

The impact of elective waiting times on benefits receipt, England: April 2014 to April 2024

Analysis investigating the impact of elective inpatient and outpatient treatments and waiting times on benefits receipt in England.

Contact:
National Statistician's Analysis
Unit
NSO_Analysis_Unit@ons.gov.uk
+44 1329 444110

Release date:
12 October 2026

Next release:
To be announced

Table of contents

1. [Main points](#)
2. [Results of the analysis](#)
3. [Data on the impact of elective waiting times on benefits receipt, England: April 2014 to April 2024](#)
4. [Glossary](#)
5. [Data sources and quality](#)
6. [Related links](#)
7. [Cite this statistical bulletin](#)

1 . Main points

- Among working-age people receiving elective (non-emergency) NHS treatment in England, treatment was associated with a reduction in benefits receipt for up to five years, compared with not having received treatment.
- For inpatients, the largest reductions in the percentage of people receiving any benefit five years after treatment were for cardiac surgery services (49.3 percentage points), thoracic surgery services (48.2 percentage points) and neurosurgical services (44.0 percentage points), compared with not having received treatment.
- For outpatients, the largest reductions in the percentage of people receiving any benefit five years after treatment were for cardiac surgery services (65.5 percentage points), thoracic surgery services (47.0 percentage points) and neurosurgical services (24.1 percentage points), compared with not having received treatment.
- Longer waiting times for elective treatment were associated with significant increases in benefits receipt up to five years after treatment, this compared with a counterfactual situation of the waiting time distribution remaining unchanged from 2015 to 2016, the last time the national target of 92% of patients treated within 18 weeks was met; we refer to this counterfactual distribution as "target waiting times".
- For inpatients, above-target waiting times were associated with an estimated 38,972 to 60,572 additional person-years of receipt of any benefit over five years across 29 treatment specialties, with the largest increases in trauma and orthopaedics (17,187 person-years over a five-year period; 7.5%), general surgery services (5,485 person-years; 5.9%) and pain management services (3,861 person-years; 6.6%).
- For outpatients, above-target waiting times were associated with an estimated 38,396 to 65,598 additional person-years of receipt of any benefit over five years across 12 treatment specialties, with the largest increases in neurology (13,372 person-years over a five-year period; 7.2%), cardiology (9,148 person-years; 4.7%) and rheumatology (7,833 person-years; 6.3%).

The data used for this analysis are de-identified in a secure virtual environment before being combined and analysed. In line with the [Code of Practice for Statistics](#), the de-identified linked data are only used for statistical production and research. Read more in [Section 5: Data sources and quality](#).

2 . Results of the analysis

This analysis is a continuation of the following work we previously conducted:

- [Associations between elective inpatient treatment and monthly earnings and employment: a national linked data study in England](#)
- [The labour market consequences of extended waiting times for elective inpatient healthcare](#)

NHS England commissioned this analysis from the Office for National Statistics (ONS) to better understand the economic consequences of elective waiting times for individuals and society.

Using linked administrative data, we investigated benefits receipt for those who have received elective inpatient treatment for 29 treatment specialties, or outpatient treatment for 12 treatment specialties, between 1 April 2014 and 31 March 2024. We created a person-level dataset by combining data from:

- NHS Hospital Episode Statistics (HES) Admitted Patient Care (APC)
- NHS Hospital Episode Statistics (HES) Outpatient (OP)
- 2011 Census
- ONS death registrations
- Benefits information (BENs) from the Department for Work and Pensions (DWP)

We carried out the analysis in two stages. First, we estimated how benefits receipt changed following elective treatment. We compared observed benefit receipt after treatment with an estimate of what benefit receipt might have been if treatment had not taken place. This estimate was based on benefit receipt patterns during the year before treatment and does not represent an observed group of untreated patients.

On the second stage, we estimated how these treatment-related changes might have differed if patients had waited less time for treatment. We compared results under observed waiting times with results under target waiting times based on those seen in 2015 to 2016, the last financial year in which the NHS standard of treating 92% of patients within 18 weeks was achieved.

The difference between these two waiting-time scenarios represents the estimated benefit receipt associated with waiting longer for treatment. These results are estimates based on statistical modelling and should not be interpreted as direct causal effects.

For more information on our methods please see [Section 4: Glossary](#) and [Section 5: Data sources and quality](#).

For each treatment specialty, the study population comprised 2011 Census respondents who were:

- usual residents of England
- linked to NHS and National Insurance numbers
- had an elective HES record in the relevant specialty between 1 April 2015 and 31 March 2024, with a waiting time of no more than two years and aged 30 to 59 years at the time of treatment

Patients with a record in the same specialty between April 2009 and March 2015 were excluded, and the earliest qualifying treatment was used as the index date.

Treatment effects and impacts of above-target waiting times were estimated across five benefit categories:

- any benefit
- disability benefits
- employment support benefits
- Universal Credit benefits excluding employment support benefits
- Universal Credit benefits including employment support benefits

In this article, we present the main results for elective inpatient treatments. Further information is available in our [accompanying dataset](#), including results for elective outpatient treatments, annual and cumulative estimates over the five-year follow-up period, and 95% [confidence intervals](#).

Associations between elective inpatient treatment and benefits receipt

The association between treatment and benefit receipt varied by treatment specialty and benefit type. Figure 1 shows that, five years after treatment, people treated under cardiac surgery services had the largest reduction in probability of receiving any benefit (49.3 percentage points), compared with the estimated probability had they not received treatment.

Figure 1: Elective inpatient treatments were associated with reductions in benefits receipt for up to five years, compared with not having received treatment

Age-standardised trajectories of benefits receipt by benefit type and treatment specialty, with time since treatment, for people aged 30 to 59 years who received elective inpatient treatment between 1 April 2015 and 31 March 2024, England

Notes:

1. Estimates are based on working-age adults receiving elective inpatient treatment between April 2015 and March 2024. One treatment episode per person per specialty was included, excluding those with prior treatment in the same specialty. Treatment effects were applied over a 60month follow-up period, restricted to ages 30 to 59 years.
2. A 1% sample was randomly selected from the 2011 Census population; these were usual residents of England who could be linked to NHS and National Insurance numbers and were alive on 1 April 2015. Index dates ("Month 0") were randomly assigned following the distribution of index dates in the study population (across all treatment specialties combined) used to calculate the age-standardised benefits data.
3. Follow-up has been filtered to 60 calendar months before and after treatment. Within this period, people's follow-up was censored if it was before they were aged 30 years, after they were aged 59 years or older, after they had died, before April 2014, and after March 2024.

Download

The impact of extended waiting times for elective inpatient healthcare on benefit receipt

To estimate the potential impact of longer waiting times on benefits receipt, we compared two scenarios for each treatment specialty. The first used the waiting times that patients actually experienced (observed waiting times). The second used waiting times based on the distribution of waits observed in 2015 to 2016, the last financial year in which the NHS standard of treating 92% of patients within 18 weeks was achieved (target waiting times).

Across our study period, pain management, cardiac surgery and vascular surgery services had the largest differences between median observed and target waiting times. For pain management services, the median observed waiting time was 60 days, compared with a target of 42 days. For both cardiac surgery and vascular surgery services, the median observed waiting time was 59 days, compared with a target of 41 days. In each case, the median observed waiting time exceeded the target by 18 days.

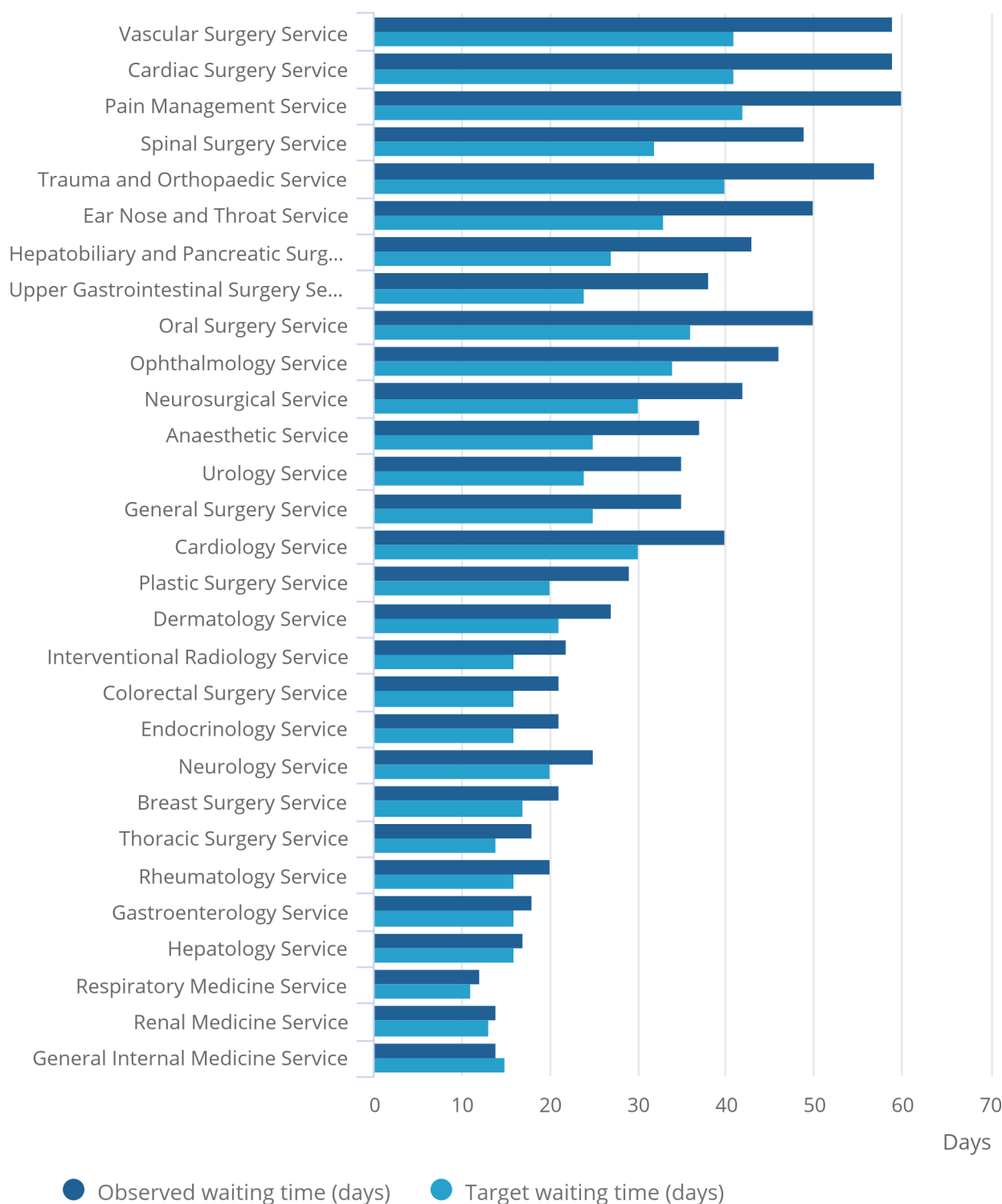
Definitions of target and median waiting times are available in [Section 4: Glossary](#).

Figure 2. Median waiting times for elective inpatient care were higher than target levels for most treatment specialties

Median observed and target waiting times by treatment specialty among people aged 30 to 59 years with a decision-to-admit date between 1 April 2015 and 31 March 2024, who were treated by 31 March 2024, England

Figure 2. Median waiting times for elective inpatient care were higher than target levels for most treatment specialties

Median observed and target waiting times by treatment specialty among people aged 30 to 59 years with a decision-to-admit date between 1 April 2015 and 31 March 2024, who were treated by 31 March 2024, England



Notes:

1. Median waiting times were calculated among patients with a decision-to-admit date between 1 April 2015 and 31 March 2024 who were treated by 31 March 2024.
2. Patients were excluded from the study population if their calculated time from decision-to-admit to admission exceeded two years (deemed to be the result of erroneous data). For this reason, the maximum observed wait is 730 days.
3. Target waiting times were based on observed HES waiting times in 2015 to 2016, the last financial year in which the NHS standard of 92% of patients being treated within 18 weeks was achieved. Each patient was assigned a target waiting time based on how long they would have waited if waiting times had been at target levels, while keeping their relative position among other patients receiving treatment under the same specialty and in the same financial year.

Table 1 shows the estimated impact of reducing waiting times to target levels. For each treatment specialty, we compared the estimated reduction in benefit receipt under observed waiting times with the reduction expected if patients had experienced shorter, target-level waiting times. The difference between these estimates represents the number of person-years of benefit receipt associated with longer waiting times.

Trauma and orthopaedics showed the largest absolute estimated impact (17,187 person-years over five years), equivalent to a 7.5% increase. This was followed by general surgery services (5,485 person-years; 5.9%) and pain management (3,861 person-years; 6.6%). The largest relative differences were for cardiac surgery services and urology (both at 7.7%).

When aggregated across the 29 treatment specialties analysed, the estimated five-year effect was 38,972 to 60,572 additional person-years spent in receipt of any benefit. Larger increases in benefits receipt may be led by the size of treatment effects, the number of people being treated, and the difference between observed and target waiting times.

Table 1. Cumulative treatment effects across the five-year follow-up period for the receipt of any benefit
People aged 30 to 59 years with a decision-to-admit date between 1 April 2015 and 31 March 2024, who were treated by 31 March 2024, England

Treatment speciality	Decrease in the receipt of any benefit under observed waiting times (person-years)	Predicted decrease in the receipt of any benefit under target waiting times (person-years)	Additional benefit receipt associated with longer waiting times (person-years)	Percentage change from observed (%)
Trauma and orthopaedic service	228,704	245,891	17,187	7.5
General surgery service	92,413	97,898	5,485	5.9
Pain management service	58,466	62,327	3,861	6.6
Neurosurgical service	59,852	63,564	3,712	6.2
Urology service	46,051	49,592	3,540	7.7
Cardiology service	71,651	75,082	3,432	4.8
Spinal surgery service	45,202	48,375	3,173	7.0
Gastroenterology service	321,094	323,650	2,556	0.8
Ear nose and throat service	35,984	38,264	2,280	6.3
Plastic surgery service	26,447	28,358	1,910	7.2
Upper gastrointestinal surgery service	35,645	37,498	1,853	5.2
Vascular surgery service	22,401	24,059	1,658	7.4
Breast surgery service	52,694	54,194	1,499	2.8
Ophthalmology service	28,029	29,339	1,310	4.7
Colorectal surgery service	44,221	45,521	1,300	2.9
Hepatobiliary and pancreatic surgery service	18,238	19,442	1,204	6.6
Interventional radiology service	38,747	39,868	1,121	2.9
Cardiac surgery service	11,674	12,574	901	7.7
Neurology service	23,461	24,184	723	3.1
Anaesthetic service	7,234	7,654	420	5.8
Thoracic surgery service	15,462	15,723	260	1.7
Rheumatology service	12,006	12,249	243	2.0
Oral surgery service	3,520	3,760	240	6.8
Endocrinology service	13,478	13,692	214	1.6
General internal medicine service	57,474	57,630	156	0.3
Dermatology service	5,175	5,305	130	2.5
Respiratory medicine service	22,418	22,525	107	0.5
Renal medicine service	9,732	9,792	60	0.6
Hepatology service	4,845	4,880	35	0.7

Notes

1. Waiting times were calculated among patients with a decision-to-admit date between 1 April 2015 and 31 March 2024 who were treated by 31 March 2024.
2. Target waiting times were based on observed HES waiting times in 2015 to 2016, the last financial year in which the NHS standard of 92% of patients being treated within 18 weeks was achieved. Each patient was assigned a target waiting time based on how long they would have waited if waiting times had been at target levels, while keeping their relative position among other patients receiving treatment under the same specialty and in the same financial year.

3 . Data on the impact of elective waiting times on benefits receipt, England: April 2014 to April 2024

[The impact of elective waiting times on benefits receipt, England](#)

Dataset | Released 12 October 2026

Analysis investigating the impact of elective inpatient and outpatient treatments and waiting times on benefits receipt in England.

4 . Glossary

Benefits dataset

The Department for Work and Pensions' (DWP's) Benefits (BENs) dataset contains information on individuals' receipt of state benefits, including out-of-work, disability- and health-related, employment support and Universal Credit benefits. In this analysis, the dataset was used to identify whether an individual was receiving a benefit in each month of follow-up.

Elective treatment

Medical procedures, surgeries or appointments that are planned in advance and are not required immediately to save a life or prevent serious harm.

Elective inpatient treatment

Planned (non-emergency) treatment received during a hospital admission, including both overnight stays and day-case admissions, recorded in the Hospital Episode Statistics' (HES') Admitted Patient Care (APC) dataset. Waiting time is measured as the period between the decision to admit and the admission date.

Elective outpatient treatment

Planned (non-emergency) treatment received during an outpatient appointment without admission to hospital, recorded in the HES Outpatient dataset. Waiting time is measured as the period between the referral date and the appointment date.

Hospital Episode Statistics

HES is a database that contains records of NHS-funded hospital care in England, including information on admissions, procedures, treatment specialties and dates of care. These data were used to identify elective treatment episodes and calculate waiting times.

Interrupted time series

A statistical approach that uses observations from before and after an event (such as treatment) to assess whether it is associated with a change in the level or trend of an outcome (such as benefits receipt) over time.

Median waiting times

Median waiting times were calculated within each treatment specialty among patients with a decision-to-admit date between 1 April 2015 and 31 March 2024 who were treated by 31 March 2024.

Person-years of benefit receipt

The total length of time that people received benefits for, added together across all people in the study. One person receiving benefits for one year contributes one person-year; two people each receiving benefits for six months also contribute one person-year.

Person-years of benefit receipt measures the total amount of benefit receipt across all patients. Therefore, it reflects both the size of the treatment population and the estimated effect on benefit receipt. As a result, comparisons of person-years across treatment specialties should be interpreted as differences in total population impact rather than differences in effects on individual patients.

Target waiting times

Target waiting times were derived from HES waiting-time distributions in 2015 to 2016, the most recent year in which the NHS standard of 92% of patients being treated within 18 weeks was achieved.

For each patient, a target waiting time was assigned based on where they would have ranked relative to other patients in the same specialty and financial year if waiting times had met this standard.

This creates a counterfactual target distribution in which 92% of patients are treated within 18 weeks, allowing observed waiting times to be compared with the waiting time each patient would have experienced had performance remained at target levels.

Treatment specialty

The treatment specialty code relates to the specialty in which the consultant was working during the period of care. A full list of treatment specialty codes is available in the [NHS Data Model and Dictionary](#).

5 . Data sources and quality

Linked dataset

We used an extension of the Public Health Data Asset (PHDA) to include data on benefits receipt. Our de-identified, linked dataset includes data from:

- the 2011 Census
- Hospital Episode Statistics (HES) Admitted Patient Care (APC) records (from 1 April 2009 to 31 March 2024)
- Hospital Episode Statistics (HES) Outpatient (OP) records (from 1 April 2009 to 31 March 2024)
- Office for National Statistics (ONS) death registrations (registered between 1 January 2009 and 31 December 2024)
- the Department for Work and Pensions' (DWP's) Benefits dataset (BENs) (from 1 April 2014 to 30 April 2024)

Datasets were linked using NHS numbers and encrypted National Insurance numbers using the ONS Demographic Index. All data were de-identified prior to analysis.

Benefits

We included [benefit types](#) related to health and employment for working-age individuals in our analysis. We grouped these into five categories:

- any benefit (comprises any benefit included in the following categories, in addition to Carer's Allowance)
- disability benefits (including Disability Living Allowance and Personal Independence Payment)
- employment support benefits (including Employment Support Allowance, Incapacity Allowance, Passported Incapacity Benefit, and Severe Disablement Benefit)
- Universal Credit benefits excluding employment support benefits (including Income Support, Jobseeker's Allowance, Housing Benefit, and Universal Credit)
- Universal Credit benefits including employment support benefits (including Income Support, Jobseeker's Allowance, Housing Benefit, Universal Credit, Employment Support Allowance, Incapacity Allowance, Passported Incapacity Benefit, and Severe Disablement Benefit)

For some benefits, such as Universal Credit, applications can cover two partners living in the same household. In these instances, both partners were assigned as benefit recipients in our analysis. Attendance Allowance, Bereavement Benefit, Pension Credit, State Pension, and Widow's Benefit were excluded from the analysis.

Inclusion criteria

For the estimation of treatment effects, we included individuals if they could be linked to both NHS and National Insurance records and had a valid census identifier. For estimation of the impact of waiting times on benefits receipt, restrictions on linkage to National Insurance numbers was not required. For each treatment specialty, the study population was restricted to individuals who:

- had a treatment date during the study period (1 April 2015 to 31 March 2024)
- were aged 30 to 59 years or over at the time of treatment
- did not have a record for this specialty from 1 April 2009 (the earliest available data) to 31 March 2015
- received treatment under more than one specialty, with one record per specialty based on the earliest treatment date within each specialty; it was possible for one individual to belong to more than one treatment specialty cohort

For estimation of the impact of waiting times on benefits receipt, we included individuals if they could be linked to an NHS number and had a valid census identifier. Unlike for the estimation of treatment effects, restrictions on linkage to National Insurance numbers was not required. For each treatment specialty, the study population was restricted to individuals who:

- had a decision-to-admit date (for inpatients) or referral date (for outpatients) during the study period (1 April 2015 to 31 March 2024)
- were aged 30 to 59 years or over at the time of treatment
- did not have a record for this specialty from 1 April 2009 (the earliest available data) to 31 March 2015
- received treatment under more than one specialty, with one record per specialty based on the earliest treatment date within each specialty; it was possible for one individual to belong to more than one treatment specialty cohort

Exposure

The exposure was time before or after the first inpatient or outpatient treatment.

Statistical analyses

For the estimation of treatment effects, this study employed an interrupted time series approach. For each treatment specialty, we estimated the average benefit uptake for the five benefit types by month, both prior to and following treatment, standardising for age using the age distribution at the time of treatment.

Predictions of monthly benefits receipt in the absence of treatment were estimated using pre-treatment data from the 12 months before treatment. Counterfactual trends were modelled separately for each treatment specialty and benefit type using piecewise linear regression with a single breakpoint, with the breakpoint representing a potential change in benefit receipt patterns associated with worsening health before treatment. These estimates are based on an extrapolation of pre-treatment trends and should be interpreted as a modelled counterfactual scenario rather than an observed untreated pathway.

To estimate the impact of waiting times on benefits receipt, the target waiting time distribution was based on observed HES waiting times in 2015 to 2016, the last financial year in which the national target of 92% of patients waiting less than 18 weeks was achieved.

To capture uncertainty, we generated confidence intervals (CIs) through simulation, as bootstrapping was computationally infeasible.

Further details on the method used to estimate the impacts of reducing waiting times and confidence intervals associated with our estimates are available in our accompanying dataset.

Quality

This analysis uses de-identified linked administrative data. Linkage rates, missing data, coding quality and changes in benefit systems over time may affect the estimates. Results should therefore be interpreted as associations rather than direct causal effects.

The study population was restricted to people aged 30 to 59 years or over, so the findings may not be generalisable to people outside this age range. Treatment effects varied according to the number of months since treatment but did not vary by the length of time waited for treatment.

The predicted outcomes in the absence of treatment are uncertain because they are based on a statistical linear model rather than observed data. We also tested second- and third-order polynomial models across the full one-year pre-treatment period to allow for a gradual rather than abrupt change in trajectory. Although these models sometimes fit the training data better, they produced unrealistic out-of-sample projections.

It was not possible to confirm whether the selected model accurately represented what would have happened without treatment, as this could not be observed in the data. Furthermore, medical oncology, clinical oncology and clinical haematology were excluded from the analysis because a no-treatment counterfactual is unlikely to be realistic in these specialties, given the high mortality expected in the absence of treatment.

HES records were available only for patients who received treatment within the study period. Patients who remained on the waiting list at the end of this period were therefore not included in the analysis.

Treatment specialties are defined according to the specialty of the clinician performing the procedure, enabling the analysis to include a broad range of treatments. However, patients within each specialty may differ in their conditions and clinical needs, and this variation may influence outcomes in ways not captured by the analysis.

The BENs dataset extract used in this analysis does not allow us to distinguish between health-related and non-health-related Universal Credit (UC) claims. Employment support benefits have also been partially replaced by UC, meaning that the "employment support benefits" and "Universal Credit benefits excluding employment support benefits" categories may not be fully independent.

To address this, we created an additional benefit category titled "Universal Credit benefits including employment support benefits", which combines UC and employment support claimants. However, given the substantially larger number of UC claims, any effects associated with employment support benefits are likely to be masked within this combined group.

We were also unable to distinguish changes in the value of benefits received and could only examine changes in the probability of receiving benefits.

6 . Related links

[Age standardised average monthly pay and percentage of people in paid employment by treatment specialty and number of months to and since admission for elective inpatient care, England: April 2014 to March 2023](#)

Freedom of information request | Released 27 August 2025

Age standardised average monthly pay and percentage of people in paid employment, 12 months prior to and 60 months after hospital attendance for elective inpatient care for various treatment specialties, and the estimated impact on earnings and employment if waiting times were reduced to match the distribution observed in the most recent year when the waiting time target was met.

[Age standardised average monthly pay and percentage of people in paid employment by treatment specialty and number of months to and since first outpatient appointment, England: April 2014 to March 2023](#)

Freedom of information request | Released 27 August 2025

Age standardised average monthly pay and percentage of people in paid employment, 12 months prior to and 60 months after hospital attendance for outpatient care for various treatment specialties, and the cumulative impact on earnings and employment given observed waiting times for treatment.

[Associations between elective inpatient treatment and monthly earnings and employment: a national linked data study in England](#)

Research article | Released 19 June 2026

A study published on the European Journal of Public Health examining how elective hospital treatment is associated with long-term improvements in employment and earnings among working-age adults in England.

[The labour market consequences of extended waiting times for elective inpatient healthcare: an observational study in England using national data](#)

Research article | 8 December 2025

A study published on medRxiv estimating the impact of longer NHS waiting times on employment and earnings, highlighting the wider economic costs of delays to elective treatment.

[Impact of health conditions requiring hospitalisation on earnings, employment and benefits receipt, England: April 2014 to December 2022](#)

Article | Released 25 June 2025

The change in earnings, probability of being a paid employee and probability of benefits receipt attributable to having a major condition requiring hospital admission, compared with a reference period before the hospital admission

7 . Cite this statistical bulletin

Office for National Statistics (ONS), released 12 October 2026, ONS website, statistical bulletin, [The impact of elective waiting times on benefits receipt, England: April 2014 to April 2024](#)