HIV prevalence, population sizes, and HIV prevention among men who paid for sex in sub-Saharan Africa (2000-2020)

A meta-analysis of 87 population-based surveys

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The Global Men and HIV Technical Working Group

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Outline

1. **Background**
   - Men who pay for sex and HIV transmission
2. **Methods**
   - Data sources
3. **Results**
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4. **Interpretations**
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1 Background

The role of men who pay for sex in the sub-Saharan Africa HIV epidemics

Background

Central position of men paying for sex in sexual networks

- To "*End AIDS*", interventions must prioritize key populations.
- Structural determinants enhance HIV acquisition and transmission risks of sex workers.
- Despite their central role in sexual networks, most interventions (and data) focus on sex workers and not clients.

Changing Dynamics of HIV Transmission in Côte d'Ivoire: Modeling Who Acquired and Transmitted Infections and Estimating the Impact of Past HIV Interventions (1976–2015)

RESEARCH ARTICLE

Estimating the contribution of key populations towards the spread of HIV in Dakar, Senegal

The central role of clients of female sex workers in the dynamics of heterosexual HIV transmission in sub-Saharan Africa

Potential Impact of Existing Interventions and of Antiretroviral Use in Female Sex Workers on Transmission of HIV in Burkina Faso: A Modeling Study

Maheu-Giroux et al (2017) PLOS Medicine
https://doi.org/10.1016/S2352-3018(20)30315-5

Background

Paucity of data on men who pay for sex

- Men who pay for sex are not recognized as a key population
- Neglecting these men places the responsibility of preventing HIV solely on sex workers.
- Developing interventions for clients of sex workers requires granular understanding of prevention needs and HIV epidemiology.
- Clients are hard to reach and hidden.

Lilian Namiiro, a sex worker from Uganda, is an activist and an advocate for HIV prevention. (Credit: UNAIDS/E.Echwalu)

Goals of our study

Aim: To improve understanding of the complex HIV transmission dynamics arising from sex work

1) Synthesize national population-based surveys conducted in SSA from 2000-2020 with information on paid sex ever

2) Conduct meta-analyses to estimate outcomes among men who do and do not pay for sex

- Population size
- Lifetime sexual partners
- Condom use
- HIV prevalence
- HIV testing
- HIV treatment outcomes

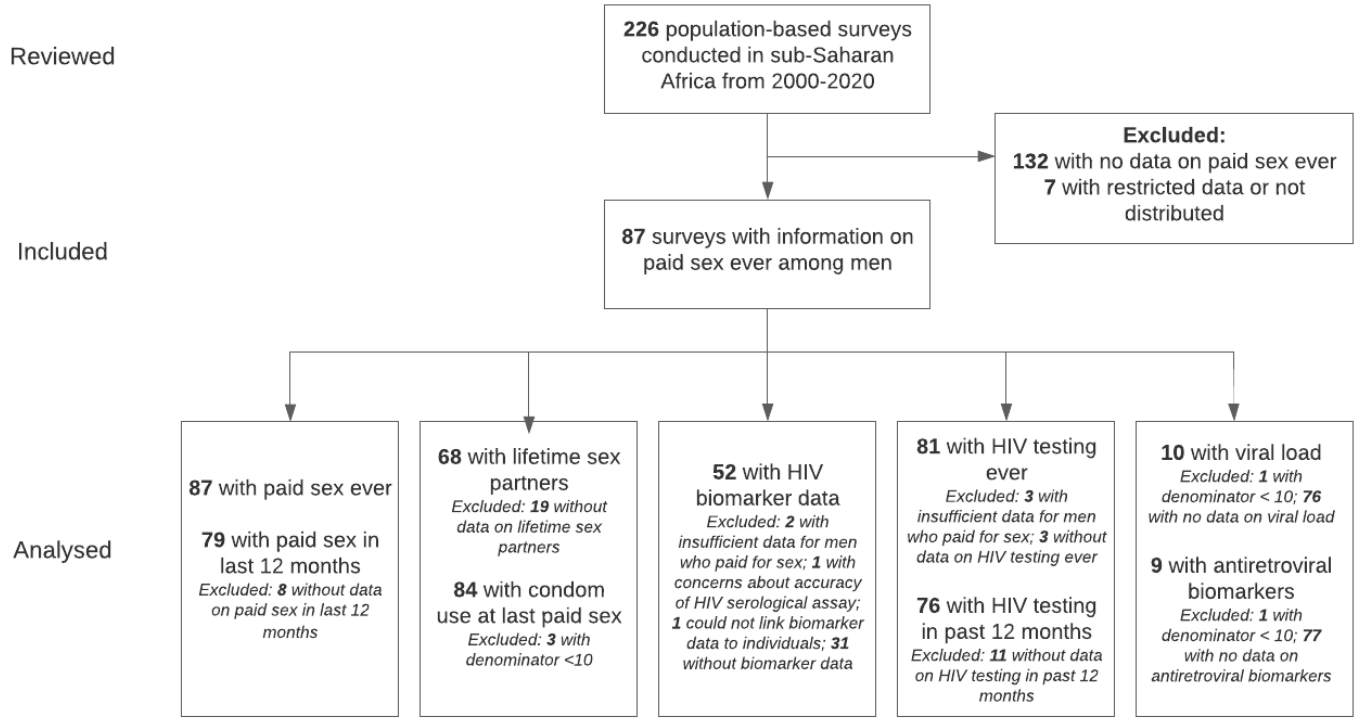
2 Methods

Data sources

Data sources and selection

Population-based surveys from sub-Saharan Africa (2000-20)

- Identified 226 surveys
- **87** surveys had data on men ever paying for sex



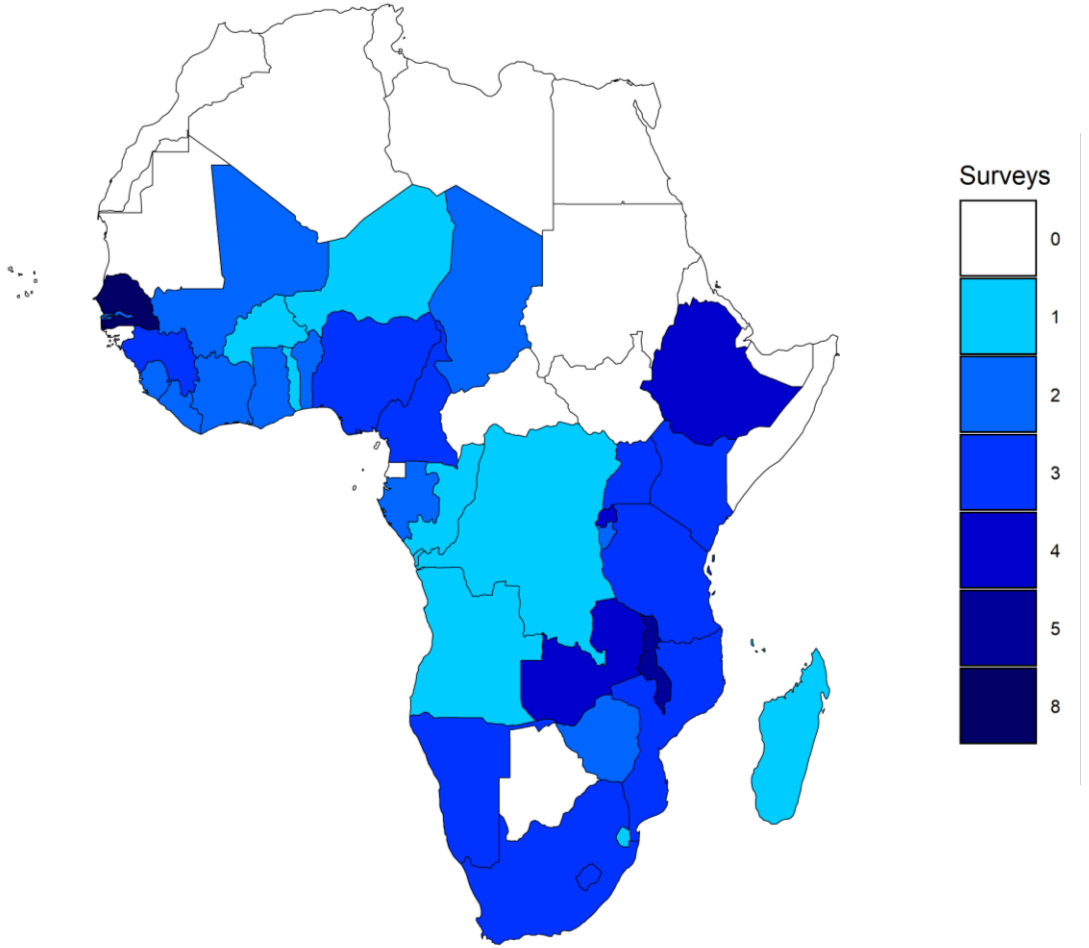
Hodgins et al. (2021) PLOS Medicine (In Press)

Data sources and selection

Population-based surveys from sub-Saharan Africa (2000-20)

- Conducted in **35** countries
- Included **368,283** sexually active men

Number of surveys by country:



Statistical analyses

Meta-analyses of survey data using random effect models

- For each survey, we calculated relevant estimands for **sexually active men aged 15-54 years old**.
- Accounted for complex survey design.
  - Survey weights, stratification, and clustering.
- Estimates pooled using inverse variance-weighted random effects with empirical Bayes estimator. Standard errors clustered by country.
- Meta-regression to examine trends.
- Several outcomes:
  - Population sizes, sexual behaviors, HIV testing history, HIV prevalence, ART coverage, VLS

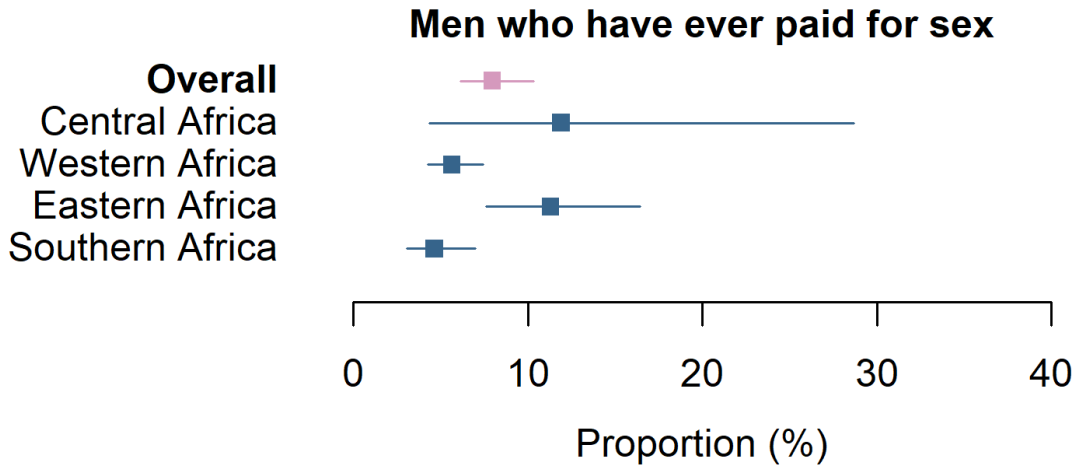
3 Results

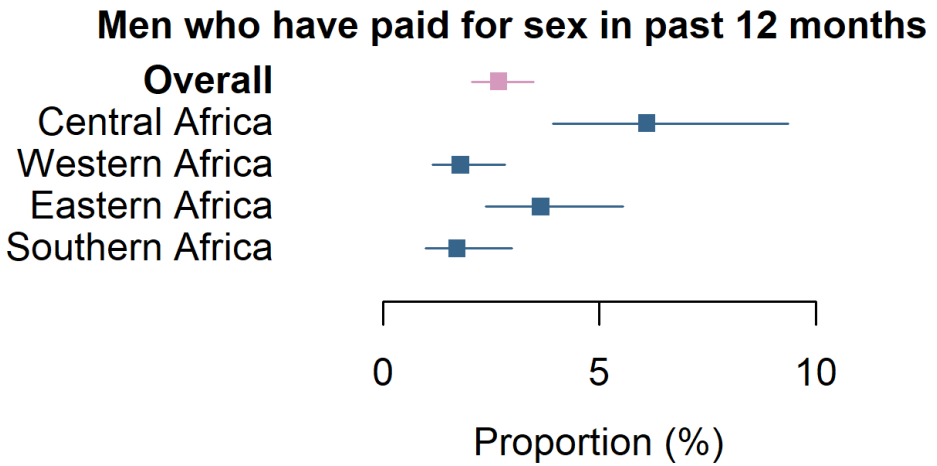
Meta-analysis results

What % of men pay for sex?

Population sizes of men who have ever/ recently paid for sex

- **8%** of sexually active men reported ever paying for sex.
- Highest in Central and Eastern Africa
  - Regional trends consistent with Carael et al., 2006, *Sex Transm Infect.*
- **3%** of men reported paying for sex in the past 12 months.
- Estimates are probably lower bounds of population sizes due to non-disclosure.





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What % of men pay for sex?

Men who pay for sex by residence type and age group

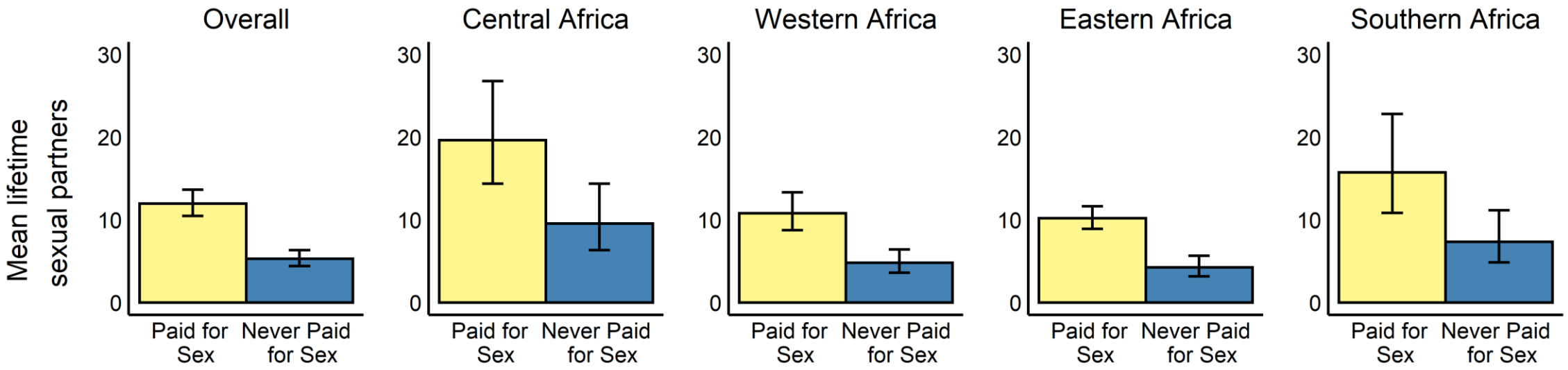
- Men in urban areas were **more likely** to report ever paying for sex than men in rural areas.
- Younger men were **more likely** to have recently paid for sex than men aged 35-54 years.

Outcome	Residence type	Pooled estimates (%)	95% Confidence interval
Proportion (%) of men who ever paid for sex	Rural	7·1	5·2 to 9·6
	Urban	9·7	7·3 to 12·7

Outcome	Age group (years)	Pooled estimates (%)	95% Confidence interval
Proportion (%) of men who paid for sex in past 12 months	15-24	5·1	3·6 to 7·1
	25-34	3·9	2·7 to 5·6
	35-54	2·2	1·5 to 3·2

Lifetime sexual partners

Men who ever paid for sex have more lifetime sexual partners



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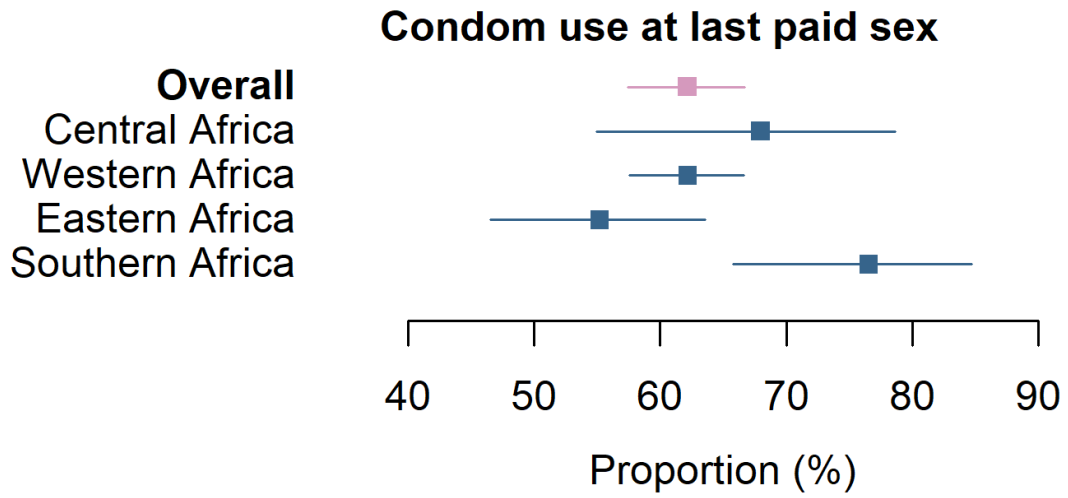
- Men who paid for sex had:
  - Average **12** lifetime sexual partners.
  - Average **2.3 times** more partners than men who did not pay for sex.
- Standardized by age and residence type.

Condom use during paid sex

After 2010, 68% of men who recently paid for sex used condom

- Condom use at paid sex **increased** over time.
- Clients of sex workers often have decisive power over condom use during paid sex (Wirtz et al., 2015, *J Acquir Immune Defic Syndr*).



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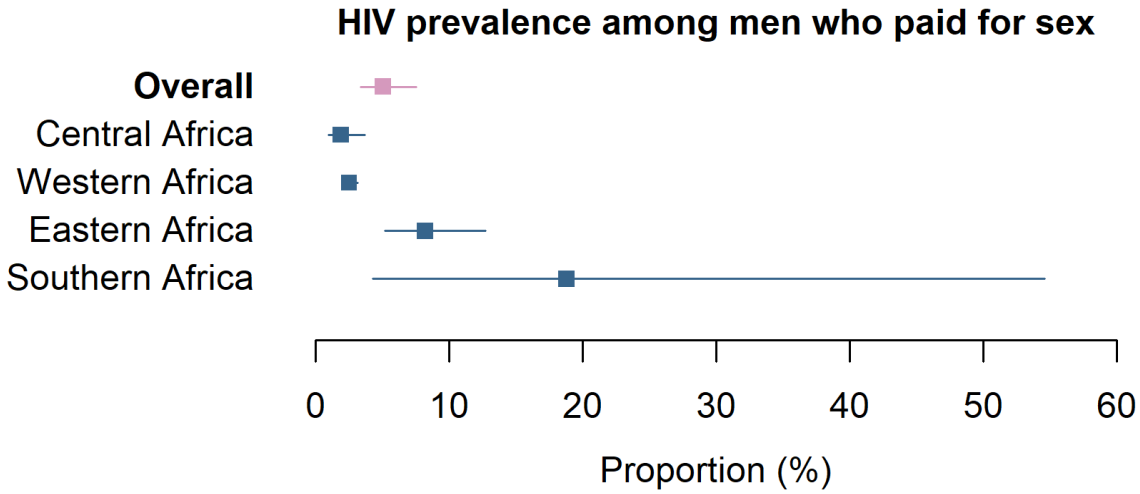
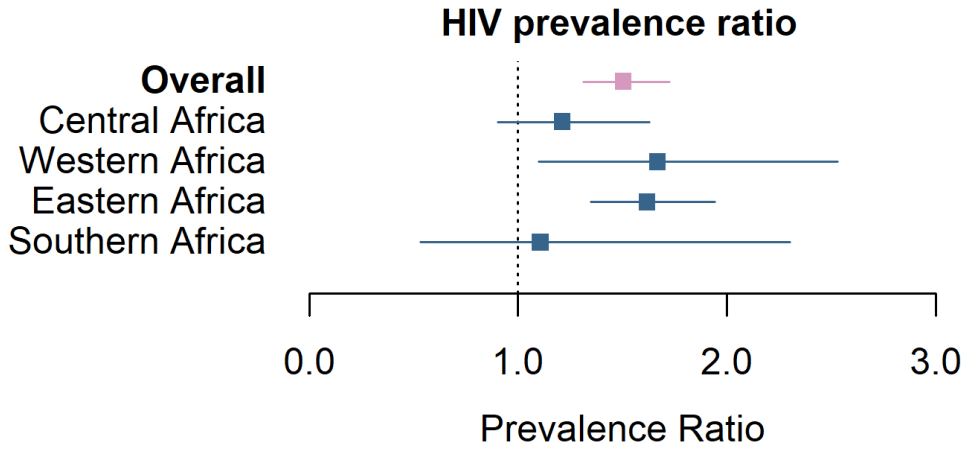
Outcome	Slope of linear trend (OR)	2010 Prediction	2020 Prediction
Proportion (%) of condom use at last paid sex	1·07 (1·04 to 1·11)	60% (56 to 65%)	76% (71 to 80%)

HIV prevalence

Men who pay for sex are more likely to be living with HIV

- Pooled HIV prevalence among men who paid for sex was **5%**.
- Lowest in Central and Western. Africa, highest in Southern Africa
  - Consistent with regional trends in HIV prevalence (UNAIDS data 2020).
- Men who paid for sex were **50% more likely** to be living with HIV than those who did not pay for sex.
- Standardized by age and residence type.





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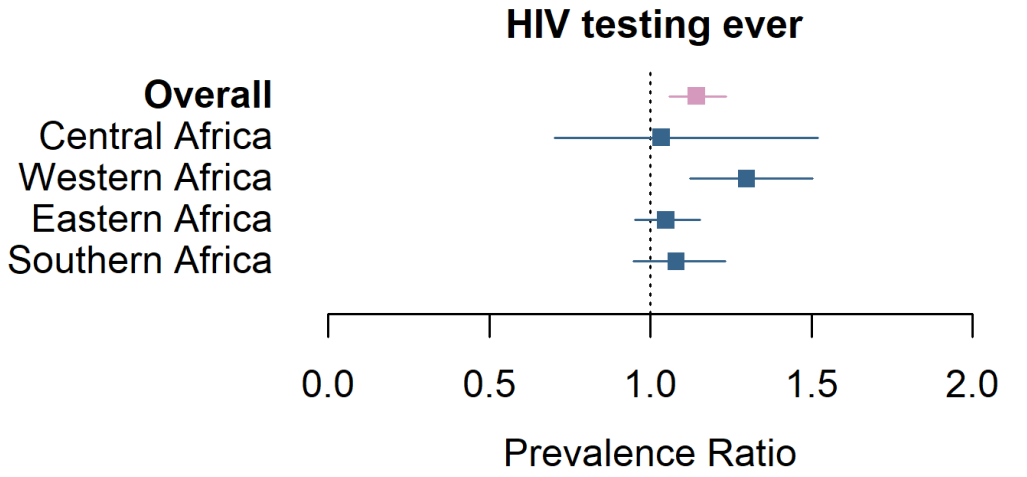
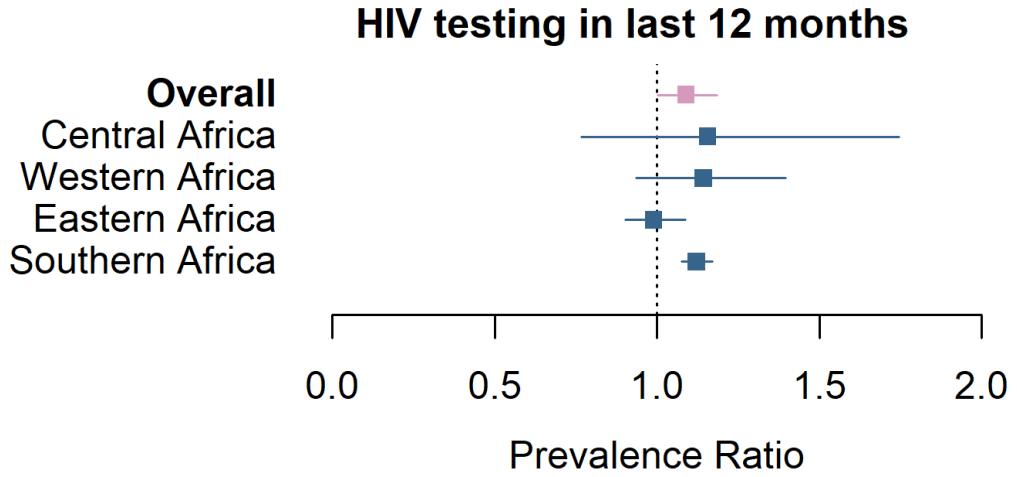
HIV testing

Men who pay for sex are more likely to have tested for HIV

- Men who paid for sex were **more likely** to have tested for HIV ever (PR=1.14) and in past 12 months (PR=1.09).
  - Could be due to higher risk perception encouraging testing (Gage et al., 2005, AIDS Care).
- Lifetime HIV testing increased over time.
- Standardized by age and residence type.





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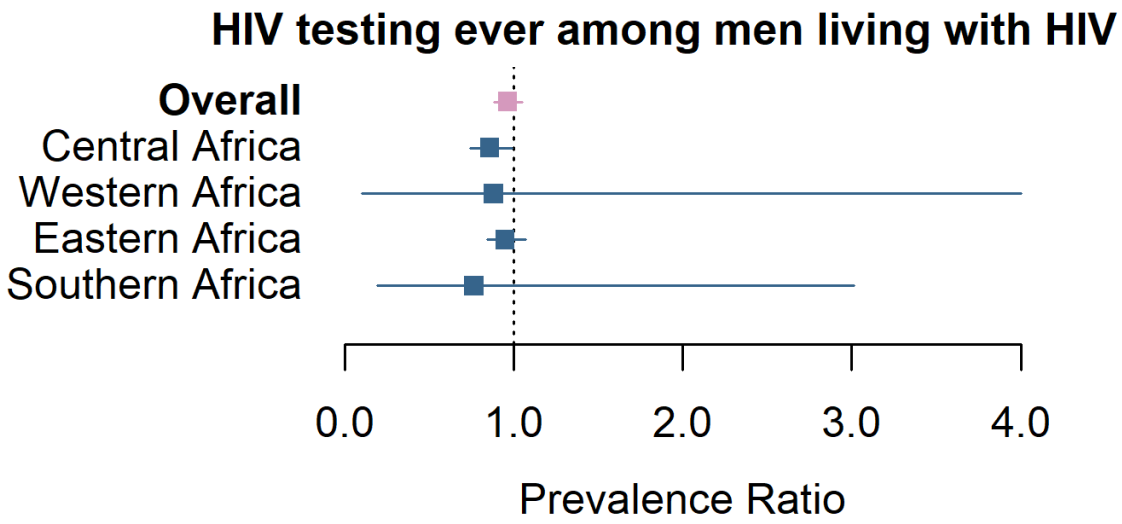
HIV testing among men living with HIV

Men living with HIV who pay for sex may have lower KOS

- Proportion ever tested for HIV was **similar** for men living with HIV who did and did not pay for sex (PR = 0.96).
  - High uncertainty.
- Could have implications for knowledge of status.



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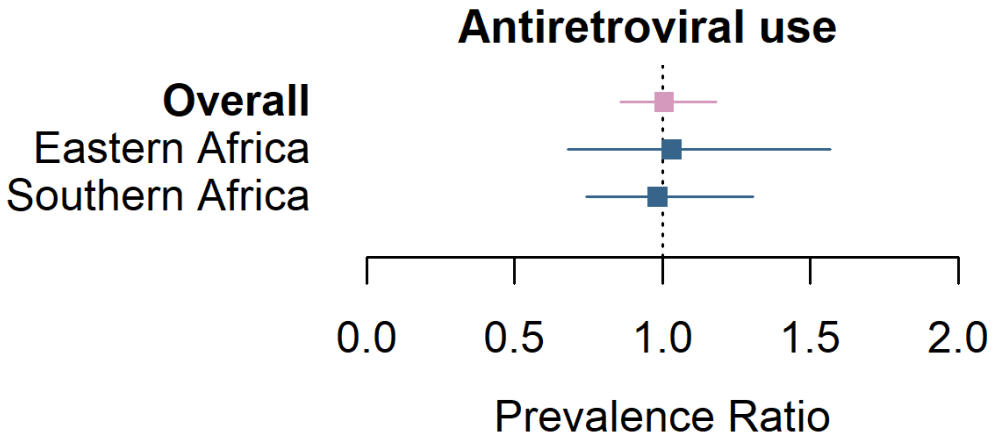
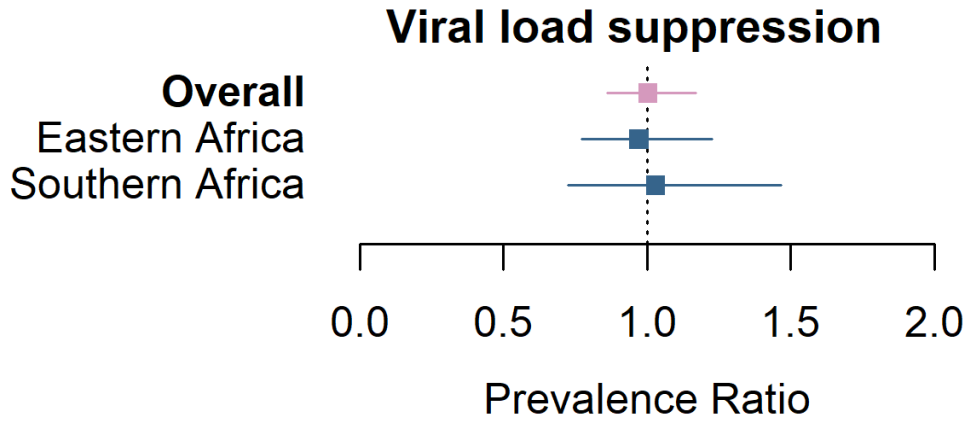
HIV treatment

Antiretroviral coverage and viral load suppression

- Few surveys had data on ARV biomarkers (n=8) or viral load (n=9).
- **No differences** in ARV or viral load suppression among men who paid for sex and those who did not.
  - High uncertainty.





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4 Interpretation

Strengths and limitations

Discussion points

Conclusions

Men who pay for sex: a priority population for HIV prevention

- Almost **1 in 10** sexually active men in SSA have ever paid for sex.
- Men who paid for sex were **50% more likely** to be living with HIV than men who did not pay for sex.
- Only **68%** of men in the last decade reported using a condom at their last paid sex act.
- Despite higher probabilities of having ever tested for HIV, ARV coverage and viral load suppression are **similar** for men who have and have not paid for sex.

Strengths and Limitations

Limitations

- Estimates depended on self-reports.
  - Affected by recall / social desirability bias.
- High heterogeneity between surveys.
- Cannot be certain that all men in our population are clients of sex workers.
  - Survey instruments captured men who have “paid” for sex.

Strengths

- Exhaustive analysis of all available population-based surveys with data on men who ever paid for sex in sub-Saharan Africa.
- Large sample size
  - Allowed investigation of trends by region and over time.
- Controlled for effects of age and residence type using standardization in prevalence ratios.

Discussion points

What do these results mean for HIV prevention programs?

- **Distribution of HIV self-tests to sex workers**, who can distribute tests to peers, clients, and partners, may help improve knowledge of status among men who pay for sex (ATLAS program: Rouveau et al., 2021, BMC Public Health).
- **Treatment access** could be facilitated by services **focused** on men who are more likely to frequent sex workers.
  - Migrant workers, long-distance truck drivers, mine workers, other men who travel for work (Baleta, 2015, Lancet).
- **Men who pay for sex** constitute a distinct population subgroup at high risk of HIV acquisition and transmission.
  - They should be recognized as a priority population for HIV prevention.

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