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BACKGROUND

- The lifetime risk of breast cancer in UK women is ~1 in 7
- Breast cancer incidence is rising; however, mortality has decreased, with 5-year survival improving from 85.6% to 95.1% between 1993-2015.
- Breast-conserving surgery (BCS) (also known as lumpectomy) is the most common surgical approach for breast cancer in England, **but is a not always a definitive resection**

OBJECTIVES

- Quantify **re-excision rate** after BCS
- Describe **high-risk patient profiles**
- Evaluate **excess HCRU & costs** associated with re-excisions

METHODS

Study Design:

Retrospective cohort analysis

Data Source:

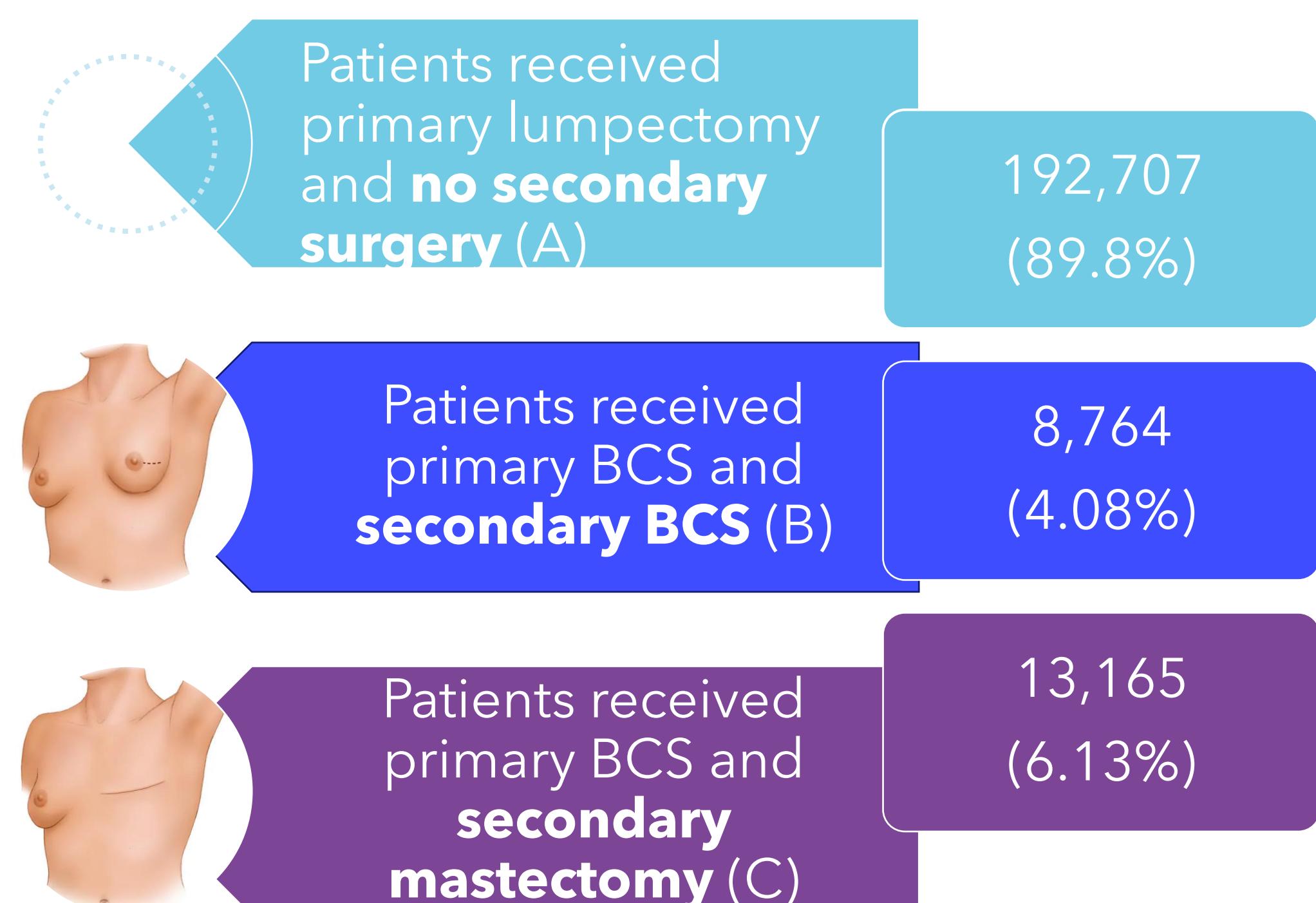
Health Episode Statistics (HES) claims supplied by NHS England. Representative sample of women diagnosed with breast cancer between January 2013 and August 2024 who underwent BCS.

Eligible population:

- Female adults diagnosed with Invasive breast cancer (ICD-10: C50)
- Undergoing a BCS (OPCS-4: B28, B41)
- Minimum 1 year follow-up pre- and post-index procedure
- Data on sociodemographic, comorbidities, BMI, smoking history, treatments, and healthcare costs within one year postoperatively.

Sub groups:

Patients were categorized by receipt of post-index surgery



RESULTS

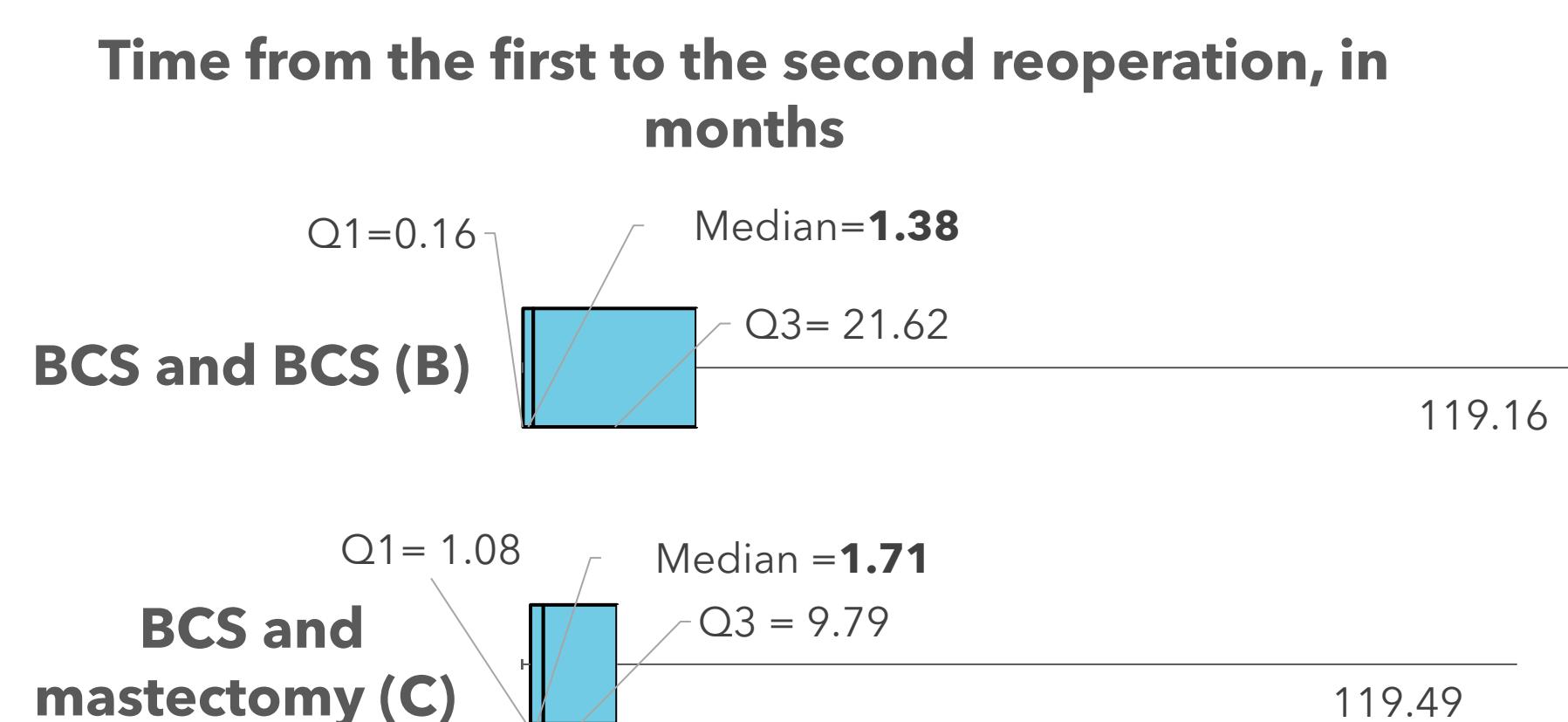
Re-excision rate:

214,636 women diagnosed with breast cancer underwent BCS as their initial surgery, and **10.2% had secondary procedures**. Re-excision rates fell across the study period, but there was a dramatic increase in repeated BCS during COVID-19.

Time to re-excision had a highly skewed distribution.

Among patients who underwent a repeated BCS, the time to re-excision was likely between 0 and 21 months, median was **1.4 months**.

For patients who had a BCS followed by a mastectomy, this subsequent procedure occurred **~1.7 months** later.



High-risk patient profiles:

Higher re-excision risk was associated with:

- younger age (58 vs 62 years old)
- racial/ethnic minority status - less likely white (75.6% vs 78.2%)
- less deprived groups
- more comorbidities (mean CCI 0.38 vs 0.43)
 - possibly due to increased comorbidity patients being ineligible for multiple surgeries;
- obese - possibly due to missing BMI data.

Clinical characteristics:

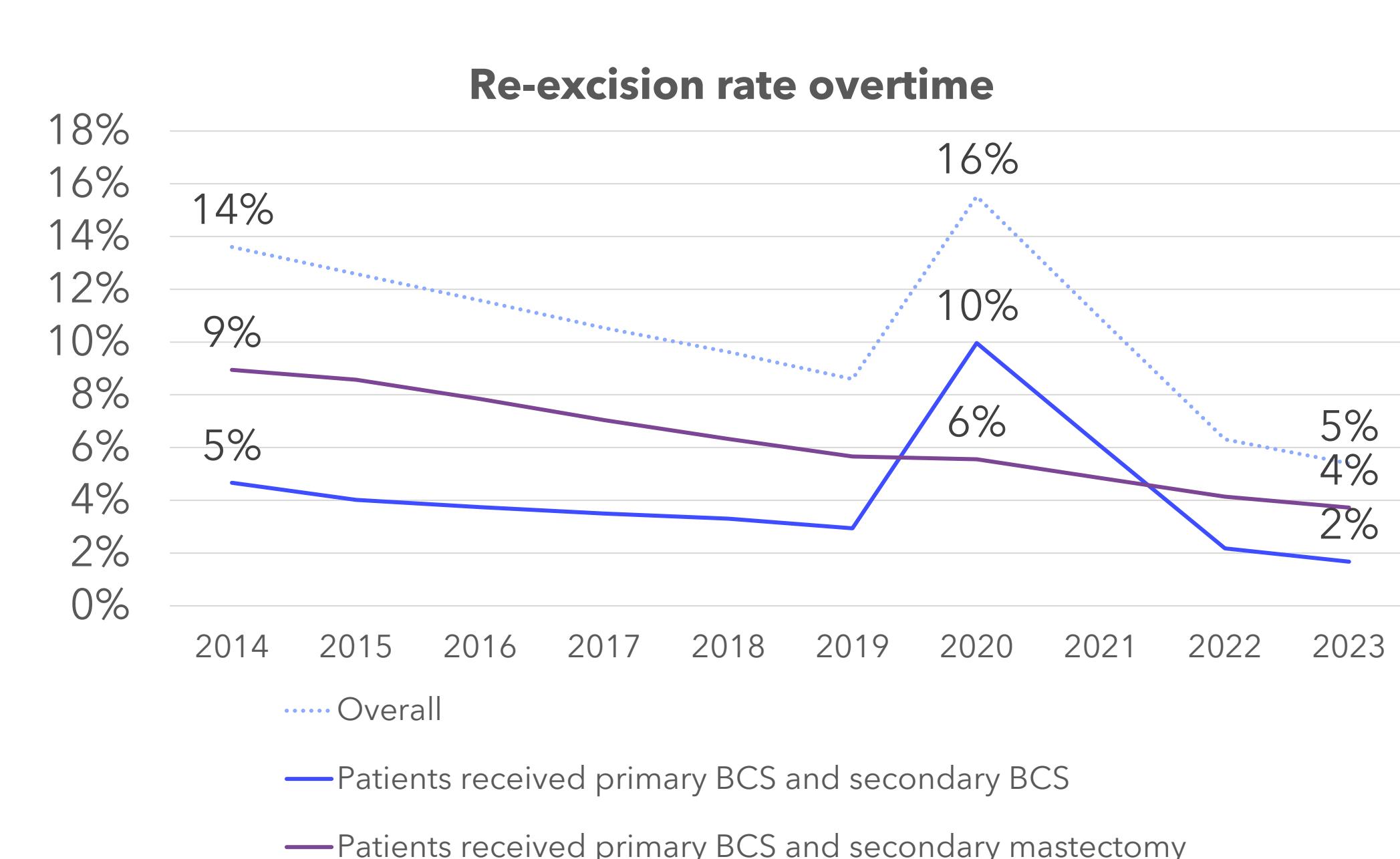
Longer wait times for the index BCS were associated with re-excisions (1.0 vs. 0.8 months).

Wire-guided localization usage **dropped by 1/3** during Covid-19 pandemic.

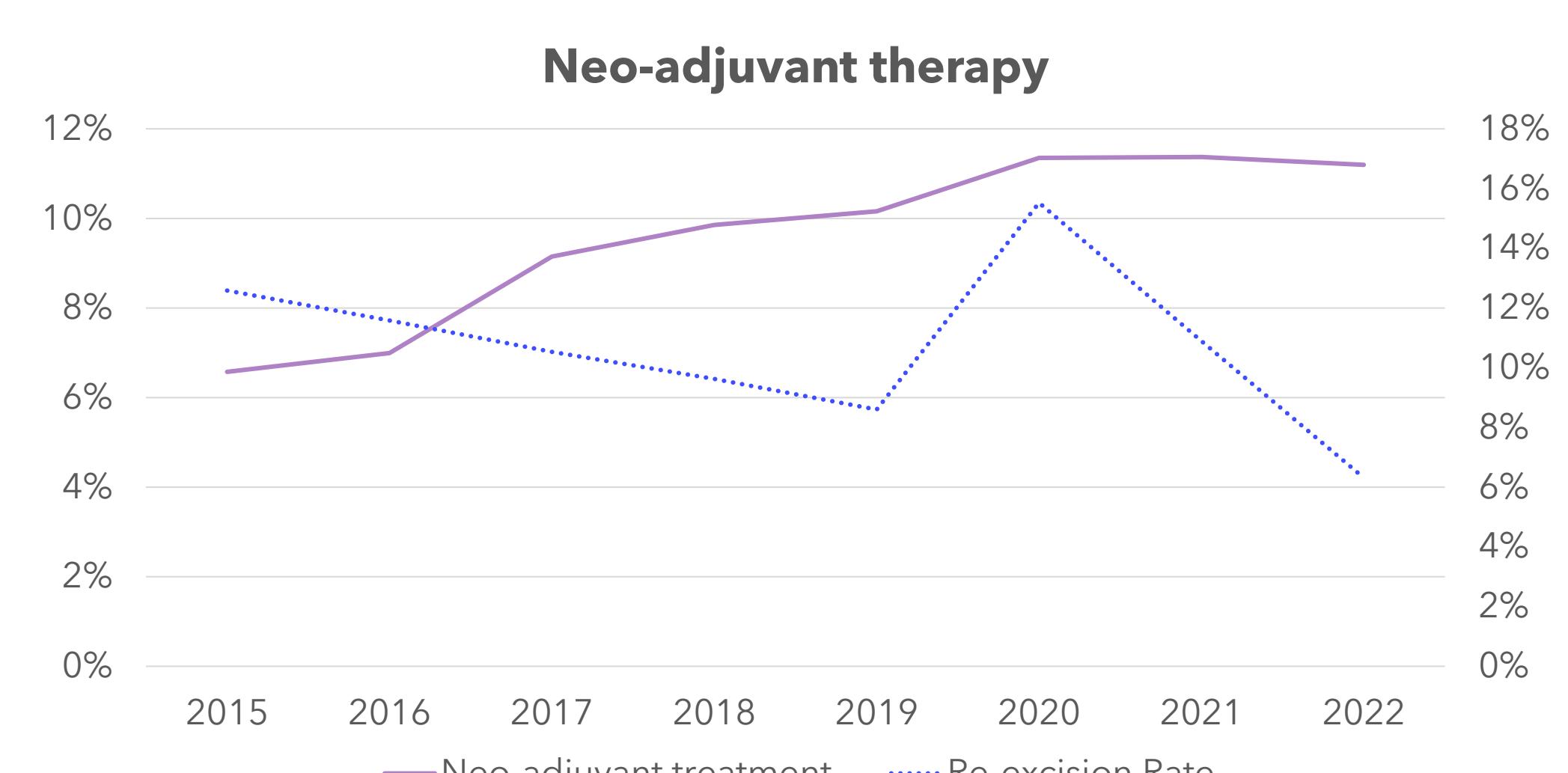
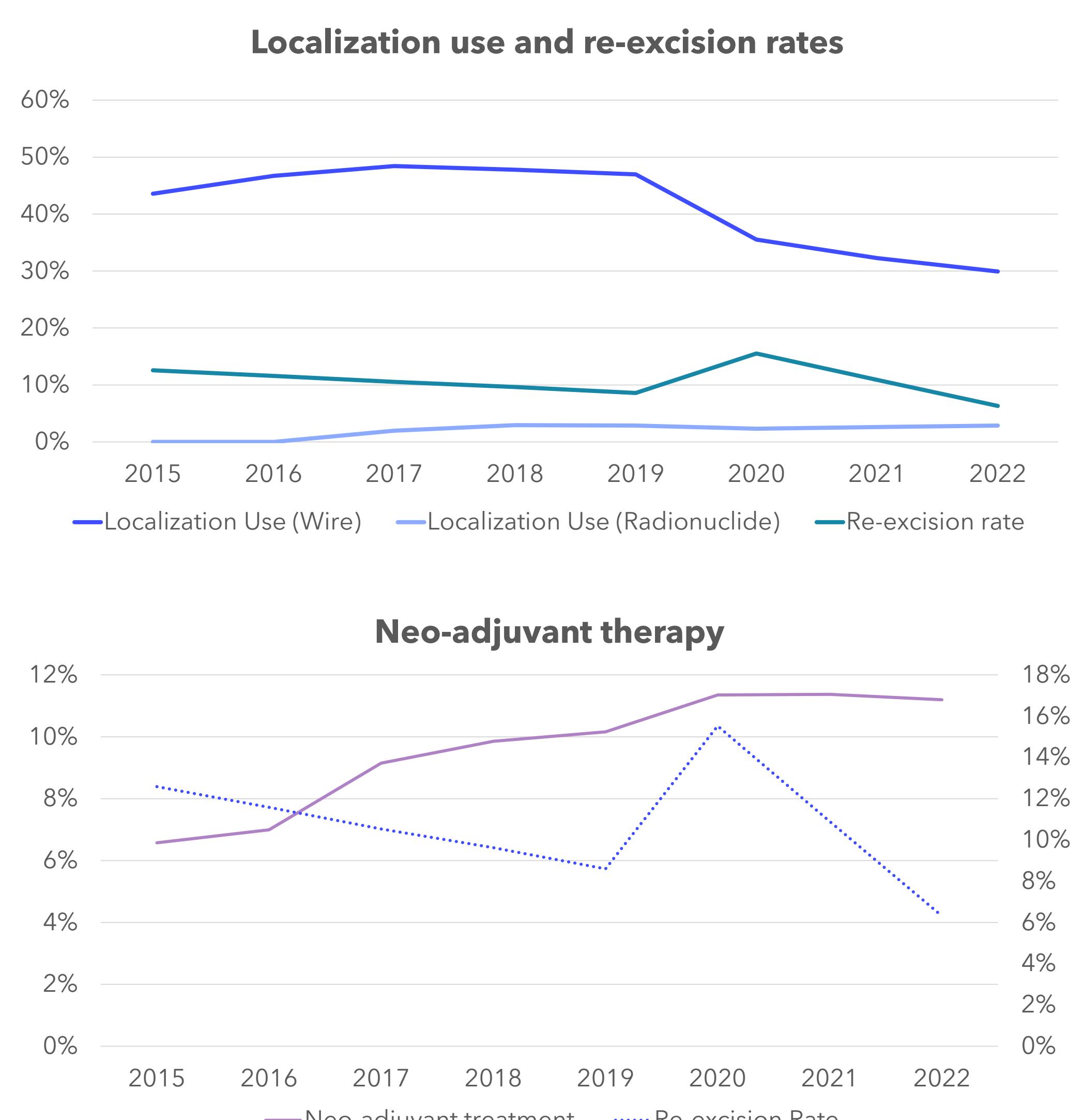
Despite the ↑ trend, **radionuclide-guided** localization still accounts for **less than 2%**.

Trend reflects a **growing adoption of neoadjuvant approaches** in clinical practice, typically to shrink tumors before surgery.

- Was used in 9.7% of cases
- Chemotherapy was most frequent
- Steadily increasing overtime from 7.4% 2014 to 11.2% in 2022.
- Usage flattened out **during the COVID-19 pandemic**



	No reoperation	Reoperation(s)	P Value
Age at diagnosis; mean (SD)	61.9 (11.9)	58.6 (12.8)	<0.001
Ethnicity; n (%)			
Black	3,121 (1.6%)	496 (2.3%)	<0.001
White	150,714 (78.2%)	16,577 (75.6%)	
Asian	6,542 (3.4%)	814 (3.7%)	
Mixed	1,015 (0.5%)	134 (0.6%)	
Other	2,811 (1.5%)	341 (1.6%)	
Unknown	28,504 (14.8%)	3,567 (16.3%)	
IMD quintile			
1 (Most deprived)	27,089 (14.1%)	2,996 (13.7%)	<0.001
2	33,419 (17.3%)	3,809 (17.4%)	
3	40,064 (20.8%)	4,617 (21.1%)	
4	43,661 (22.7%)	5,037 (23.0%)	
5 (Least deprived)	46,571 (24.2%)	5,380 (24.5%)	
Unknown	1,903 (1.0%)	90 (0.4%)	
Charlson comorbidity index			
0	132,050 (68.52%)	15,629 (71.27%)	<0.001
1 ~ 2	55,882 (29.00%)	5,887 (26.85%)	
> 2	4,775 (2.48%)	413 (1.88%)	



Cost and HCRU

Repeat surgery was associated with more costs and HCRU

	No reoperation	Reoperation(s)
Units per patient-year	Cost (£)	HCRU (visits)
Inpatient	£2,063	1.5
Outpatient	£718	8.6

The downstream financial impacts linked to re-excision are:

- + **522£** additional BCS;
- + **1,936£** subsequent mastectomy (per person per year)

DISCUSSION

- COVID-19 pandemic shifted practices away from wire-guided localization, neoadjuvant therapy, and reconstructions to reduce risks to patients
- These rapid adaptations were associated with a large reversal in the downward trend of re-excisions, but this temporary change was returned after the learning curve for new practices was achieved
- Longer waiting times were a risk factor for re-excisions, but national utilization of private facilities to improve patient throughput during the pandemic helped minimize waiting times
- Costs and HCRU due to re-excisions add burden to a strained healthcare system, which was required rapid readjustments to return to the downward trend of re-excisions