

RISKS, VULNERABILITIES, AND BURDEN OF HIV AMONG KEY POPULATIONS IN LOW AND MIDDLE INCOME COUNTRIES

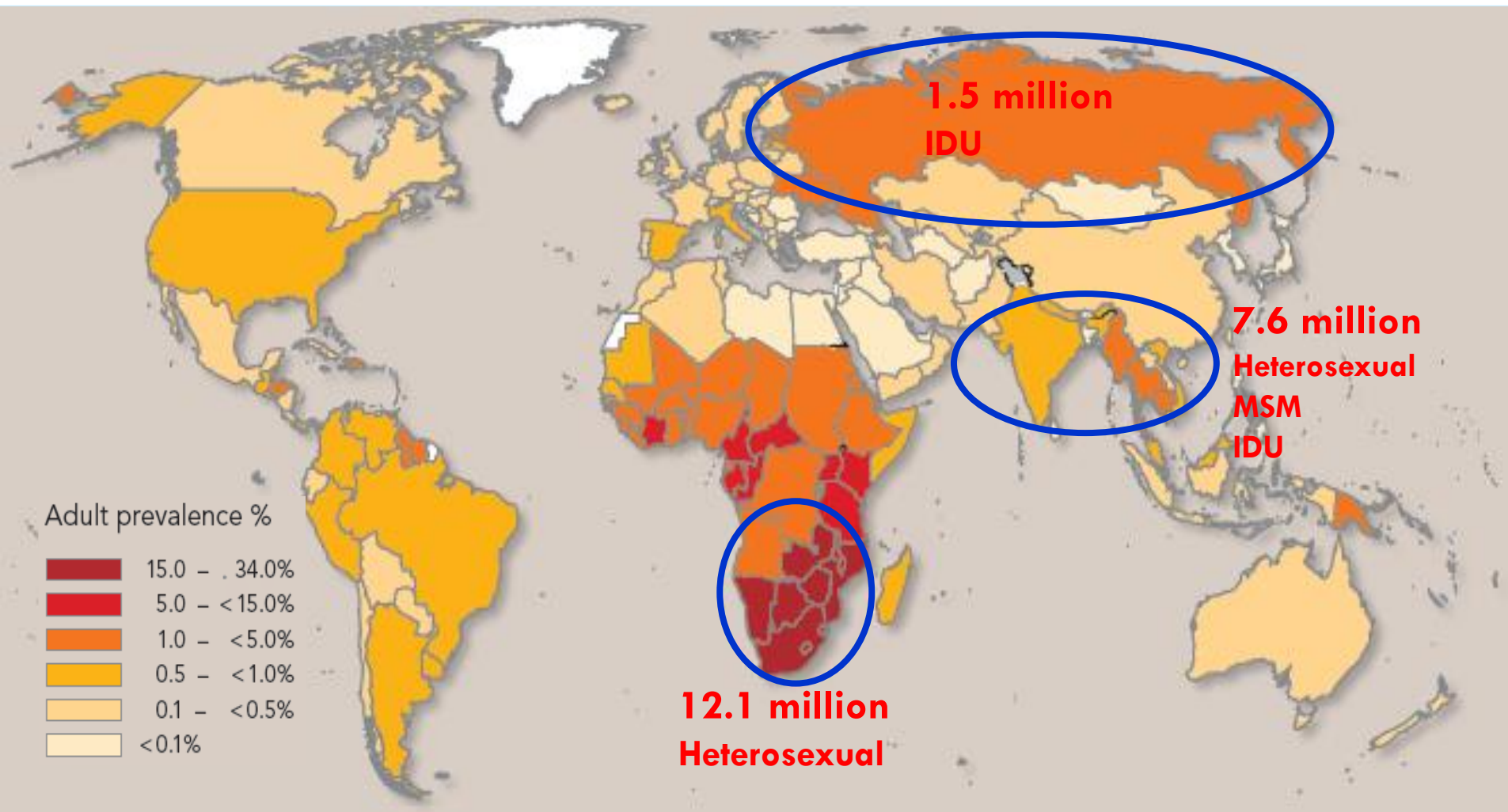
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Outline

- Assumptions about the Epidemiology of HIV
- HIV Among Key Populations
 - ▣ Epidemiology
 - ▣ Levels of HIV Risk
- Prerequisites for HIV Research and Programs
 - ▣ Case Studies
 - Prerequisites for Effective HIV Prevention and Treatment Programs
- Moving Forward

Traditional View of the Epidemiology of HIV



Most At Risk or Key Populations

- Populations with specific acquisition and transmission risk factors
 - ▣ Three Universal Key Populations
 - Sex workers (SW)
 - Gay Men and other Men who have sex with Men (MSM)
 - People who use drugs (PUD)
 - ▣ Country Specific Key Populations
 - Migrant populations
 - Laborers (Fisherfolk, Truckers, Mining)
 - Often Clients of Sex Workers
 - Non-Laborers (Internally Displaced People, Refugees)

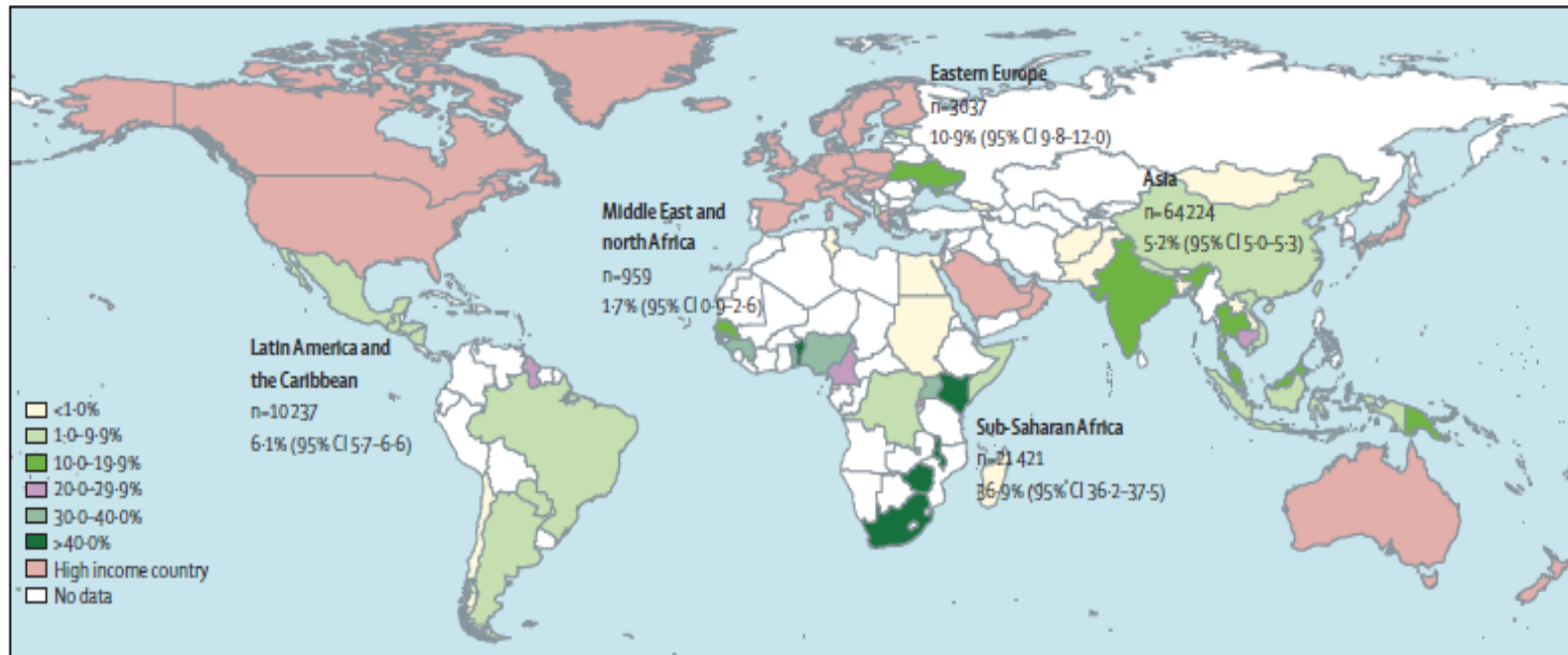
Burden of HIV among FSW

- Sex Workers (SW) are at increased vulnerability to HIV acquisition and transmission through risks mediated by:
 - ▣ Biological
 - Eg. Untreated sexually transmitted infections mediate infection
 - ▣ Behavioural
 - Eg. High numbers of partners, limited condom usage
 - ▣ Structural
 - Eg. Criminalization and rights violations limits service provision and uptake

Results of HIV Prevalence among FSW

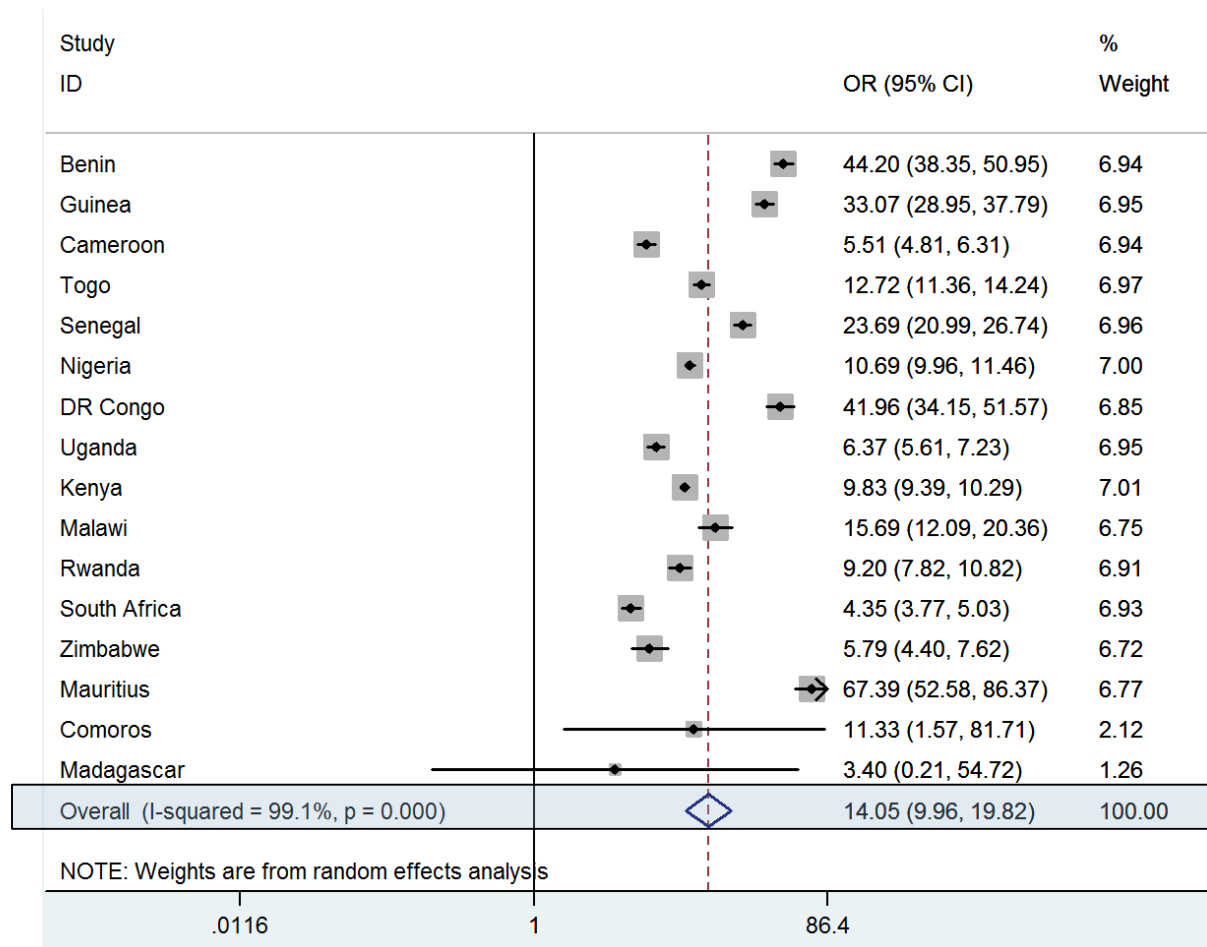
	# Of Countries	HIV Positive SW	SW Sample Size	Pooled SW HIV Prevalence	HIV Prevalence Women 15-49
Asia	14	3323	64224	5.2%	0.18%
EE/FSU	4	331	3037	10.9%	0.2%
LAC	12	627	10273	6.1%	0.38%
MENA	5	17	959	1.97%	0.43%
SSA	16	7899	21421	36.9%	7.42%
Total	50	12197	99878	Total HIV Prevalence among SW 11.8% (95% CI 11.6-12.0)	

Map of HIV prevalence among female sex workers in low-income and middle-income countries, 2007-2011



- Pooled OR for HIV infection among FSW compared to other reproductive age women
 - ▣ 13.49 (95% CI 10.04-18.12)

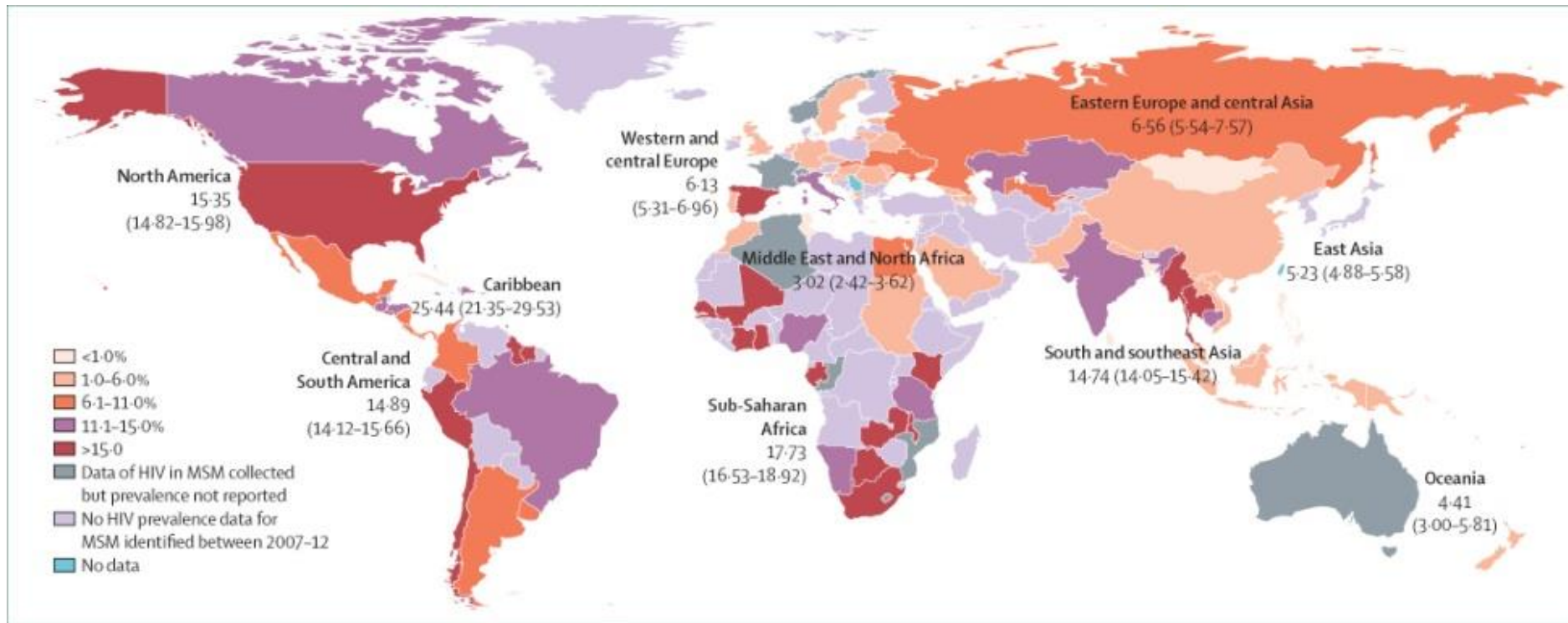
Meta-Analysis of HIV among FSW compared to other women in SSA



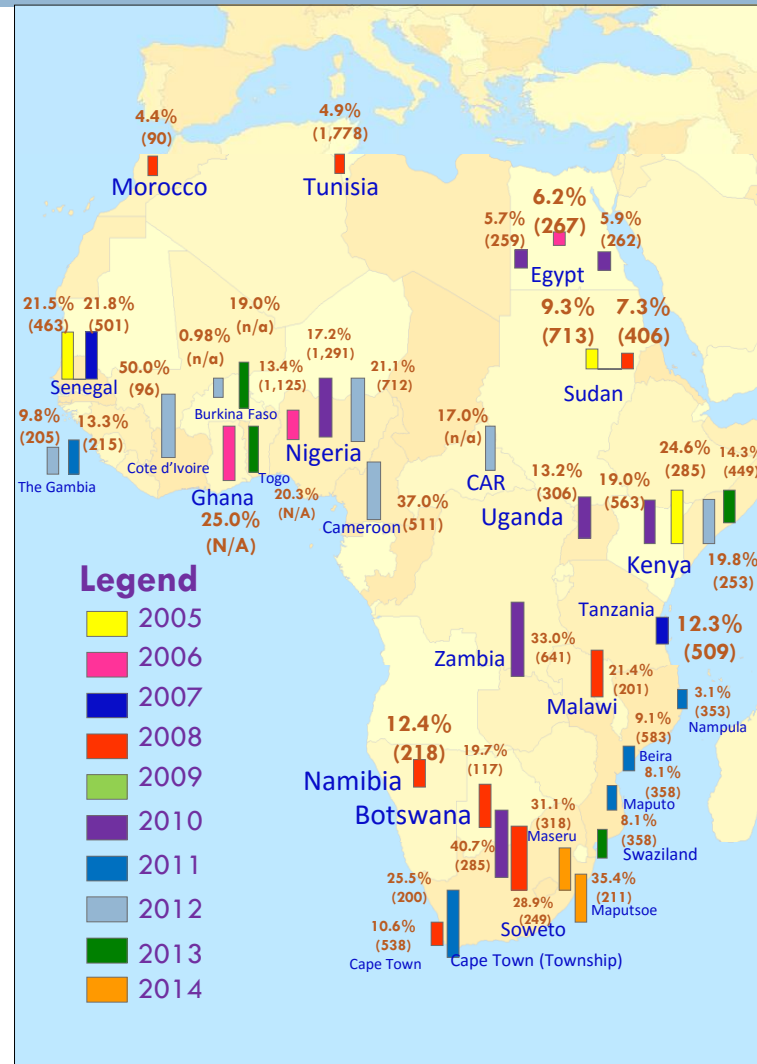
HIV Incidence among Female Sex Workers in Sub-Saharan Africa (1987-2012)

Country	Range of HIV Incidence Rate Estimates among FSW	HIV Incidence among all individuals
Kenya	3.6-25.9	0.53-1.09
South Africa	6.5-20.9	2.1-2.35
Benin	9.6	N/A
Rwanda	3.5-6.5	0.18-0.22
Cameroon	6.6	0.53
Cote D'Ivoire	3.7-8.5	~0.1-1
Tanzania	4.3-13.9	N/A

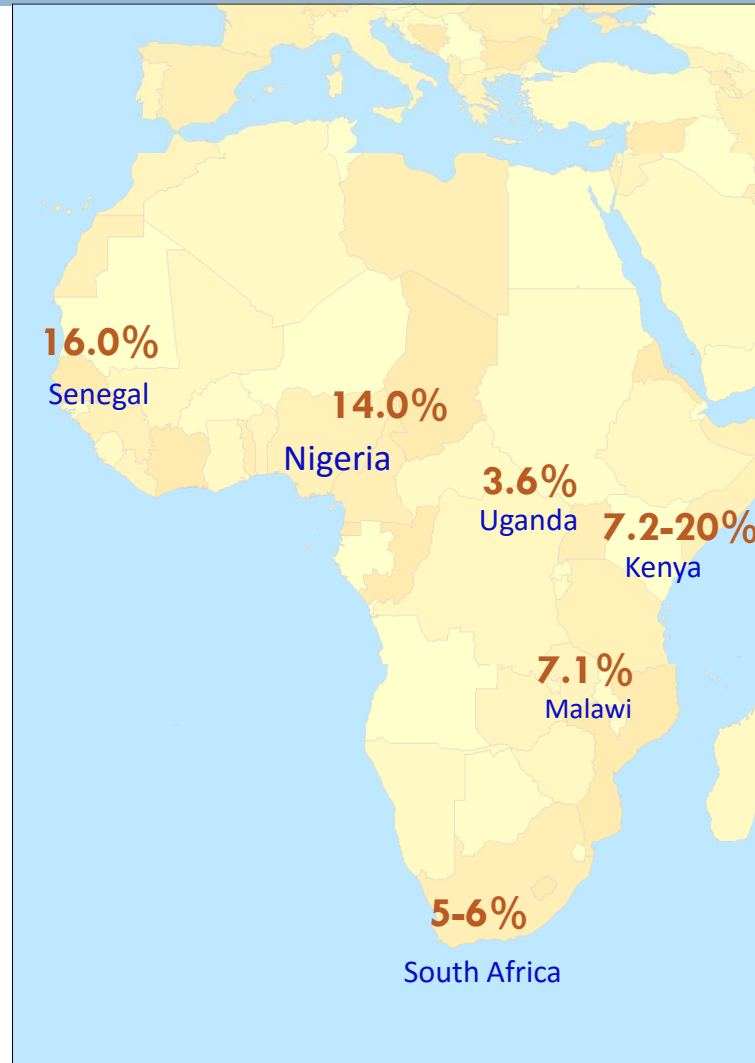
Global HIV Prevalence among MSM, 2007-2012



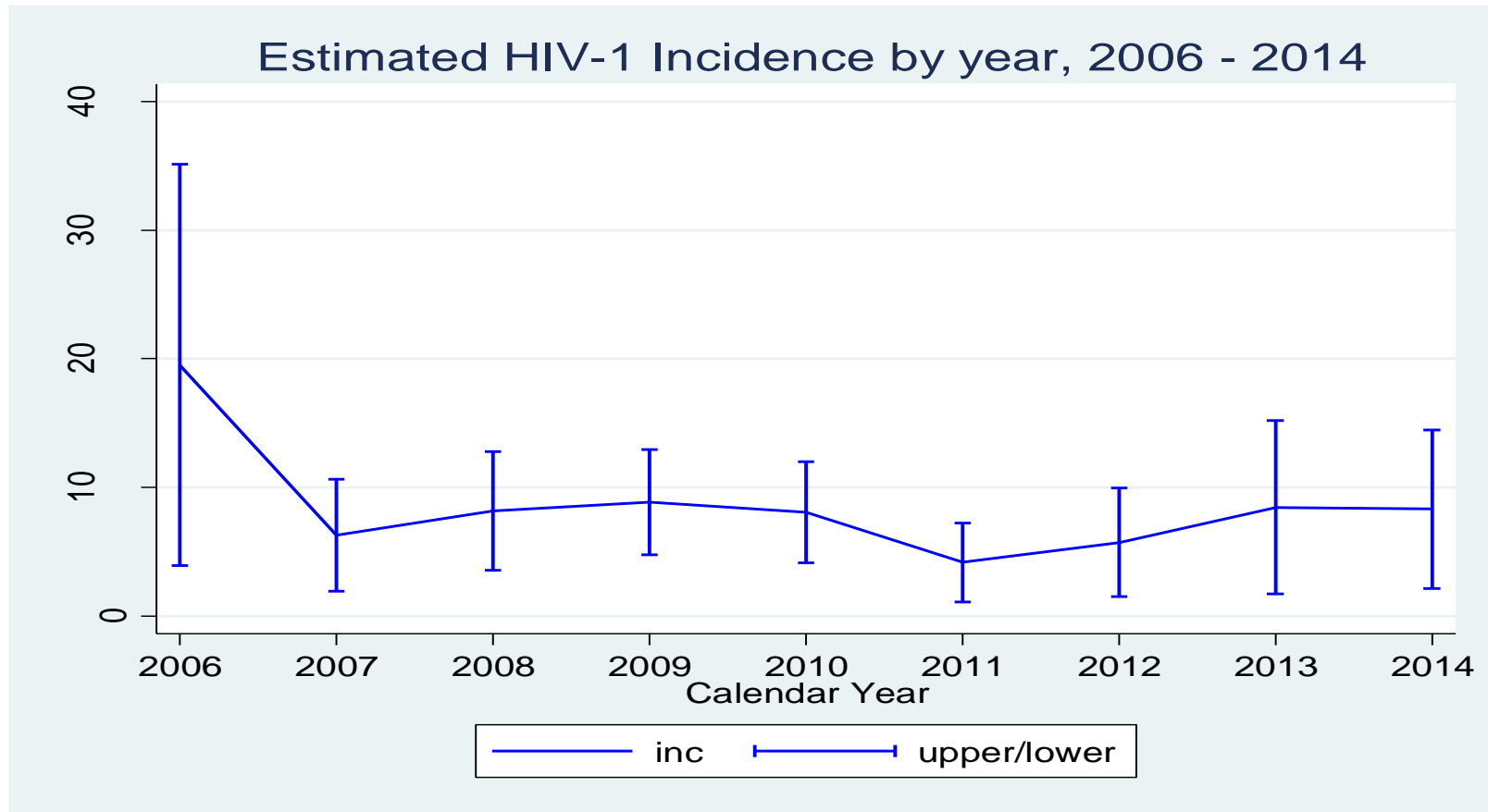
HIV Prevalence among MSM in Africa



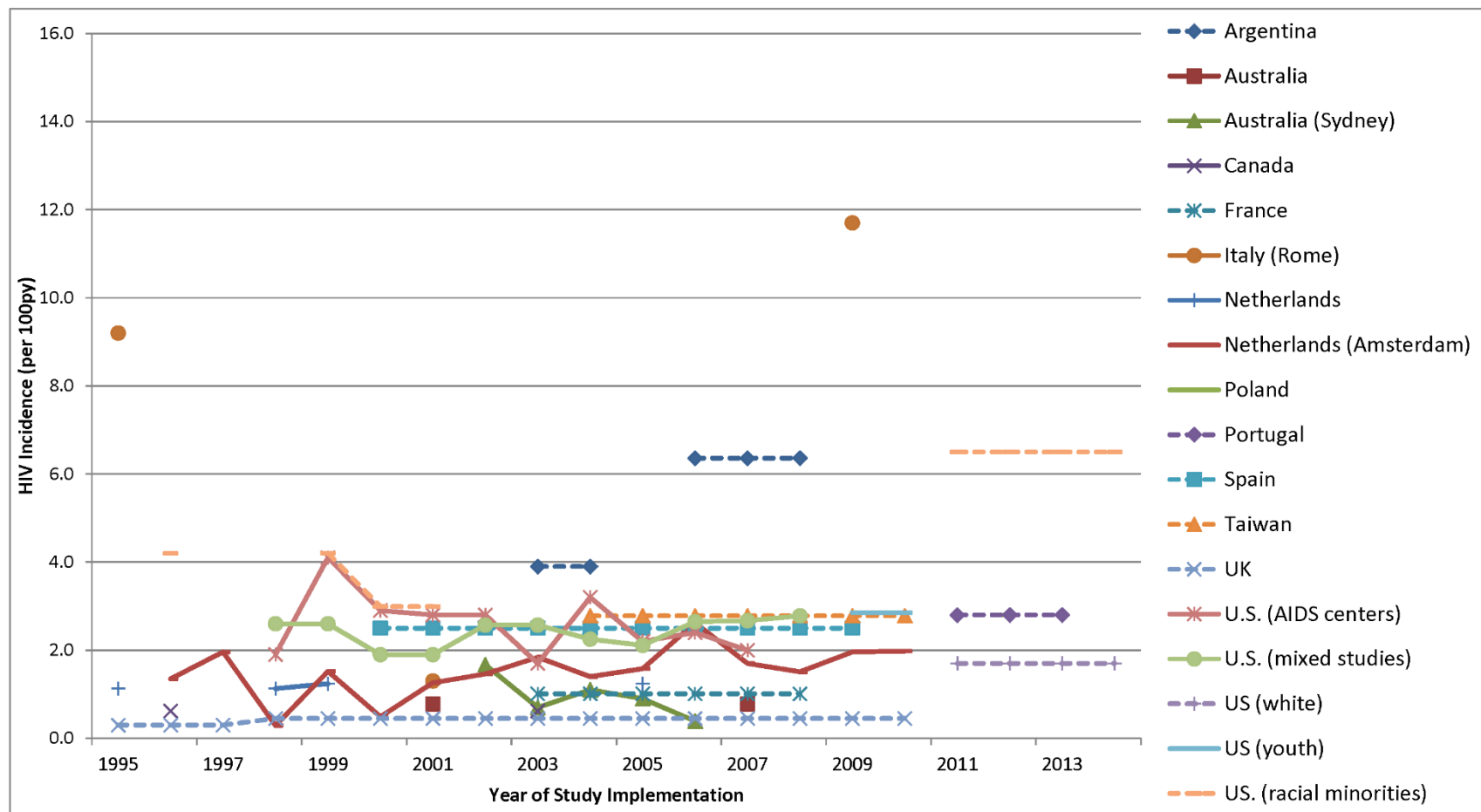
HIV Incidence among MSM in Sub-Saharan Africa



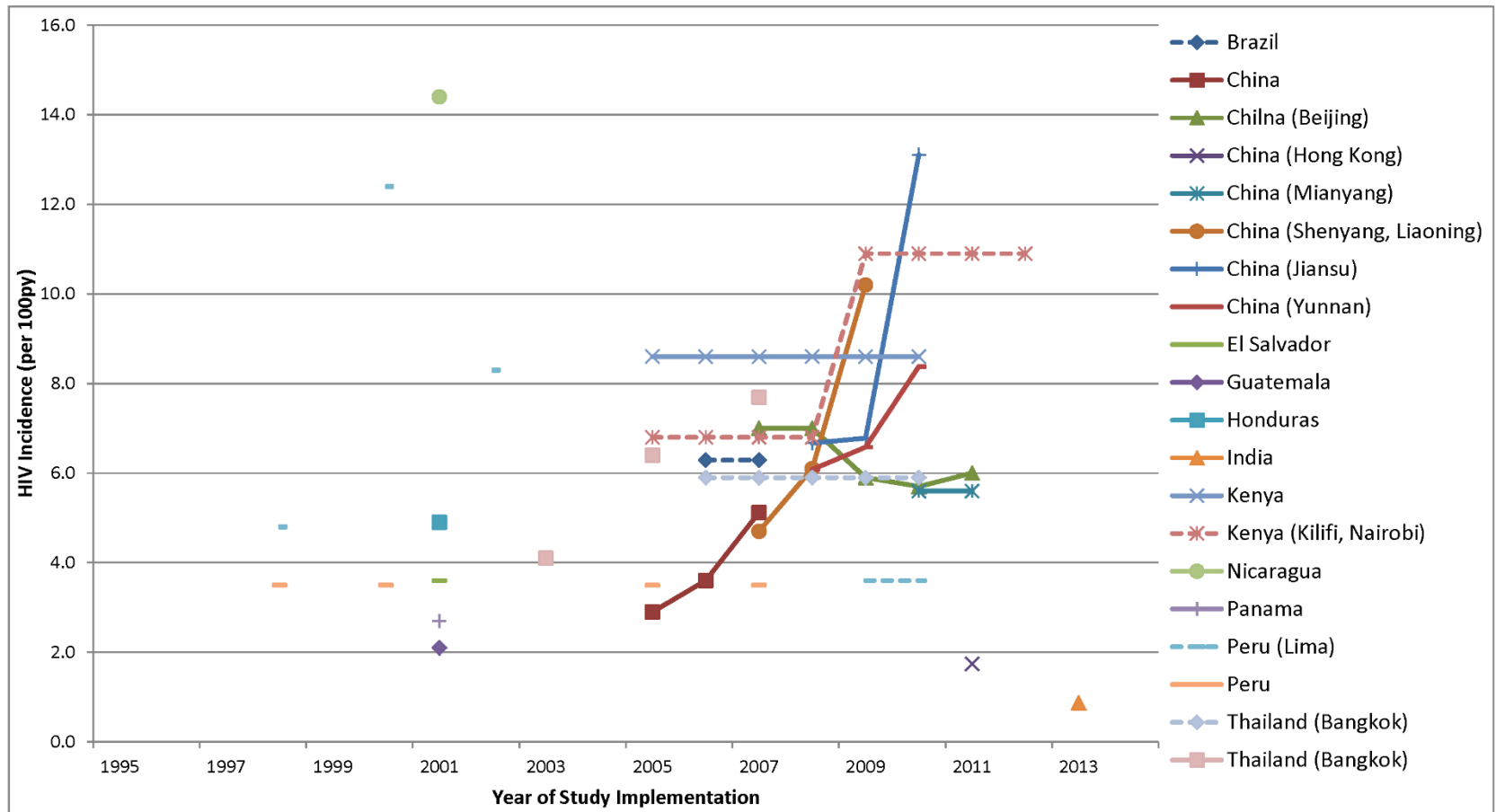
HIV Incidence among MSM in Kilifi, Kenya



HIV Incidence among MSM in High Income Countries, 1995-2015

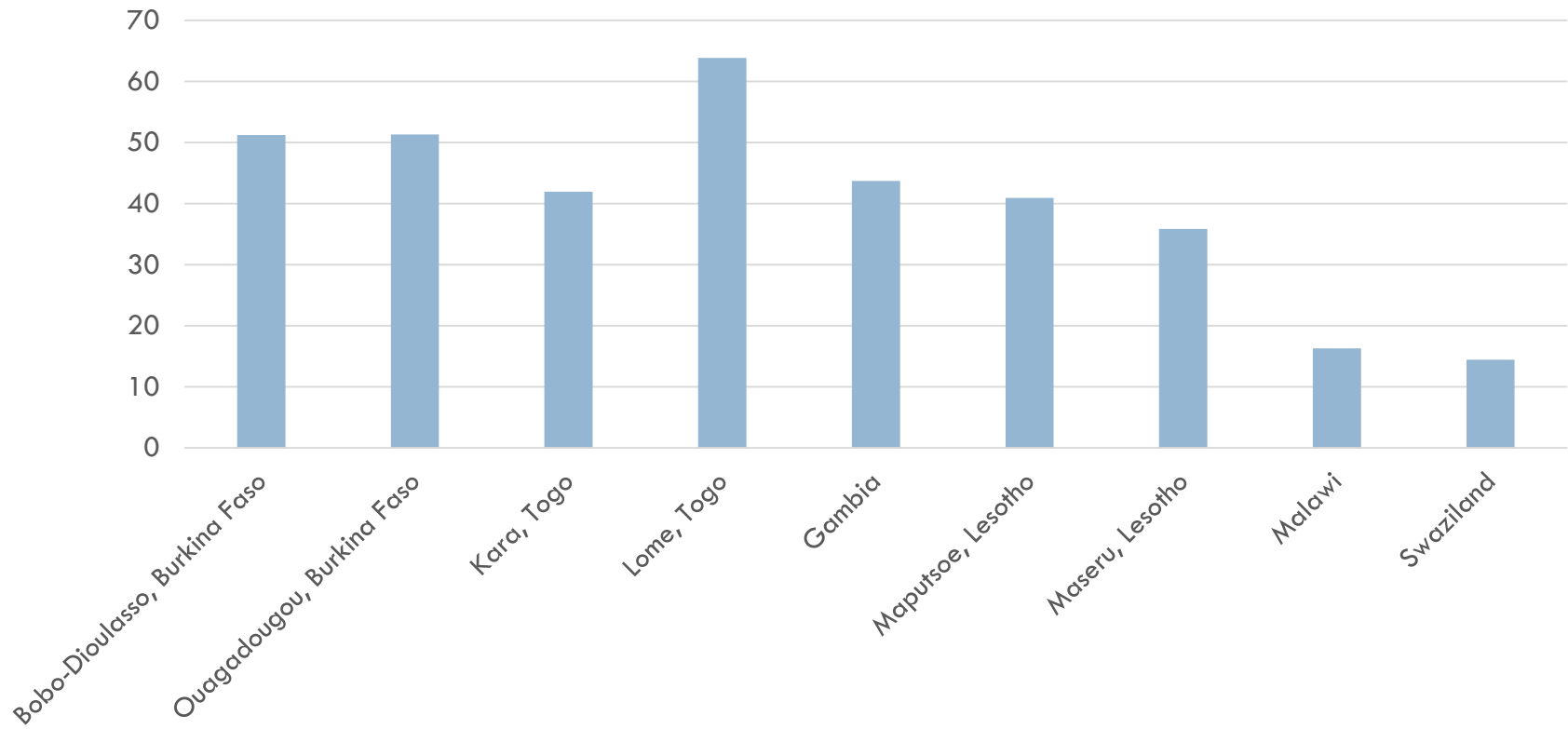


HIV Incidence among MSM in Low and Middle Income Countries, 1995-2015

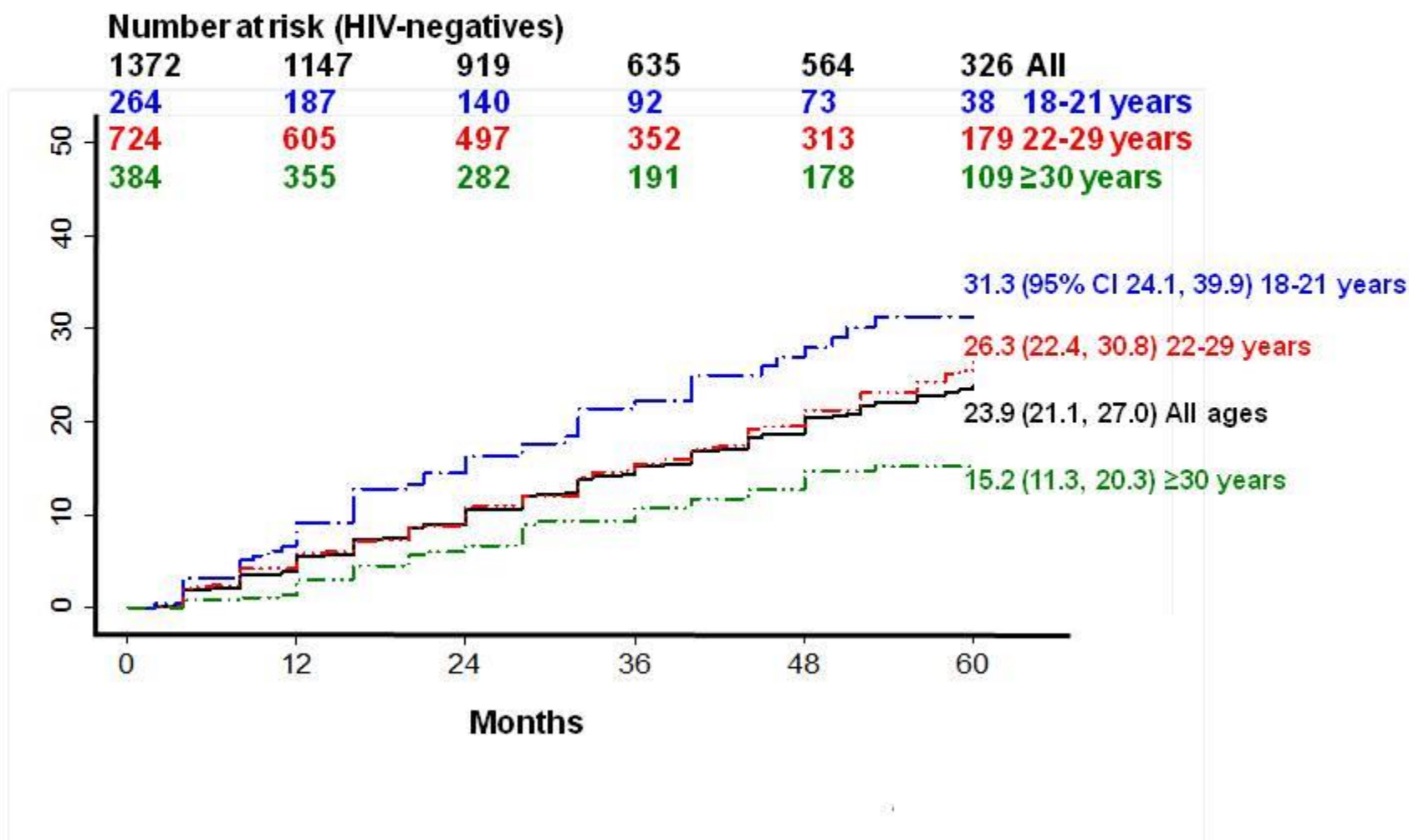


Adolescent MSM

Percentage of participants who had anal sex with a man before age 18



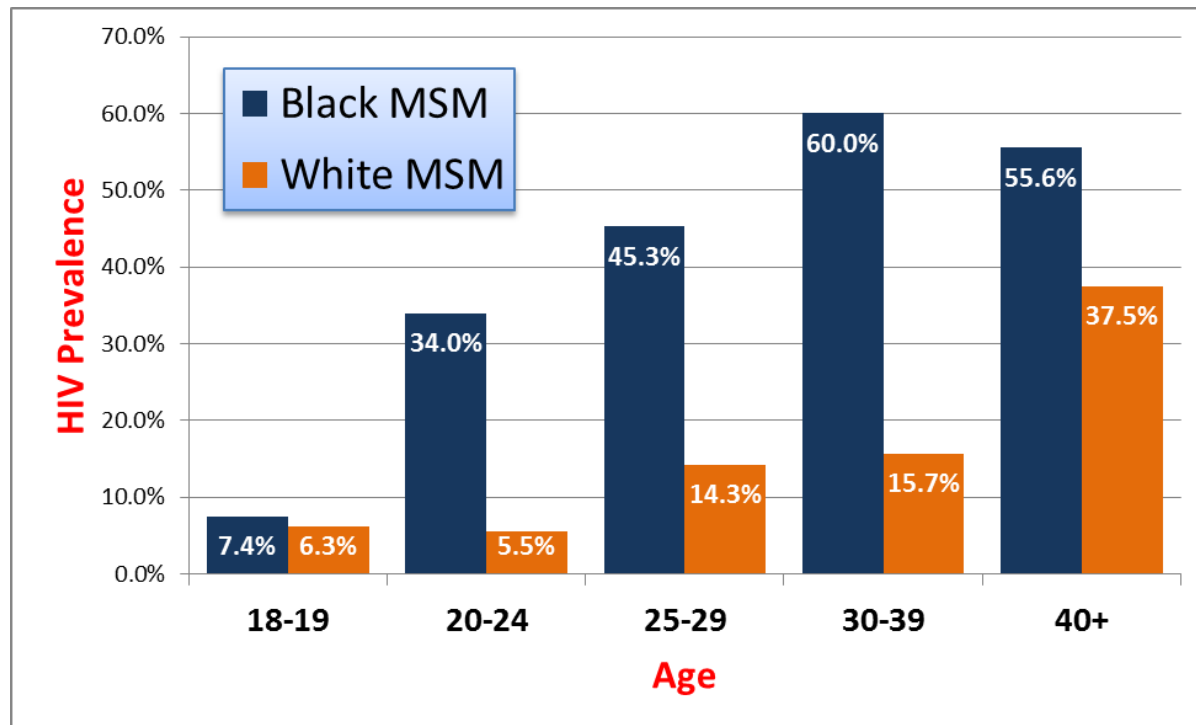
Sixty months cumulative HIV incidence in a cohort of men who have sex with men, Bangkok, Thailand, 2006 – 2012, by age group



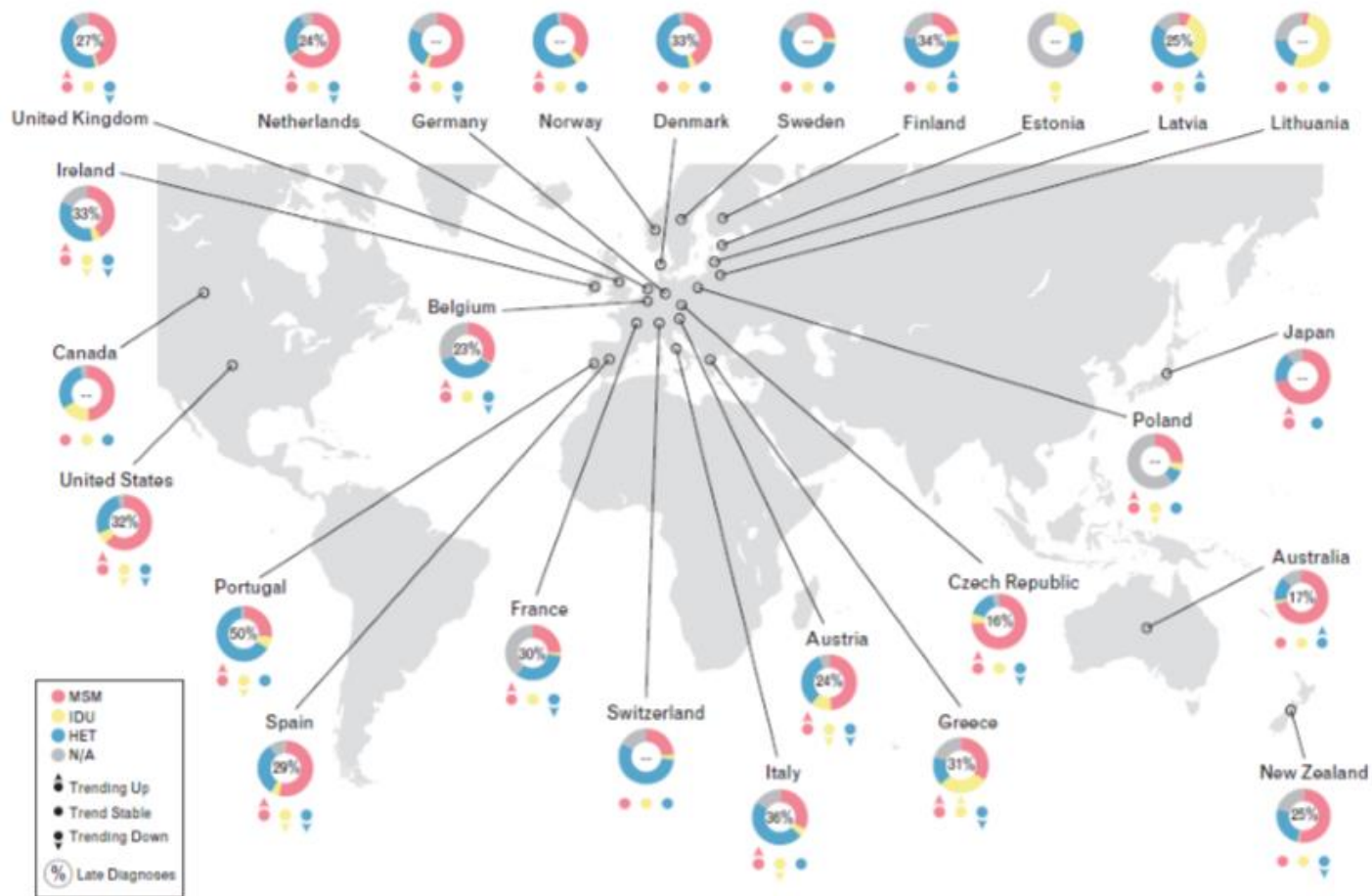
HIV prevalence, by race and age in InvolveMENT Cohort in Atlanta

Black MSM: 44%

White MSM: 13%



Late HIV Diagnoses



Estimated Number of People Who Inject Drugs by Region 2013

Region	Subregion	Injecting drug users					
		Estimated number			Prevalence (%)		
		Low	Best	High	Low	Best	High
AFRICA		304,925	997,574	6,608,038	0.05	0.17	1.12
AMERICA		2,908,787	3,427,561	4,019,041	0.47	0.55	0.64
	North America	1,935,144	2,006,470	2,101,572	0.63	0.65	0.68
	Latin America and the Caribbean	973,643	1,421,091	1,917,468	0.31	0.45	0.61
ASIA		4,328,212	5,692,005	7,031,647	0.16	0.20	0.25
	Central Asia and Transcaucasia	659,582	699,191	758,421	1.25	1.33	1.44
	East and South-East Asia	2,959,863	3,786,472	4,677,484	0.19	0.25	0.30
	Near and Middle East/ South-West Asia	462,269	952,948	1,334,013	0.17	0.36	0.50
	South Asia	246,498	253,394	261,729	0.03	0.03	0.03
EUROPE		3,553,859	3,777,948	4,156,492	0.64	0.68	0.75
	Eastern/South-Eastern Europe	2,821,599	2,907,484	2,987,155	1.23	1.26	1.30
	Western/Central Europe	732,260	870,464	1,169,337	0.23	0.27	0.36
OCEANIA		118,628	128,005	158,919	0.49	0.53	0.66
GLOBAL		11,214,411	14,023,092	21,974,136	0.24	0.31	0.48

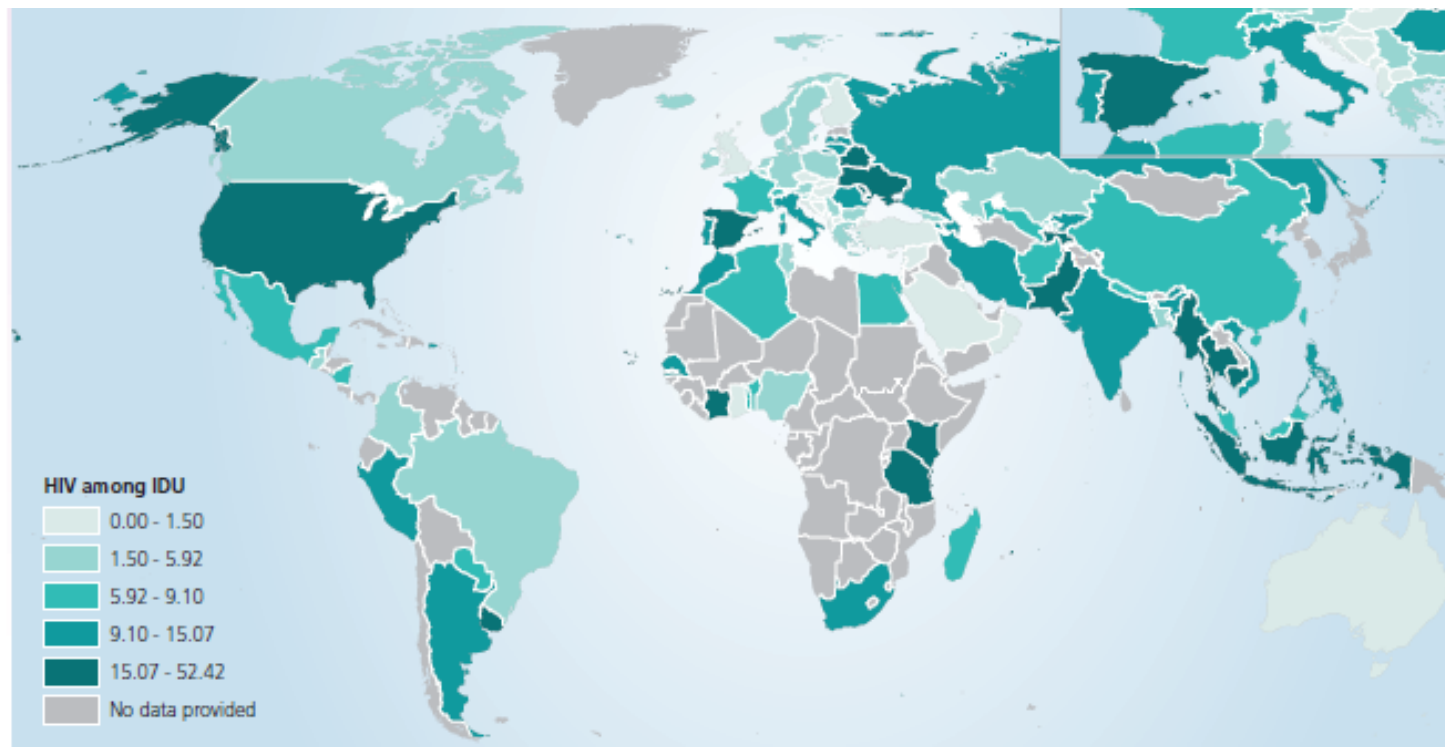
Sources: United Nations Office on Drugs and Crime, data from the annual report questionnaire; progress reports of the Joint United Nations Programme on HIV/AIDS (UNAIDS) on the global AIDS response (various years); the Reference Group to the United Nations on HIV and Injecting Drug Use; estimates based on United Nations Office on Drugs and Crime data; and national Government reports.

HIV Prevalence among People Who Inject Drugs, 2011

Region	Subregion	HIV among injecting drug users			
		Estimated number		Prevalence (%)	
		Low	Best	High	
AFRICA		36,506	117,502	1,837,542	11.8
AMERICA		222,053	369,445	560,134	10.8
	North America	159,836	270,749	383,041	13.5
	Latin America and the Caribbean	62,217	98,696	177,093	6.9
ASIA		440,559	637,271	928,476	11.2
	Central Asia and Transcaucasia	54,858	59,193	71,352	8.5
	East and South-East Asia	256,396	328,101	519,982	8.7
	Near and Middle East/South-West Asia	108,539	228,765	315,430	24.0
	South Asia	20,767	21,212	21,712	8.4
EUROPE		466,243	492,054	532,304	13.0
	Eastern/South-Eastern Europe	419,715	433,836	448,183	14.9
	Western/Central Europe	46,528	58,217	84,120	6.7
OCEANIA		1,095	1,308	1,635	1.0
GLOBAL		1,166,456	1,617,580	3,860,091	11.5

Source: United Nations Office on Drugs and Crime, data from the annual report questionnaire; progress reports of the Joint United Nations Programme on HIV/AIDS (UNAIDS) on the global AIDS response (various years); the Reference Group to the United Nations on HIV and Injecting Drug Use; estimates based on United Nations Office on Drugs and Crime data; and national Government reports.

HIV prevalence among PWID in 2011



Source: United Nations Office on Drugs and Crime, data from the annual report questionnaire; progress reports of the Joint United Nations Programme on HIV/AIDS (UNAIDS) on the global AIDS response (various years); the Reference Group to the United Nations on HIV and Injecting Drug Use; estimates based on United Nations Office on Drugs and Crime data; and national Government reports.

Note: The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent unconfirmed boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined.

Increasing Drug Trade in West Africa

TUESDAY 27 MAY 2014 Français



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West Africa: the new theatre in US war on drugs
(AFP (eng) 06/21/13)

International wire news

'Poison plot' accused released from prison in Benin - AFP - 05/20/14

Benin's president pardons 'poison plot' suspects - AFP - 05/15/14

West African funk band mounts stunning comeback - AFP - 03/23/14

Former slave trade town seeks to become African art hub - AFP - 02/28/14

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Benin president names new



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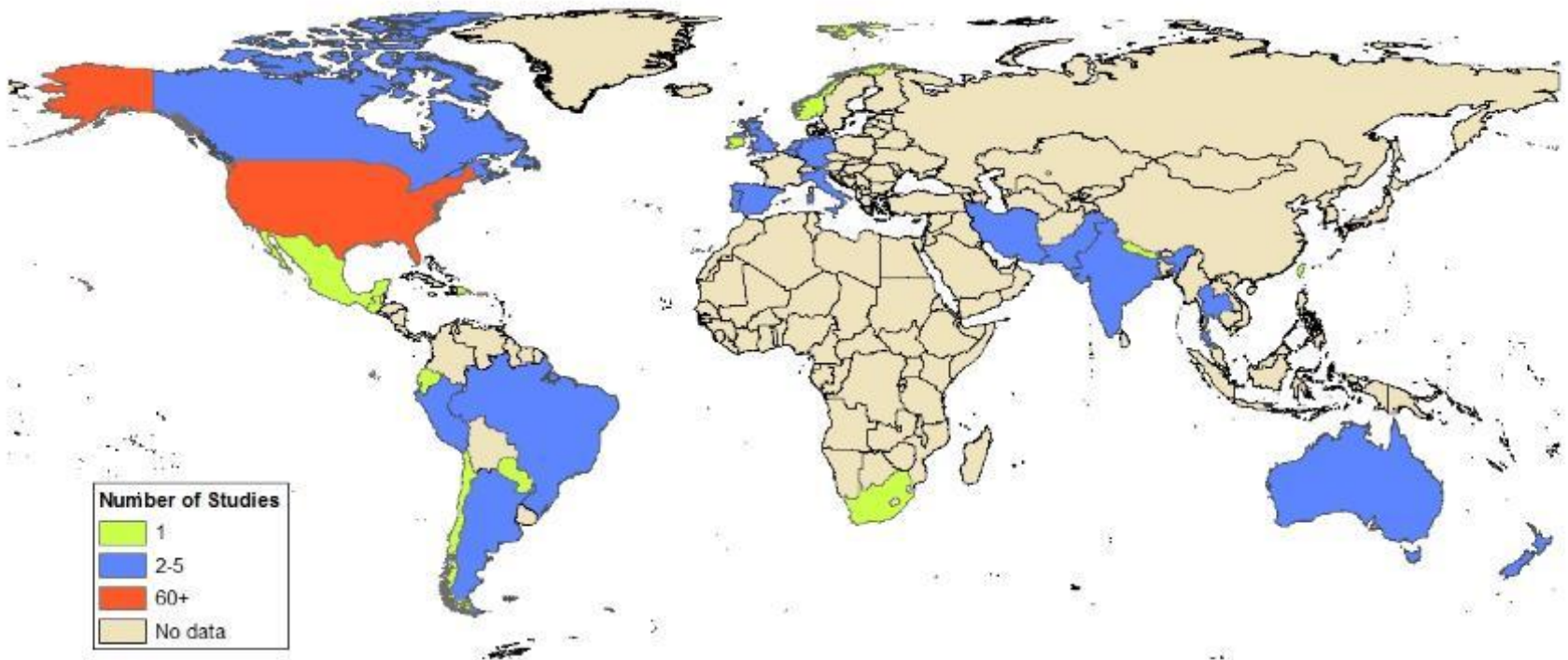
Commission Calls Drug War a Failure and for Treating Drug Use as Health Issue

The Cocaine Crisis: How the Drug Trade Is Ruining West Africa

By Alex Perry / Bissau and Bamako | Monday, Oct. 22, 2012

Global Distribution of Transgender Health Research

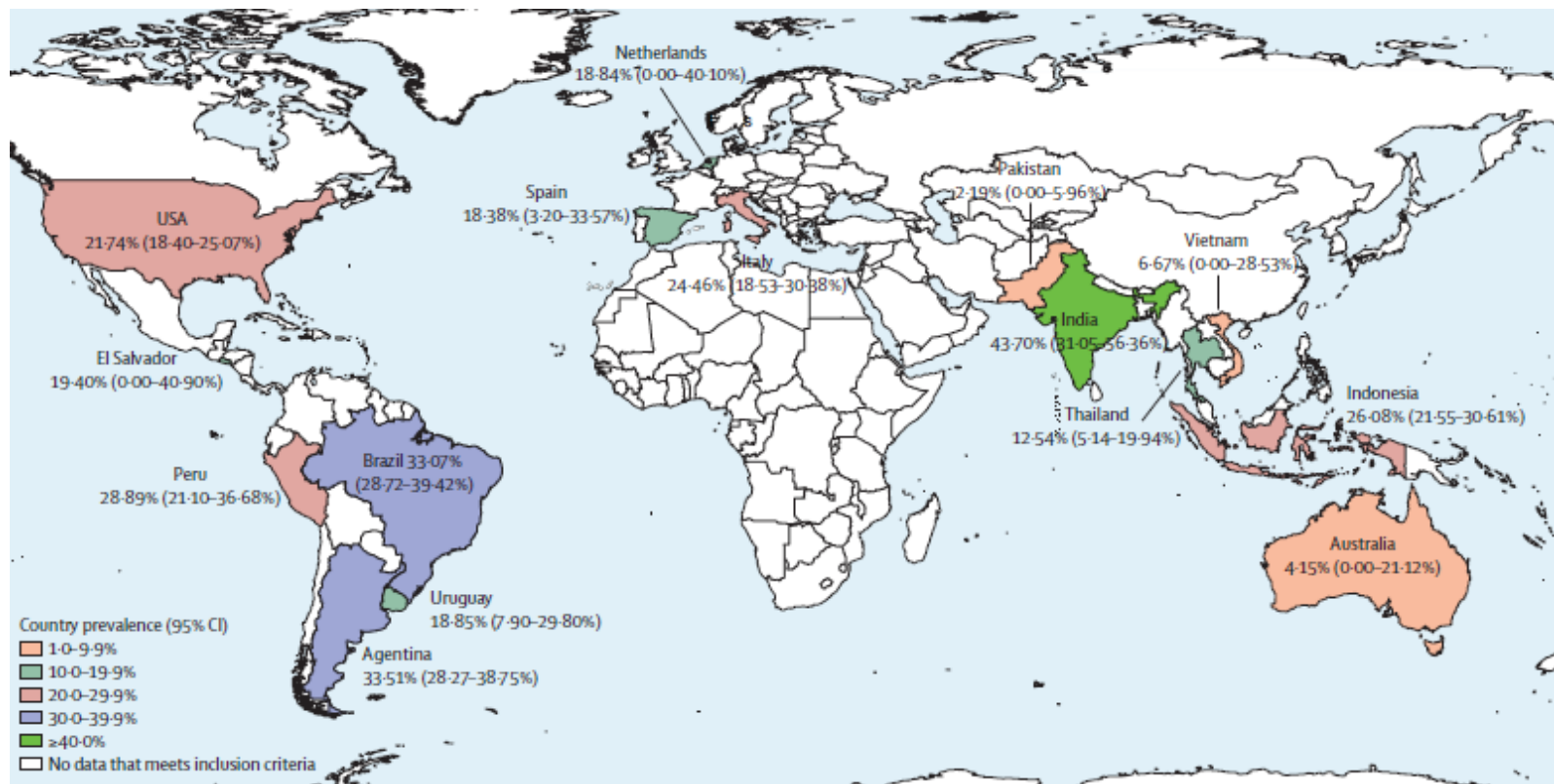
What do we know and where?



Population Studies Yielding Prevalence Data for Transgender People

Author, Date, country	Sample	Measure	Prevalence Data		
			Birth Assigned Males (%)	Birth Assigned Females	All
Conron, 2012, USA	28662 Adults	Identification as Transgender	0.5	0.4	0.5
Glen and Hurrell, 2012, UK	10039 Adults	Identification as other gender or in another way	0.6	0.4	0.5
Clark, 2014, New Zealand	8166 High School Students	Identification as transgender	1.3	1.2	1.2
Kuyper and Wijsen, 2014, Netherlands	8064 Adults	Identification gender spectrum	1.1	0.8	0.9
Van Caenergen, 2015, Belgium	1832 Adults	Identification gender spectrum	0.7	0.6	0.6

Burden of HIV among Transgender Women

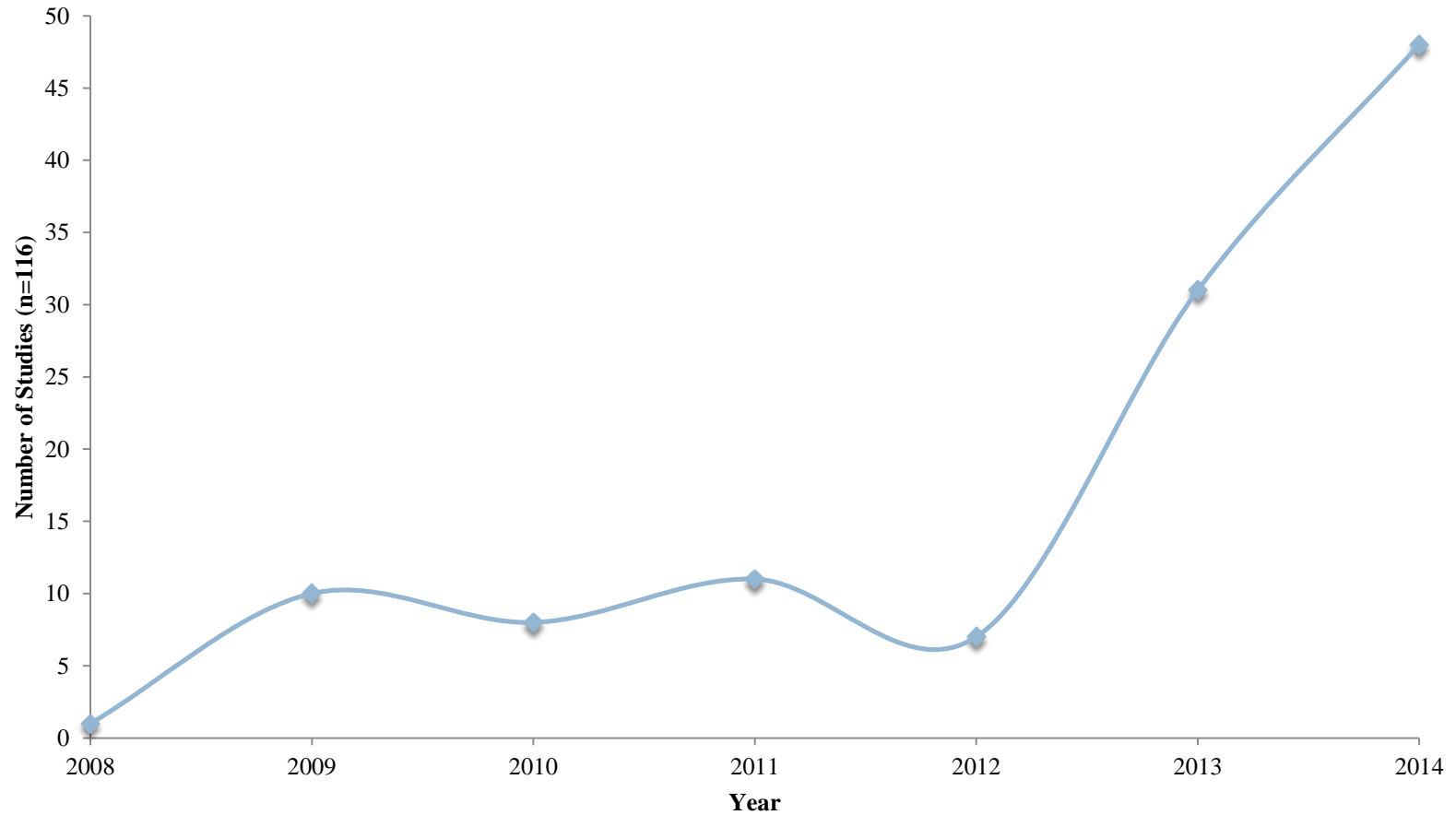


- Pooled OR for HIV infection among transgender women compared to other reproductive people
 - 48.8 (95% CI 31.2-76.3)

Transgender Women across Sub-Saharan Africa

- Very rare for people to identify as transgender, but more common to identify as women using two-step gender assessment in studies focused on MSM
 - ▣ 16% In Burkina Faso
 - ▣ 19% In Malawi
 - ▣ 25.5% in Swaziland (aOR for HIV 3.96 [1.66-9.43])
 - ▣ 8% In Lesotho ($p < 0.05$ for HIV)

Transgender Health Research by Year



HIV Surveillance

□ 1989

□ WHO First Recommendations on HIV Surveillance

- Focused nearly exclusively on general population
 - One size fits all
 - Sentinel Surveillance
 - Antenatal Clinics (ANC)
 - No tracking of behavior

□ 2000

□ Second Generation HIV Surveillance

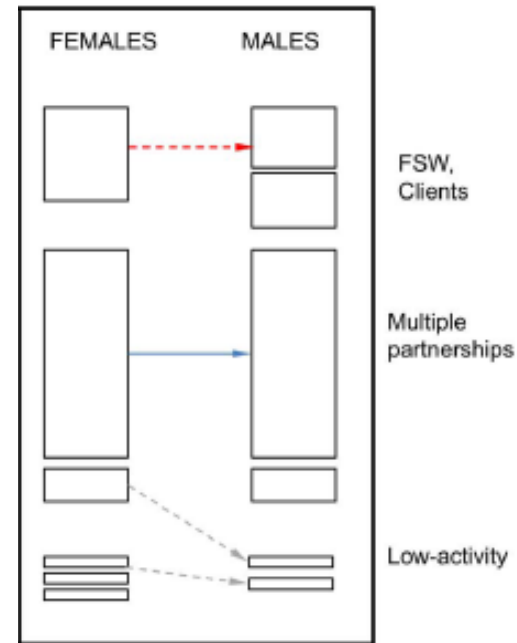
- Targeted Surveillance Strategy
 - Categorized HIV Epidemics
 - Low Level
 - Less than 5% in any most at risk population (IDU, SW, MSM, country-specific MARPS)
 - Less than 1% in ANC
 - Concentrated
 - Greater than 5% in any most at risk population
 - Less than 1% in ANC
 - Generalized
 - Greater than 1% in ANC (changed 2013 to remove the 1%)
- Passive Case-Based Surveillance, Active Surveillance (+Demographic Health Surveys, AIDS Indicator Surveys, etc)

□ 201...

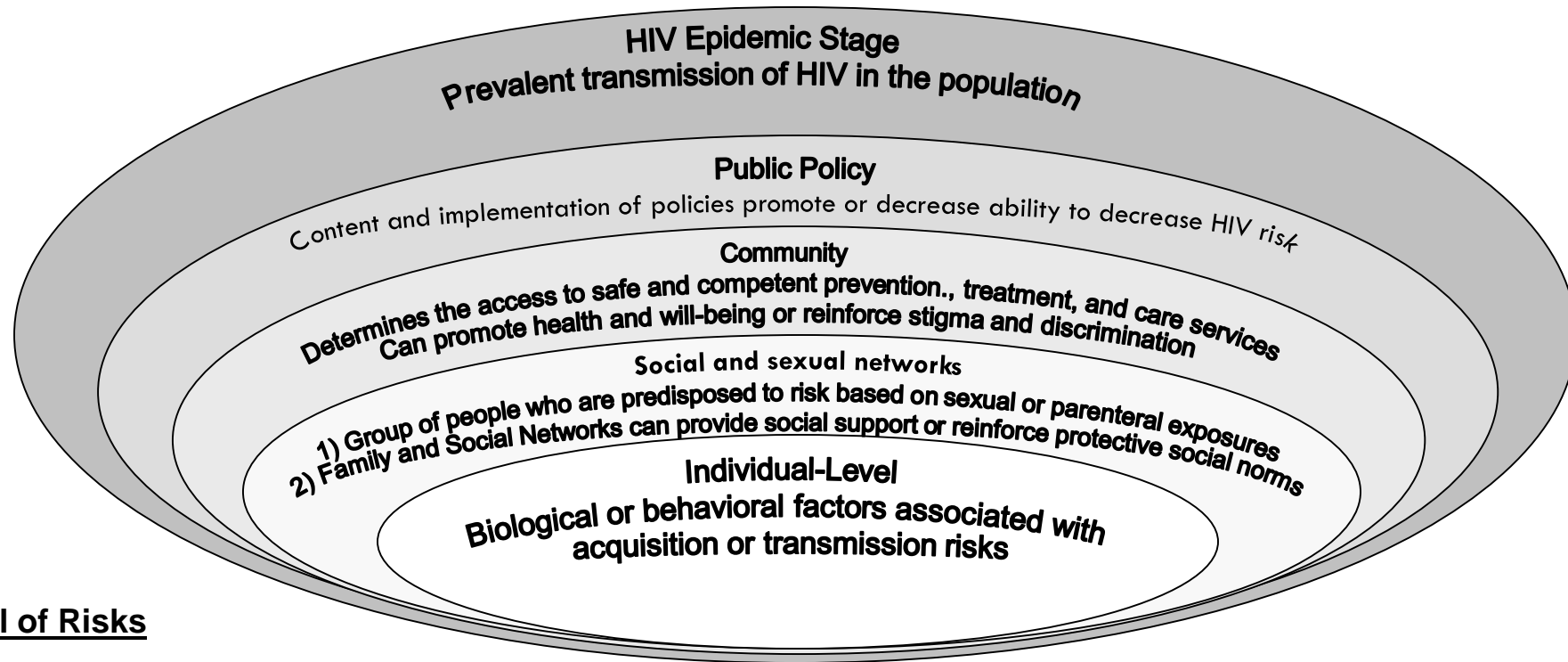
□ Third Generation Surveillance

Modes of Transmission Studies

C Generic MOT model



Levels of HIV Acquisition and Transmission Risks



Level of Risks

Stage of Epidemic

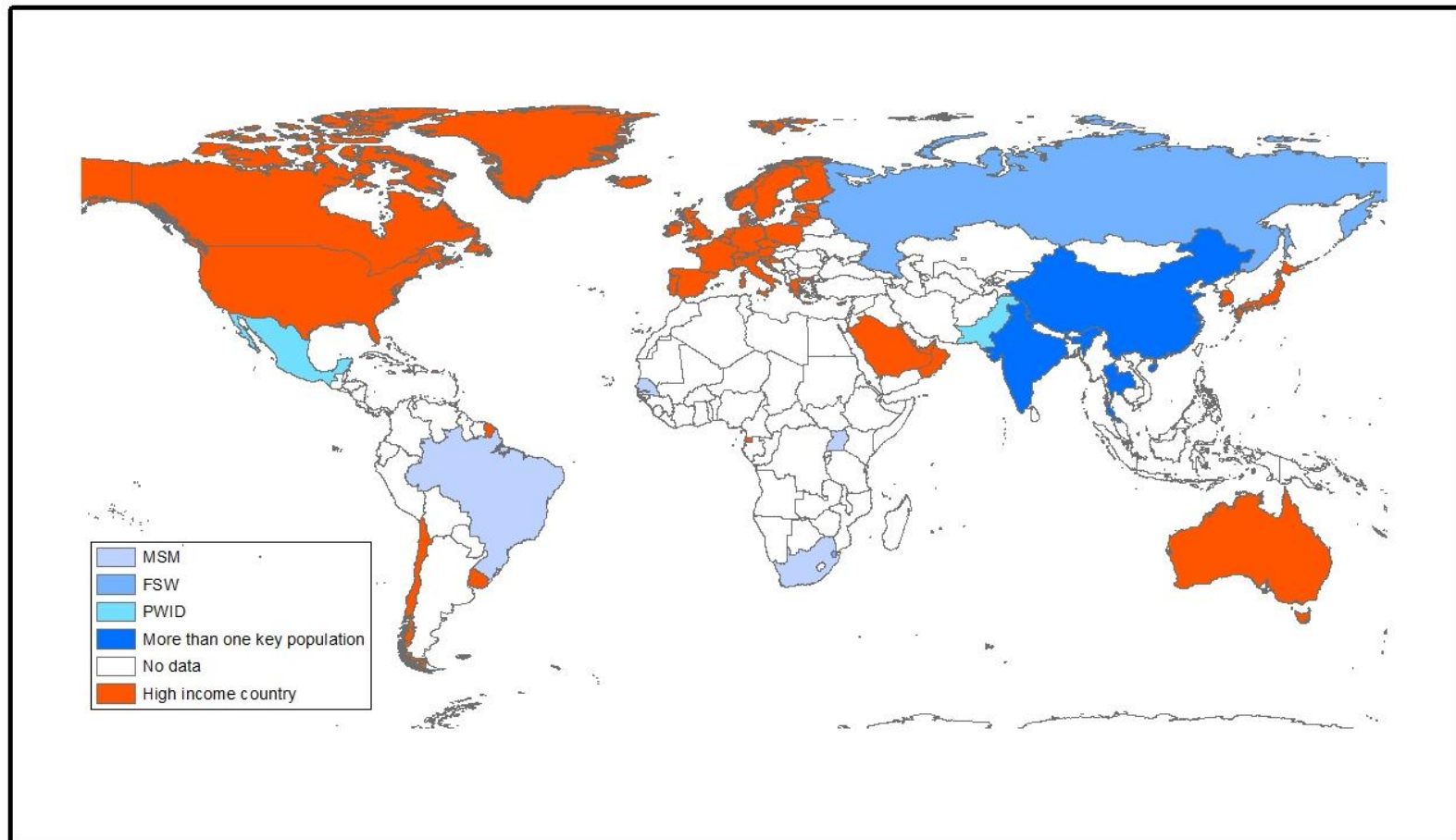
Public Policy

Community

Network

Individual

Studies focused on Structural Determinants of HIV risk among key populations in LMIC, 2000-2014



Source: Baral, et al. Enhancing benefits or increasing harms: community responses for HIV among men who have sex with men, transgender women, female sex workers, and people who inject drugs. JAIDS. 2014

STIs among MSM in South Africa and Nigeria

□ STI among MSM in Nigeria

▣ Lagos

■ Gonorrhea 28.1%

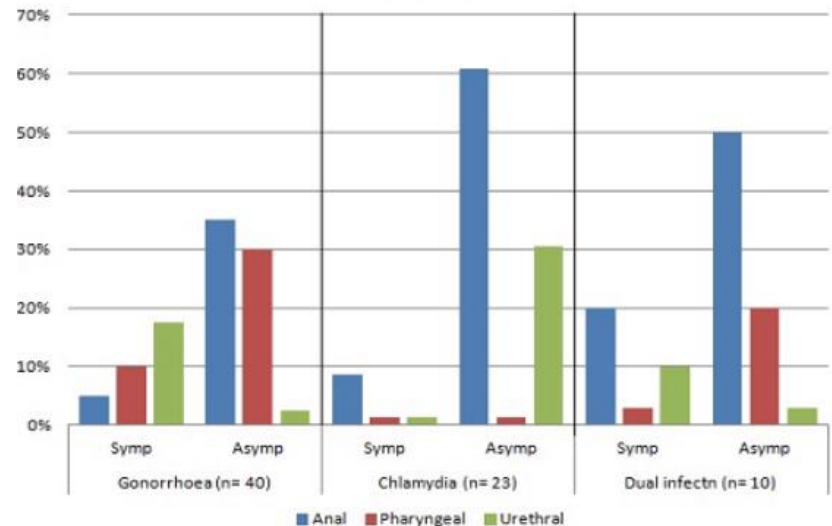
■ Chlamydia 18.3%

■ Syphilis 19.6%

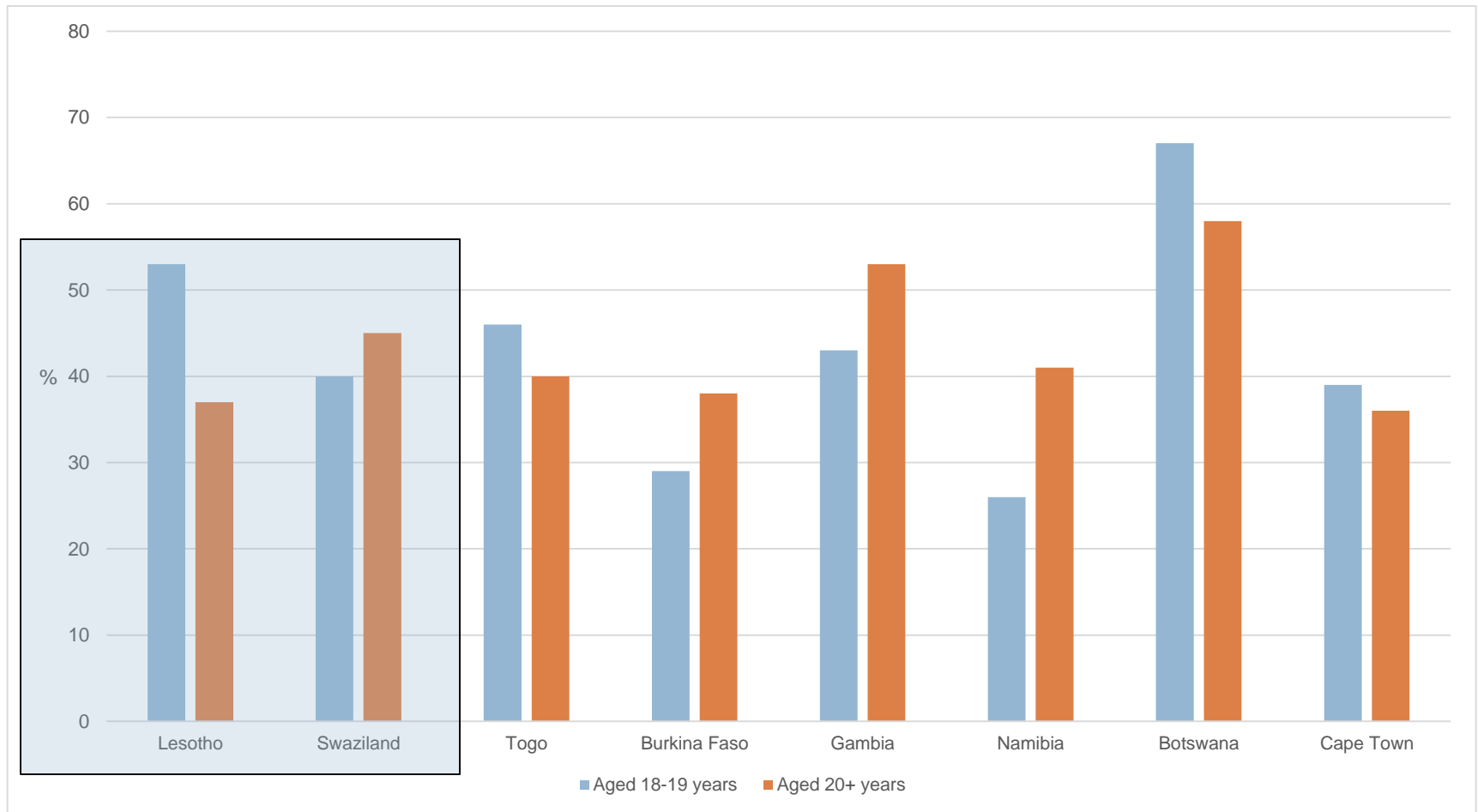
▣ All Asymptomatic

□ STI among MSM in South Africa

SSTI and ASTI (*Gonorrhoea* and *Chlamydia*) by site of infection



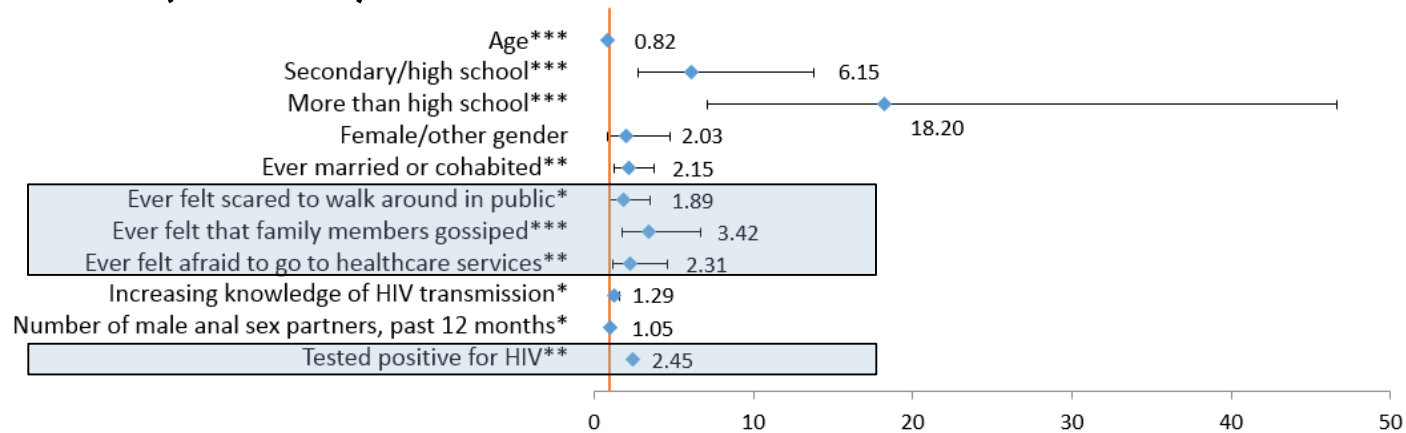
Prevalence of meeting sex partners online among MSM in SSA by country and age



Source : Stahlman, Baral, Characteristics of Men Who Have Sex with Men in Southern Africa Using the Internet to Find Sexual Partners: A Cross-Sectional Study. AIDS and Behavior

Associations of Meeting Male Sex Partners Online among MSM

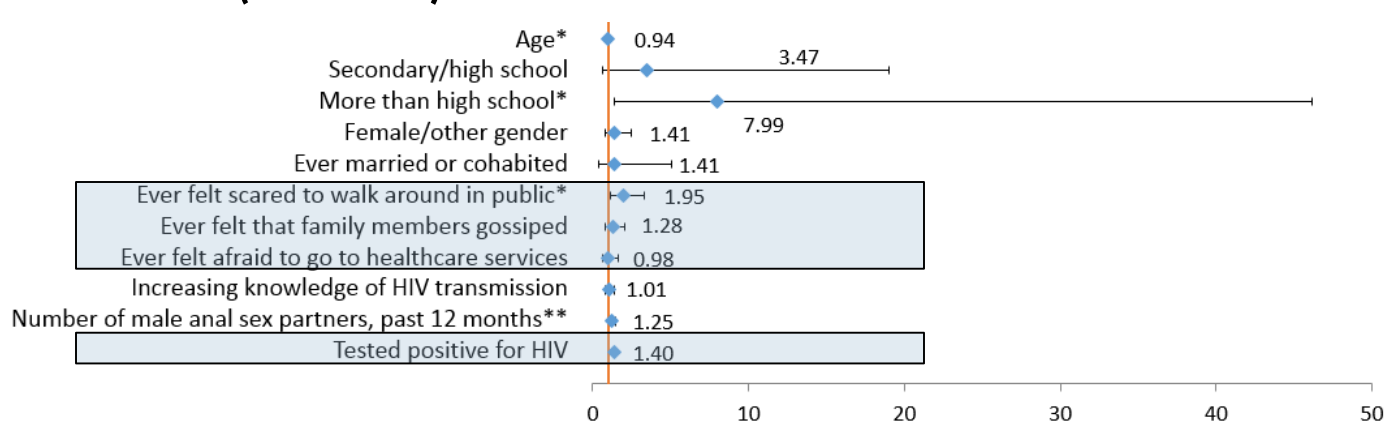
Lesotho (n=530)



*p<0.05; **p<0.01; ***p<0.001

Note: Variables entered into single logistic regression model

Swaziland (n=322)



*p<0.05; **p<0.01

Note: Variables entered into single logistic regression model

Depression and HIV/STIs among MSM in Lesotho

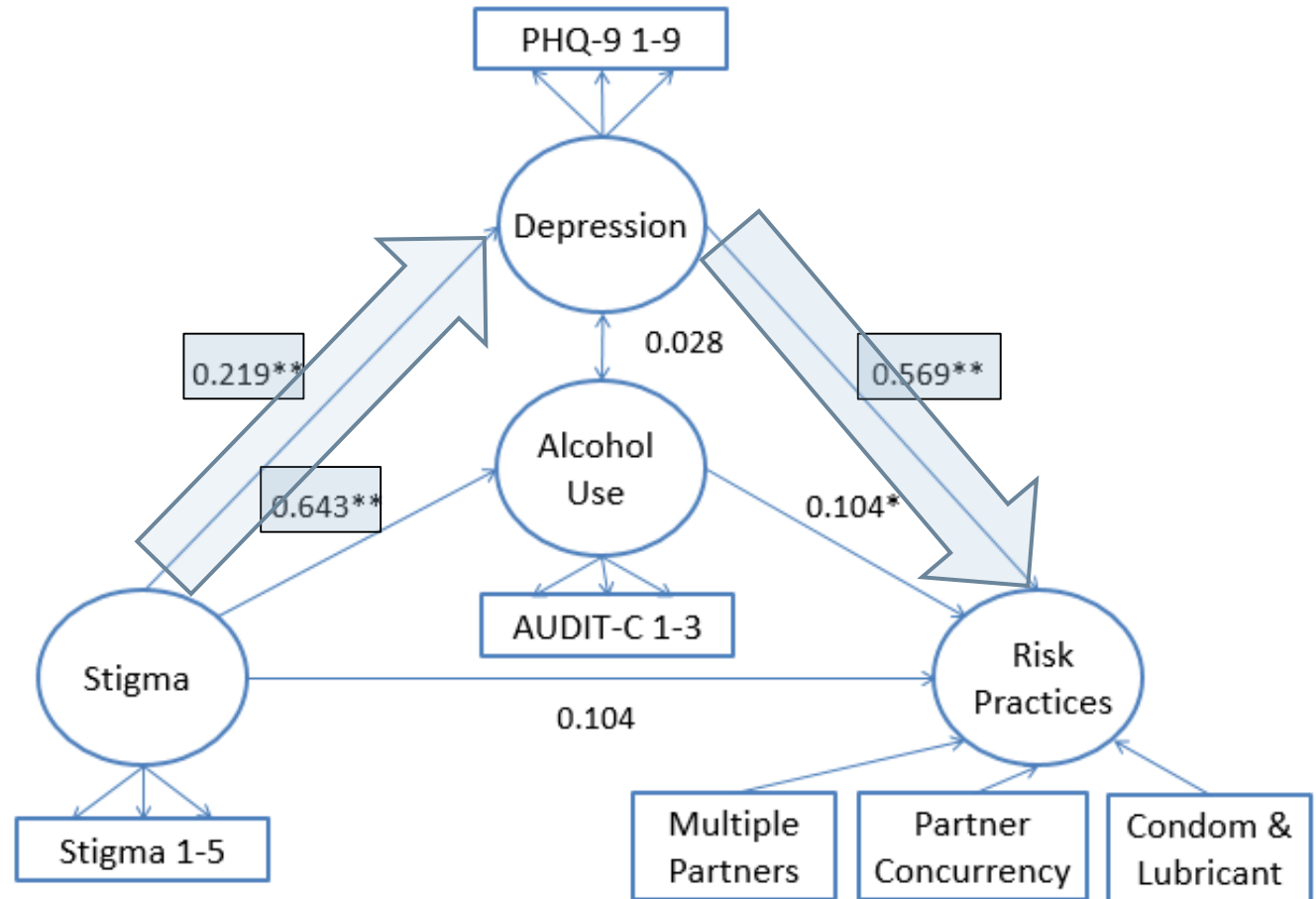
- 527 MSM completed structured survey instrument, biologic testing for HIV and Syphilis
 - ▣ Defined positive depression screen as a PHQ-9 score of 10 or more

Outcome variable	Adjusted Odds Ratio	95% Confidence Interval
Laboratory test result		
Positive for syphilis	2.75*	1.07, 7.08
Positive for HIV	1.58	0.85, 2.94
Self-report		
Diagnosed with any STI, past 12 months	2.04*	1.02, 4.06
Diagnosed with HIV, ever	1.27	0.61, 2.63

Potential Causal Pathway for Stigma and HIV-Risks

Structural Equation Model

- Indirect effect of stigma in health system on sexual risk practices
- 527 MSM from Lesotho
- * $p=0.072$; ** $p<0.01$



Combination HIV Prevention Programs

▣ Behavioural Interventions

- Increasing condom and lubricant use during sex
 - Eg. Peer Education, Risk Reduction Counselling, Adherence Counselling

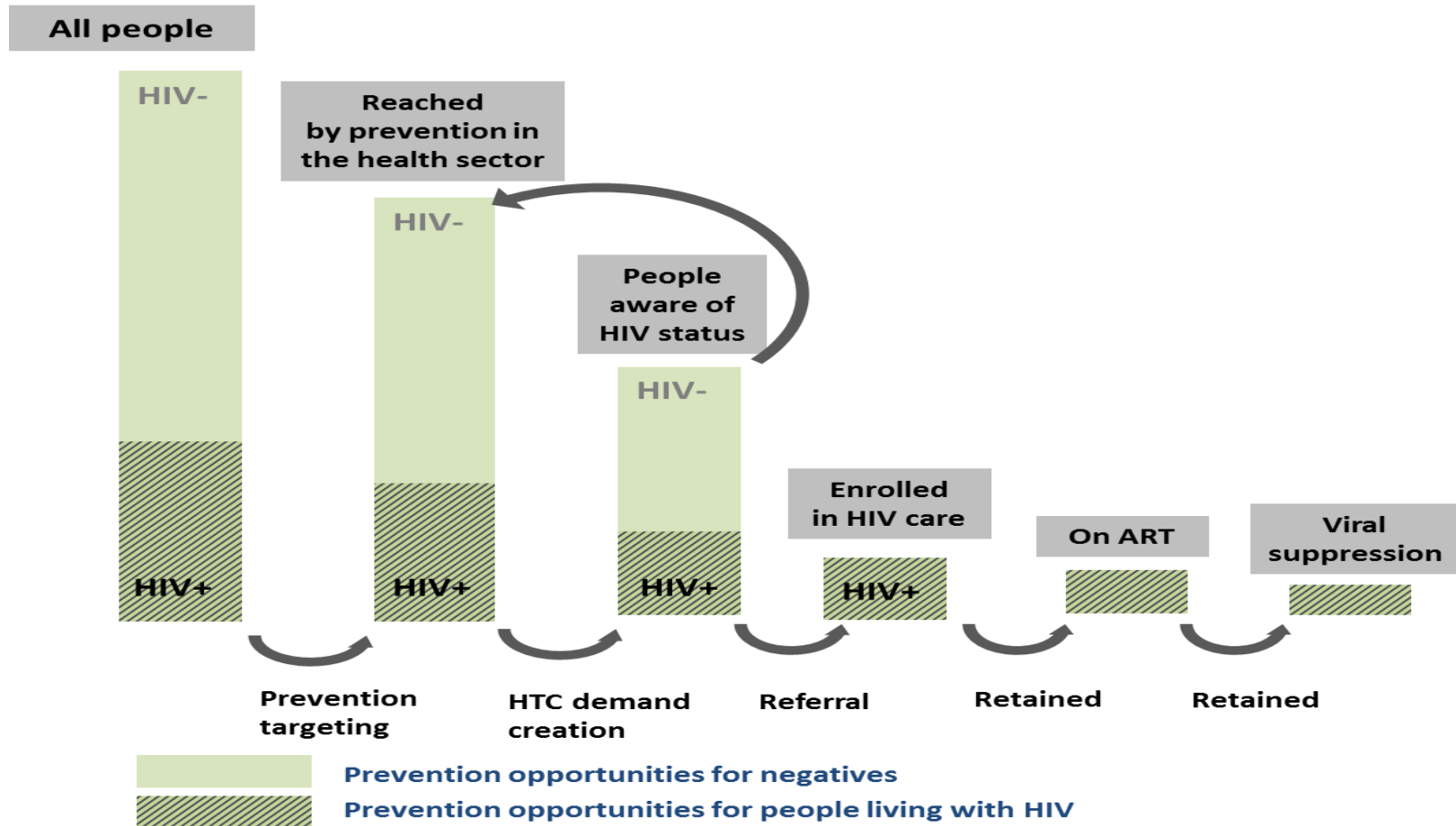
▣ Biomedical Interventions

- Biomedical interventions aim to decrease transmission and acquisition risk of sex
 - Eg. Oral or topical antiviral chemoprophylaxis, Universal Coverage of Treatment (UCT)

▣ Structural Interventions

- Focused on potentiating safe and effective provision and uptake of Biomedical and Behavioral Interventions
 - Eg. Decriminalization, Government-sponsored anti-stigma policy, Mass media engagement, Gender engagement programs, Community systems strengthening, Health Sector Interventions

Continuum of HIV Care



Prerequisites for HIV Prevention Program

□ Identification

- ▣ Must be able to Identify MSM and Sex Workers

- Willing to Self-Disclose

□ Risk Assessment

- ▣ Must be able to appropriately stratify MSM and Sex Work according to risk

- Asked about risks in a competent and sensitive manner

□ Follow Up

- ▣ Must be able to follow up participants to assess adherence and efficacy of intervention

- Safe Environment

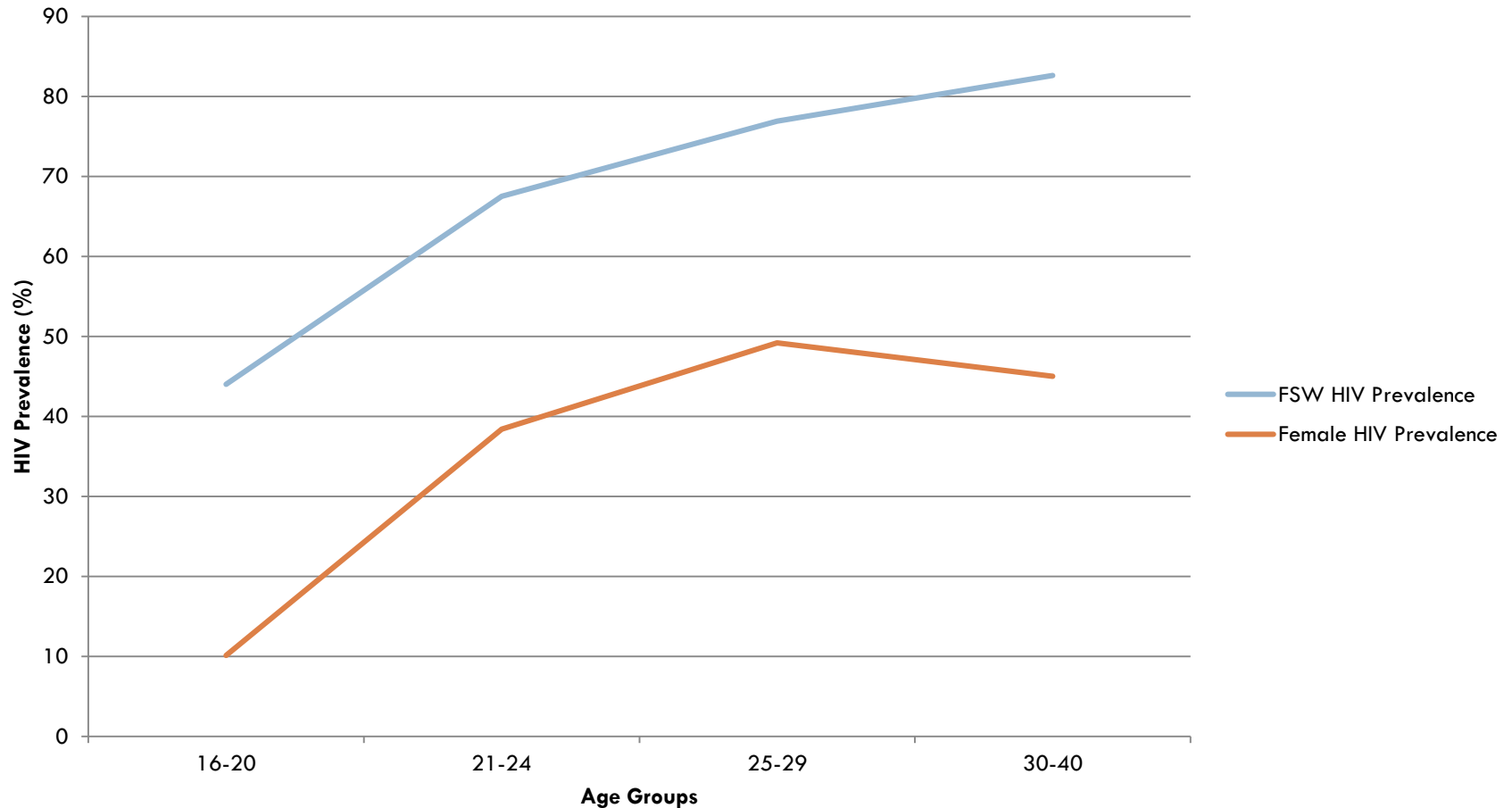
- Community Group

- Client trust in health care facility

Case Studies

- Combination HIV Prevention and Treatment and Stigma
 - ▣ Female Sex Workers in Swaziland
 - ▣ Gay men and other MSM in The Gambia

Case Study - Swaziland



Source: Central Statistical Office & Macro International, 2008, p. 222

Disclosure of Sex Work in Swaziland

		N=313	%
As a result of selling sex	Felt afraid to seek healthcare	143	44.0
	Experienced legal discrimination	152	46.8
	Been refused police protection	160	49.4
	Been blackmailed	113	34.8
	Verbal and physical harassment	198	60.9
	Have been tortured	173	53.2
	Have been beaten up	125	38.7
Have been beaten up by			
	Uniformed Officers (police, military, security)	45	20.8
	Family Member	21	9.7
	Regular Partner	16	7.4
	One time client	11	5.1
	Regular client, partner	9	4.2
	Manager/pimp	6	2.8

Associations of Disclosure of Sex Work

□ Disclosure of Sex Work to

▣ Family Member

■ 30.3% (98/325)

▣ Health Care Worker

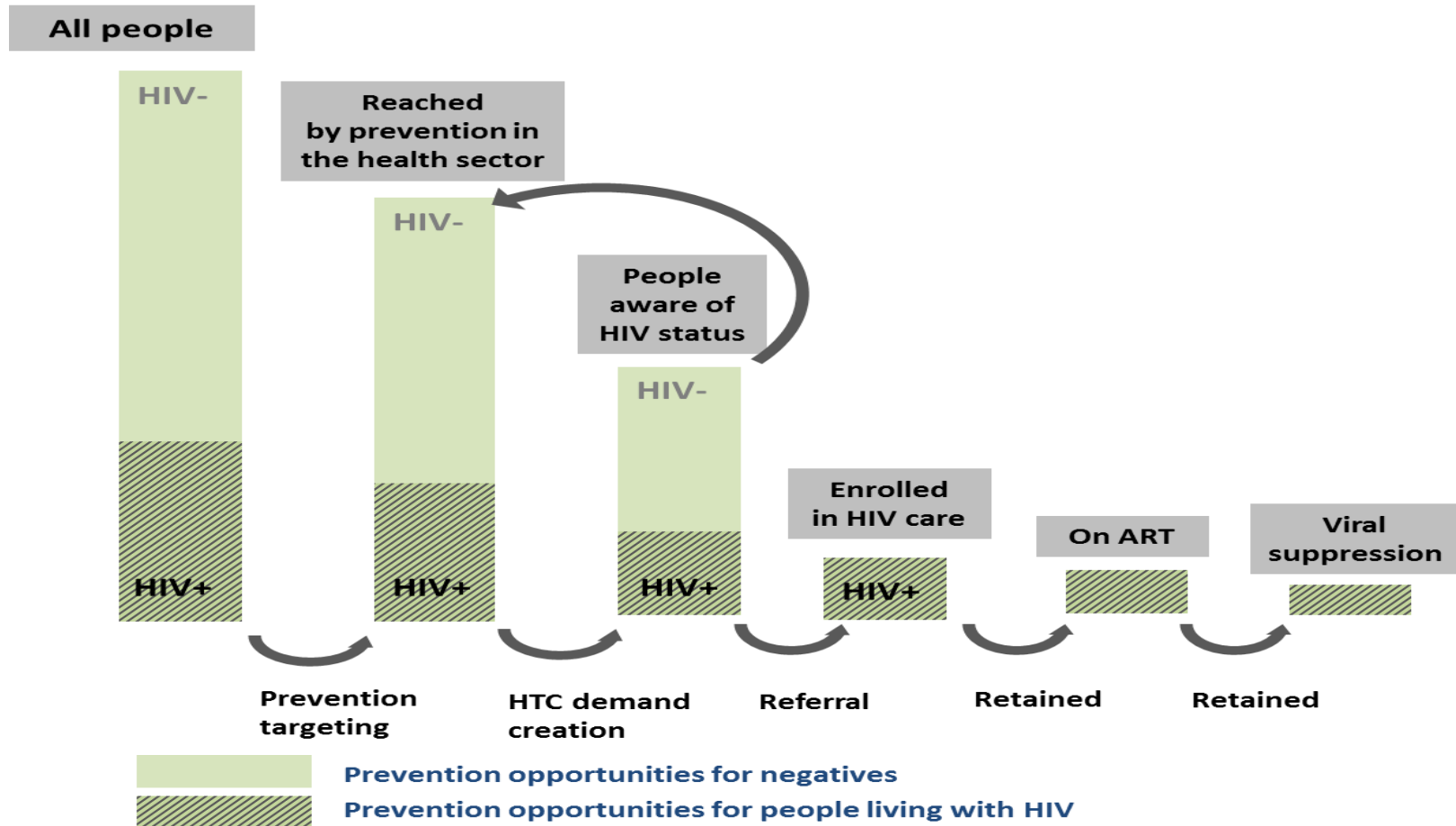
■ 25.9% (84/325)

□ Afraid to Seek Health Care

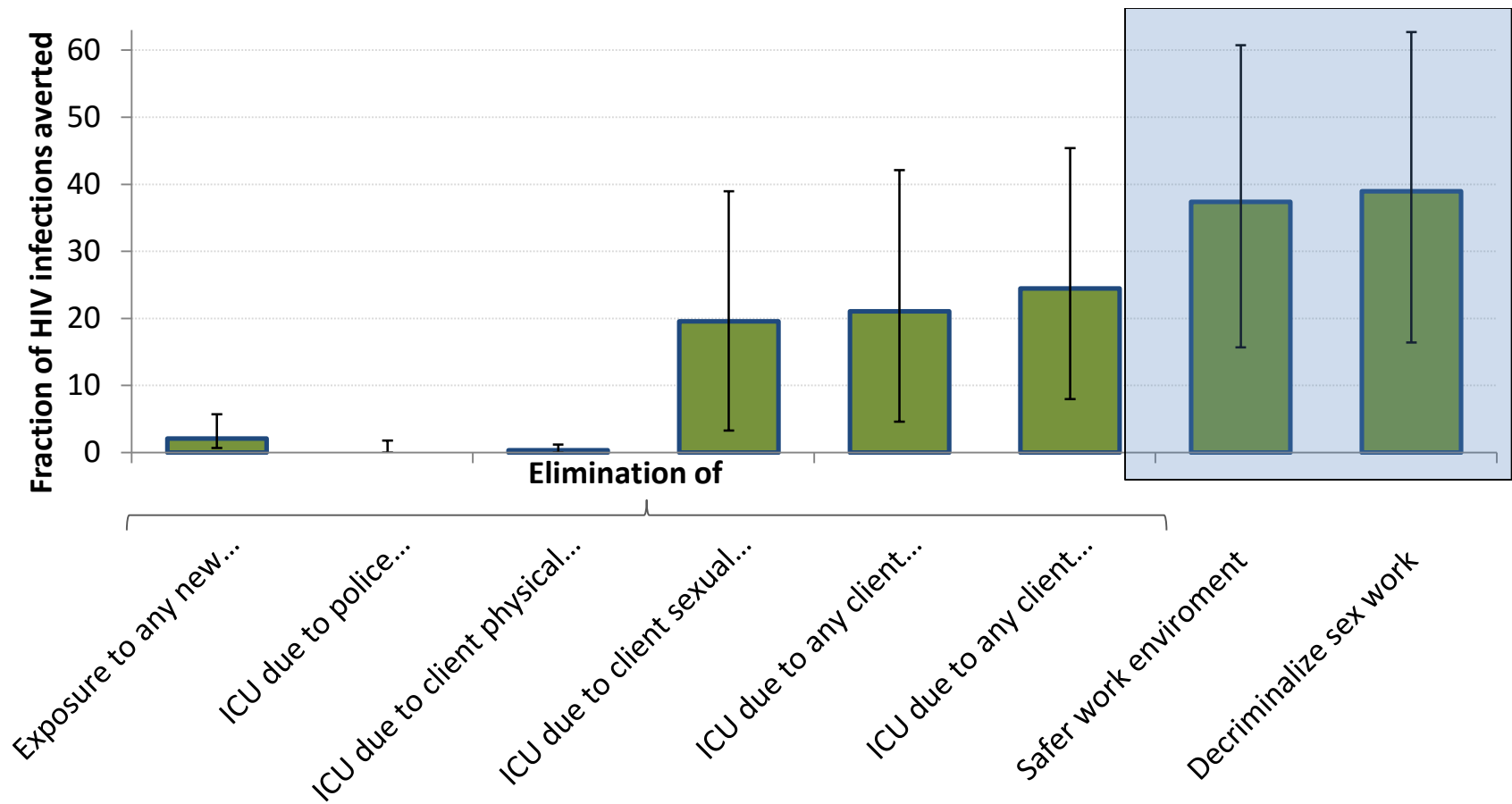
▣ OR 3.5 (95% CI 1.3-5.6) disclosed sex work to HCW

▣ OR 2.0 (95% CI 1.12-3.7) being treated for HIV

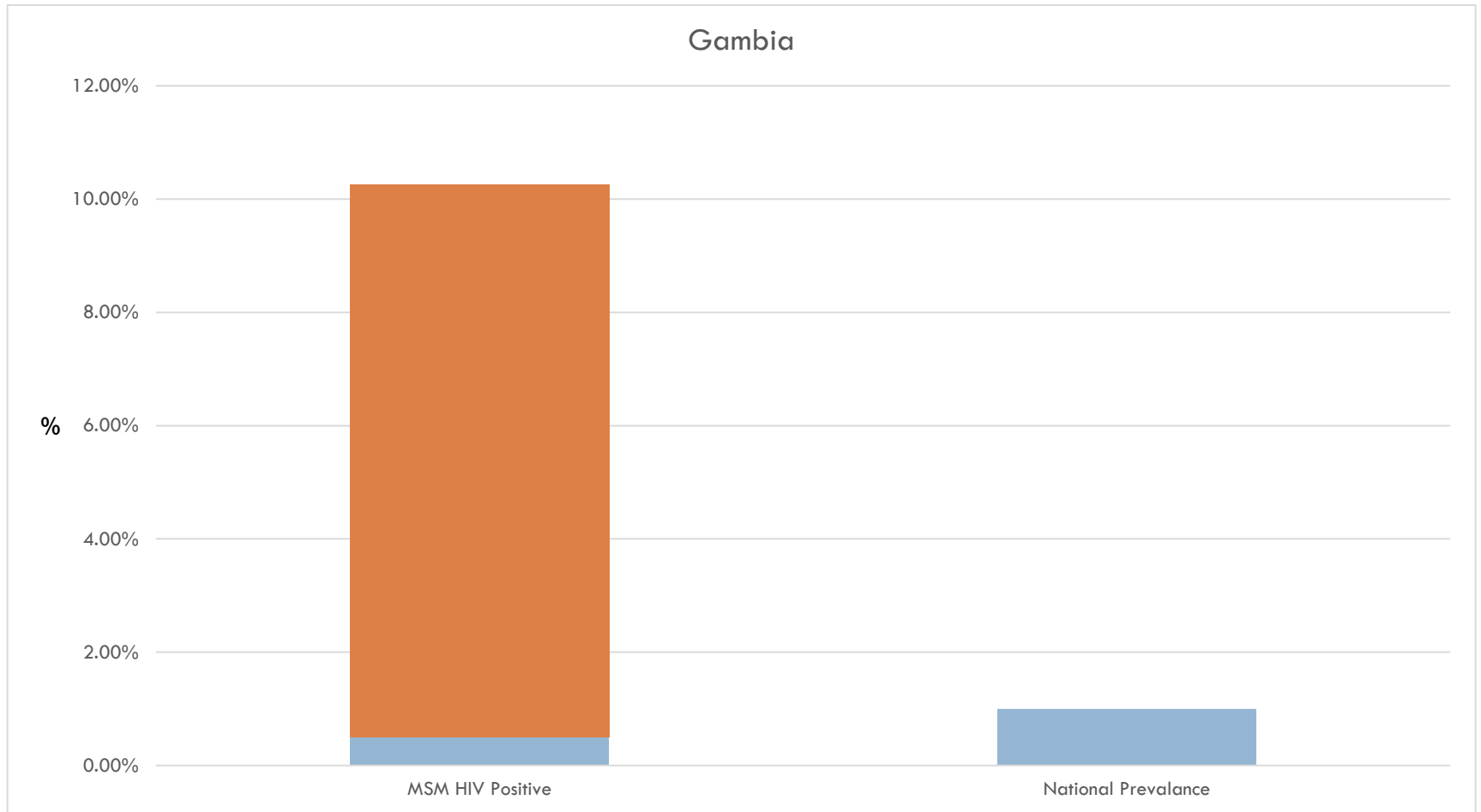
Continuum of HIV Care



Fraction of new HIV infections averted among FSWs and clients over ten years



Case Study – Gambia



Gambia – Anti Homosexuality Act 2014

THE ANTI-HOMOSEXUALITY ACT, 2014.

An Act to prohibit any form of sexual relations between persons of the same sex; prohibit the promotion or recognition of such relations and to provide for other related matters.

- (e) who acts as an accomplice or attempts to promote or in any way abets homosexuality and related practices;

commits an offence and is liable, on conviction, to a fine of five thousand currency points or imprisonment of a minimum of five years and a maximum of seven years or both fine and imprisonment.

(2) Where the offender is a corporate body or a business or an association or a non-governmental organization, on conviction its certificate of registration shall be cancelled and the director, proprietor or promoter shall be liable, on conviction, to imprisonment for seven years.

PART IV—MISCELLANEOUS.

14. Extradition.

A person charged with an offence under this Act shall be liable to extradition under the existing extradition laws.

Associations with Disclosure

- Disclosure of Sexual Orientation to
 - ▣ Family Member
 - 3.9% (8/205)
 - ▣ Health Care Worker
 - 15.4% (32/205)

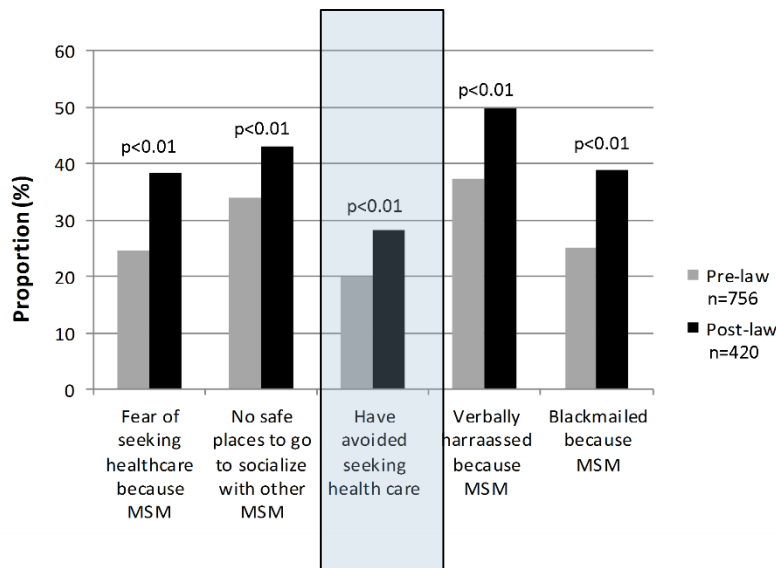
	Fear		Denial	
Variable	OR	[95% CI]	OR	[95% CI]
Disclosure of Sexual Orientation to Family or HCW	2.61	[1.08-6.32]	9.74	[1.96-48.45]

Effects of the Criminalization of Same-Sex Practices in Nigeria

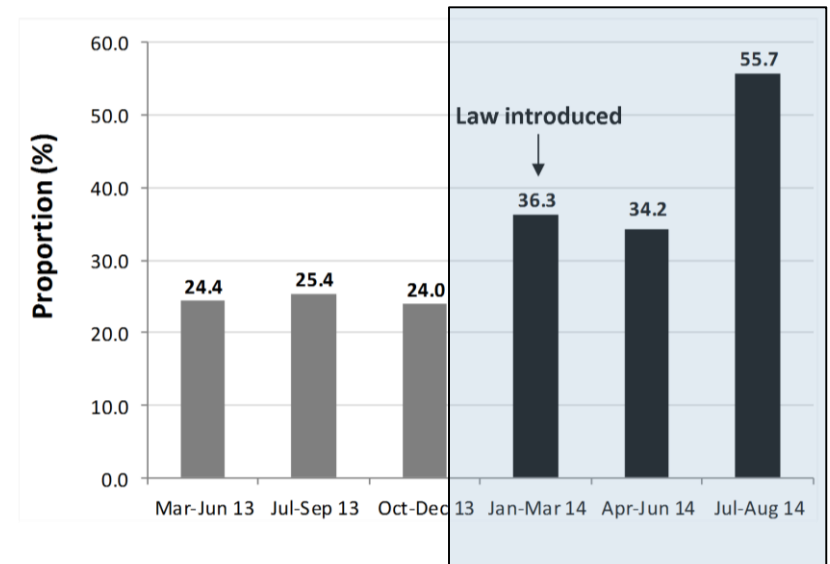
- Same-sex marriage bill introduced in Nigeria in January, 2014 further criminalizing same-sex relationships and associations with community groups
- Methods
 - ▣ MSM recruited through respondent-driven sampling and enrolled into a prospective cohort in Abuja from March 2013-June 2014
 - ▣ Characteristics related to discrimination and HIV care are described and compared pre-post legislation using chi-squared statistics
 - ▣ TRUST Model
 - UMD/IHV HIV Prevention and Treatment Services co-located with community group serving MSM (ICARH)

Outcomes of Criminalization on HIV-Risks among MSM in Nigeria

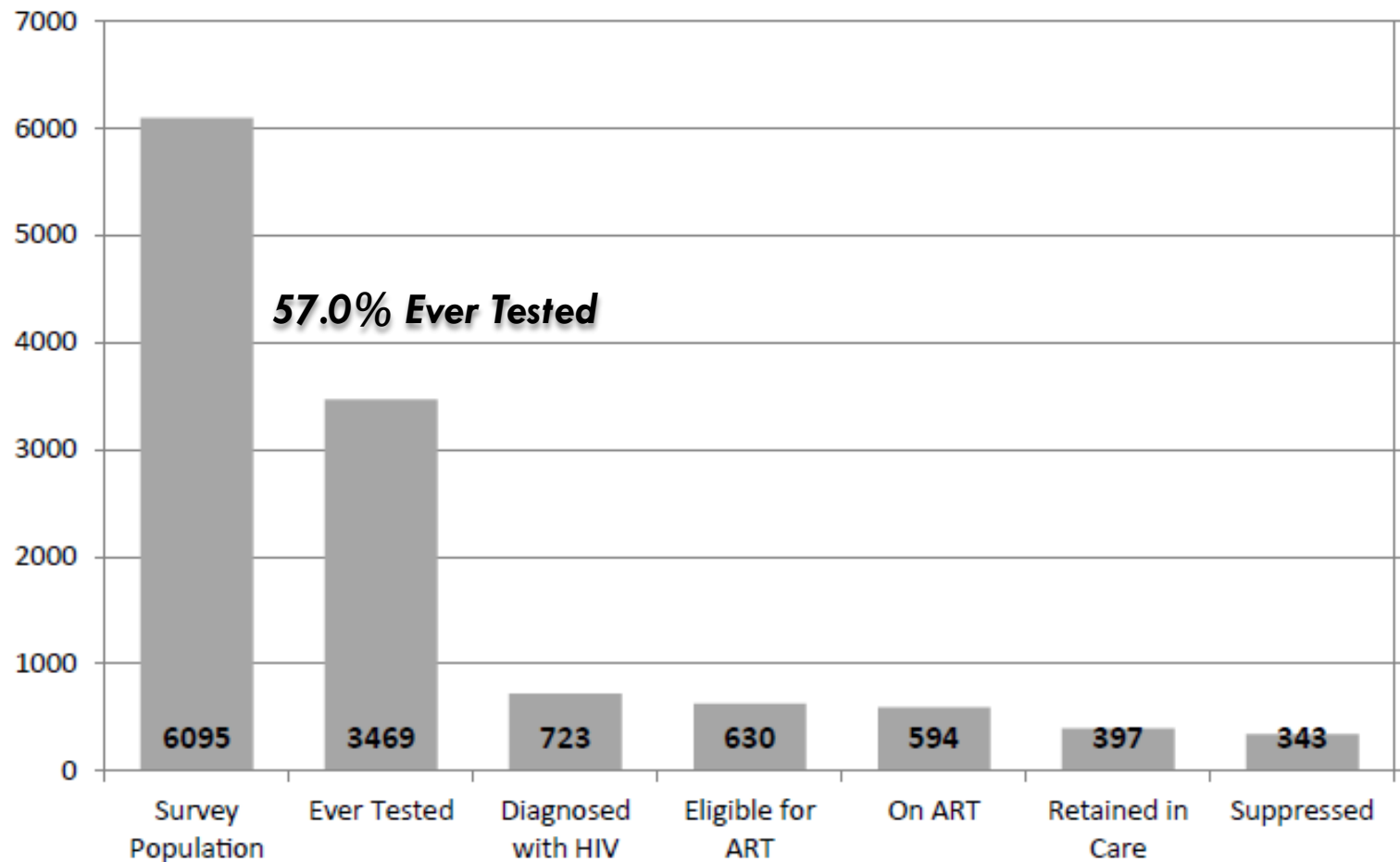
Reporting of Discrimination and Stigma During Study Visits Pre and Post Legislation



Cumulative lifetime experiences of reported fear of seeking health care services across study visits (n=1,175 visits).



Global Engagement in the Continuum of HIV Care among MSM



Source: Ayala, Mafokane, Arreola, Beck, Do. HIV Treatment Cascades that Leak: Correlates of Drop-off from the HIV Care Continuum among Men who have Sex with Men Worldwide. J AIDS Clin Res 2014, 5:8

Case Study Messages



- Limited Capacity for Scale Up of HIV Prevention and Treatment Programs if Populations:
 - ▣ Live in fear
 - ▣ Live hidden
 - ▣ Have limited access to safe and effective clinical care

Key Themes

- Data Paradox
 - ▣ There is the least amount of data characterizing the needs of key populations in the most stigmatizing settings
- The world is more similar than it is different
 - ▣ Wherever HIV is studied around the world, risk is not evenly distributed
 - Highest incidence appears to be among young gay men and other MSM
 - Transgender woman appear to have higher burden of HIV
- Comprehensive Research Agenda should include evaluating the content, scale, and implementation of HIV prevention, treatment, and care programs for all people affected by HIV

Acknowledgements

Key Populations Program

- Carrie Lyons, Gnilane Turpin, Sheree Schwartz, Shauna Stahlman, Sosthenes Ketende
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