

Real world impact data of HPV vaccine effectiveness in the UK

Tim Palmer

Consultant in Public Health Medicine,
Public Health Scotland

HPV immunisation in the UK

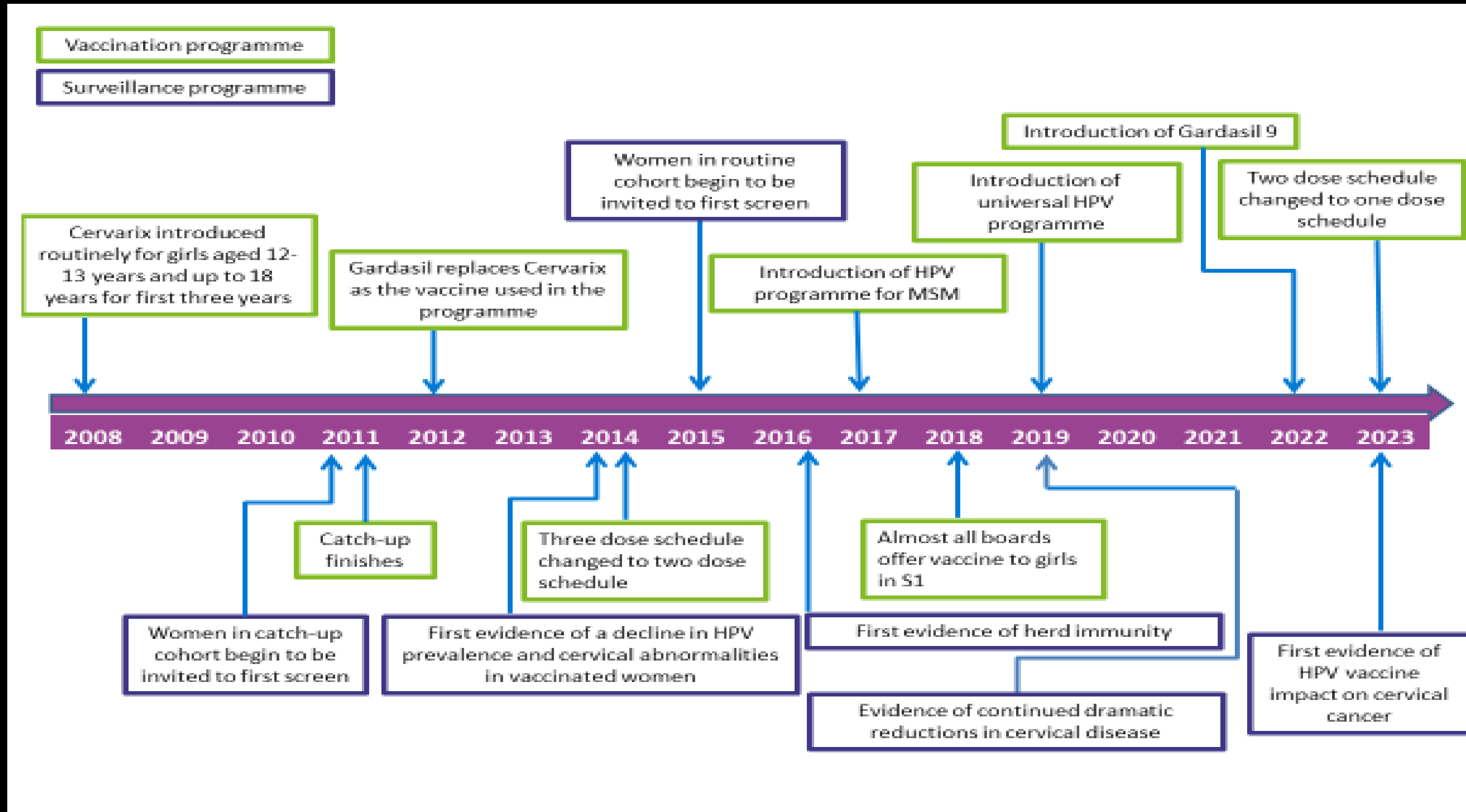
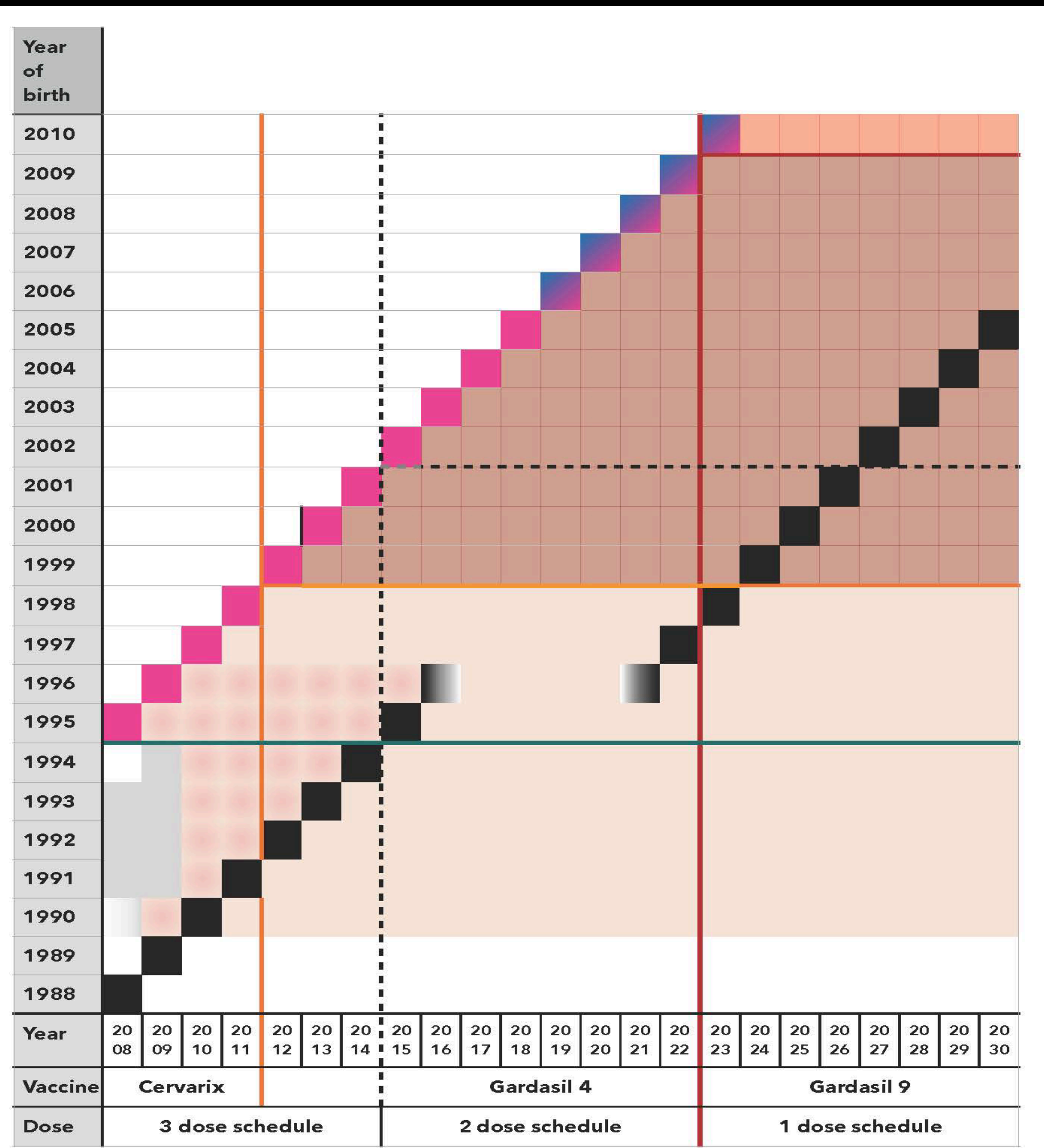


Diagram courtesy of Ross Cameron, MPH, Public Health Scotland

Inter-relationship between immunisation and screening (Scotland)



- White background: not immunised
- Pale pink: Cervarix cohort
- Brown: Gardasil4 cohort
- Orange: Gardasil 9 cohort
- Magenta: girls only programme
- Magenta/blue: gender neutral
- Grey: catch-up programme
- Black: year of entry to screening programme

Data available and linkages

England and Wales

Immunisation uptake

Screening outcomes

Uptake

Cytology

HPV status (HPV pilot and
screening 2019 on)

Biopsy

Cancer registry

Sexual health

No direct linkage

Scotland

Immunisation uptake

Screening outcomes/samples

Uptake

Cytology

HPV (from March 2020)

Biopsy

Cancer Registry

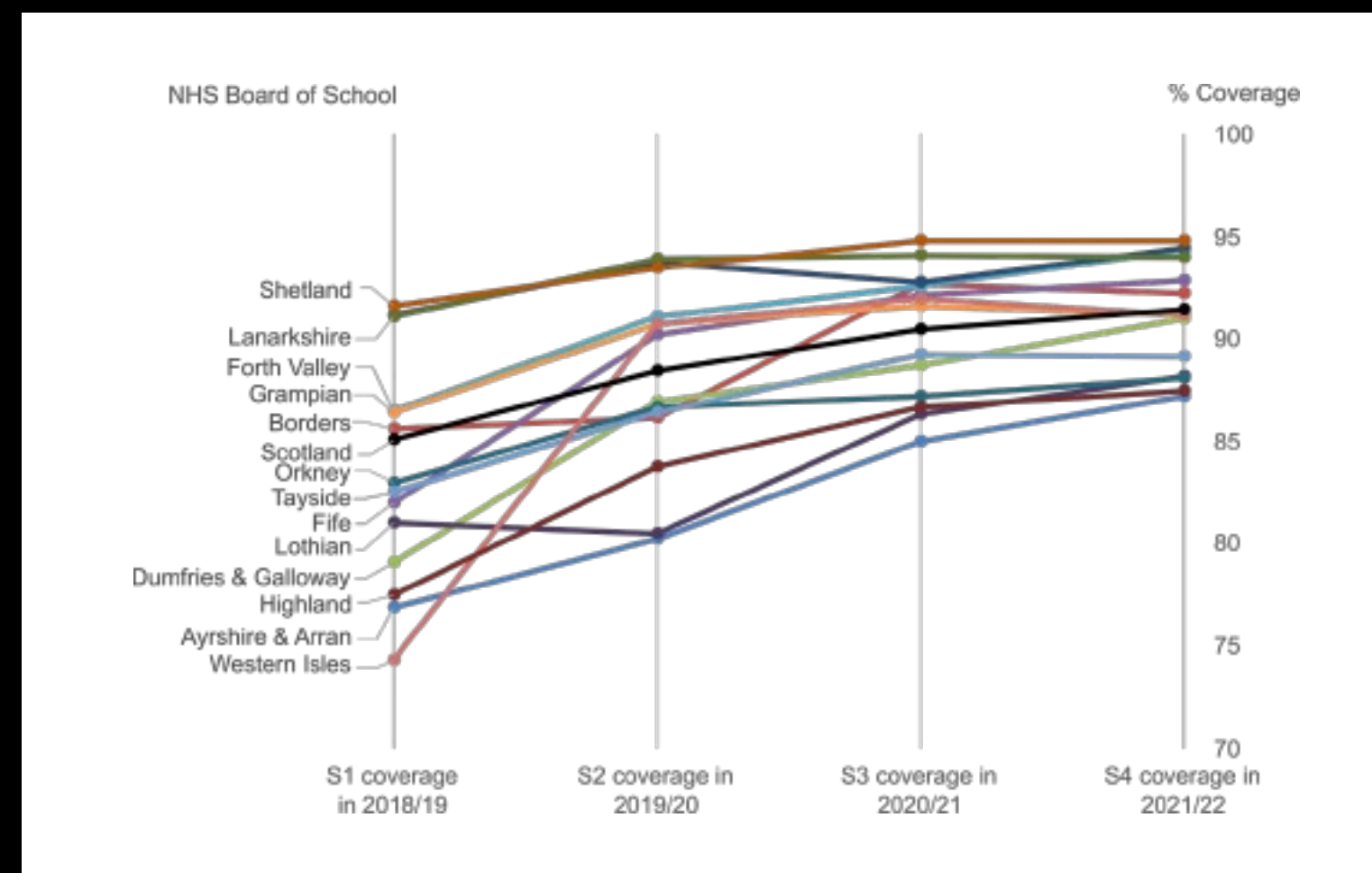
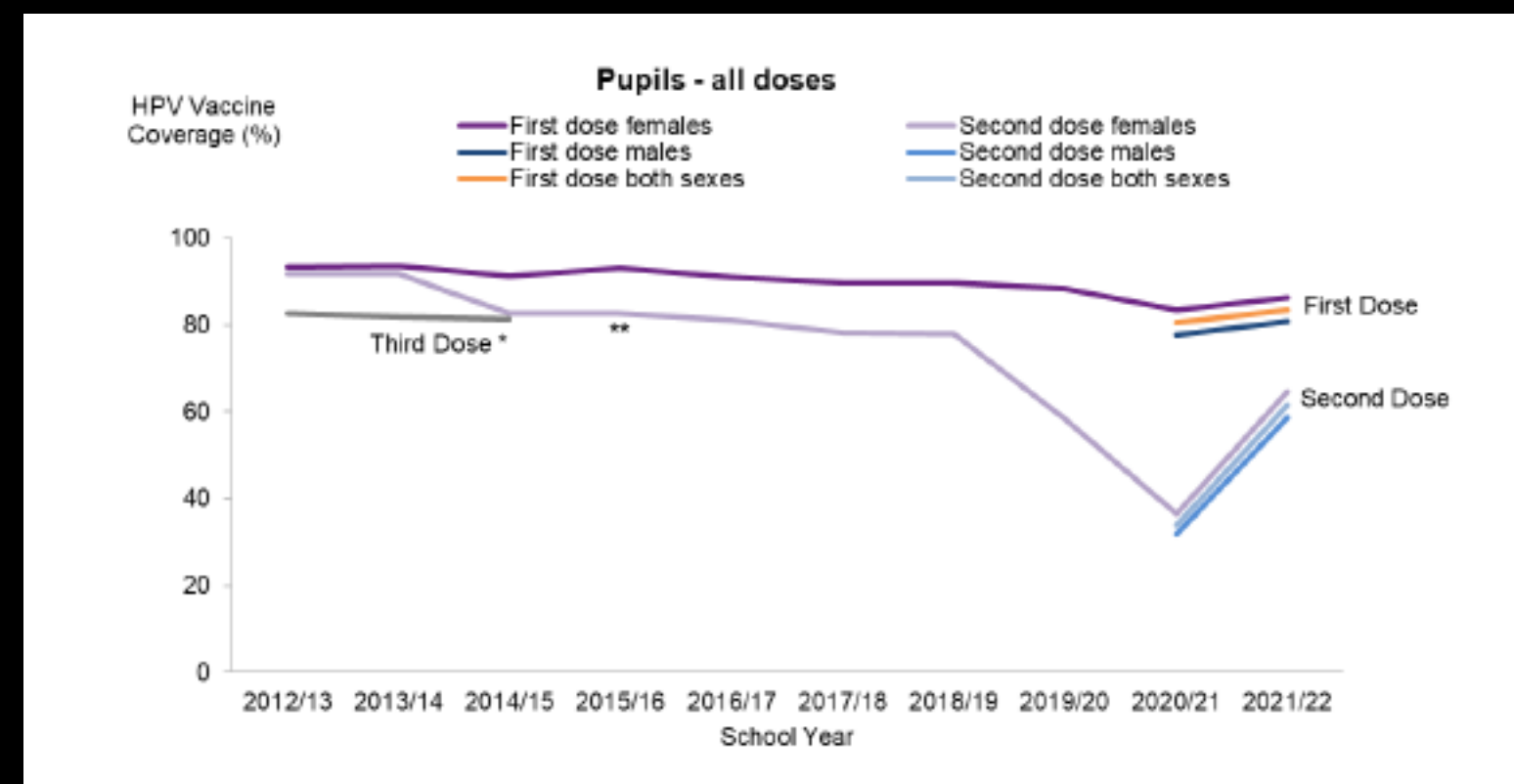
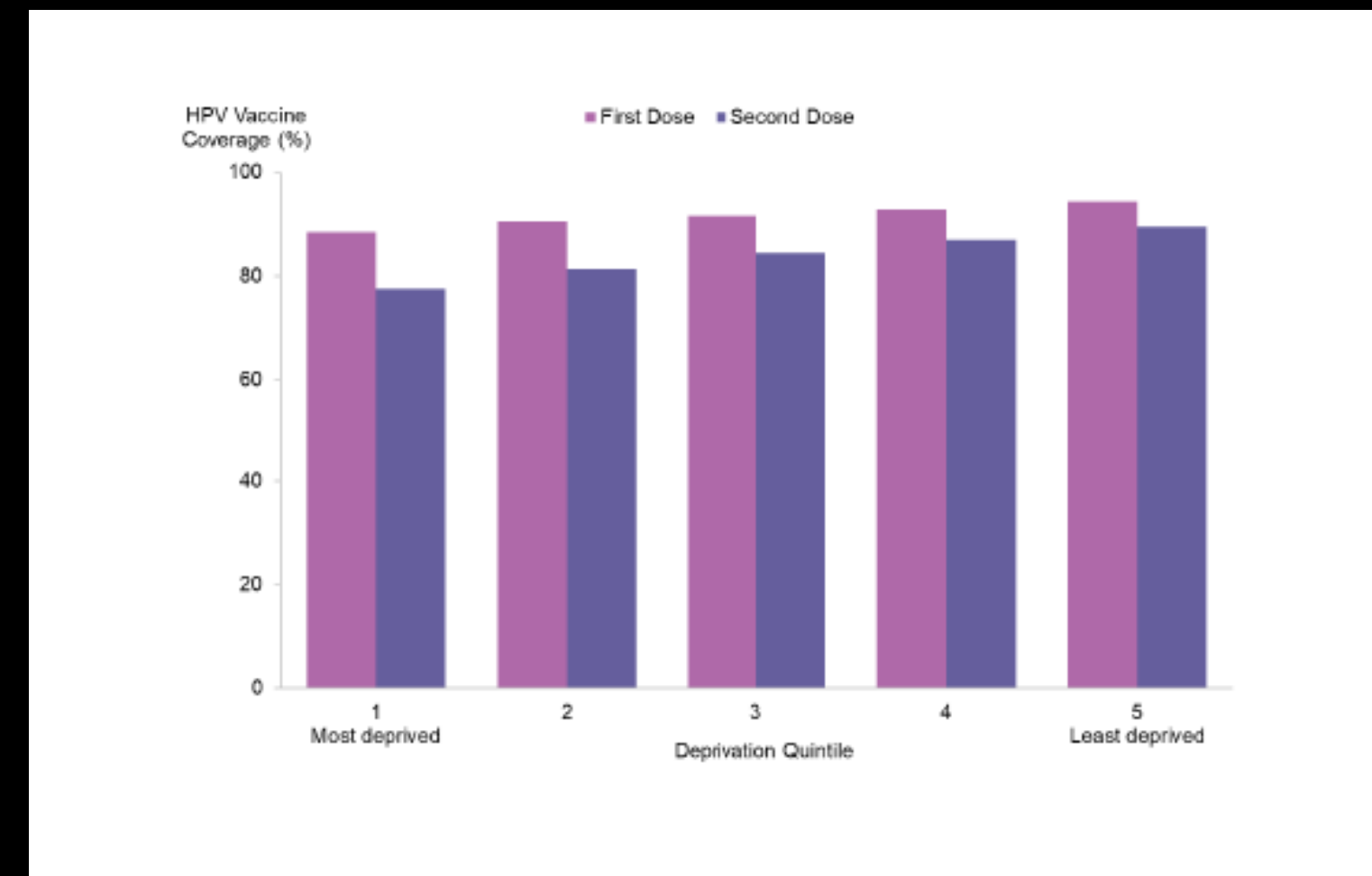
Deprivation

HPV archive

Direct linkage through CHI

Uptake of vaccine

	Scotland	Scotland	England	England	Wales	Wales	Northern Ireland	Northern Ireland
	2021/22	2021/22	2020/21	2020/21	2020/21	2020/21	2020/21	2020/21
	S2	S3	Year 9	Year 10	Year 9	Year 10	Year 10	Year 11
First dose - females	86.4	89.8	81.8	..	84.0	85.6	86.8	..
First dose - males	80.9	84.8	77.3	..	78.0	80.0	82.5	..
Second dose - females	64.8	76.9	60.6	..	59.5	70.4	56.4	..
Second dose - males	58.6	71.0	54.7	..	54.3	65.5	51.6	..

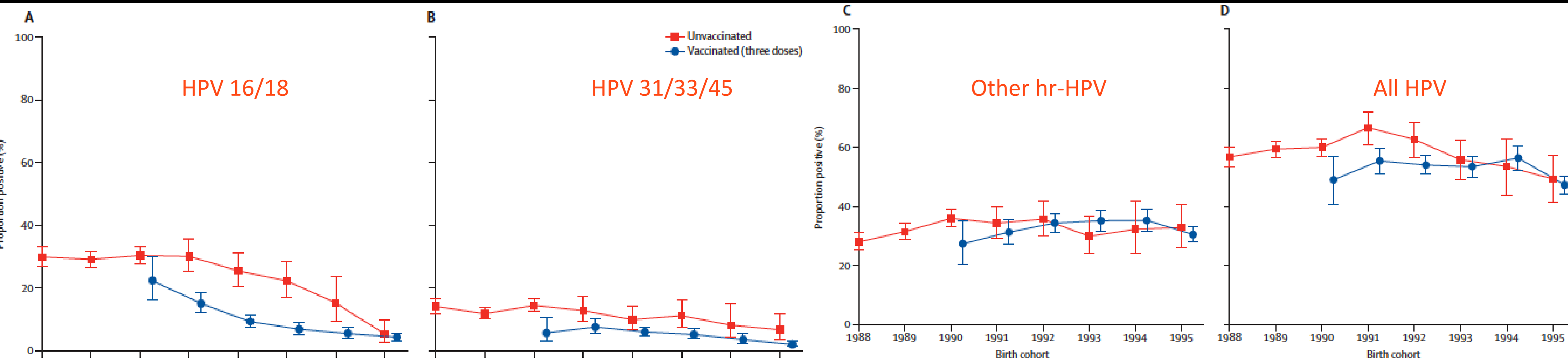
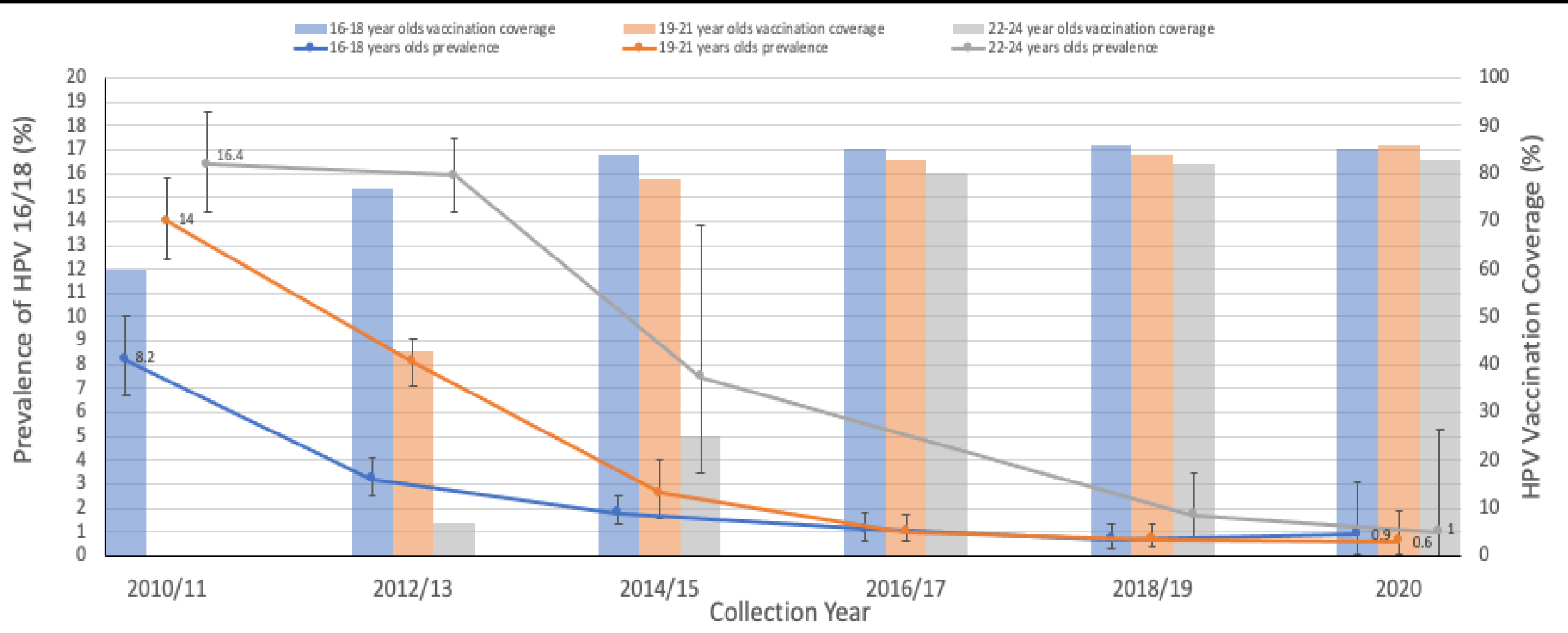


<https://www.publichealthscotland.scot/media/16628/2022-11-29-hpv-report.pdf>

Change in HPV in population

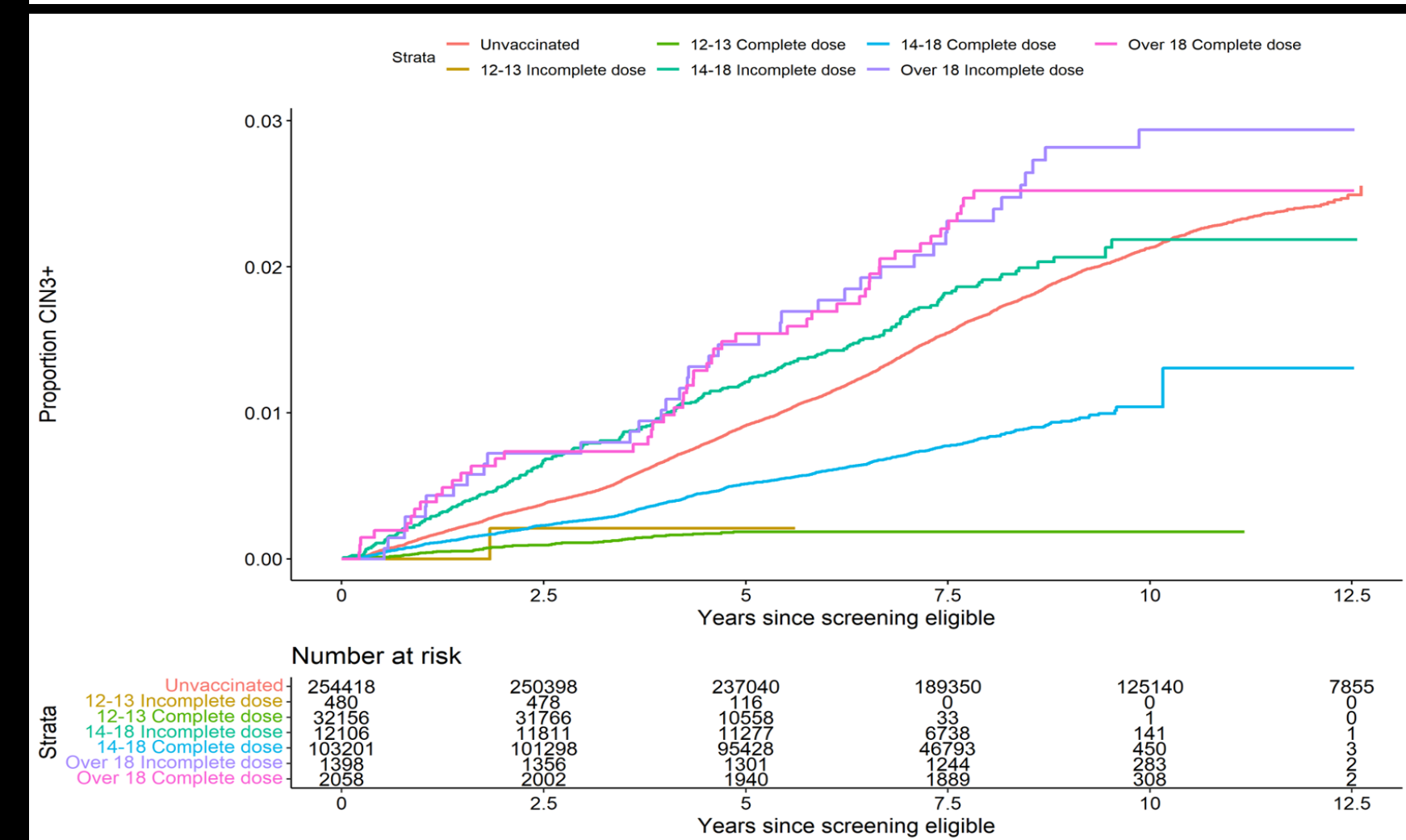
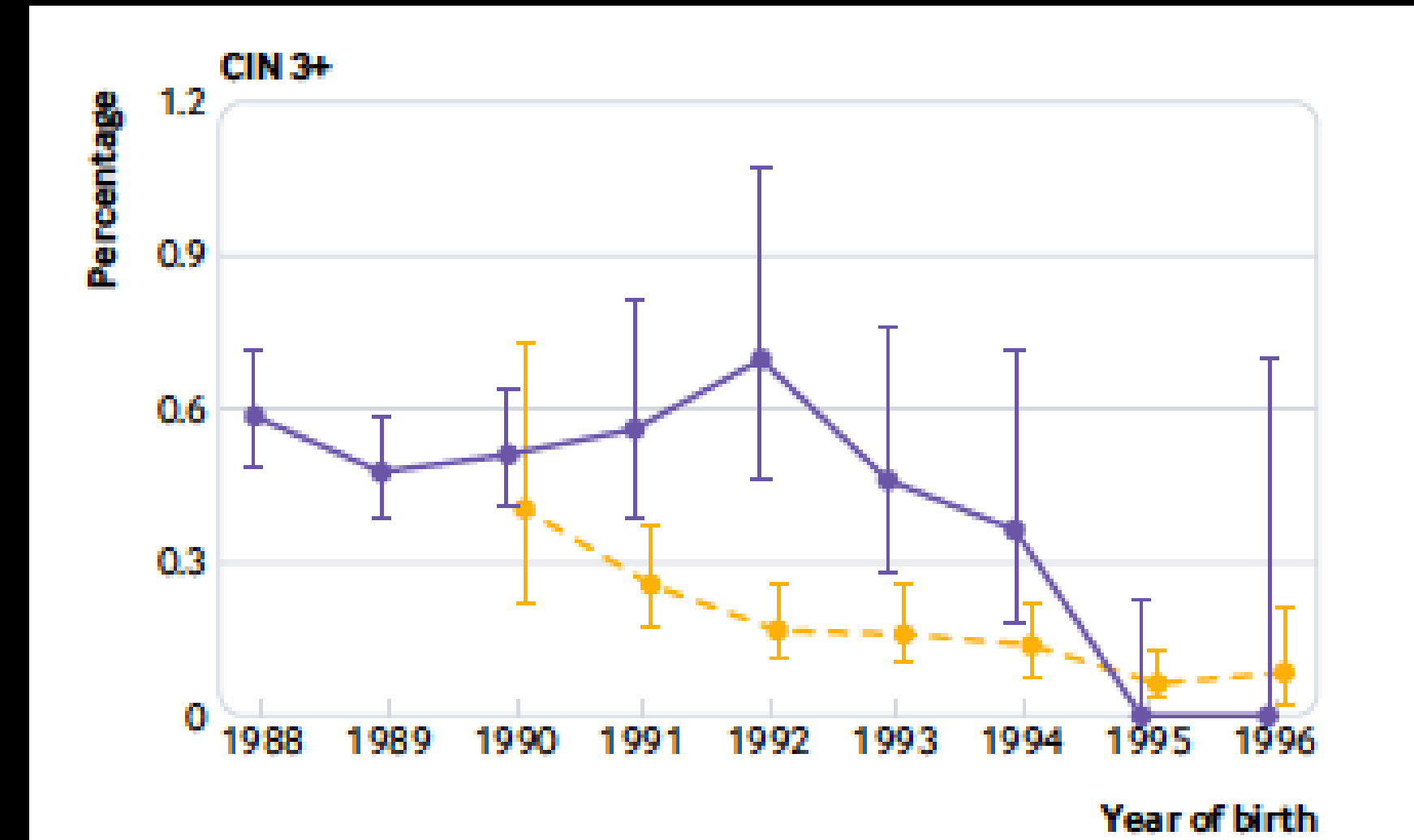
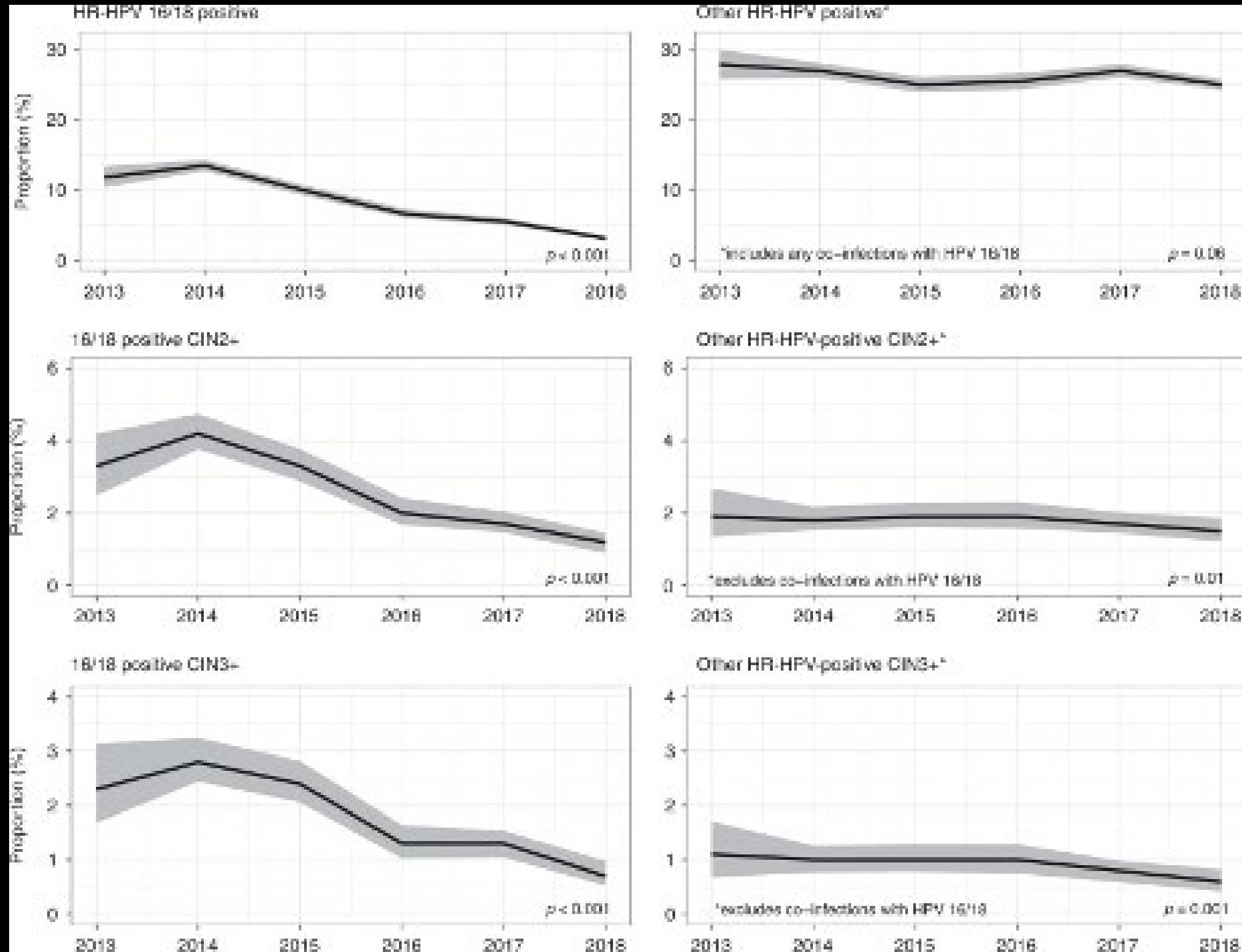
21072 vulvo-vaginal swabs collected through chlamydia screening programme: age 16–25 yr

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858872/hpr0220_HPV_2018.pdf



K Kavanagh et al
Lancet Infect Dis 2017;
17: 1293–302

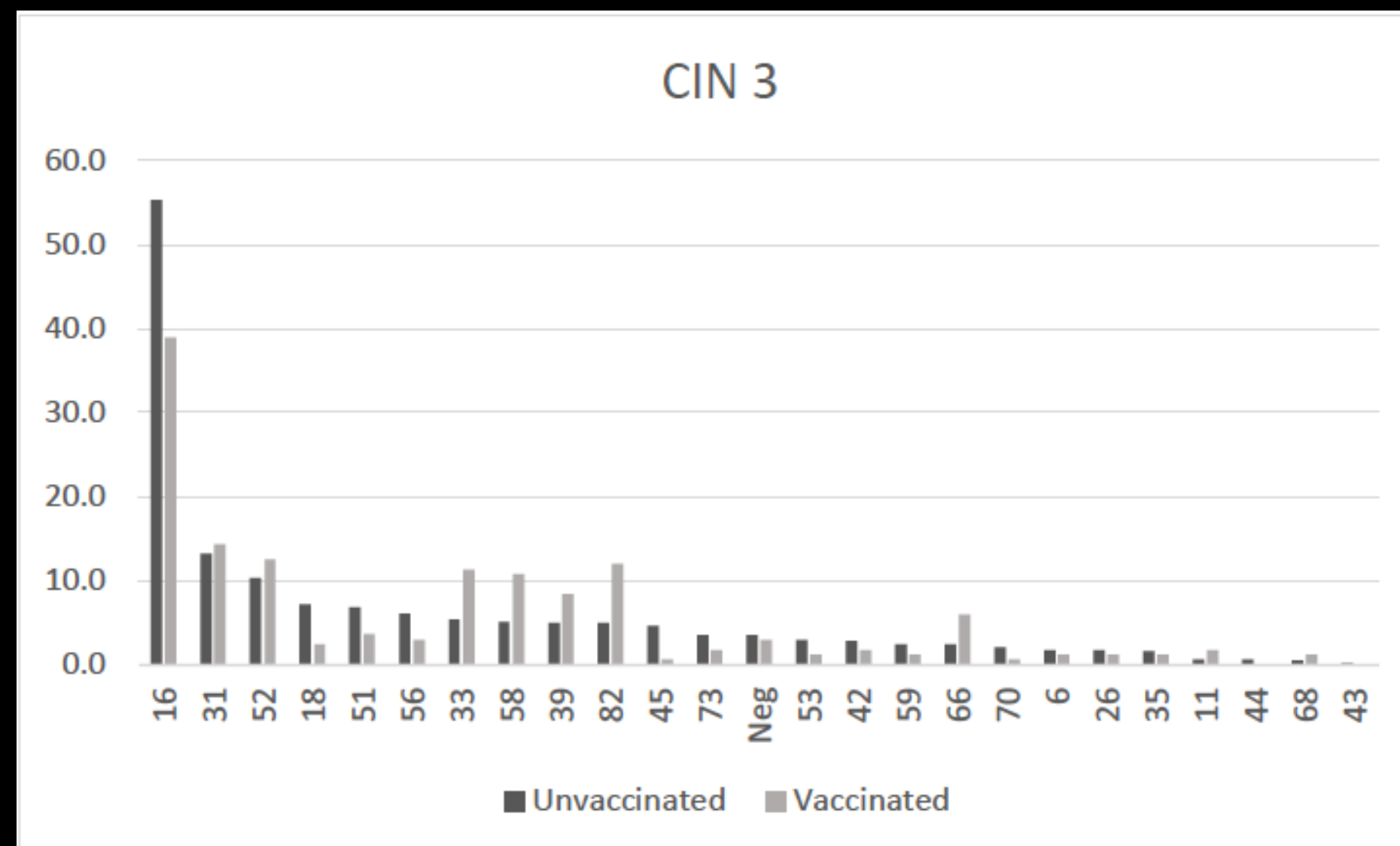
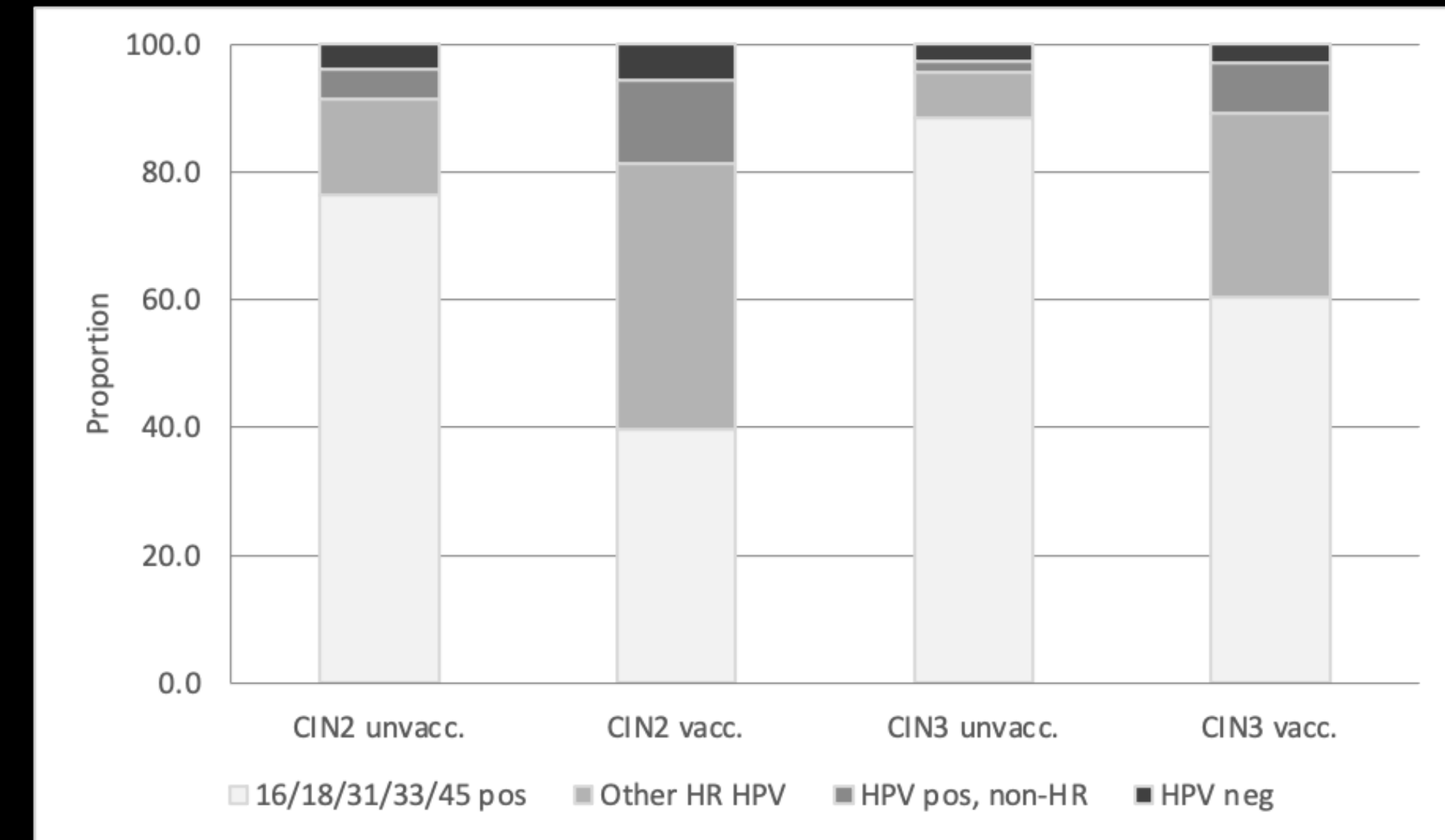
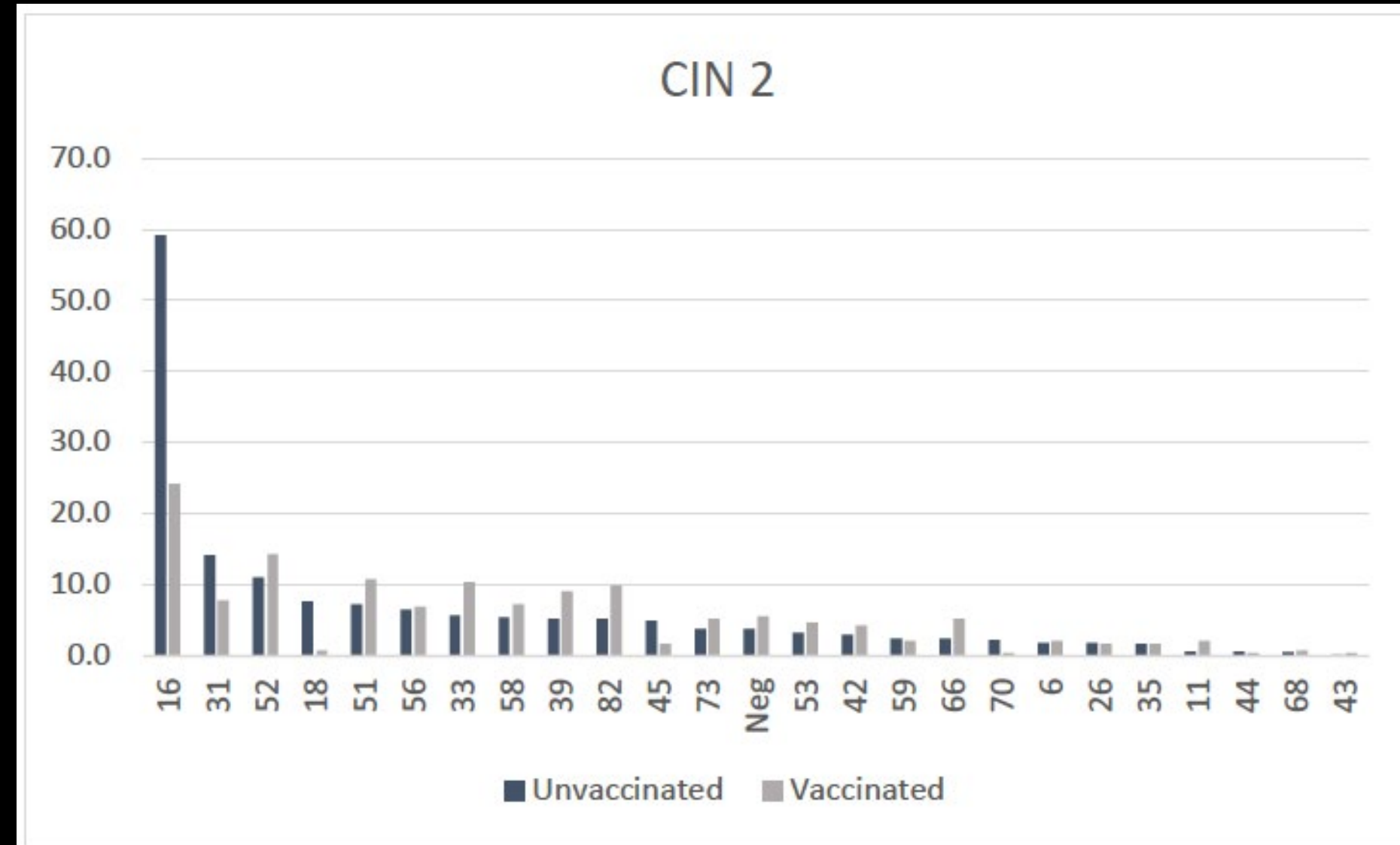
Change in CIN in population



Rebolj M et al. The impact of catch-up bivalent human papillomavirus vaccination on cervical screening outcomes: an observational study from the English HPV primary screening pilot. Br J Cancer. 2022 Jul;127(2):278-287

Palmer T et al BMJ 2019;365:l1161
<http://dx.doi.org/10.1136/bmj.l1161>
 and unpublished data

Change in HPV in CIN

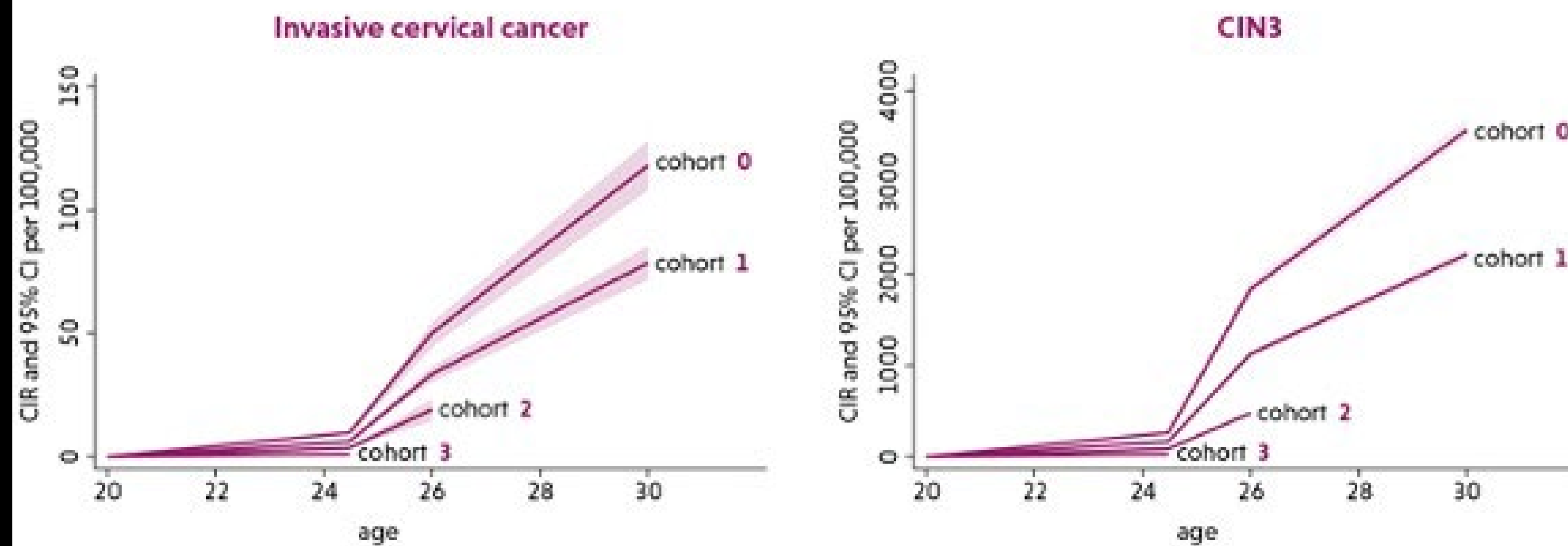


>1700 HG–CIN collected alternate years 2011–2017

Mostly unvaccinated and catch-up vaccinated women; few routine vaccinees, age 20–25 yr

Change in Invasive cancers

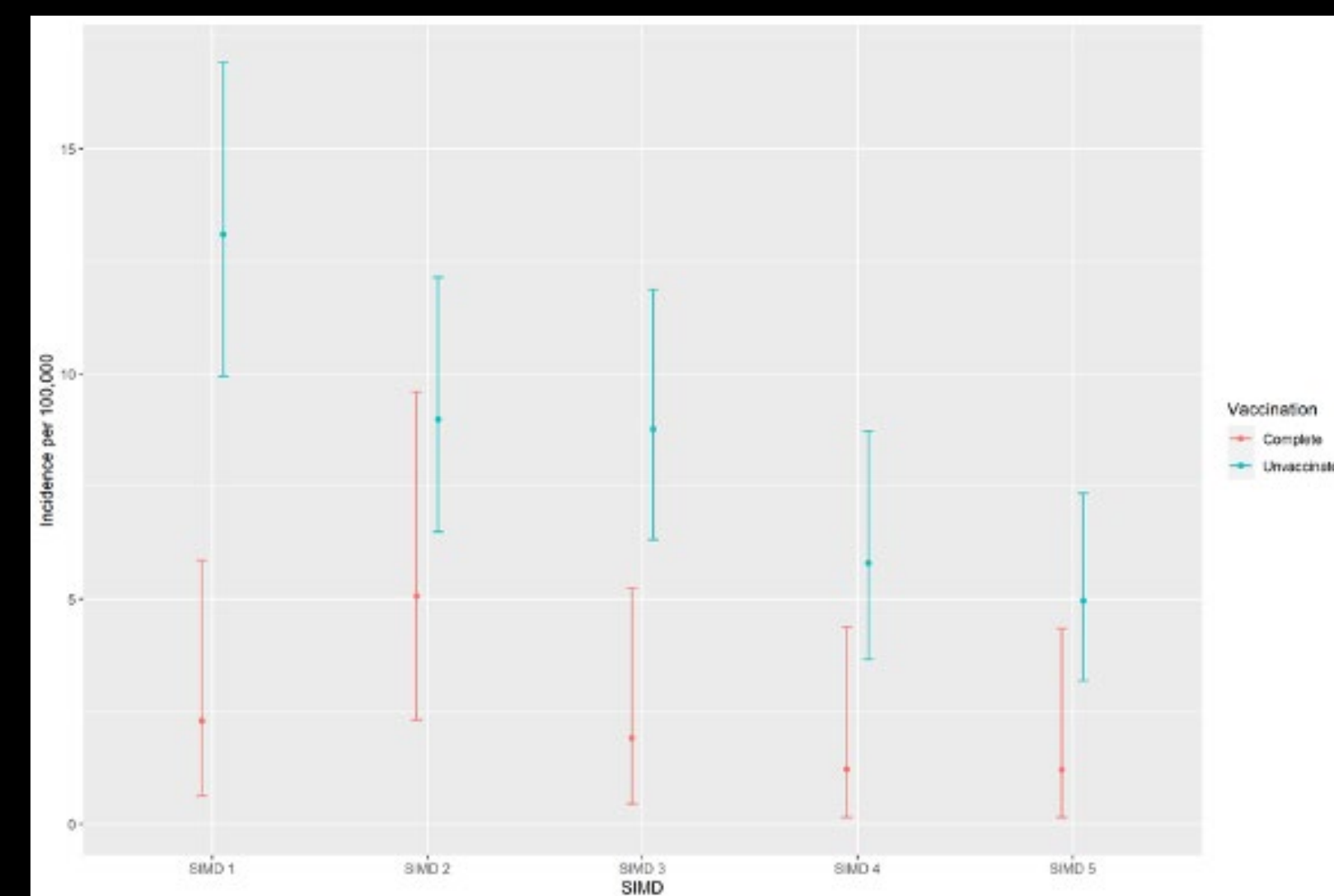
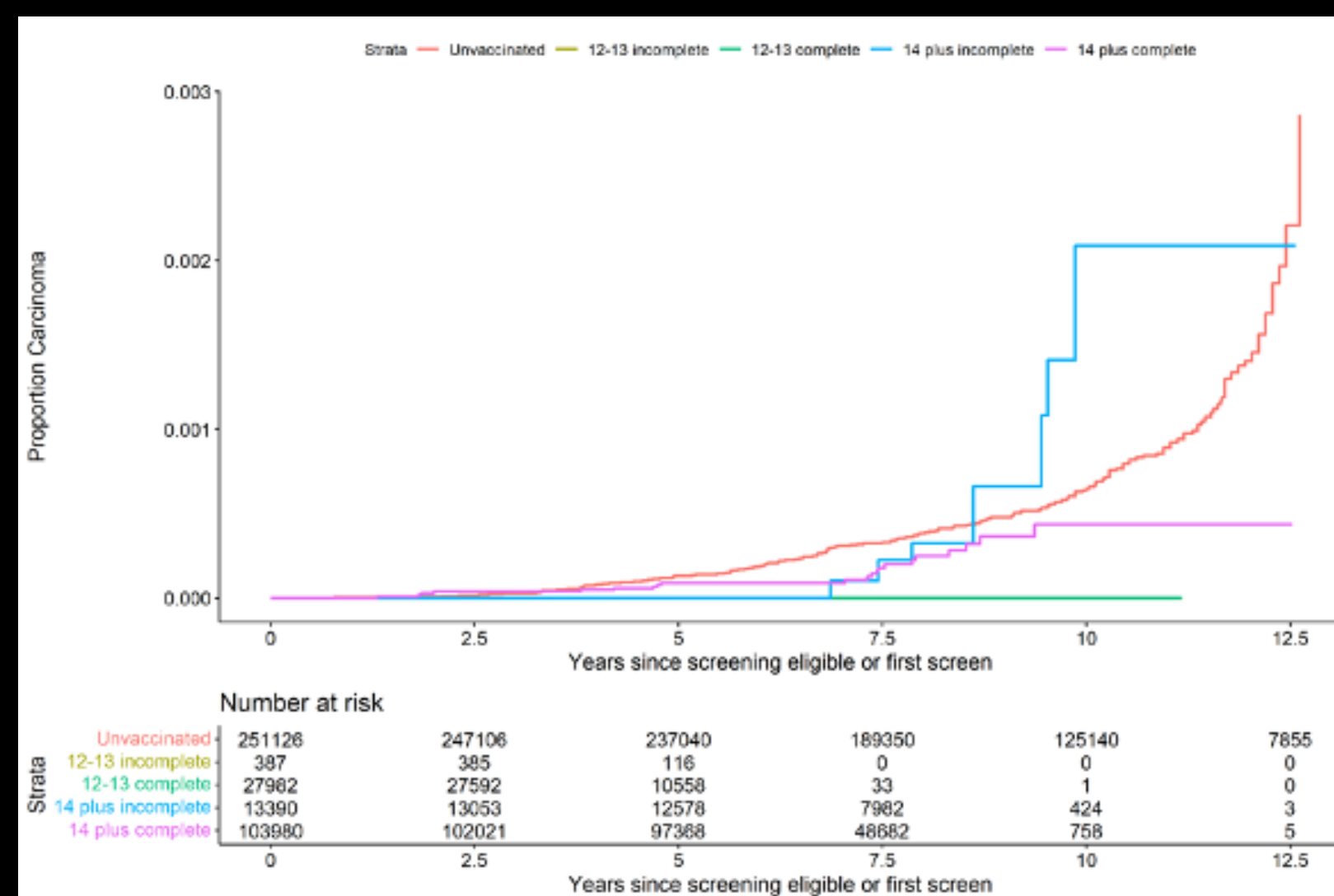
Figure 1
Cumulative rates of cervical cancer and CIN3 in different birth cohorts.



Amongst women who would not have been invited for cervical screening before age 24.5, the annual rates of cervical cancer per 100,000 women aged 20-24.5 were:

- 1.9 in the cohort not offered HPV vaccination,
- 1.0 in those offered vaccination aged 16-18,
- 0.7 in those offered vaccination aged 14-16, and
- 0.3 in those offered vaccination aged 12-13

Falcaro et al Lancet. 2021 Dec 4;398(10316):2084-2092



Women aged 32 ≤ years
No immunisation/incomplete/completed cohorts combined with age at vaccination.

SIMD: Scottish Index of Multiple deprivation (1= most deprived)

Palmer et al. Manuscript in prep^{tn}

Immunisation surveillance in UK 2023 onwards

Scotland:

Establish a surveillance database
with linkage of:

- Immunisation status – dose, vaccine,
age administered

- Screening data – HPV status \pm genotype,
cytology, histology

- Cancer registry – cancer type, site,
stage, survival

- Demographic data – deprivation,
ethnicity

- HIV status

England and Wales:

Plan for monitoring 1 dose
schedule

Review HPV type in Chlamydia
samples:

- Sample size

- Age groups targeted

Seroprevalence studies for
changes in type-specific
immunogenicity

Immunisation surveillance in Scotland 2023 onwards – targets for study

Longitudinal assessment of:

Vaccination uptake

Rates of HG CIN and invasive cancer

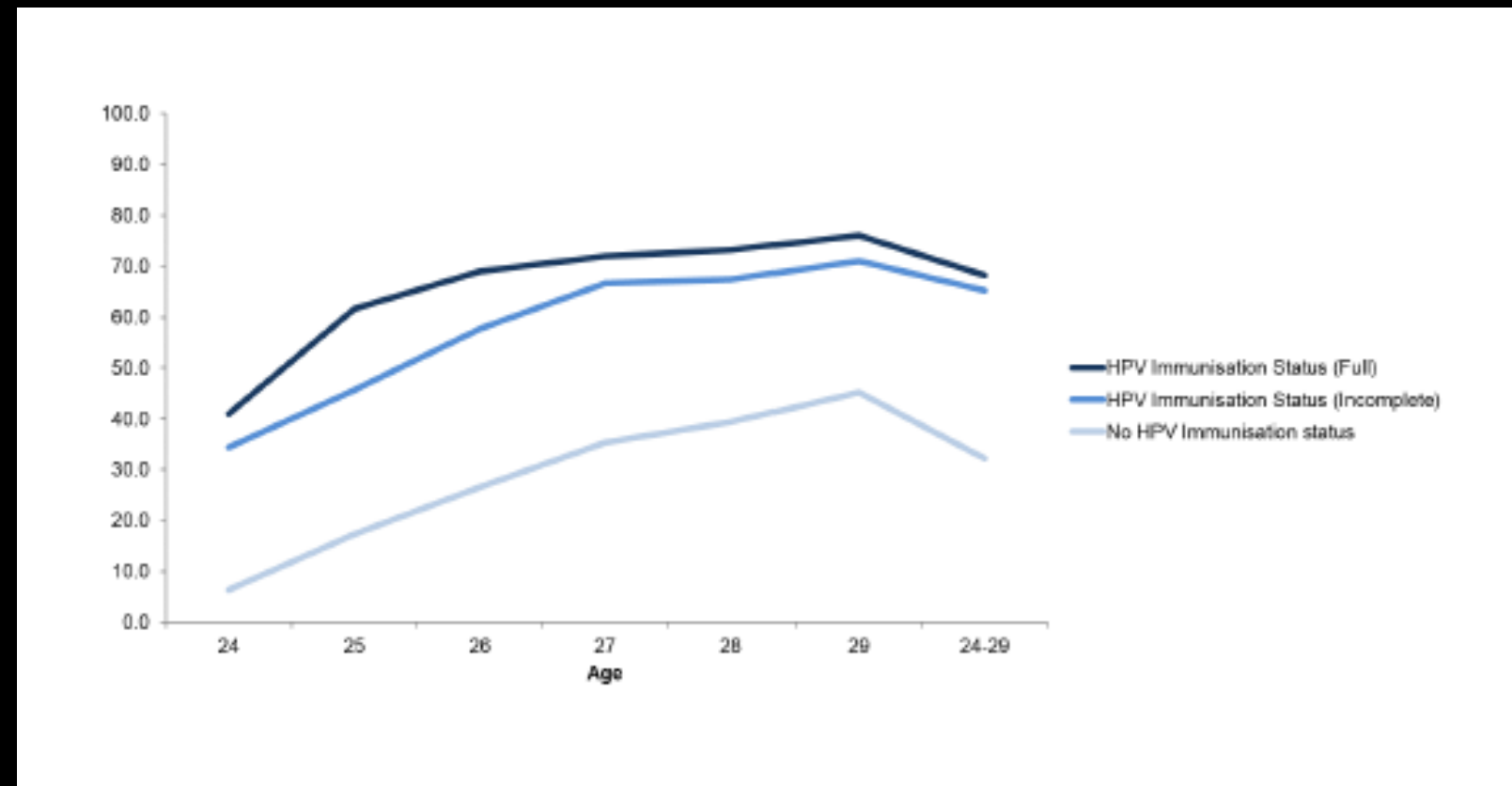
Extended genotype of HG CIN and cancer

MSM and people living with HIV

Ethnicity and vaccination, screening and outcomes

Effects of changing vaccination and dosage schedules

Other outputs

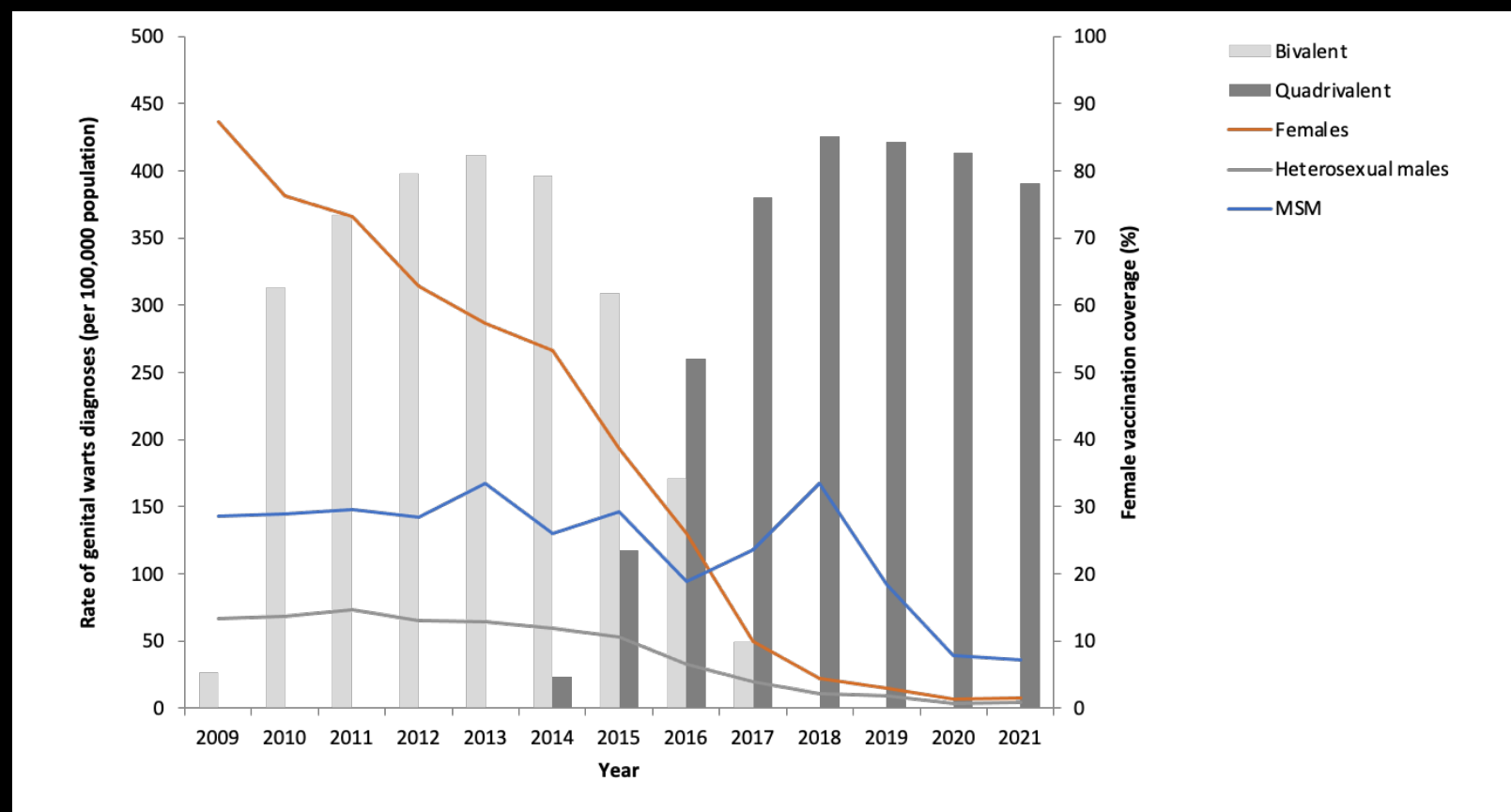


Test performance:

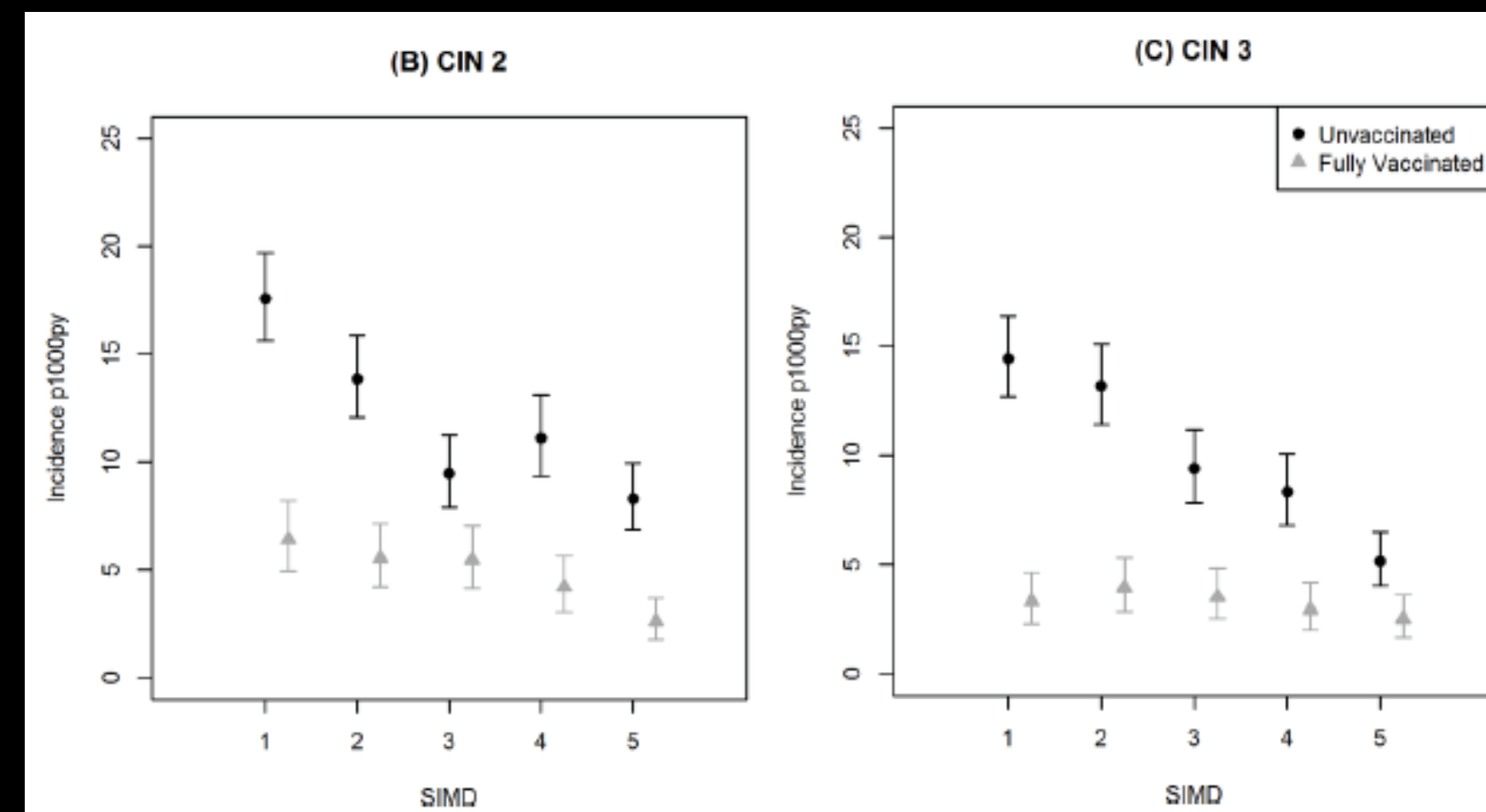
Cytology: T Palmer et al Br J Cancer 2016
doi:10.1038/bjc.2015.474

HPV tests: R Bhatia et al Int. J. Cancer 2016;138:2922–2931

Immunisation and cervical screening uptake



Genital warts in females, males and MSM



Deprivation, vaccination and HG CIN. R Cameron et al
J Epidemiol Community Health 2017;71:954–960

Acknowledgements

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Scottish HPV Reference Laboratory

Scottish Pathology Laboratories

Scottish Cervical Screening Programme

