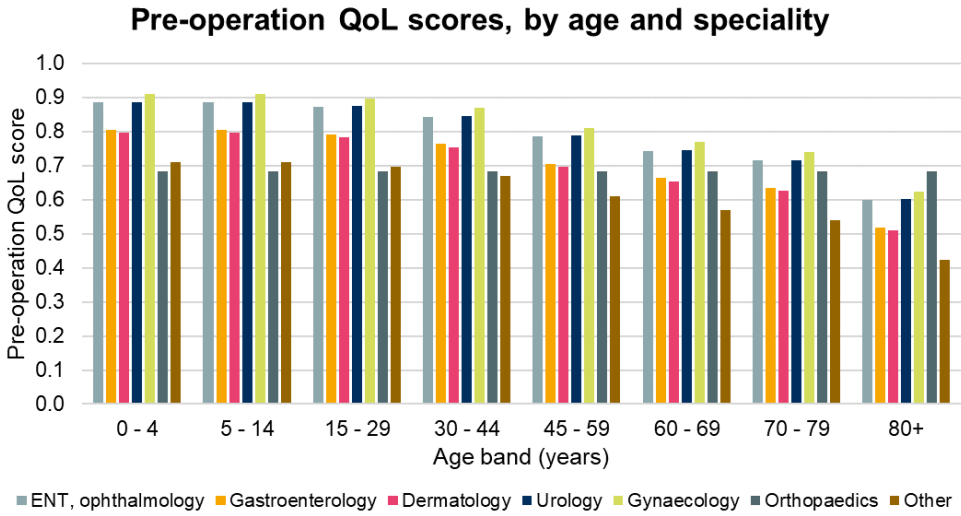
Source: Health Opportunity costs (Estimating health opportunity costs in the NHS and other health care systems) Methods for estimation of the NICE cost-effectiveness threshold Claxton et al. Accessed X November 2022 NICE Threshold - Centre for Health Economics, University of York

Pre-operative QoL scores steadily decline with age

- The chart opposite sets out the baseline QoL score at each age for males and females. As the baseline scores are broadly designed to represent healthy patients, our calculations use the same baseline QoL scores for patients in each treatment speciality.



- The second chart shows the pre-operation QoL scores within each age band, split by speciality. In practice, our calculations use separate pre-operation QoL scores for males and females. However, averaged scores are shown here for illustration.



Components of net production

Net production = production – consumption

Production

- Paid production is calculated as

  gross wage(1+16.4%)*productivity rate.*

- The gross wage is specific to the patient's age and gender, the 16.4% uplift represents the typical overhead costs of employment, and the productivity rate reflects the proportion of time spent working, which depends on the patient's QoL score.
- Unpaid production, for example domestic work or volunteering, is calculated by multiplying the average hours spent on unpaid production (based on the patient's age and gender) by the opportunity cost of that production, which is taken as being the mean net hourly wage of £15.05 as of September 2022.
- A list of the activities included as unpaid production is included in the appendix. Passive childcare and sickness care are included separately in the model.
- Under this model, a typical 65-year-old in good health contributes around 10 hours per week of paid production and around 40 hours per week of unpaid production. Further detail on the paid and unpaid production rates used in the model is included in the appendix.

Consumption

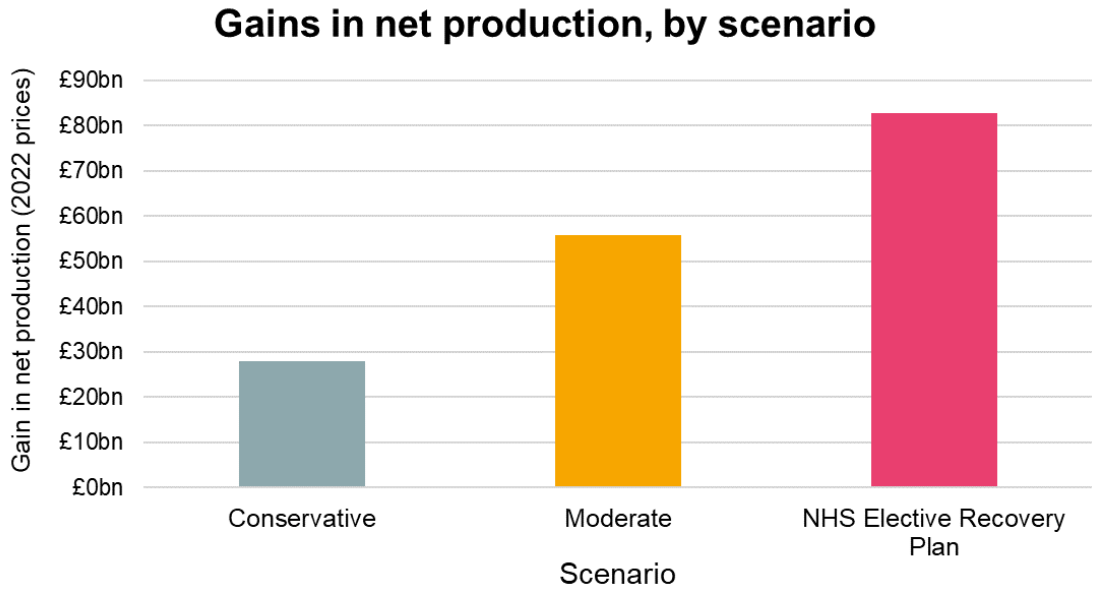
- Private paid consumption is calculated by estimating mean household expenditure in 2022 (£520 per week), dividing by mean household size (2.35 persons), and adjusting for different levels of consumption at different ages. An adjustment is made for patients receiving residential care.
- Unpaid consumption is calculated by multiplying the average amount of unpaid economic activity per person (115 hours per month) by the mean net hourly wage of £15.05. An adjustment is made for patients receiving residential care.
- Formal care costs are calculated by estimating private care costs in 2022 (£2,555 per month) and multiplying by the probability of needing care, which depends on the patient's QoL score.
- A similar model is used to calculate the cost of receiving informal care, where the expected hours of care received depends on the patient's QoL score.
- We have ignored consumption of government services, as this does not depend on a patient's QoL score under the DoH model.

Full documentation of model: DH-Documentation-for-Wider-Societal-Benefits.pdf (nice.org.uk)

Reducing the waiting list could lead to an estimated saving of £83bn

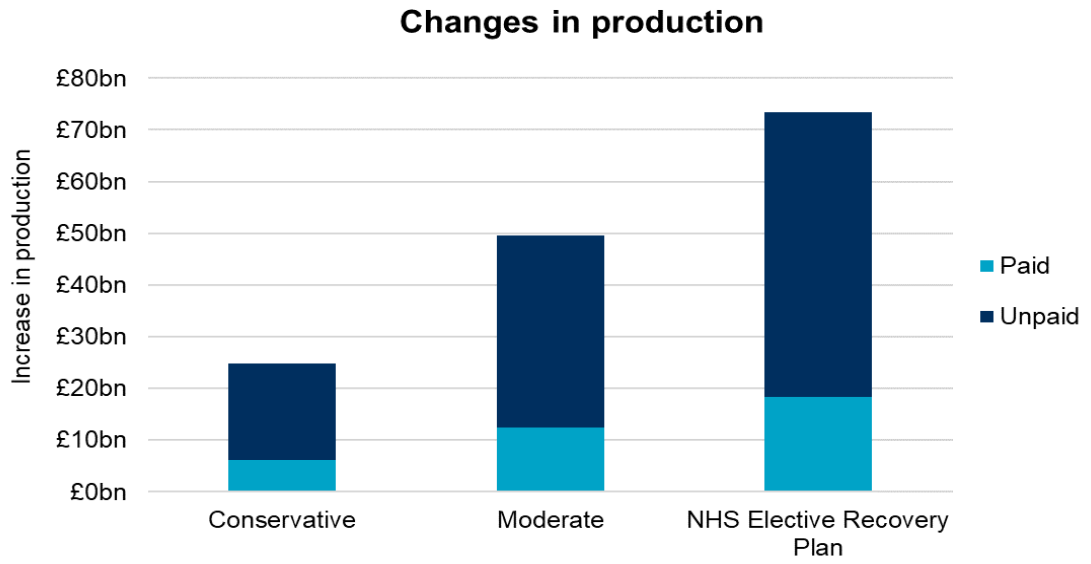
- The targeted scenario, in which NHS treatment capacity reaches 30% above the levels seen immediately before the pandemic, estimates a total saving of £83bn over the next five years, equivalent to around 0.75% of UK GDP over this period.
- This compares with the NHS's projected costs of implementing the Elective Recovery Plan of £13.9bn over the three years to 31 March 2025.

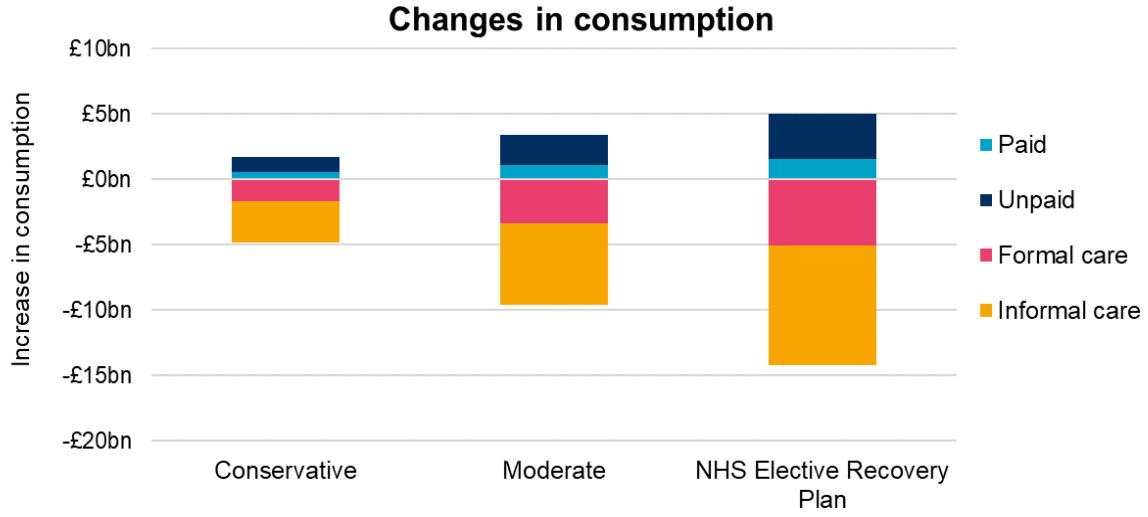
Scenario	Reduction in waiting times (patient-years)	Gain in net production (2022 prices)
Conservative (10%)	5.7m	£28bn
Moderate (20%)	11.3m	£56bn
NHS Elective Recovery Plan (30%)	16.8m	£83bn



All components of production increase, while cost of care decreases

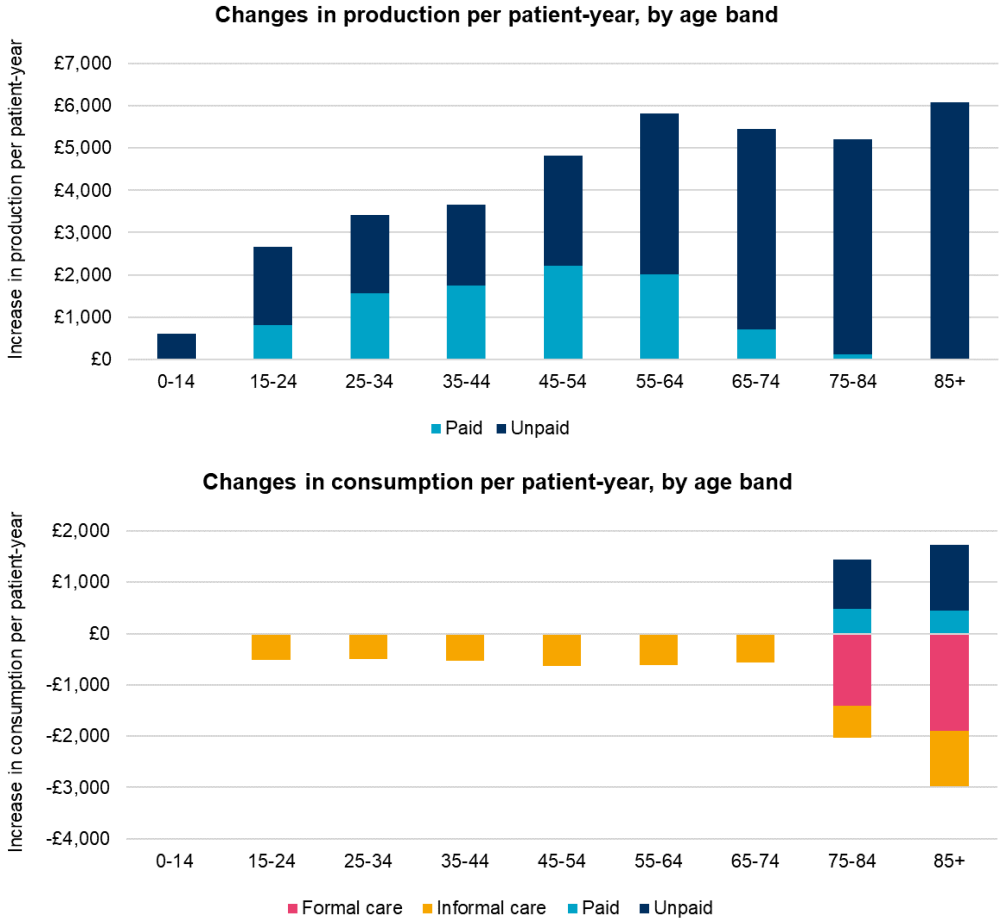
- A patient's quality of life (QoL) score improves on average from **0.67 to 0.80** when treatment is completed (i.e. no longer on the waiting list).
- This results in an overall increase in an individual's productivity of £13.48 per day, equivalent **to £4,920 per year.**
- When a patient's QoL score increases, both paid and unpaid production increase.
- When a patient's QoL score increases, paid and unpaid general consumption increase, but this is outweighed by a greater decrease in their consumption of formal and informal care.
- The relative attribution of gains in net production between the components of production and consumption is the same under all scenarios.
- The changes in production and consumption under each scenario are shown in the charts opposite, with numerical values set out in a table in the appendix.

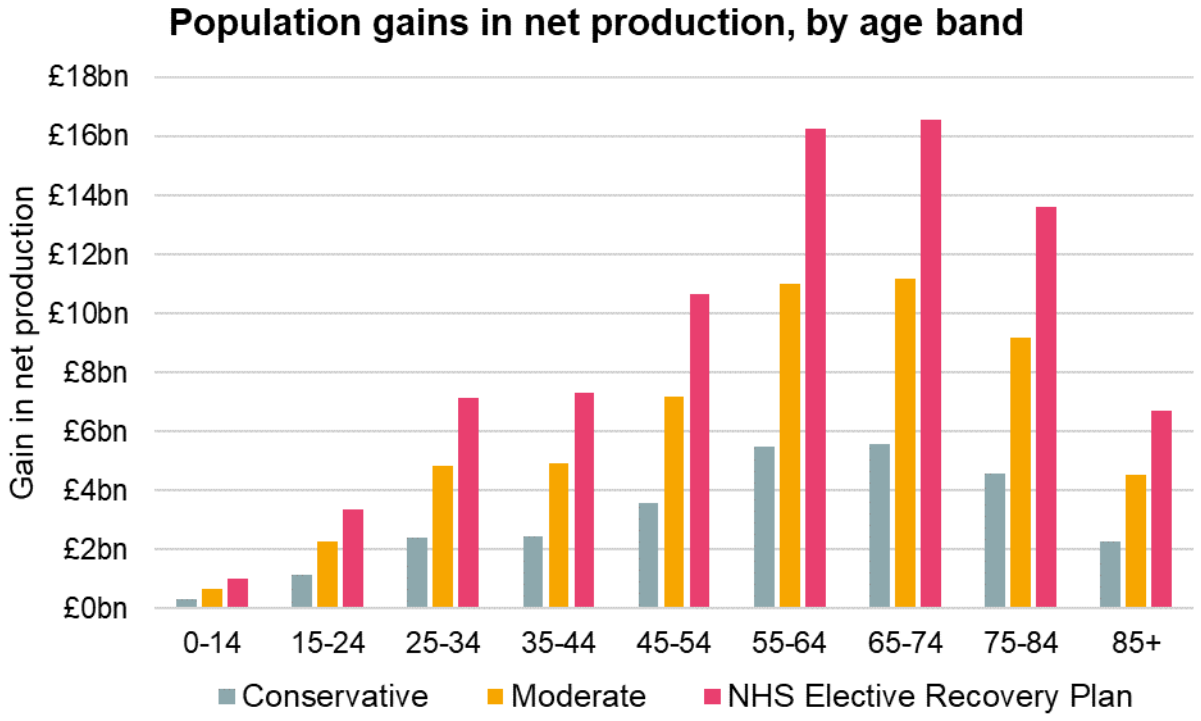




The largest estimated gain in net production is observed in those aged 55-74 years

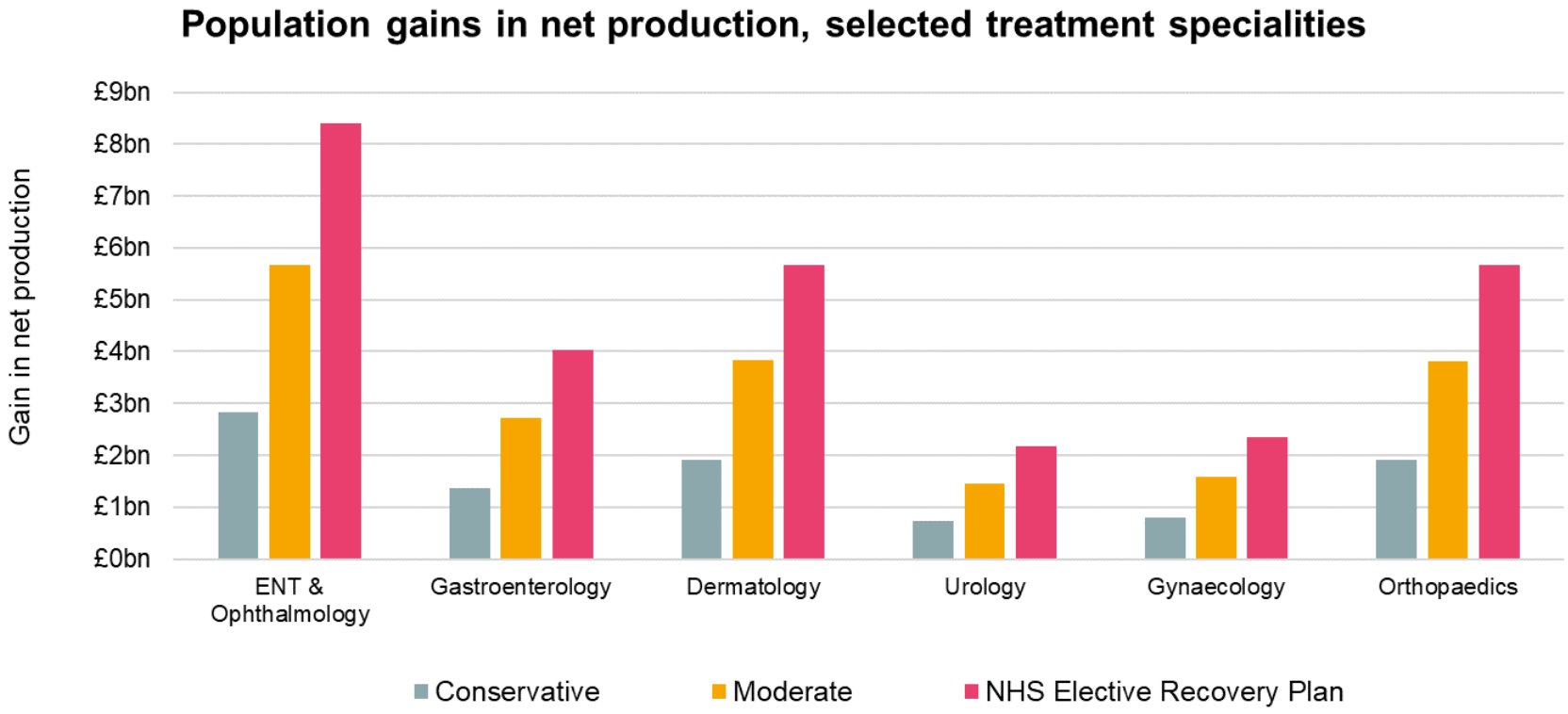
- Bringing treatment forward has a greater impact on net production for older patients than for younger patients.
- Patients aged 55-74 make up 31% of the waiting list and 40% of the population gains in net production.





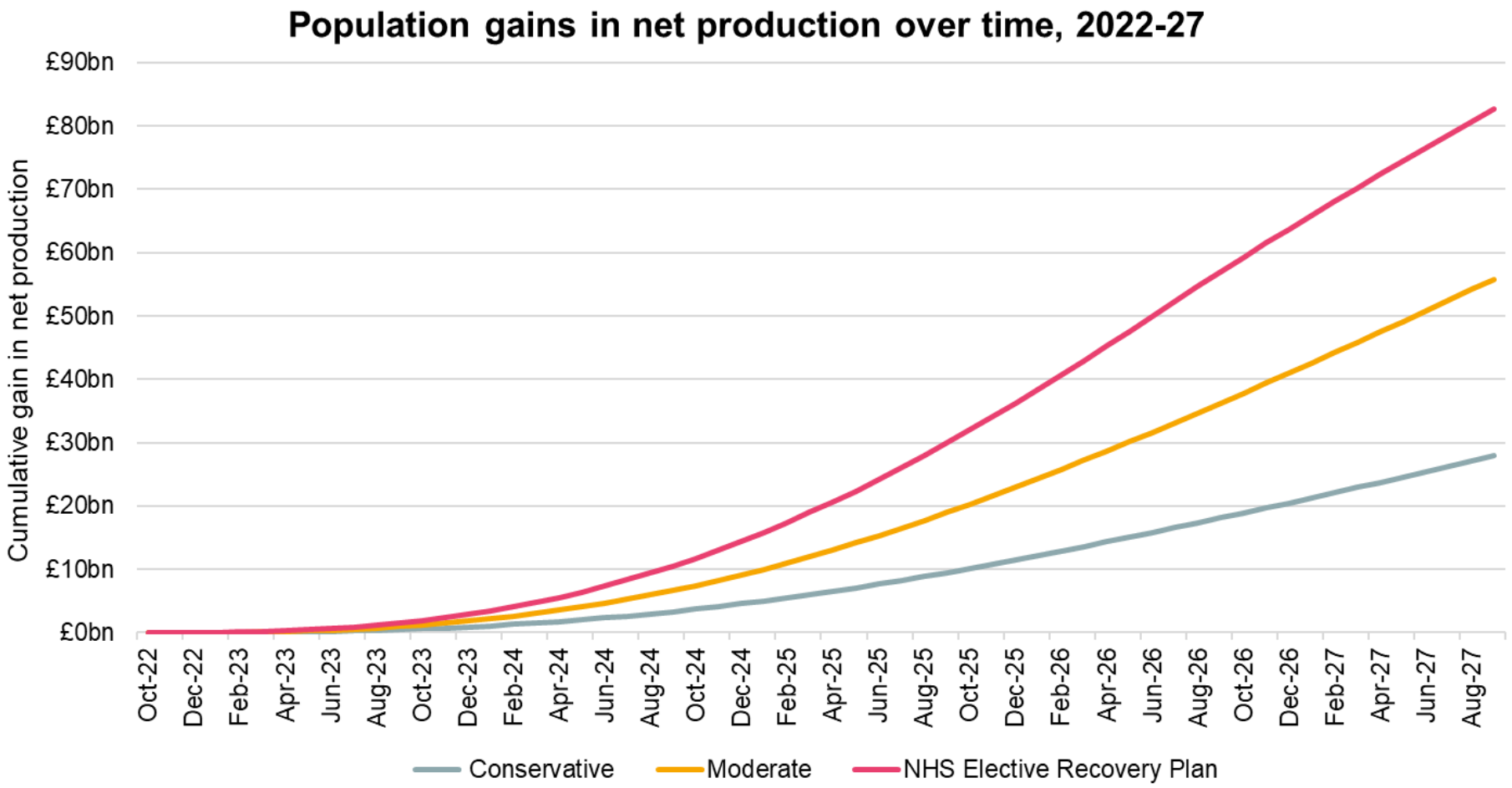
ENT and Ophthalmology patients have the highest estimated gains under all scenarios

- This chart shows only those treatment specialities that map directly to specific ICD-10 chapters.
- As such the higher ENT & Ophthalmology gains will be in part due to an assumed 100% return to baseline.
- The remaining gains in net production are captured in the “other” ICD-10 chapter, for the purposes of the DoH model.



Emergence of gains over time mostly observed in 2026-2027

- Over half of the gain in net production under all scenarios accrues in the final 18 months, i.e. from 1 April 2026 to 30 September 2027.



Sensitivity to assumptions

Effect on net production gains of changing selected assumptions

- The table below illustrates the effect of increasing or decreasing certain parameters on the results of our analysis.
- Each sensitivity is considered in isolation, with all other parameters set equal to the base case.
- The net production figures shown are from the “NHS Elective Recovery Plan” scenario. The other scenarios exhibit similar percentage changes in net production under the same parameter changes.

Parameter	Change in parameter	New parameter	Change in total gain in net production	New total gain in net production
Base case	*N/A*	*N/A*	*N/A*	*£83bn*
Baseline QoL scores	-0.05	0.75 (F) / 0.78 (M) at age 65	-28%	£60bn
	+0.05	0.85 (F) / 0.88 (M) at age 65	+28%	£105bn
QoL scaling factors	-25%	25% major / 50% minor / 75% minimal	-32%	£56bn
	+25%	75% major / 100% minor / 100% minimal	+25%	£103bn
Age of waiting list	-5 years	Mean age of 47	-6%	£78bn
	+5 years	Mean age of 57	+7%	£89bn
Gross wage rate	-10%	£559 per week	-8%	£76bn
	+10%	£683 per week	+8%	£90bn
Cost of private residential care	-10%	£2,300 per month	-1%	£82bn
	+10%	£2,811 per month	+1%	£83bn

The economic benefit is materially affected by the effectiveness of the recovery plan

- The substantial variation between the projection scenarios shows how dependent the size of the economic boost is on the effectiveness of the Elective Recovery Plan. If treatment rates increase by 10% above 2019 levels (i.e. 15% above current levels), we project that the gain in net production would be £28bn. However, if treatment rates increase by 30% above 2019 levels (i.e. 36% above current levels), we estimate a net production gain of £83bn, 296% higher.
- These gains in net production are large relative to NHS's expected costs of implementation (£13.9bn), suggesting that tackling the elective backlog would result in an overall resource saving.
- Under the "NHS Elective Recovery Plan" scenario, we project that £14bn of the £83bn total gain in net production (17%) would arise from reduced costs of formal and informal patient care. This would increase available resources in a sector that is increasingly stretched since the pandemic.
- The economic gains covered in this report would be additional to any health benefits for patients from receiving earlier treatment for their conditions. We would expect clearing the elective backlog to lead to gains in Quality Adjusted Life Years (QALYs), as patients live longer and/or in better health following treatment.
- This report only considers increases to treatment capacity within the NHS. However, the NHS intends to work in partnership with independent sector providers as part of the Elective Recovery Plan. If private sector capacity is used effectively to help clear the elective backlog within the NHS, we could see further reductions in aggregate waiting times and gains in net production.

Reductions in consumption of formal and informal care account for 17% of total projected net production gains.

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Additional assumptions for the Wider Societal Benefits Model

Most of the financial assumptions set out in the NICE methodology note reflect price levels in 2010 or 2011. To allow for inflation since then, we have made the following adjustments and judgements in our calculations:

- We have used age-banded gross pay from the 2022 Annual Survey of Hours and Earnings: Employee earnings in the UK - Office for National Statistics (ons.gov.uk).
- We have calculated average net total pay based on ONS gross average wages in September 2022: Average weekly earnings in Great Britain - Office for National Statistics (ons.gov.uk). To derive a net wage rate, we inputted the gross wage rate into the UK government's weekly income tax calculator.
- We have uplifted the cost of residential care set out in the NICE methodology note from 2011 to 2022 in line with care home cost inflation rates based on research by LaingBuisson.
- We have uplifted the average household spend from 2010 to 2022 based on the observed average rate of increase in this figure between 2010 and 2019. We followed this approach because data for 2022 is not available yet and the figures for 2020 and 2021 will have been distorted by the pandemic.

Subject to the above adjustments, we have followed the approach set out in the NICE methodology note in calculating our estimates of net production. We have not included the condition-specific adjustments to the cost of residential care for dementia and stroke patients, on the basis that dementia and stroke patients make up a small proportion of the elective waiting list.

Data tables

- The following table sets out the projected total unmet need for NHS elective treatments between September 2022 and September 2027 under each scenario, as shown in the chart on slide 7.

Scenario	30 September 2022	30 September 2023	30 September 2024	30 September 2025	30 September 2026	30 September 2027
Counterfactual	11.0m	11.6m	10.4m	8.3m	6.8m	5.9m
Conservative	11.0m	11.3m	9.5m	6.8m	4.9m	3.8m
Moderate	11.0m	11.0m	8.6m	5.2m	3.0m	1.8m
NHS Elective Recovery Plan	11.0m	10.8m	7.7m	3.6m	1.1m	0.4m

- The following tables set out the changes in each component of production and consumption under each scenario, relative to the counterfactual scenario, as shown in the charts on slide 12.

Component of production	Conservative	Moderate	NHS Elective Recovery Plan
Paid	£6bn	£12bn	£18bn
Unpaid (general)	£16bn	£31bn	£46bn
Unpaid (sickness care)	£2bn	£4bn	£6bn
Unpaid (childcare)	£1bn	£2bn	£3bn
Total production*	**£25bn**	**£50bn**	**£73bn**

Component of consumption	Conservative	Moderate	NHS Elective Recovery Plan
Paid	£1bn	£1bn	£2bn
Unpaid	£1bn	£2bn	£3bn
Formal care	-£2bn	-£3bn	-£5bn
Informal care	-£3bn	-£6bn	-£9bn
Total consumption*	**-£3bn**	**-£6bn**	**-£9bn**

- The following table sets out the projected cumulative gains in net production between September 2022 and September 2027 under each scenario, relative to the counterfactual scenario, as shown in the chart on slide 15.

Scenario	30 September 2022	30 September 2023	30 September 2024	30 September 2025	30 September 2026	30 September 2027
Conservative	£0bn	£0bn	£3bn	£9bn	£18bn	£28bn
Moderate	£0bn	£1bn	£7bn	£19bn	£36bn	£56bn
NHS Elective Recovery Plan	£0bn	£2bn	£11bn	£30bn	£57bn	£83bn

Totals may not sum due to rounding.

Activities included under unpaid production

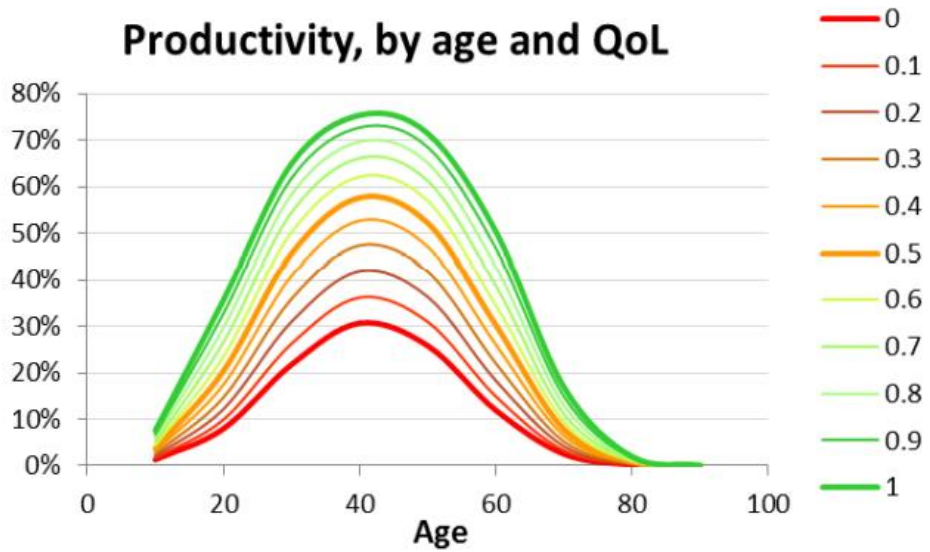
The Wider Societal Benefits (WSB) Model uses data from the Time Use Survey (TUS), which records the time spent by participants at 10-minute intervals and categorises them as paid production, unpaid production, leisure or study time. *Unpaid production* is defined as active work patients do that benefits others but for which they are not paid. The WSB model splits unpaid production between "general" unpaid production (the activities listed below), childcare and sickness care. General unpaid production covers the following activities:

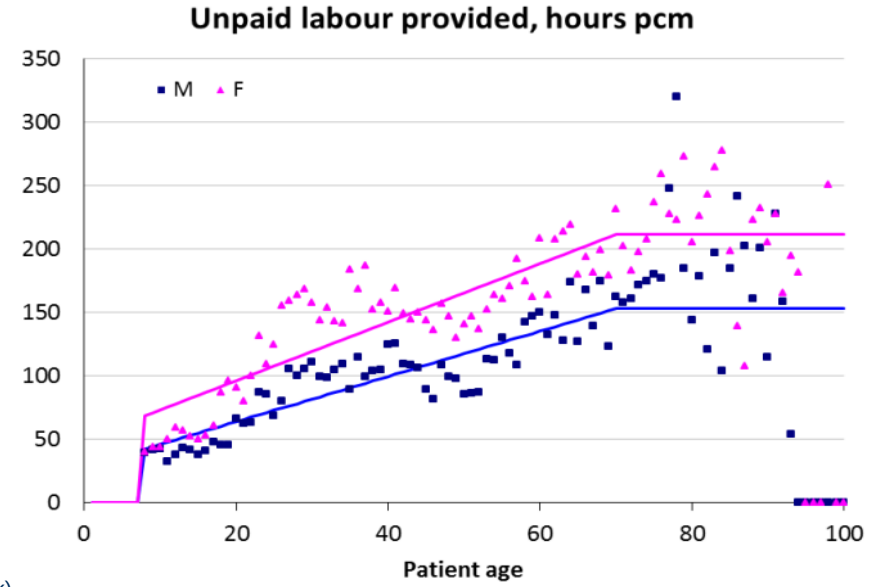
- Personal care, e.g. washing and dressing
- Family care
- Job seeking
- Household upkeep
- Managing bills and utilities
- Food management and preparation
- Cleaning and gardening
- Laundry, ironing and sewing
- Caring for pets
- Construction, renovation and repairs
- Vehicle maintenance
- Woodcraft, metalcraft, sculpture and pottery
- Shopping
- Commercial and administrative services
- **Active** childcare, e.g. physical care, teaching, playing, reading
- **Active** care to adult household members
- Volunteering
- Informal help to friends, neighbours etc.
- Hunting, fishing and gathering

- Travel time related to the above activities is also included as general unpaid production.
- Only *active* childcare and care for other adults is included under general unpaid production. The separate "sickness care" and "childcare" categories within the WSB Model cover *passive* care, i.e. needing to simply be present and respond to care needs as they arise.

Rates of paid and unpaid production

- The WSB Model calculates paid production by estimating patients' *productivity*, i.e. the proportion of normal working time* the patient spends in paid employment per week. This is multiplied by their mean gross weekly wage and is uplifted for the overhead costs of their employment. The productivity rates by age and QoL used in the WSB Model are set out in the left-hand chart below.
- The uplift for overhead costs reflects the costs incurred by employers as a direct result of employing people over and above their gross wage, e.g. office space, heating, lighting, pension contributions etc. The rationale for including this uplift in the calculation of paid production is that the employee is in theory creating sufficient value to (at least) offset the employer's costs of employing them.
- As described on the previous slide, the WSB Model estimates unpaid production using data from the Time Use Survey. The resulting number of hours of unpaid labour provided per month by completely healthy patients (those with QoL of 1) is shown in the right-hand chart below. This figure is adjusted downwards to reflect the QoL of the patient, as appropriate, and multiplied by the national average hourly week to reflect the opportunity cost of unpaid production.





Charts copied from NICE model documentation: DH-Documentation-for-Wider-Societal-Benefits.pdf (nice.org.uk)

- A completely healthy individual aged 65 (with QoL of 1) has a productivity rate of 33%, i.e. they are assumed to work 33% of the normal hours worked by a 65-year-old in work (33.7 if male and 25.4 if female). This results in approximately 10 hours of paid production per week, much less than the corresponding amount of unpaid production (153/4.35 = 35 hours if male and 211/4.35 = 49 hours if female).

*Normal working time is defined as the average hours worked per week for those in work, stratified by age and gender. For example, this is 37.5 hours for males aged between 22 and 39 years old.