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Modeling the potential effect of closing the gender gap in population viral suppression

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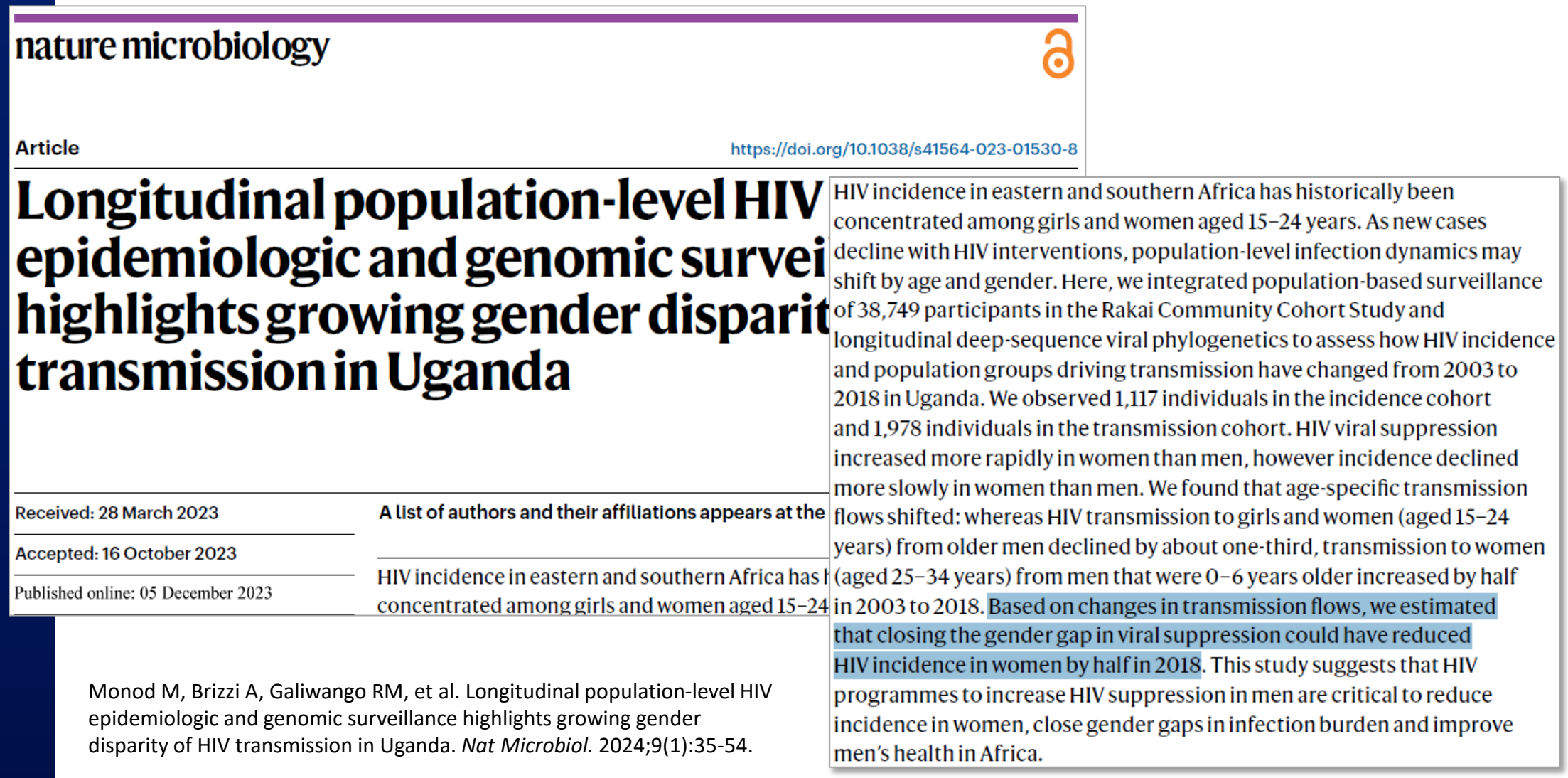

nature microbiology

Article

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Longitudinal population-level HIV epidemiologic and genomic surveillance highlights growing gender disparity of HIV transmission in Uganda

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HIV incidence in eastern and southern Africa has historically been concentrated among girls and women aged 15–24 years. As new cases decline with HIV interventions, population-level infection dynamics may shift by age and gender. Here, we integrated population-based surveillance of 38,749 participants in the Rakai Community Cohort Study and longitudinal deep-sequence viral phylogenetics to assess how HIV incidence and population groups driving transmission have changed from 2003 to 2018 in Uganda. We observed 1,117 individuals in the incidence cohort and 1,978 individuals in the transmission cohort. HIV viral suppression increased more rapidly in women than men, however incidence declined more slowly in women than men. We found that age-specific transmission flows shifted: whereas HIV transmission to girls and women (aged 15–24 years) from older men declined by about one-third, transmission to women (aged 25–34 years) from men that were 0–6 years older increased by half in 2003 to 2018. Based on changes in transmission flows, we estimated that closing the gender gap in viral suppression could have reduced HIV incidence in women by half in 2018. This study suggests that HIV programmes to increase HIV suppression in men are critical to reduce incidence in women, close gender gaps in infection burden and improve men's health in Africa.

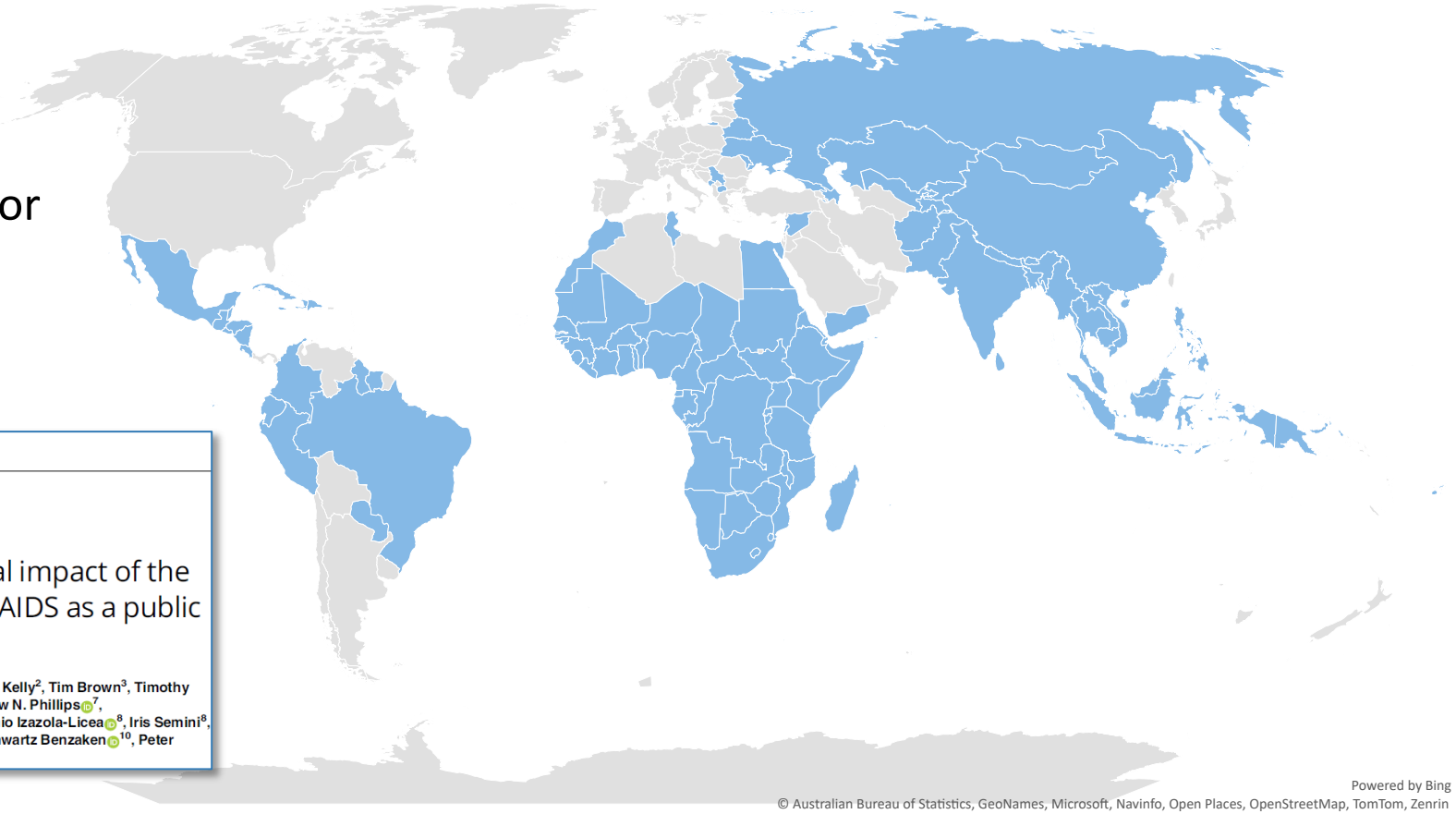
Monod M, Brizzi A, Galiwango RM, et al. Longitudinal population-level HIV epidemiologic and genomic surveillance highlights growing gender disparity of HIV transmission in Uganda. *Nat Microbiol.* 2024;9(1):35-54.

Does this impact generalize to other settings?

- We used the Goals HIV epidemic model to evaluate the potential impact of closing gender gaps in viral suppression
  - **Raise ART coverage** in 15+ men to the same levels as 15+ women
  - **Raise viral suppression** on ART by age in men to the same levels as in women
- **Countries:** Malawi, South Africa, Uganda, Zimbabwe
- **Time frame:** 2024-2025
- **Outcome:** HIV infections and DALYs averted over two years
- **Counterfactual:** Status quo scenario in which ART coverage and viral suppression on ART are maintained at 2023 levels

The Goals models have been applied worldwide for UNAIDS Global AIDS Strategy, national strategic plans, investment cases and Global Fund applications

The Goals models are transmission-dynamic HIV epidemic models that account for the effects of sexual behavior and HIV treatment and prevention programs on HIV incidence and mortality



PLOS MEDICINE

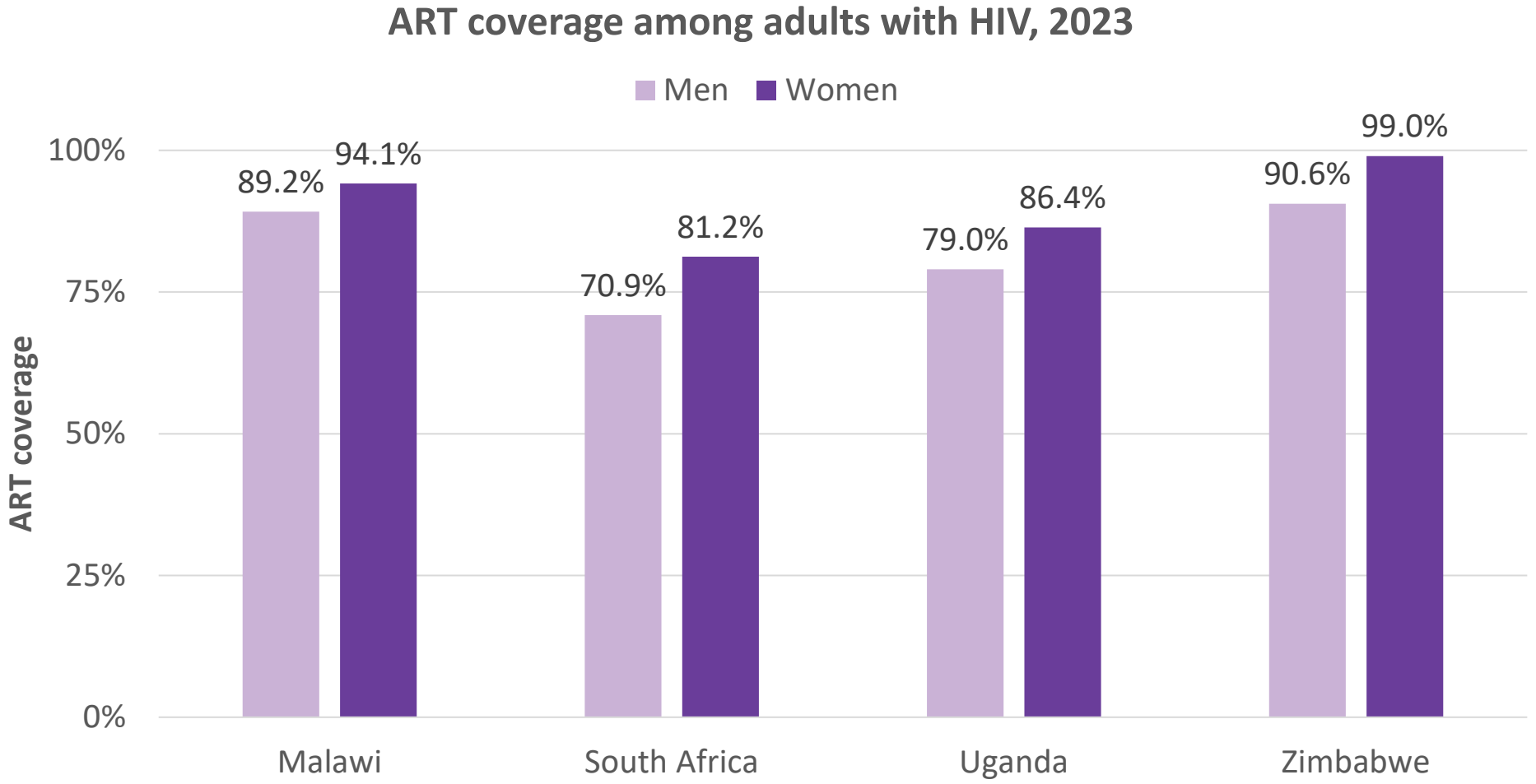
RESEARCH ARTICLE

Modeling the epidemiological impact of the UNAIDS 2025 targets to end AIDS as a public health threat by 2030

John Stover[1]*, Robert Glaubius[1], Yu Teng[1], Sherrie Kelly[2], Tim Brown[3], Timothy B. Hallett[4], Paul Revill[5], Till Bärnighausen[6], Andrew N. Phillips[7], Christopher Fontaine[8], Luisa Frescura[8], Jose Antonio Izazola-Licea[8], Iris Semini[8], Peter Godfrey-Faussett[8], Paul R. De Lay[9], Adèle Schwartz Benzaken[10], Peter D. Ghys[8]

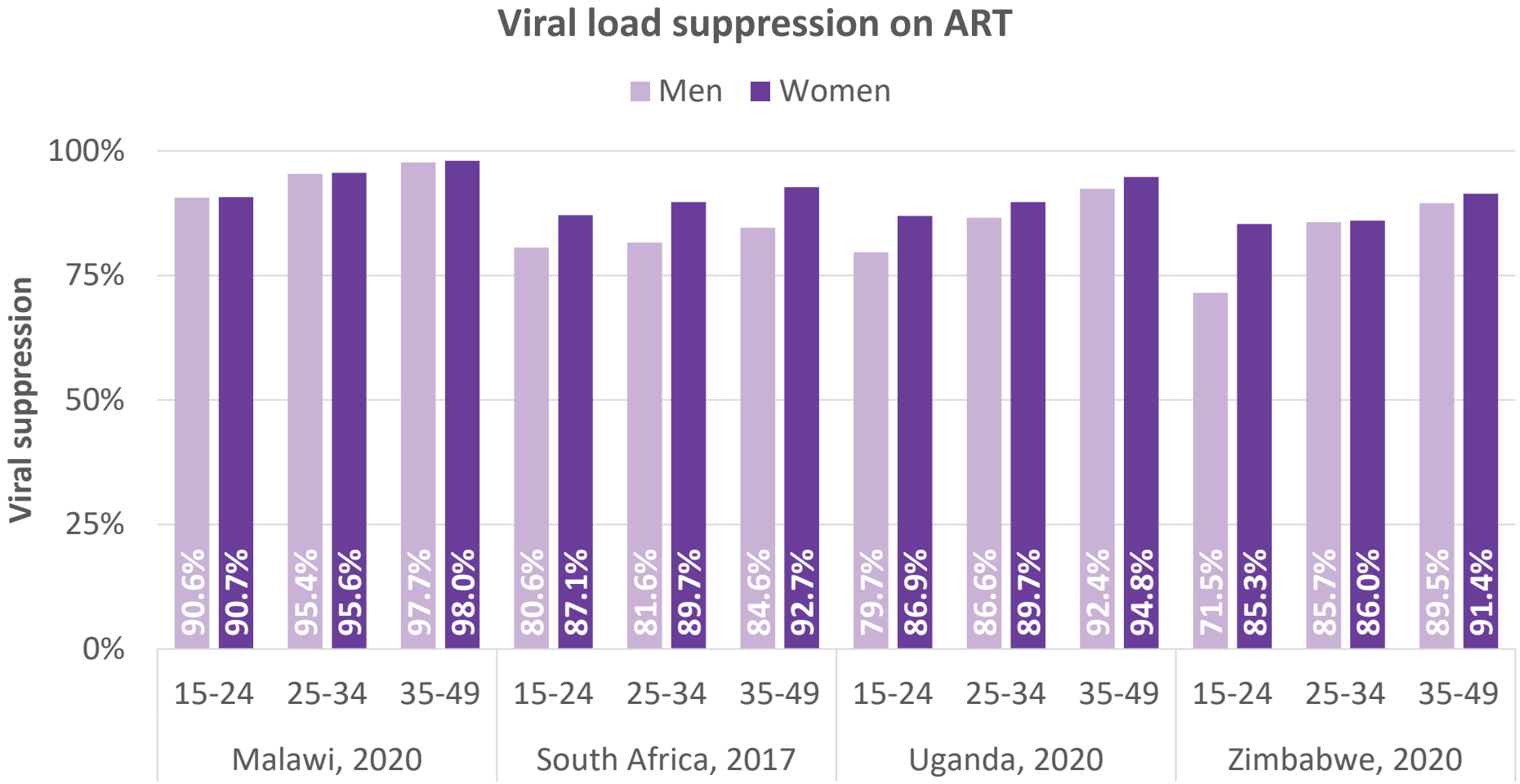
Avenir Health

ART coverage is lower in men than women



Estimates from 2024 UNAIDS Spectrum files

Viral suppression on ART is more common in women than men



Estimates from the most recent PHIA or SABSSM survey in each country
Estimates for the 15-24 age group are often based on few survey respondents

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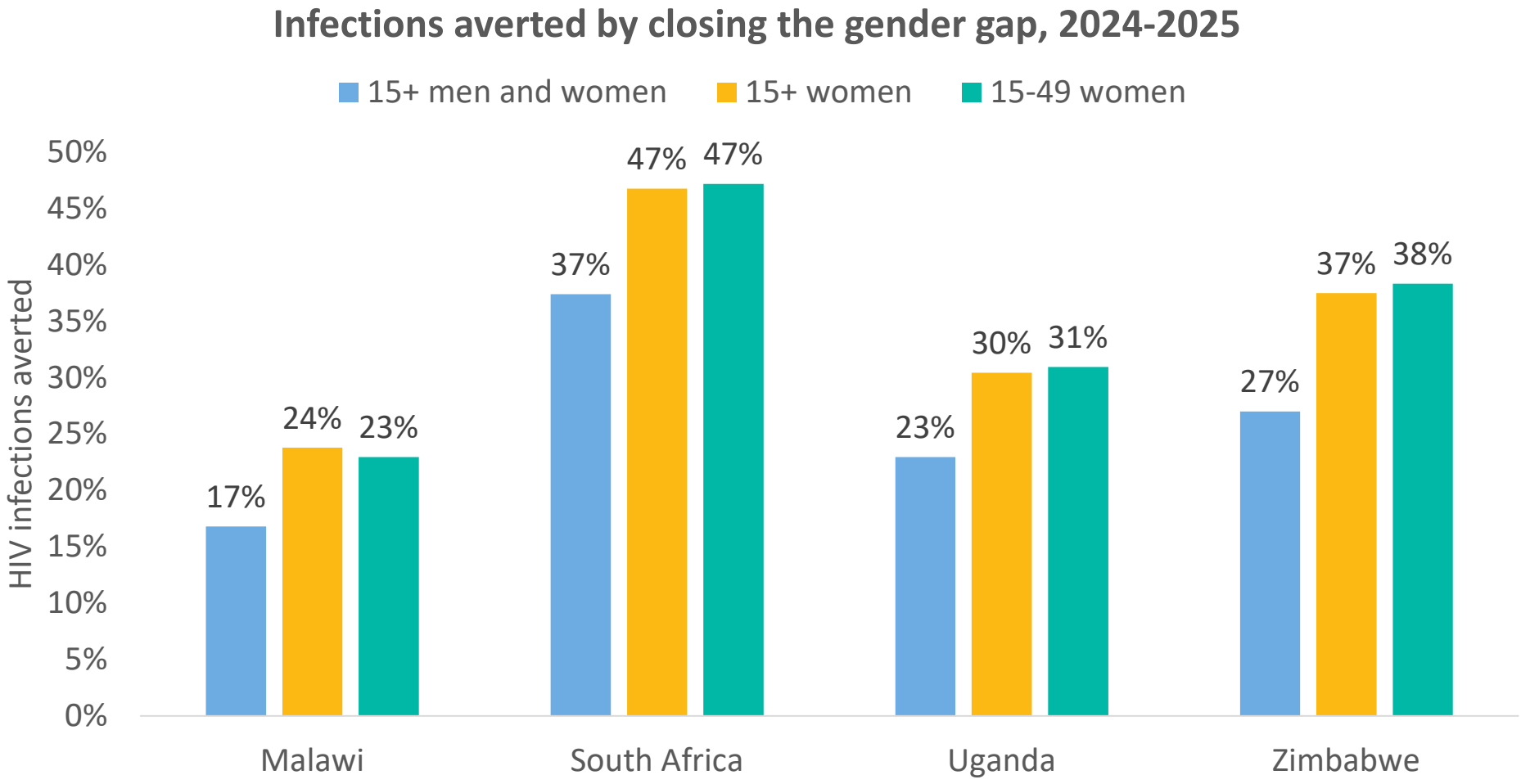
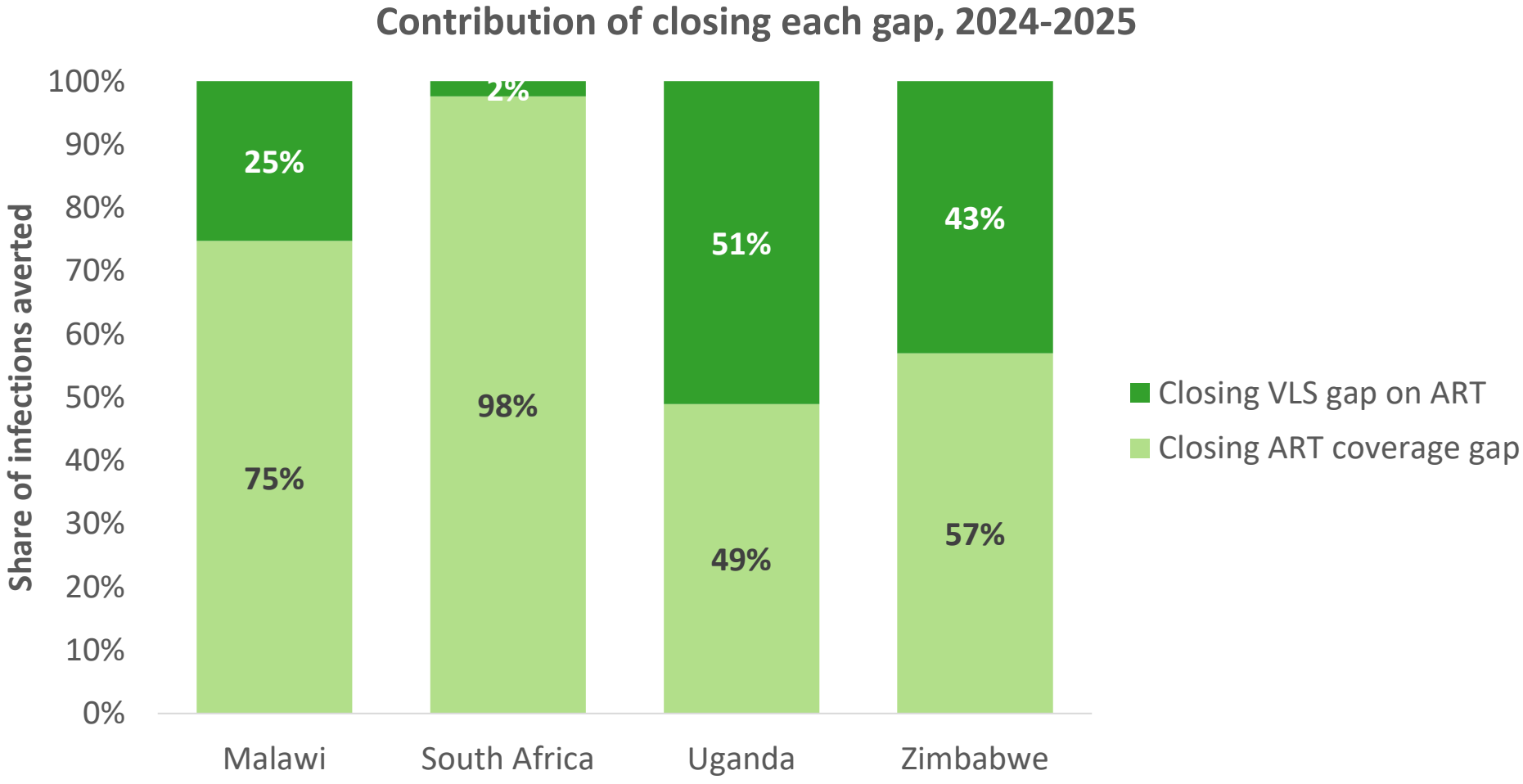
Closing the gender gap in viral suppression could prevent 23%-47% of infections in 15-49 women



Most impact on HIV prevention comes from closing gaps in ART coverage



Discussion

- Closing gender gaps in ART coverage and viral suppression could prevent 23%-47% of new HIV infections in 15-49 women over two years
- Closing gender gaps in ART coverage had more impact on HIV transmission compared to closing gaps in viral suppression on ART
- Closing gender gaps in viral suppression on ART had a relatively small effect in South Africa, despite the gaps reported in 2017
  - We assumed viral suppression gaps have shrunk since 2017, but may have overstated the extent

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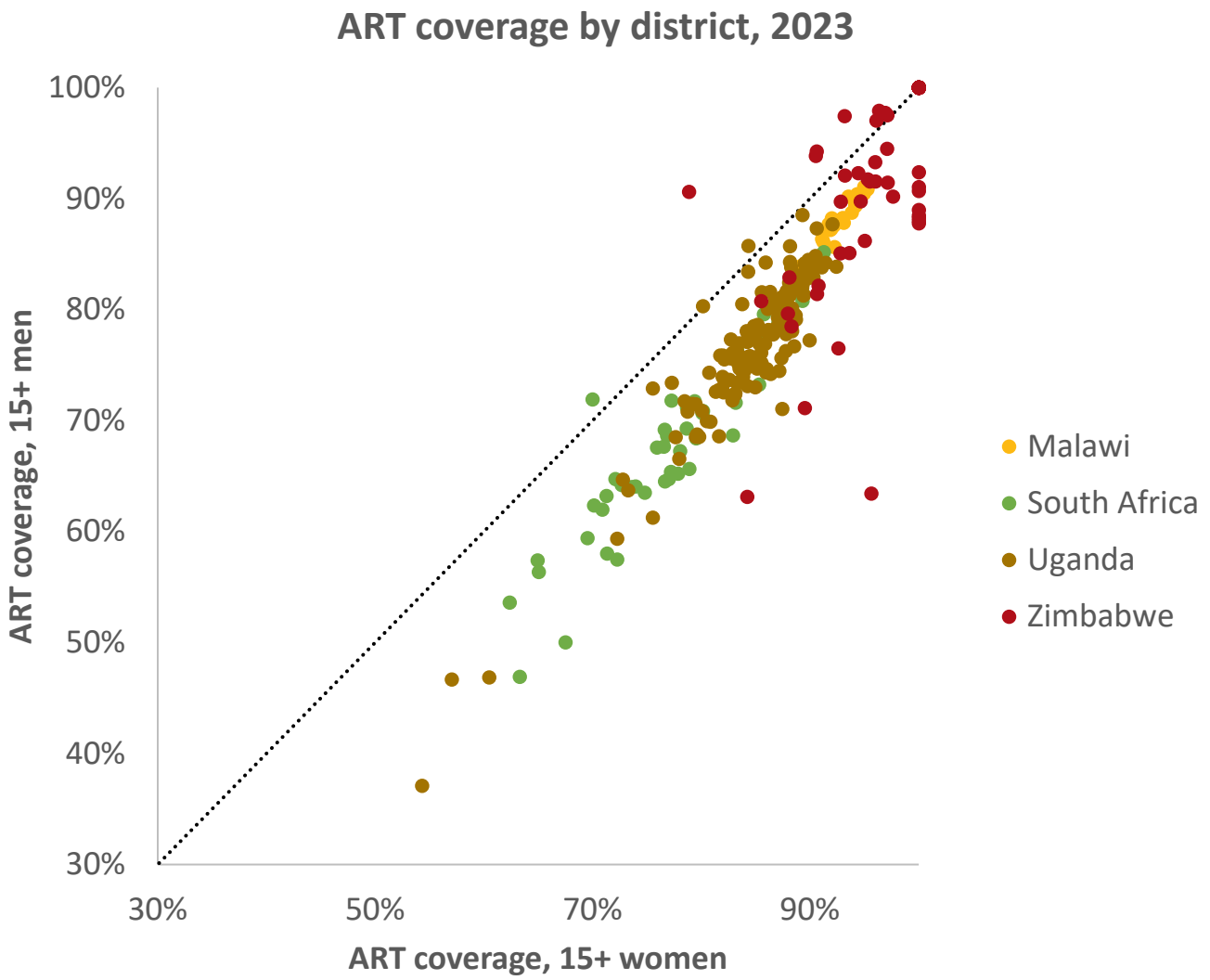
Thank You!

Supplementary Slides



Subnational estimates accessed at https://naomi-spectrum.unaids.org/

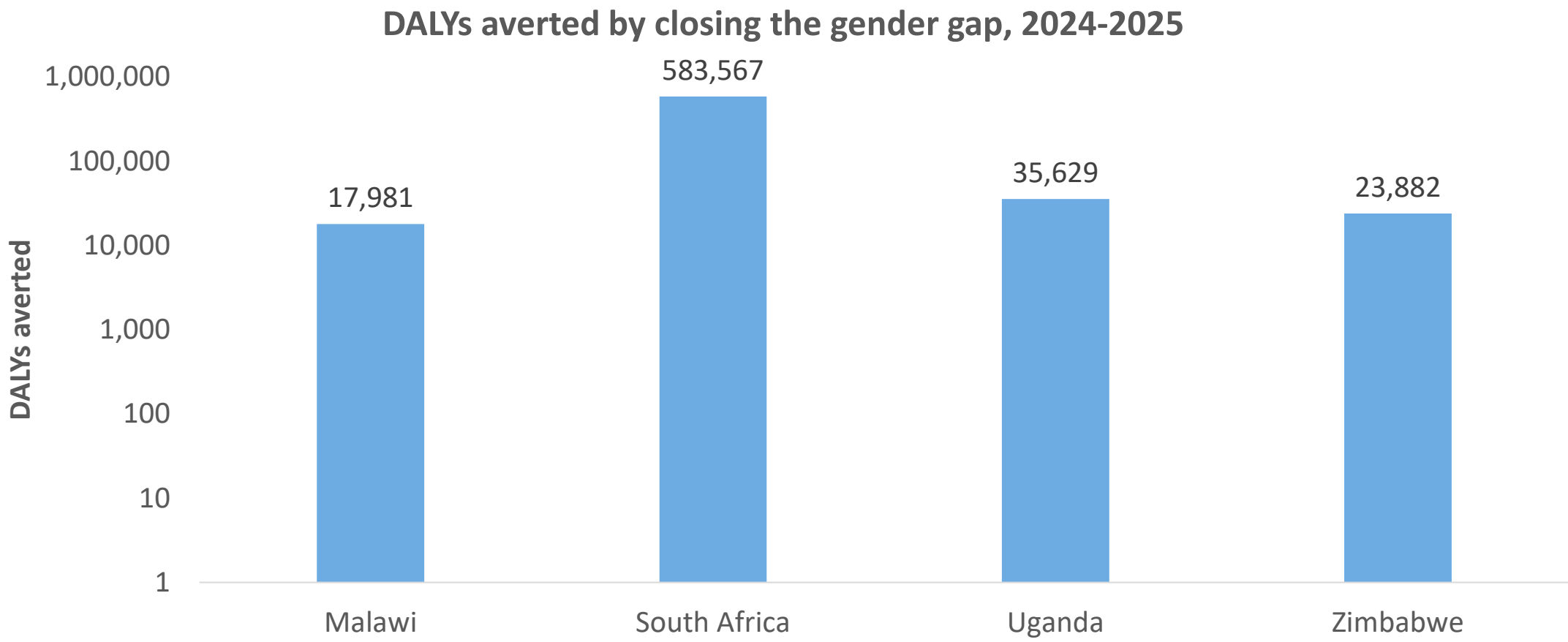
Finding the gaps

- Our analyses highlight the potential national impact of reaching men
- Subnational estimates of ART coverage can help identify locations where gaps are largest, or where coverage is low overall

New HIV infections averted by closing gender gaps in ART and viral suppression, 2024-2025

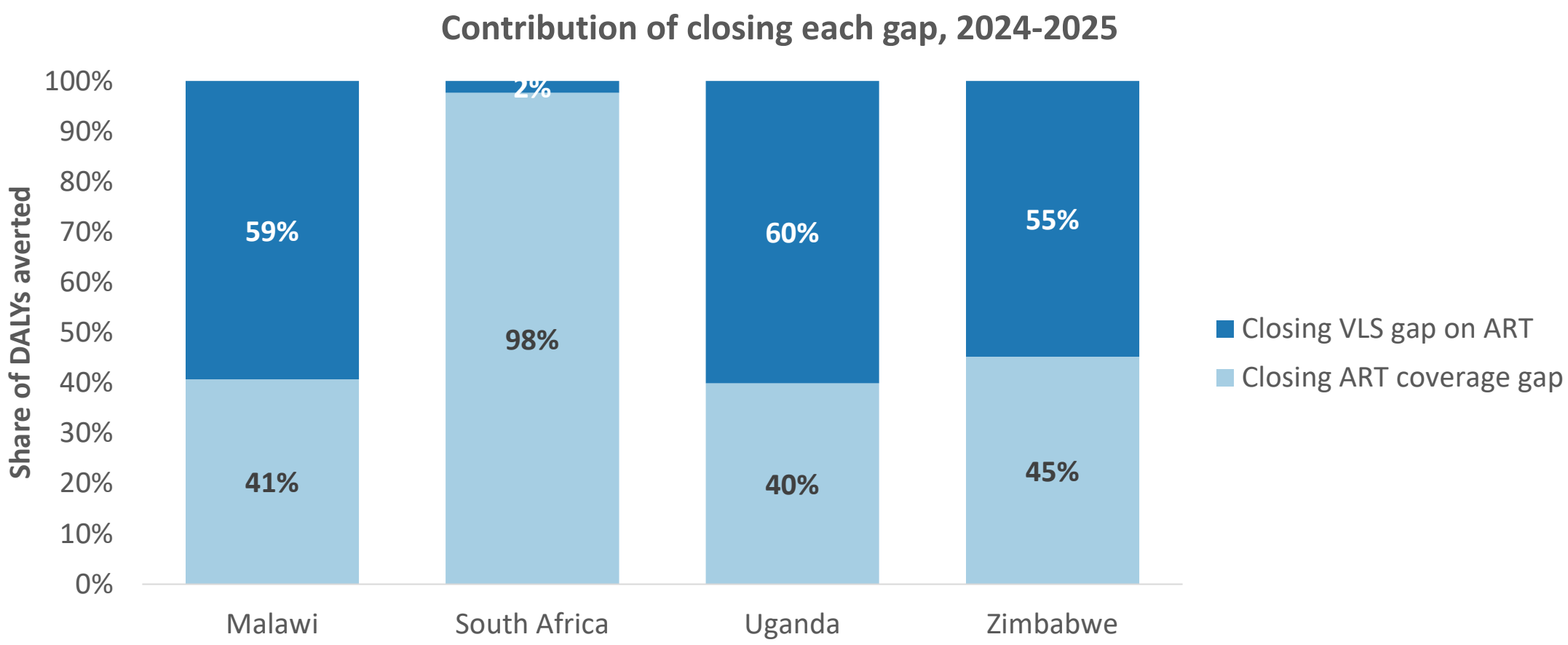
	15+ men and women		15+ women		15-49 women	
Country	New HIV infections, status quo	Infections averted	New HIV infections, status quo	Infections averted	New HIV infections, status quo	Infections averted
Malawi	11,575	1,944	7,639	1,817	7,253	1,664
South Africa	298,246	111,507	225,018	105,200	205,148	96,773
Uganda	23,223	5,328	16,686	5,076	15,084	4,666
Zimbabwe	12,088	3,263	7,965	2,986	7,412	2,841

Closing the gender gap prevents transmission and extends lives



* Log scale

Most impact on DALYs comes from improving viral suppression on ART



DALYs averted by closing gender gaps in ART and viral suppression, 2024-2025

Country	DALYs, status quo	DALYs averted
Malawi	5,247,264	17,981
South Africa	20,527,316	583,567
Uganda	12,264,310	35,629
Zimbabwe	5,199,786	23,882