



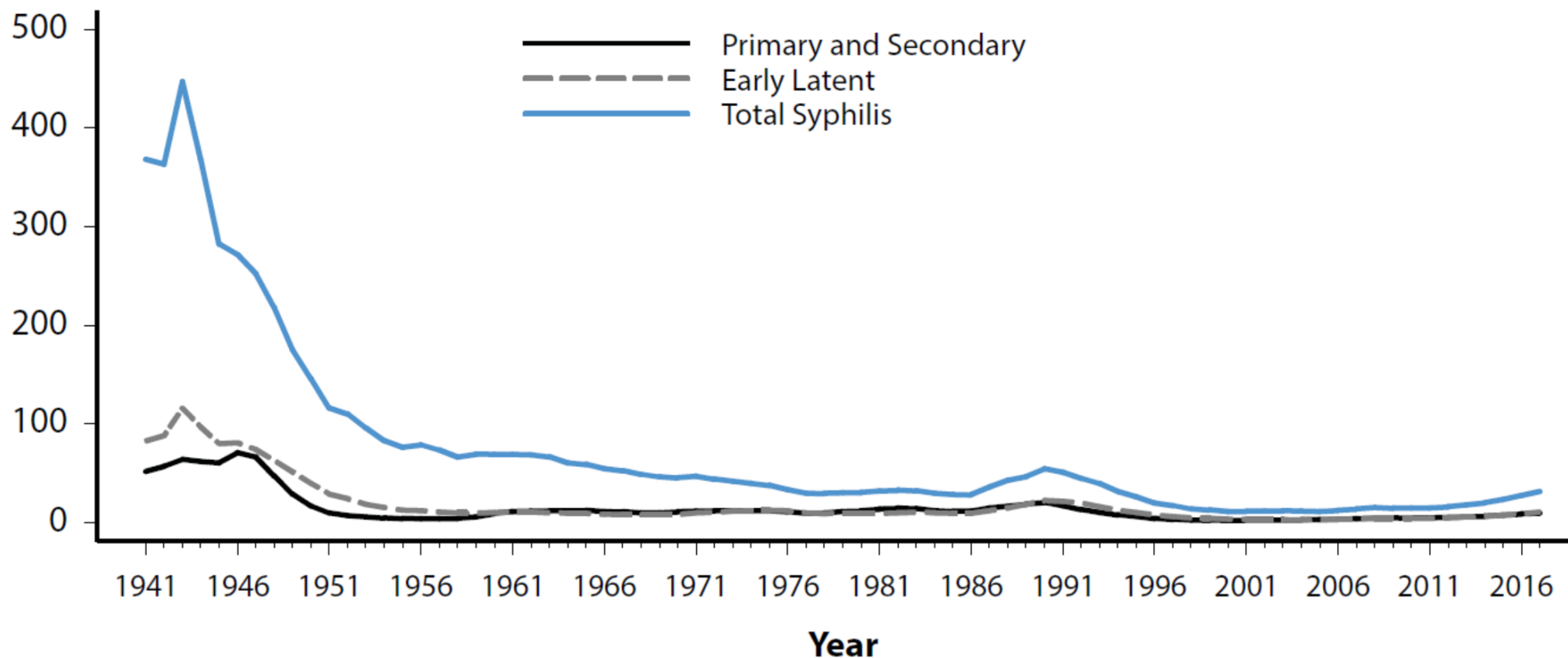
Sexually Transmitted Disease

Surveillance 2017

SYPHILIS

Syphilis — Rates of Reported Cases by Stage of Infection, United States, 1941–2017

Rate (per 100,000 population)

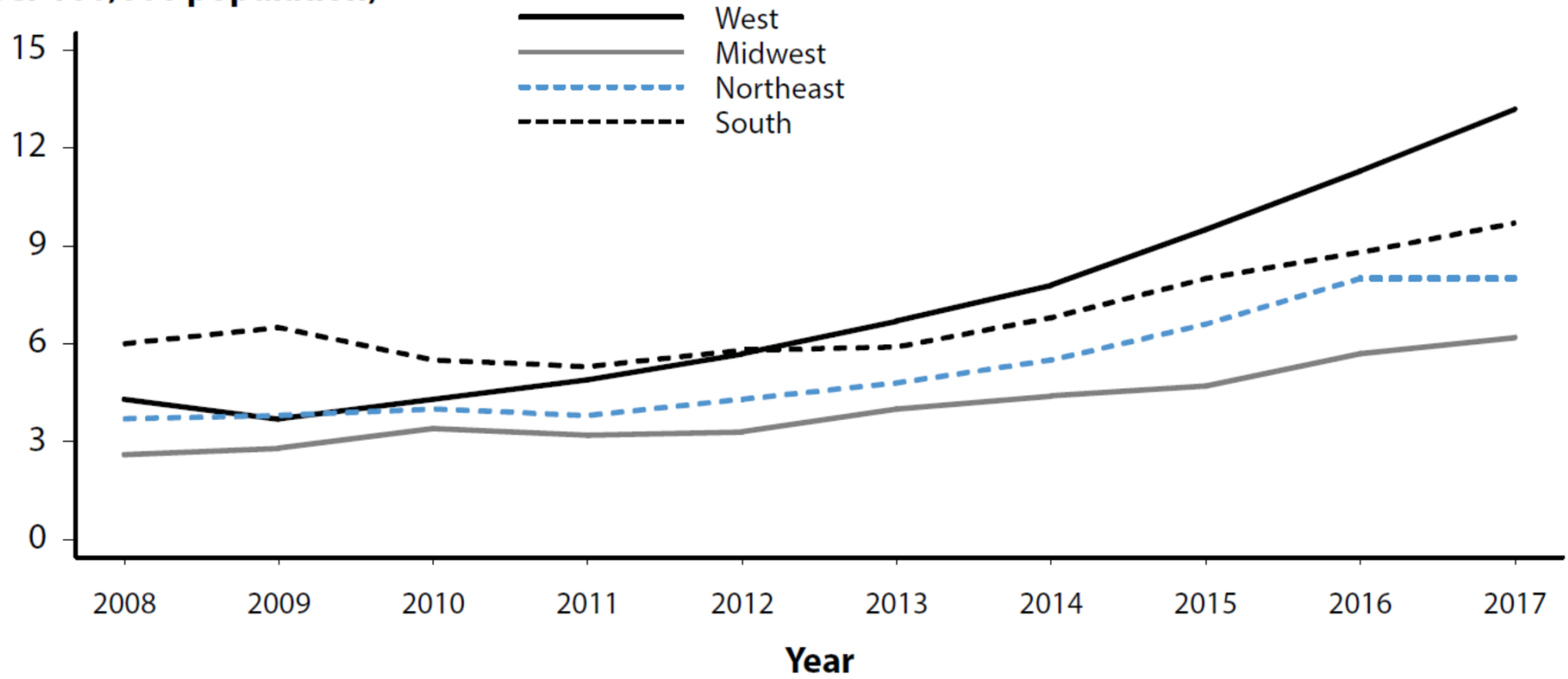


NOTE: Data collection for syphilis began in 1941; however, syphilis became nationally notifiable in 1944. Refer to the National Notifiable Disease Surveillance System (NNDSS) website for more information: <https://wwwn.cdc.gov/nndss/conditions/syphilis/>.

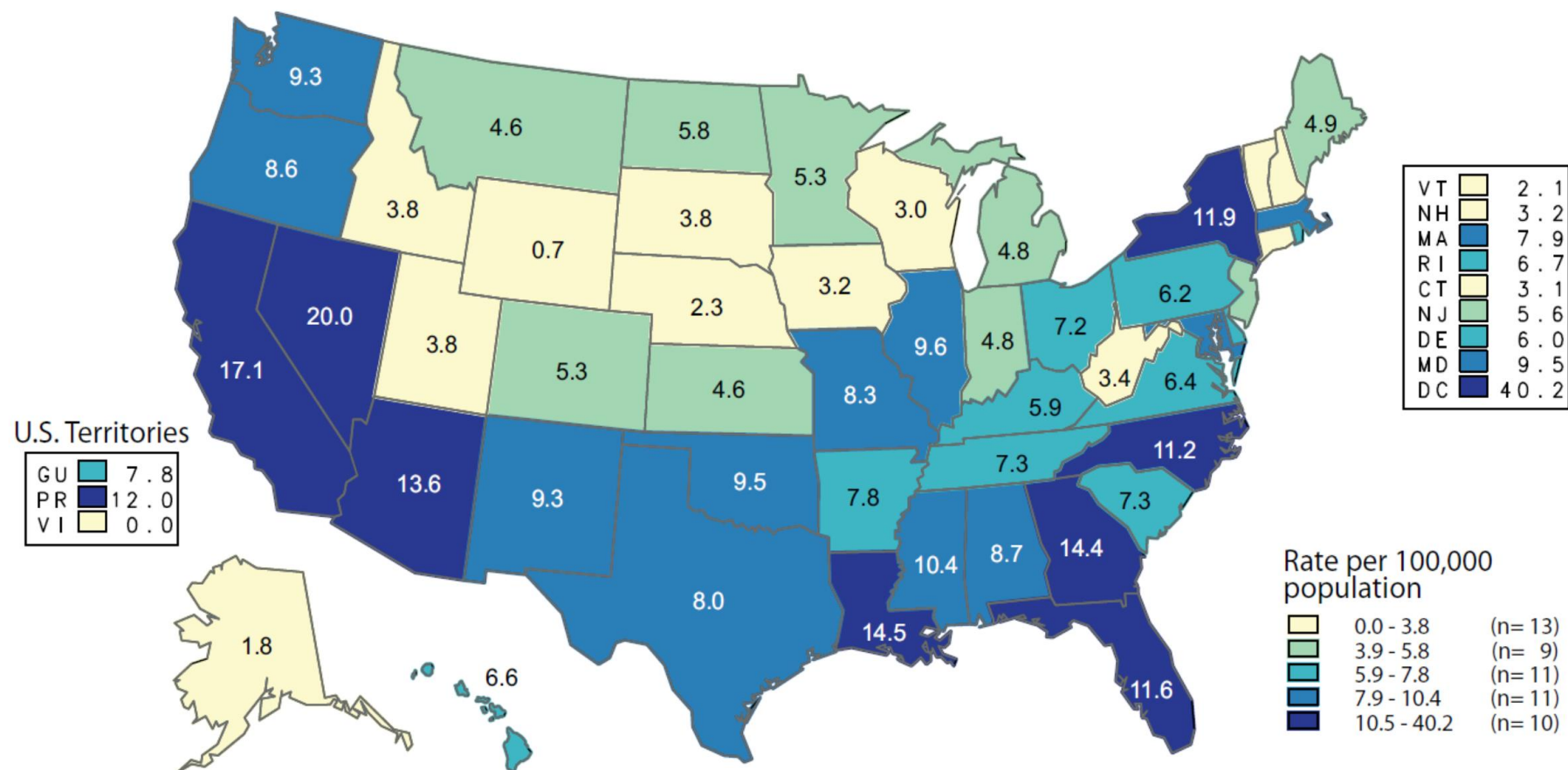


Primary and Secondary Syphilis — Rates of Reported Cases by Region, United States, 2008–2017

Rate (per 100,000 population)



Primary and Secondary Syphilis — Rates of Reported Cases by State, United States and Outlying Areas, 2017

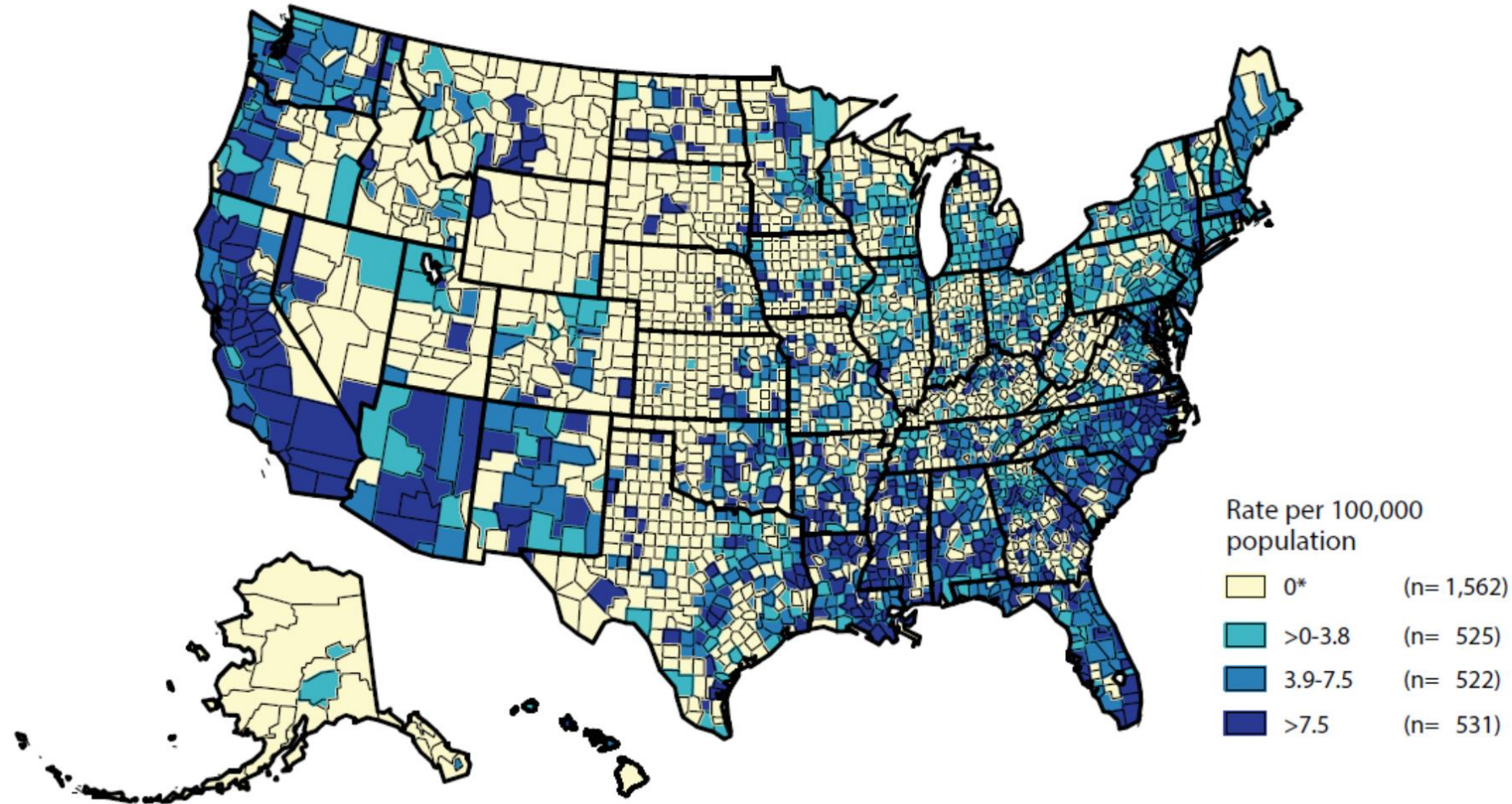


NOTE: The total rate of reported cases of primary and secondary syphilis for the United States and outlying areas (including Guam, Puerto Rico, and the Virgin Islands) was 9.5 per 100,000 population. See Section A1.11 in the Appendix for more information on interpreting reported rates in the outlying areas.

ACRONYMS: GU = Guam; PR = Puerto Rico; VI = Virgin Islands.

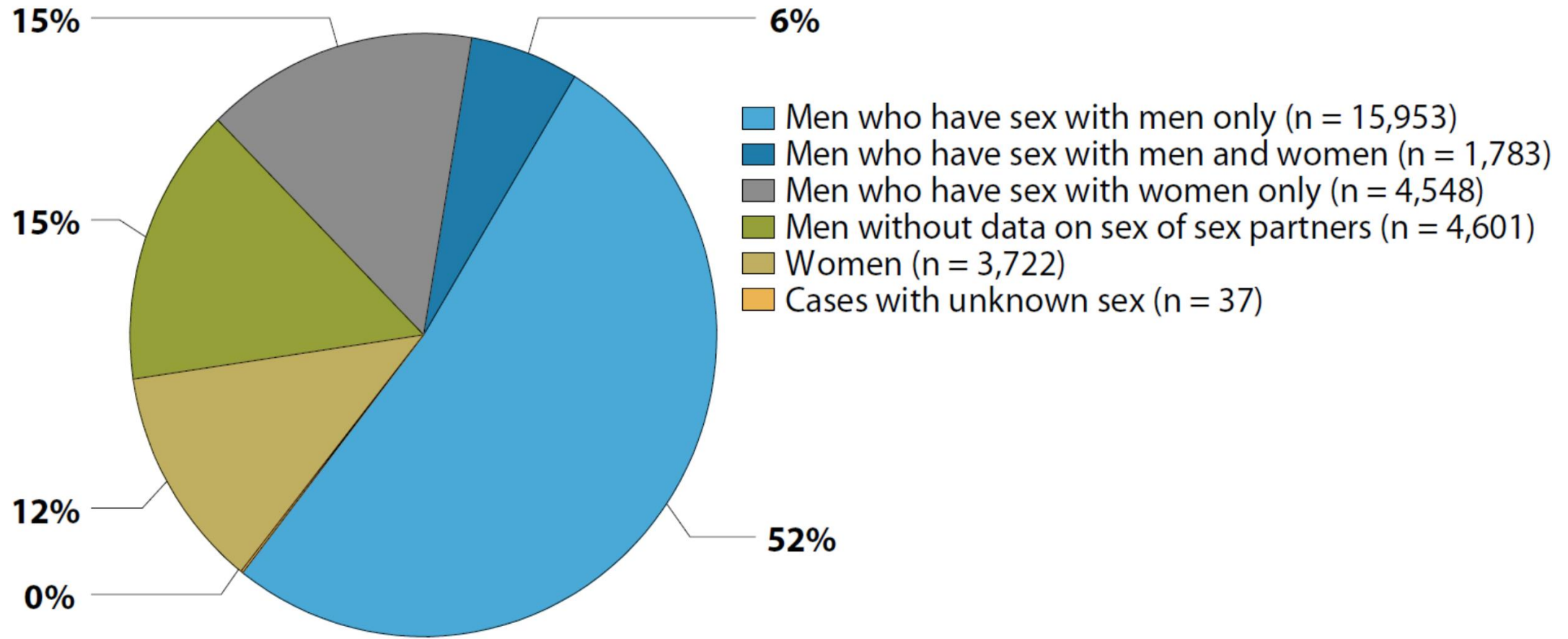


Primary and Secondary Syphilis — Rates of Reported Cases by County, United States, 2017

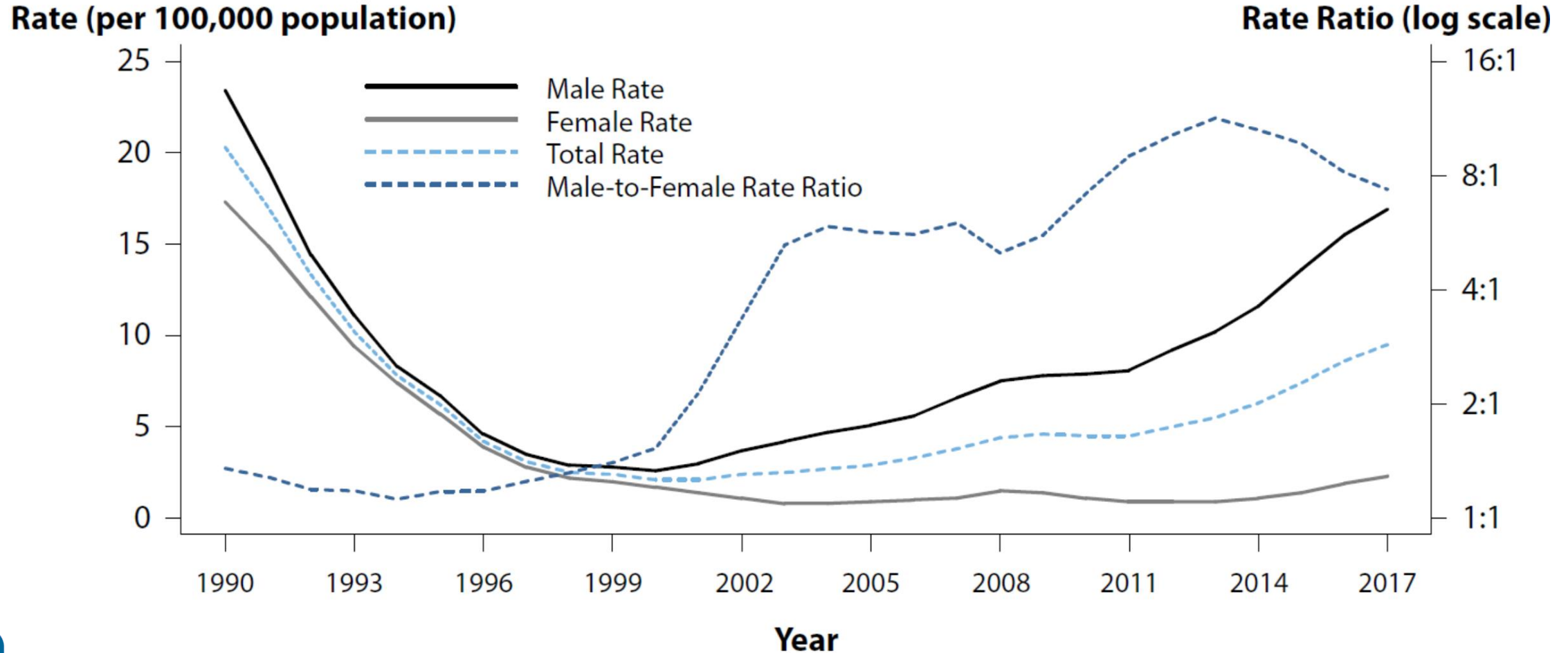


* In 2017, 1,562 (49.7%) of 3,140 counties in the United States reported no cases of primary and secondary syphilis. Refer to the NCHHSTP AtlasPlus for further county-level rate information: <https://www.cdc.gov/nchhstp/atlas/>

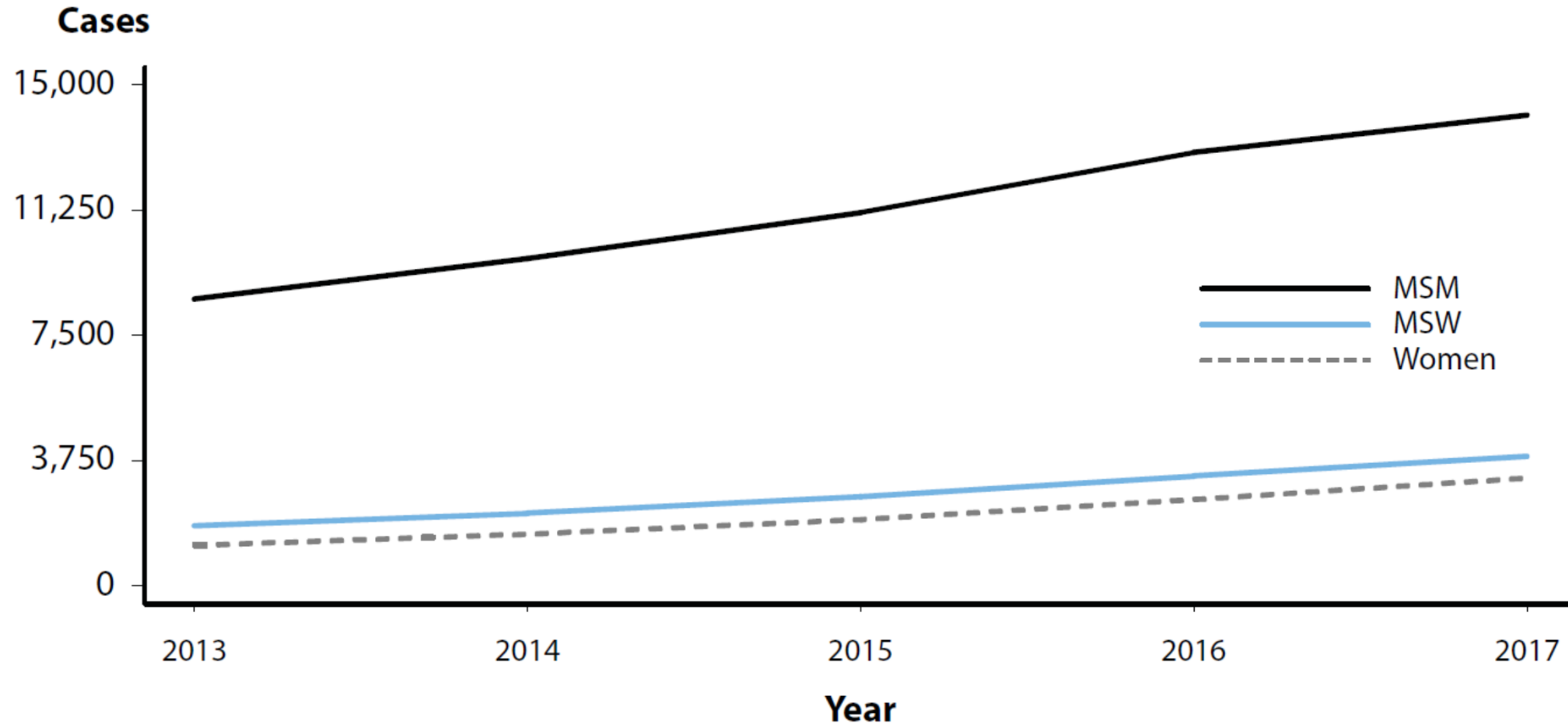
Primary and Secondary Syphilis — Distribution of Cases by Sex and Sexual Behavior, United States, 2017



Primary and Secondary Syphilis — Rates of Reported Cases by Sex and Male-to-Female Rate Ratios, United States, 1990–2017



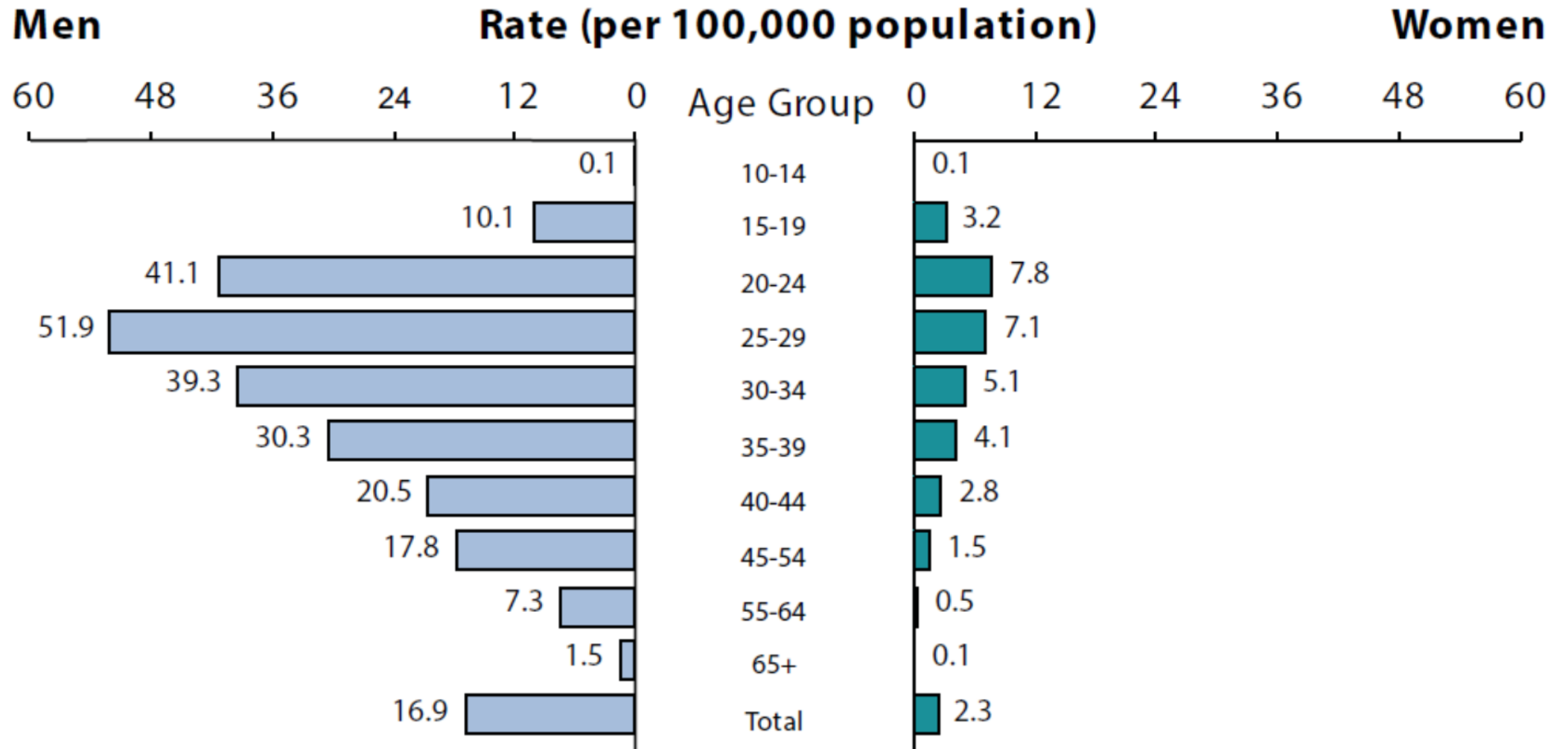
Primary and Secondary Syphilis — Reported Cases by Sex and Sexual Behavior, 37 States*, 2013–2017



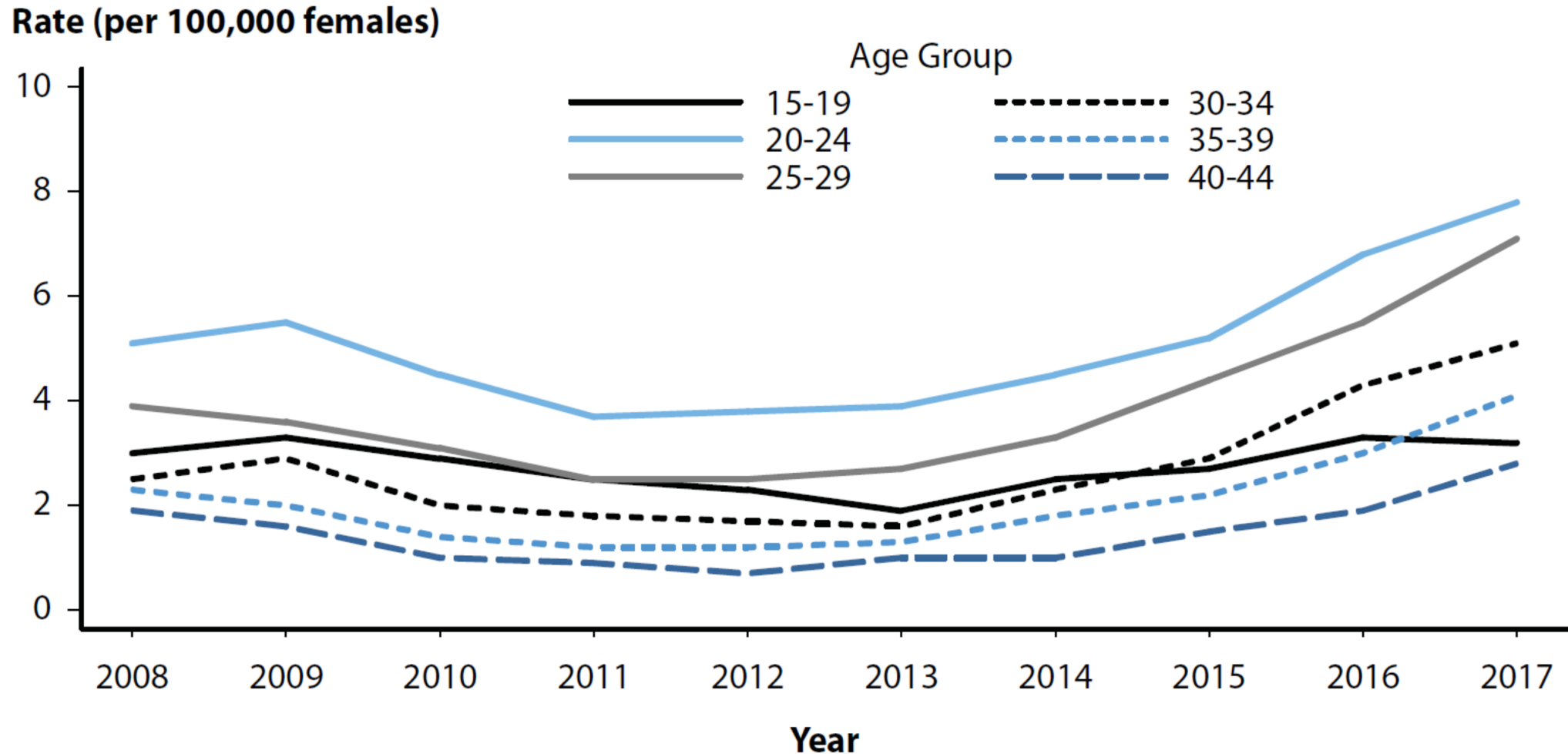
* 37 states were able to classify $\geq 70\%$ of reported cases of primary and secondary syphilis as either MSM, MSW, or women for each year during 2013–2017.
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.



Primary and Secondary Syphilis — Rates of Reported Cases by Age Group and Sex, United States, 2017

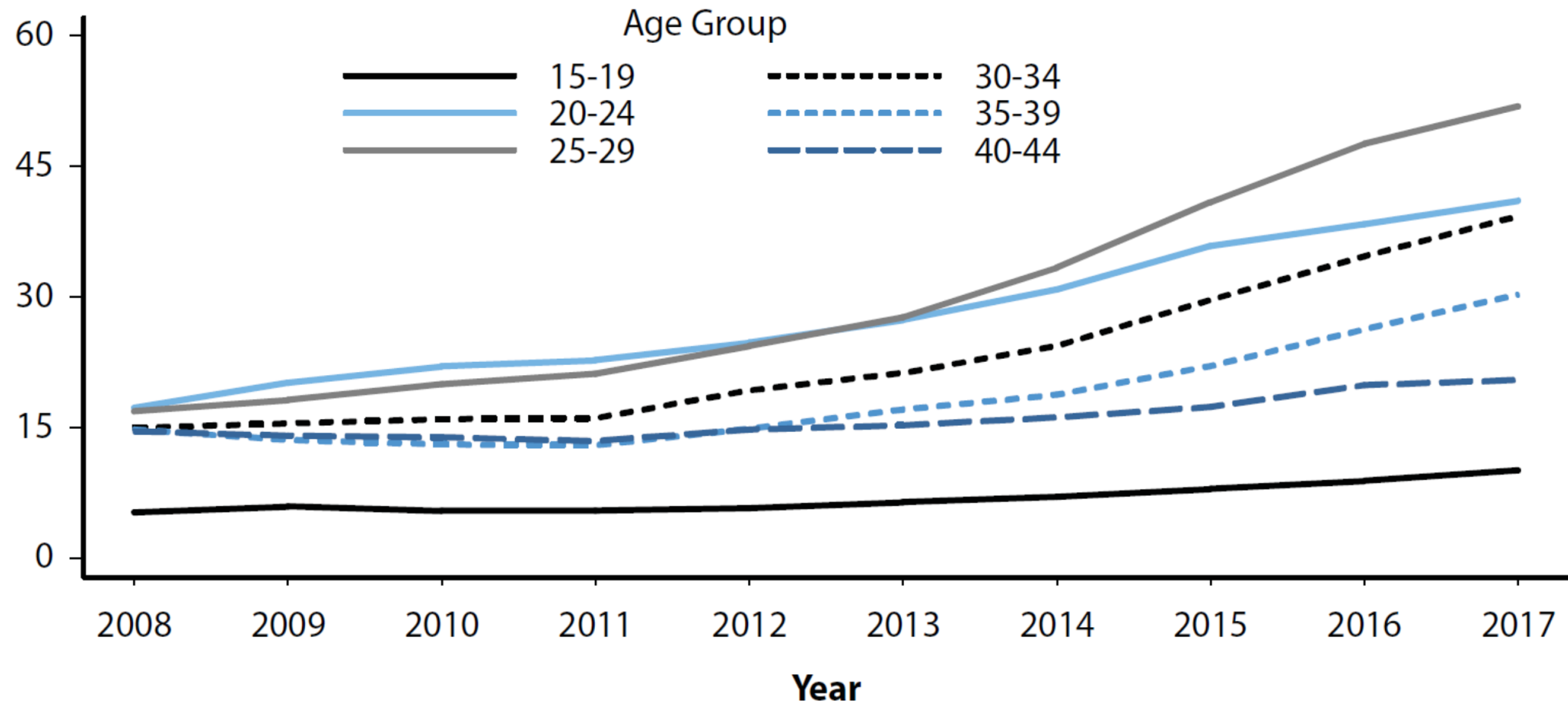


Primary and Secondary Syphilis — Rates of Reported Cases Among Women Aged 15–44 Years by Age Group, United States, 2008–2017

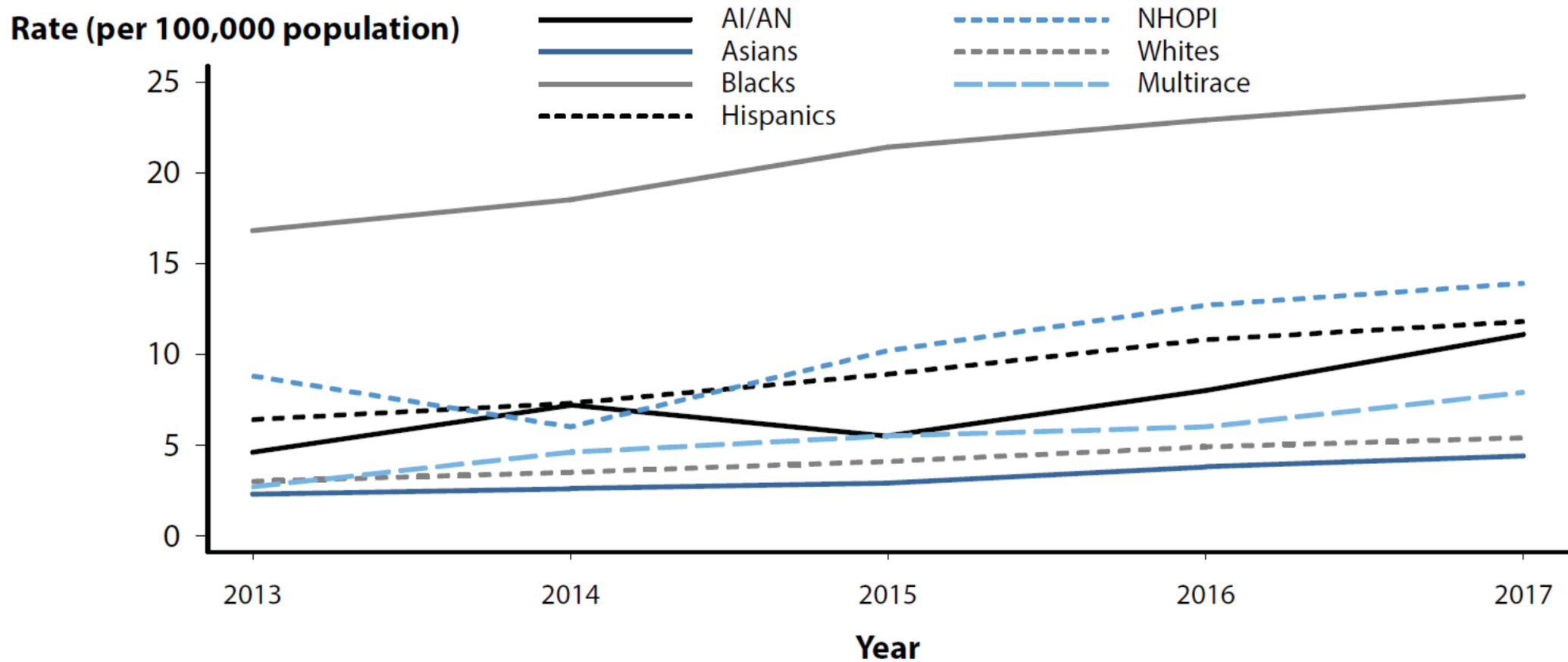


Primary and Secondary Syphilis — Rates of Reported Cases Among Men Aged 15–44 Years by Age Group, United States, 2008–2017

Rate (per 100,000 males)



Primary and Secondary Syphilis — Rates of Reported Cases by Race and Hispanic Ethnicity, United States, 2013–2017

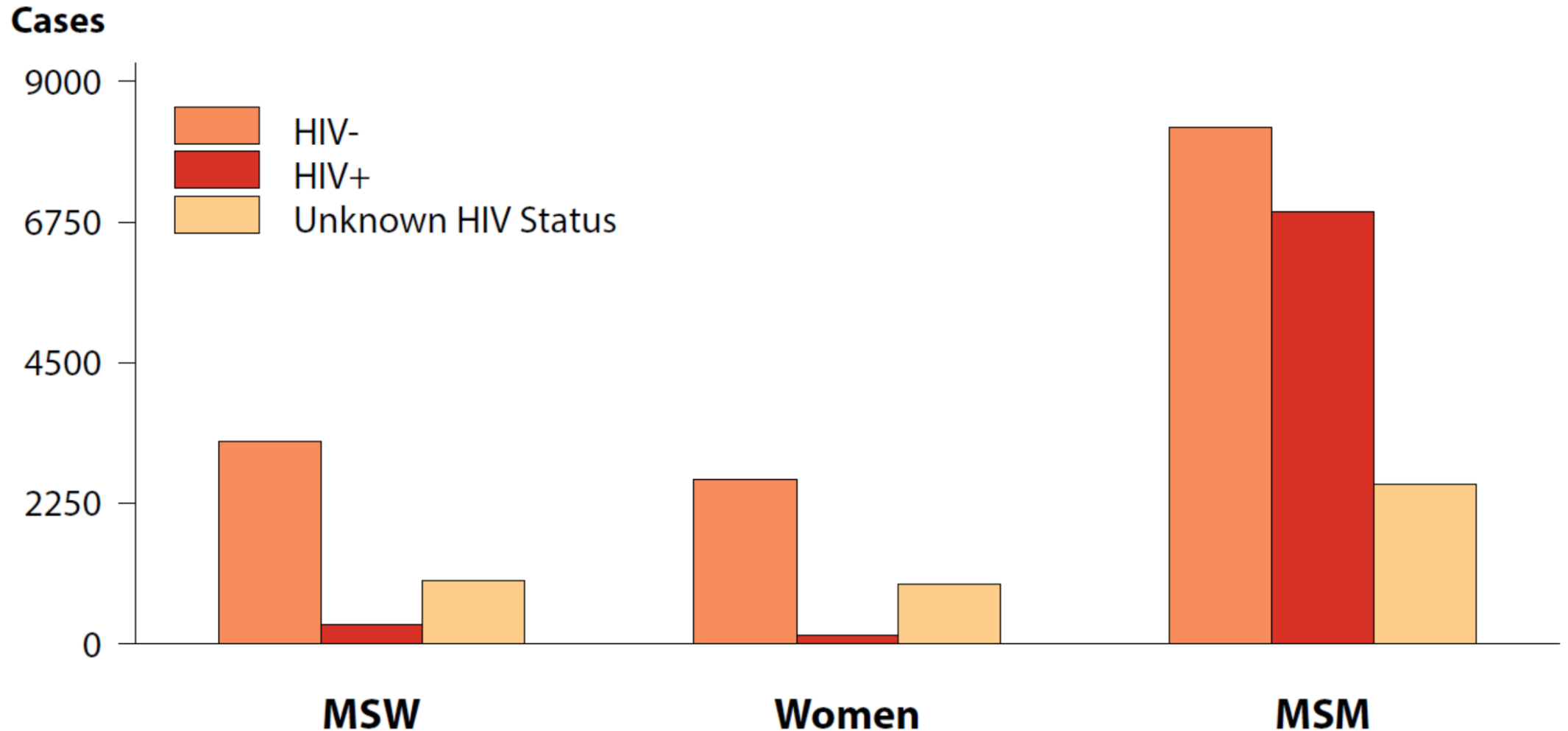


NOTE: Not all US jurisdictions reported cases in OMB-compliant Race categories in 2017. This may minimally under- or overestimate rates for Asians, NHOPI, or Multirace individuals. For completeness, data in this figure include cases reported from all jurisdictions. See Section A1.5 in the Appendix for information on reporting STD case data for race and Hispanic ethnicity.

ACRONYMS: AI/AN = American Indians/Alaska Natives; NHOPI = Native Hawaiians/Other Pacific Islanders; OMB = Office of Management and Budget.



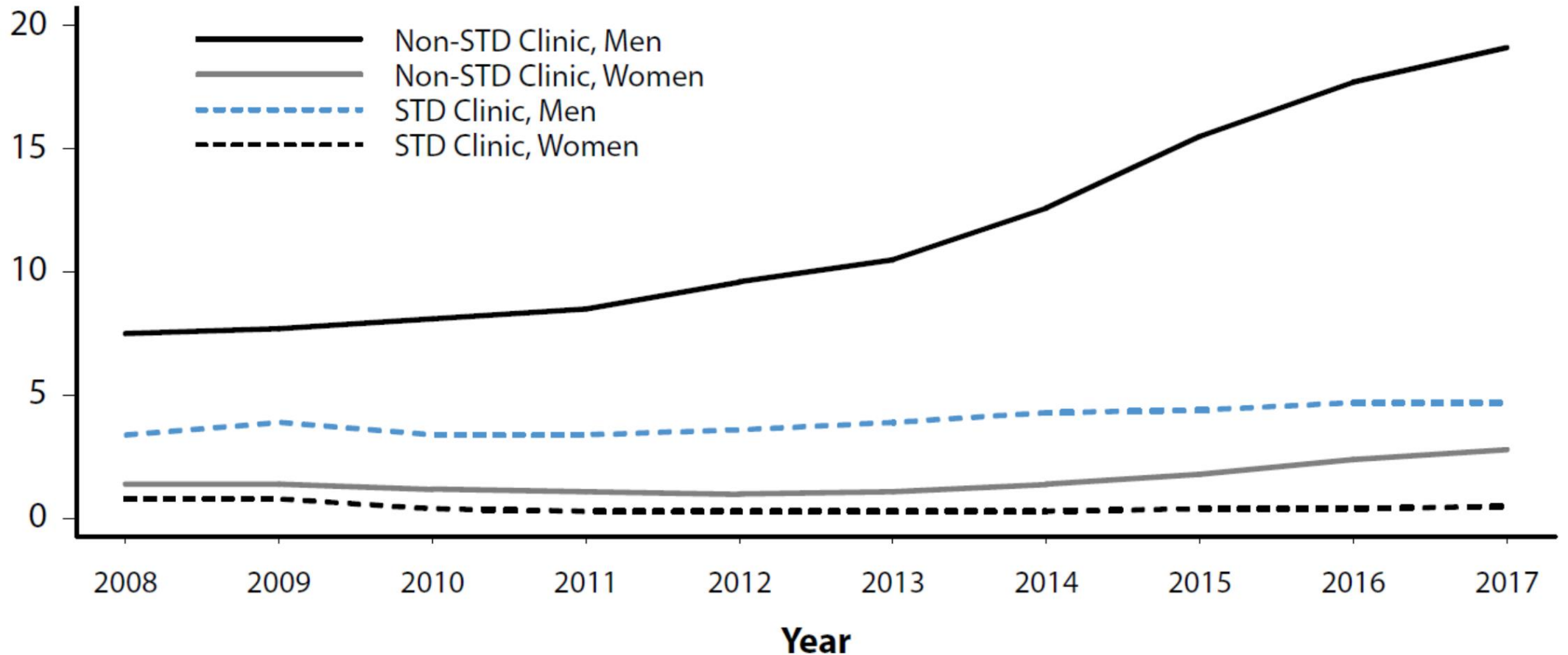
Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Status, United States, 2017



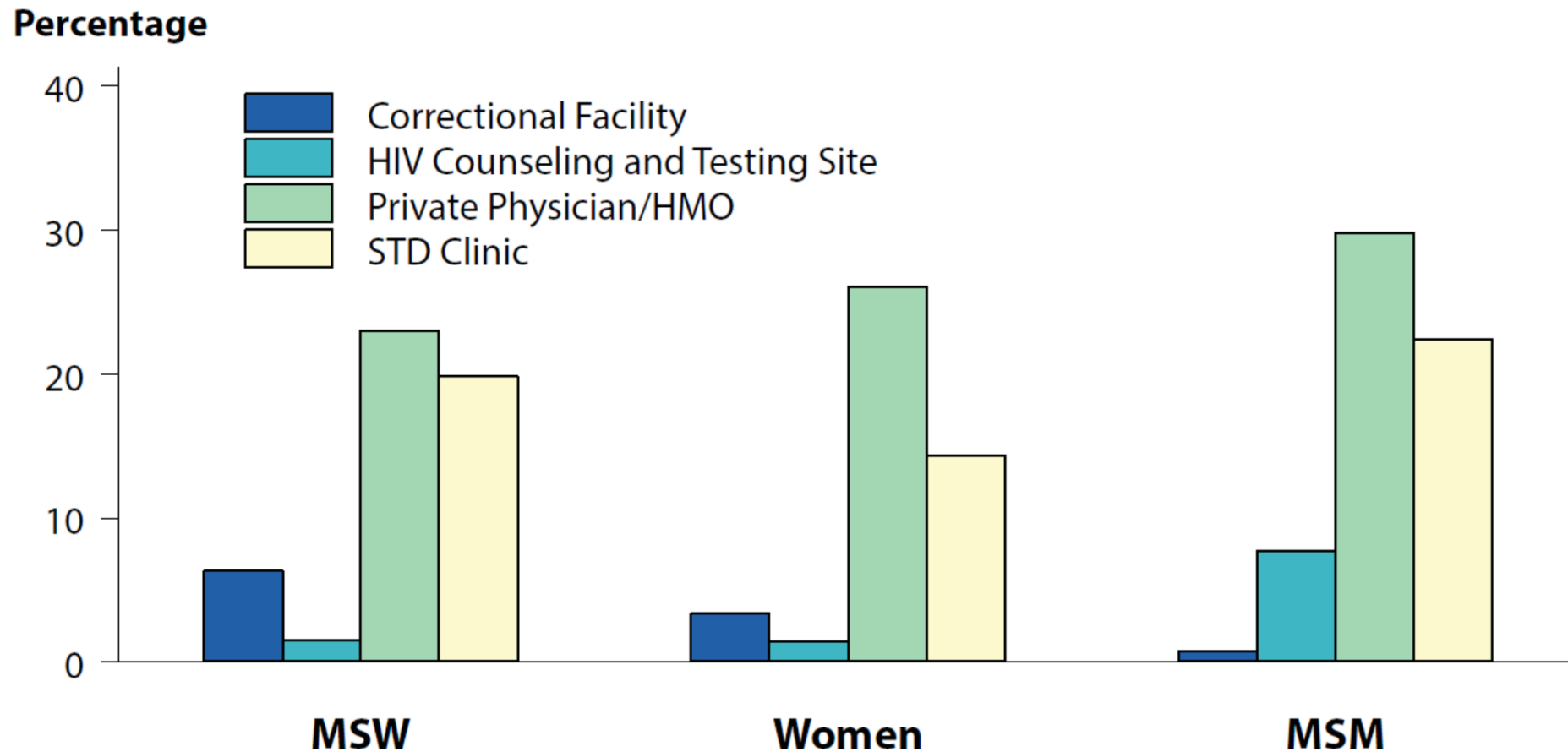
ACRONYMS: MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.

Primary and Secondary Syphilis — Reported Cases by Reporting Source and Sex, United States, 2008–2017

Cases (in thousands)



Primary and Secondary Syphilis — Percentage of Reported Cases* by Sex, Sexual Behavior, and Selected Reporting Sources, United States, 2017

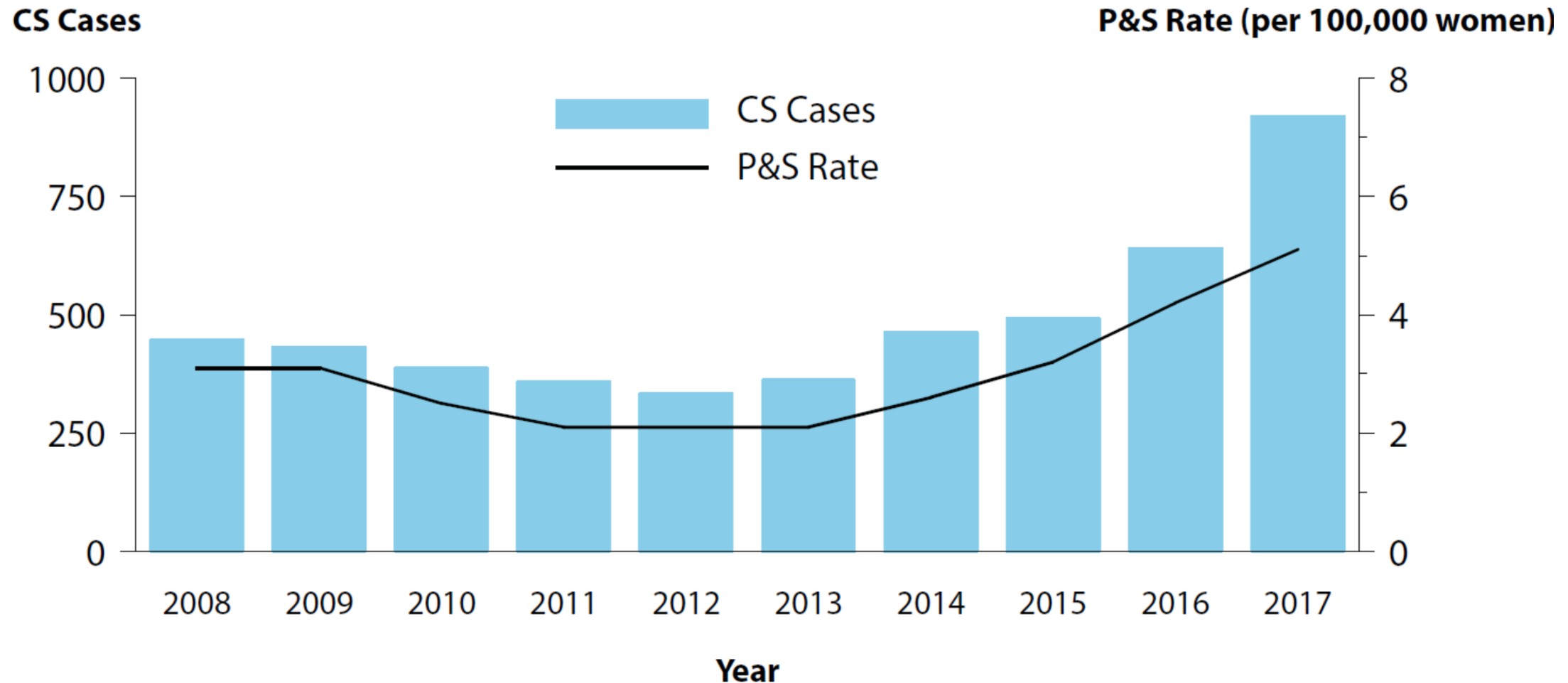


* Of all primary and secondary cases, 11.4% had a missing or unknown reporting source. Among all cases with a known reporting source, the reporting source categories presented represent 56.4% of cases; 43.6% were reported from sources other than those shown.

ACRONYMS: HMO = health maintenance organization; MSM = Gay, bisexual, and other men who have sex with men (collectively referred to as MSM); MSW = Men who have sex with women only.



Congenital Syphilis — Reported Cases by Year of Birth and Rates of Reported Cases of Primary and Secondary Syphilis Among Women Aged 15–44 Years, United States, 2008–2017



ACRONYMS: CS = Congenital syphilis; P&S = Primary and secondary syphilis.



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.





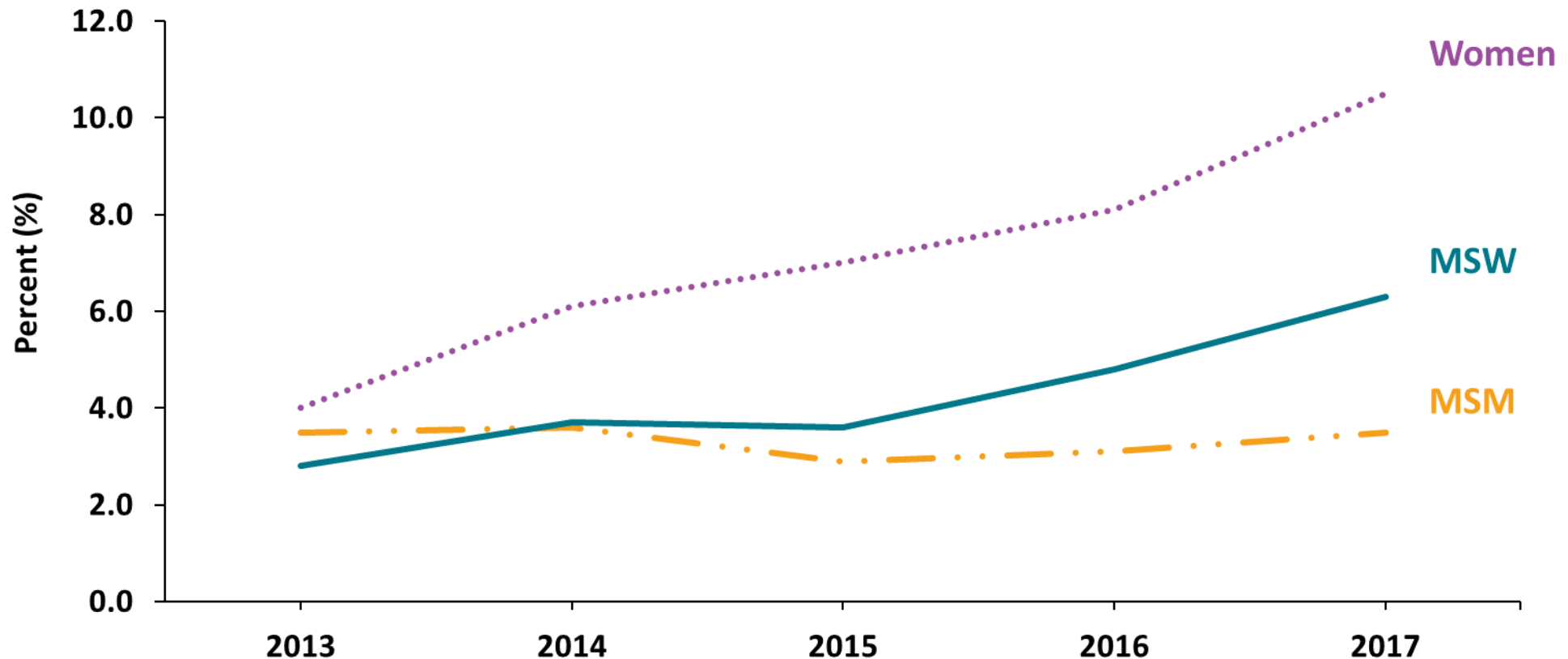
Syphilis Surveillance Supplement 2013–2017

Slides

Figures in this presentation were created using data available at:

<https://www.cdc.gov/std/stats17/syphilis2017/>

Reported Injection Drug Use* Among Reported Primary and Secondary Syphilis Cases by Sex and Sexual Behavior, United States, 2013–2017

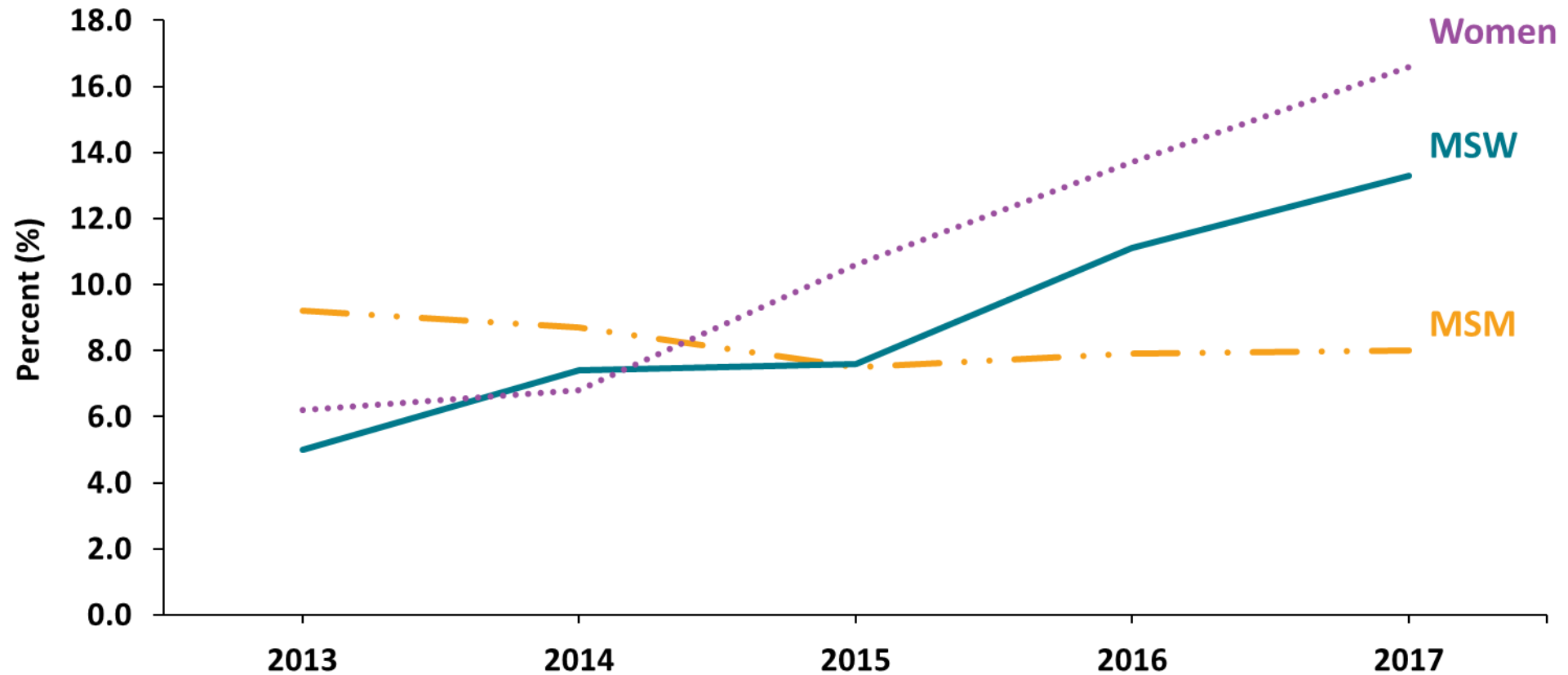


* Proportion reporting injection drug use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men; MSW = men who have sex with women only.



Reported Methamphetamine Use* Among Reported Primary and Secondary Syphilis Cases by Sex and Sexual Behavior, United States, 2013–2017

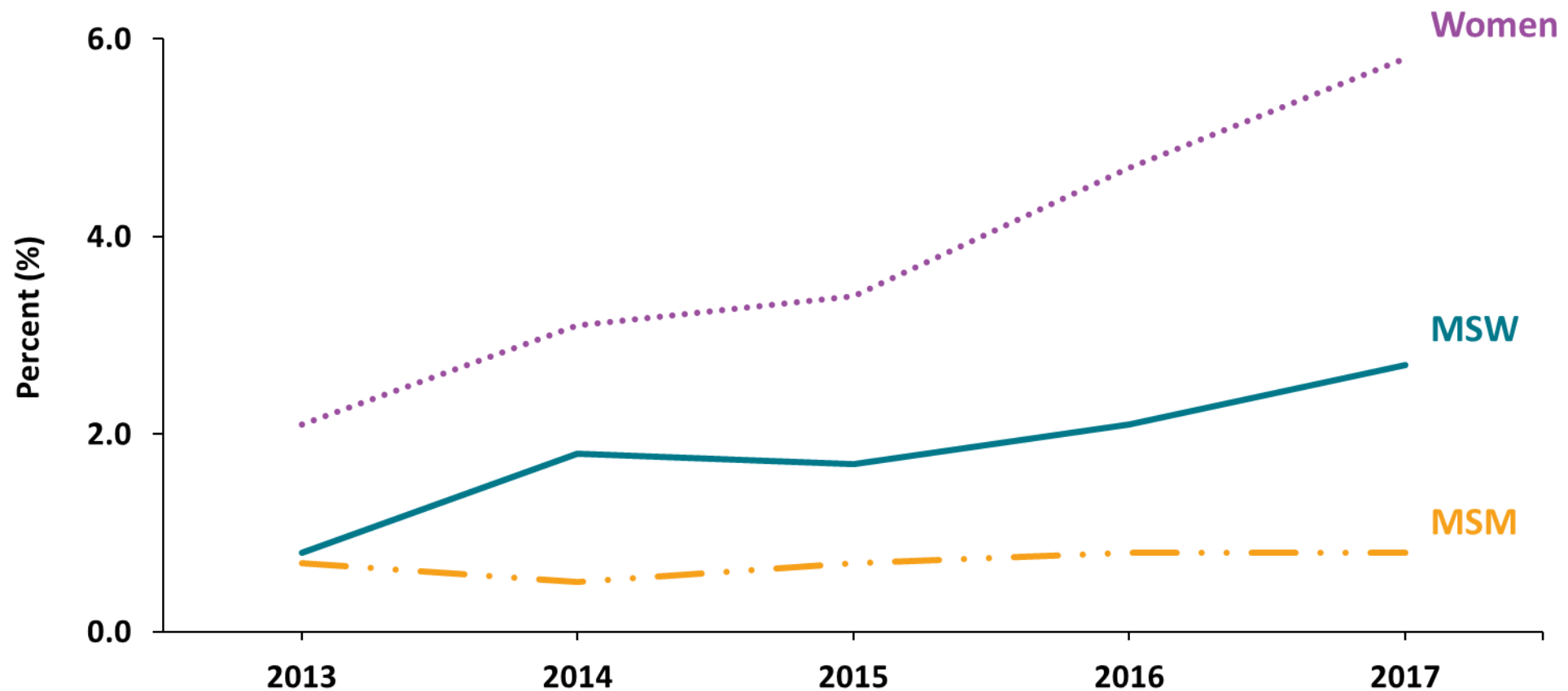


* Proportion reporting methamphetamine use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men; MSW = men who have sex with women only.



Reported Heroin Use* Among Reported Primary and Secondary Syphilis Cases by Sex and Sexual Behavior, United States, 2013–2017

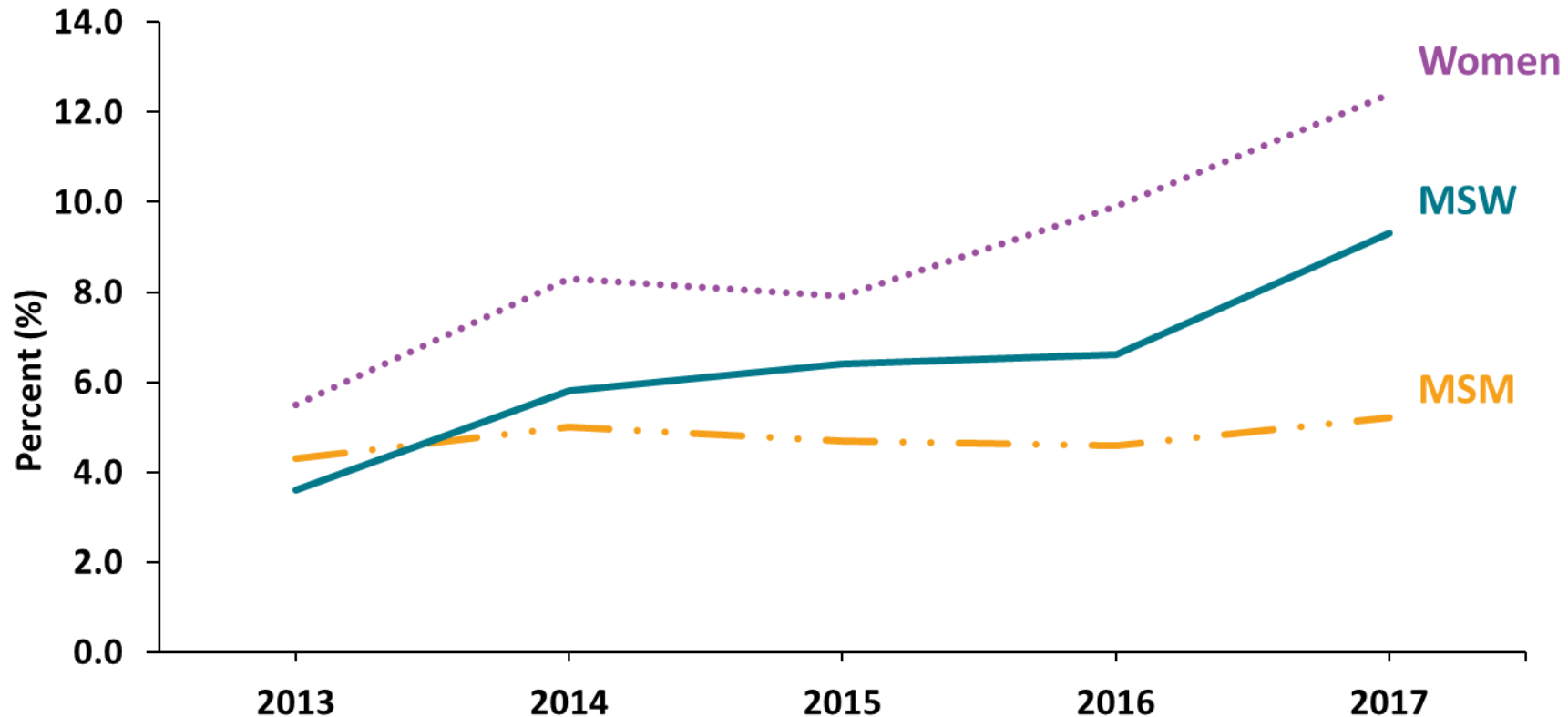


* Proportion reporting heroin use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men; MSW = men who have sex with women only.



Reported Sex with a PWID* Among Reported Primary and Secondary Syphilis Cases by Sex and Sexual Behavior, United States, 2013–2017



* Proportion reporting sex with a PWID within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

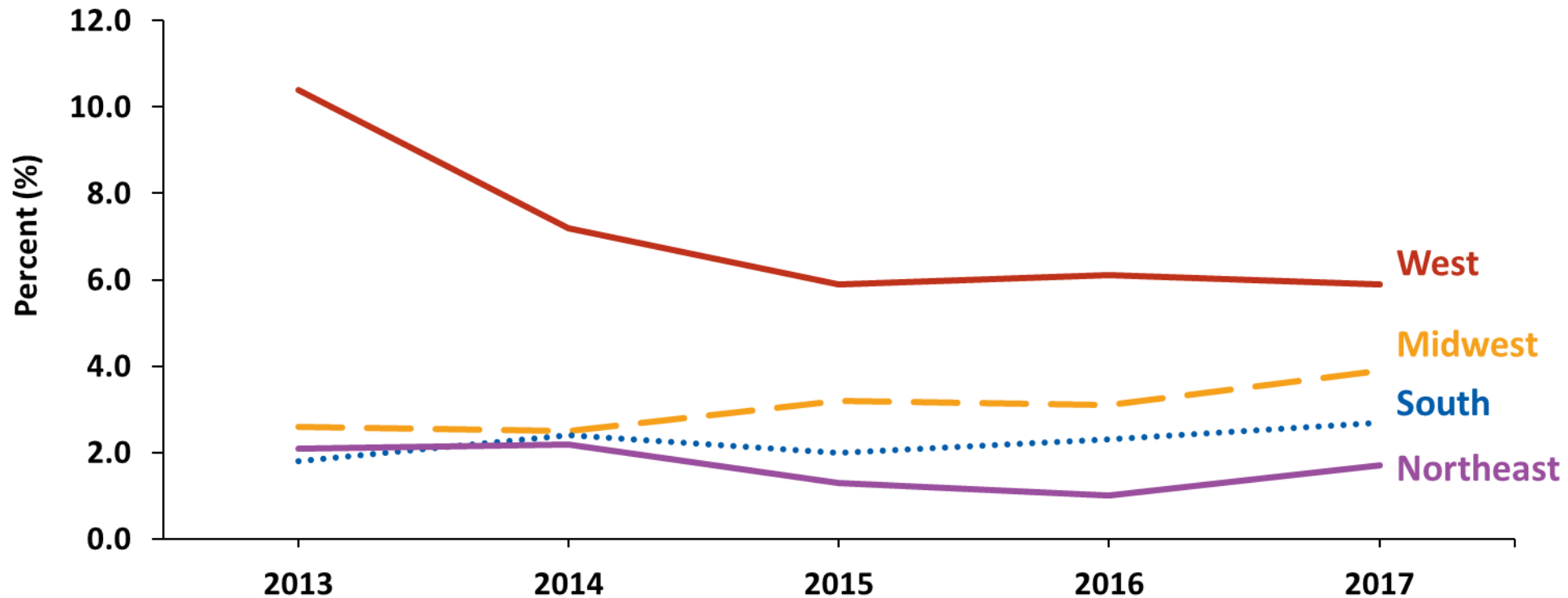
Abbreviations: MSM = gay, bisexual, or other men who have sex with men; MSW = men who have sex with women only; PWID = person who injects drugs.



Injection Drug Use



Reported Injection Drug Use* Among MSM with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

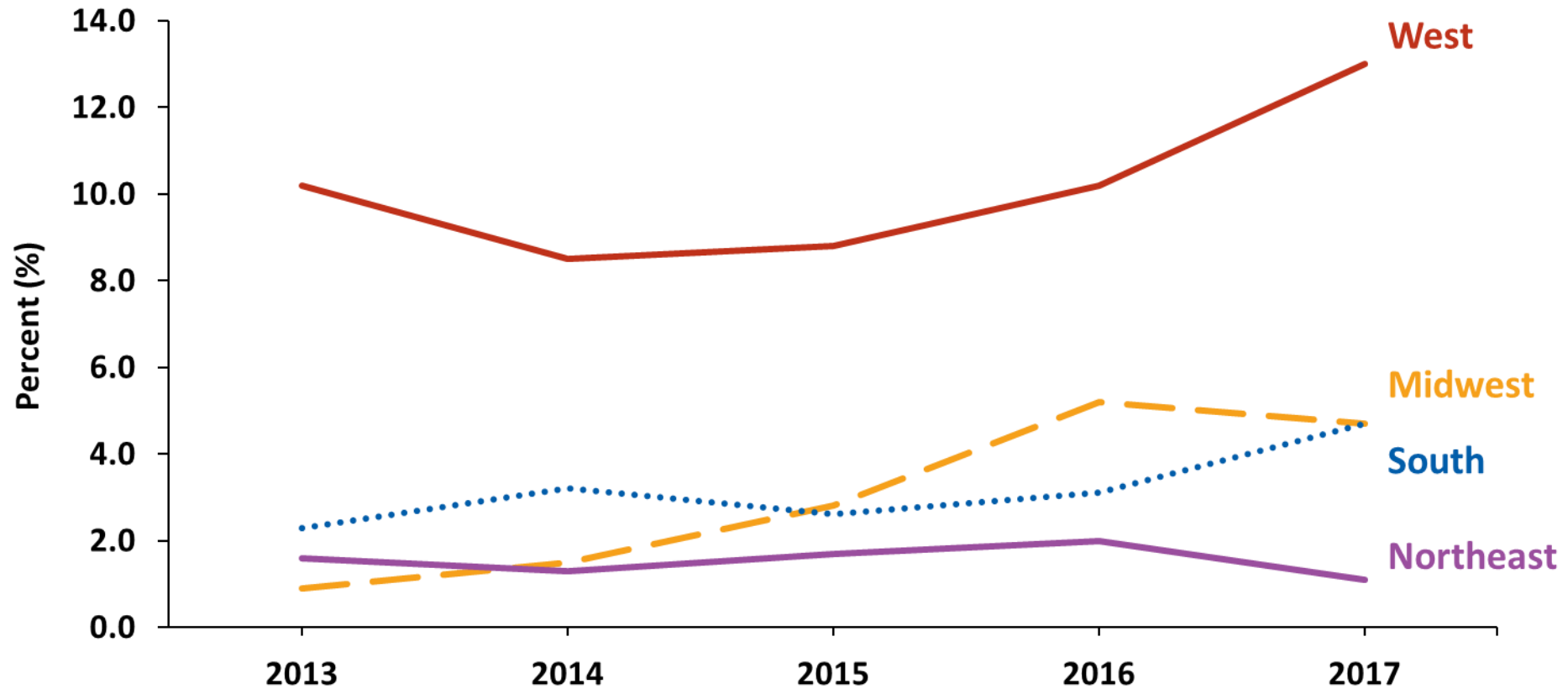


* Proportion reporting injection drug use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men.



Reported Injection Drug Use* Among MSW with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

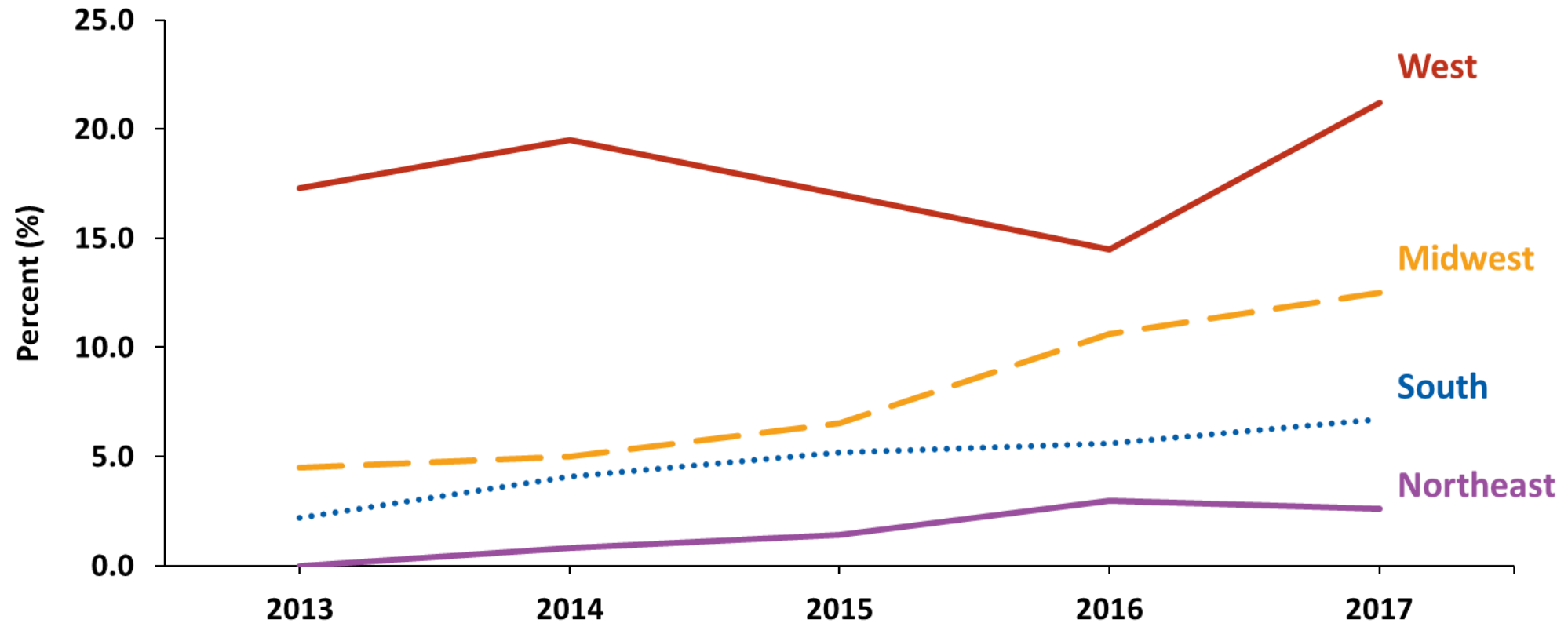


* Proportion reporting injection drug use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSW = men who have sex with women only.



Reported Injection Drug Use* Among Women with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017



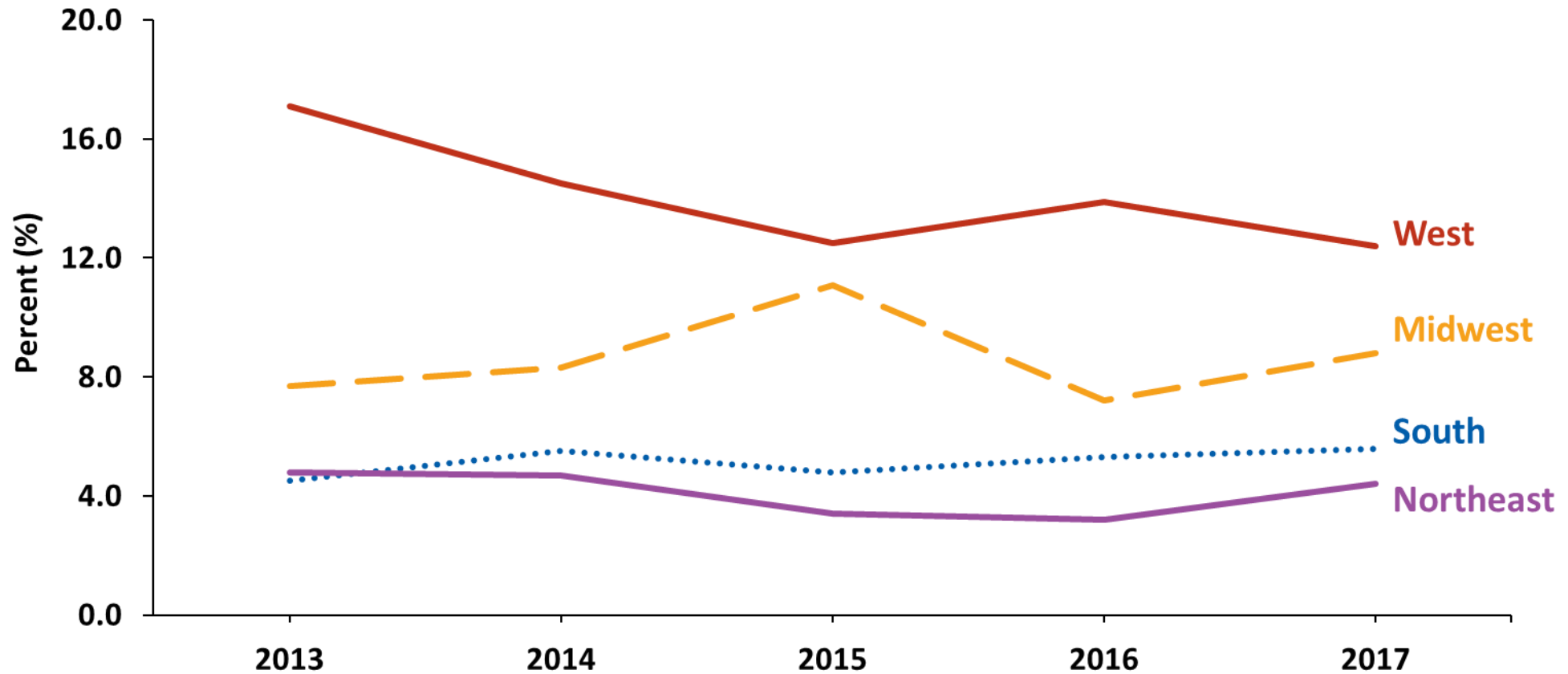
* Proportion reporting injection drug use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).



Methamphetamine



Reported Methamphetamine Use* Among MSM with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

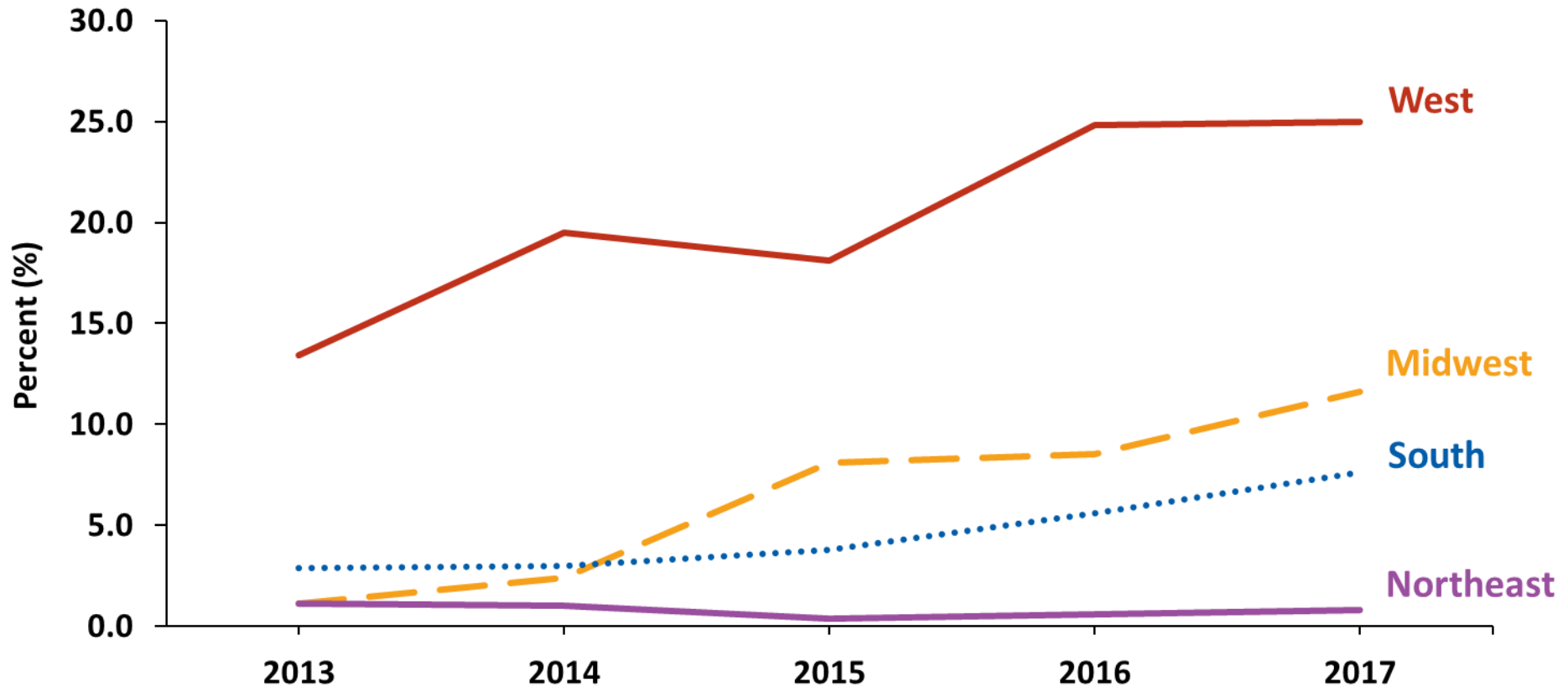


* Proportion reporting methamphetamine use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men.



Reported Methamphetamine Use* Among MSW with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

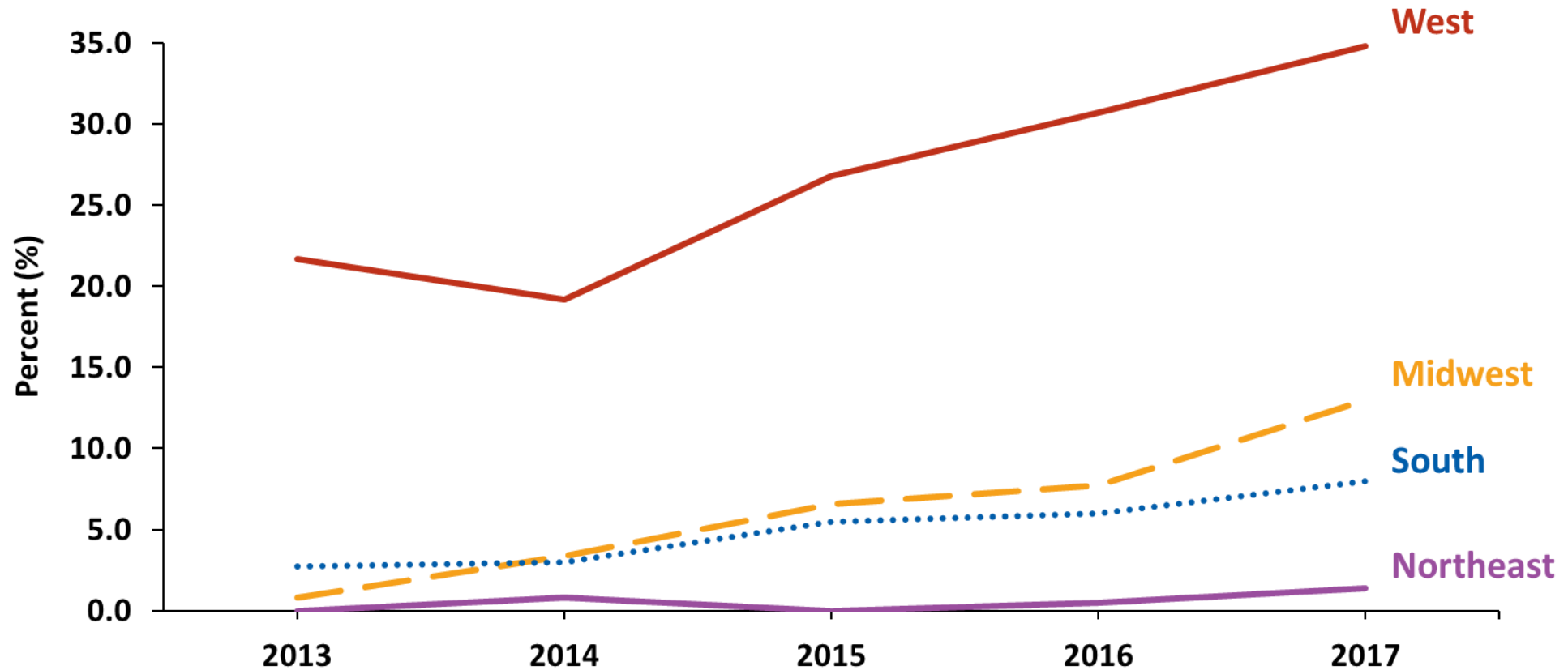


* Proportion reporting methamphetamine use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSW = men who have sex with women only.



Reported Methamphetamine Use* Among Women with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017



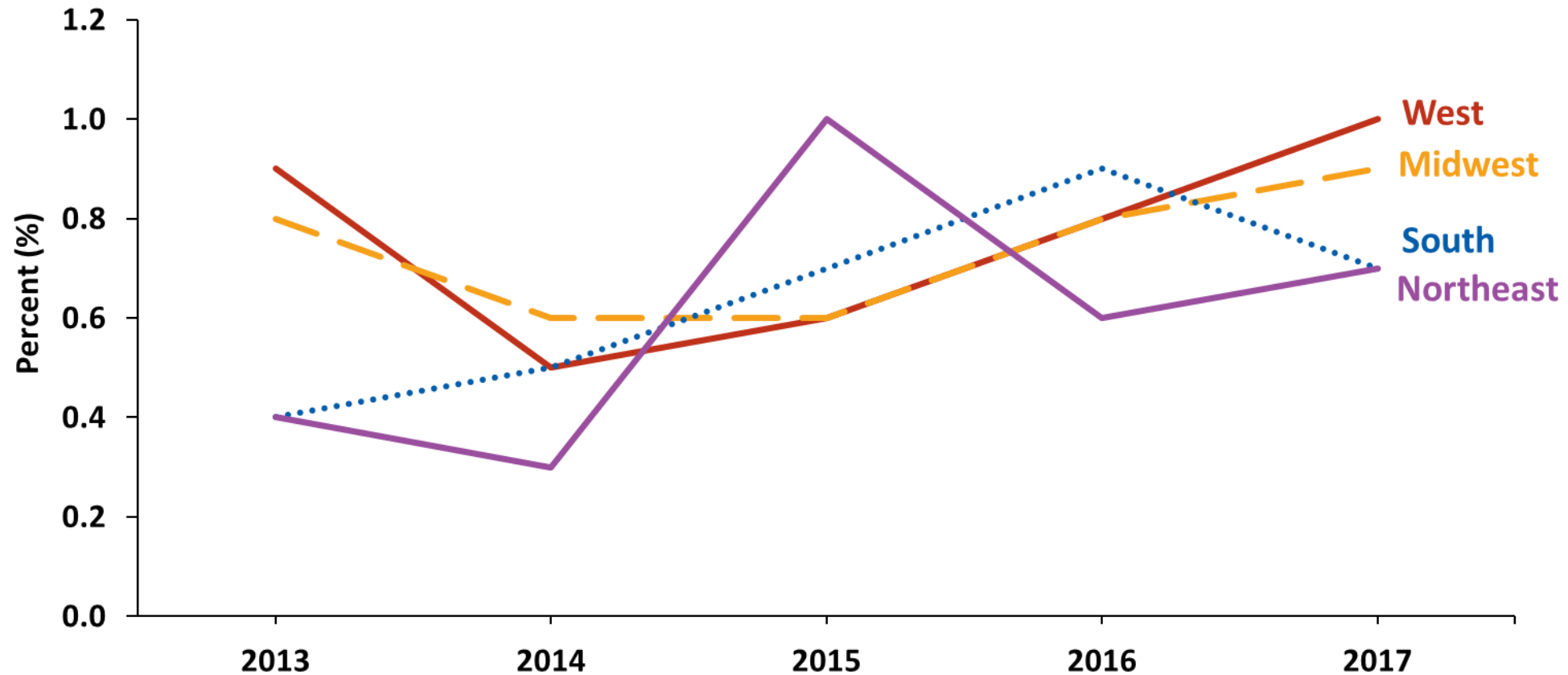
* Proportion reporting methamphetamine use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).



Heroin



Reported Heroin Use* Among MSM with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

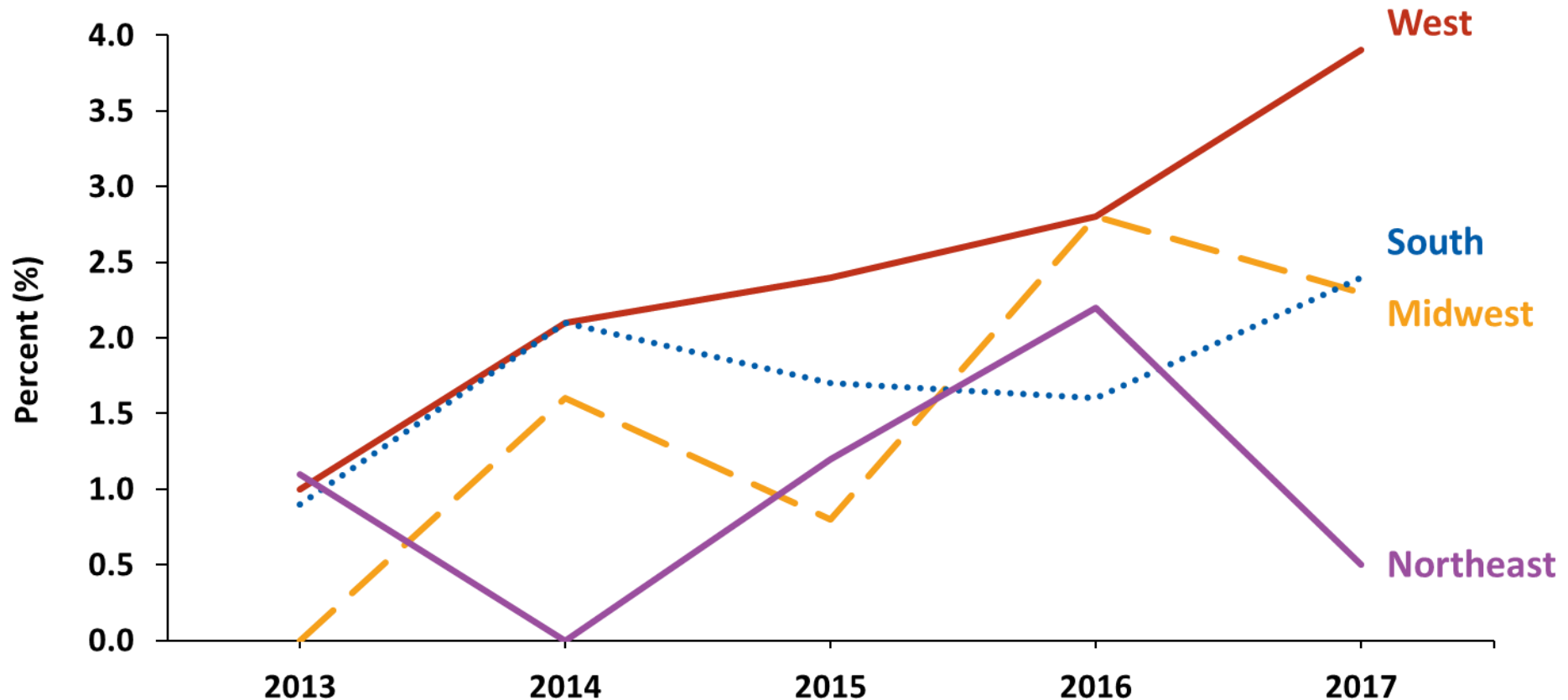


* Proportion reporting heroin use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men.



Reported Heroin Use* Among MSW with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

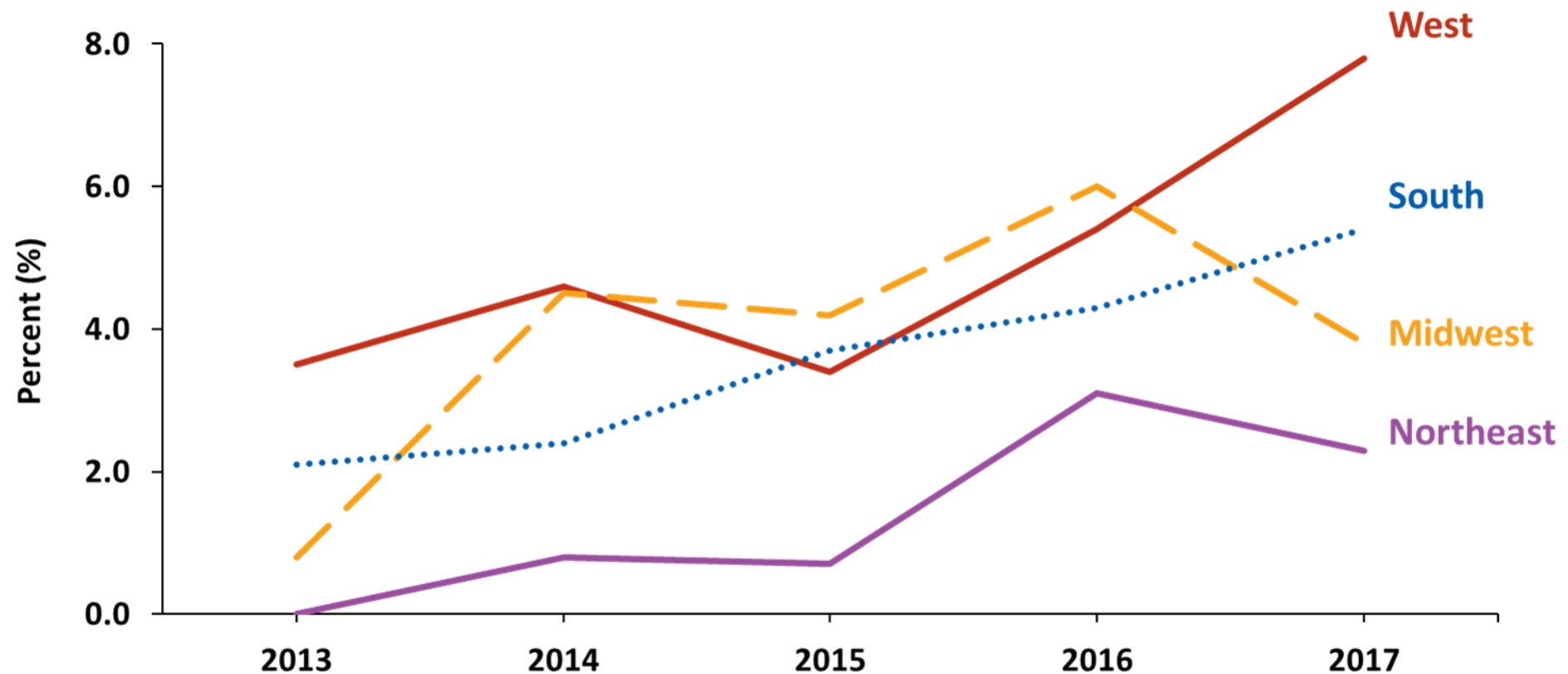


* Proportion reporting heroin use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSW = men who have sex with women only.



Reported Heroin Use* Among Women with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017



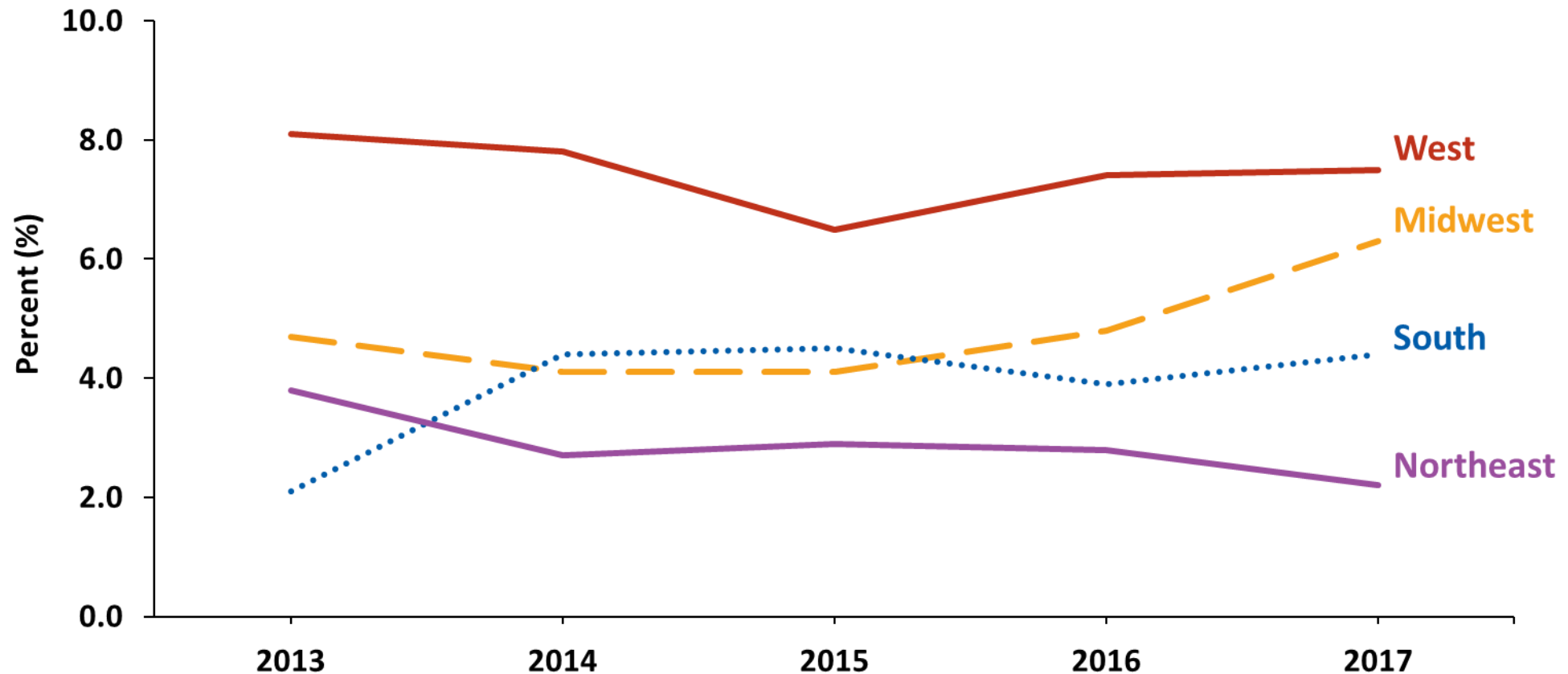
* Proportion reporting heroin use within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).



Sex with a Person Who Injects Drugs



Reported Sex with a PWID* Among MSM with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

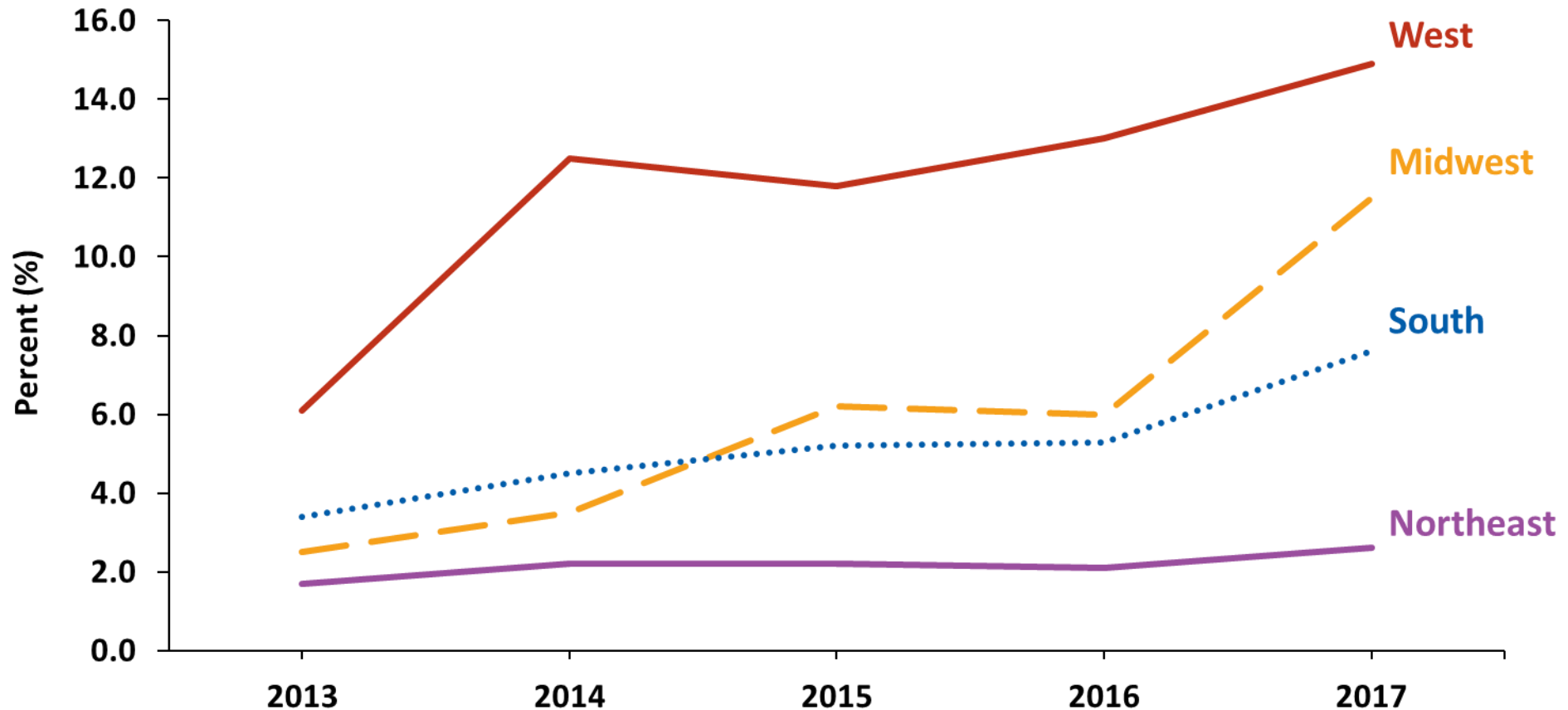


* Proportion reporting sex with a PWID within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSM = gay, bisexual, or other men who have sex with men; PWID = person who injects drugs.



Reported Sex with a PWID* Among MSW with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017

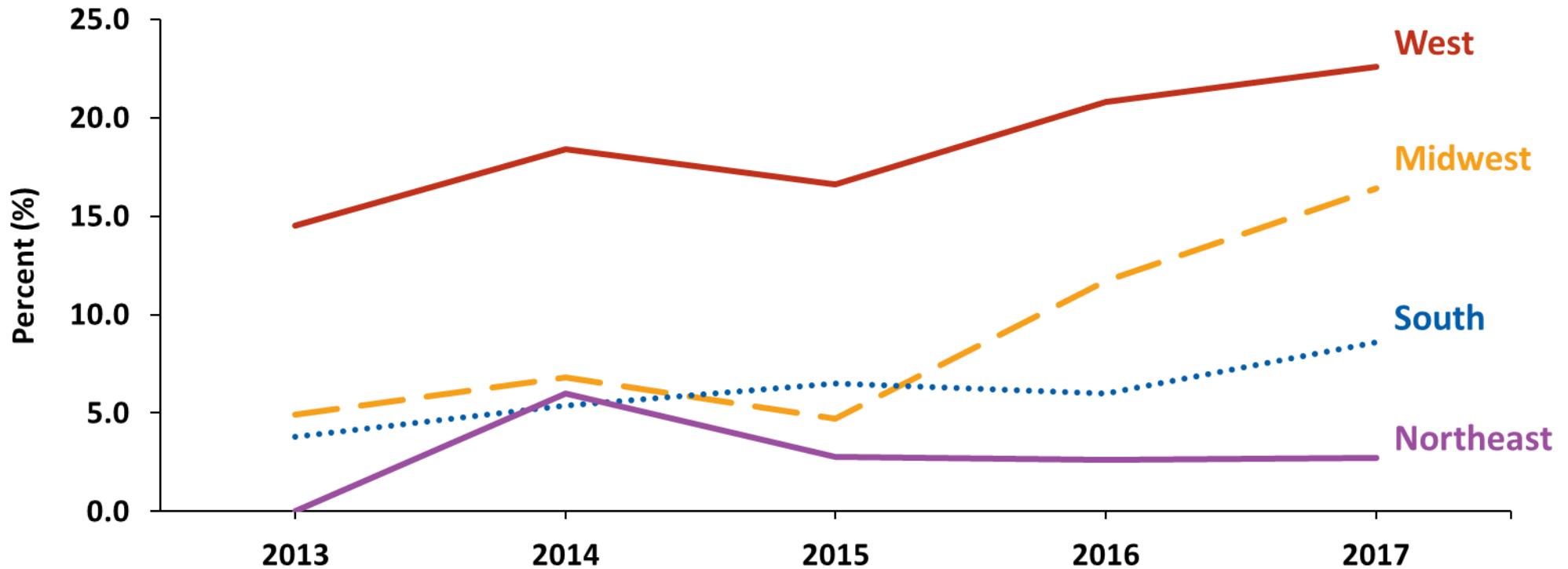


* Proportion reporting sex with a PWID within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: MSW = men who have sex with women only; PWID = person who injects drugs.



Reported Sex with a PWID* Among Women with Reported Primary and Secondary Syphilis by Region, United States, 2013–2017



* Proportion reporting sex with a PWID within the last 12 months calculated among cases with known data (cases with missing or unknown responses were excluded from the denominator).

Abbreviations: PWID = person who injects drugs.



38yo male

Admitted with history of gait unsteadiness, light headedness, blurry vision, photophobia

Self-stopped ART

History of HIV

KS with cutaneous dissemination 2016

Congenital glaucoma, loss of vision OS

Syphilis 2009, last RPR 18 mos earlier was negative

Meds: T/S for PCP prophylaxis, Lovenox for DVT

PE: Afebrile

Alert, oriented

Neuro: No nuchal rigidity, Ataxic gait – leans to right

Labs: CBC WNL, Biochem WNL

CXR neg

CT Head neg

HIV RNA 43,000

CD4 11 (1%)

Trep EIA +

RPR 1024

CSF: Prot 145

154

Glu 12

30

WBC 365 (67% PMN)

174 (81% L)

CSF VDRL 1:8

Lyme EIA 2.4

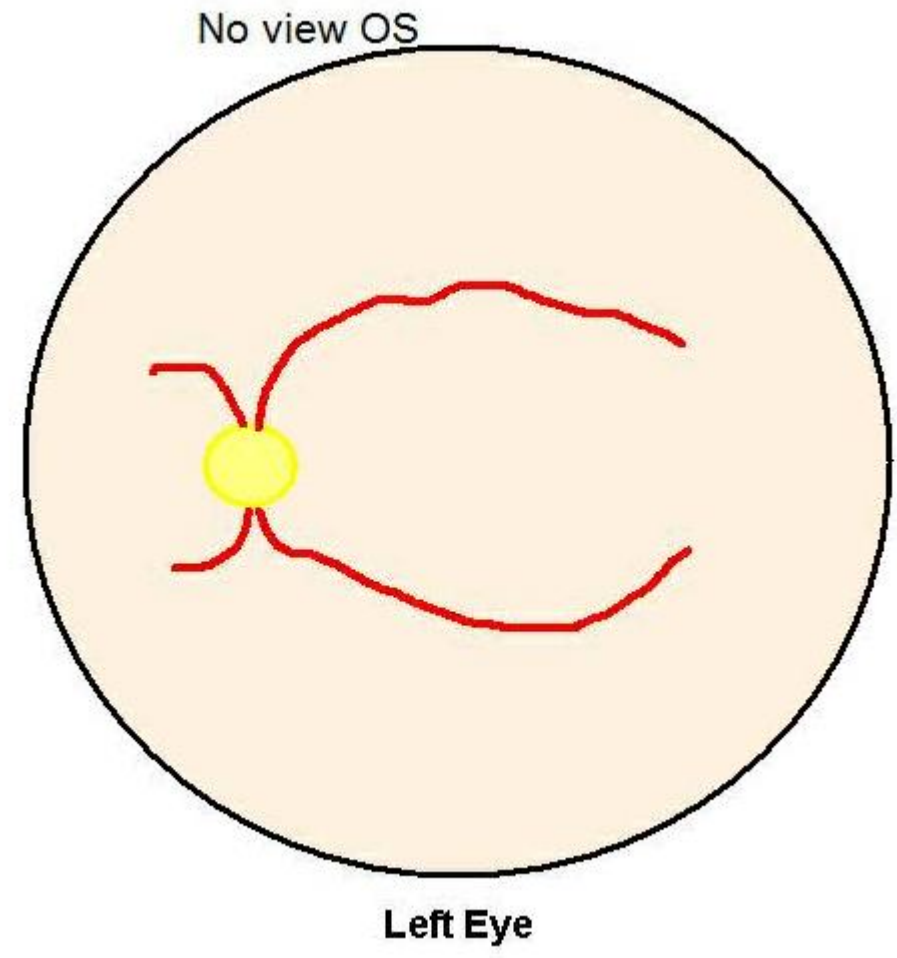
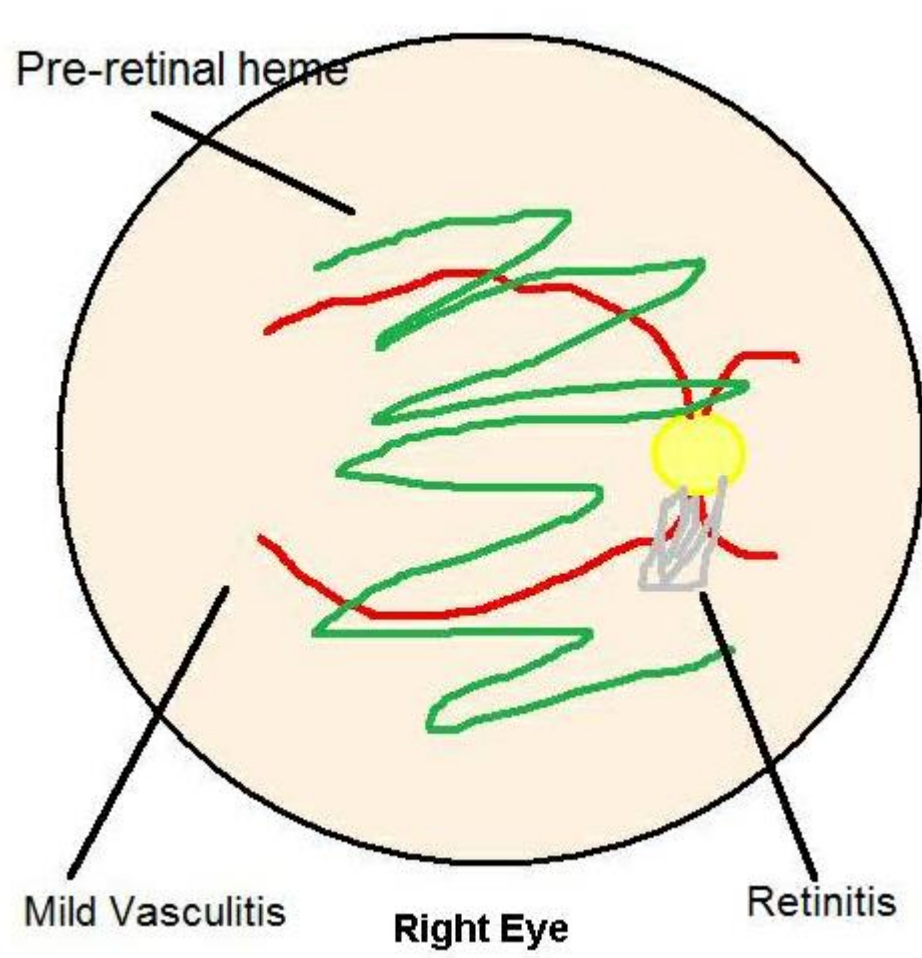
CMV PCR neg

HSV PCR neg

EBV PCR pos

VZV neg

WNV IgM neg

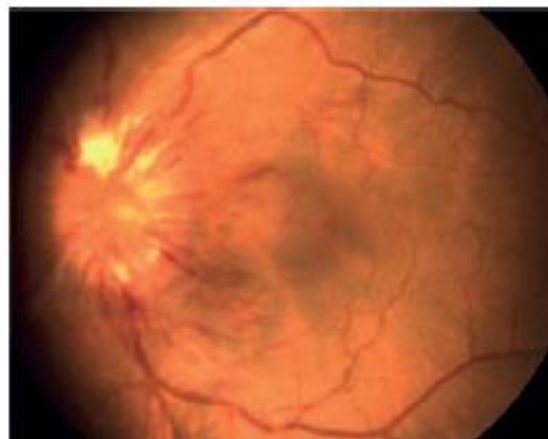




A



A



A

Initial finding OD retinal hemorrhage, retinitis, uveitis

Ophthalmological Differential

CMV retinitis

Toxoplasmosis

Syphilis

Initial treatment: Vanco Amp Ceftriax then changed to PenG

T/S

GCV (initially intravitreal)

Vitreous aspirates for CMV and Toxo PCRs were neg

Plasma was CMV neg

Lyme serology was neg

Syphilis PCR was inadvertently not sent

Clinical Advisory: Ocular Syphilis in the United States

Updated March 24, 2016

Between December 2014 and March 2015, 12 cases of ocular syphilis were reported from two major cities, San Francisco and Seattle. Subsequent case finding indicated more than 200 cases reported over the past 2 years from 20 states. The majority of cases have been among HIV-infected MSM; a few cases have occurred among HIV-uninfected persons including heterosexual men and women. Several of the cases have resulted in significant sequelae including blindness.

Ocular syphilis can involve almost any eye structure, but posterior uveitis and panuveitis are the most common. Additional manifestations may include anterior uveitis, optic neuropathy, retinal vasculitis and interstitial keratitis. Ocular syphilis may lead to decreased visual acuity including permanent blindness. Ocular syphilis can be associated with neurosyphilis. Both ocular syphilis and neurosyphilis can occur at any stage of syphilis, including primary and secondary syphilis. While previous research supports evidence of neuropathogenic strains of syphilis, it remains unknown if some *Treponema pallidum* strains have a greater likelihood of causing ocular infections.

- **Clinicians should be aware of ocular syphilis and screen for visual complaints in any patient at risk for syphilis** (MSM, HIV-infected persons, others with risk factors and persons with multiple or anonymous partners).
- **All patients with syphilis should receive an HIV test if status is unknown or previously HIV-negative**
- **Patients with positive syphilis serology and early syphilis without ocular symptoms should receive a careful neurological exam including all cranial nerves.**
- **Patients with syphilis and ocular complaints should receive immediate ophthalmologic evaluation.**
- **A lumbar puncture with cerebrospinal fluid (CSF) examination should be performed in patients with syphilis and ocular complaints.**
- **Ocular syphilis should be managed according to [treatment recommendations for neurosyphilis](#)**
- **Cases of ocular syphilis should be reported to your state or local health department within 24 hours of diagnosis. Ocular syphilis cases diagnosed since December 1, 2014, should be reported to your local or state health department.** The case definition for an ocular syphilis case is as follows: a person with clinical symptoms or signs consistent with ocular disease (i.e. uveitis, panuveitis, diminished visual acuity, blindness, optic neuropathy, interstitial keratitis, anterior uveitis, and retinal vasculitis) with syphilis of any stage.

Recommended Regimen

Neurosyphilis and Ocular Syphilis

Aqueous crystalline penicillin G 18–24 million units per day, administered as 3–4 million units IV every 4 hours or continuous infusion, for 10–14 days

If compliance with therapy can be ensured, the following alternative regimen might be considered.

Alternative Regimen

Procaine penicillin G 2.4 million units IM once daily

PLUS

Probenecid 500 mg orally four times a day, both for 10–14 days

The durations of the recommended and alternative regimens for neurosyphilis are shorter than the duration of the regimen used for latent syphilis. Therefore, benzathine penicillin, 2.4 million units IM once per week for up to 3 weeks, can be considered after completion of these neurosyphilis treatment regimens to provide a comparable total duration of therapy.

Human Immunodeficiency Virus Seropositivity and Early Syphilis Stage Associated With Ocular Syphilis Diagnosis: A Case-control Study in British Columbia, Canada, 2010–2018

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¹Faculty of Medicine, University of British Columbia, Vancouver, Canada, and ²British Columbia Centre for Disease Control, Vancouver, Canada

Background. The incidence of syphilis has been increasing worldwide in the last 20 years, disproportionately impacting those living with human immunodeficiency virus (HIV). Alongside this increase, several jurisdictions have reported increasing incidences of syphilis-related complications, including ocular syphilis. We sought to characterize ocular syphilis cases in British Columbia (BC), Canada.

Methods. This case-control study compared ocular syphilis cases, matched (1:4) to syphilis controls, that were diagnosed in BC between January 2010 and December 2018. Multivariable logistic regression was used to identify potential correlates of ocular syphilis, where variables were included in the final model if significant ($P \leq .05$).

Results. During the study period, there were 6716 syphilis diagnoses, including 66 (0.98%) ocular syphilis cases. The median age of cases was 49.5 years (interquartile range 39–59). Most (87.8%) patients were male, where 54.6% identified as men who have sex with men. The most common ophthalmologic diagnosis was panuveitis (42.4%). Of ocular syphilis patients, 48.5% were living with HIV at the time of their syphilis diagnosis, compared to 26.4% of controls ($P = .001$). The proportion of syphilis cases with ocular syphilis increased from 0.48% in 2010 to 0.83% in 2018. The final multivariable model demonstrated correlates between ocular syphilis and early syphilis stage, including primary/secondary (odds ratio [OR] 4.96, 95% confidence interval [CI] 1.86–13.24) and early latent (OR 4.29, 95% CI 1.62–11.34) stages, and HIV serostatus (OR 2.16, 95% CI 1.14–4.09).

Conclusions. Ocular syphilis increased over the study period, both in absolute numbers and as a proportion of all syphilis cases, a finding consistent with other jurisdictions. These findings highlight the importance of vigilance for ocular syphilis, to avoid diagnostic and treatment delays.

Keywords. syphilis; ocular; *Treponema pallidum*; HIV; epidemiology.

Table 1. Continued

Characteristic	n (%)		P Value
	Cases, n = 68	Controls, n = 264	
Normal	29 (58.00)	4 (57.14)	...
Elevated (>0.450 g/L)	21 (42.00)	3 (42.86)	...
CSF VDRL			
Nonreactive	36 (70.59)	7 (70.00)	...
Reactive	15 (29.41)	3 (30.00)	...
Treatment			
IV penicillin	58 (89.23)	2 (0.76)	...
IM penicillin	3 (4.62)	236 (89.39)	...
Procalne penicillin	2 (3.08)	0 (0.00)	...
Doxycycline	1 (1.54)	26 (9.85)	...
Other	1 (1.54)	0 (0.00)	...
Ophthalmologic diagnosis			
Panuveitis	28 (42.42)	...	...
Optic neuritis	22 (33.33)	...	...
Retinitis	21 (31.82)	...	...
Vitritis	16 (24.24)	...	...
Vasculitis	16 (24.24)	...	...
Optic disc swelling	4 (6.06)	...	...
Anterior uveitis	3 (4.55)	...	...
Iritis	3 (4.55)	...	...
Central artery occlusion with cherry spots	1 (1.51)	...	...
Conjunctivitis	1 (1.51)	...	...
Anisocoria of pupil	1 (1.51)	...	...
Scleritis	1 (1.51)	...	...
Papillitis	1 (1.51)	...	...
Optic neuropathy	1 (1.51)	...	...
Acute retinal necrosis	1 (1.51)	...	...
Panophthalmitis	1 (1.51)	...	...
Visual improvement			
Yes	41	...	...
No	4	...	...
Unknown	21	...	...

Abbreviations: CSF, cerebrospinal fluid; HIV, human immunodeficiency virus; IM, intramuscular; IQR, interquartile range; IV, intravenous; MSM, men who have sex with men; RPR, rapid plasma reagin; VDRL, Venereal Disease Research Laboratory test.

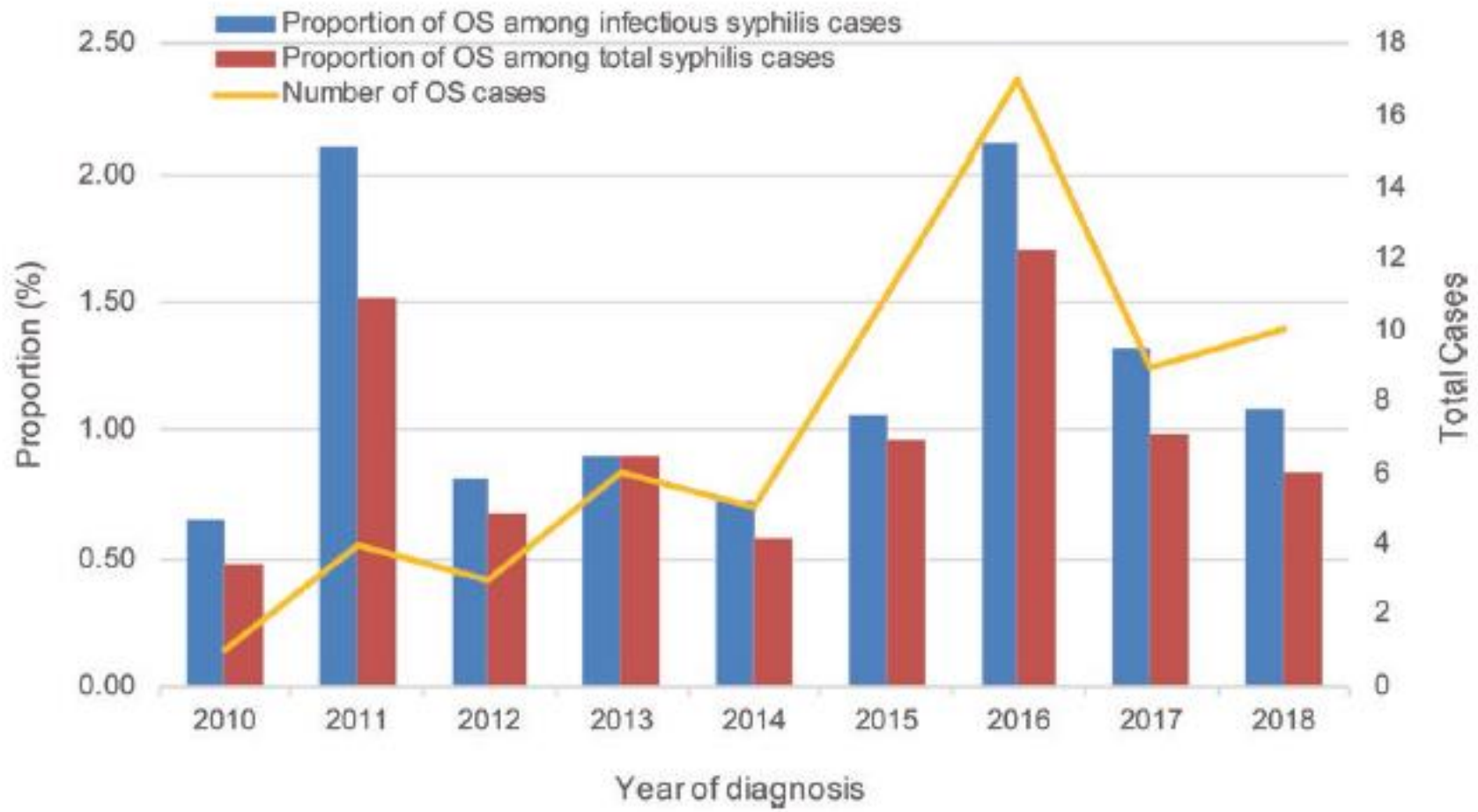


Table 2. Multivariable Model of Variables Associated With Ocular Syphilis

Variable	Bivariable Analysis			Multivariable Analysis		
	Odds Ratio	95% CI	PValue	Adjusted Odds Ratio	95% CI	PValue
Stage of syphilis infection						
Primary/secondary	6.66	2.53–17.53	.003	4.96	1.86–13.24	.011
Early latent	5.93	2.30–15.34	.012	4.29	1.62–11.34	.053
Late latent	ref	...	...	ref	...	...
HIV serostatus						
Positive	3.04	1.67–5.53	<.001	2.16	1.14–4.09	.019
Negative	ref	...	...	...	...	...
HIV viral load,^a copies/ml						
Not suppressed (50+)	6.95	1.44–33.46	.016	...	...	...
Suppressed (<50)	ref	...	...	...	...	...
Syphilis reinfection						
Yes	0.52	.19–1.41	.201	...	...	...
No	ref	...	...	...	...	...
RPR titer^a						
>1:32	27.23	8.82–84.08	<.001	...	...	...
1:8–1:32	0.84	.18–3.88	.011	...	...	...
<1:8	ref	...	...	...	...	...

Abbreviations: CI, confidence interval; HIV, human immunodeficiency virus; Ref, reference variable; RPR, rapid plasma reagin.

^aVariables were not included in the multivariable analysis due to interaction and multicollinearity.