

Technical Meeting

Elimination of HPV-associated Cancers: Routine Universal HPV Vaccination and the Role of Anal Screening

5th – 6th June 2025

Antwerp, Belgium

STATUS OF PRIMARY PREVENTION (HPV VACCINATION) AND SECONDARY PREVENTION (HPV-RELATED CANCER SCREENING) IN THE WORLD

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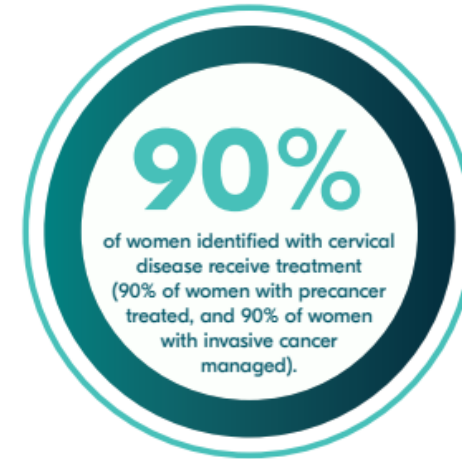
ICO/IARC Information Centre on HPV and Cancer: www.hpvcentre.net

HPV VACCINATION

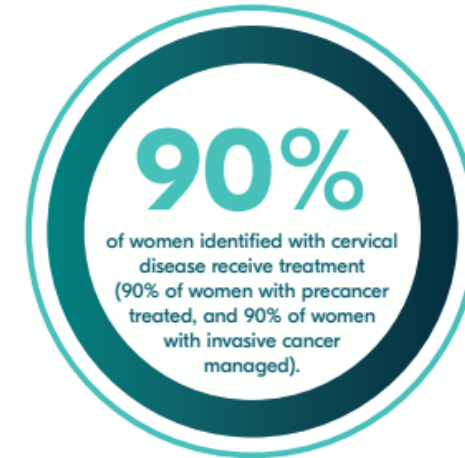
CERVICAL CANCER SCREENING

Periodicity	<ul style="list-style-type: none">Annual	<ul style="list-style-type: none">Every 3 years
Year publication first edition	<ul style="list-style-type: none">Since 2019, WHO/UNICEF annually updates HPV vaccination coverage estimates for 194 Member States from 2010 onwards	<ul style="list-style-type: none">In 2022 first edition (estimates for 2019)In 2025 second edition (estimates for 2022). New: specific estimates of HPV-based screening coverage
Data sources / Methods	<ul style="list-style-type: none">Administrative and survey data reported through the WHO/UNICEF Joint Reporting Form. + country-by country review of available data informed and constrained by a set of heuristics;no statistical or mathematical models are used.	<ul style="list-style-type: none">Administrative and survey data + statistical models including missing data treatment
WHO country consultation	Yes	Yes
References	<ul style="list-style-type: none">Methods: Bruni et al 2021 Prev MedData:https://immunizationdata.who.int/global/wiise-detail-page/human-papillomavirus-(hpv)-vaccination-coverage	<ul style="list-style-type: none">Methods and results: Bruni, Serrano et al 2022 Lancet Glob HealthData:https://www.who.int/data/gho/data/indicators/indicator-details/GHO/prevalence-of-cervical-cancer-screening-among-women-aged-30-49-years-%28-%29

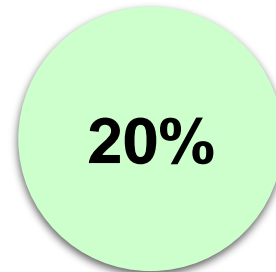
THE GOALS



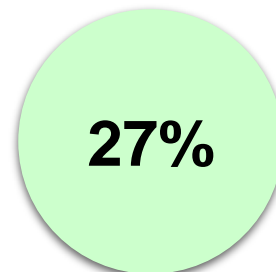
THE GOALS



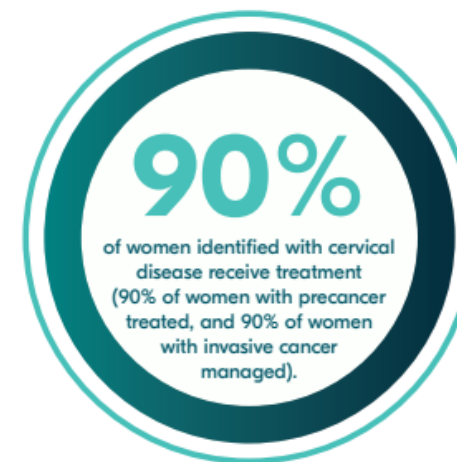
2023 Estimated global HPV
vaccine coverage by age 15
GIRLS - At least one dose



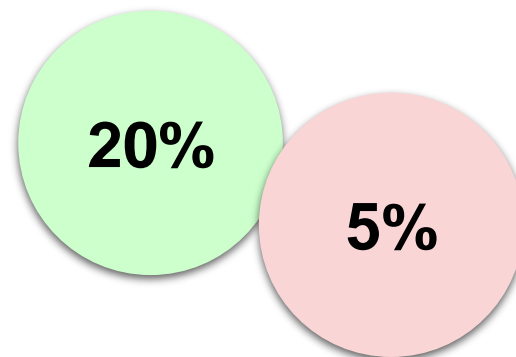
2023 Estimated global
coverage of HPV vaccination
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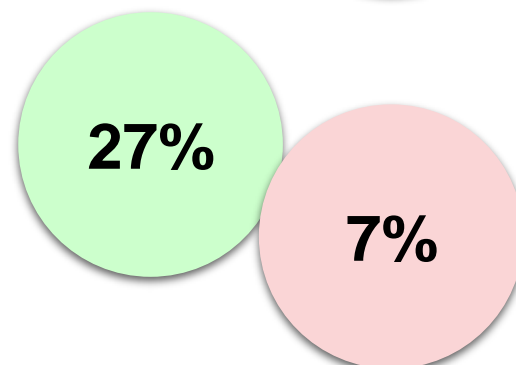
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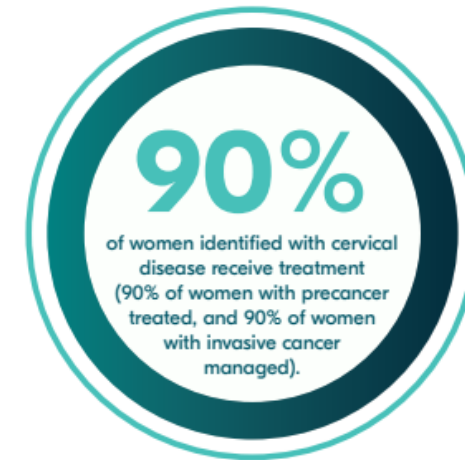
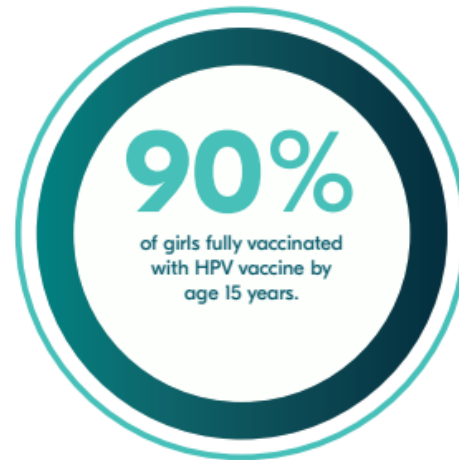
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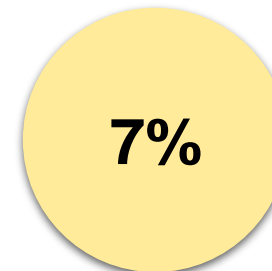
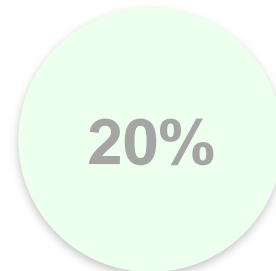
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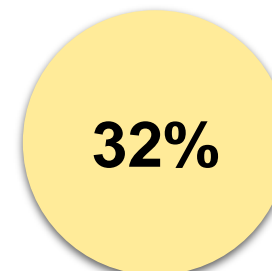
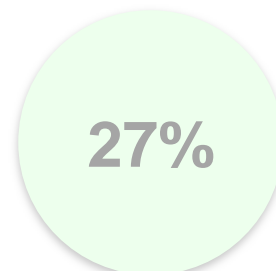


2023 Estimated global HPV
vaccine coverage by age 15
GIRLS - At least one dose



2022 Estimated global HPV-based
screening coverage
Women aged 30-49, 5y screening

2023 Estimated global
coverage of HPV vaccination
programmes
GIRLS - at least one dose

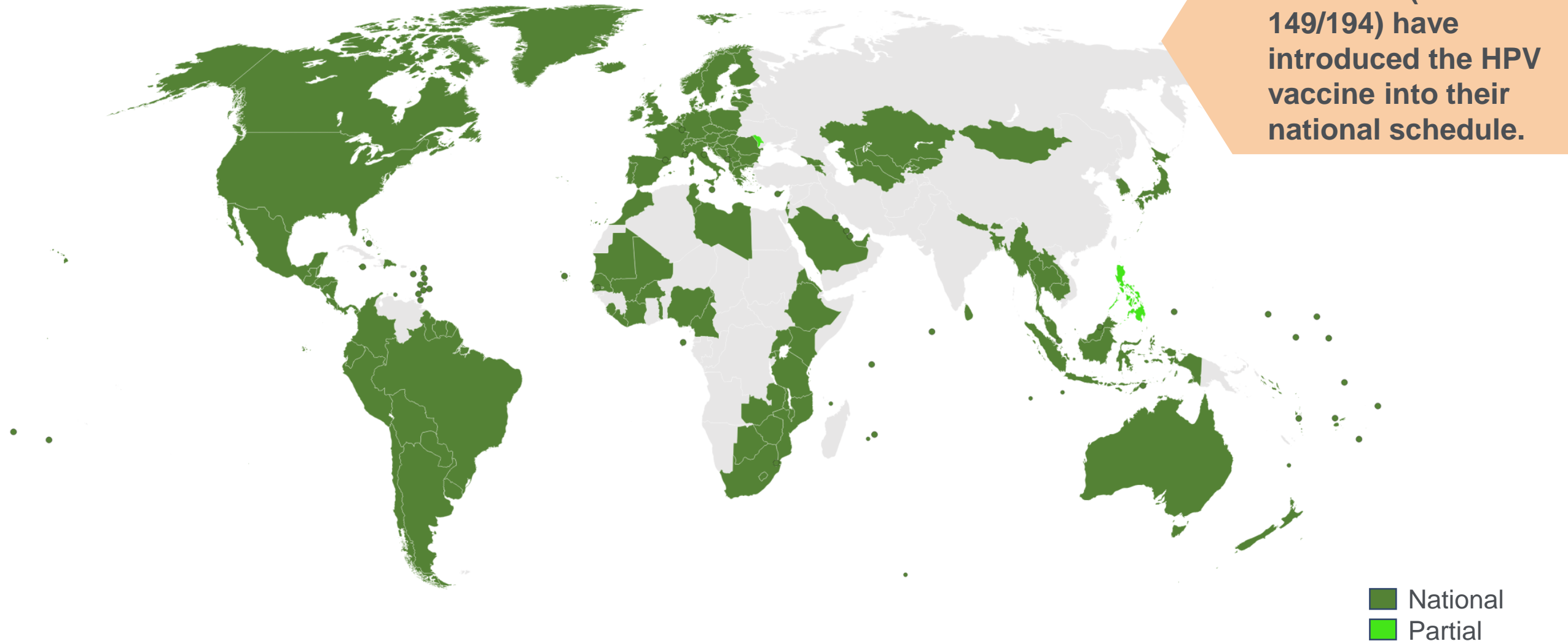


2022 Estimated global cervical
screening coverage (Any test:
cytology, HPV, or VIA)
Women aged 30-49, 5y screening

HPV VACCINE COVERAGE

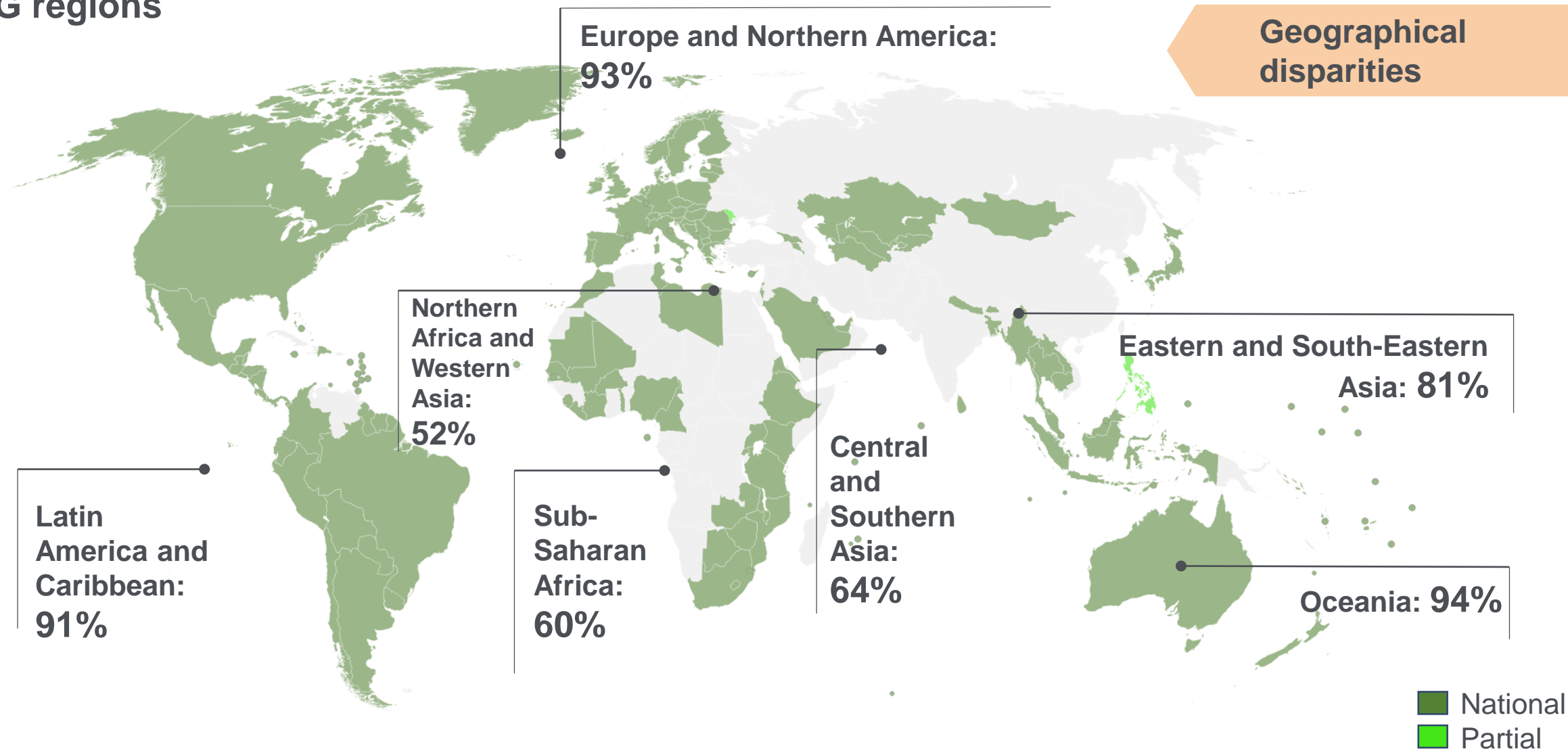
COUNTRIES WITH HPV VACCINATION PROGRAMS - MAY 2025

By May 2025, 77% of countries (N = 149/194) have introduced the HPV vaccine into their national schedule.

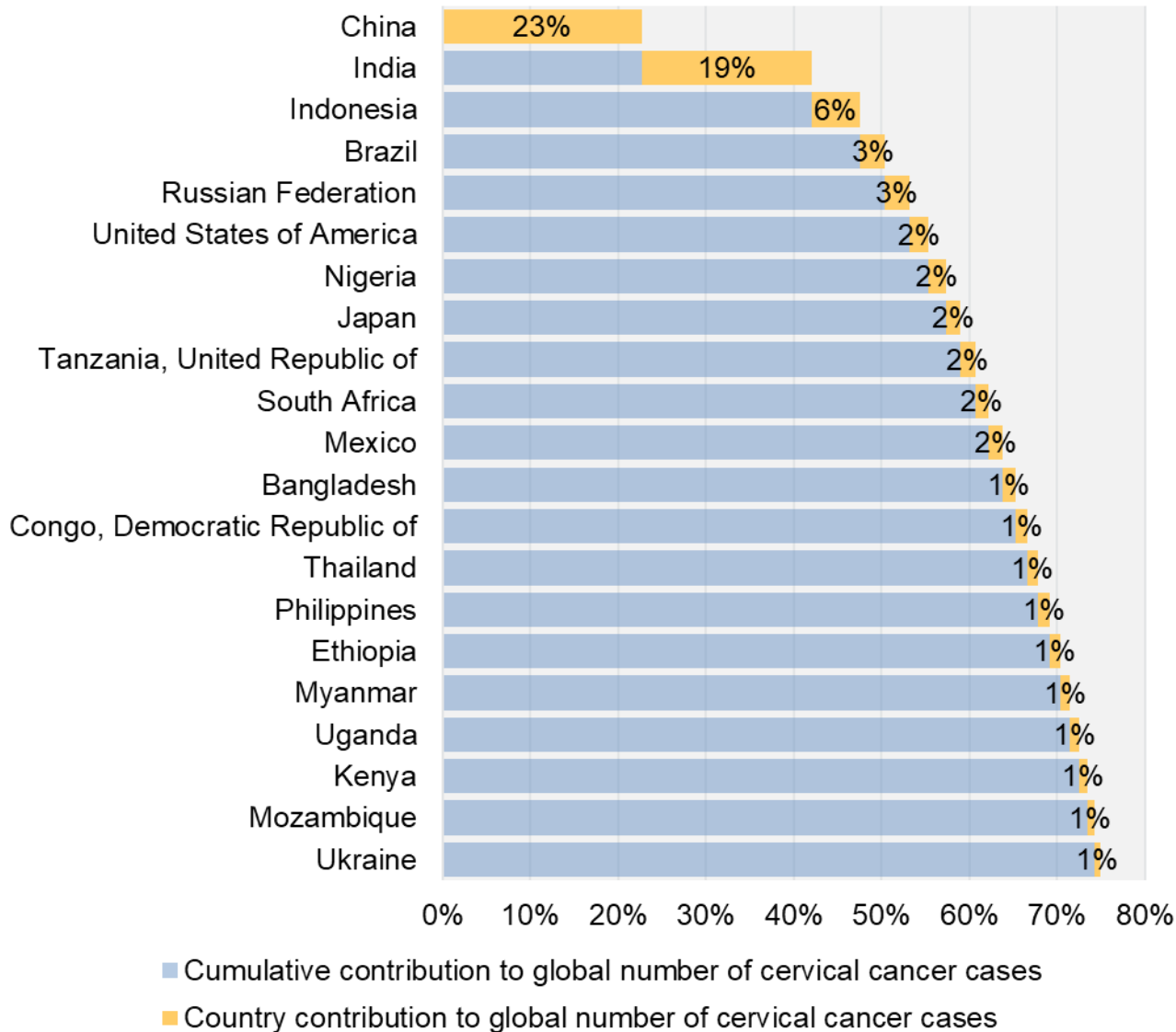


SDG regions

Geographical disparities



CONTRIBUTION OF EACH COUNTRY TO THE GLOBAL NUMBER OF CERVICAL CANCER CASES



4 countries contribute to 50% of the global burden of CC, with China and India accounting for 41%

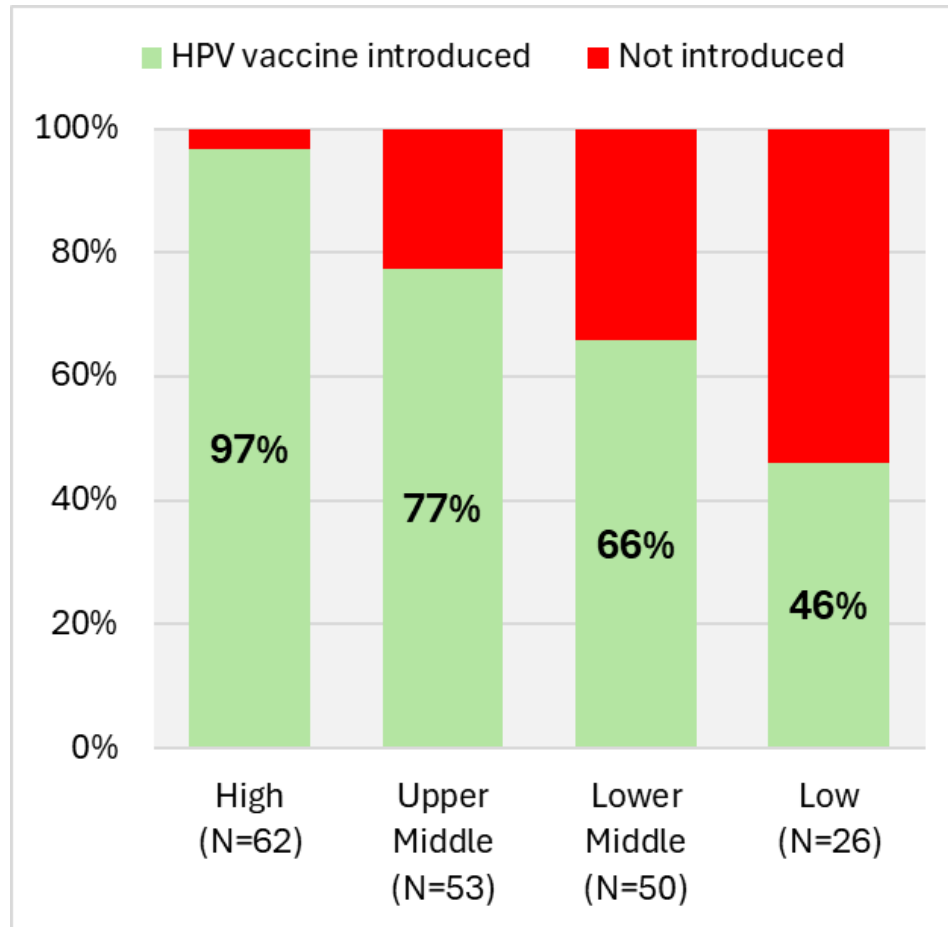
20 countries contribute to 75% of CC cases

*In **yellow**: the countries that have introduced HPV vaccination (up to May 2025)

Introduced in 2023-25: Bahréin, **Bangladesh**, **Cambodia**, Eswatini, Kiribati, Kuwait, Nicaragua, **Nigeria**, **Poland**, Qatar, Rumania, Timor Leste, Togo, Vanuatu, Kazakhstan, Mongolia, Mali, Nepal, Tunisia

Data from WHO Immunization portal:
<https://immunizationdata.who.int>

% of countries having introduced the vaccine by income



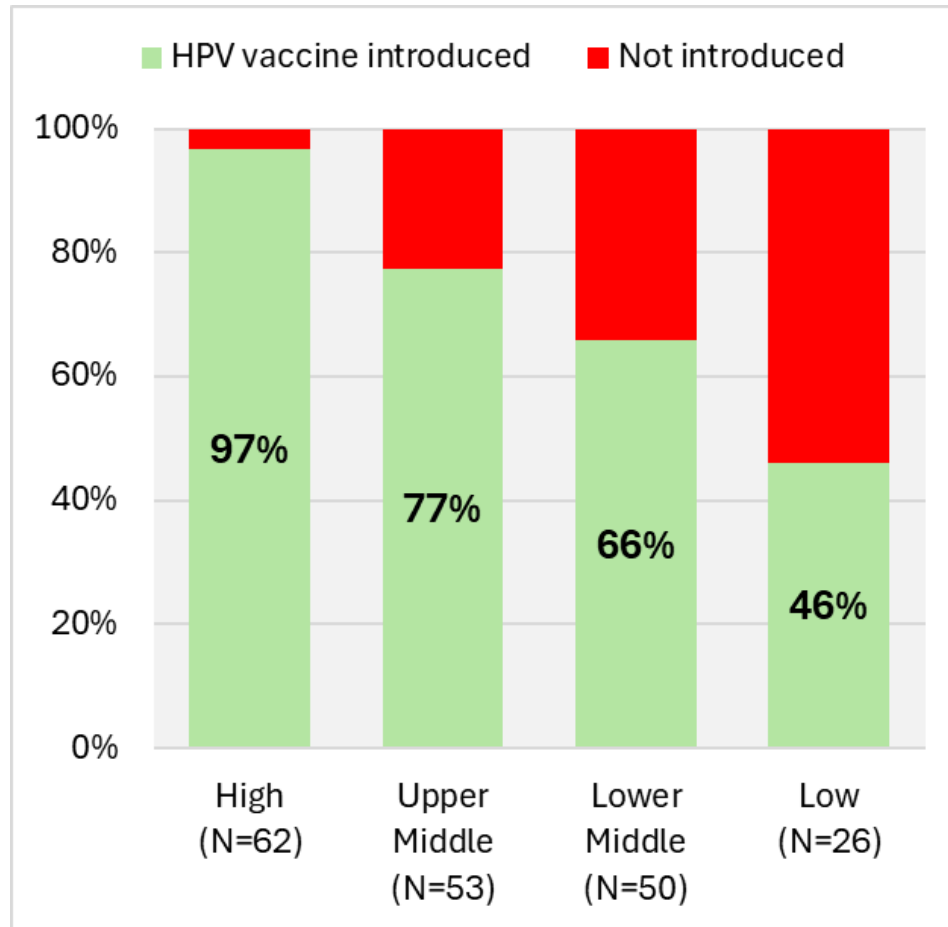
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1) Worldwide introduction. 55% of girls still live in countries that have not yet introduced it

It is critical that HPV vaccine is introduced in all countries, particularly those with high incidence, as well as low or medium incidence countries with large populations

CHALLENGES

% of countries having introduced the vaccine by country income level



Data from WHO Immunization portal:
<https://immunizationdata.who.int>

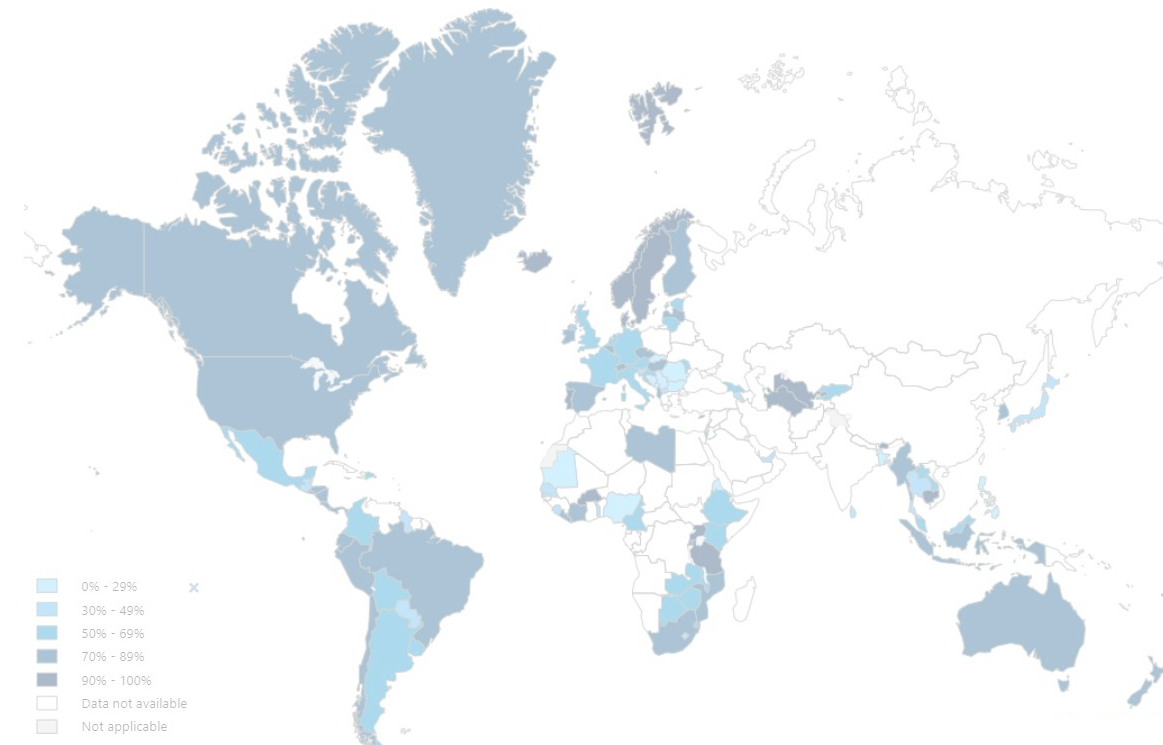
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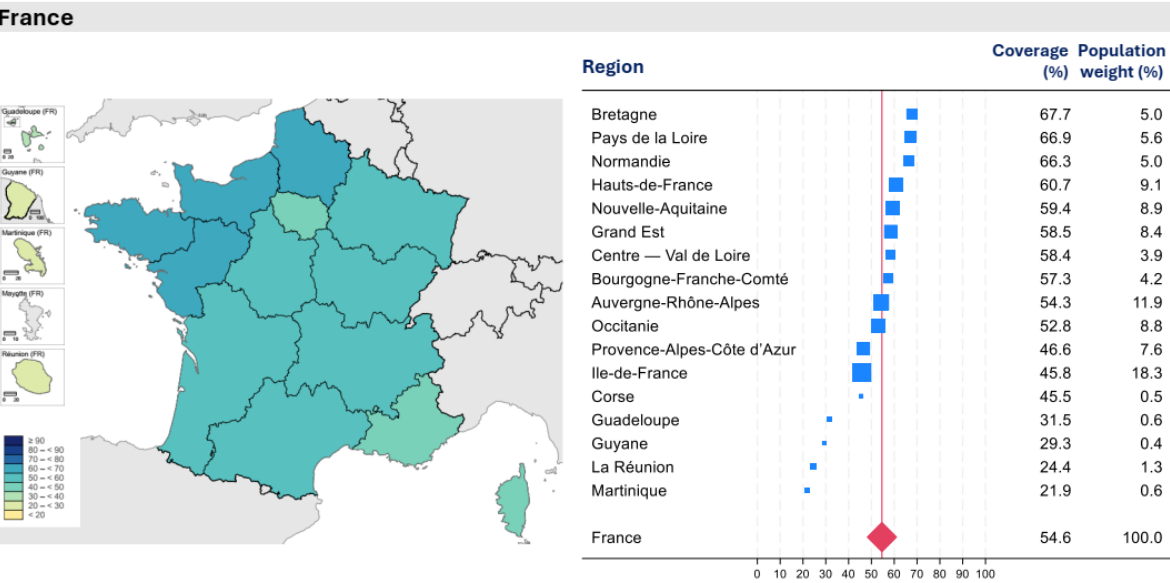
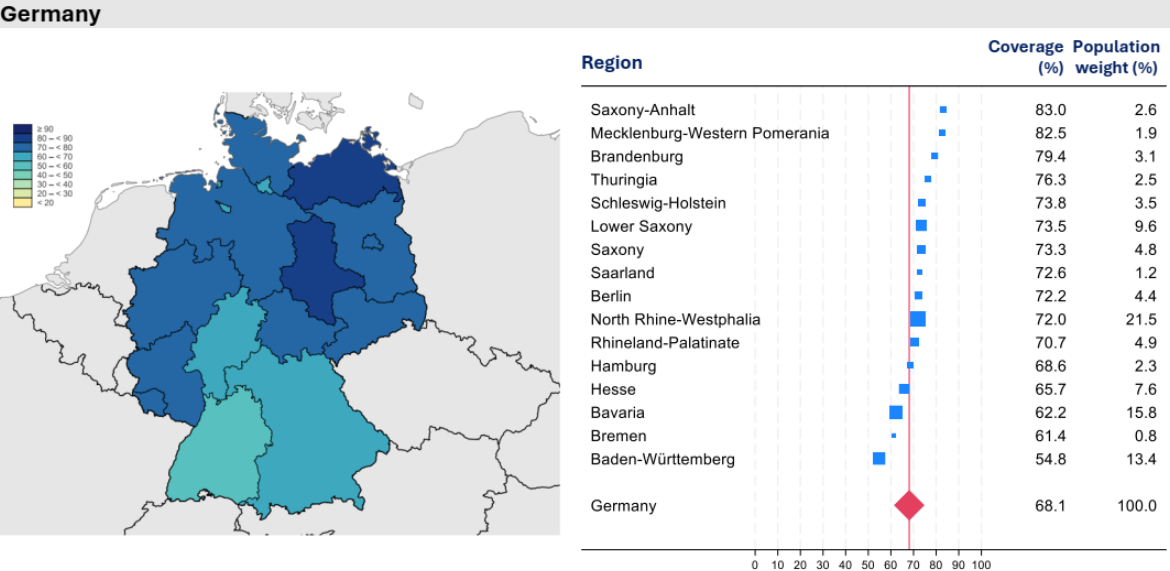
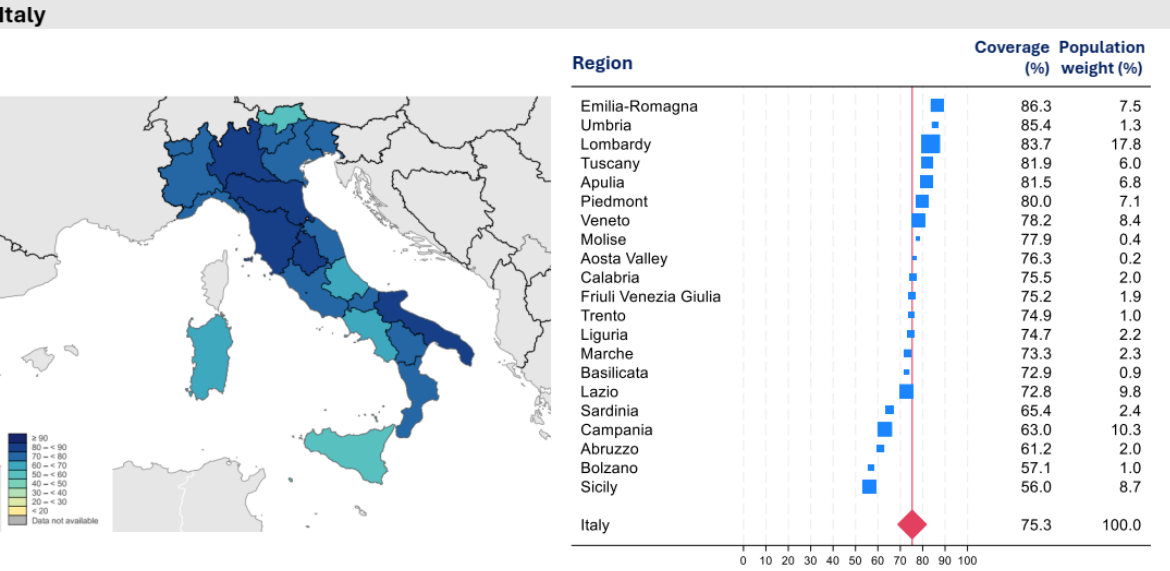
2) Low HPV vaccine coverage

Many girls still not being protected against cervical cancer despite the HPV vaccine being introduced in their country.

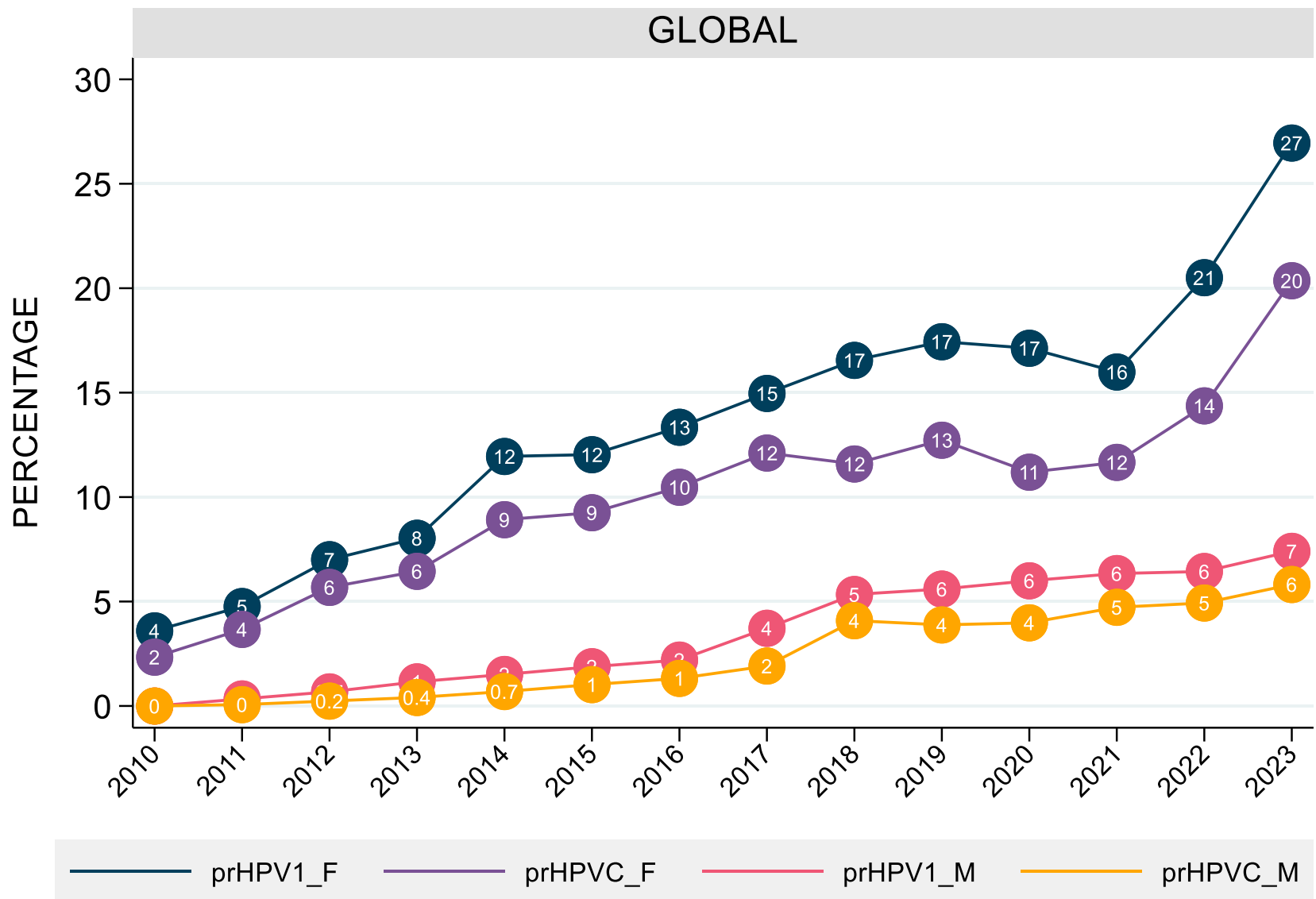
- Program performance is suboptimal in many countries, including high-income countries with more resources. **In 2023 only 16 countries reached coverages for the first dose higher than 90%**
- In 2019, the programs had an average coverage of :
 - **67%** for the first dose of the vaccine
 - **53%** for the final dose
- After COVID, in 2021, the programs had an average coverage of:
 - **55%** for the first dose of the vaccine
 - **44%** for the final dose
- In 2023:
 - **62%** for the first dose of the vaccine
 - **52%** for the final dose *(includes single-dose schedules)



SUBNATIONAL DIFFERENCES

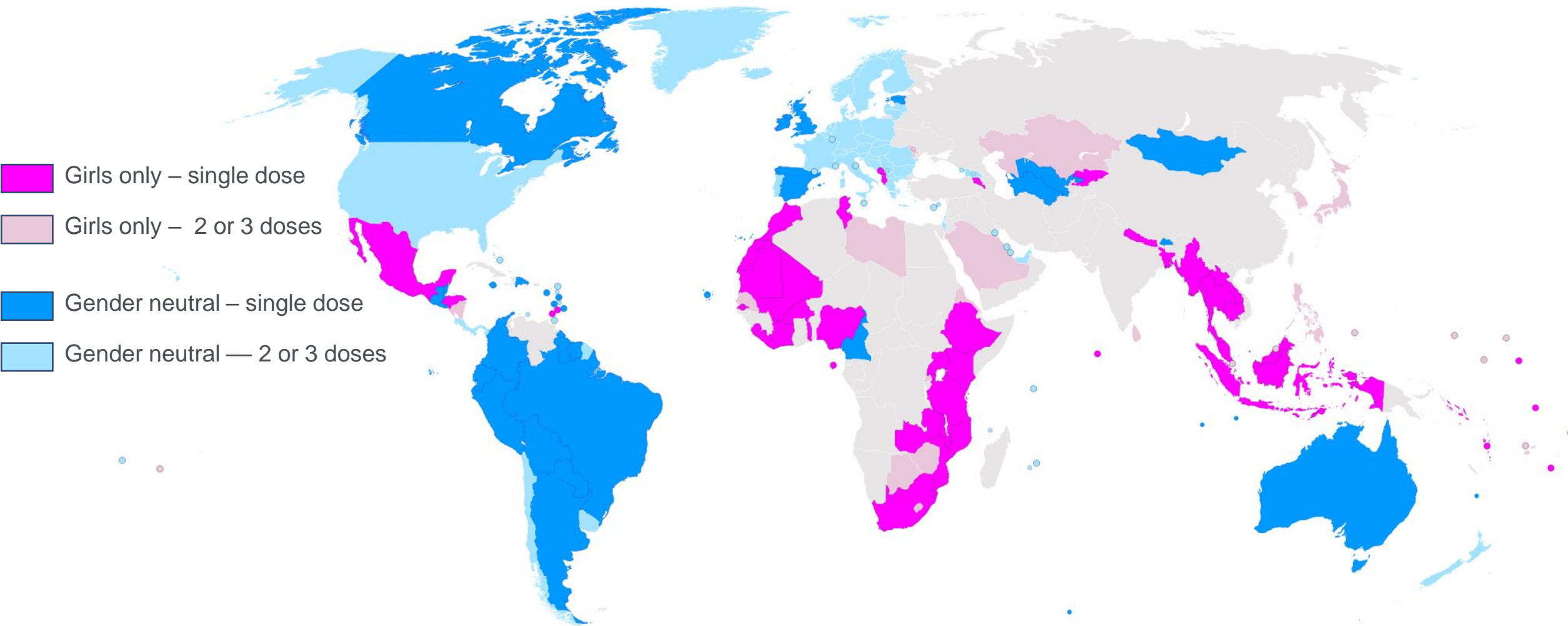


GLOBAL HPV VACCINATION PROGRAMME COVERAGE, WEIGHTED BY POPULATION SIZE

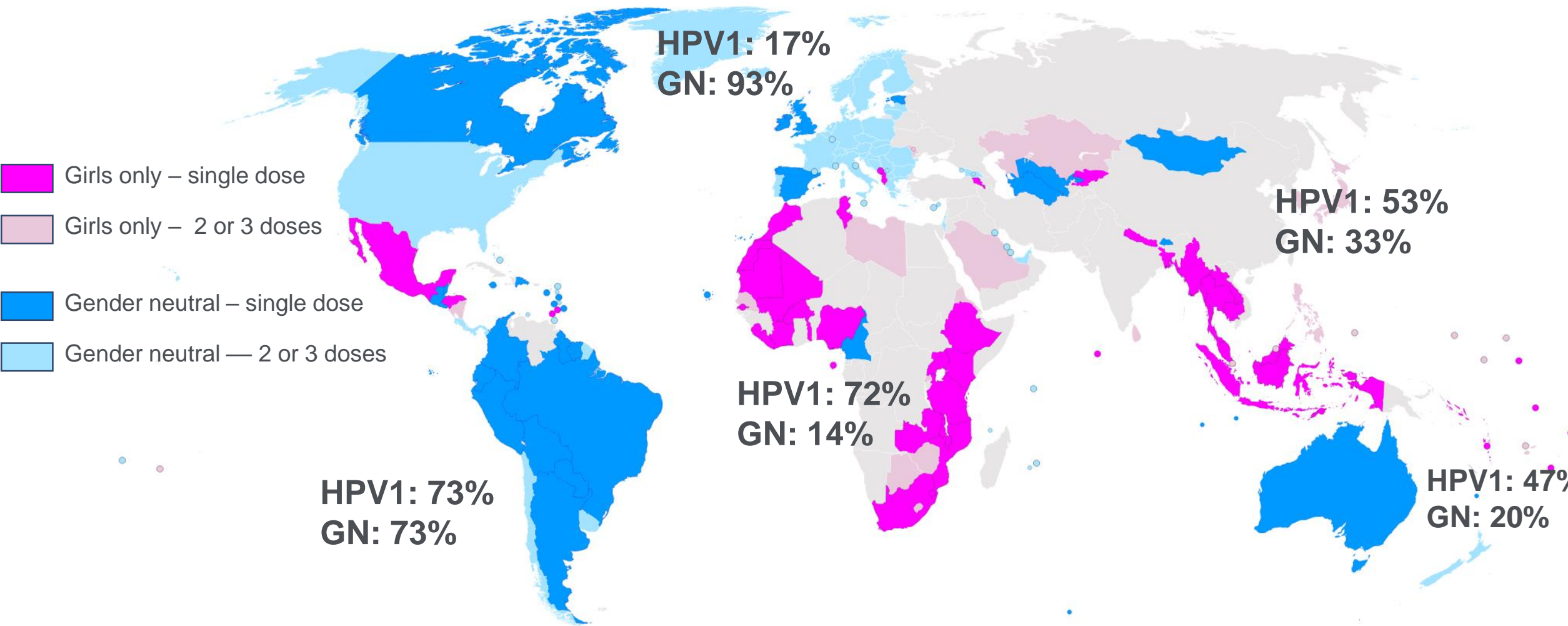


- In 2023 we estimated that 27% of girls worldwide had received at least one dose of the HPV vaccine.
- HPV vaccination coverage is recovering after the decline caused by the pandemic.
- Impact of the single-dose strategy since 2022

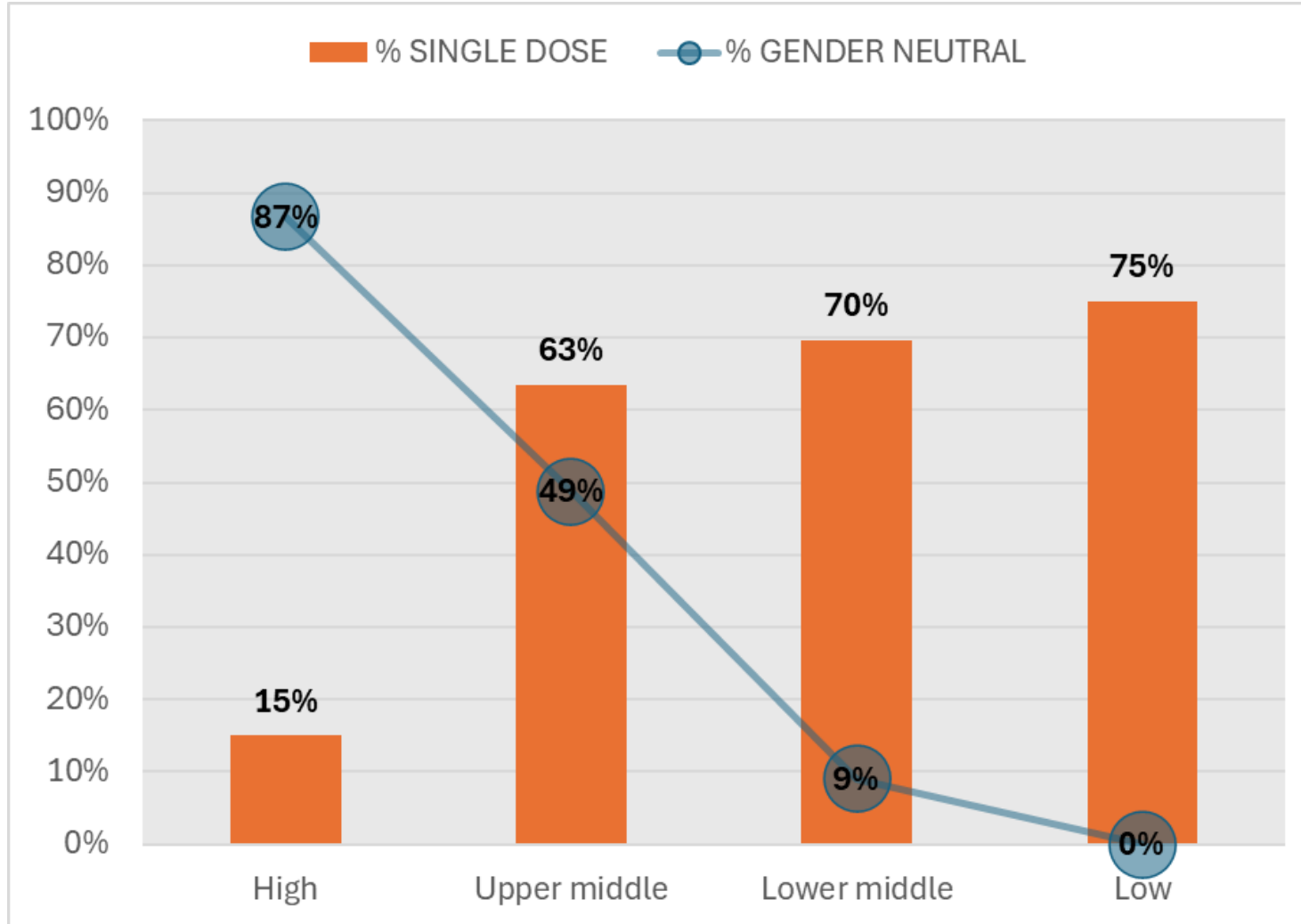
IN 2022, WHO RECOMMENDED THE SINGLE-DOSE SCHEDULE AS AN ALTERNATIVE.
SINCE THEN, OF THE 149 COUNTRIES WITH HPV VACCINATION, **75 (50%)** HAVE ADOPTED A **SINGLE-DOSE SCHEDULE**



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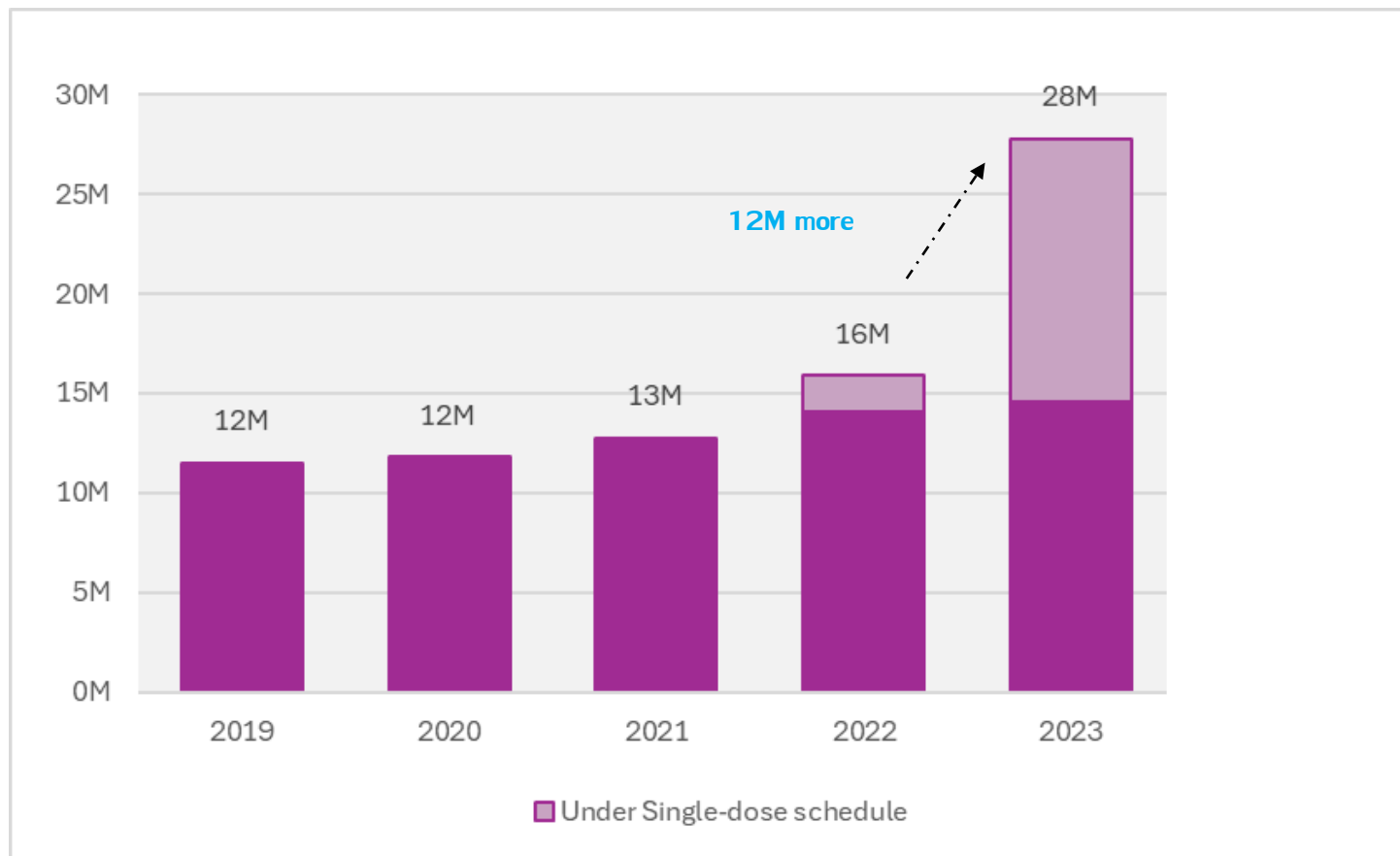
% of countries with HPV vaccination introduced having adopted the single-dose strategy and gender-neutral vaccination by income



- 53% of the 32 introductions since mid-2022 have been with single-dose.
- Six countries expanded the single-dose programs to include boys
- 14 countries incorporated catch-up strategies with a single-dose up to ages 18-25.

Data from WHO Immunization portal:
<https://immunizationdata.who.int>

Millions of girls aged 9-14 vaccinated with a first dose of HPV vaccine



- We estimate that **28M girls and 6M boys aged 9-14 years** received a first dose of HPV vaccine in 2023
- which **13M girls(47%)** and 1M million boys(17%) were under a single-dose regimen.
- Of the 13M single doses in girls, **6.5M (50%) were from new introductions**
- WHO regions of Africa and South-East Asia saw significant increases, with 6.6 million and 4.4 million more girls vaccinated with at least one dose in 2023 than in 2022, mainly driven by **introductions in Nigeria, Indonesia, and Bangladesh.**

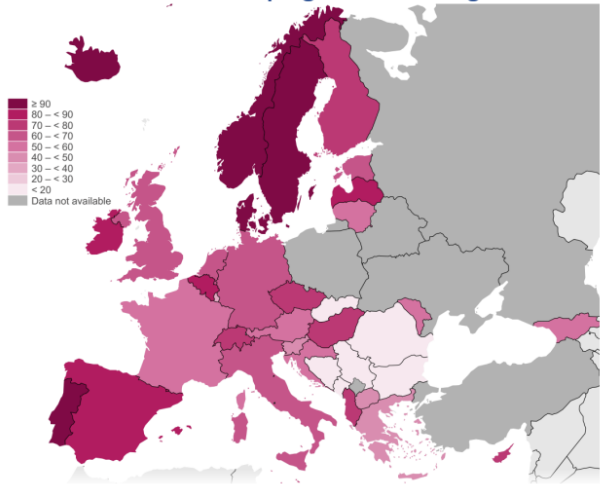
EUROPE Estimated HPV vaccination coverage by birth cohort

GIRLS (AT LEAST ONE DOSE)

% of girls vaccinated before age 15

Age in 2024	Birth cohort	EUROPE	EU-27	Eastern Europe	Northern Europe	Southern Europe	Western Europe
28	1996	25%	26%	0%	62%	39%	29%
27	1997	29%	33%	0%	60%	51%	36%
26	1998	31%	34%	0%	68%	52%	36%
25	1999	34%	39%	2%	77%	55%	37%
24	2000	36%	42%	2%	84%	57%	39%
23	2001	37%	44%	3%	84%	56%	42%
22	2002	38%	46%	5%	85%	56%	44%
21	2003	39%	49%	5%	83%	62%	46%
20	2004	40%	50%	5%	83%	60%	51%
19	2005	42%	53%	5%	86%	61%	56%
18	2006	44%	56%	5%	87%	65%	59%
17	2007	44%	57%	6%	84%	66%	60%
16	2008	44%	58%	6%	82%	66%	63%

Female HPV vaccination programme coverage - at least one dose



Mean coverage of programmes:	
EUROPE	60%
Eastern Europe	37%
Northern Europe	79%
Southern Europe	56%
Western Europe	62%
EU-27	63%

*Catch-up vaccination after age 15 not included



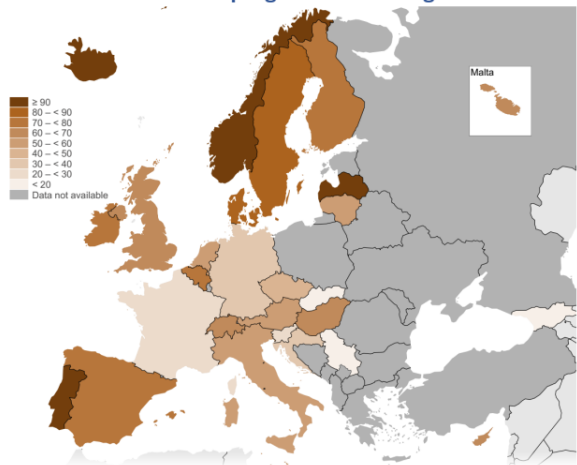
EUROPE Estimated HPV vaccination coverage by birth cohort

BOYS (AT LEAST ONE DOSE)

% of boys vaccinated before age 15

Age in 2024	Birth cohort	EUROPE	EU-27	Eastern Europe	Northern Europe	Southern Europe	Western Europe
28	1996	0%	0%	0%	0%	0%	0%
27	1997	0%	0%	0%	0%	0%	0%
26	1998	0%	0%	0%	0%	0%	0%
25	1999	0%	0%	0%	0%	0%	0%
24	2000	0%	0%	0%	0%	0%	0%
23	2001	0%	0%	0%	0%	0%	0%
22	2002	0%	0%	0%	0%	0%	1%
21	2003	1%	0%	0%	0%	0%	2%
20	2004	4%	7%	0%	0%	8%	10%
19	2005	8%	12%	1%	3%	9%	19%
18	2006	13%	19%	1%	12%	23%	22%
17	2007	22%	22%	2%	66%	24%	25%
16	2008	24%	26%	4%	65%	24%	31%

Male HPV vaccination programme coverage - at least one dose



Mean coverage of programmes:

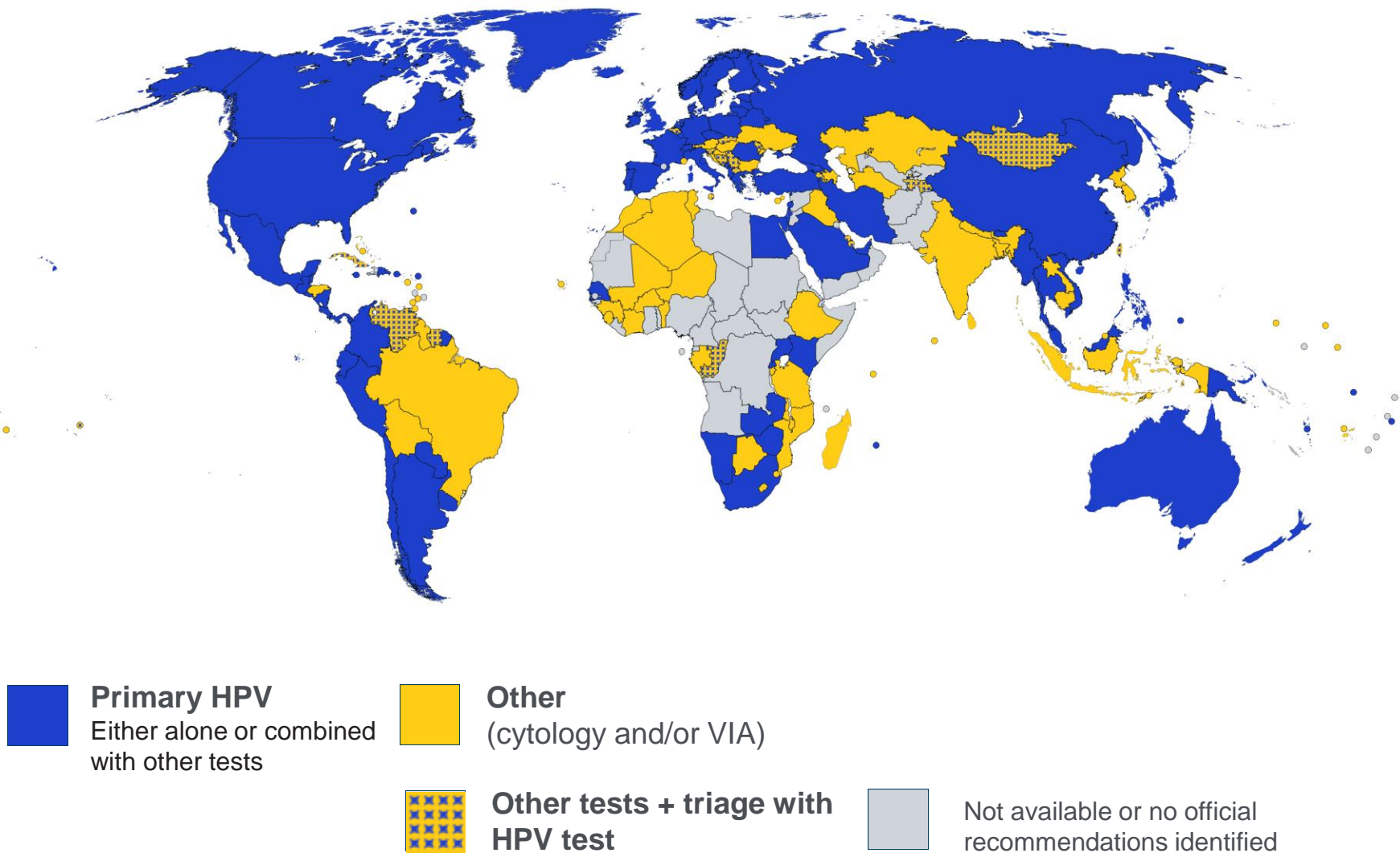
EUROPE	58%
Eastern Europe	39%
Northern Europe	80%
Southern Europe	48%
Western Europe	50%
EU-27	59%

*Catch-up vaccination after age 15 not included



SCREENING COVERAGE

OFFICIALLY RECOMMENDED PRIMARY TESTS FOR CERVICAL CANCER SCREENING (up to May 2024)



- Cervical screening recommendations were identified in 161/202 (79%) countries, with 83 (52%) recommending HPV-based screening.
- Of the 41 countries without screening recommendations, almost half are in Sub-Saharan Africa (19/41, 46%).
- Only 46, predominantly (72%) from Europe and Northern America, reported organising cervical cancer screening with individual invitations.
- Of the 83 countries that recommend HPV primary screening, half (52%) are high-income countries
- HPV is used as a cytology/VIA triage test in 19 countries

Europe and Northern America:

98% countries with screening recommendations

67% of them with HPV primary screening

Northern Africa and Western Asia:

67% countries with scr. recommendations

29% of them with HPV primary screening

Eastern and South-Eastern Asia:

100% countries with recommendations

53% of them with HPV primary screening

Central and Southern Asia:

71% countries with scr. recommendations

14% of them with HPV primary screening

Sub-Saharan Africa:

60% countries with scr recommendations

19% of them with HPV primary screening

Oceania:

68% countries with scr. recommendations

41% of them with HPV primary screening

Primary HPV

Either alone or combined with other tests

Other

(cytology and/or VIA)

Other tests + triage with HPV test

Not available or no official recommendations

Latin America and Caribbean:

91% countries with scr. recommendations

53% of them with HPV primary screening

up to May 2024

Serrano, Bruni, et al. in preparation

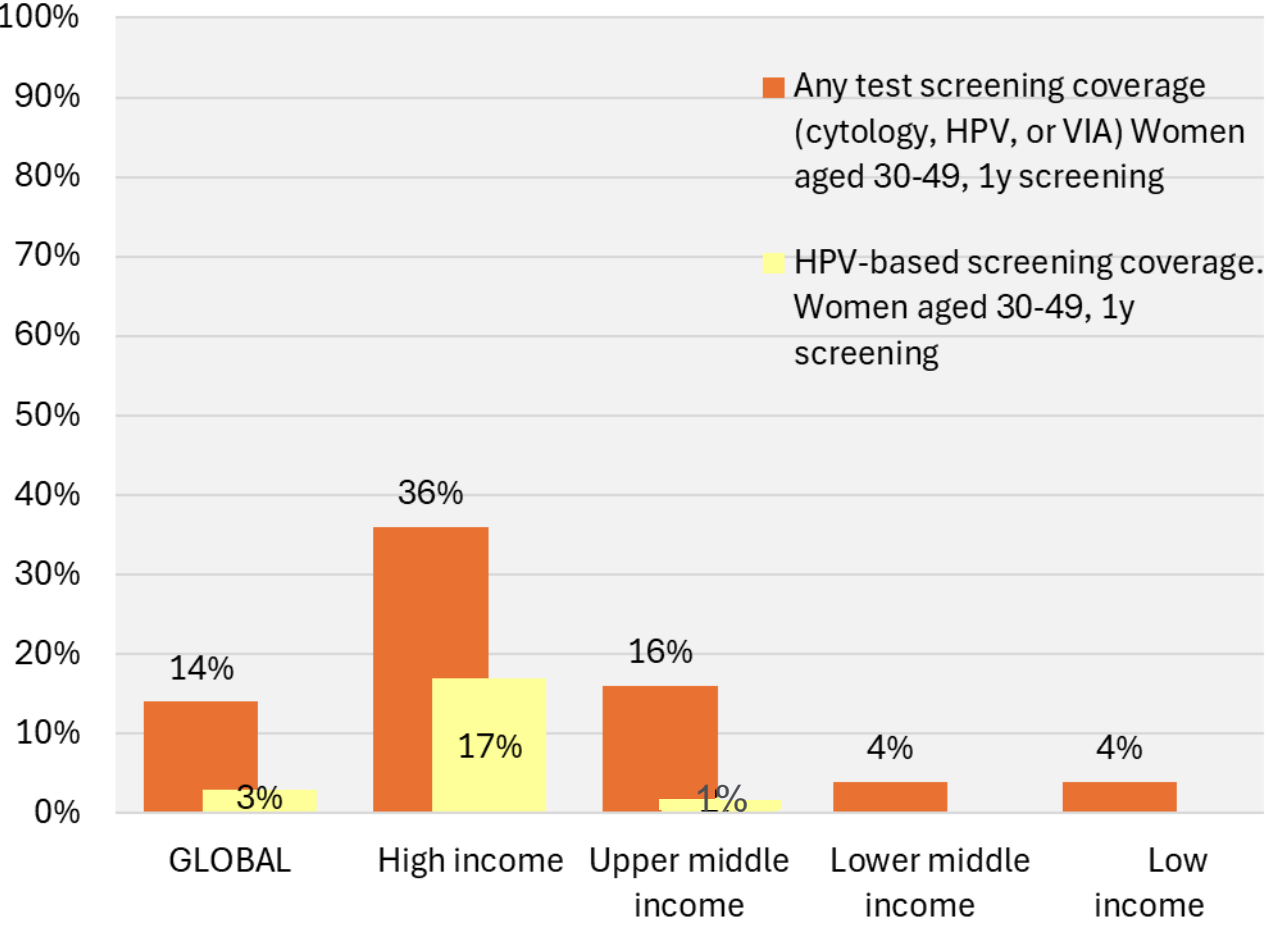
UNPUBLISHED DATA, PLEASE DO NOT DISTRIBUTE

Recommendation \neq Roll-out

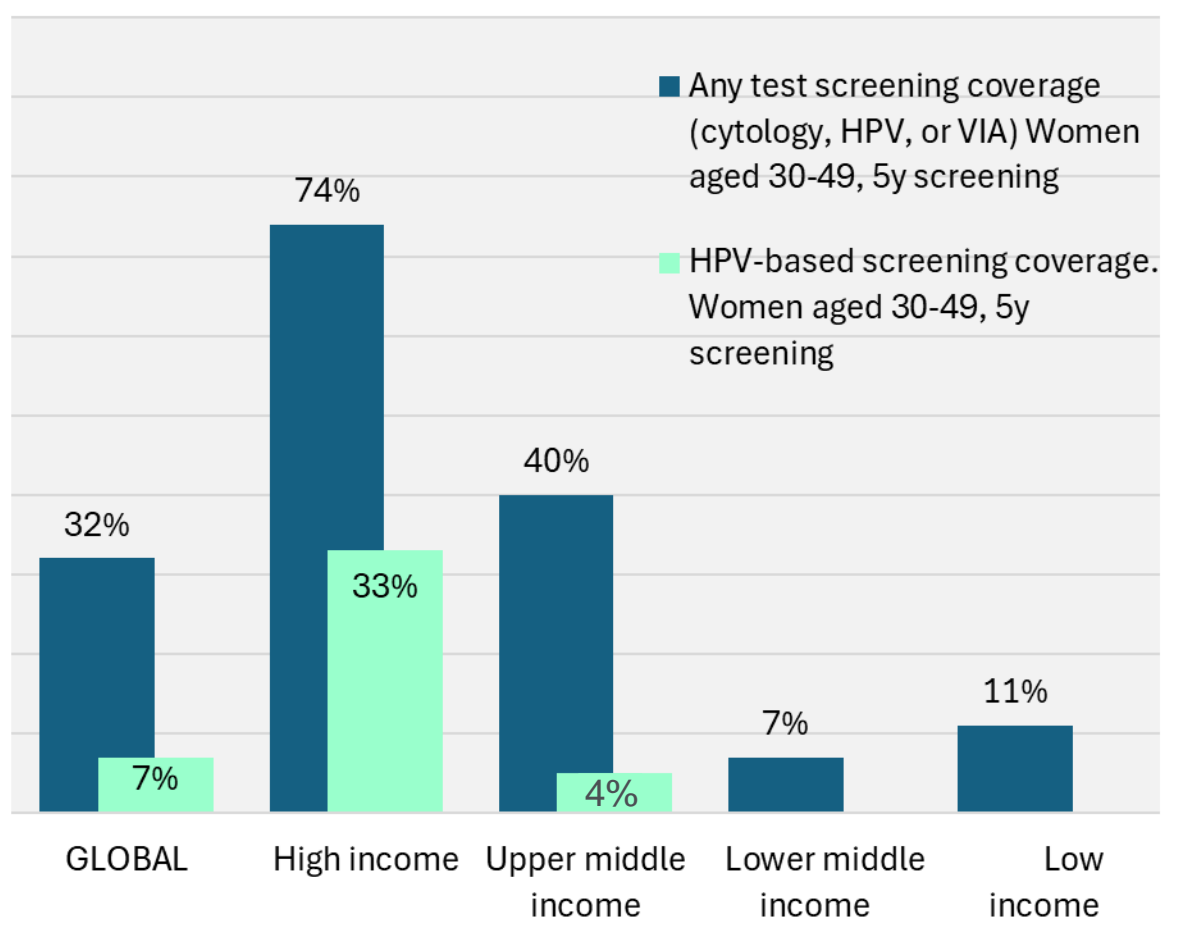
SCREENING COVERAGE IN THE PREVIOUS 5 YEARS, WOMEN 30-49Y, ESTIMATES 2022 BY COUNTRY INCOME

64% of women aged 30 to 49 years have never been screened, 93% have never been screened with an HPV test

1 YEAR COVERAGE



5 YEAR COVERAGE

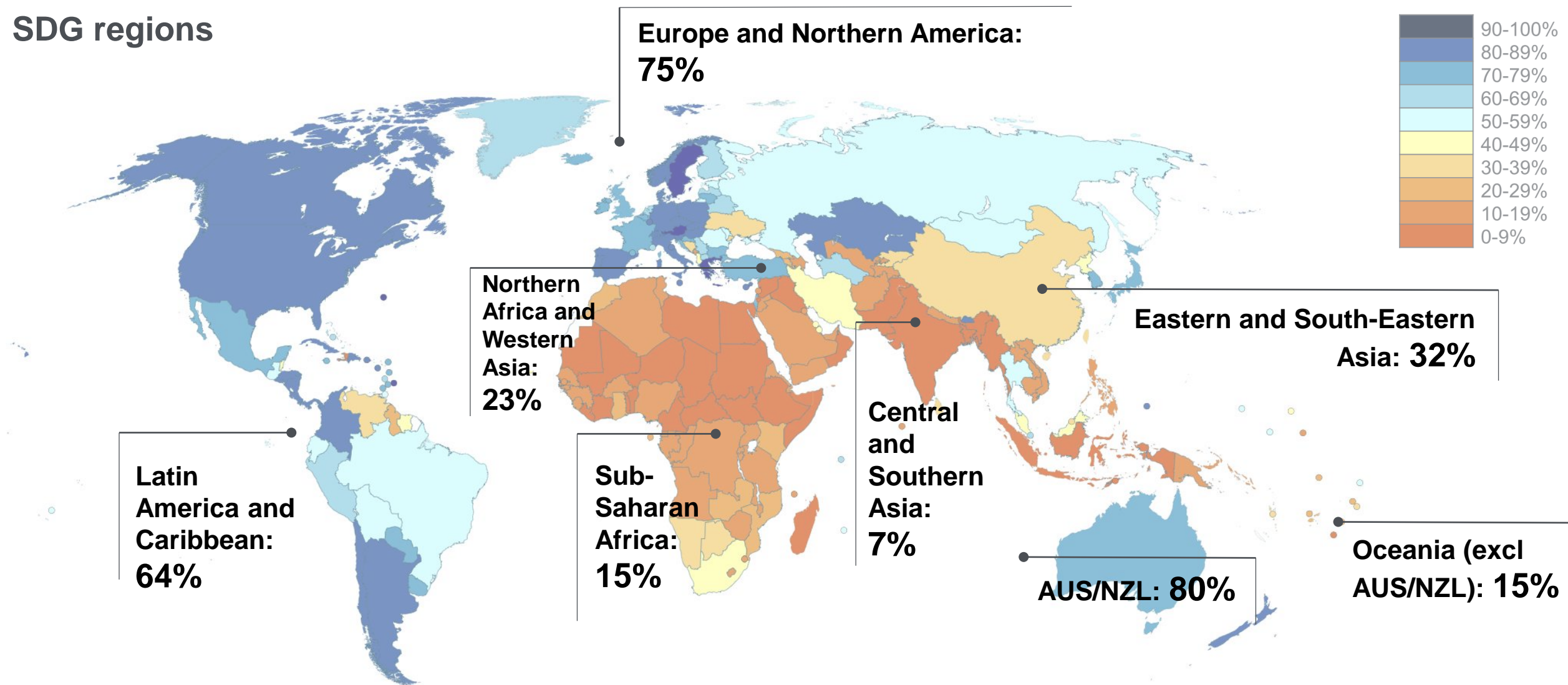


ANY TEST (CITO, HPV OR VIA) SCREENING COVERAGE

IN THE PREVIOUS 5 YEARS, WOMEN 30–49Y, ESTIMATES 2022 BY COUNTRY

Regional Disparities

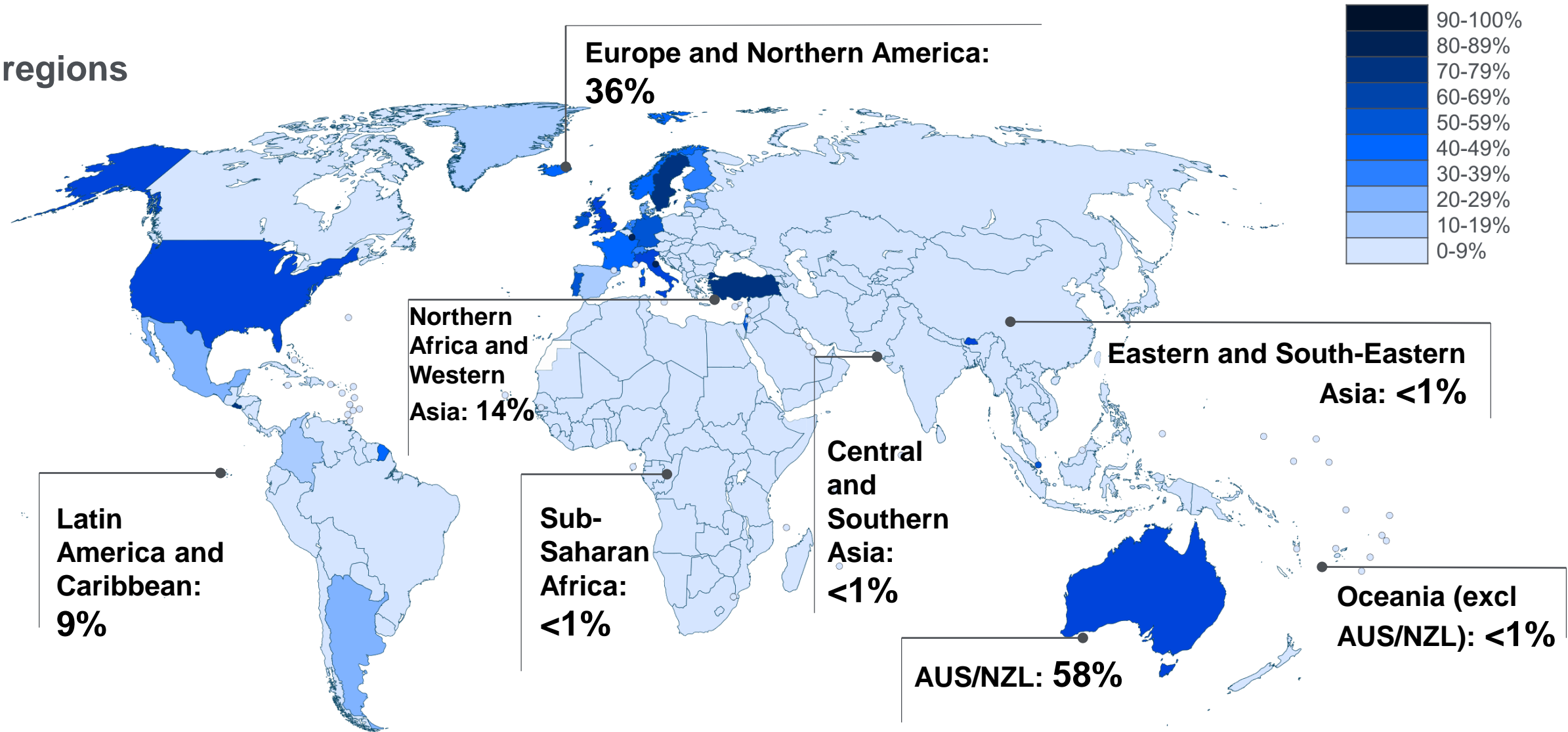
SDG regions



HPV SCREENING COVERAGE IN THE PREVIOUS 5 YEARS, WOMEN 30-49Y, ESTIMATES

2022 BY COUNTRY

SDG regions



CONCLUSIONS

- More girls and boys were vaccinated in 2023 than ever before, facilitated by **introductions in high-population countries and the adoption of single-dose and multi-age cohort strategies.**
 - 28 million girls and 6 million boys aged 9–14
 - 13 million girls and 1 million boys aged 9–14 under single-dose schedule
- However, the average programme performance remains low and far from the 2030 target.
 - **27% global HPV vaccination coverage in girls (at least one dose)**
- To reach the 90% target, it is necessary to accelerate introductions and improve the performance of the programmes.

- The coverage and organisation of cervical cancer screening varies widely between countries, leading to wide disparities in access to cervical cancer prevention.
- **Worldwide, two out of three women aged 30–49 have never been screened**, with significant differences across regions and country income levels.
- Screening coverage is very low in low- and lower-middle-income countries, and HPV-based screening is still anecdotal.
- **We estimate that most (93%) of women aged 30–49 worldwide have never been tested for HPV.**
- As vaccine coverage expands and vaccinated cohorts reach older ages, accelerating the transition to HPV-based screening is critical to achieving cervical cancer elimination.

ACKNOWLEDGEMENTS



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