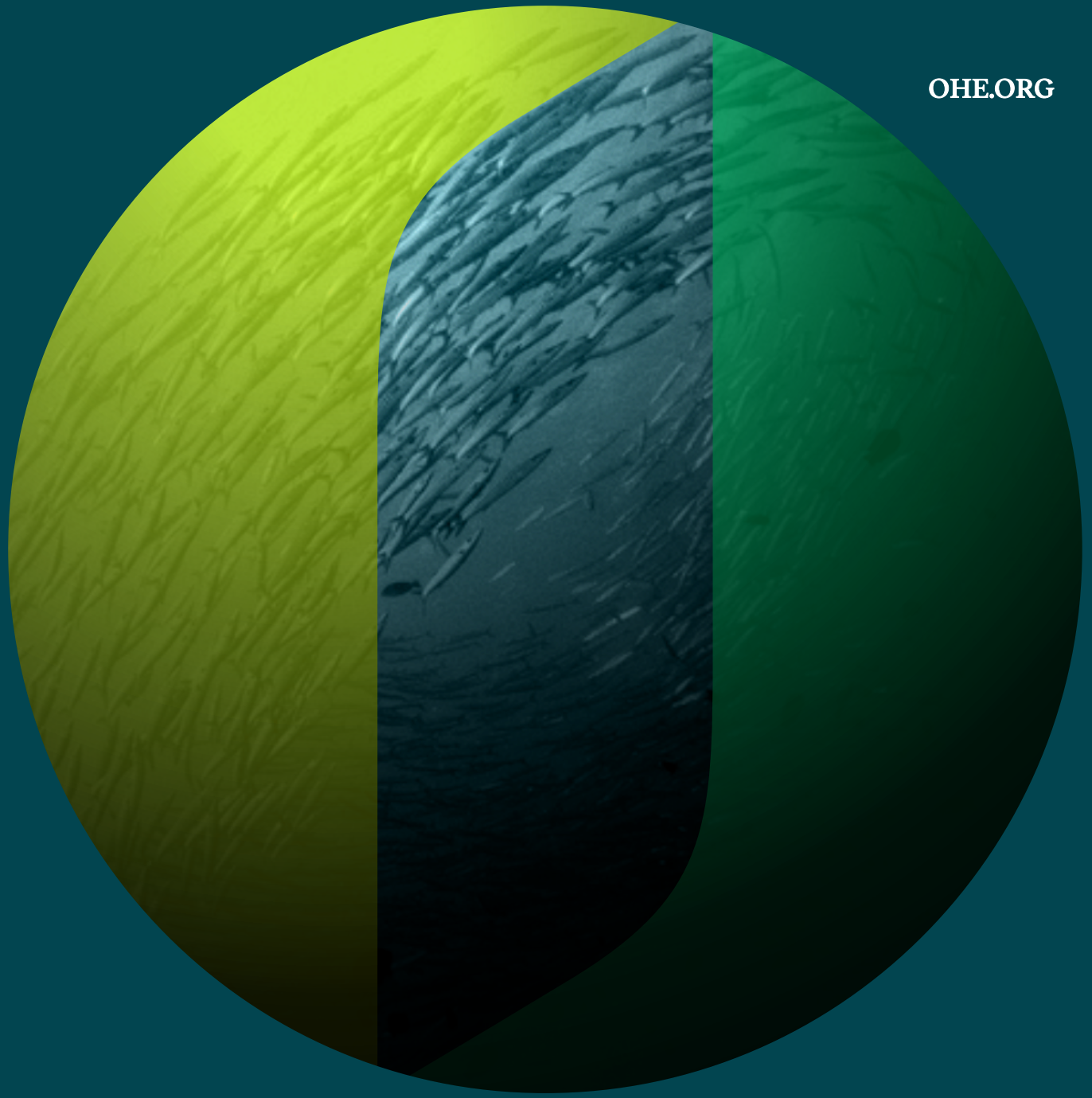
OHE

OHE.ORG

The socio-economic value of adult vaccination



Prof. Lotte Steuten, PhD
Deputy Chief Executive, Office of Health Economics
Honorary Professor, City St George's, University of London

European Parliament, Brussels, Nov 2026


60+ years old
Founded in 1962 alongside the birth of health economics
Thought leader
Track record of engaging with and informing health policy
OHE
Independent
A non-profit with Independent Research Organisation status
Publisher
Prolific publisher of original research through reports and journal articles

Disclosure

Lotte Steuten is an employee of the Office of Health Economics (OHE), a registered charity and Independent Research Organisation in the UK, which receives funding from a wide range of public and private sector sources for work on vaccination programmes and many other topics related to health economics and health policy.

The views and opinions expressed in this presentation are my own, based on over 20 years of experience in global health technology assessment (HTA), and do not necessarily reflect those of OHE or any of its funders.

All sources of funding for OHE research referenced in this presentation are disclosed on the relevant slides.

Global burden of vaccine preventable respiratory diseases is substantial

Influenza

~1b

Annual influenza cases worldwide across all ages.[1]
(last estimated in 2025)

290-650k

Influenza related deaths per year.[1]

Respiratory syncytial virus (RSV)

~64m

Annual RSV cases worldwide across all ages.[2]
(last estimated in 2022)

160k

RSV related deaths per year.[2]
(global estimate)

COVID-19

2.7m

COVID-19 cases worldwide across all ages.[3]

48k

COVID-19 related deaths.[4]

For period 5th February 2024 to 2nd February 2025

Pneumococcal pneumonia

~98m

S. pneumoniae cases across all ages globally in 2021.[5]

~505k

S. pneumoniae related deaths in 2021 globally.[6]

Note: These numbers are estimates from different sources. They should be interpreted with caution as indicative of the burden of the different viral and bacterial aetiologies of respiratory diseases and comparisons between aetiologies are not appropriate.

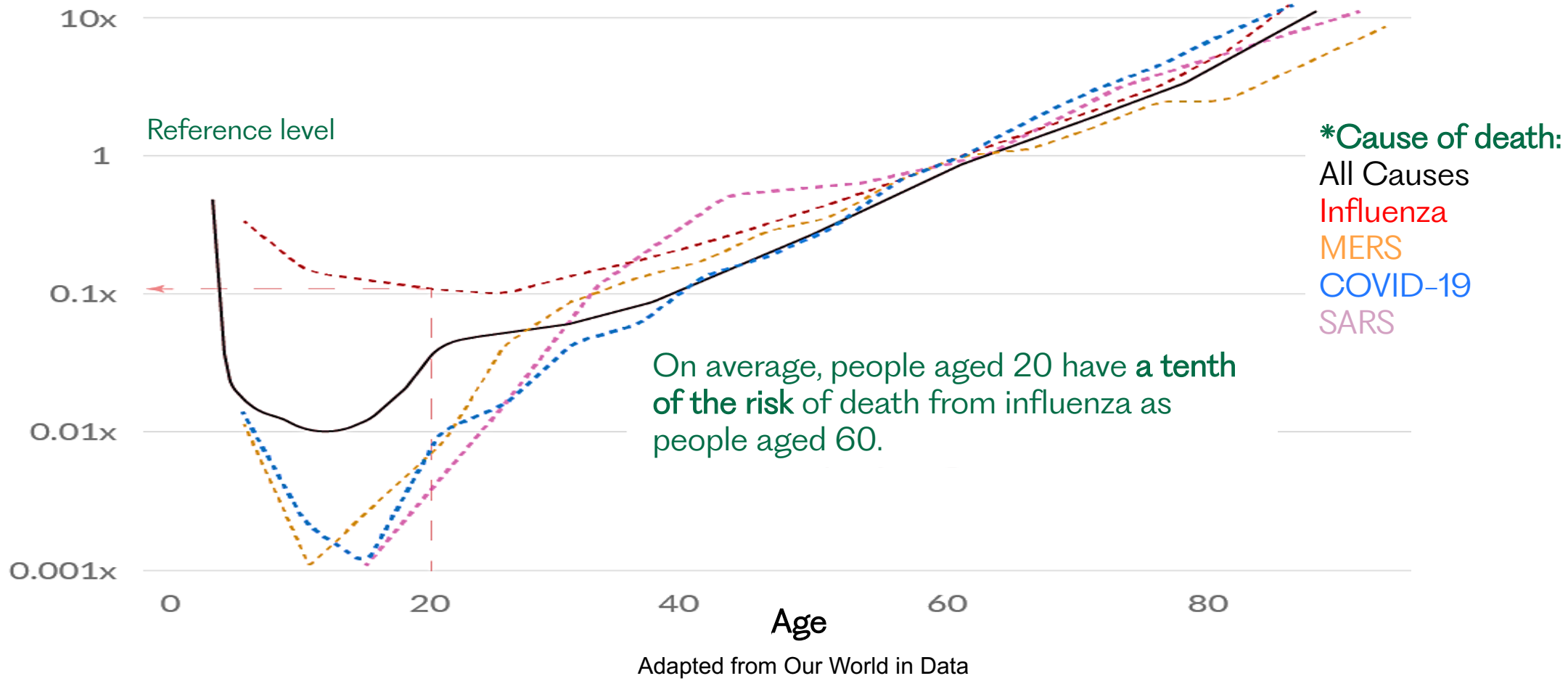
Due to many countries not reporting COVID-19 cases to the WHO, underreporting is probable.

1. World Health Organization (2025) *Influenza (seasonal)*. Available at: https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal) (Accessed: February 2026).
2. National Institute of Allergy and Infectious Diseases (2022) *Respiratory Syncytial Virus (RSV)*. Available at: https://www.niaid.nih.gov/diseases-conditions/respiratory-syncytial-virus-rsv (Accessed: February 2026).
3. World Health Organization (2025) *WHO COVID-19 dashboard: cases*. Available at: https://data.who.int/dashboards/covid19/cases?n=c (Accessed: February 2026).
4. World Health Organization (2025) *WHO COVID-19 dashboard: deaths*. Available at: https://data.who.int/dashboards/covid19/deaths?n=o (Accessed: February 2026).
5. Gil-Prieto R, Hernandez-Barrera V, Marín-García P, González-Escalada A, Gil-de-Miguel Á. Hospital burden of pneumococcal disease in Spain (2016-2022): A retrospective study. Hum Vaccin Immunother. 2025 Dec;21(1):2437915. doi: 10.1080/21645515.2024.2437915. Epub 2025 Jan 9. PMID: 39786144; PMCID: PMC11730369, Accessed February 2026
6.Kong Z, Xiong J, Chen L, Peng K, Liu H, Li Q, Luo Z. The Global, Regional, and National Burden of Lower Respiratory Infections Caused by *Streptococcus pneumoniae* Between 1990 and 2021. Healthcare (Basel). 2025 Aug 12;13(16):1982. doi: 10.3390/healthcare13161982. PMID: 40868598; PMCID: PMC12385783.

Burden of vaccine preventable respiratory diseases is growing with aging[1]

Relative risk of death[1]

How much higher is the risk of death compared to someone aged 60?

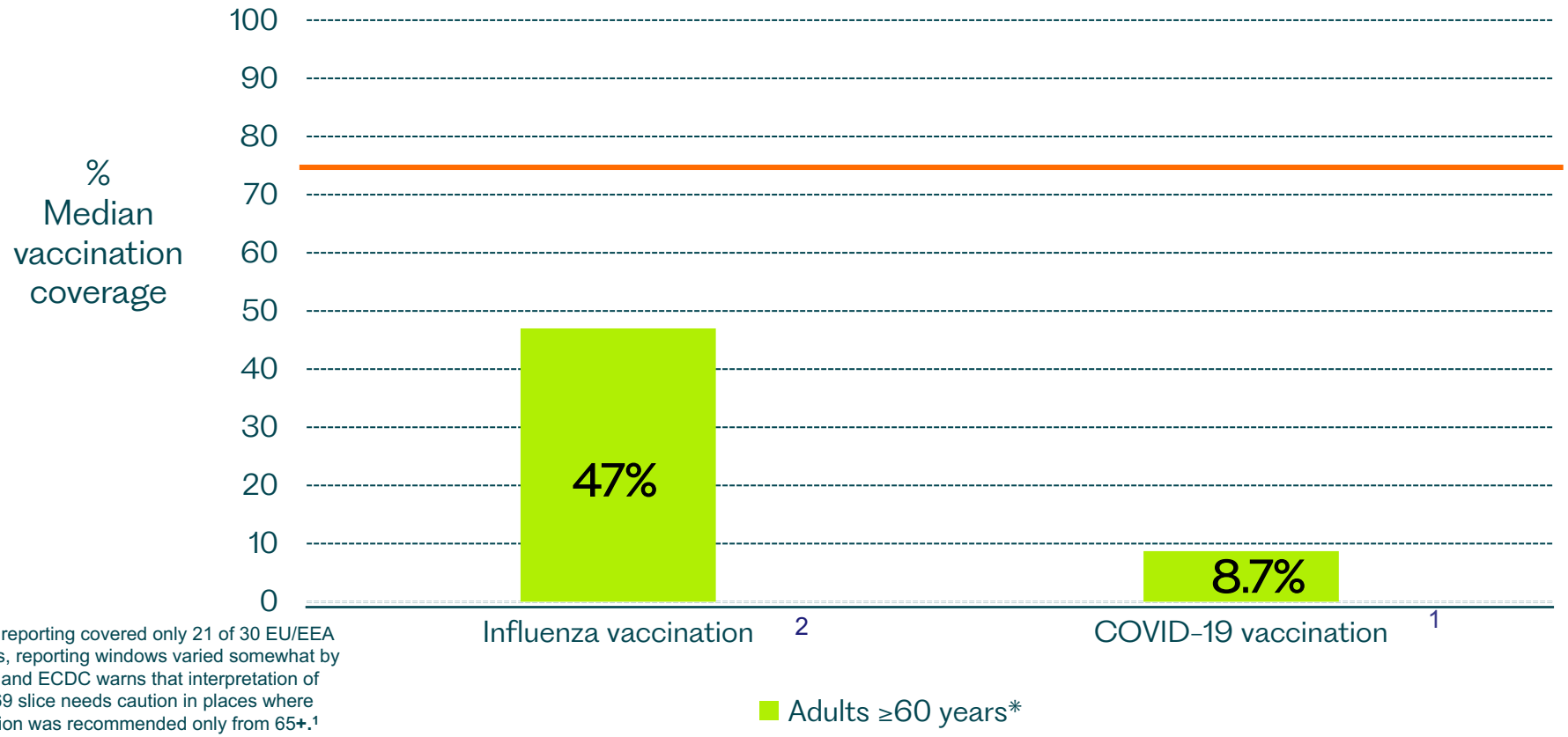


Adapted from Our World in Data

1. Our World in Data (2022). How many people die from the flu? Which factors affect the number of deaths from the flu? Available at https://ourworldindata.org/influenza-deaths . Accessed March 2025.
*Mortality data in this study was sourced from different countries: influenza (US), Covid-19 (France), SARS (China), MERS (multi-country), all-cause 28 European countries

Despite this, coverage of adult respiratory vaccines remain low[1,2]

Older adult vaccination rates for influenza and COVID-19[1]* across EU/EEA** in 2024–2025[1,2]



Vaccination coverage for influenza is lower than WHO coverage target of 75% for older adults and people with chronic conditions[3]

Influenza vaccination rate (5%—76%)[2]
COVID-19 vaccination rate (<0.1%—52.8%)[1]

*COVID reporting covered only 21 of 30 EU/EEA countries, reporting windows varied somewhat by country, and ECDC warns that interpretation of the 60–69 slice needs caution in places where vaccination was recommended only from 65**+**.[1]

**Across countries in the EU/EEA there was some variation in the lower age limit, ranging from 50 to 65 years.[2]

1. ECDC (2025), COVID-19 vaccination coverage in the EU/EEA during the 2024–25 season campaigns, Available at: https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-vaccine-coverage-2024-2025-season-campaigns.pdf., Accessed February 2026
2. ECDC (2025) Survey report on national seasonal influenza vaccination recommendations and coverage rates in EU/EEA countries, 2024/25. Available at: https://www.ecdc.europa.eu/sites/default/files/documents/seasonal-influenza-recommendation-coverage-2025.pdf. Accessed March 2026
3. WHO (2025). Understanding drivers of influenza vaccine uptake. Available at: https://www.who.int/news-room/feature-stories/detail/understanding-drivers-of-influenza-vaccine-uptake#:~:text=The%20Global%20Influenza%20Strategy%20(2019,to%20as%20the%20BeSD%20IN.. Accessed March 2026

The true burden of vaccine-preventable respiratory disease is under-recognized[1,2]

Perceived impact:

- Acute symptoms[3–5]
- Risk in specific subpopulations[1–4,6,7]



Under-recognized issues:

- Long-term burden[5,7,8]
- Worsening of underlying medical conditions[3–5,7]
- Risk beyond recognized groups[1,3,4,9]
- Cardiovascular consequences[5,7,8,10]
- Functional decline[7,8]

1. Rozenbaum MH et al. *Infect Dis Ther* 2023;12:1487–1504; 2. WHO. https://www.who.int/publications/m/item/covid-19-epidemiological-update-edition-169; 3. ECDC. https://www.ecdc.europa.eu/en/respiratory-syncytial-virus-rsv; 4. CDC. https://www.cdc.gov/rsv/hcp/clinical-overview/index.html; 5. NASEM. https://www.nationalacademies.org/read/27768/chapter/2; 6. Cocuzzo B et al. *Cureus* 2022;14:e29394; 7. Kruckow KL et al. *Pneumonia (Nathan)* 2023;15:5; 8. Wildenbeest JG et al. *Lancet Respir Med* 2024;12:822–836; 9. McConnell KH et al. *BMC Infect Dis* 2023;23:193; 10. Ivey KS et al. *J Am Coll Cardiol* 2018;71:1574–1583. All URLs accessed June 2026.

GROWING EVIDENCE

Socio-Economic Value of Adult Vaccination in the UK and Beyond



Adult respiratory vaccine programs offer an estimated return of investment of up to 19x* in one year[1]

Based on coverage rates and UK age-based vaccination recommendations at the time of the analysis, using the VSL approach, which values avoided mortality equally across ages:



1

*Full range: 5.1×—19.3× in Year 1; 5.8×—27.8× over lifetime (from lower-bound VSLY, which adjusts the value of prevented mortality by remaining life expectancy and therefore lowers with increasing age, to upper-bound VSL, which applies the same societal value to each prevented death regardless of age). Lifetime defined as the model time horizon in which cohorts are followed until death or up to 100 years of age.

Harrison C, Brassel S, Chowdhury S, Theakston C, Napier M, Vietri J, Mendes D, Yang J, Hu T, Steuten L. The broader socio-economic value of adult respiratory disease vaccinations in the UK – results from a benefit cost analysis. Expert Rev Vaccines. 2025 Dec;24(1):644-655. Erratum in: Expert Rev Vaccines. 2026 Dec;25(1):2732400. Funding: sponsored by Pfizer.

But who gets what part of "the 19"? And when?

From global averages to country specifics from the UK to the US and well beyond

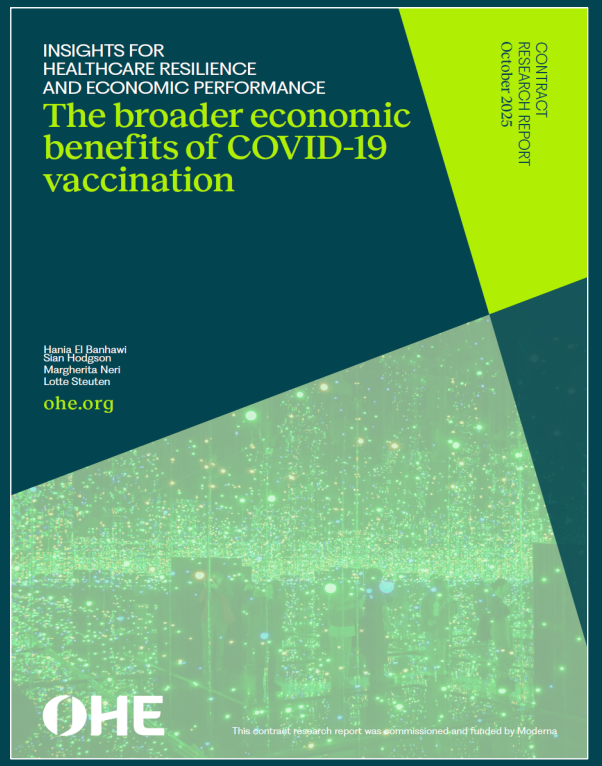
Health Affairs Scholar, 2026, 4, 1–10
https://doi.org/10.1093/haschl/qxag114
Published: 12 May 2026
Research Article

Health Affairs Scholar OXFORD
EMERGING & GLOBAL HEALTH POLICY

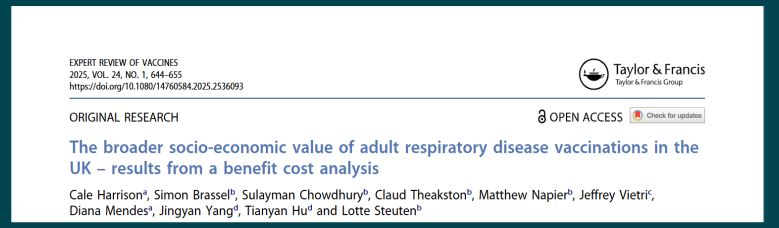
Socioeconomic value of adult respiratory vaccination in the United States: a benefit-cost analysis

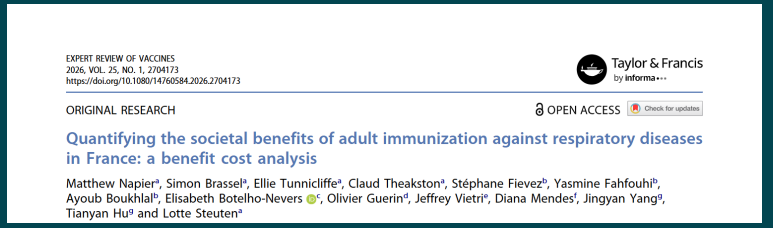
Claud Theakston [1], Tianyan Hu [2], Simon Brassel [1]*, Jeffrey Vietri [3], Diana Mendes [4], Matthew Napier [1], Ellie Tunnicliffe [1], Alon Yehoshua[2], Raymond Farkouh[2], Lotte Steuten [1]

[1]Office of Health Economics, London SE1 2HB, United Kingdom
[2]Pfizer Inc., NewYork, NY 10001, United States
[3]Pfizer Inc., Collegeville, PA 19426, United States
[4]Pfizer Ltd., Tadworth, Surrey KT20 7NS, United Kingdom
*Corresponding author: Office of Health Economics, 2nd Floor Goldings House, Hay's Galleria, 2 Hay's Lane, London SE1 2HB, United Kingdom.
Email: sbrassel@ohe.org

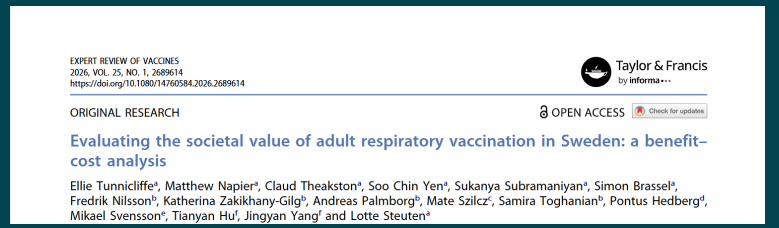



EXPERT REVIEW OF VACCINES
2026, VOL. 25, NO. 1, 2695495
https://doi.org/10.1080/14760584.2026.2695495
Taylor & Francis by informa
ORIGINAL RESEARCH
OPEN ACCESS
Evaluating the socioeconomic value of adult respiratory immunization in Spain: a benefit–cost analysis
Matthew Napier[a], Alejandra López-Ibánez de Aldecoa[b], Simon Brassel[a], Ellie Tunnicliffe[a], Claud Theakston[a], Yolanda Moreno[b], Francisco Mesa[b], Jeffrey Vietri[c], Diana Mendes[d], Jingyan Yang[e], Tianyan Hu[e] and Lotte Steuten[a]


EXPERT REVIEW OF VACCINES
2025, VOL. 24, NO. 1, 644–655
https://doi.org/10.1080/14760584.2025.2536093
Taylor & Francis Taylor & Francis Group
ORIGINAL RESEARCH
OPEN ACCESS
The broader socio-economic value of adult respiratory disease vaccinations in the UK – results from a benefit cost analysis
Cale Harrison[a], Simon Brassel[b], Sulayman Chowdhury[b], Claud Theakston[b], Matthew Napier[b], Jeffrey Vietri[c], Diana Mendes[a], Jingyan Yang[d], Tianyan Hu[d] and Lotte Steuten[b]


EXPERT REVIEW OF VACCINES
2026, VOL. 25, NO. 1, 2704173
https://doi.org/10.1080/14760584.2026.2704173
Taylor & Francis by informa
ORIGINAL RESEARCH
OPEN ACCESS
Quantifying the societal benefits of adult immunization against respiratory diseases in France: a benefit cost analysis
Matthew Napier[a], Simon Brassel[a], Ellie Tunnicliffe[a], Claud Theakston[a], Stéphane Fievez[b], Yasmine Fahfouhi[b], Ayoub Boukhlal[b], Elisabeth Botelho-Nevers[c], Olivier Guerin[d], Jeffrey Vietri[e], Diana Mendes[f], Jingyan Yang[g], Tianyan Hu[g] and Lotte Steuten[a]


EXPERT REVIEW OF VACCINES
2025, VOL. 24, NO. 1, 633–643
https://doi.org/10.1080/14760584.2025.2536092
Taylor & Francis Taylor & Francis Group
ORIGINAL RESEARCH
OPEN ACCESS
A benefit-cost analysis quantifying the broader socioeconomic value of adult respiratory vaccination programs in Japan
Claud Theakston[a], Matthew Napier[a], Simon Brassel[a], Kazumasa Kamei[b], Shuhei Ito[b], Jeffrey Vietri[c], Diana Mendes[d], Jingyan Yang[e], Tianyan Hu[e] and Lotte Steuten[a]


EXPERT REVIEW OF VACCINES
2026, VOL. 25, NO. 1, 2689614
https://doi.org/10.1080/14760584.2026.2689614
Taylor & Francis by informa
ORIGINAL RESEARCH
OPEN ACCESS
Evaluating the societal value of adult respiratory vaccination in Sweden: a benefit–cost analysis
Ellie Tunnicliffe[a], Matthew Napier[a], Claud Theakston[a], Soo Chin Yen[a], Sukanya Subramaniyan[a], Simon Brassel[a], Fredrik Nilsson[b], Katherina Zakikhany-Gilg[b], Andreas Palmborg[b], Mate Szilcz[c], Samira Toghanian[b], Pontus Hedberg[d], Mikael Svensson[e], Tianyan Hu[f], Jingyan Yang[f] and Lotte Steuten[a]

~25 countries forthcoming

Individual, health system and societal benefits accumulate over a lifetime*

Estimated benefits based on **current** coverage rates and UK age-based vaccination recommendations:

Year 1

~41K
Hospitalizations prevented[1]

~255K
Bed-days freed[1]

~10K
Deaths averted[1]

€31.8M**[2]
Productivity retained[1]

Year 5

~160K
Hospitalizations prevented[1]

~985K
Bed days freed[1]

~41K
Deaths averted[1]

€122M*[3]
Productivity retained[1]

Lifetime[1]

~314K
Hospitalizations prevented[1]

~1.9M
Bed days freed[1]

~86K
Deaths averted[1]

€237.8M**[4]
Productivity retained[1]

1. Harrison C, Brassel S, Chowdhury S, Theakston C, Napier M, Vietri J, Mendes D, Yang J, Hu T, Steuten L. The broader socio-economic value of adult respiratory disease vaccinations in the UK - results from a benefit cost analysis. Expert Rev Vaccines. 2025 Dec;24(1):644-655. Erratum in: Expert Rev Vaccines. 2026 Dec;25(1):2732400.
2. XE. Currency converter: GBP to EUR exchange rate for £27.7M. Available from: https://www.xe.com/en-gb/currencyconverter/convert/?Amount=27700000&From=GBP&To=EUR
3. XE. Currency converter: GBP to EUR exchange rate for £106.2M. Available from: https://www.xe.com/en-gb/currencyconverter/convert/?Amount=106200000&From=GBP&To=EUR
4. XE. Currency converter: GBP to EUR exchange rate for £207M. Available from: https://www.xe.com/en-gb/currencyconverter/convert/?Amount=207000000&From=GBP&To=EUR

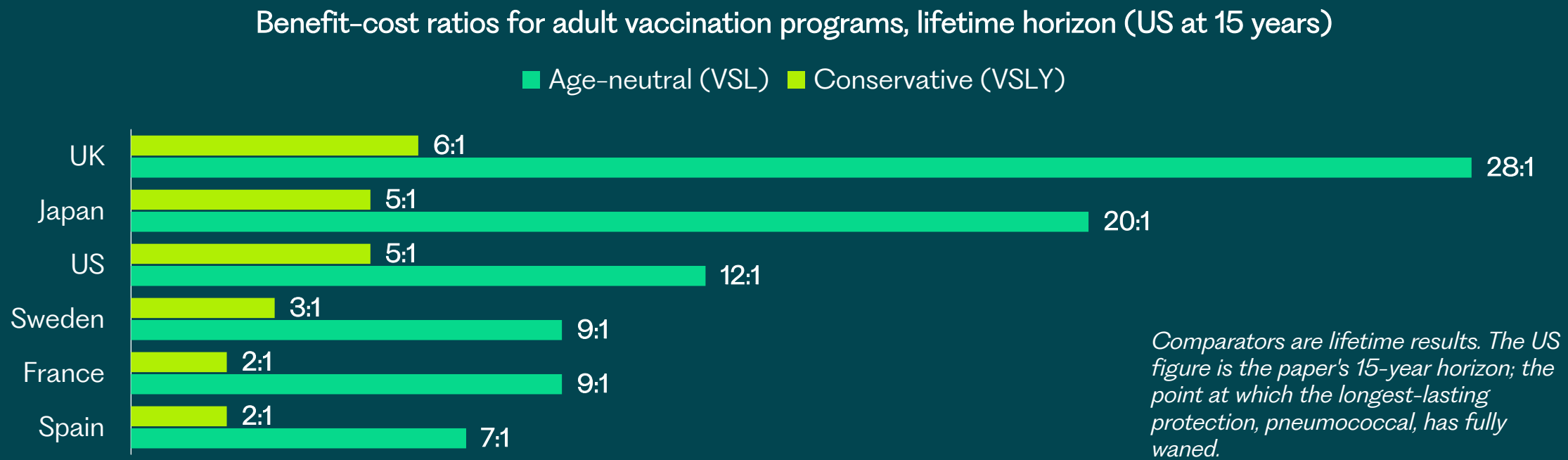
Funding: sponsored by Pfizer

*Lifetime defined as the model time horizon in which cohorts are followed until death or up to 100 years of age. For productivity retained, these figures exclude the productivity retained associated with premature fatality as this is captured in the valuation of mortality risk reduction.
**€31.8M equivalent to approximately £27.7M (XE, April 2026)
***€122M equivalent to approximately £106.2M (XE, April 2026)
**** €237.8M equivalent to approximately £207M (XE, April 2026)

Not a UK artifact: similar answer across countries

Six countries, one baseline answer

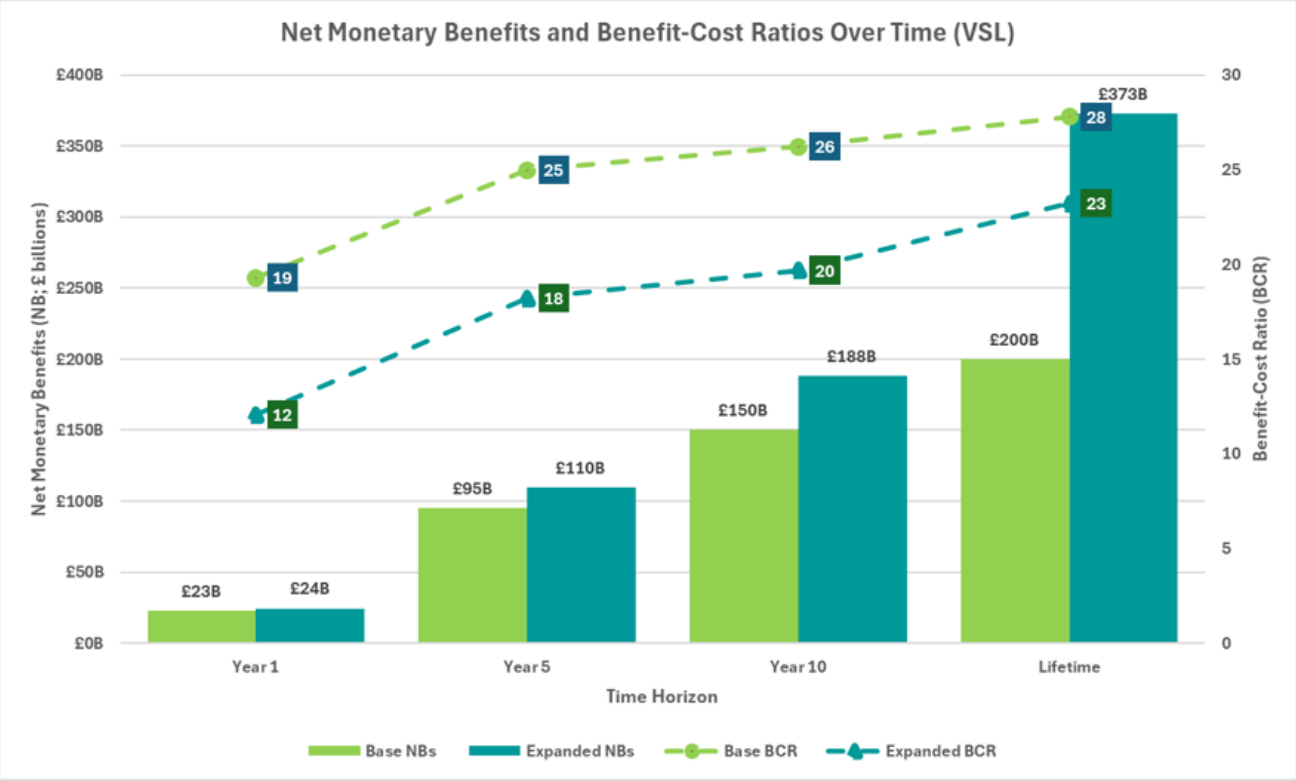
- **The UK results are the same range as Japan and the US** — above Sweden, France and Spain.
- **Every country clears 2:1 on the conservative measure** and reaches 7:1 to 28:1 once lives are valued age-neutrally
- **Differences mostly due to how a life is valued** (VSL vs. VSLY)
- Larger differences when using **VSL also depend on how age-restricted current programs** are; i.e., how "age-non-neutral" they are.



Comparators are lifetime results. The US figure is the paper's 15-year horizon; the point at which the longest-lasting protection, pneumococcal, has fully waned.

Harrison et al., (2025); Napier et al., (2026 & 2026a); Theakston et al. (2025 & 2026); Tunnicliffe et al. (2026). Funding: sponsored by Pfizer.

The UK earns high returns from adult respiratory vaccination today, but would gain even more from expanding



Harrison C, Brassel S, Chowdhury S, Theakston C, Napier M, Vietri J, Mendes D, Yang J, Hu T, Steuten L. The broader socio-economic value of adult respiratory disease vaccinations in the UK - results from a benefit cost analysis. Expert Rev Vaccines. 2025 Dec;24(1):644-655. Erratum in: Expert Rev Vaccines. 2026 Dec;25(1):2732400. Funding: sponsored by Pfizer

The cost of COVID-19 to society is multiple times higher than its cost to the healthcare system

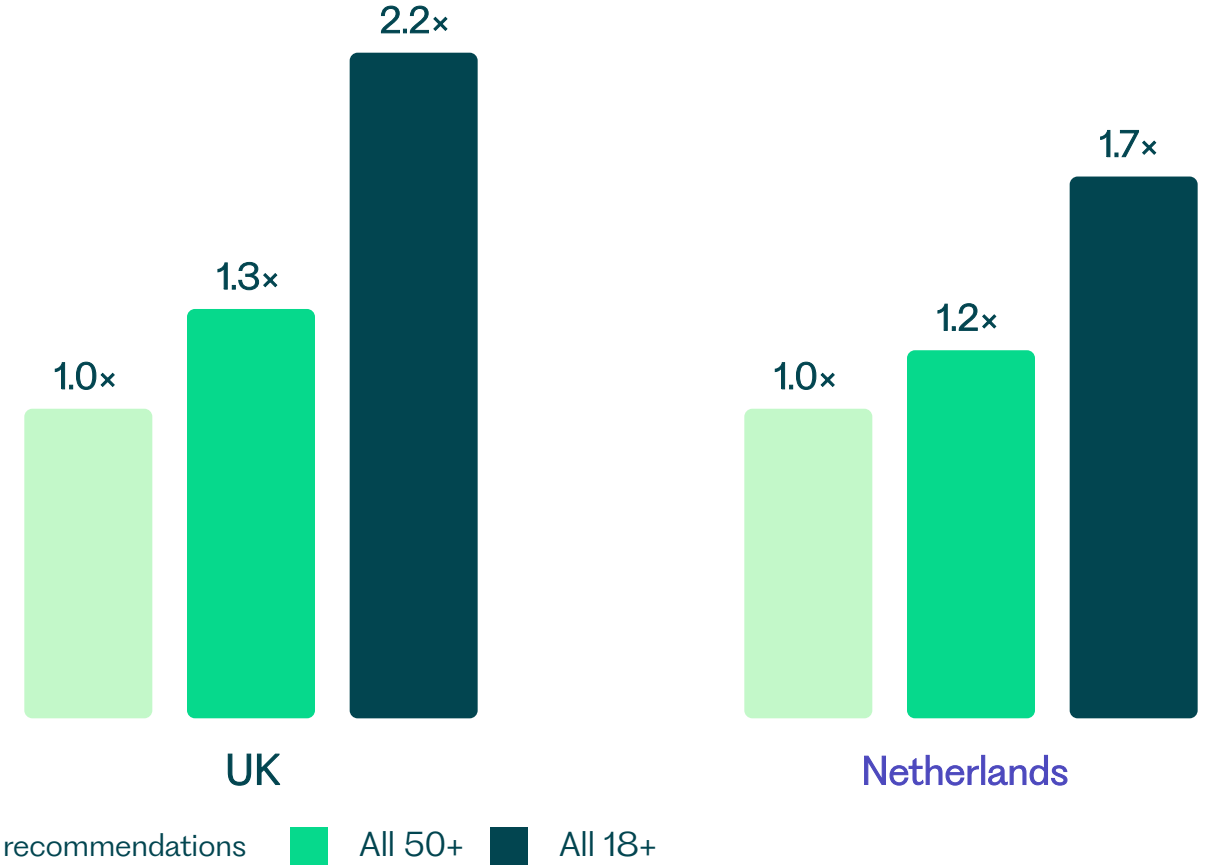
Annual, no autumn programme	UK	Netherlands
Total economic burden	£6.98bn	€3.99bn
Share of GDP	0.26%	0.39%
Economy : health care	7.5 : 1	10.6 : 1
Economic burden in age 18—64	89%	93%
Workdays lost, annually	~24 million	~10 million

Long term consequences of COVID: **~20–50%** of the economic burden.

El Banhawi, Hodgson, Neri, Steuten. The broader economic benefits of COVID-19 vaccination, OHE 2025. Funding: sponsored by Moderna.

Broader COVID-19 eligibility multiplies the return, almost all of it outside health care

Economic benefit indexed to each country's 2023 programme.



UK, annual benefit

Total £836m → £1.1b → £1.8b

Economy £603m → £1.5b; health care £233m → 326m

Benefit per symptomatic infection averted rises from £523 to £686

El Banhawi, Hodgson, Neri, Steuten. The broader economic benefits of COVID-19 vaccination, OHE 2025. Funding: sponsored by Moderna.

In England, pharmacy vaccination reaches the people general practice misses

35%

of adult NHS flu jabs given in pharmacies; 16% more in the most deprived areas

27% vs 7%

uptake gap, most vs least deprived: shingles (GP only) vs flu (GP and pharmacy)

>400k

GP appointments a year freed if shingles and pneumococcal matched flu's pharmacy share

≥ 0

net cost to the NHS: at least cost-neutral, ~£1.1m saved a year

Netherlands

Pharmacists have no independent authorisation to vaccinate.

Flu uptake at 60—64 is 42%. Working-age adults rarely see their GP.

Extending eligibility to them without a new channel risks paying for doses no one collects.

OHE, Pharmacy-based vaccination in England, 2024 (exploratory; associations, not causal); Nivel 2025; KNMP. Funding: commissioned by GSK.

Conclusion

1. **Current programmes already deliver exceptional societal ROI** – the economic case for maintaining them is overwhelming

2. **The marginal return from expanding coverage and eligibility is large** – in many cases exceeding the return from the existing programme; pharmacy vaccination facilitates higher uptake and equitable access.

3. **The majority of the economic value at stake sits outside healthcare budgets** – in lost productivity, workforce attrition, and long-term consequences of infectious diseases; decision-making frameworks ignoring this are structurally biased against expansion

4. **The binding constraint is not evidence** – it is how value is assessed and how budgets are structured

References and funding

El Banhawi H, Hodgson S, Neri M, Steuten L. The broader economic benefits of COVID-19 vaccination. OHE Contract Research, 2025. **Sponsored by Moderna.**

Harrison C, Brassel S, Chowdhury S, Theakston C, Napier M, Vietri J, Mendes D, Yang J, Hu T, Steuten L. The broader socio-economic value of adult respiratory disease vaccinations in the UK – results from a benefit cost analysis. Expert Rev Vaccines. 2025 Dec;24(1):644-655. Erratum in: Expert Rev Vaccines. 2026 Dec;25(1):2732400. **Sponsored by Pfizer.**

Napier M, Brassel S, Tunnicliffe E, Theakston C, Fievez S, Fahfouhi Y, Boukhlal A, Botelho-Nevers E, Guerin O, Vietri J, Mendes D, Yang J, Hu T, Steuten L. Quantifying the societal benefits of adult immunization against respiratory diseases in France: a benefit cost analysis. Expert Rev Vaccines. 2026 Dec;25(1):2704173. **Sponsored by Pfizer.**

Napier M, López-Ibánez de Aldecoa A, Brassel S, Tunnicliffe E, Theakston C, Moreno Y, Mesa F, Vietri J, Mendes D, Yang J, Hu T, Steuten L. Evaluating the socioeconomic value of adult respiratory immunization in Spain: a benefit-cost analysis. Expert Rev Vaccines. 2026 Dec;25(1):2695495. **Sponsored by Pfizer.**

OHE. Pharmacy-based vaccination in England: exploring opportunities and impact on health equity. 2024. **Commissioned by GSK.**

Theakston C, Hu T, Brassel S, Vietri J, Mendes D, Napier M, Tunnicliffe E, Yehoshua A, Farkouh R, Steuten L. Socioeconomic value of adult respiratory vaccination in the United States: a benefit-cost analysis. Health Aff Sch. 2026 May 12;4(7):qxag114. **Sponsored by Pfizer.**

Theakston C, Napier M, Brassel S, Kamei K, Ito S, Vietri J, Mendes D, Yang J, Hu T, Steuten L. A benefit-cost analysis quantifying the broader socioeconomic value of adult respiratory vaccination programs in Japan. Expert Rev Vaccines. 2025 Dec;24(1):633-643. Erratum in: Expert Rev Vaccines. 2026 Dec;25(1):2732404. **Sponsored by Pfizer.**

Tunnicliffe E, Napier M, Theakston C, Yen SC, Subramaniyan S, Brassel S, Nilsson F, Zakikhany-Gilg K, Palmborg A, Szilcz M, Toghanian S, Hedberg P, Svensson M, Hu T, Yang J, Steuten L. Evaluating the societal value of adult respiratory vaccination in Sweden: a benefit-cost analysis. Expert Rev Vaccines. 2026 Dec;25(1):2689614. **Sponsored by Pfizer.**

For further enquiries, please contact:

Prof. Lotte Steuten
Deputy Chief Executive
lsteuten@ohe.org
ohe.org

OHE

Follow us