



Health
Economics
Unit



Midlands and Lancashire
Commissioning Support Unit

Economic impact of achieving HPV vaccination and cervical screening targets in London

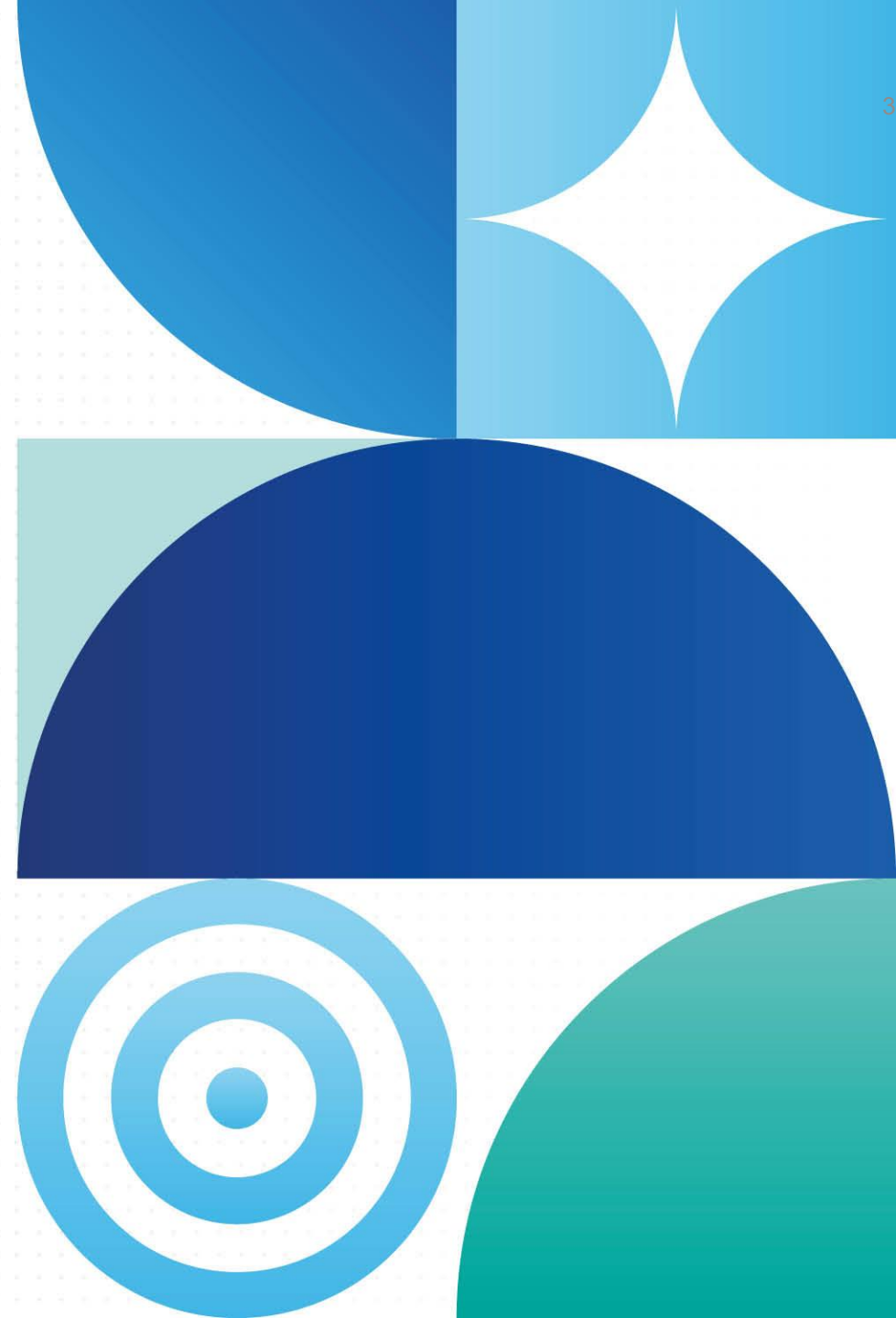
Lisa Cummins, Lead Health Economist @ the Health
Economics Unit

Agenda

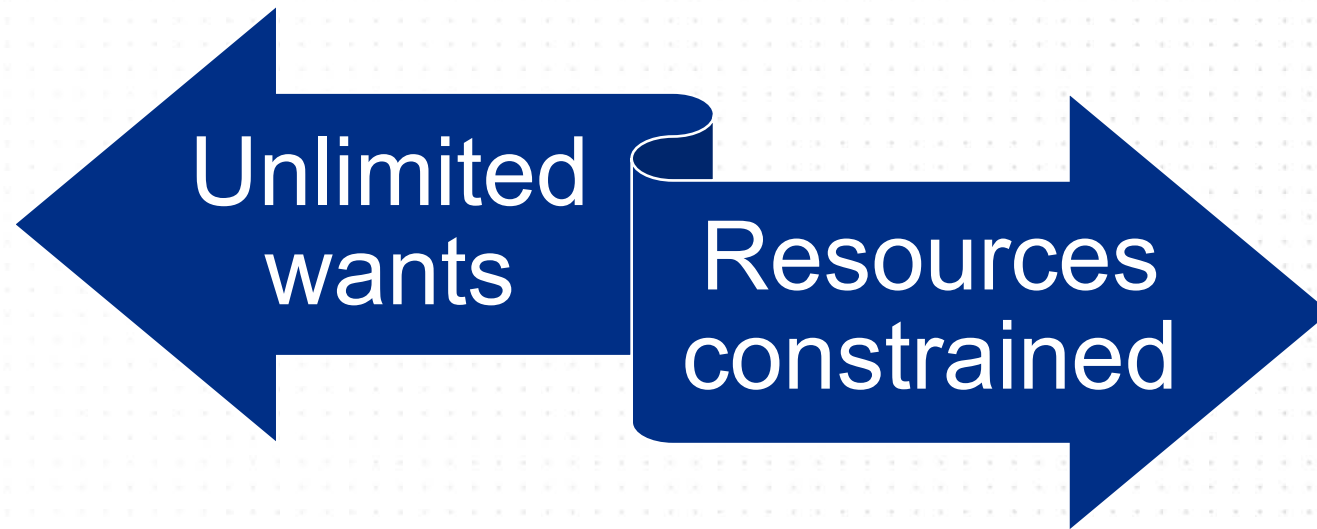
A very short intro to Health Economics

Health Economic modelling project: “Economic impact of achieving HPV vaccination and cervical screening targets in London”

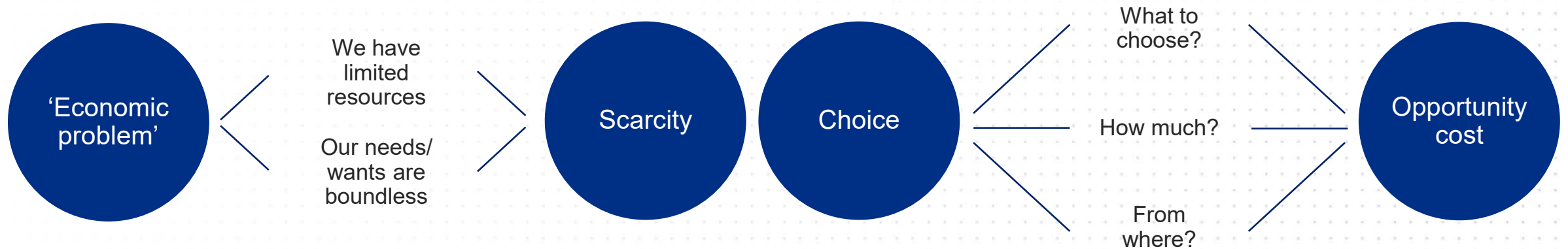
(A very) short intro to Health Economics



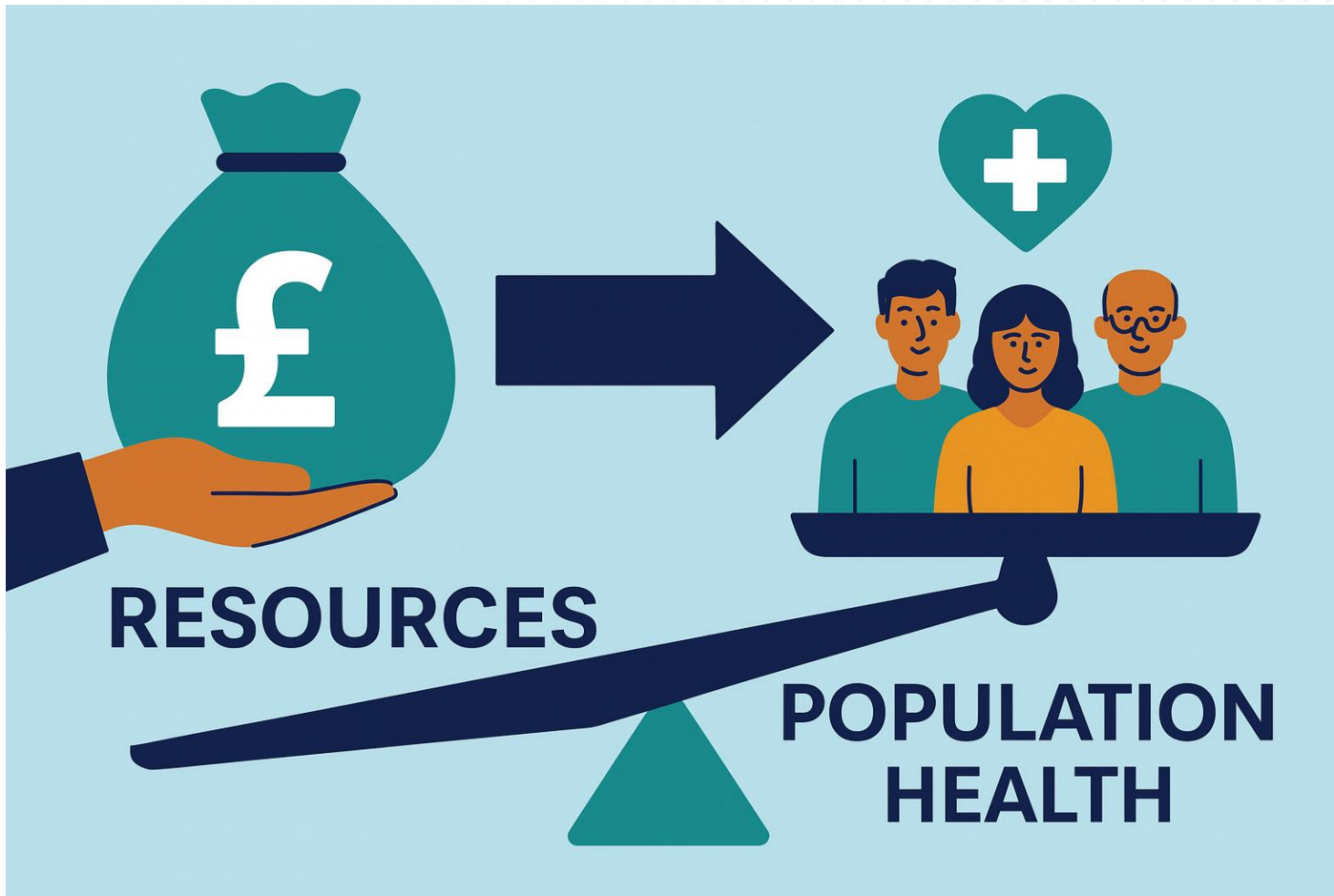
What is economics?



'Economic problem'

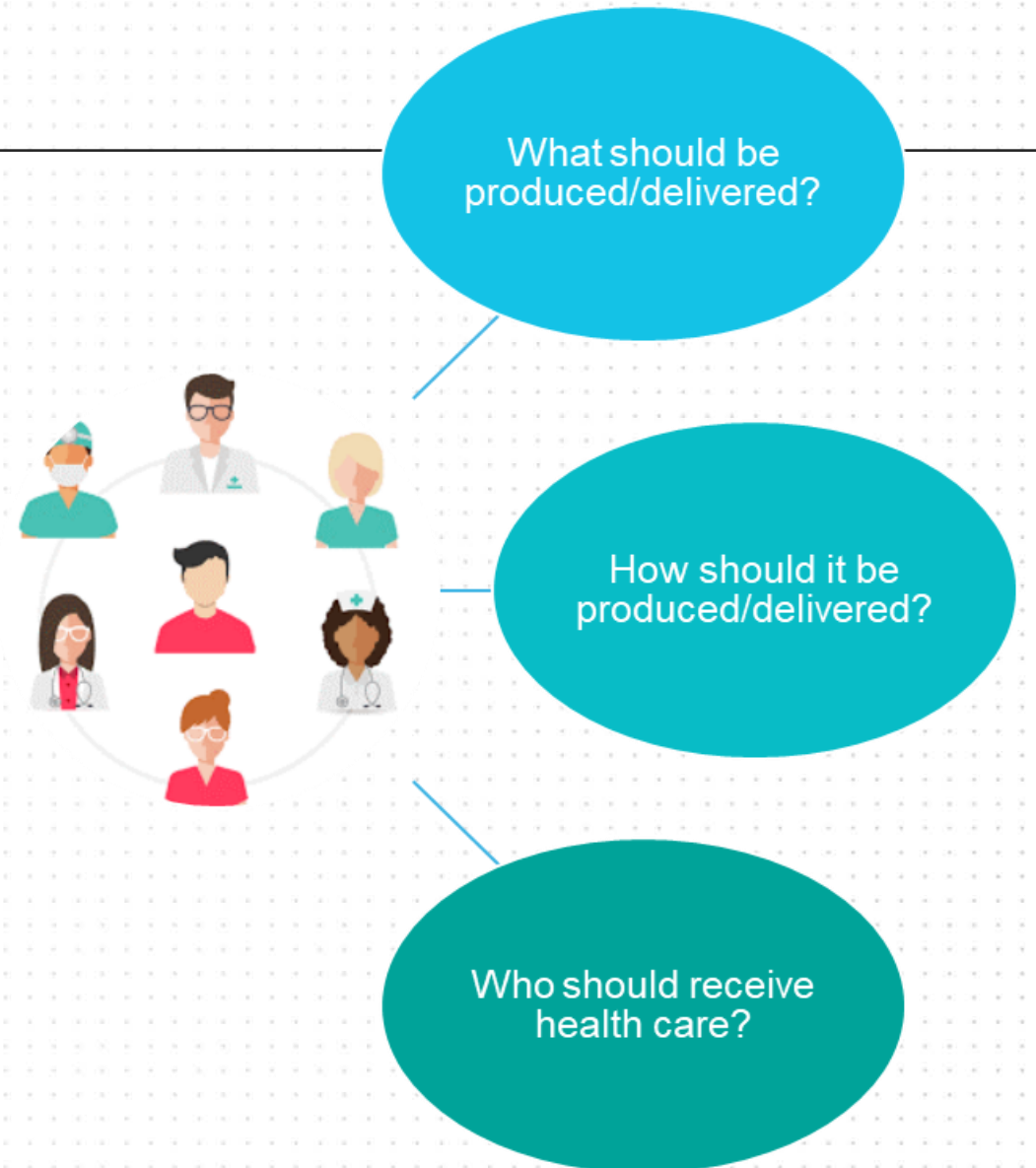


What is health economics?



Health economics is concerned with how best to allocate scarce resources to improve the population's health.

The 'economic problem' and opportunity cost in health and social care



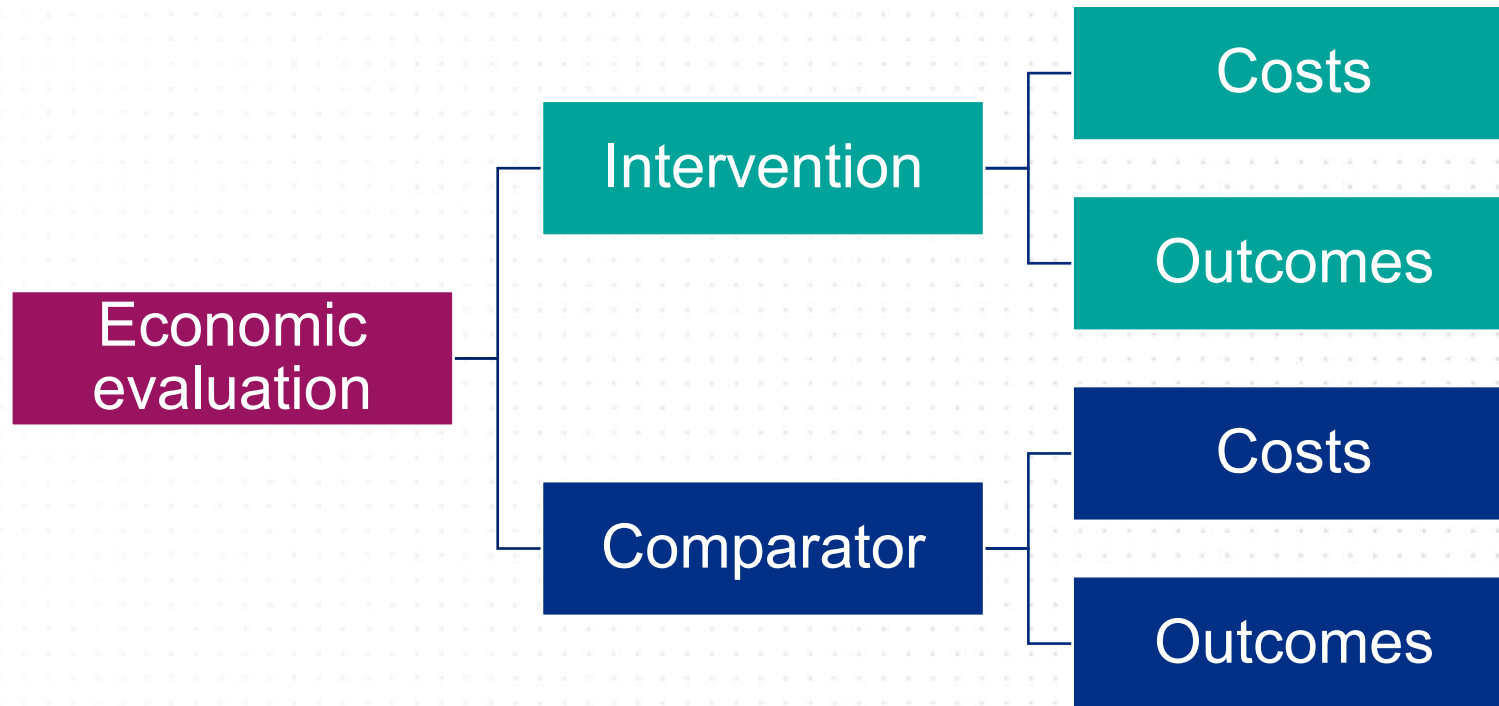
What is the role of a health economist



Economic evaluation

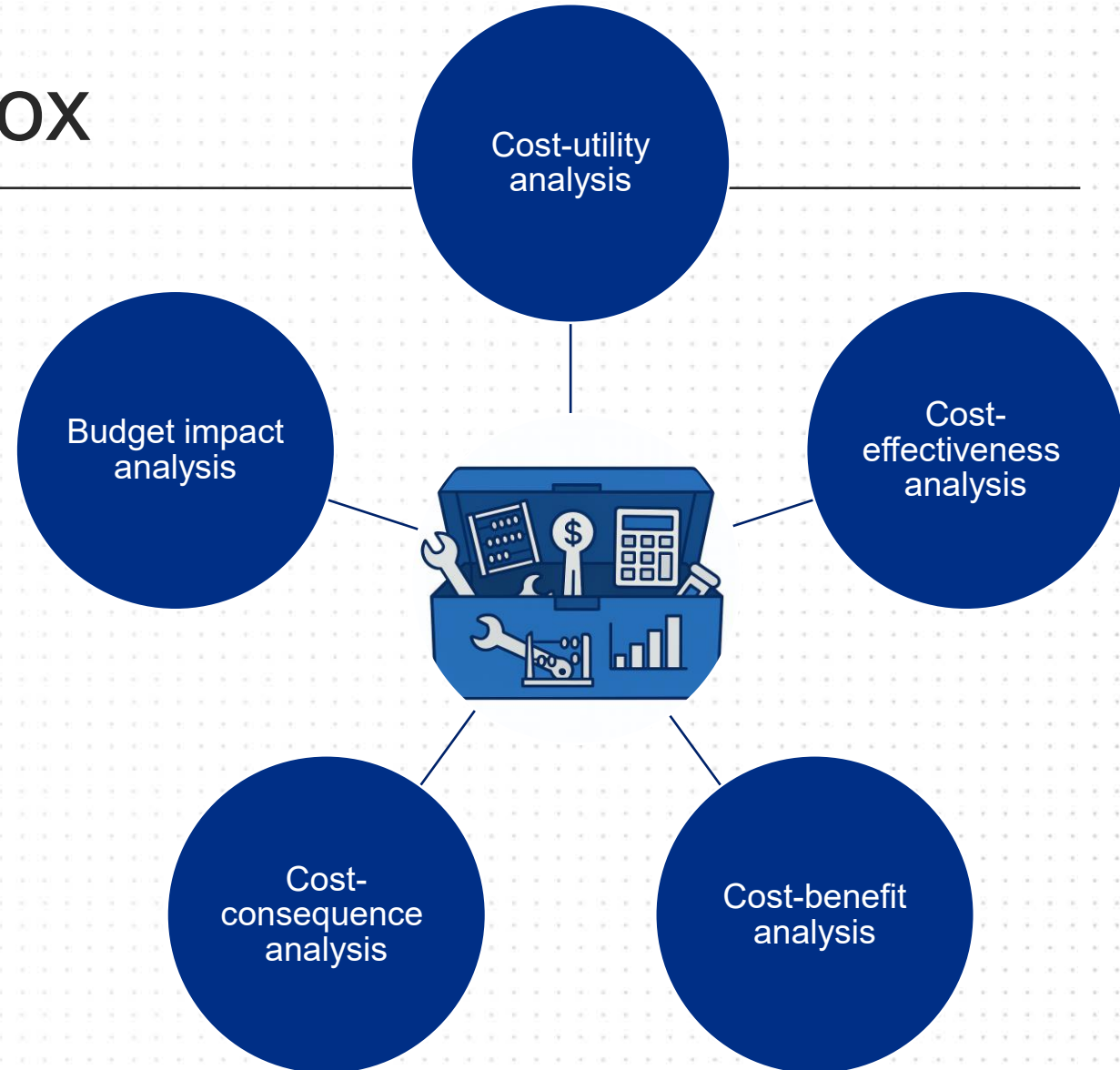
“Is this intervention a good use of resources?”

Economic evaluation – a process of comparing the **costs and consequences** of different healthcare interventions or programs to inform decision-making in funding



Economic evaluation toolbox

Approaches	Measure
Cost-utility analysis	Incremental cost-effectiveness ratio, cost per quality-adjusted life year
Cost-effectiveness analysis	Incremental cost-effectiveness ratio e.g. cost per admission avoided
Cost-benefit analysis	Assign monetary value to costs and benefits, present net monetary benefit
Cost-consequence analysis	Present costs and benefits separately in a disaggregated format
Budget impact analysis	Summarises the net budget impact



Modelling the economic impact of achieving HPV vaccination and cervical screening targets in London

Why is this important

Symptoms of Cervical Cancer

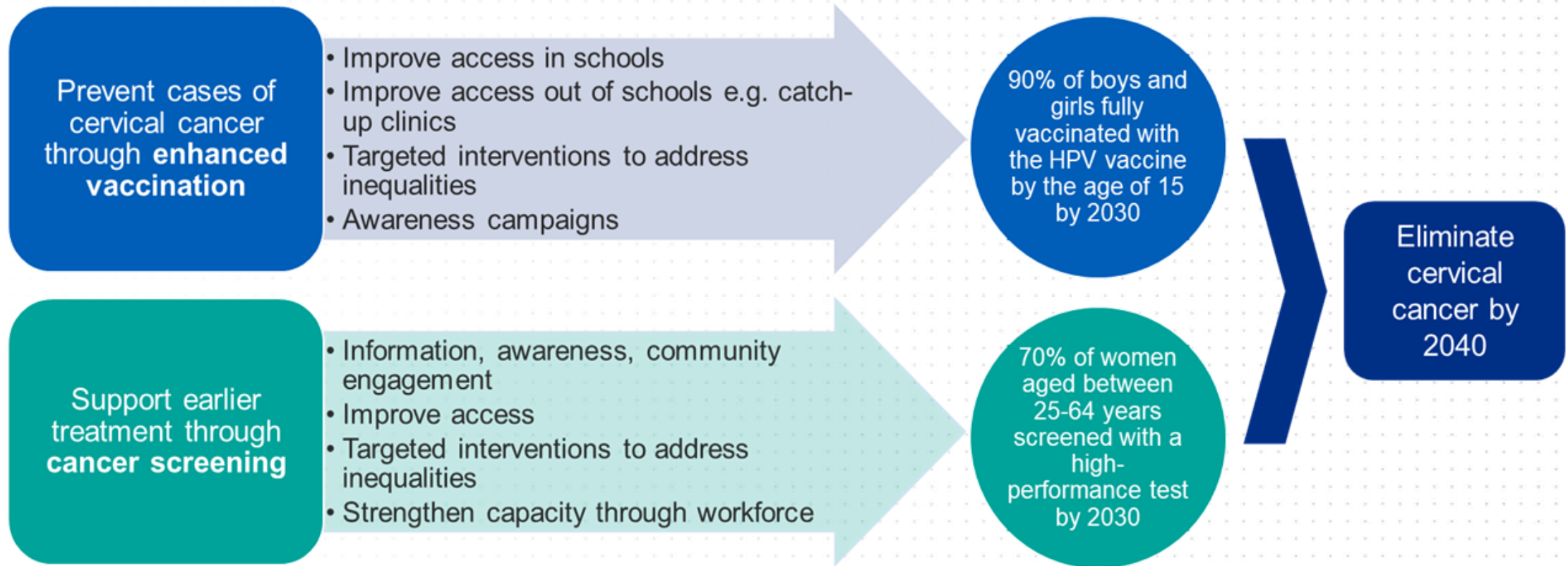
-  Vaginal bleeding that is unusual for you
-  Changes to vaginal discharge
-  Pain or discomfort during sex
-  Pain in your lower back or pelvis

**For your protection,
even if you have had
the HPV vaccination
you will still be invited
for cervical screening**
Don't ignore your invite!

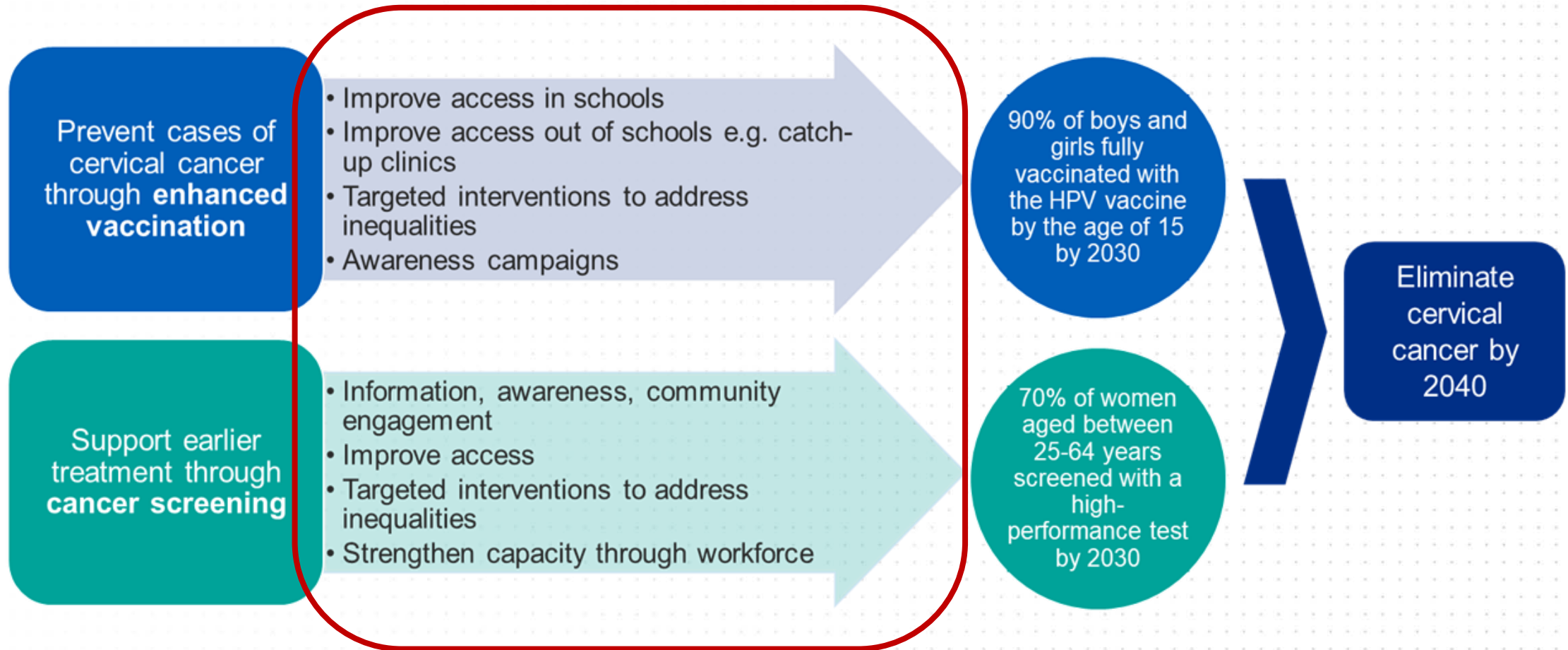


- [Cervical Cancer UK](#)
- [Office of Health Economics, 2024](#)

NHS London Cervical Cancer elimination strategy

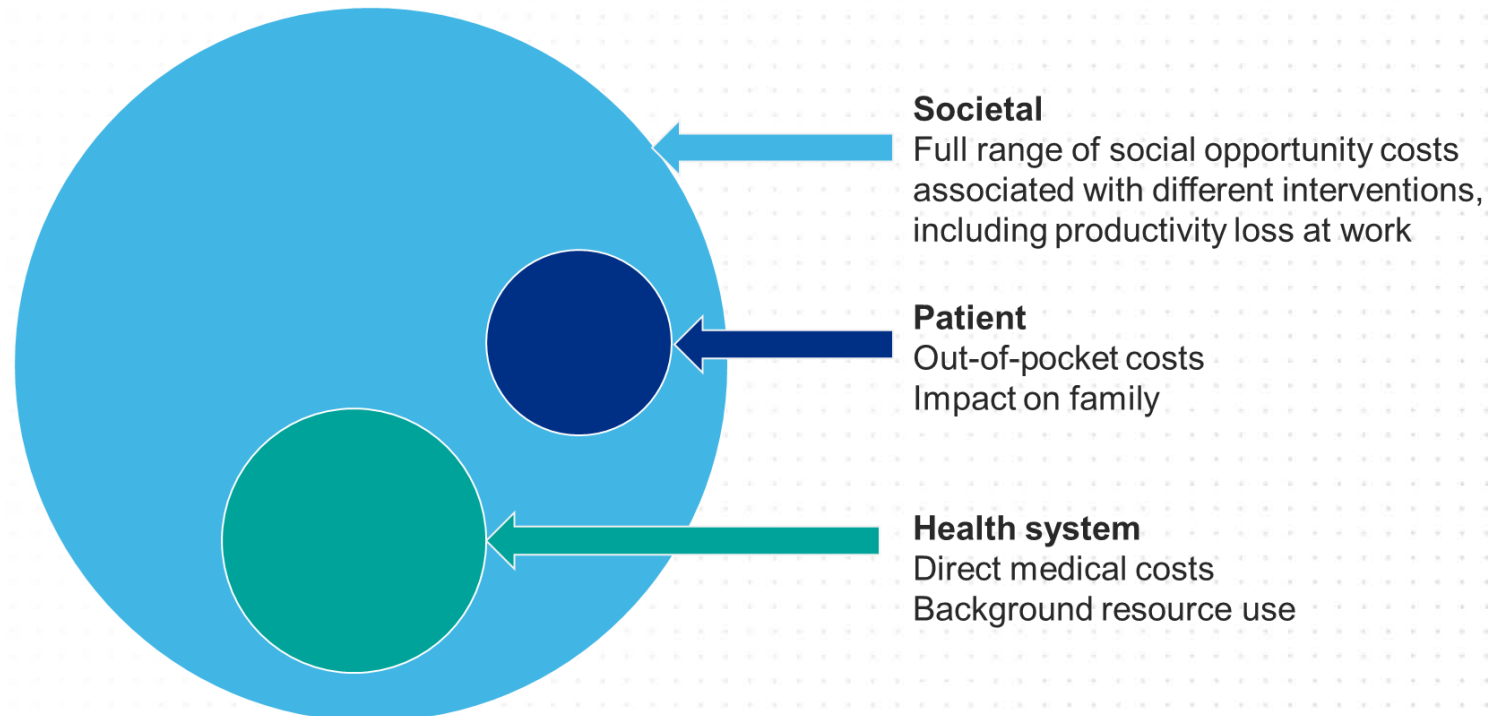


NHS London Cervical Cancer elimination strategy



To help make the case for additional funding...

We were commissioned to develop an economic model to estimate the value of investing in strategies aimed at increasing coverage rates, from a health care and wider societal perspective.



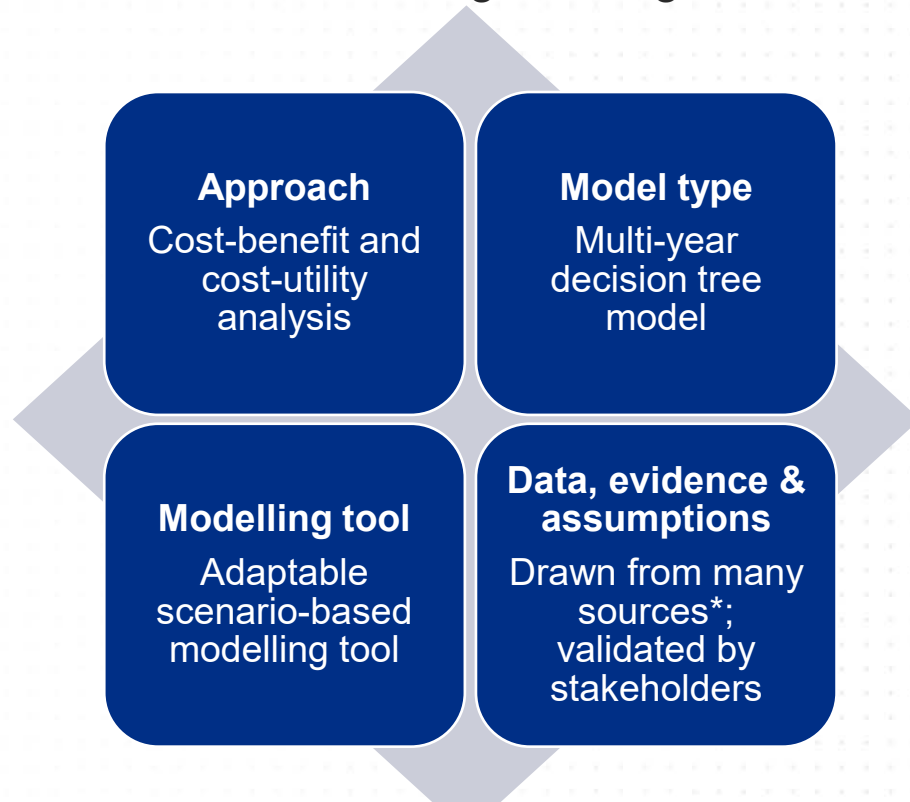
Our approach

- We combined cost-benefit and cost-utility analysis
 - CBA demonstrated the broader economic impact on the population of London affected by cervical cancer
 - CUA provided evidence of the value of preventing health loss (QALY loss avoided)



Overview of modelling approach

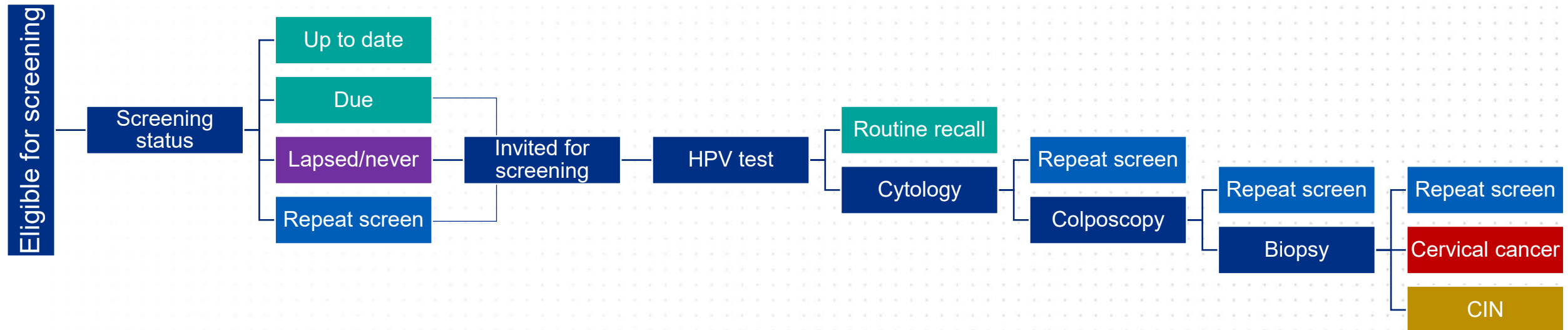
Decision problem: What is the potential return on investment in eliminating cervical cancer by increasing HPV vaccination and screening coverage?



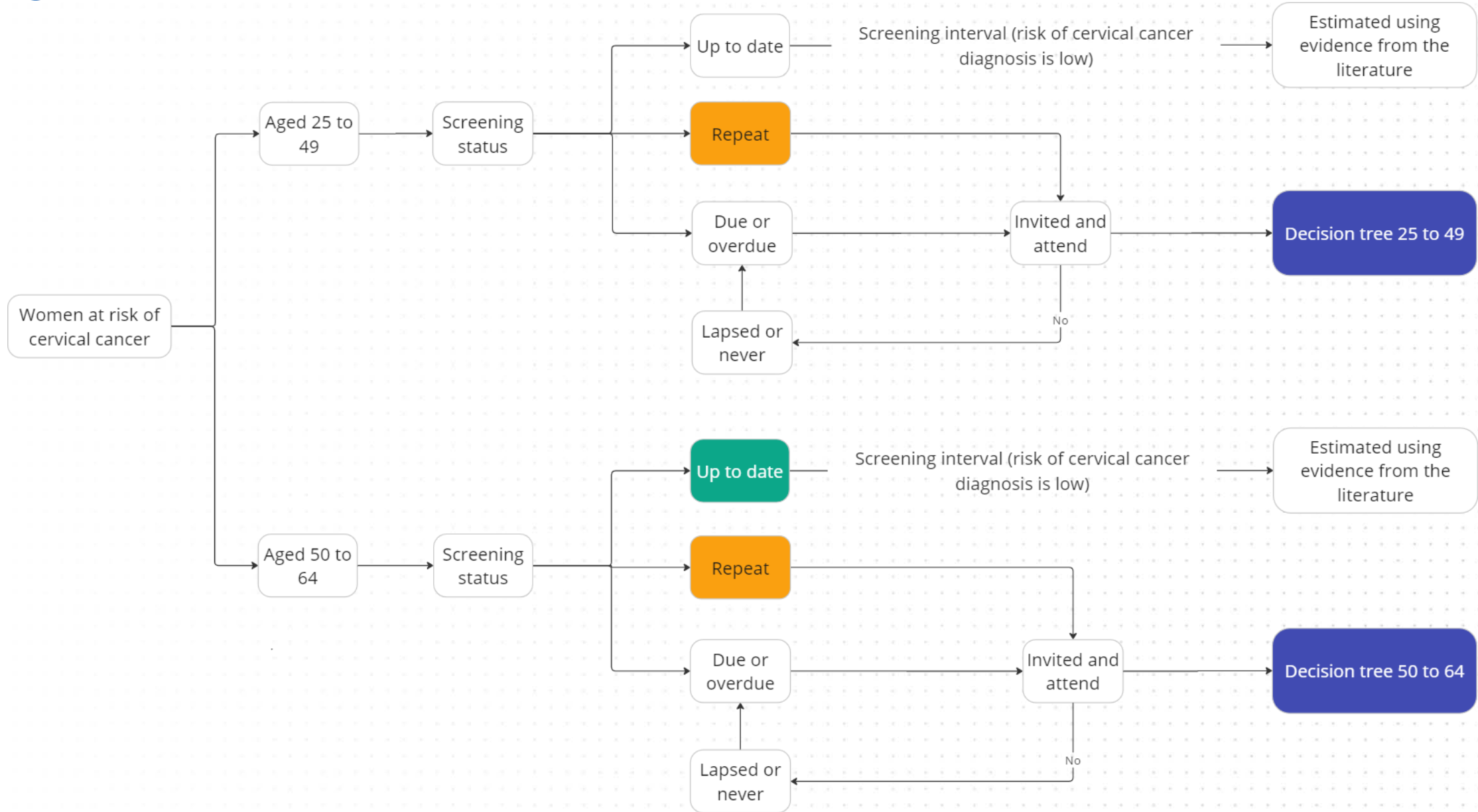
Item	Details
Perspective	Health care payer and wider societal perspective
Population	Women aged 25 to 64 at risk of cervical cancer
Time horizon	Costs and outcomes over the duration of the model - 2025 to 2050
Discounting	3.5% for costs and benefits (as per NICE methods guidance)
Primary outcome	Net Present Value Incremental Cost Effectiveness Ratio
Secondary outcomes(s)	Life Years gained; Productivity gains; Cost savings

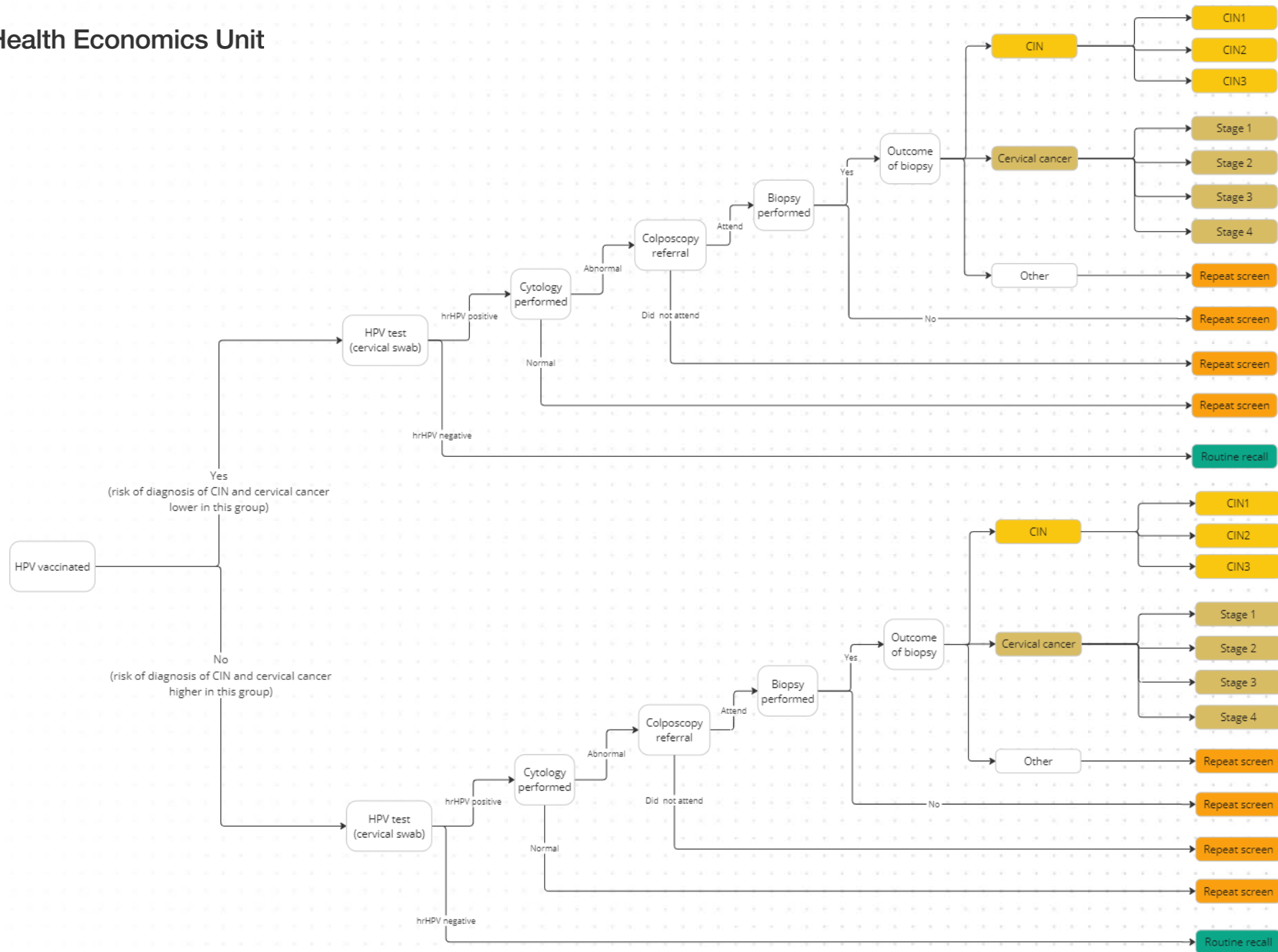
*Clinical, epidemiological and economic evidence was collated from various sources e.g. literature, national statistics. NHS cost collections

Model structure (simplified)

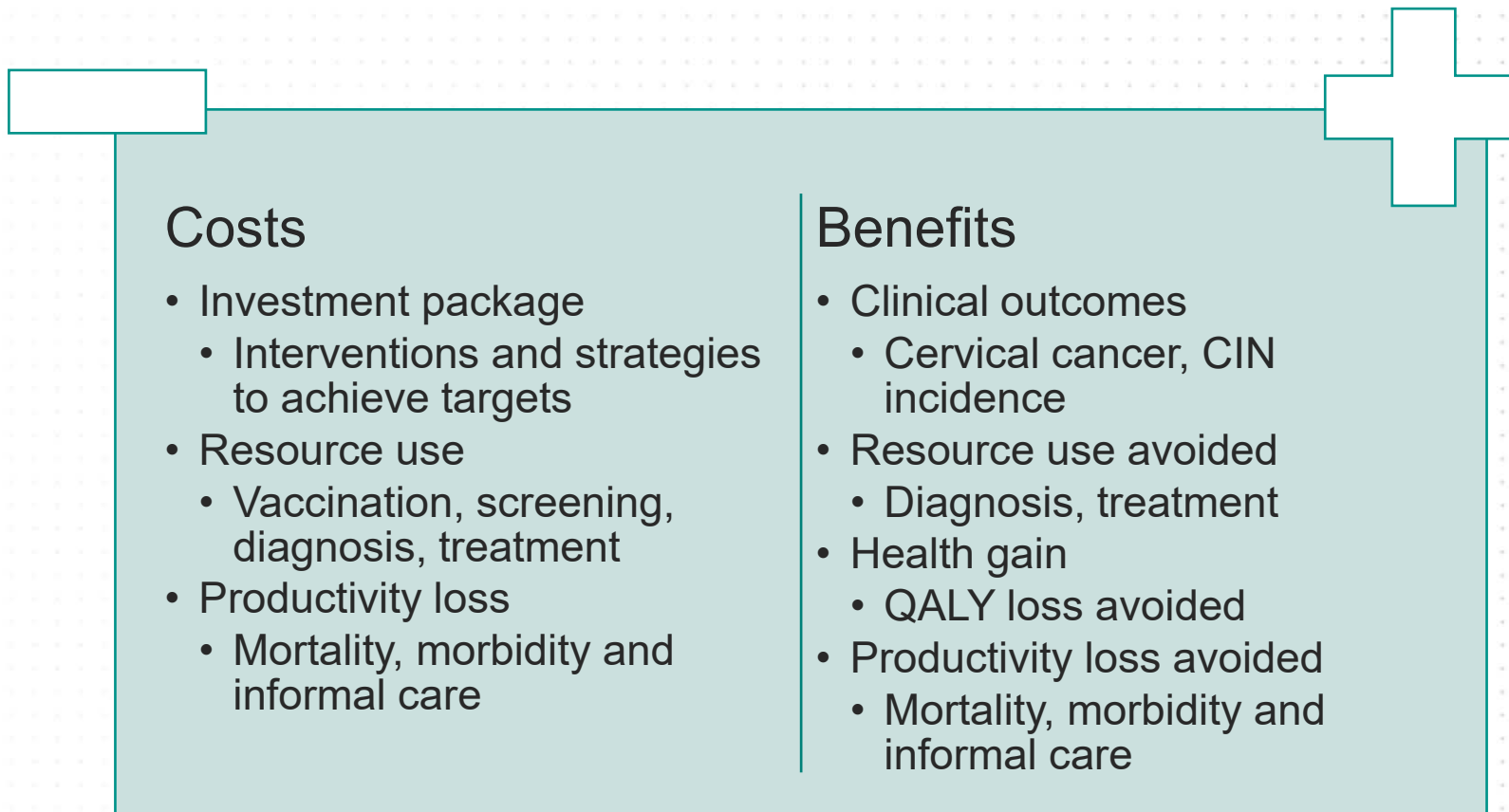


Multi-year decision tree model, with women entering and leaving the model each year





Cost and benefits included in the model



Key findings

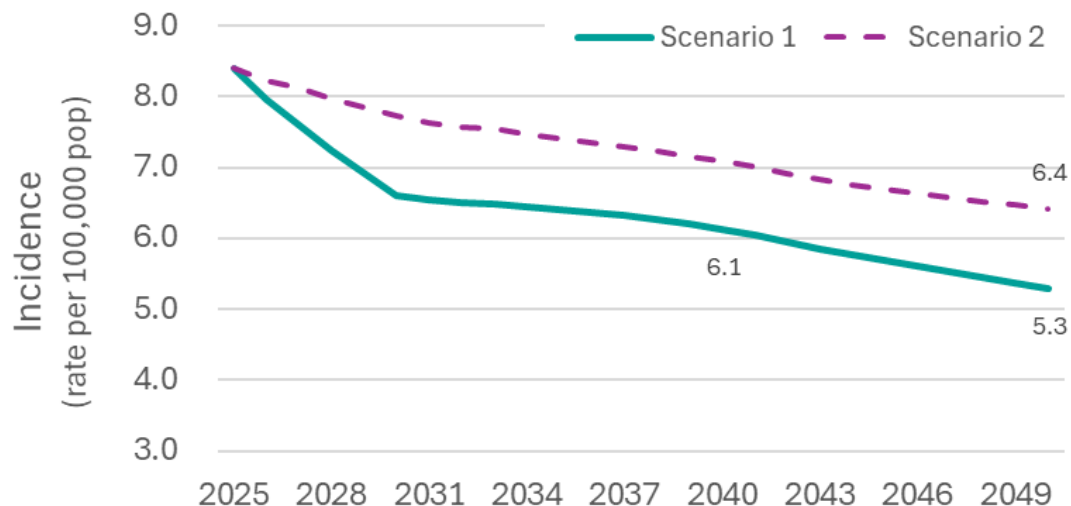
- Increasing vaccination and screening reduces cervical cancer incidence
- There is cost to preventing and treating cervical cancer... but investing in prevention pays off over time and it offers greater health benefit at a lower cost



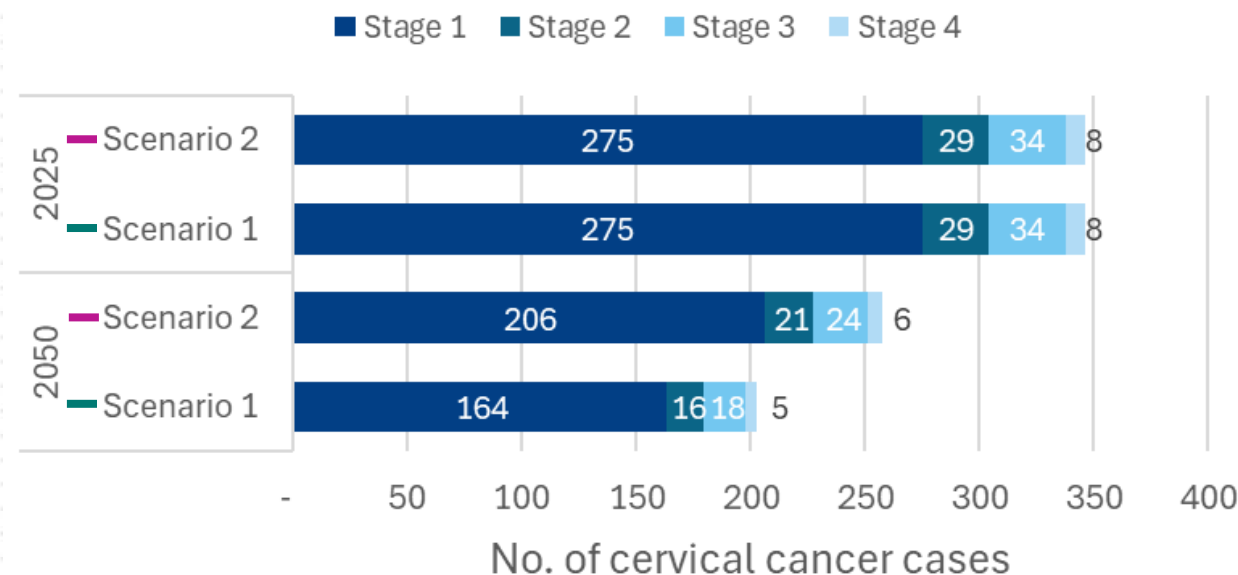
Results

- The results presented here compare two different scenarios:
 - **Scenario 1 - Best case:** HPV vaccination and screening rates are achieved
 - **Scenario 2 - Baseline:** HPV vaccination and screening coverage rates remain constant

Increasing vaccination and screening reduces cervical cancer incidence



Cervical cancer incidence (rate per 100,000 population): all ages

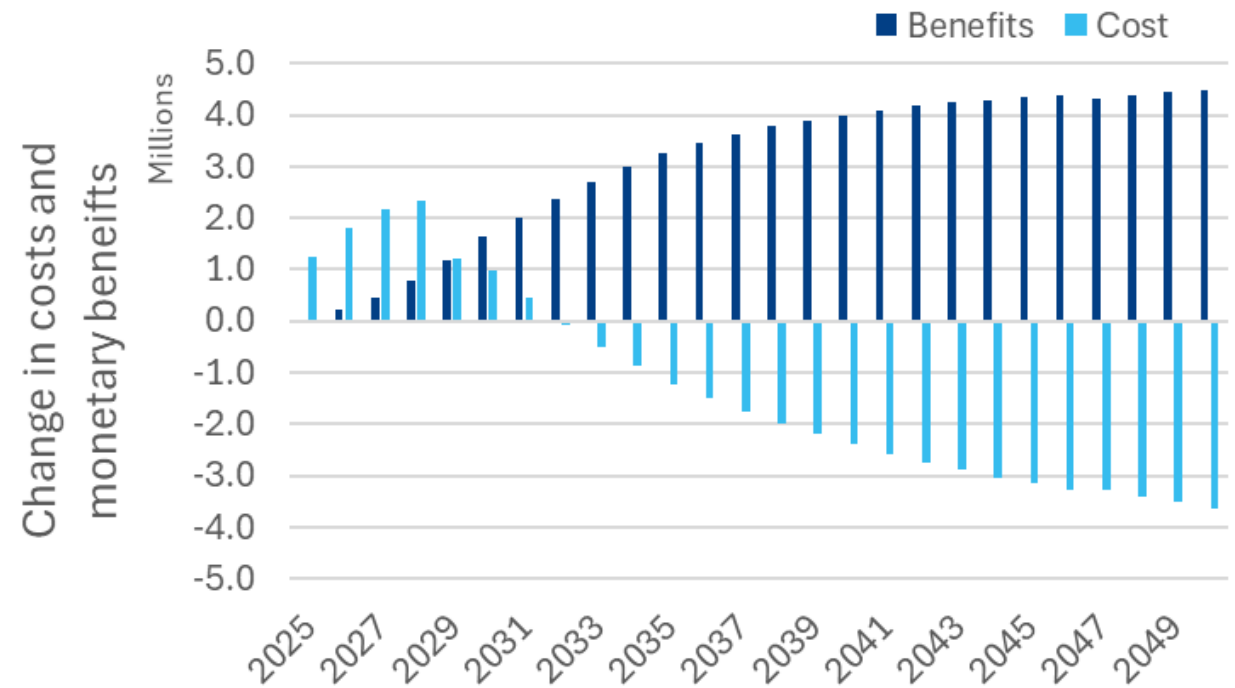


Cervical cancer cases by stage in 2025 and 2050: age 25 to 64

There is cost to preventing and treating cervical cancer...

- Net Present Value**

- **Scenario 1:** - £1.53 billion (net loss)
- **Scenario 2:** - £1.65 billion (net loss)



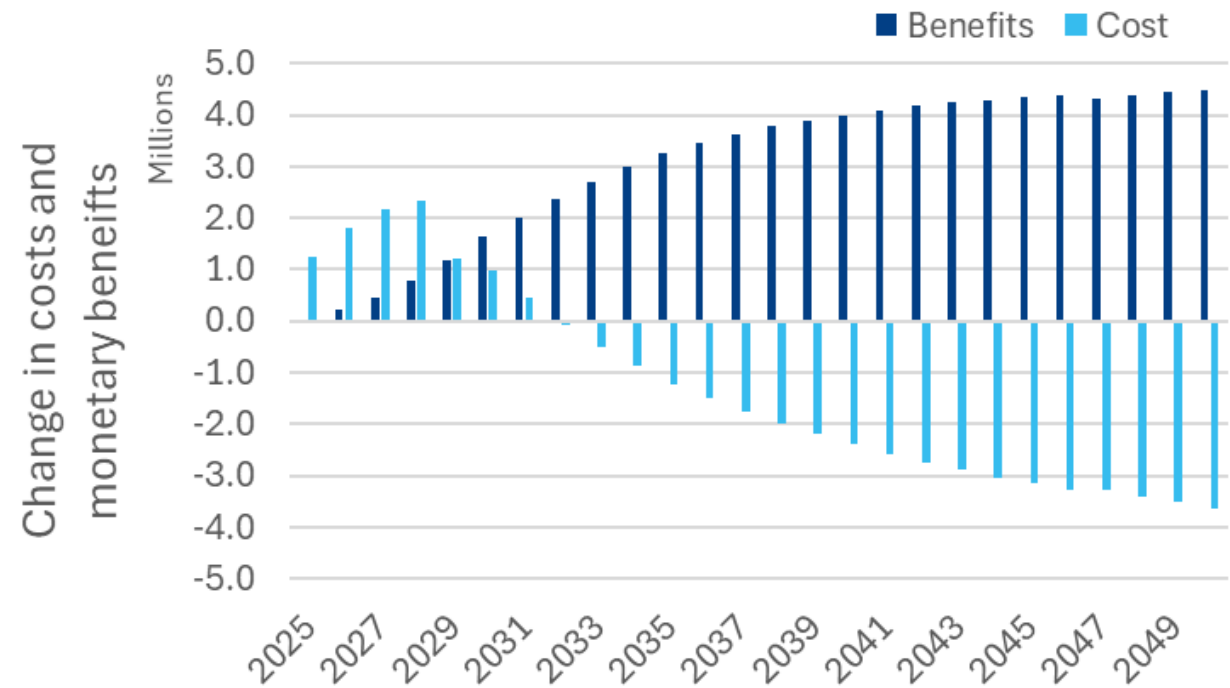
NPV shows the total discounted net cost over the period 2025 to 2050. Monetisable benefits minus costs (discounted)

... but investing in prevention pays off over time

- **Net Present Value**

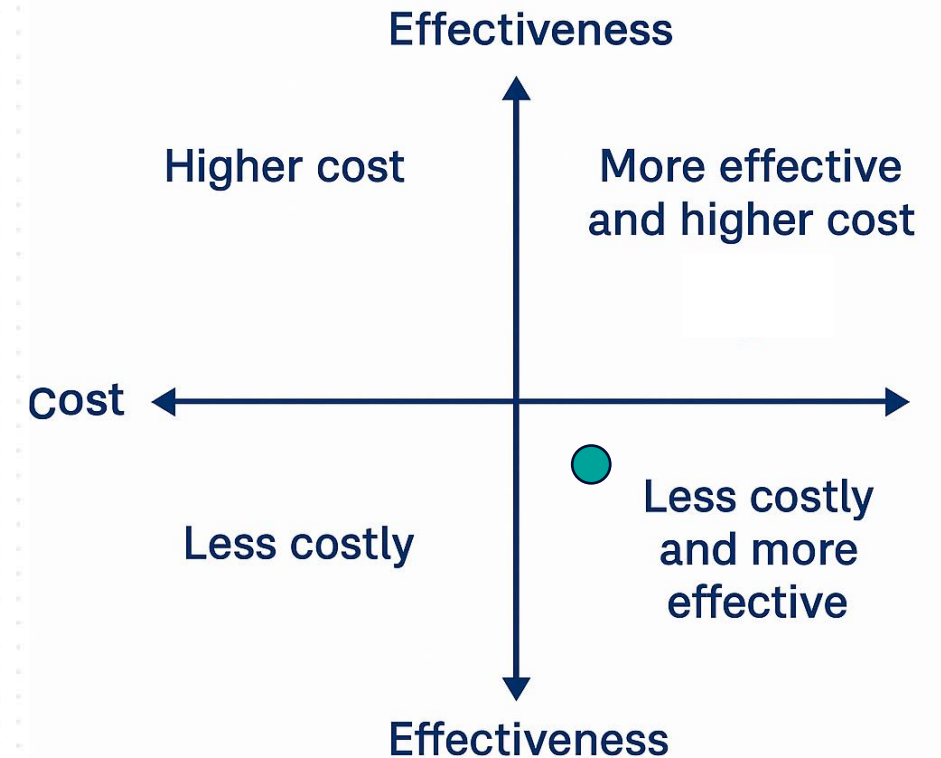
- **Scenario 1:** - £1.53 billion (net loss)
- **Scenario 2:** - £1.65 billion (net loss)

- **By achieving targets, projected loss avoided could be in the region of £113 million (or £4.7 million per year)**



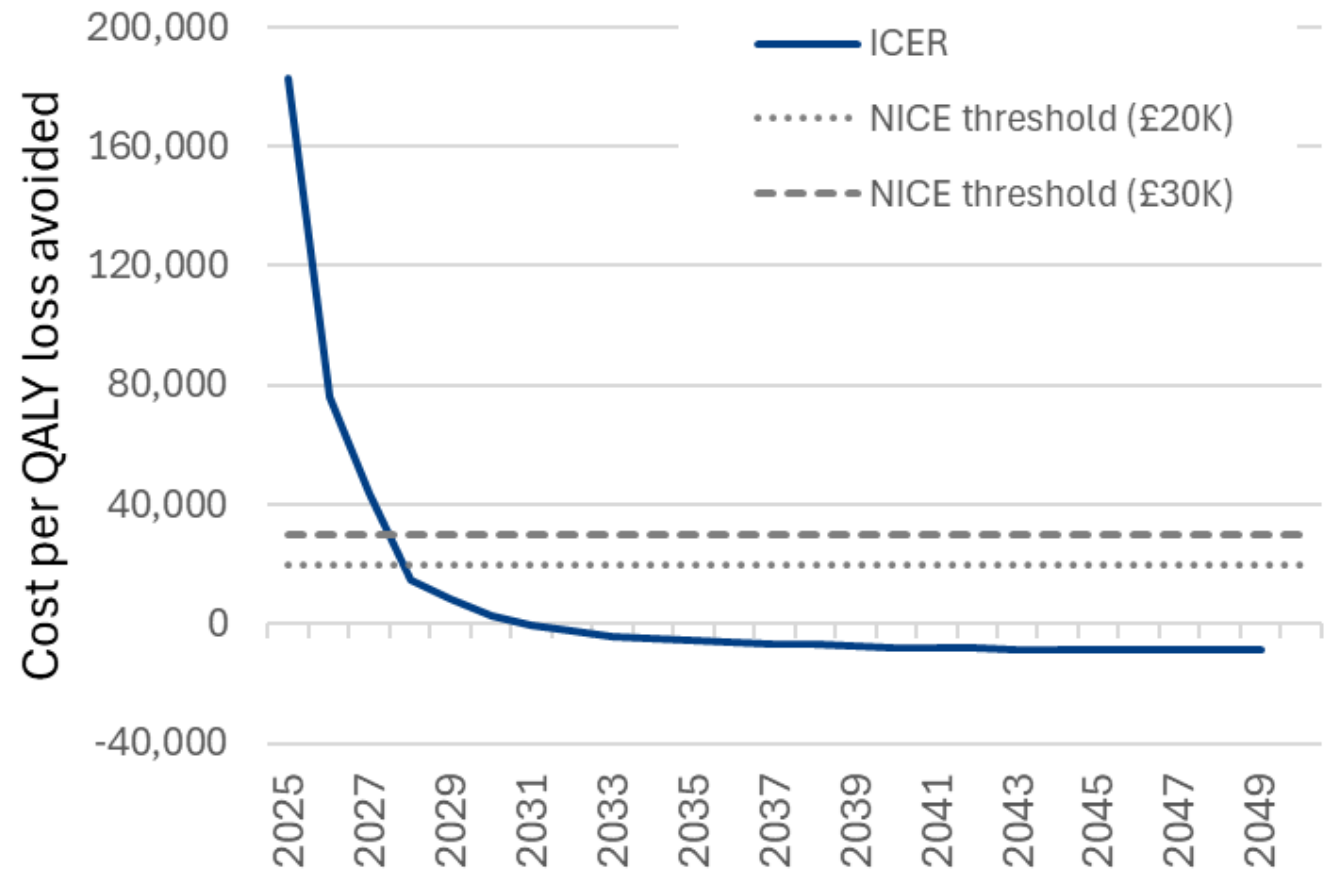
... and it offers greater health benefit at a lower cost*

- **Lower cost**
 - Difference in costs: -£33.9 million
- **More effective**
 - Difference in QALY loss avoided: 6,490
- Cost per QALY loss avoided (ICER): -£2,920



Change in ICER over time

- By 2030 the investment becomes cost-effective as the cost per QALY loss avoided falls below NICE willingness-to-pay thresholds.



Change in ICER (Cost per QALY loss avoided) over time

Main limitations

Simplified version of a complex pathway

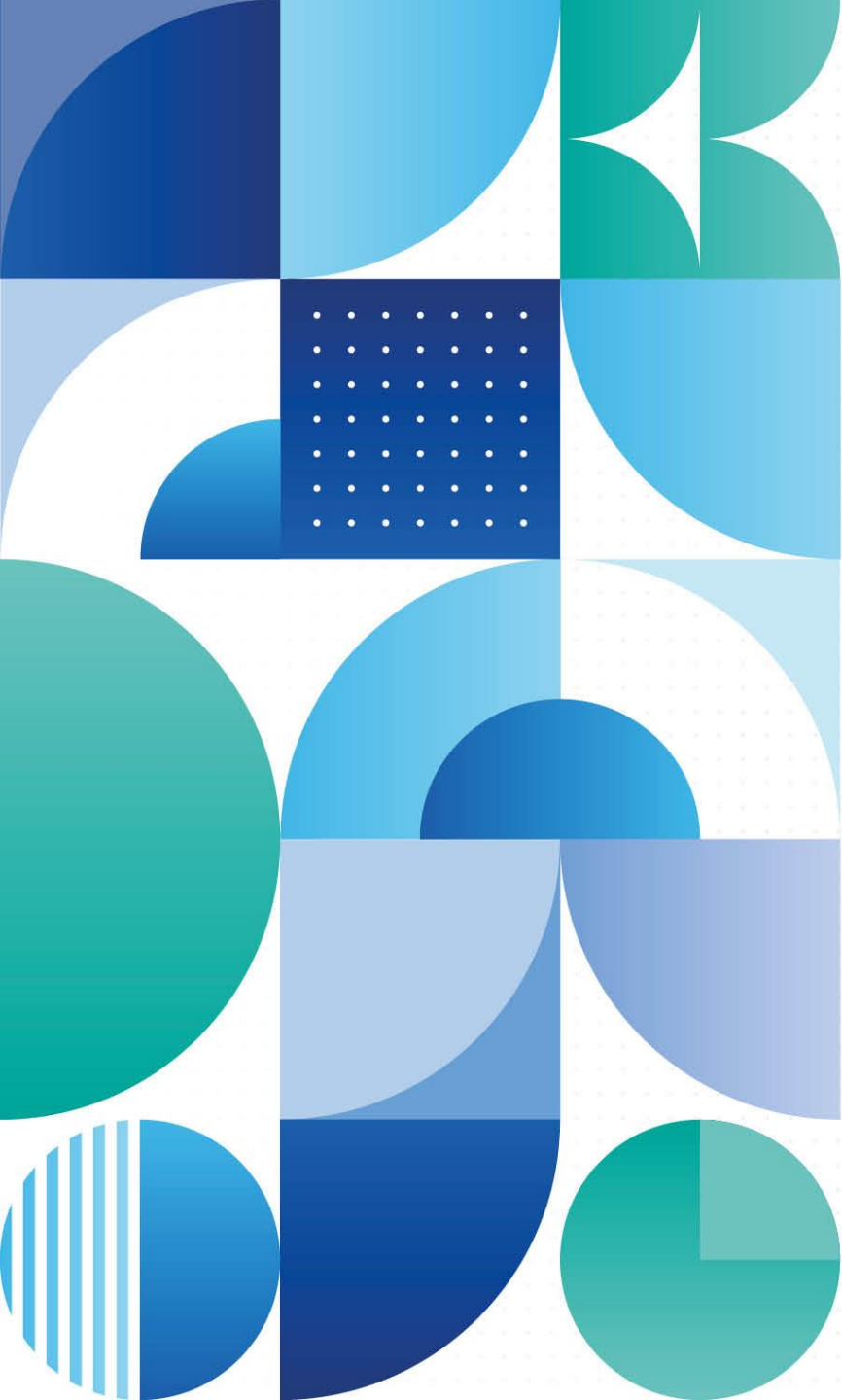
True effect of the vaccine is underestimated, e.g. does not account for herd immunity or transmission dynamics in the population

It focuses solely on cervical cancer and not on other HPV-related cancers, therefore, does not account for full benefit of HPV vac

Population level. Therefore, does not account for differences across subgroups.

Any questions?





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<https://healtheconomicsunit.nhs.uk/>