

Public Health

Seattle & King County



**Sexually Transmitted Diseases
Epidemiology Report
2008**

Public Health – Seattle and King County 2008 Sexually Transmitted Diseases (STD) Epidemiology Report

Data sources

King County morbidity data:

This report describes case numbers and rates of infection for three sexually transmitted infections in the King County population. These three infections (chlamydial infection, gonorrhea, and syphilis) are notifiable diseases in Washington state. Medical providers and laboratories are required by law to report all laboratory confirmed cases of these infections to Public Health – Seattle & King County (Public Health). The Public Health STD Control Program forwards these reports to the Washington State Department of Health.

For this report, yearly infection totals are based on year of diagnosis, rather than year of report. The numbers contained in the Chlamydial Infection, Gonorrhea, and Syphilis sections of this report are for cases diagnosed from 1992-2008 and reported through March 31, 2008.

Population data:

Incidence rates were calculated using population estimates provided by the Washington State Office of Financial Management for intercensal years, and U.S. census data for 2000. Population data for 2008 are not yet available; for these years, population data from 2007 were utilized to calculate incidence figures for 2008.

the Public Health HIV/AIDS Epidemiology Unit provided population estimates for men who have sex with men (MSM), as well as HIV positive and negative MSM. The overall population estimate used for MSM (43,150 men) represents 5.8% of men ages 15 and older in King County in 2006; this figure is comparable to estimates from several population-based studies for the percent of the male population that is MSM.¹⁻³

Data limitations: Notifiable disease data are subject to several limitations. In some cases, considerable differences in numbers and rates of infection between subgroups are attributable in large part to screening and testing practices. For example, the rate of chlamydial infection in King County is substantially higher among women than men, reflecting national recommendations that young women be screened for chlamydia annually, and the absence of corresponding recommendations for young men.

While chlamydial infection, gonorrhea, and syphilis are all notifiable diseases in Washington state, these data are subject to underreporting by physicians and laboratories. Additionally, because undiagnosed infections cannot be reported, infections which are frequently experienced with no symptoms, such as chlamydia, may exist at higher levels in the population than notifiable disease data indicate.

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2008 Sexually Transmitted Diseases Epidemiology Report**

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Executive Summary

Chlamydial infection and gonorrhea are the two most commonly-reported notifiable diseases in the United States. Left untreated, these two infections can cause serious long term health consequences in women, including ectopic pregnancy, tubal infertility and chronic pelvic pain. Although syphilis occurs much less frequently, untreated syphilis also can result in long term complications, including stroke, blindness, hearing loss, dementia and cardiovascular complications. Untreated syphilis in pregnant women may lead to congenital syphilis or perinatal death. Other sexually transmitted infections can lead to a variety of other complications, as well as increase the risk of acquisition of HIV.

In this 2008 Sexually Transmitted Diseases Epidemiology Report, we describe recent trends in chlamydial infection, gonorrhea, and early syphilis among King County residents. We also provide information about patients using the Public Health – Seattle & King County (PHSKC) STD Clinic, as well as trends in diagnoses of several other sexually transmitted infections in the STD Clinic. We hope that the information contained in this report will be useful to providers, policy makers, researchers and others interested in reducing the transmission of sexually transmitted infections in King County.

Key developments in the epidemiology of sexually transmitted diseases (STD) in King County in 2008 include:

Gonorrhea incidence stabilized. The incidence¹ of gonorrhea in King County declined slightly in 2008 (70 cases per 100,000 persons) and is now at its lowest level since 1999. The cause of the recent declines in gonorrhea incidence is unclear. This trend could change rapidly; providers should maintain current gonorrhea testing and treatment practices. The observed decrease occurred among heterosexual men and women as well as among men who have sex with men (MSM). Rates of gonorrhea among men began to increase in late 1990s, due in large part to rising rates of infection among MSM. Rates of reported gonococcal infection in MSM peaked in 2005 at 704 per 100,000 MSM, and since that time have declined 57%. Between 2004 and 2006, gonorrhea rates increased dramatically among heterosexuals in King County and in many other areas of the Western U.S., but declined substantially in 2007, a trend that continued in 2008. The reported gonorrhea incidence among women ages 25-29 in King County is now similar to that of women in other Washington counties (176 per 100,000), and is substantially lower than that among women ages 15-29 (514 per 100,000) nationally.

- **Drug resistance for gonococcal infections increased among men.** The proportion of gonococcal infections caused by quinolone resistant *Neisseria gonorrhoeae* (QRNG) in King County increased from 39% in 2007 to 48% in 2008 among men but remained stable among women at 23%. In 2008, 58.4% of gonococcal isolates from men who have sex with men (MSM) and 36.9% from heterosexual men were QRNG. Health care providers in King County should continue to avoid the use of fluoroquinolones for treatment of gonorrhea.

- Chlamydia incidence is stable, with the highest rates of reported infection observed among young women.** In 2008, the incidence of chlamydial infection among King County residents (320 per 100,000 persons) was similar to the incidence observed in 2007 (309 per 100,000 persons). The plateau of rates was also observed among 15-29 year old women in King County. In contrast, the incidence of chlamydial infection among women in this age group in other counties in Washington increased sharply from 2007 to 2008, probably due in part to changes in the statewide reporting system for sexually transmitted diseases. The persistent high risk of chlamydial infection among young women highlights the need to ensure that all sexually active women younger than 26 be tested for *C. trachomatis* infection at least annually.
- Chlamydial prevalence is stable.** The prevalence of chlamydial infection ² (based on testing data from the Infertility Prevention Project) in King County women ages 15-24 in 2008 (6.1%) was similar to the prevalence observed in 2007 (5.9%), continuing a period of stable prevalence in this population which began in 2000. Among women in this age group in other Washington state counties, chlamydial prevalence increased rapidly from 2001 to 2004 and has since stabilized. The prevalence of chlamydia is consistently higher in Washington women outside of King County than within. Although the stabilization of chlamydial rates is somewhat reassuring, these rates remain too high, and the failure of existing efforts to control the infection highlights the need for new efforts. Toward that end, Public Health recommends that clinicians routinely rescreen persons diagnosed with chlamydial infection or gonorrhea three months following initial therapy, and that providers make use of patient-delivered partner therapy (PDPT) provided at no cost through the health department. More information about PDPT is available at: <http://www.kingcounty.gov/healthservices/health/communicable/std/providers.aspx>
- Early syphilis incidence remains stable.** Early syphilis incidence has been stable in King County for the past 5 years; incidence was 9 per 100,000 persons in 2004 and 11 per 100,000 persons in 2008. Early syphilis in King County continues to be concentrated among MSM (473 per 100,000), particularly among MSM who are HIV positive. The early syphilis epidemic among MSM began in 1997, and has continued to the present, with a sharp rise in syphilis both from 1997 to 1999, and from 2003 to 2004. Over the past several years, Public Health observed a trend toward early latent syphilis cases accounting for a larger proportion of reported early syphilis cases. Many of these cases are detected through the screening of men without signs or symptoms of syphilis. The shift toward more early latent syphilis increases the importance of regular syphilis testing among MSM. PHSKC recommends that all MSM test for syphilis at least annually, and that MSM with any of the following risks tests for syphilis and other STDs every three months: 1) bacterial STD diagnosis in the last year; 2) methamphetamine use or popper use; 3) unprotected anal sex with a partners of unknown or different HIV status.
- The Public Health STD clinic diagnosed a substantial proportion of all reportable STDs diagnosed in King County in 2008.** This included 64 (31%) of the 204 cases of early syphilis, 348 (27%) of the 1294 cases of gonorrhea, 56 (18%) of the 315 cases of HIV³, and 531 (9%) of the 5962 cases of chlamydial infection. As in past years, the PHSKC STD Clinic diagnosed more cases of HIV in 2008 than any other single clinical

site in Washington state. The Public Health STD Clinic remains a vital resource for residents and health care providers in King County.

- **MSM continued to experience high rates of all reportable STDs relative to heterosexuals.** In 2008, the estimated rates of gonorrhea, chlamydia and early syphilis among MSM were 719, 879 and 473 cases per 100,000, respectively. For comparison, rates of these infections among heterosexuals were 51, 307, and 0.3 per 100,000, respectively. Across the reportable STDs among MSM, incidence was stable from 2007 to 2008. Behavioral surveillance data obtained through the Public Health STD clinic suggest that the sexual behavior of MSM evaluated in the clinic has remained relatively stable since 2000. The continued disproportionate impact of STD on MSM should be a strong impetus for ensuring that MSM test for STD, including HIV, at least annually.

- **Rates of all STD continue to show marked racial and ethnic disparities.** In 2008, incidence of chlamydial infection was 6.8 times greater among African American (1830 per 100,000) than among white women (262 per 100,000). Compared to whites, rates among Native American (939 per 100,000) and Hispanic women (1034 per 100,000) were also elevated. The incidence of gonorrhea was 12.6 times higher among African American women (314 per 100,000), and 7.4 times higher among Native American women (187 per 100,000), than among white women (25 per 100,000). For all race/ethnicity analyses, Hispanic ethnicity was treated as a separate race group, and all other race groups exclude Hispanics. Similar, though somewhat attenuated, disparities occurred among men.

On a positive note, while the incidence of reported gonorrhea decreased from 2007 to 2008 in all racial and ethnic groups among women, the largest decreases occurred among African American (25%) and Hispanic women (55%). The county has made some progress in reducing racial and ethnic disparities in STD rates, but much remains to be done. The persistence of racial disparities should prompt providers to ensure that existing screening guidelines are rigorously applied.

¹ Incidence is a measure describing the number of new cases of disease in a specific population over a period of time. In King County, incidence of sexually transmitted infections is calculated by dividing the number of reported cases of an infection over the total King County population, and is usually expressed as a number of cases per 100,000 population per year.

² Prevalence is a measure of all cases of disease present in a population during a specified time period. Prevalence is often expressed as a percentage, calculated as the number of cases of a disease divided by the number of individuals at risk.

³ Some of the 56 cases of HIV diagnosed in the STD Clinic may not have been King County residents.

Chlamydial Infection

In 2008, 5962 cases of chlamydial infection were reported among King County residents, representing an overall reported incidence of 320 per 100,000 people (Table 1), similar to the incidence of 310 cases per 100,000 people observed in 2007 (Table 3). In 2008, 3956 cases were reported among women, for a reported incidence of 423 per 100,000 women, and 2006 cases were reported among men, for a reported incidence of 216 per 100,000 men (Table 1).

Historically, the incidence of chlamydial infection has varied substantially by age and race in King County. These patterns continued in 2008 (As noted in the Executive Summary, Hispanic ethnicity was treated as a separate race group, and all other race groups exclude Hispanics.):

- Among women, reported incidence was highest among black women (1570 per 100,000 women), followed by Hispanic (1034 per 100,000), Native American (991 per 100,000), Asian (459 per 100,000), and white (252 per 100,000) women (Table 2). This pattern of disparity was also evident when analysis was restricted to women ages 15-29 (Figure 4).
- Among men, black men had the highest reported incidence of chlamydial infection with an incidence of 1022 per 100,000, followed by Hispanic men (385 per 100,000). Incidence of reported chlamydial infection was less variable among Native American (173 per 100,000), Asian (159 per 100,000), and white men (139 per 100,000) than was the case among women (Table 2).
- Among women, the incidence of chlamydial infection was highest among 15-19 year olds (2444 per 100,000) and 20-24 year olds (1994 per 100,000), while among men, reported incidence was highest among 20-24 year olds (888 per 100,000) followed by 15-19 and 25-29 year olds (544 and 497 per 100,000, respectively) [Table 2, Figure 3]. Higher rates among women than men both overall and within most age and race groups largely reflect differential screening practices in King County, whereby asymptomatic women are frequently screened for chlamydial infection and men are not.

Public Health evaluates three sources of data to assess trends in chlamydial infection in the population:

- 1) Numbers of cases reported to PHSKC by diagnosing providers and laboratories;
- 2) Prevalence in a sentinel population of women (the Infertility Prevention Project [IPP]);
- 3) Trends in infection in the Public Health STD clinic.

The incidence of reported chlamydial infection among 15-29 year old women in King County remained stable from 2006-2008, after a downward trend in reported incidence observed from 2004 through 2005 (Table 4, Figure 1). In contrast, incidence of reported chlamydial infection among 15-19 year old women rose sharply from 2007 to 2008 on a statewide basis, (Washington state excluding King County); this increase may be related in part to increased reporting of chlamydia cases as a result of a new web-based case reporting system introduced statewide in 2007-9. (A similar system has been in place in King County since the late 1990s.) Chlamydial infection incidence increased less markedly on a national basis (Figure 1) from 2006 to 2007. Prior to these recent increases, state and national incidence of chlamydial infection plateaued for several years starting in 2004.

Public Health does not currently monitor the number of chlamydial tests performed in the population, and we cannot estimate the extent to which changes in the number of cases reported reflect true changes in incidence vs. increased case detection or ascertainment due to changes in the number of tests performed, changes in the sensitivity of the tests employed, or more complete reporting of diagnosed cases. The increase observed in national reported chlamydial incidence from 1997 through 2004 is likely due, at least in part, to increased screening among women in states which did not previously have screening programs. Changes in testing technology also may have influenced trends in reported incidence. Locally, Public Health began pilot testing nucleic acid amplification tests (NAATs) for chlamydial infection in 1994; this more sensitive test may have resulted in increases in chlamydia diagnoses in the years following 1994. All Public Health clinics and sites participating in IPP were using NAATs by the end of 1999.

IPP is a national program that provides routine screening and treatment services for chlamydial infection to patients seen in family planning, sexually transmitted disease, and selected other public clinics. All patients meeting selective screening criteria are tested in these clinics, thereby providing an estimate of the prevalence of infection among young women, regardless of symptoms. Figure 2 displays IPP chlamydia prevalence (the number of positive chlamydia tests divided by all chlamydia tests performed) among women ages 15-29 for King County and all other Washington counties for 1998-2008. Chlamydial infection prevalence has been stable among King County women since 2000 (Figure 2). In contrast, among other women in Washington, chlamydial prevalence increased rapidly from 2001 to 2004, and has been roughly stable since.

Finally, among patients evaluated at the Public Health STD Clinic, the prevalence of chlamydial infection in women declined from 2003 to 2008. The number of men seeking evaluation for symptomatic chlamydial urethritis (Figure 21) decreased from 2003 to 2007, but did not change from 2007 to 2008. The extent to which slightly divergent trends observed in the three data sources monitored by Public Health reflect true differences in chlamydial morbidity vs. changing patterns in the populations tested is not certain.

Because reporting is likely more complete among women than among men and morbidity associated with chlamydial infection is concentrated in women, age, race, and ethnicity trends for reported chlamydial infection over time are shown for women only (Figures 3 and 4). Incidence among women across all age groups remained stable over the past year (Figure 3). Analysis of trends over time in race and ethnicity are limited to women ages 15-29, the group in which incidence is highest. Reported chlamydia incidence decreased slightly among 15-29 year old Native American woman from 2007 to 2008 (Figure 4). Reported 2008 incidence among other race groups was similar to the incidence observed in 2007. Following an increase from 2004 to 2007, reported chlamydial infection incidence among Hispanic women ages 15-29 was flat from 2007 to 2008. Similarly, incidence of chlamydial infection among Non-Hispanic women was stable from 2007 to 2008, but in this group, incidence fell slightly from 2004 through 2007.

**Table 1: Number of Reported Cases and Chlamydia Incidence,
King County, WA, 2008**

	Cases	Incidence per 100,000 population
Sex		
Women	3956	423
Men	2006	216
Total cases	5962	320

Table 2: Number of Reported Cases and Chlamydia Incidence in Men and Women, by Race, Ethnicity, and Age King County, WA, 2008

		Women (N=3956)		Men (N=2006)	
		Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
Race/ethnicity*^					
	White	1338	231	728	130
	Black	770	1570	525	1022
	Native American	64	939	10	151
	Asian/Pacific Islander	437	377	141	133
	Hispanic	511	1034	223	385
	Other	64		12	
	Multiple	169		36	
	Unknown	603		331	
Age*					
	0-9 years	3	3	1	1
	10-14 years	76	145	9	16
	15-19 years	1384	2444	322	548
	20-24 years	1359	1994	612	888
	25-29 years	651	868	394	497
	30-34 years	266	391	246	334
	35-44 years	160	113	272	183
	45-55 years	43	29	121	83
	>=56 years	14	6	28	15
	Unknown	0		1	

* Cases with unknown race, ethnicity, or age were included in race/ethnicity and age specific rates after being distributed among race/ethnicity/age categories based on the distribution of cases with known race, ethnicity and age. In 2008, among women, 603 case reports were missing race and/or ethnicity, and among men, 331 cases reports were missing race and/or ethnicity, and 1 was missing age.

^Race/ethnicity specific rates exclude cases reported with "multiple" or "other" races. Cases of Hispanic ethnicity are included in the Hispanic category. All other race groups exclude cases of Hispanic ethnicity.

**Table 3: Number of Reported Chlamydia Cases and Incidence among Men and Women
King County, WA, 1992-2008**

Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	3000	375	965	124	3965	251
1993	2563	316	813	102	3376	210
1994	2742	334	811	101	3553	219
1995	2410	291	802	98	3212	196
1996	2356	282	880	107	3236	195
1997	2247	266	903	108	3150	188
1998	2447	286	1071	127	3518	207
1999**	2719	315	1357	158	4076	237
2000	3388	388	1653	191	5041	290
2001	3285	372	1612	184	4897	279
2002	3483	391	1750	198	5233	295
2003	3796	425	2031	229	5827	327
2004	4108	457	2061	232	6172	345
2005	4070	448	2188	243	6261	346
2006	3956	429	2016	221	5974	325
2007	3901	418	1840	198	5752	309
2008	3956	423	2006	216	5962	320

** Some PHSKC clinics began using NAATS testing for chlamydial infection in 1994, and all PHSKC clinics were using NAATs by 1999.

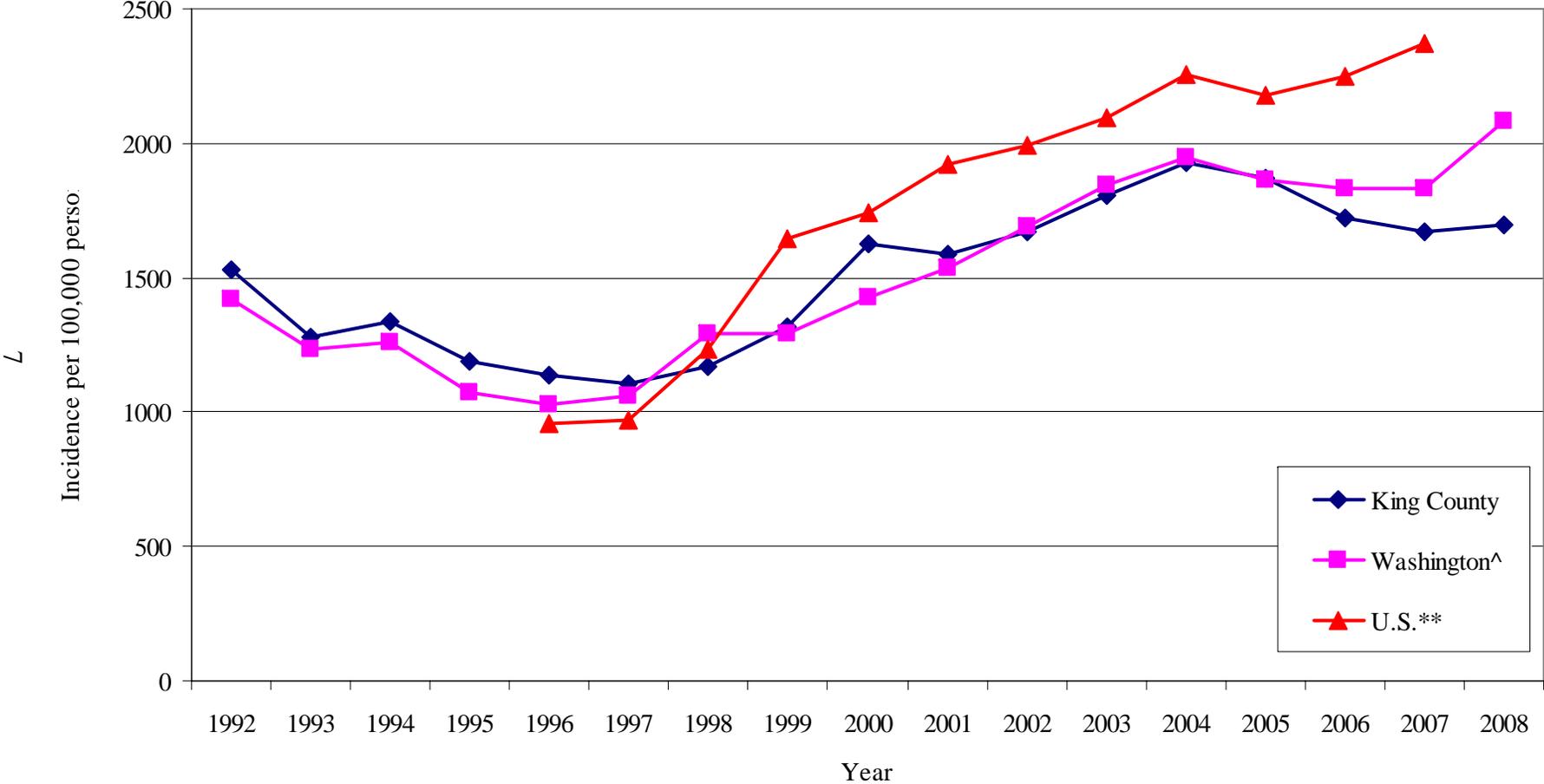
Table 4: Number of Reported Chlamydia Cases and Incidence among Men and Women ages 15-29, King County, WA, 1992-2008

Year	Women, ages 15-29		Men, ages 15-29		Total, ages 15-29	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	2658	1392	805	452	3464	985
1993	2212	1160	695	390	2908	827
1994	2302	1290	637	358	2939	840
1995	2051	1149	642	359	2693	766
1996	1976	1108	664	367	2640	744
1997	1942	1093	644	353	2586	722
1998	2081	1160	788	426	2869	790
1999**	2357	1291	934	502	3291	903
2000	2918	1430	1154	617	4071	1110
2001	2877	1397	1065	566	3942	1069
2002	3050	1441	1215	642	4265	1147
2003	3312	1634	1385	727	4698	1256
2004	3589	1747	1349	699	4938	1303
2005	3536	1721	1508	692	5045	1307
2006	3359	1723	1297	642	4656	1172
2007	3336	1669	1176	568	4512	1109
2008	3394	1698	1329	642	4723	1161

* Cases with unknown age were included age specific counts and rates after being distributed among age categories based on the distribution of cases with known age.

** Some PHSKC clinics began using NAATS testing for chlamydial infection in 1994, and all PHSKC clinics were using NAATs by 1999.

Figure 1: Chlamydia Incidence among Women ages 15-29*, 1992-2008
 King County, Washington State^, and U.S.

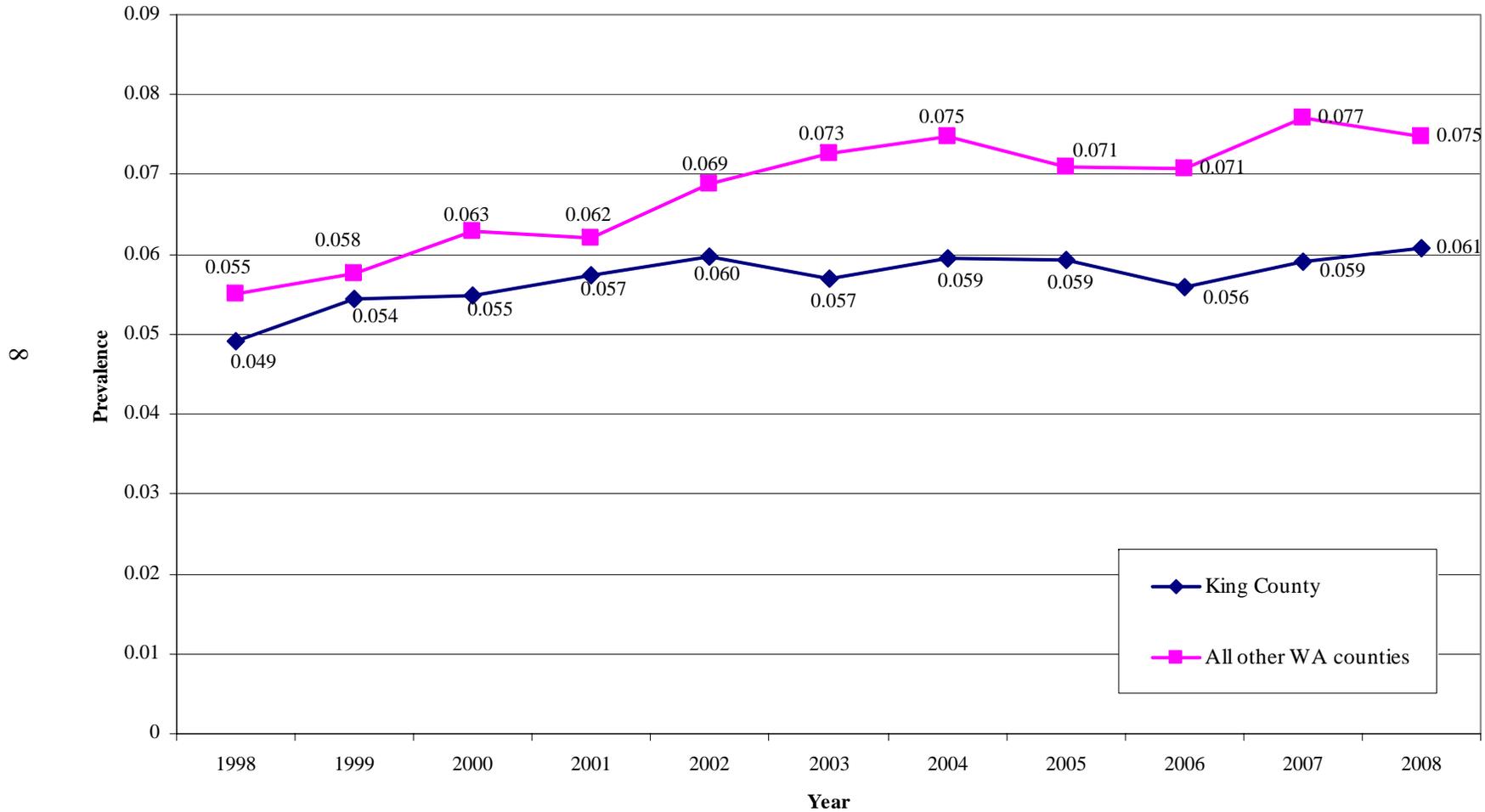


* Cases with unknown age were distributed according to annual age distributions among cases with known age and included in age-specific rates.

** National data for 2008 were not available at the time this report was prepared.

^ Washington State rates exclude King County.

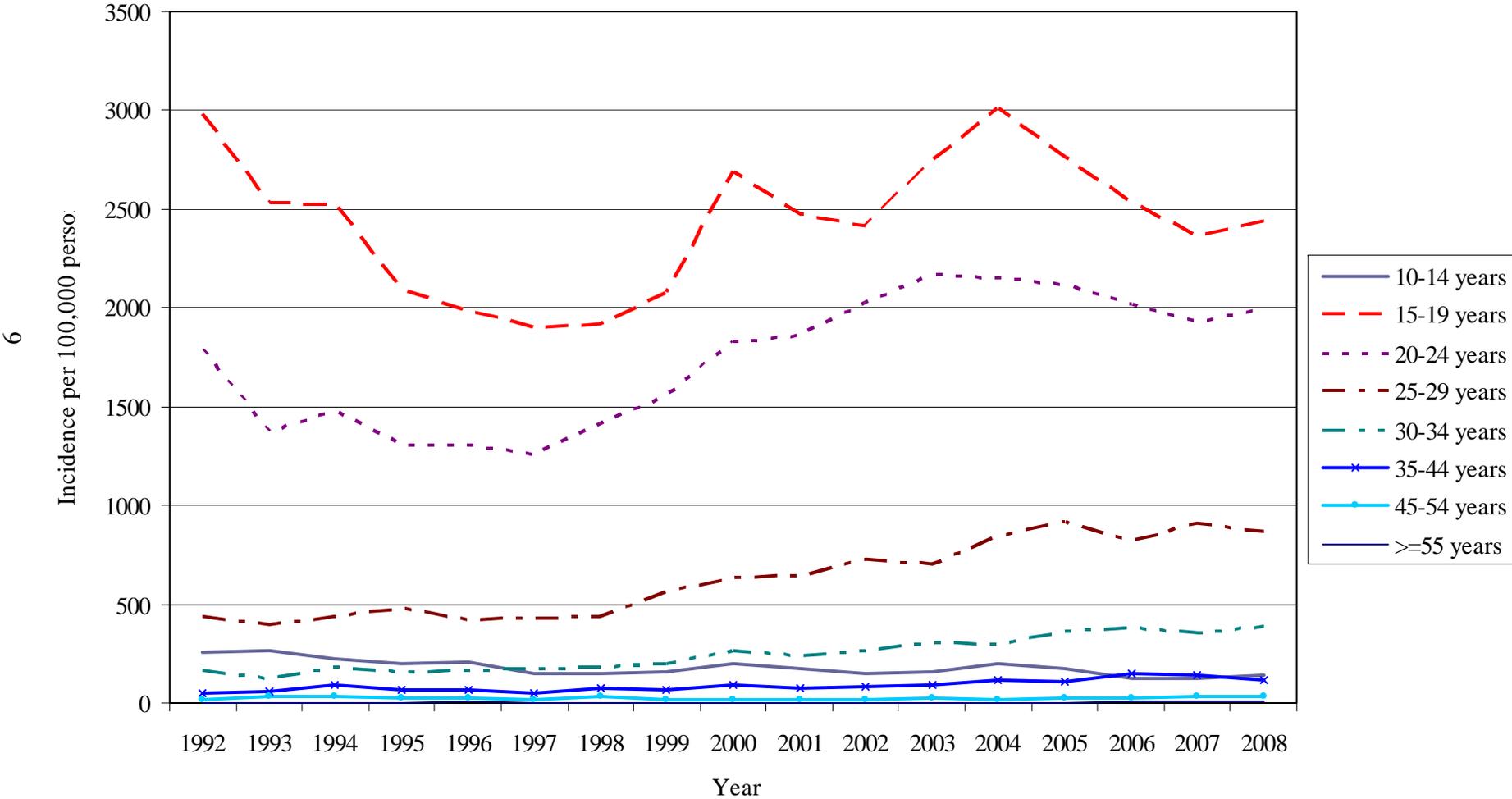
Figure 2: Chlamydia Prevalence among Women ages 15-29 tested in King County and All Other Washington Counties*
Infertility Prevention Project, 1998-2008**



* County is based on the zip code of the reporting clinic

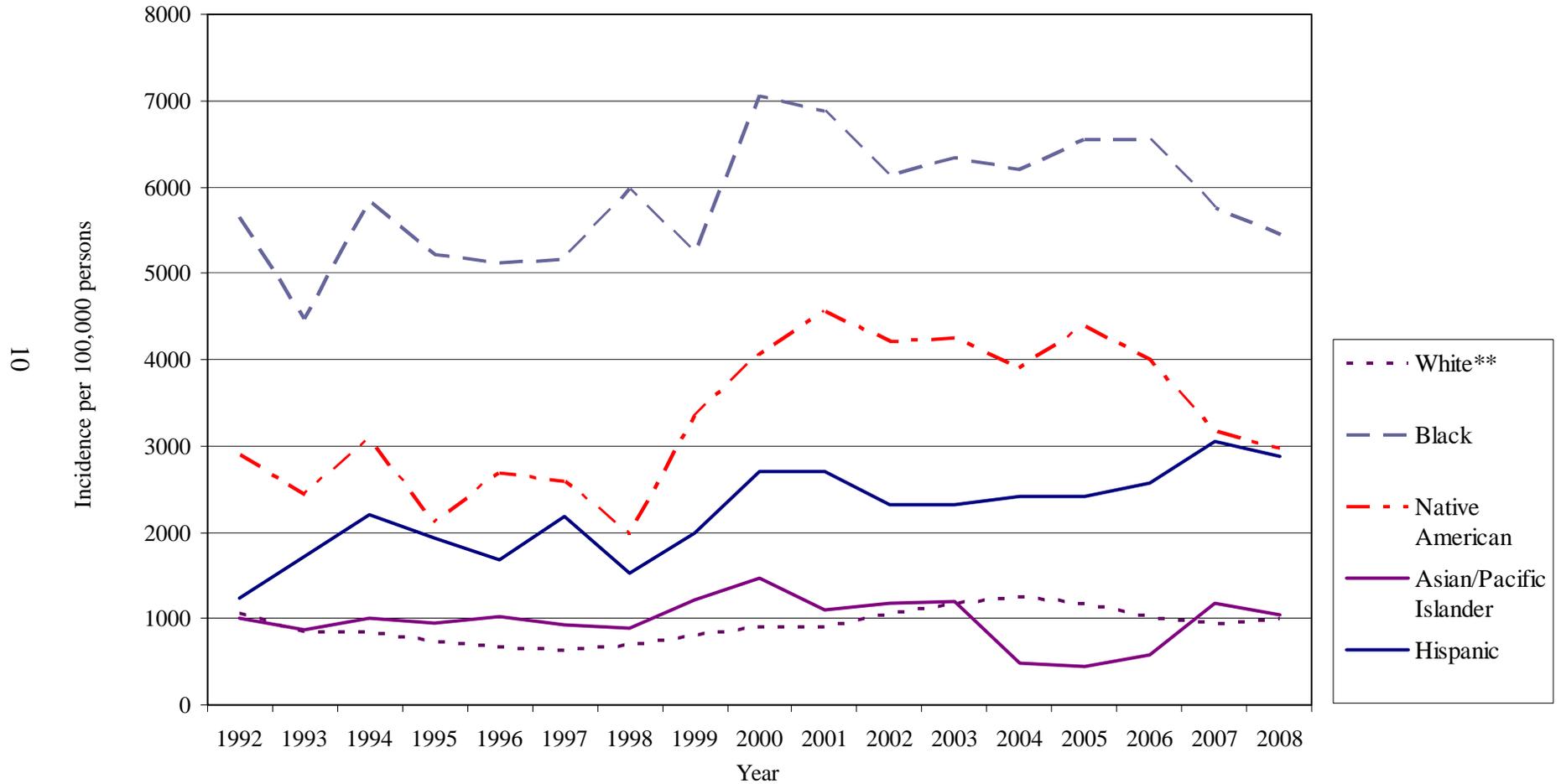
** The population tested through the IPP has changed over time; these changes, in addition to true changes in positivity, may influence trends in prevalence over time.

Figure 3: Reported Chlamydial Infection by Age* Among Women
King County, WA, 1992-2008



* Cases with unknown age were distributed according to annual age distributions among cases with known age and included in age-specific rates.

Figure 4: Reported Chlamydial Infection by Race and Ethnicity Among Women Ages 15-29*
King County, WA, 1992-2008



* Cases with unknown race, ethnicity, and age were distributed according to annual race, ethnicity and age distributions among cases with known race, ethnicity and age and included in race-specific rates.

** All persons of Hispanic ethnicity are included in the Hispanic group. Other race groups exclude Hispanics.

Gonorrhea

In 2008, 1294 cases of gonorrhea were reported in King County, resulting in an overall incidence of 70 per 100,000 persons (Table 5). The incidence of reported gonorrhea in King County has fallen by 48% since 2006 and the rate of gonorrhea in King County in 2008 was the lowest observed since 1999. This downward trend in incidence was observed among both men and women (Table 7), and includes men who have sex with men (MSM, Figure 32). Continuing a longstanding trend, gonorrhea incidence among men (88 per 100,000 men) was higher in 2008 than that among women (52 per 100,000), most likely due to the relatively high rate of gonorrhea among MSM compared to heterosexual men and women (Figure 32).

Interpreting King County epidemiologic gonorrhea data is complicated by the fact that there are two ongoing, substantially separate epidemics, one among MSM, and another among heterosexuals. Because case report data on sexual orientation are incomplete, Public Health cannot reliably determine the sexual orientation of all male cases. As a result, the heterosexual epidemic is best monitored by concentrating on the occurrence of gonorrhea in women, while the epidemic among MSM is best monitored using data collected in sentinel populations, like STD clinic patients, among whom sexual orientation data are complete, in combination with case report data.

The incidence of gonorrhea was highest in the 15-19 and 20-24 year age groups among women in 2008, while in men, incidence was highest in the 20-24 and 25-29 year old age groups (Table 6). Similar to historical trends observed both nationally and in King County, large racial disparities in gonorrhea incidence were observed in 2008, with the highest incidence observed among African American men and women, and the lowest incidence occurring among white women and Asian and Pacific Islander men (Table 6). Women aged 15-29 years account for most of the gonorrhea morbidity among women in King County. In this group, incidence of gonorrhea fell sharply from 2006 to 2008 (Figure 5). In contrast, elsewhere in the state of Washington, gonorrhea incidence fell slightly in 2008 after a period of stable incidence in 2006 and 2007. Nationally, incidence among women in this age group has been stable since 1998 (Figure 5). National data were not available for 2008 at the time this report was prepared.

The Neisseria Reference Laboratory, University of Washington performs susceptibility tests on gonococcal isolates received from private and public laboratories in Seattle-King County. Prior to 2003, resistance to the fluoroquinolones was detected in <1% of isolates. During 2003, the prevalence of fluoroquinolone resistance increased from ~1% in January-March to 18% in October-December (Figure 6). During late 2003, Public Health, Seattle & King County recommended that fluoroquinolones no longer be used for the treatment of gonococcal infection. From 2003-2005, >90% of quinolone resistant isolates were recovered from men who have sex with men (MSM). However, in 2006, the prevalence of fluoroquinolone resistance among women increased to 17%, then increased further to 25% in 2007, but was unchanged from 2007 to 2008. In 2008, 58.4% of gonorrhea isolates from MSM, and 36.8% among heterosexual men, were quinolone resistant. The recommendation that fluoroquinolones not be used for gonorrhea treatment remains in place. [Reported by Olusegun O. Soge and William L. H. Whittington, Department of Medicine, University of Washington]

Figures 7 and 8 include women only to better illustrate trends in gonorrhea among heterosexuals. Historically, gonorrhea incidence in women has been highest among 15-19 and 20-24 year olds.

This pattern continued in 2008. Reported gonorrhea incidence fell in most age groups from 2007 to 2008 (Figure 7). The only groups in which incidence did not fall were among the very young (<14) and older women (55 years of age and older), however, these groups accounted for very few gonorrhea cases in 2008. Trends were somewhat variable across race/ethnicity groups among 15-29 year old women from 2007 to 2008, with a dramatic decline in incidence among Non-Hispanic African American women, and stable or slightly declining rates among other racial/ethnic groups (Figure 8).

Data from the Public Health STD Clinic suggest that gonorrhea morbidity among MSM was stable over the past year. The total number of gonorrhea diagnoses among MSM STD Clinic patients was 220 cases in 2007 and 207 cases in 2008 (Figure 17). Monitoring symptomatic urethral gonorrhea among men provides a measure of morbidity that is relatively unaffected by changes in screening and testing practices from year to year. The number of STD Clinic diagnoses among MSM patients with symptomatic urethral gonorrhea fell slightly from 2007 to 2008 (Figure 18).

Table 5: Number of Reported Gonorrhea Cases and Gonorrhea Incidence, King County, WA, 2008

	Cases	Incidence per 100,000 population
Sex		
Women	482	52
Men	812	88
Total cases	1294	70

Table 6: Number of Reported Gonorrhea Cases and Incidence, in Men and Women, by Race, Ethnicity, and Age, King County, WA, 2008

		Women (N=482)		Men (N=812)	
		Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
Race/ethnicity* ^					
	White	146	25	283	49
	Black	157	314	288	548
	Native American	13	187	7	103
	Asian/Pacific Islander	39	33	29	27
	Hispanic	26	52	71	120
	Other	9		3	
	Multiple	26		13	
	Unknown	66		118	
Age*					
	0-9 years	1	1	0	0
	10-14 years	16	30	1	2
	15-19 years	165	291	74	126
	20-24 years	129	189	182	264
	25-29 years	74	99	145	183
	30-34 years	32	47	91	124
	35-44 years	47	33	181	122
	45-55 years	15	10	105	72
	>=56 years	3	1	33	18
	Unknown	0		0	

* Cases with unknown race, ethnicity, or age were included in race/ethnicity and age specific rates after being distributed among race/ethnicity/age categories based on the distribution of cases with known race, ethnicity and age. In 2008, among women, 603 case reports were missing race and/or ethnicity, and among men, 331 cases reports were missing race and/or ethnicity, and 1 was missing age.

^Race/ethnicity specific rates exclude cases reported with "multiple" or "other" races. Cases of Hispanic ethnicity are included in the Hispanic category. All other race groups exclude cases of Hispanic ethnicity.

**Table 7: Number of Reported Gonorrhea Cases and Incidence among Men and Women
King County, WA, 1992-2008**

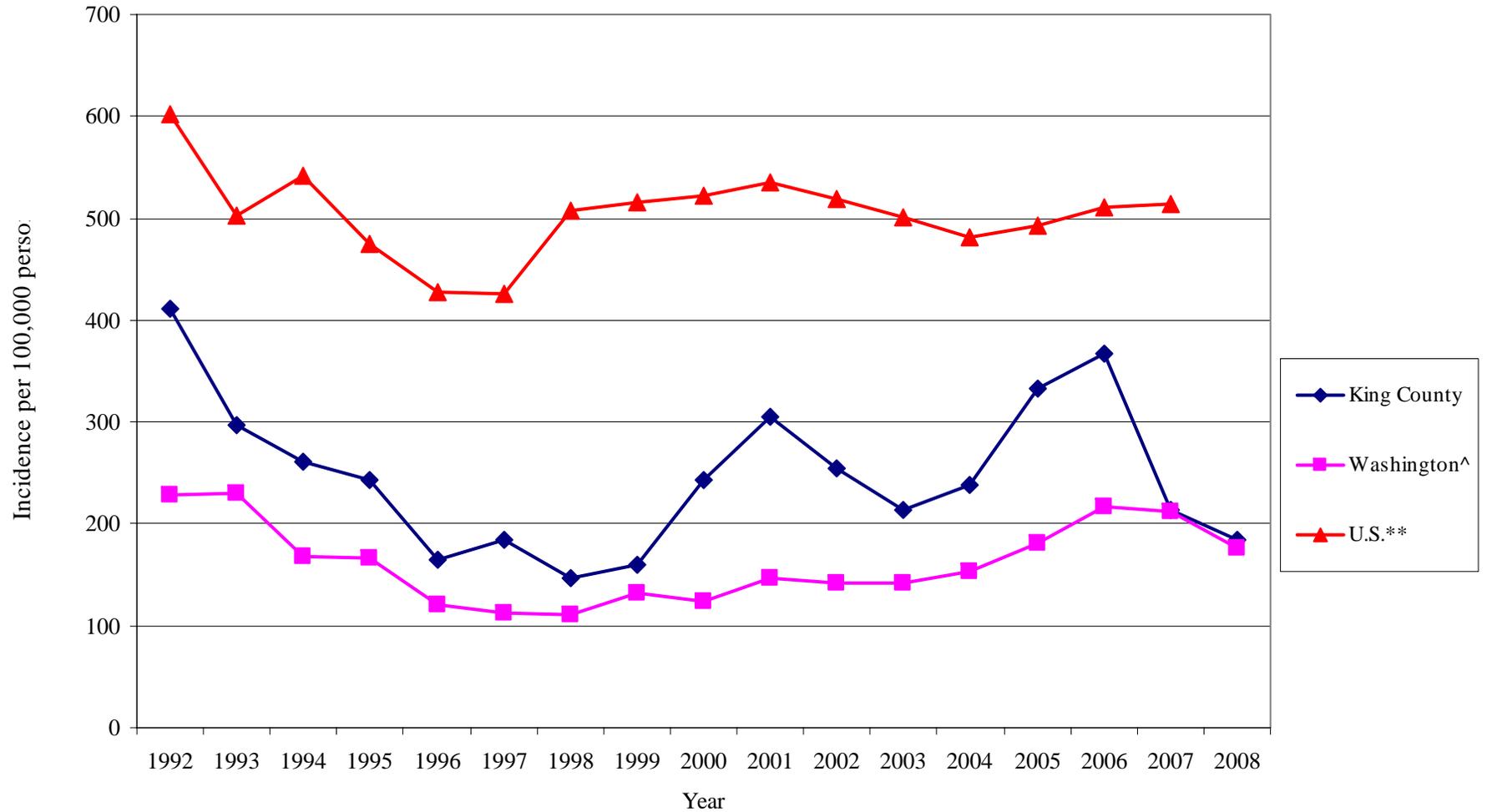
Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	900	112.6	1052	134.8	1952	123.8
1993	649	80.0	878	110.5	1527	95.1
1994	543	66.2	675	83.9	1218	74.9
1995	516	62.3	762	93.6	1278	77.9
1996	354	42.4	559	67.9	913	55.0
1997	395	46.7	519	62.2	914	54.5
1998	324	37.9	655	77.4	979	57.6
1999	347	40.2	608	71.0	955	55.1
2000	583	66.8	894	103.4	1477	70.6
2001	727	82.3	1164	133.0	1891	88.0
2002	584	65.5	1197	135.6	1781	81.9
2003	528	59.1	1119	126.3	1647	75.8
2004	556	61.9	1021	114.7	1577	72.3
2005	788	86.8	1457	161.8	2245	99.0
2006	962	104.4	1506	164.8	2468	134.5
2007	553	59.2	856	92.3	1409	75.7
2008	482	51.6	812	87.6	1294	69.5

**Table 8: Number of Reported Gonorrhea Cases and Incidence
Among Men and Women ages 15-29,* King County, WA, 1992-2008**

Year	Women, ages 15-29		Men, ages 15-29		Total, ages 15-29	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	713	410.7	706	396.0	1419	403.3
1993	514	296.4	530	297.0	1044	296.7
1994	451	261.9	421	236.9	872	249.2
1995	420	243.0	422	236.2	842	239.5
1996	287	165.0	302	167.0	589	166.0
1997	325	185.1	258	141.2	583	162.7
1998	262	147.5	334	180.2	596	164.2
1999	286	160.3	317	170.6	603	165.6
2000	436	242.9	378	202.2	815	222.2
2001	552	305.2	549	292.2	1101	298.6
2002	466	255.2	557	294.2	1023	275.0
2003	392	213.5	464	243.9	856	229.0
2004	444	238.9	419	217.3	864	227.9
2005	630	332.8	648	329.7	1278	331.2
2006	716	367.5	699	345.9	1416	356.5
2007	428	214.1	424	204.8	852	209.4
2008	368	184.2	401	193.7	769	189.0

* Cases with unknown age were included age specific counts and rates after being distributed among age categories based on the distribution of cases with known age.

Figure 5: Gonorrhea Incidence among Women ages 15-29*, 1992-2008
King County, Washington State ^, and U.S.

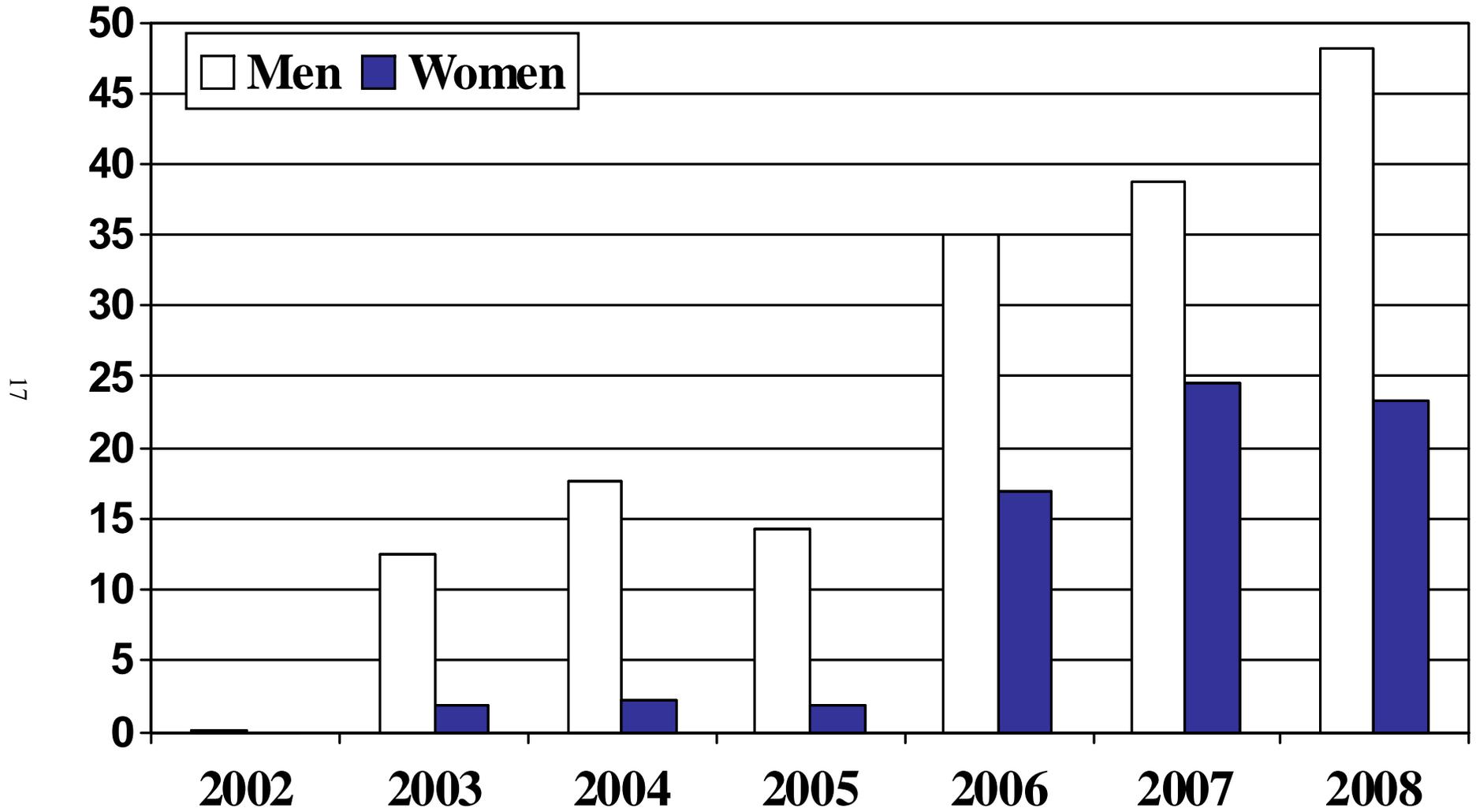


* Cases with unknown age were distributed according to annual age distributions among cases with known age and included in age-specific rates.

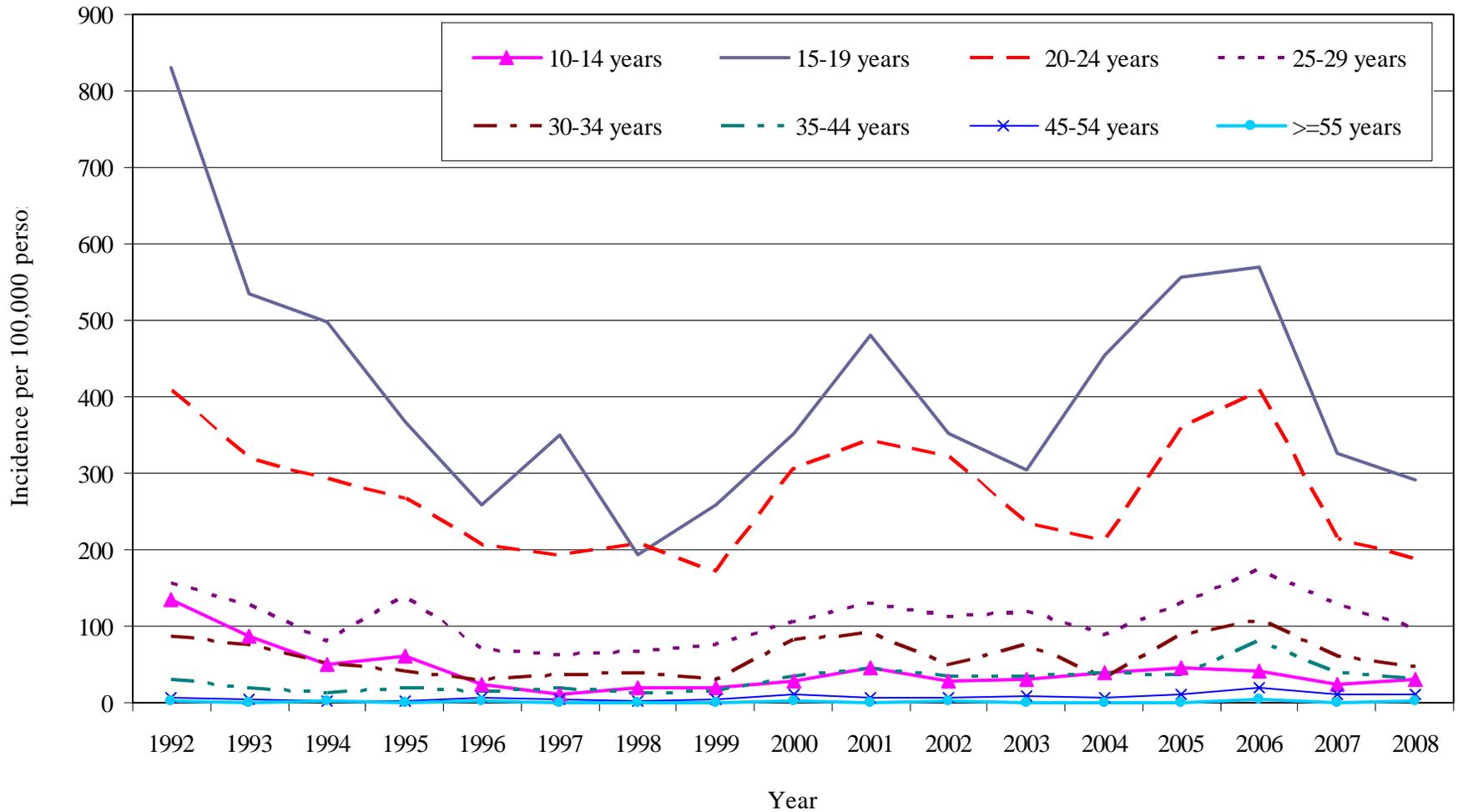
** National data for 2007 were not available at the time this report was prepared.

^ Washington State rates exclude King County.

Figure 6: Proportion of Infections Caused by Fluoroquinolone Resistant Gonococci by Gender and Year, 2002-2008

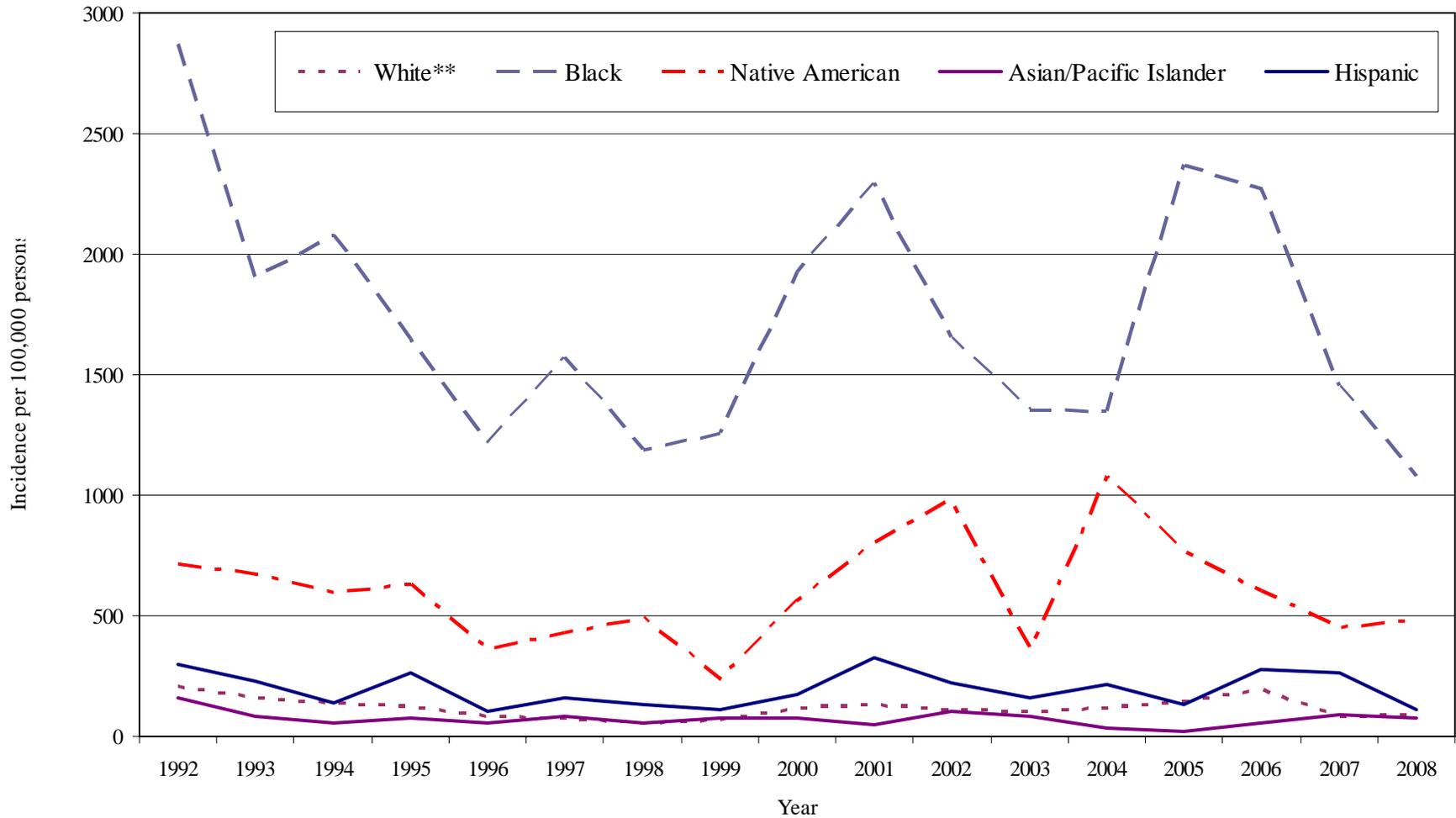


**Figure 7: Gonorrhea Incidence by Age* Among Women
King County, WA, 1992-2008**



* Cases with unknown age were distributed according to annual age distributions among cases with known age and included in age-specific rates.

**Figure 8: Gonorrhea Incidence by Race and Ethnicity Among Women Ages 15-29*
King County, WA, 1992-2008**



* Cases with unknown race, ethnicity, and age were distributed according to annual race, ethnicity and age distributions among cases with known race, ethnicity and age and included in race-specific rates.

** All persons of Hispanic ethnicity are included in the Hispanic group. Other race groups exclude Hispanics.

Syphilis

King County is experiencing an ongoing epidemic of syphilis among MSM. The total number of early syphilis (primary, secondary, and early latent) cases grew from 194 in 2007 to 204 cases in 2008 (Tables 9 and 12). Of the 2007 cases, 198 (97%) were among MSM (Table 10, Figure 10). The overall 2008 incidence of early syphilis among King County residents was 11 per 100,000 persons (Table 9). The early syphilis incidence among MSM was over 1500 times greater (473 per 100,000 MSM) than that among heterosexual men (0.3 per 100,000 men) [Table 13] in 2008.

Since the epidemic of syphilis among MSM began in 1997, HIV positive MSM have been disproportionately affected. In 2008, the estimated incidence of early syphilis among HIV positive MSM was 2,215 per 100,000 men, compared to 176 per 100,000 among HIV negative MSM (Figure 12). Since 2004, this disparity between HIV positive and HIV negative MSM has grown, primarily due to steadily increasing incidence among HIV positive MSM. Despite the widening gap in incidence between HIV positive and negative MSM, MSM who are HIV negative or have an unknown HIV status have accounted for between 41 and 50% of early syphilis cases diagnosed among MSM since 2002 (Figure 11).

Early syphilis incidence among heterosexuals remained very low in 2008, with only 6 of 204 cases occurring among heterosexual men (2 cases) and women (4 cases) [Tables 10, 12, and 13]. The percentage of early syphilis cases with primary, secondary, and early latent syphilis, with HIV, and who reported engaging in a variety of risk behaviors are presented in Table 10, both for heterosexuals and for MSM. In 2008, 62% of MSM syphilis cases were HIV positive. While the percentage of MSM cases reporting use of bathhouses to meet sex partners has remained roughly stable over time (29% in 2008), the percentage reporting using the Internet to find sex partners has grown (from 27% in 2004 to 48% in 2008).

MSM with early syphilis reported more total and more anonymous sex partners while they were infectious than did heterosexuals. However, the number of heterosexual cases who provided partner information was small, making comparisons between MSM and heterosexuals difficult (Table 11).

Figure 13 displays reason for visit among MSM early syphilis cases from 1993-2008. Heterosexuals are excluded from this figure because of the small number of heterosexuals diagnosed during this period. In 2008, 54% of MSM cases were diagnosed after seeking care for symptoms. Over time the proportion of cases diagnosed after seeking care for symptoms has decreased, while the proportion diagnosed via routine care and through partner notification efforts has increased (Figure 13).

Figure 14 displays the reporting source for all cases of syphilis from 1997-2008. In 2008, HIV care providers have been added as a separate category of provider in this figure; in previous years, most HIV care providers fell into the "other" provider category (primarily private practice). Since 1998, "other" providers have reported greater than half of the early syphilis cases each year (109 cases, 53% in 2008). The Public Health STD Clinic reported 64 (31%) new early syphilis cases in 2008. Family planning clinics, community clinics, county jails, and other

public health clinics combined have consistently accounted for less than 15% of the annual total reported early syphilis cases in King County since 1996, and in 2008 accounted for less than 4% of cases combined.

**Table 9: Reported Cases and Incidence of Early Syphilis
King County, WA, 2008**

		Cases	Percent	Incidence per 100,000 population
Sex				
	Men	200	98	22
	Women	4	2	0.4
Total cases		204		11

**Table 10: HIV Status and Risk Behaviors among Syphilis Cases
By Sexual Orientation, King County, WA, 2008**

		MSM* N=198		Heterosexual Men and Women N=6	
		Number	Percent	Number	Percent
Stage	Primary	39	21%	1	17%
	Secondary	84	45%	1	17%
	Early latent	75	41%	4	67%
HIV	Positive	114	62%	1	17%
	Negative	71	38%	4	67%
	Unknown	13	7%	1	17%
Methamphetamine Use					
	Yes	54	29%	1	17%
	No	123	66%	4	67%
	Unknown	21	11%	1	17%
Anonymous sex partners during infectious period					
	Yes	136	74%	3	50%
	No	25	14%	2	33%
	Unknown	37	20%	1	17%
Partners met in bathhouses					
	Yes	54	29%	0	0%
	No	135	73%	6	100%
	Unknown	9	5%	0	0%
Internet use to meet partners					
	Yes	88	48%	0	0%
	No	101	55%	6	100%
	Unknown	9	5%	0	0%
Has traded sex for money or drugs (sex worker)					
	Yes	10	5%	2	33%
	No	172	93%	3	50%
	Unknown	16	9%	1	17%
Sex with a known sex worker					
	Yes	3	2%	0	0%
	No	179	97%	5	83%
	Unknown	16	9%	1	17%
Reason for Visit					
	Routine exam	54	29%	2	33%
	Symptoms	109	59%	4	67%
	Exposed	34	18%	0	0%
	None/other	1	1%	0	0%

*MSM: all men who acknowledged sex with a man.

Table 11: Total and Anonymous Sex Partners Reported by Syphilis Cases								
By Gender and Sexual Orientation								
King County, WA, 2008								
			MSM			Heterosexual Men and Women		
			N=161*			N=5		
			Total	Mean	Median	Total	Mean	Median
Total sex partners during infectious period			1,220	7.6	4	10	2	1.0
Anonymous sex partners* during infectious period			778	4.8	1	3	0.6	1

* 37 MSM and 1 heterosexual were missing information on number of sex partners

**Table 12: Number of Reported Early Syphilis Cases and Incidence among Men and Women
King County, WA, 1992-2008**

Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	26	3	42	5	68	4
1993	21	3	15	2	36	2
1994	6	1	12	1	18	1
1995	1	0	4	0	5	0
1996	0	0	2	0	2	0
1997	10	1	10	1	20	1
1998	1	0	37	4	38	2
1999	3	0	67	8	70	4
2000	4	0	67	8	71	4
2001	1	0	51	6	52	3
2002	0	0	64	7	64	4
2003	2	0	80	9	82	5
2004	7	1	159	18	166	9
2005	7	1	186	21	193	11
2006	2	0	183	20	185	10
2007	1	0	193	21	194	10
2008	4	0	200	22	204	11

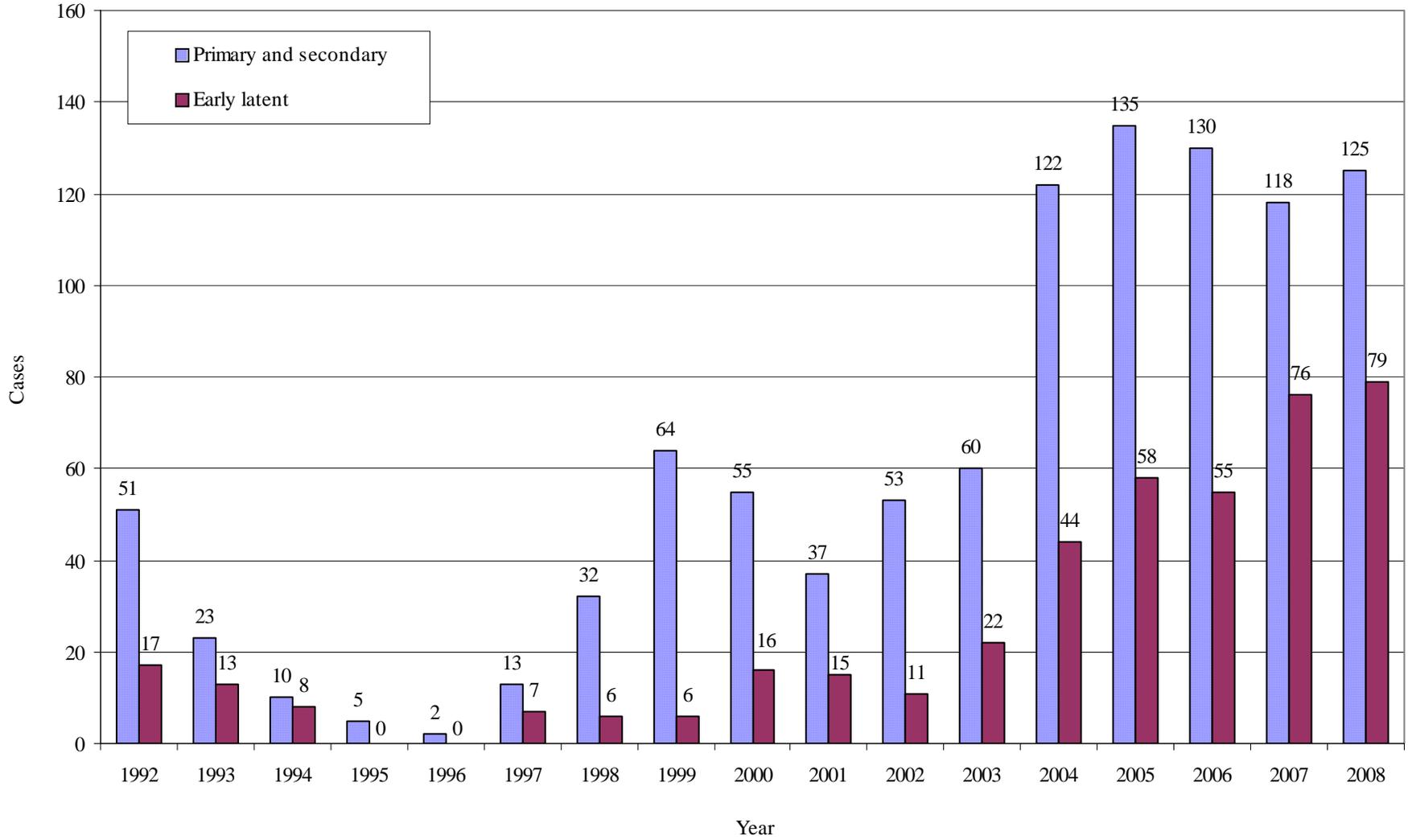
Table 13: Number of Reported Early Syphilis Cases and Incidence Among MSM and Heterosexual Men, King County, WA, 1992-2008

Year	MSM		Heterosexual Men	
	Cases	Incidence per 100,000 population**	Cases	Incidence per 100,000 population
1992*	0	0	0	0.0
1993*	1	3	5	0.8
1994	2	6	10	1.7
1995	2	6	2	0.3
1996	1	3	1	0.2
1997	5	14	5	0.8
1998*	32	86	3	0.5
1999*	60	159	6	0.9
2000*	58	151	8	1.2
2001	50	129	1	0.1
2002*	60	152	3	0.4
2003	77	194	3	0.4
2004	140	351	19	2.8
2005	179	442	6	0.9
2006	174	423	8	1.1
2007	188	449	4	0.6
2008	198	473	2	0.3

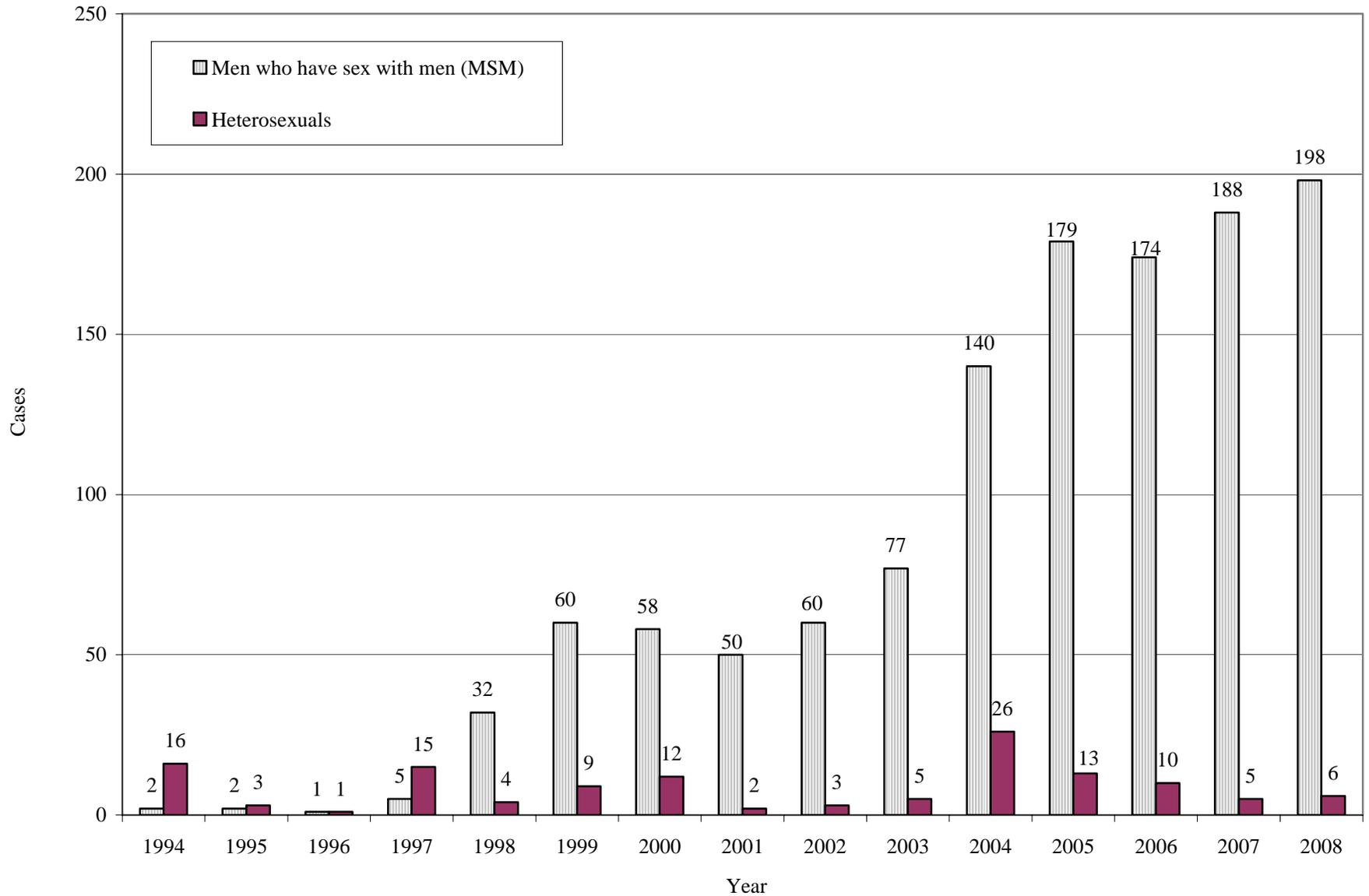
* Men were missing sexual orientation data in the following years (numbers missing are included in parantheses): 1992 (42), 1993 (9), 1998 (2), 1999 (1), 2000 (1), and 2002 (1), 2005(1), 2006(1), 2007(1)

** MSM incidence is calculated using an annual MSM population size estimate of 5.5% of the male population aged 15 and higher as the denominator.

**Figure 9: Reported Cases of Primary and Secondary vs. Early Latent Syphilis
King County, WA 1992-2008**

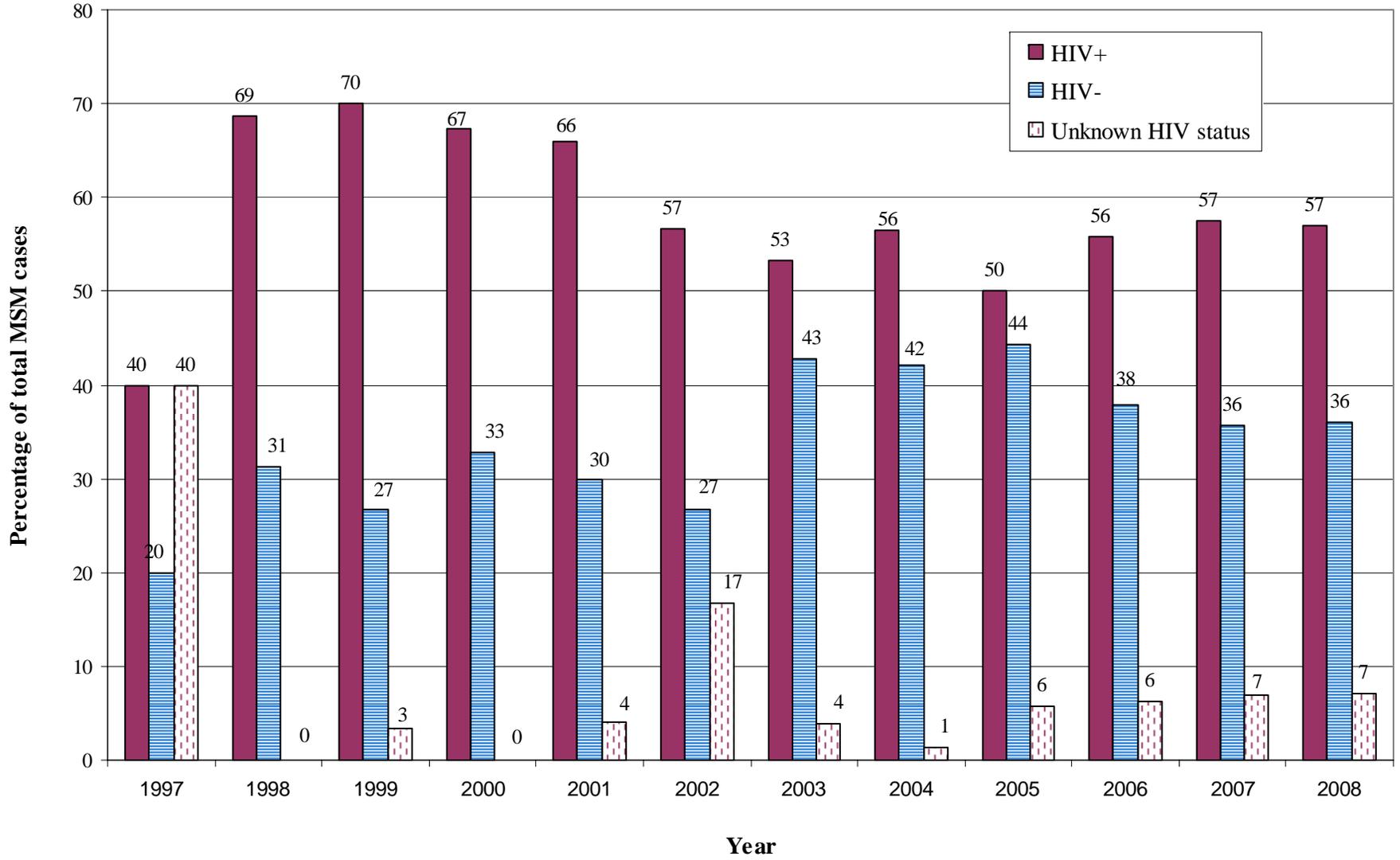


**Figure 10: Reported Cases of Early Syphilis by Sexual Orientation*,
King County, WA, 2008**



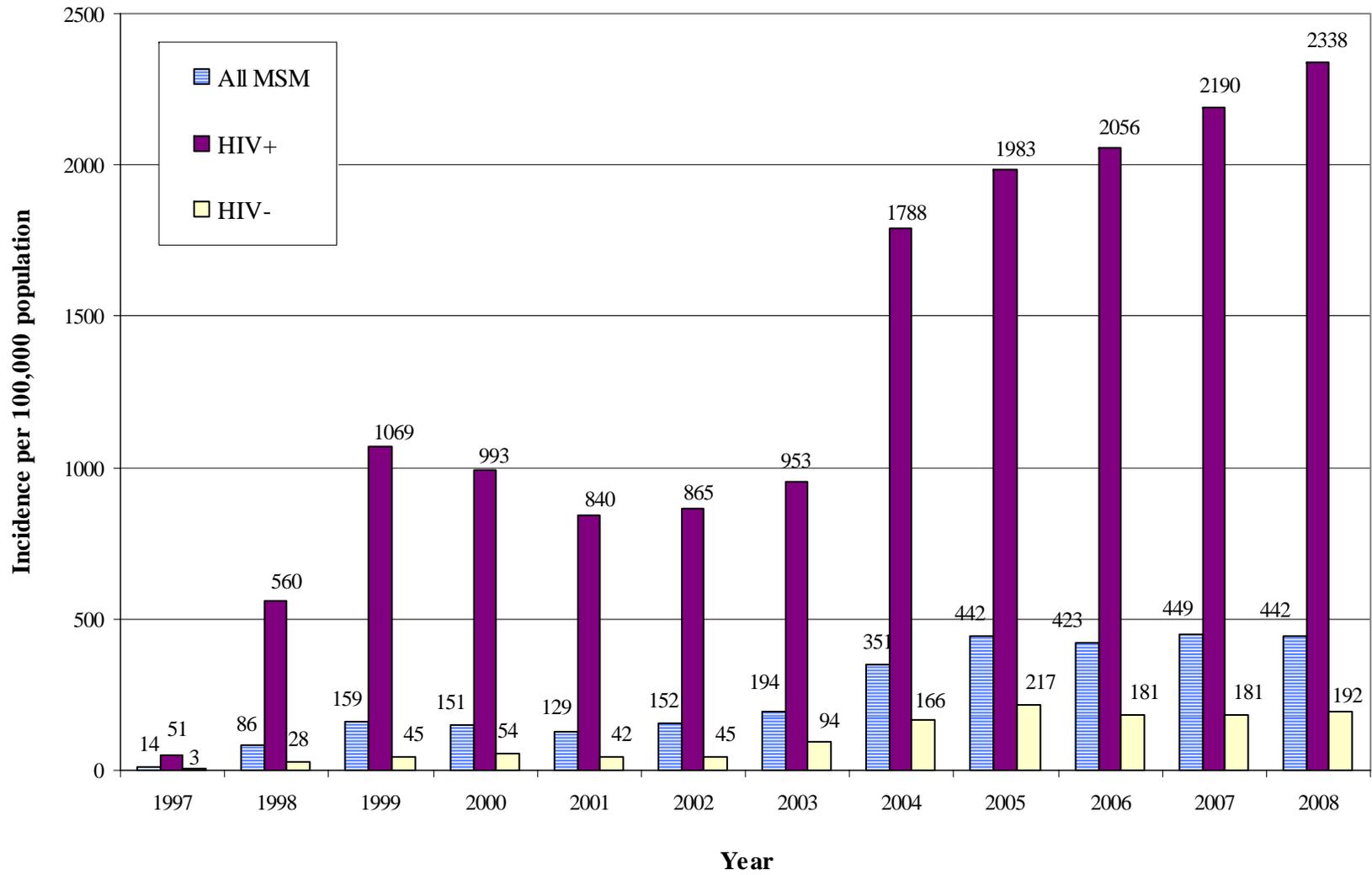
*Data on sexual orientation were missing for men in the following years: 2 men in 1998, and 1 man in 1999, 2000, 2002, 2005, 2006, and 2007.

**Figure 11: Percent of Reported Early Syphilis Cases Among MSM by HIV Status
King County, WA, 1997-2008**

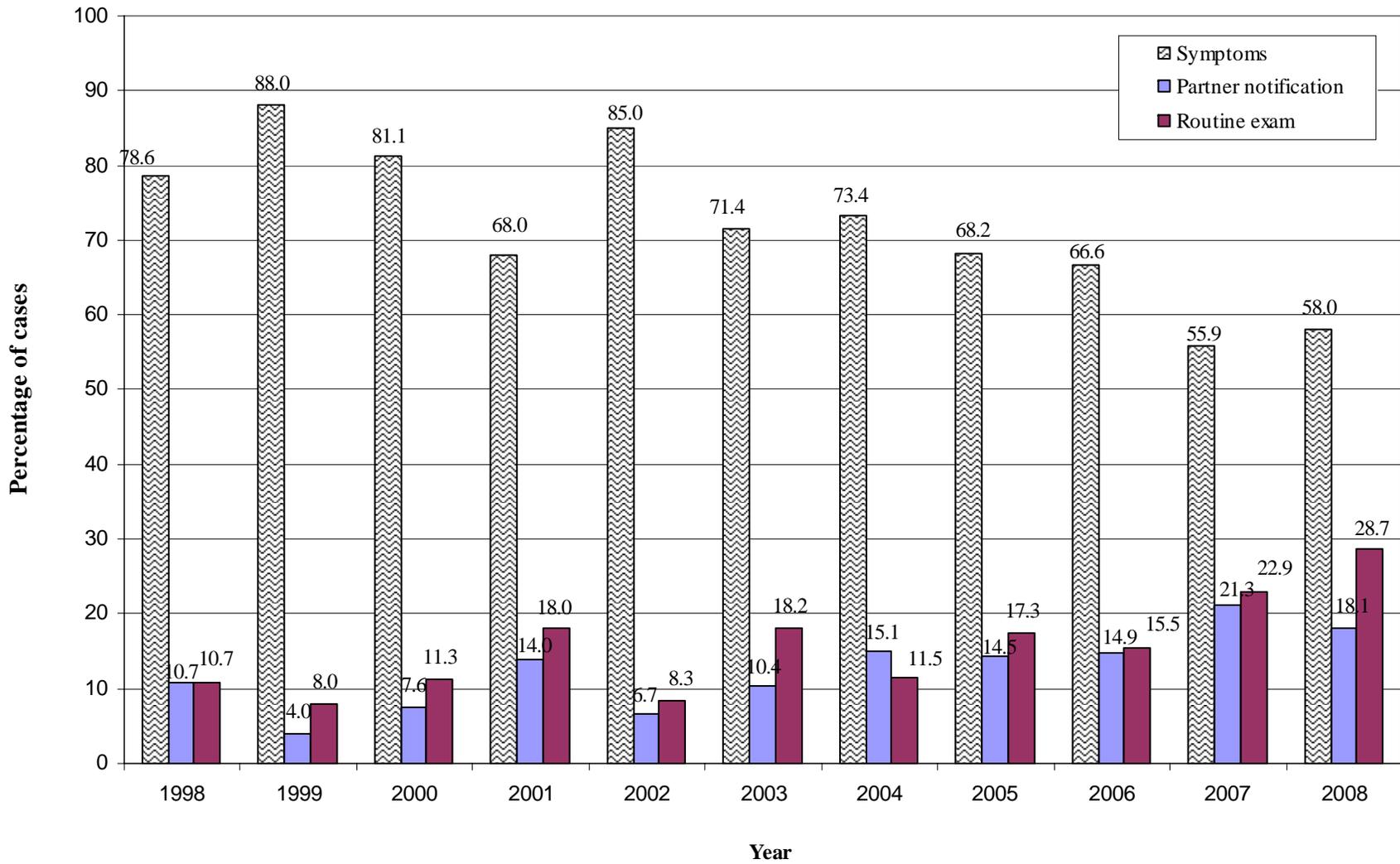


**Figure 12: Early Syphilis Incidence Among MSM by HIV Status
King County, WA, 1997-2008**

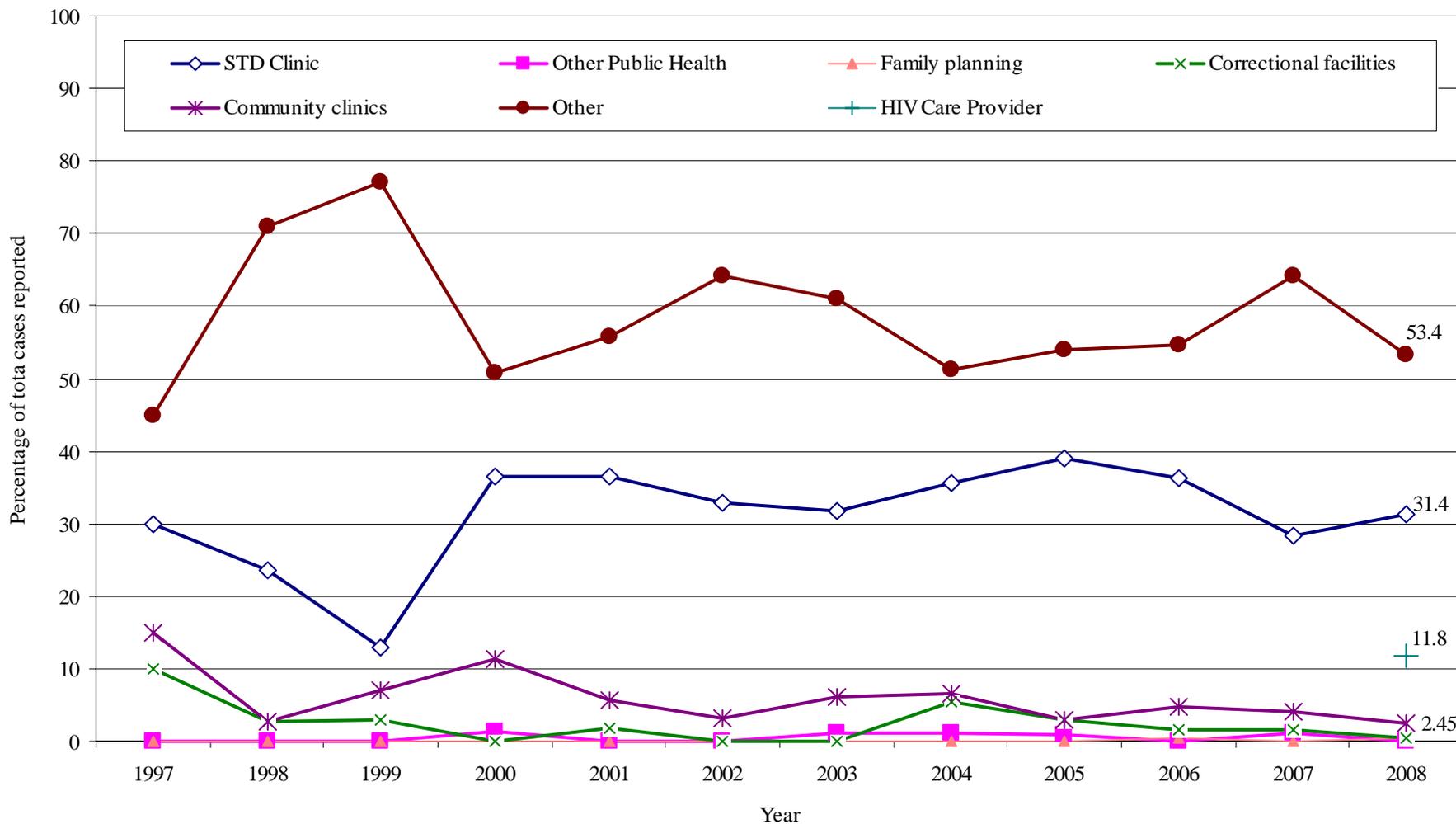
29



**Figure 13: Reason for Visit among MSM reported with Early Syphilis
King County, WA, 1993-2008**



**Figure 14: Reporting Provider for Reported Early Syphilis Cases,
King County, WA 1992-2008**



Public Health – Seattle & King County STD Clinic

In 2008, 8,387 patients made 12,923 visits to the Public Health STD Clinic. Of these, 11,787 visits were made by patients seeking STD Clinic services, while 1,136 visits were made by patients seeking an HIV test only; patients seeking only HIV testing were seen by Disease Intervention Specialists (DIS), public health staff who perform HIV testing and counseling among other functions [Table 14]. Prior to 2006, data on patients tested for HIV by DIS were not a part of the Public Health STD Clinic database and did not contribute to annual counts of STD Clinic visits. In 2008, heterosexual men made 43% of the visits among patients seeking STD Clinic services, while MSM and women accounted for 28% and 26% of these visits respectively. Among clients seen by DIS, 42% of visits were made by heterosexual men, 35% by MSM, and 23% by women. Among patients seeking STD Clinic services, the number of visits made by MSM and heterosexual men increased in 2008, and while the number of visits made by women decreased slightly (Table 18, Figure 15). Among unduplicated patients, only the number of MSM patients increased from 2007 to 2008 (Table 19, Figure 16). The clinic provided services to MSM during more visits in 2008 (3376) than in any previous year for which we have data.

Tables 15-17 display the race/ethnicity (race groups exclude Hispanics) and age distribution for STD Clinic patients in 2008. MSM patients are more likely to be white and tend to be older than heterosexual patients. This was true for both STD Clinic and HIV testing only visits in 2008. The primary difference between these two groups in 2007 was that the HIV testing only patients were older, on average, than patients seeking STD Clinic services.

The PHSKC STD clinic diagnosed a substantial proportion of all reportable STDs diagnosed in King County in 2008. This included 64 (31%) of the 204 cases of early syphilis, 348 (27%) of the 1294 cases of gonorrhea, 56 (18%) of the 315 cases of HIV*, and 531 (9%) of the 5962 cases of chlamydial infection. As in past years, the PHSKC STD Clinic diagnosed more cases of HIV in 2008 than any other single clinical site in Washington State.

In contrast to declines in reported cases of gonorrhea overall in King County in 2008 (Table 7), the number of cases of gonorrhea diagnosed in the Public Health STD Clinic remained roughly stable from 2007 (398 cases) to 2008 (372 cases, Figure 17). Although currently stable, the number of cases of gonorrhea in MSM remains substantially higher than numbers observed in the late 1990s. Some of the observed increase may be related to increased screening for rectal and pharyngeal gonorrhea among MSM implemented in the late 1990s. In order to examine trends in gonorrhea diagnoses among MSM not influenced by this increase in screening, Figure 18 displays urethral gonorrhea diagnoses among men experiencing symptoms. Figure 18 demonstrates both a long term trend toward more symptomatic urethral gonorrhea among MSM since the late 1990s, and a recent decline in symptomatic urethral gonorrhea among both MSM and heterosexual men.

In 2008, STD Clinic clinicians diagnosed 531 cases of chlamydial infection (Figure 20), similar to the number of diagnoses in 2007 (547 cases). The overall number of chlamydia diagnoses has dropped for the past four years, driven for the most part by a decline in chlamydial infection among female clinic patients. This is mirrored by a decrease in the prevalence of chlamydial

infection diagnoses among asymptomatic women during the same period of time (Figure 22). The number of diagnoses of chlamydial infection among MSM remained relatively stable, as did diagnoses among heterosexual men over this period of time. There were 80 early syphilis diagnoses among individuals for whom the gender of sex partners could be determined in the STD Clinic in 2008 (Figure 23); 94% of these occurred among MSM, reflective of an ongoing syphilis epidemic among MSM in King County (Figure 10). Figure 24 displays new HIV diagnoses from both the STD Clinic (1993-2008) and the HAP program (2000-2008). While the overall number of new HIV diagnoses has been variable for the past several years, MSM continue to account for the majority of new HIV diagnoses made via the STD and HAP programs.

Following a long term decreasing trend in trichomoniasis, the number of trichomoniasis cases diagnosed in the STD Clinic remained relatively stable from 2003 to 2006, but then increased from 2006 to 2008, with 124 trichomoniasis diagnoses in 2008 (Figure 25). Figure 26 also displays trichomoniasis prevalence, calculated as the number of women with a positive culture or wet mount divided by the total number of these tests performed each year. Trichomoniasis prevalence has increased for the past three years. In contrast, both the number of bacterial vaginosis diagnoses and bacterial vaginosis prevalence (calculated as the total number of bacterial vaginosis diagnoses divided by the number of women tested for vaginal PH and the presence of vaginal clue cells on wet preparations) fell between 2006 (728 cases, prevalence of 40%) and 2008, (643 cases, prevalence of 0.34, Figure 26).

While the number of initial genital herpes diagnoses was relatively unchanged from 2007 (156 cases) to 2008 (141 cases, Figure 27), the number of diagnoses of recurrent genital herpes decreased somewhat among women and MSM, but increased slightly among heterosexual men during this time (Figure 28). The majority of both initial and recurrent herpes diagnoses were in heterosexual men (45% and 67% of cases, respectively) followed by women (38% and 35%) and MSM (17% and 22% respectively, Figures 27 and 28). Among 2,191 asymptomatic patients tested for HSV-2 in 2007, there were 43 HSV-2 diagnoses among MSM, 104 among heterosexual men, and 61 in women (Figure 29).

* Some of the 56 cases of HIV diagnosed in the STD Clinic may not have been King County residents.

Table 14: Number of PHSKC STD Clinic Visits and Patients, 2008

(A) Clients seen for services other than HIV tests only

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	3107	5113	3376	191	11787
Patients (unduplicated visits)	2054	3590	1981	104	7729

(B) Clients seen for HIV tests only

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	233	478	402	23	1136
Patients (unduplicated visits)	155	272	219	12	658

(C) Clients seen for all services

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	3340	5591	3778	214	12923
Patients (unduplicated visits)	2209	3862	2200	116	8387

* Men who have sex with men are men who acknowledged sex with another man in the preceding year during any clinic visit.

Table 15: Age and Race/Ethnicity of PHSKC STD Clinic Patients, 2008

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	69	(49.1)	2105	(54.5)	1548	(70.4)	4806	(57.3)
Black	25	(25.6)	993	(25.7)	152	(6.9)	1736	(20.7)
Native American	2	(2.4)	42	(1.1)	23	(1.0)	120	(1.4)
Asian/Pacific Isl	5	(9.5)	236	(6.1)	149	(6.8)	599	(7.1)
Hispanic	10	(5.7)	292	(7.6)	216	(9.8)	645	(7.7)
Multiple Race	2	(3.8)	70	(1.8)	44	(2.0)	201	(2.4)
Unknown	3	(3.8)	124	(3.2)	68	(3.1)	280	(3.3)
Age								
10-14 years	10	(0.5)	9	(0.2)	0	(0.0)	20	(0.2)
15-19 years	218	(9.9)	113	(3.0)	60	(2.7)	395	(4.7)
20-24 years	534	(24.2)	644	(16.9)	317	(14.4)	1512	(18.0)
25-29 years	496	(22.5)	797	(20.9)	429	(19.5)	1764	(21.0)
30-34 years	294	(13.3)	624	(16.4)	320	(14.6)	1265	(15.1)
35-44 years	357	(16.2)	903	(23.7)	588	(26.8)	1895	(22.6)
45-55 years	232	(10.5)	506	(13.3)	350	(15.9)	1115	(13.3)
>=56 years	68	(3.1)	216	(5.7)	130	(5.9)	419	(5.0)
Unknown	0	(0.0)	1	(0.0)	1	(0.0)	2	(0.0)

* Men who have sex with men are men who acknowledged sex with men in the current visit, or for follow-up visits, the associated new problem visit

[^] 170 men with unknown sexual orientation are excluded from the race/age distributions for heterosexual men and MSM, but are included in total race and age distributions

**Table 16: Age and Race/Ethnicity of PHSKC STD Clinic Patients
Seen for Services Other than HIV Tests Only, 2008**

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	1004	(48.9)	1962	(54.7)	1380	(69.7)	4408	(57.0)
Black	523	(25.5)	925	(25.8)	143	(7.2)	1614	(20.9)
Native American	49	(2.4)	39	(1.1)	21	(1.1)	111	(1.4)
Asian/Pacific Isl	197	(9.6)	216	(6.0)	132	(6.7)	549	(7.1)
Hispanic	122	(5.9)	269	(7.5)	200	(10.1)	599	(7.8)
Multiple Race	82	(4.0)	67	(1.9)	39	(2.0)	190	(2.5)
Unknown	77	(3.7)	112	(3.1)	66	(3.3)	258	(3.3)
Age								
10-14 years	9	(0.4)	2	(0.1)	0	(0.0)	11	(0.1)
15-19 years	208	(10.1)	97	(2.7)	56	(2.8)	364	(4.7)
20-24 years	504	(24.5)	611	(17.2)	297	(15.0)	1429	(18.5)
25-29 years	463	(22.5)	758	(21.4)	391	(19.8)	1650	(21.3)
30-34 years	265	(12.9)	584	(16.5)	285	(14.4)	1159	(15.0)
35-44 years	326	(15.9)	833	(23.5)	526	(26.6)	1728	(22.4)
45-55 years	215	(10.5)	471	(13.3)	314	(15.9)	1024	(13.2)
>=56 years	64	(3.1)	188	(5.3)	106	(5.4)	363	(4.7)
Unknown	0	(0.0)	1	(0.0)	1	(0.0)	1	(0.0)

* Men who have sex with men are men who acknowledged sex with men in the current visit, or for follow-up visits, the associated new problem visit

[^] 155 men with unknown sexual orientation are excluded from the race/age distributions for heterosexual men and MSM, but are included in total race and age distributions

Table 17: Age and Race/Ethnicity of PHSKC STD Clinic Patients Seen for HIV Tests Only, 2008

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	80	(51.6)	143	(52.6)	168	(76.7)	398	(60.5)
Black	43	(27.7)	68	(25.0)	9	(4.1)	122	(18.5)
Native American	4	(2.6)	3	(1.1)	2	(0.9)	9	(1.4)
Asian/Pacific Isl	12	(7.7)	20	(7.4)	17	(7.8)	50	(7.6)
Hispanic	5	(3.2)	23	(8.5)	16	(7.3)	46	(7.0)
Multiple Race	3	(1.9)	3	(1.1)	5	(2.3)	11	(1.7)
Unknown	8	(5.2)	12	(4.4)	2	(0.9)	22	(3.3)
Age								
10-14 years	1	(0.6)	7	(2.6)	0	(0.0)	9	(1.4)
15-19 years	10	(6.5)	16	(6.0)	4	(1.8)	31	(4.7)
20-24 years	30	(19.4)	33	(12.3)	20	(9.1)	83	(12.6)
25-29 years	33	(21.3)	39	(14.6)	38	(17.3)	114	(17.3)
30-34 years	29	(18.7)	40	(14.9)	35	(15.9)	106	(16.1)
35-44 years	31	(20.0)	70	(26.1)	62	(28.2)	167	(25.4)
45-55 years	17	(11.0)	35	(13.1)	36	(16.4)	91	(13.8)
>=56 years	4	(2.6)	28	(10.4)	24	(10.9)	56	(8.5)
Unknown	0	(0.0)	0	(0.0)	1	(0.5)	1	(0.2)

* Men who have sex with men are men who acknowledged sex with men in the current visit, or for follow-up visits, the associated new problem visit

[^] 35 men with unknown sexual orientation are excluded from the race/age distributions for heterosexual men and MSM, but are included in total race and age distributions

Table 18: Number of PHSKC STD Clinic Visits, 1993-2008

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	HIV Test Only Visits	Total
1993	6826	9003	1386	514		17729
1994	7017	8986	1829	578		18410
1995	6951	8567	2377	509		18404
1996	6117	7635	2152	292		16196
1997*	4929	6340	1753	333		13355
1998	4541	6111	2106	248		13006
1999**	4085	5879	2550	189		12703
2000	3954	5762	2937	220		12873
2001	4312	5883	3160	307		13662
2002	4277	6037	2958	338		13610
2003	3906	6030	3055	268		13259
2004	3771	5935	3072	327		13105
2005	3656	5808	3344	314		13122
2006	3389	5359	3364	301	1726	14139
2007	3171	5034	3004	262	1387	12858
2008	3107	5113	3376	191	1136	12923

* In 1997, the PHSKC STD Clinic eliminated its Saturday and evening clinic hours.

** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

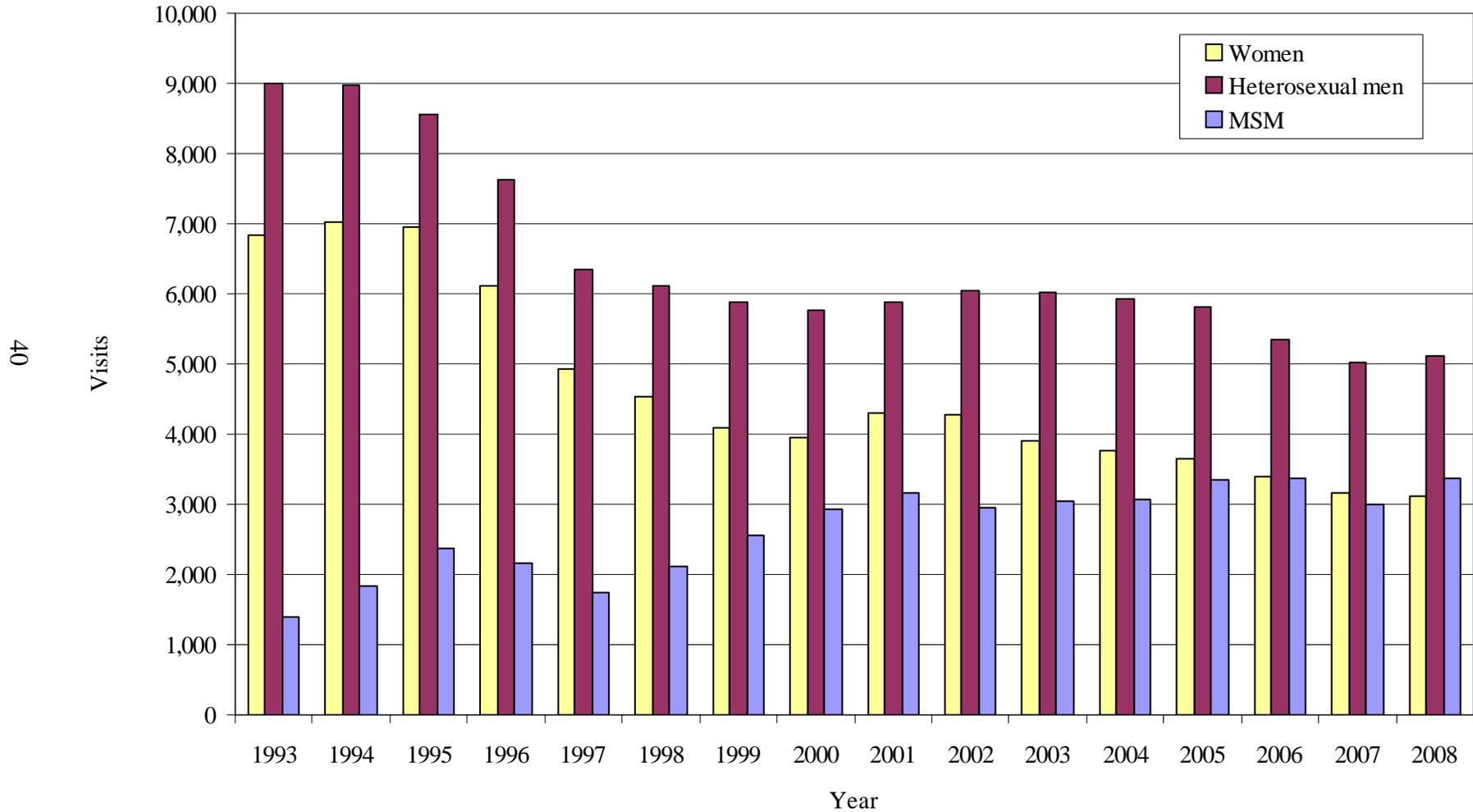
Table 19: Number of PHSKC STD Clinic Patients (Unduplicated Visits per Year), 1993-2008

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	HIV Test Only Patients	Total
1993	3903	5639	843	443		10828
1994	3771	5406	891	398		10466
1995	3939	5383	1102	305		10729
1996	3630	5067	1161	184		10042
1997*	3001	4252	993	222		8468
1998	2831	4102	1099	197		8229
1999**	2503	3987	1236	150		7876
2000	2450	3926	1247	168		7791
2001	2568	4004	1411	229		8212
2002	2746	4183	1581	257		8767
2003	2559	4291	1715	204		8769
2004	2480	4139	1747	198		8564
2005	2435	4128	1885	186		8634
2006	2363	4032	1863	147	1031	9436
2007	2146	3720	1711	126	886	8589
2008	2054	3590	1981	104	658	8387

* In 1997, the PHSKC STD Clinic eliminated its Saturday and evening clinic hours.

** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

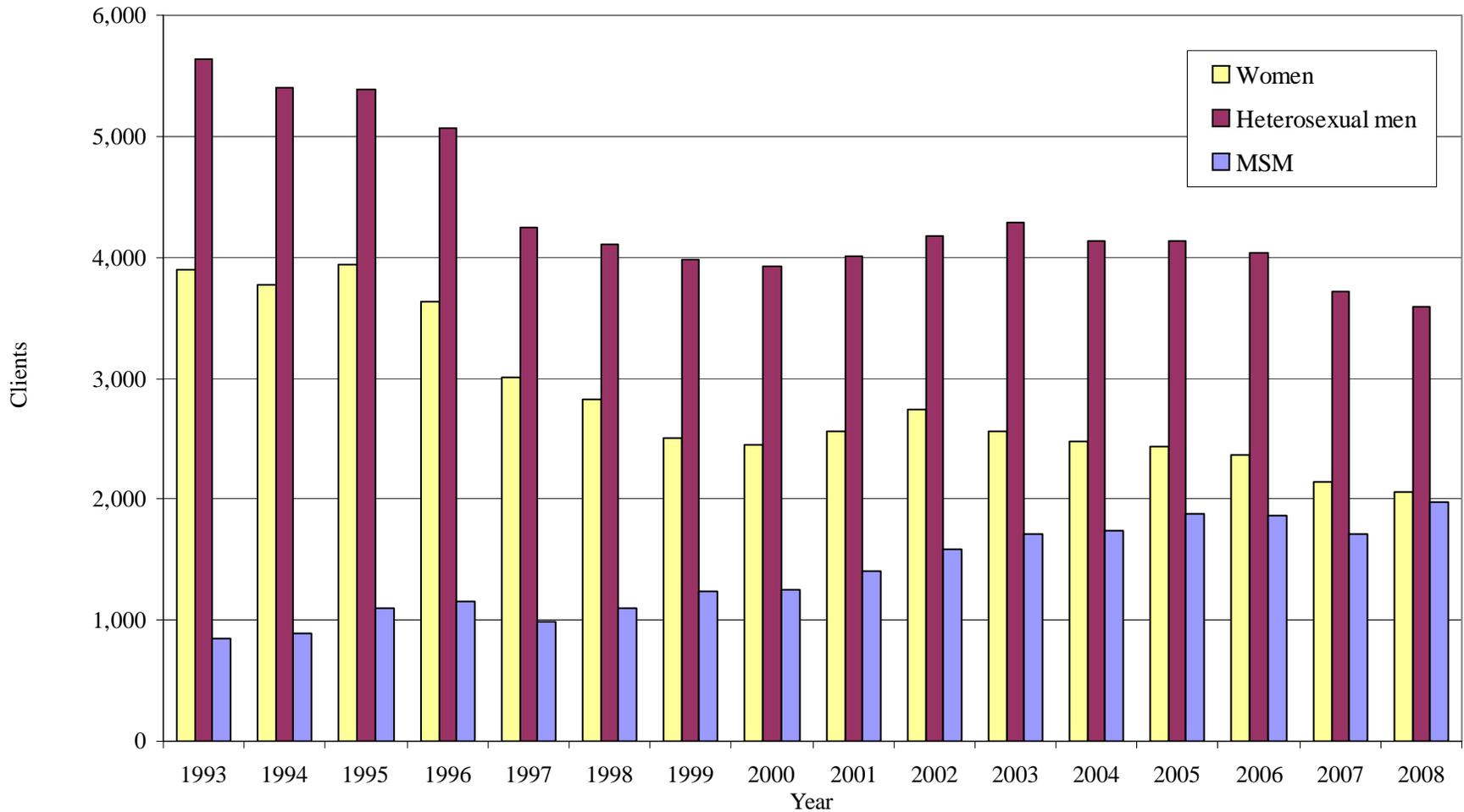
Figure 15: Visits* to Public Health - Seattle and King County STD Clinics, 1993-2008**



*This figure excludes men with missing sexual orientation data, and HIV testing visits provided through the HIV/AIDS Program (HAP).

** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

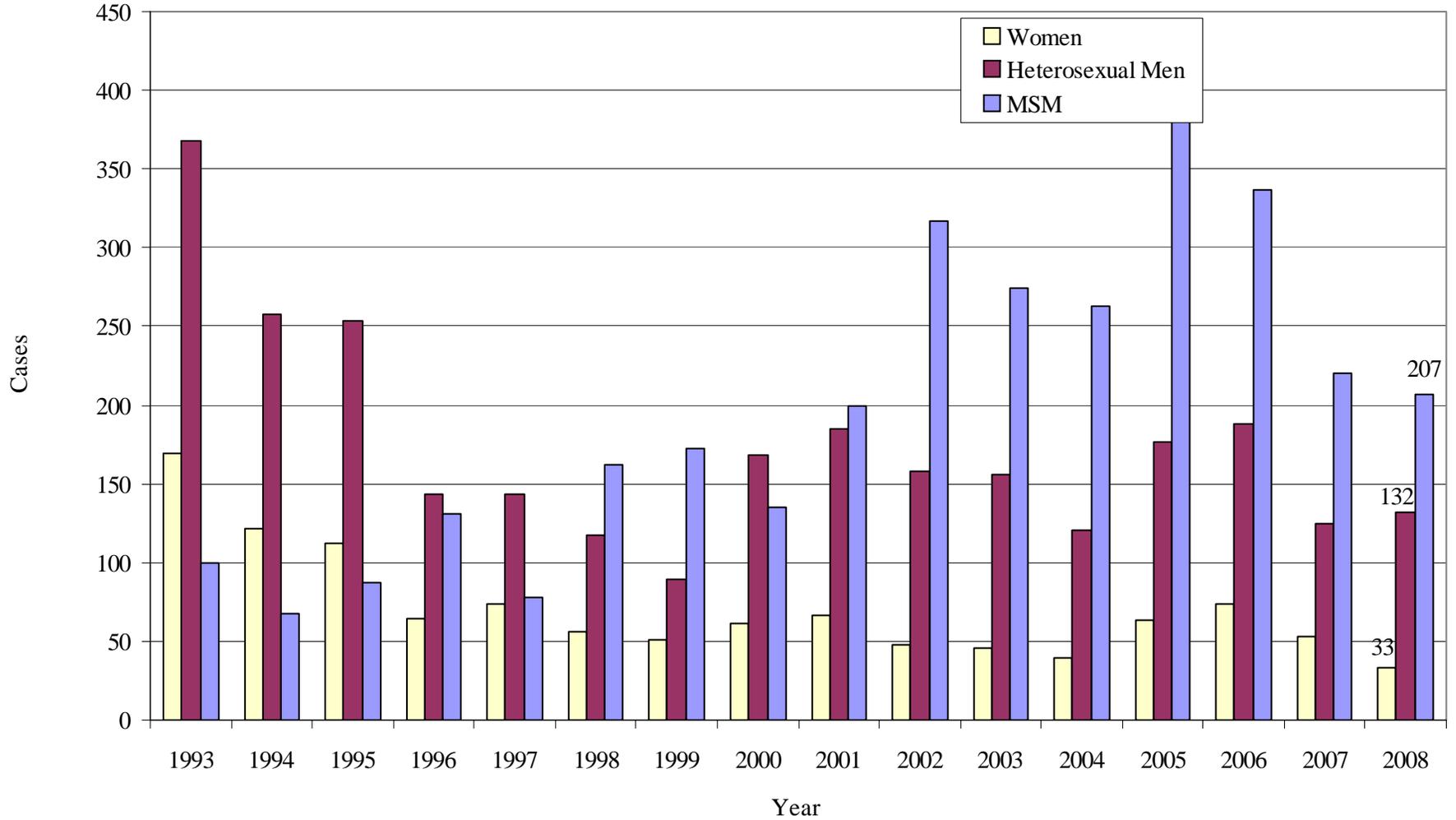
**Figure 16: Patients* Visiting the PHSKC STD Clinics by Year
(Unduplicated Visits), 1993-2008**



*This figure excludes men with missing sexual orientation data, , and HIV testing visits provided through the HIV/AIDS Program. (HAP).

** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

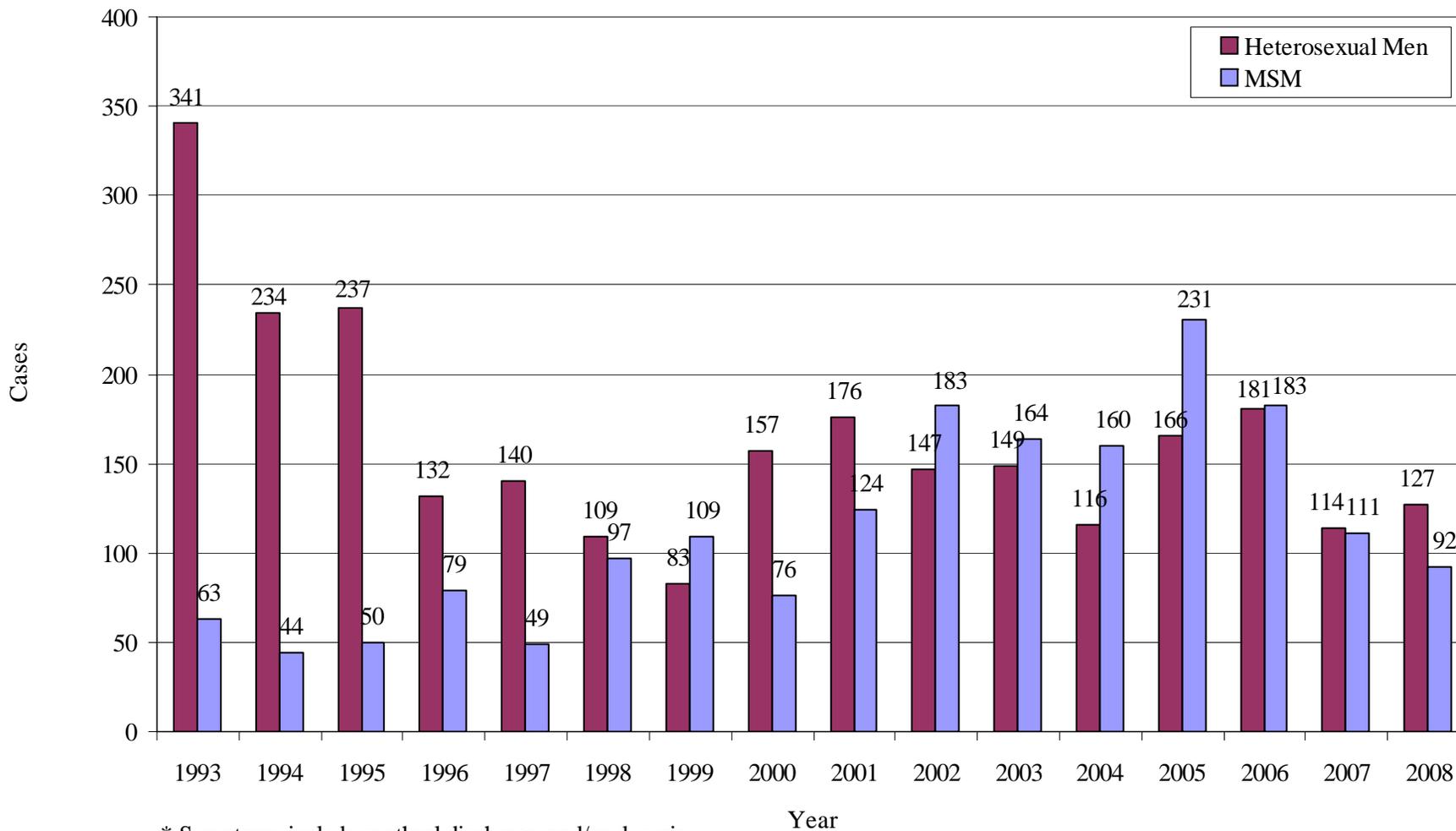
**Figure 17: Gonorrhea Diagnoses*, PHSKC STD Clinic
1993-2008**



* These data exclude 61 cases of gonorrhea among men who were missing sexual orientation information

Figure 18: Symptomatic* Gonococcal Urethritis among Men
PHSKC STD Clinic, 1993-2008**

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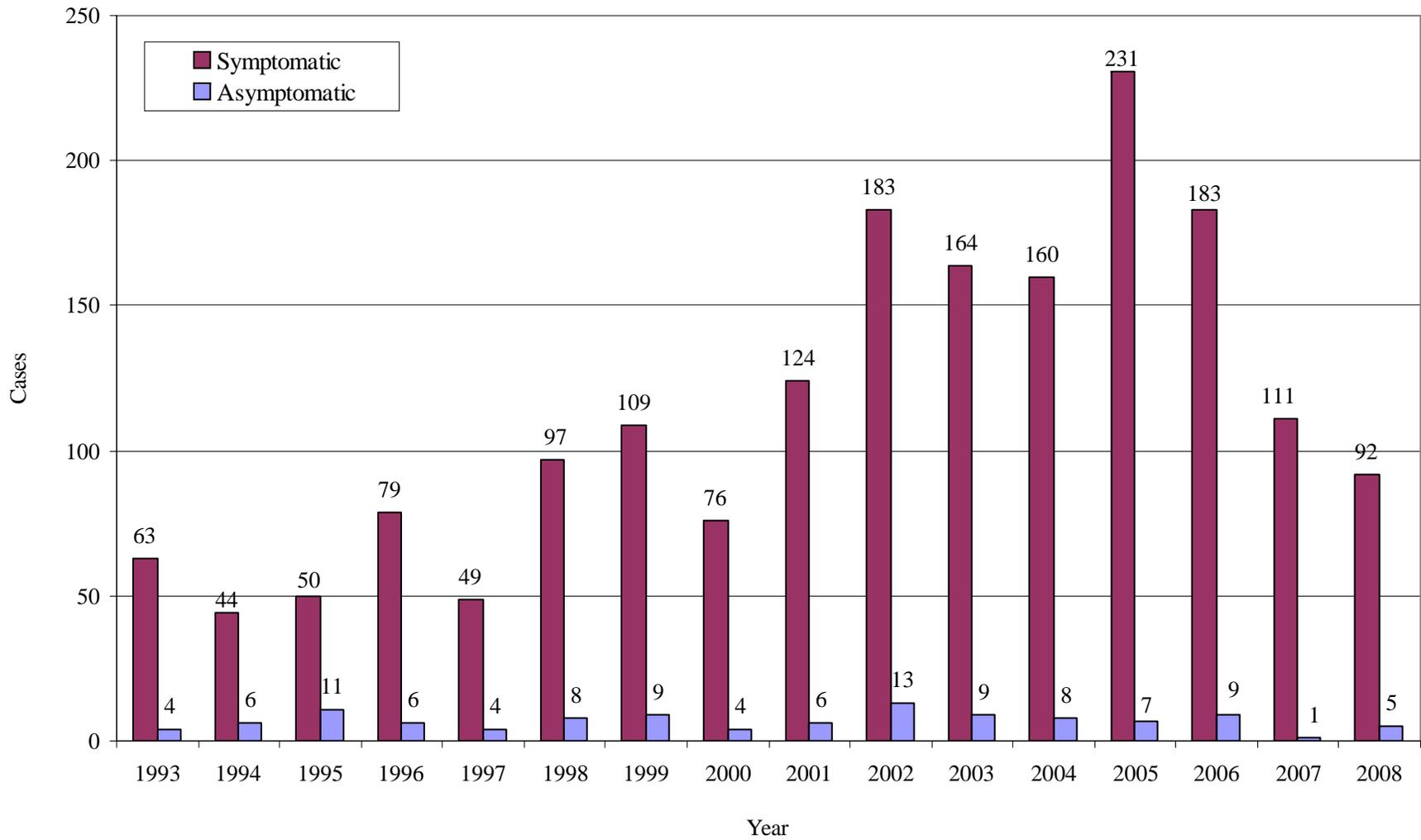


* Symptoms include urethral discharge and/or dysuria

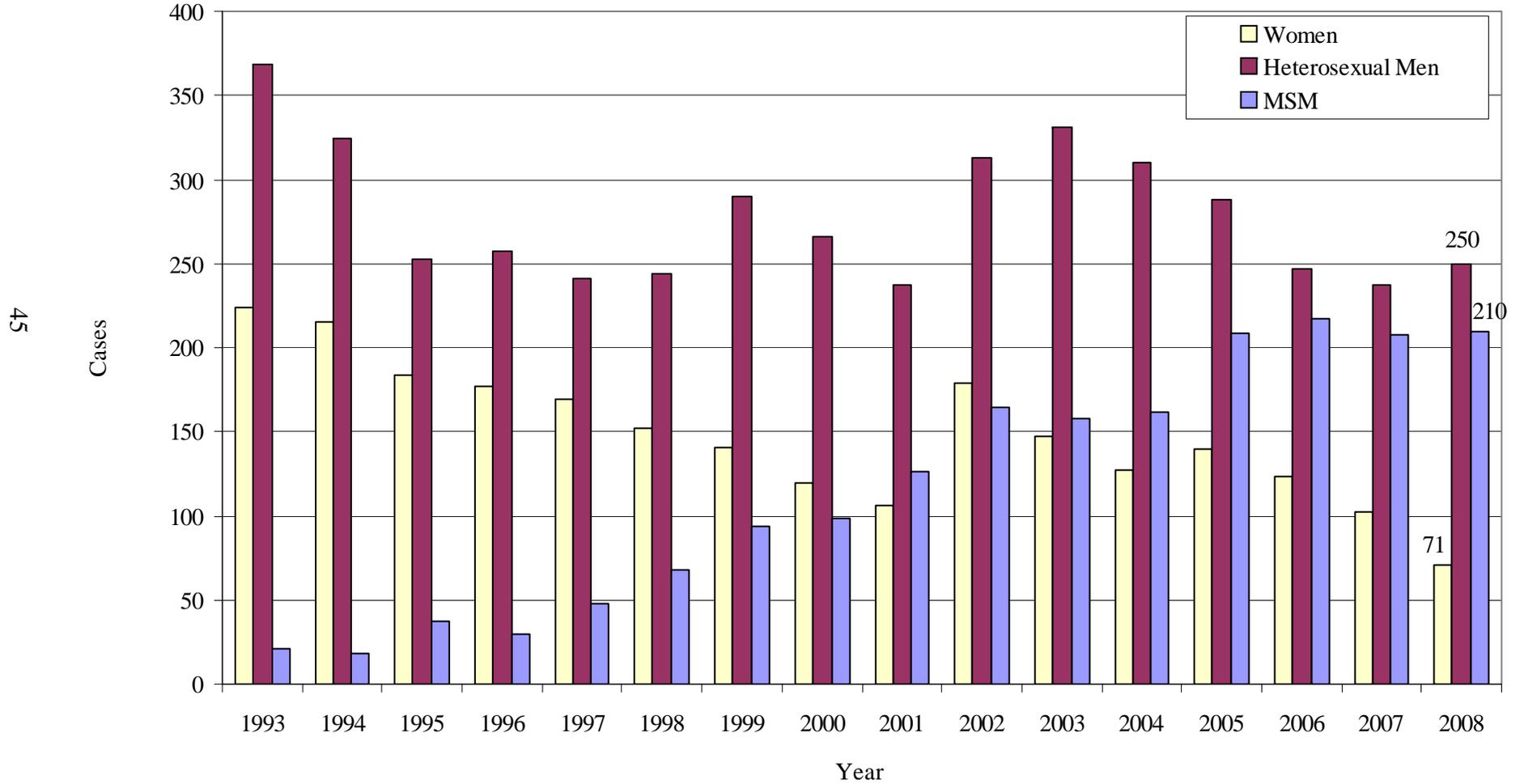
** These data exclude 50 cases of symptomatic urethral gonorrhoea among men who were missing sexual orientation information

Figure 19: Symptomatic and Asymptomatic* Gonococcal Urethritis among MSM
PHSKC STD Clinic, 1993-2008**

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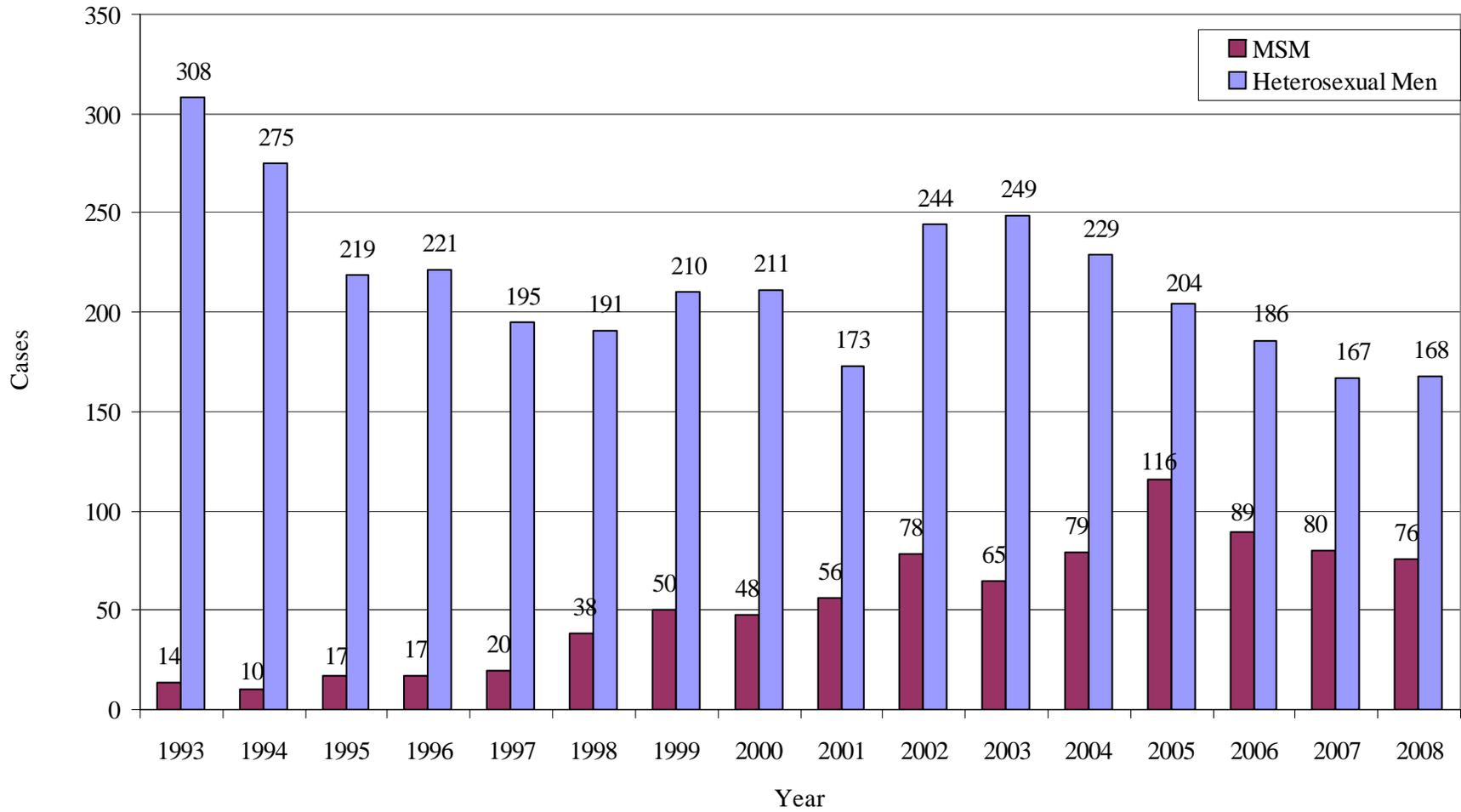


**Figure 20: Chlamydial Infection Diagnoses*, PHSKC STD Clinic
1993-2008**



* These data exclude 116 cases of chlamydial infection among men who were missing sexual orientation information

Figure 21: Symptomatic* Chlamydial Urethritis among Men
PHSKC STD Clinic, 1993-2008**



**Figure 22: Chlamydia Prevalence among Asymptomatic Women Ages 15-29
PHSKC STD Clinic, 1993-2008**

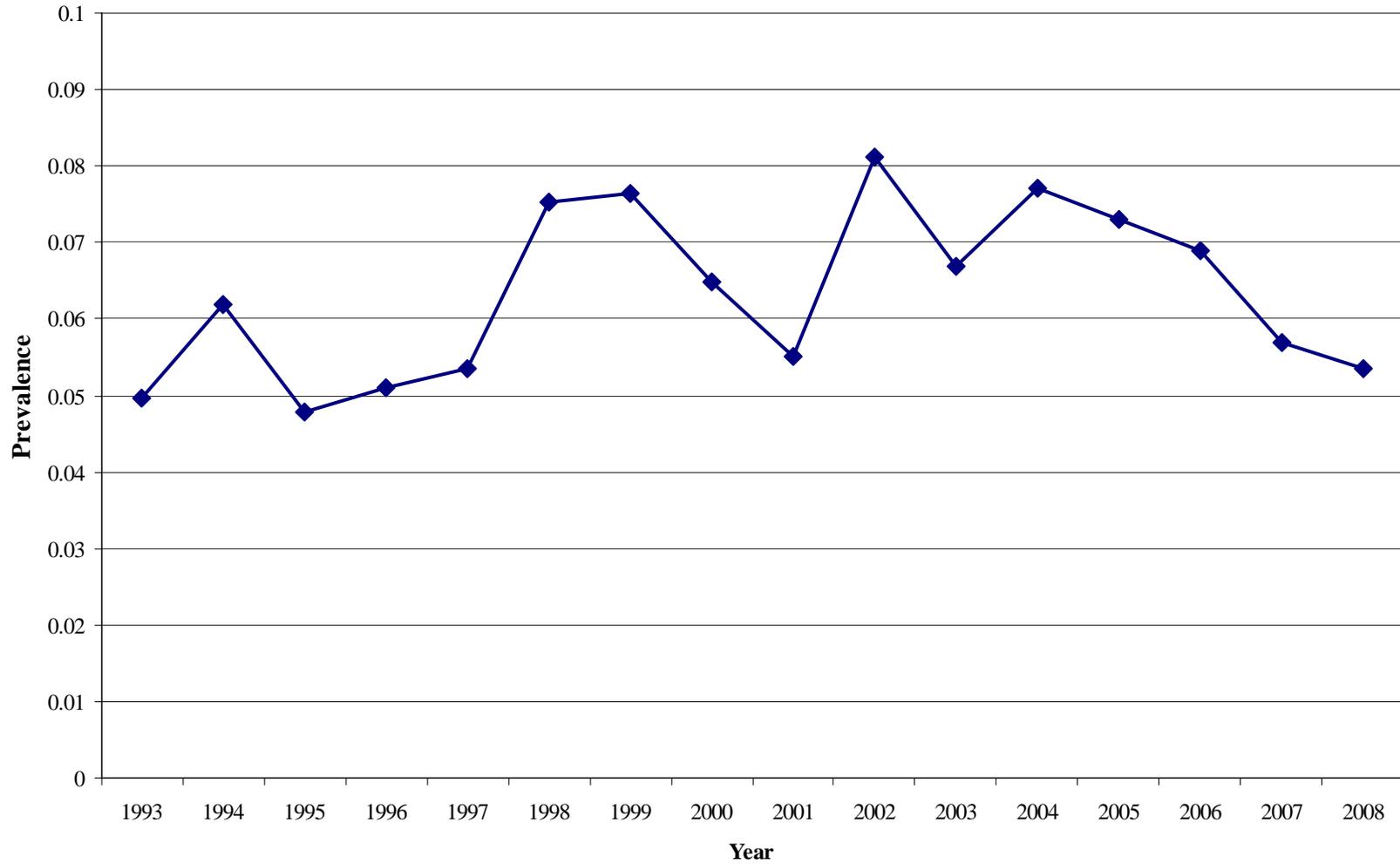
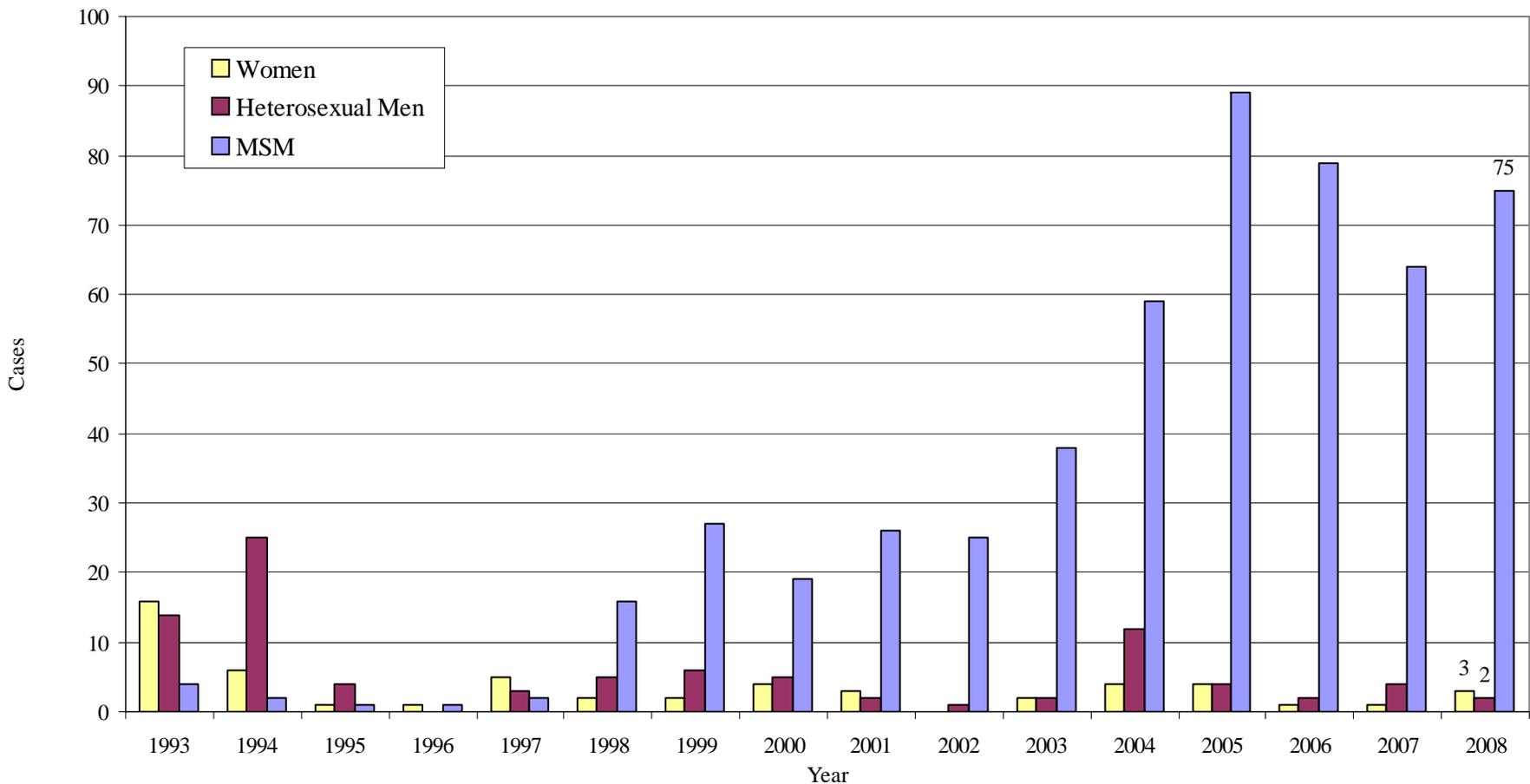


Figure 23: Early* Syphilis Diagnoses^, PHSKC STD Clinic
1993-2008**

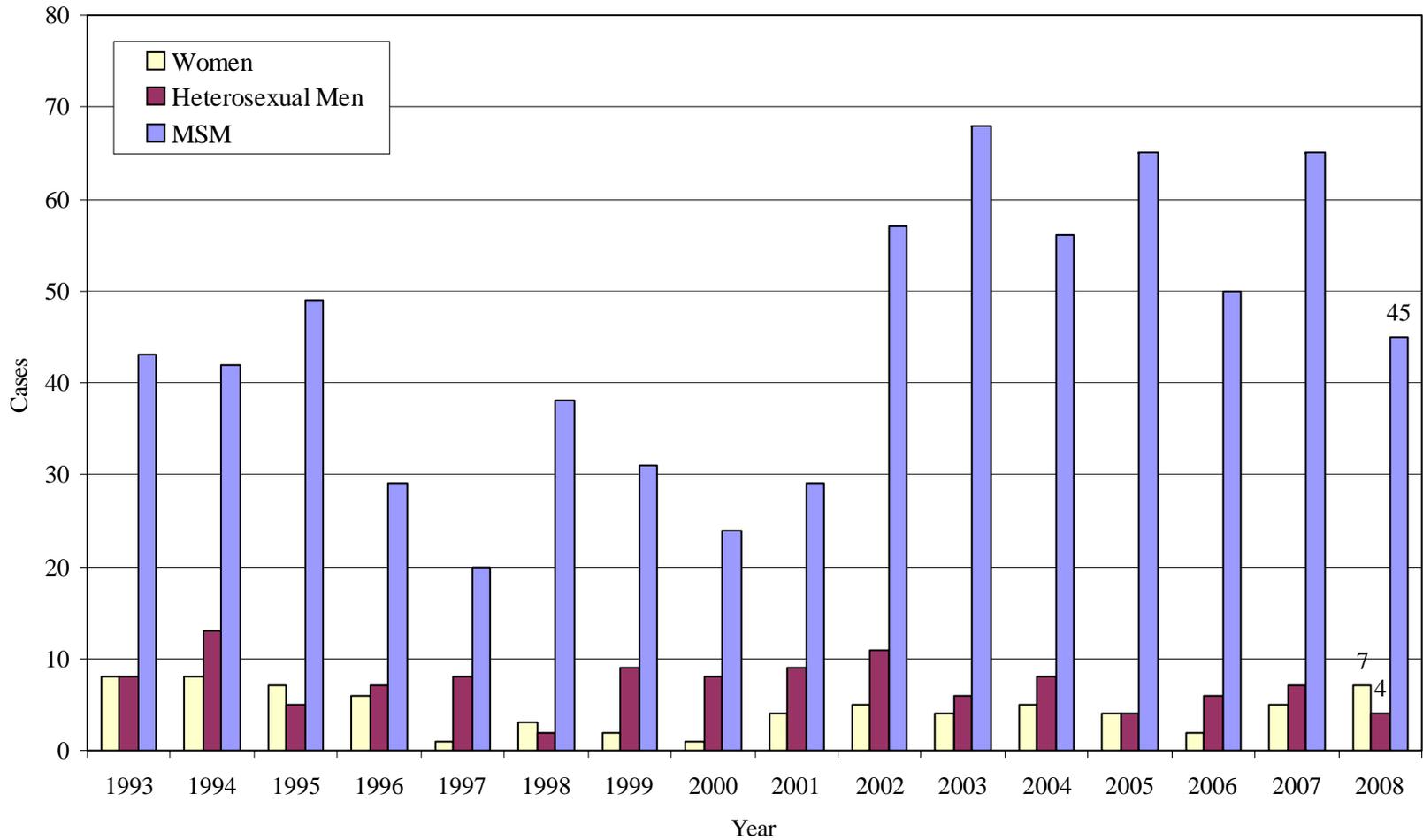


* Includes primary, secondary, and early latent syphilis diagnoses

** These data exclude 58 cases of early syphilis among men who were missing sexual orientation information

^ Some patients may have been diagnosed by outside providers and referred to the PHSKC STD Clinic for follow up

Figure 24: HIV Diagnoses*, PHSKC STD Clinic
1993-2008**

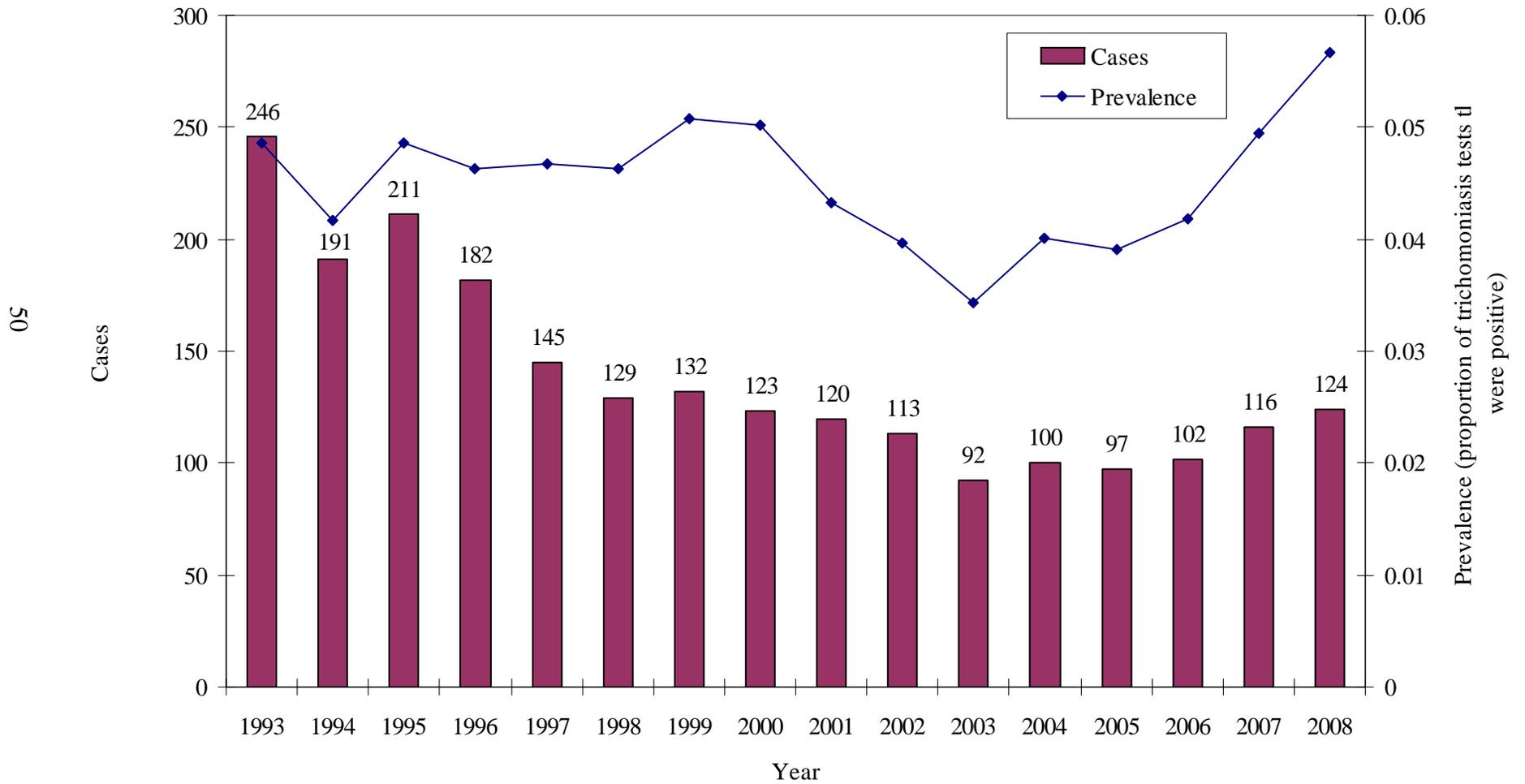


* These data exclude 6 cases of HIV among men who were missing sexual orientation information

** Includes tests performed through the HIV AIDS Program (HAP), which joined the PHSKC STD Clinic in 2000.

^ As of September 2003, all MSM tested for HIV in the PHSKC STD Clinic also received an HIV RNA test.

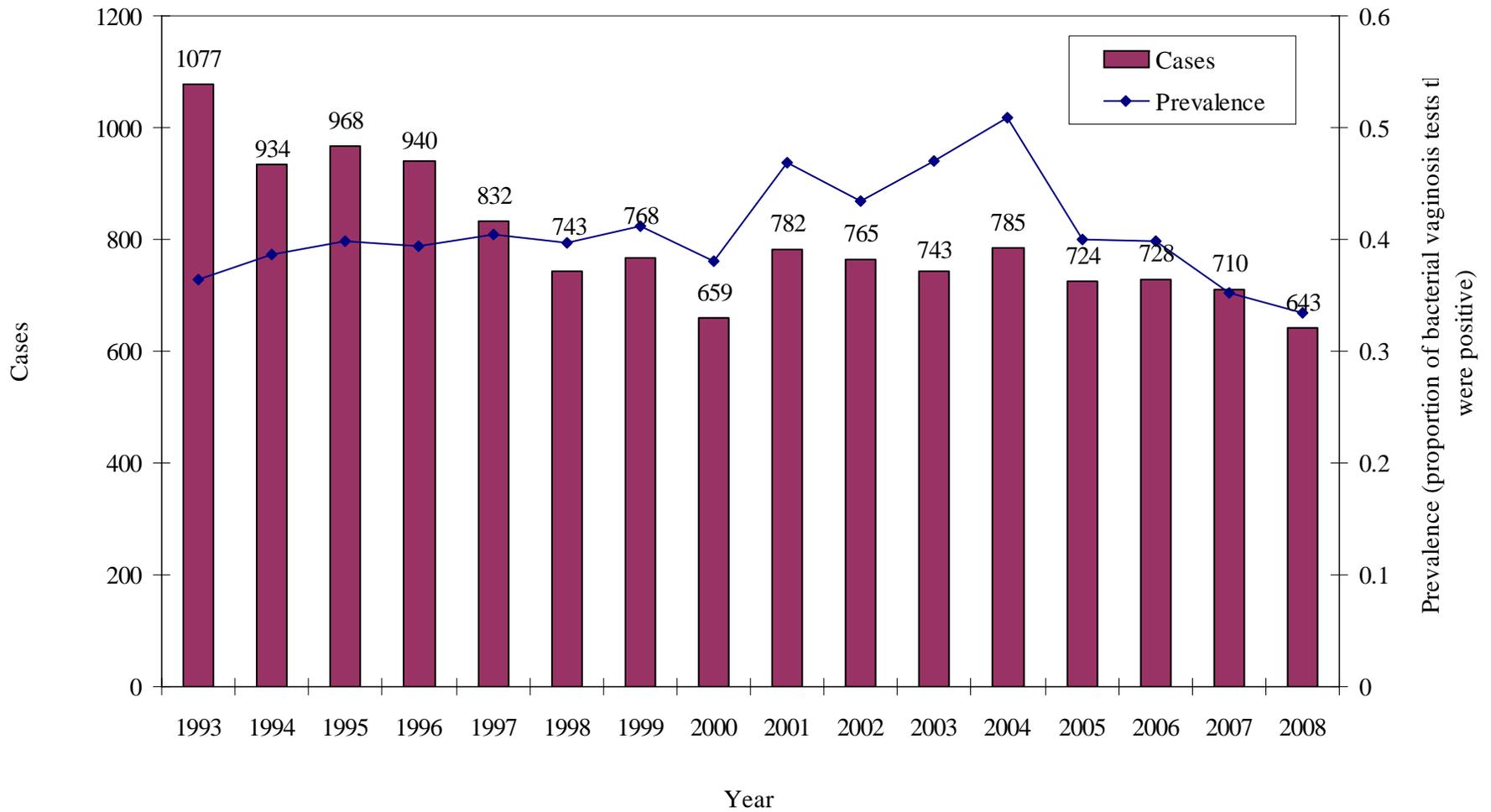
**Figure 25: Trichomoniasis Diagnoses* and Prevalence Among Female Patients
PHSKC STD Clinic, 1993-2008**



*Diagnoses are based on culture and/or wet mount tests

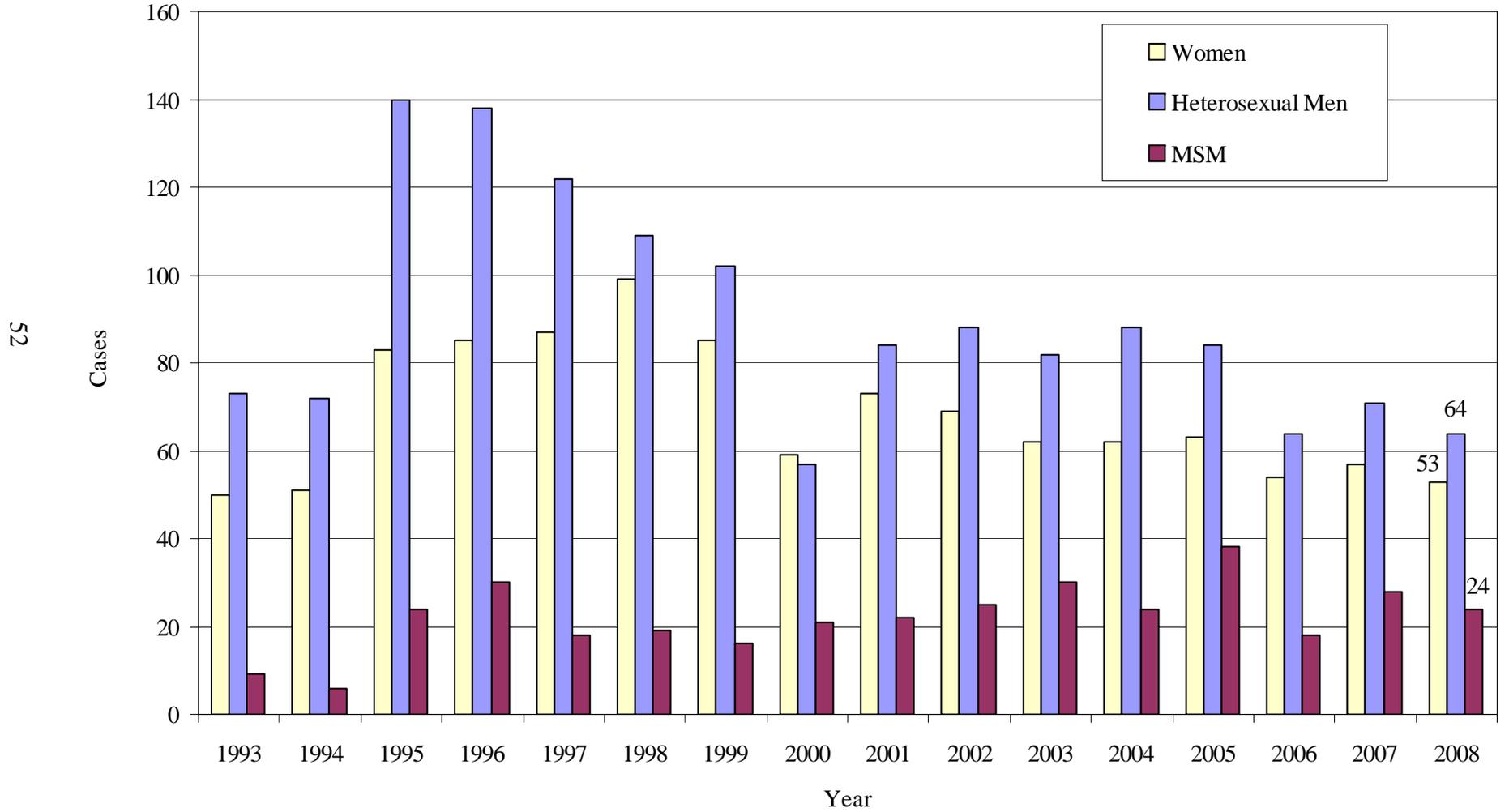
**Prevalence is calculated as total annual diagnoses/total annual tests (culture and/or wet mount)

Figure 26: Bacterial Vaginosis Diagnoses and Prevalence Among Female Patients
PHSKC STD Clinic, 1993-2008**



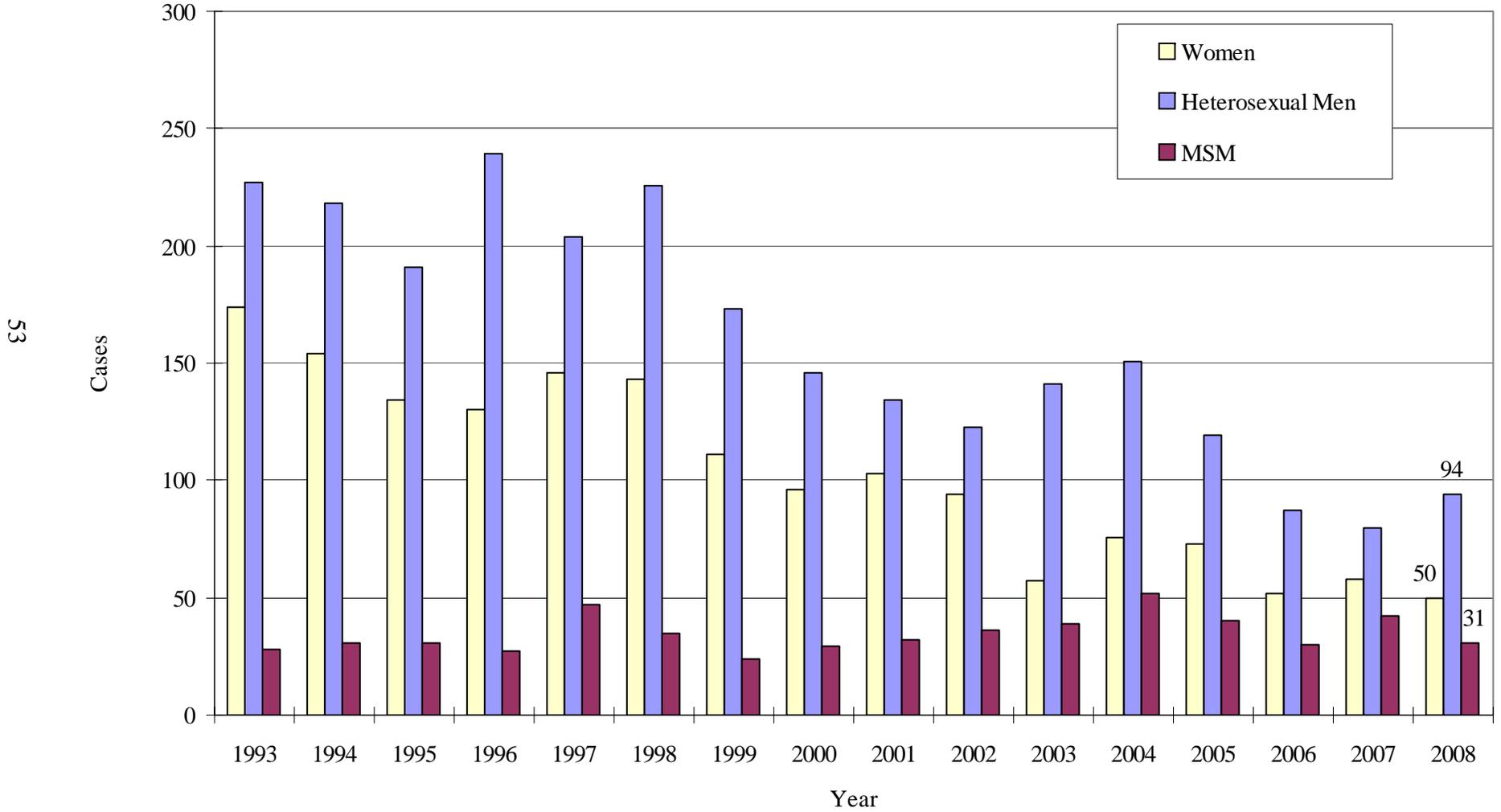
*Prevalence is calculated as total annual diagnoses/annual patients with tests for both vaginal PH and clue cells.

Figure 27: Initial Genital Herpes Diagnoses*
PHSKC STD Clinic, 1993-2008



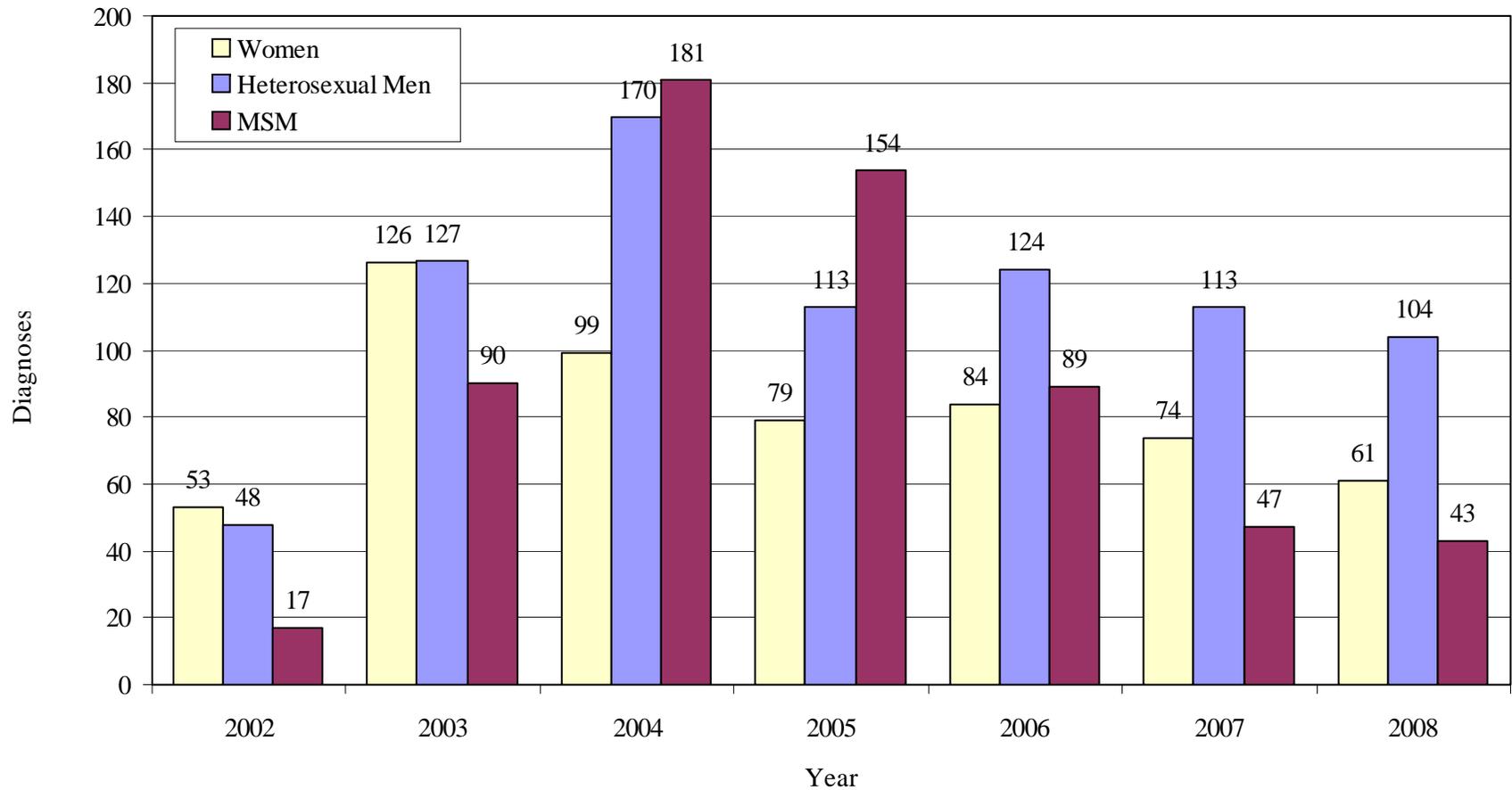
* These data exclude 38 cases of initial genital herpes among men who were missing sexual preference information

**Figure 28: Recurrent Genital Herpes Diagnoses*
PHSKC STD Clinic, 1993-2008**



* These data exclude 98 cases of recurrent genital herpes among men who were missing sexual preference information

**Figure 29: Serologic Diagnoses of HSV-2 in Patients* without Symptoms
PHSKC STD Clinic, 1993-2008****



Number tested: 198 362 75 586 1178 523 567 1263 1068 589 1190 1038 579 1361 599 522 1385 398 511 1257 423

* These data exclude 20 cases of serologic herpes among men who were missing sexual preference information

** Free serologic testing for HSV-2 was available for MSM STD Clinic patients through a research project from October 15, 2003 - April 30, 2006

Men Who Have Sex with Men (MSM)

The number of cases of chlamydial infection, gonorrhea, and early syphilis reported among MSM changed little between 2007 and 2008, but over the last four years the rate of gonorrhea among MSM plummeted while rates of chlamydial infection and early syphilis have remained relatively stable.

Interpreting recent data on reported numbers of STD cases among MSM is complicated by recent changes in reporting practices. In 2008, the algorithm used to determine whether King County gonorrhea and chlamydial infection cases occurred among MSM or heterosexual men changed retrospectively back to the year 2004. Data on sexual orientation were not routinely collected as part of STD case reports before 2004; in 2004, the Washington State Department of Health added a question regarding the gender of sex partners to the case report.

However, between 2004 and 2006, providers often did not report this information. Thus, until 2007, the number of MSM cases was estimated by adding the numbers of each infection diagnosed among Public Health STD Clinic MSM patients to the number of rectal gonorrhea and chlamydia infections reported by non-Public Health STD Clinic providers. These earlier estimates were an underestimate of MSM cases for these two infections, as they excluded non-rectal infections among MSM diagnosed by non-Public Health STD Clinic providers. In 2008, gender of sex partners was reported on 75% of case reports for gonococcal and chlamydial infections among men. For male cases missing this information any rectal infection diagnosed in a man was categorized as an MSM case. Therefore, ascertainment of MSM status is more complete from 2004 onward than in previous years.

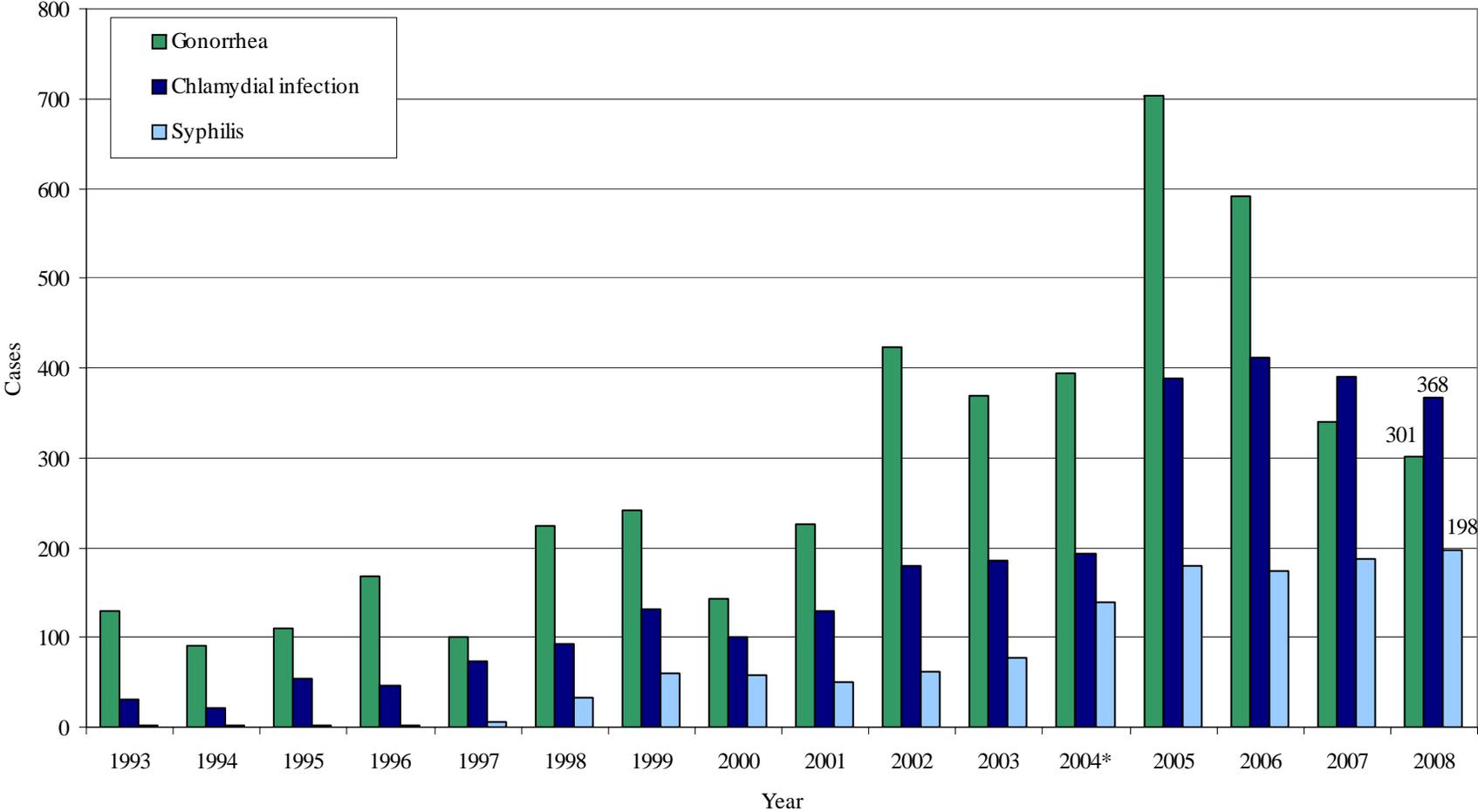
As shown in Figure 31, the number of gonorrhea, chlamydia, and early syphilis cases diagnosed among King County MSM increased substantially between the mid-1990s and the middle of the current decade. However, in recent years this pattern has been less consistent. Gonorrhea diagnoses have decreased since 2005, although the decline from 2007 to 2008 was much smaller than from 2005 to 2007. Trends in chlamydial infection among MSM have been relatively stable since 2005, following a large increase in cases from 2004 to 2005. These trends are quite similar to those seen in the STD clinic in 2008 (Figures 17 and 20).

Similarly, diagnoses and rates of early syphilis among MSM have stabilized over the past four years (Figures 31, 32), with a slight increase from 2007 to 2008. From 2005 to 2007, the number of cases of primary and secondary syphilis fell while the numbers of early latent syphilis cases continued to rise. However, in 2008, the number of primary, secondary, and early latent syphilis cases all rose slightly. The extent to which these divergent trends may reflect changing testing practices is uncertain. Monitoring the occurrence of symptomatic urethral gonorrhea among MSM STD clinic patients provides a measure of gonococcal morbidity that is relatively unaffected by changing STD testing practices over time. However, this measure could be affected by changing patterns of where MSM seek medical care. After increasing substantially between 2004 and 2005, the number of symptomatic urethral gonorrhea cases among MSM treated in the Public Health STD Clinic has declined steadily since 2005 (Figure 33), returning to a level of morbidity last observed in 2001.

In addition to observed increases in reported sexually transmitted infections among MSM, PHSKC collects data on the sexual behavior of MSM seen in the Public Health STD Clinic. These behavioral data suggest an increasing pattern of risk between 1993 and 2000, with more stable patterns of behavior since that time. Figure 34 demonstrates that the proportion of MSM STD Clinic patients reporting two or more sex partners in the preceding two months increased consistently from 1993-2000, but has been stable for the past several years. The proportion of MSM STD Clinic patients reporting unprotected anal intercourse in the preceding two months likewise increased from 1993 through 2002, but has stabilized since that time (Figure 35).

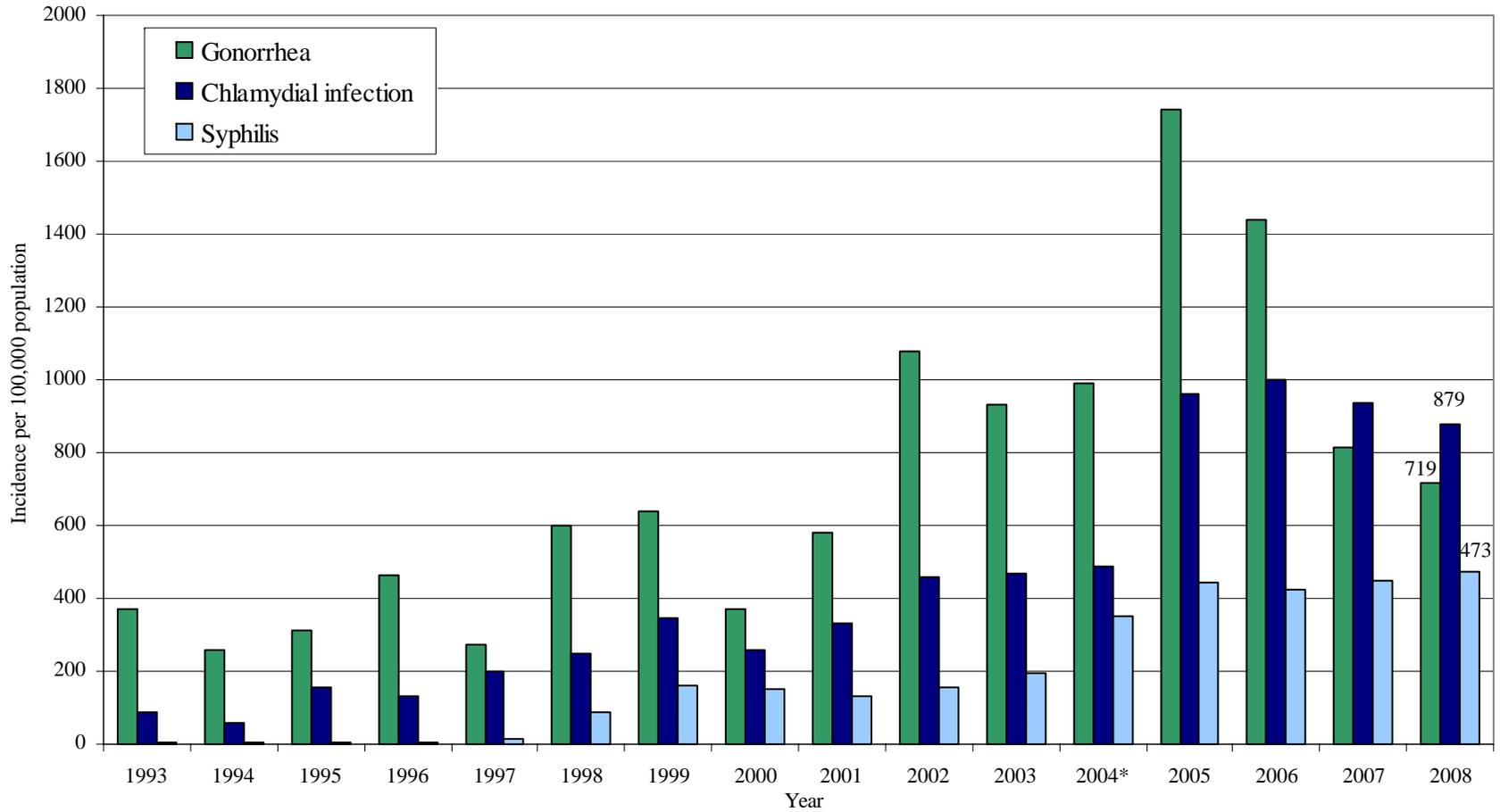
Taken together, these data suggest that sexual risk behaviors now appear to be roughly stable among the MSM seen in the STD clinic, at least insofar as risk can be gauged by the limited data collected as part of clinical evaluations. The generalizability of these data to MSM in the larger population is uncertain.

**Figure 31: Gonorrhea*, Chlamydia*, and Early Syphilis among MSM
King County, WA, 1993-2008**



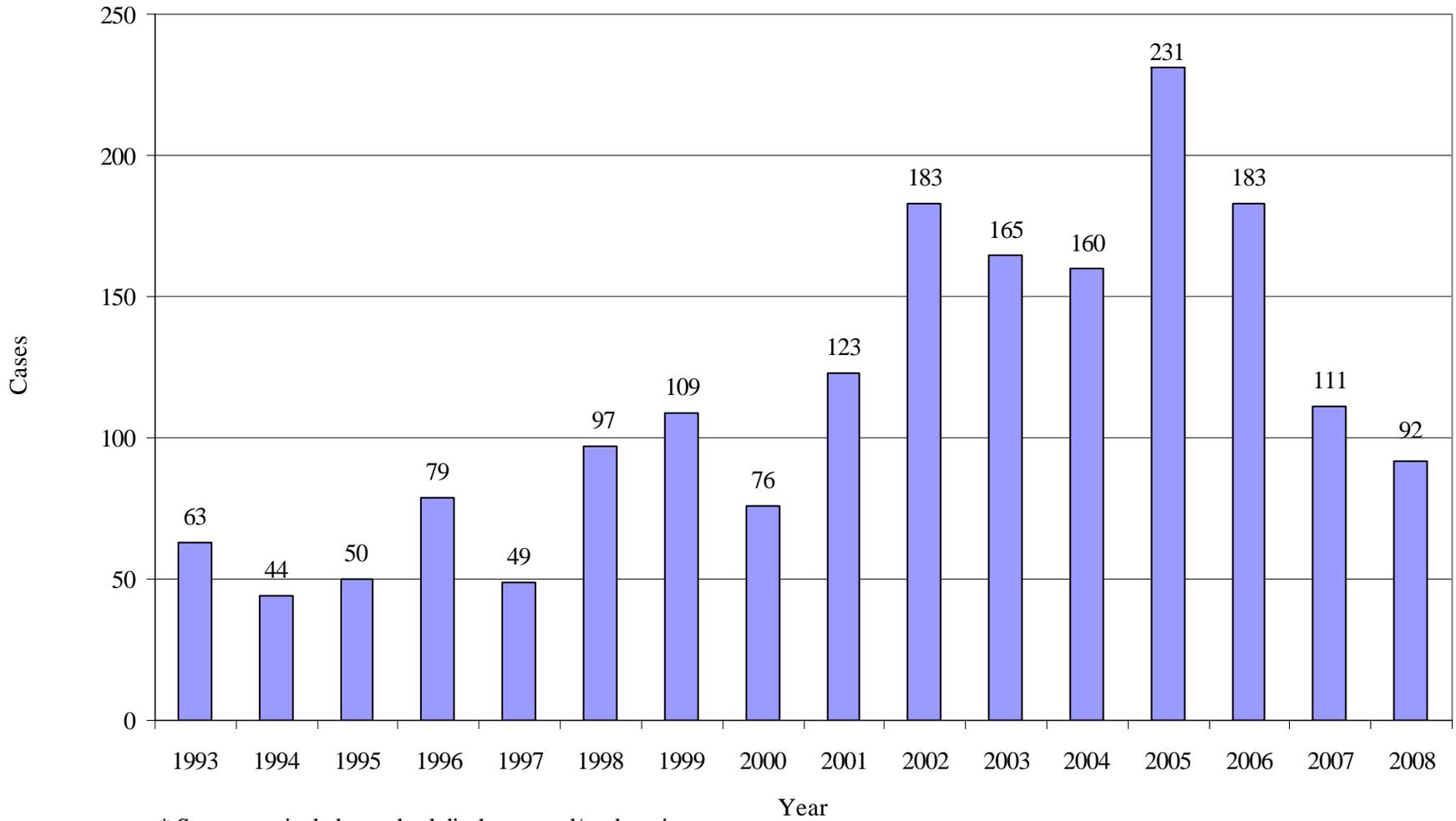
*From 1993-2003, MSM cases were calculated by summing all PHSKC STD Clinic diagnoses among MSM with all rectal infections reported to PHSKC by other providers. Since 2004, men have been assigned MSM status if the reporting provider indicated they had male sex partners, or they had a rectal infection.

**Figure 32: Incidence of Gonorrhea*, Chlamydial Infection*, and Early Syphilis Among MSM
King County, WA 1993-2008**



*From 1993-2003, MSM cases were calculated by summing all PHSKC STD Clinic diagnoses among MSM with all rectal infections reported to PHSKC by other providers. From 2004 onward, men were assigned MSM status if the reporting provider indicated they had male sex partners, or they had a rectal infection.

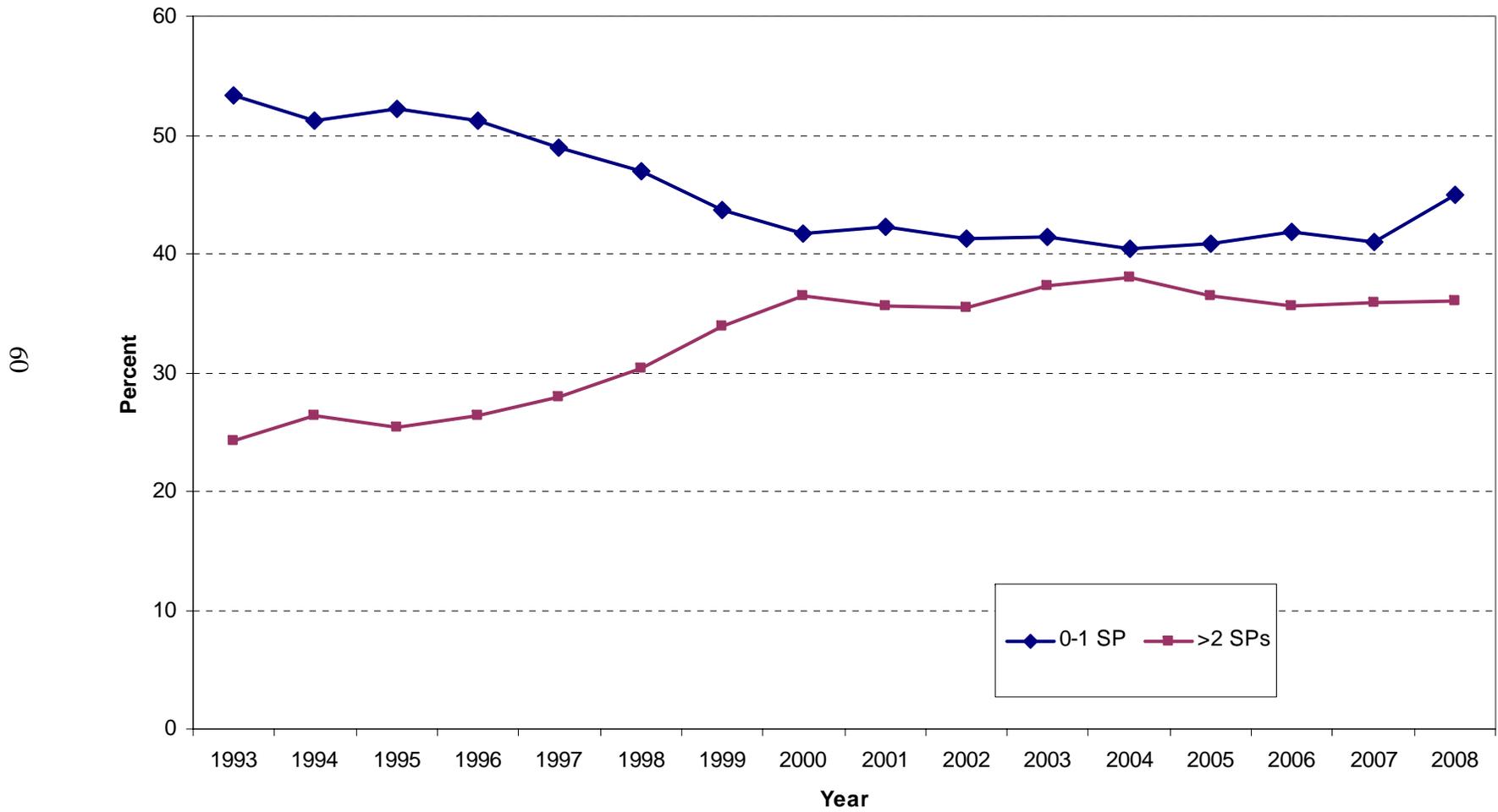
Figure 33: Symptomatic* Gonococcal Urethritis among MSM
PHSKC STD Clinic, 1993-2008**



* Symptoms include urethral discharge and/or dysuria

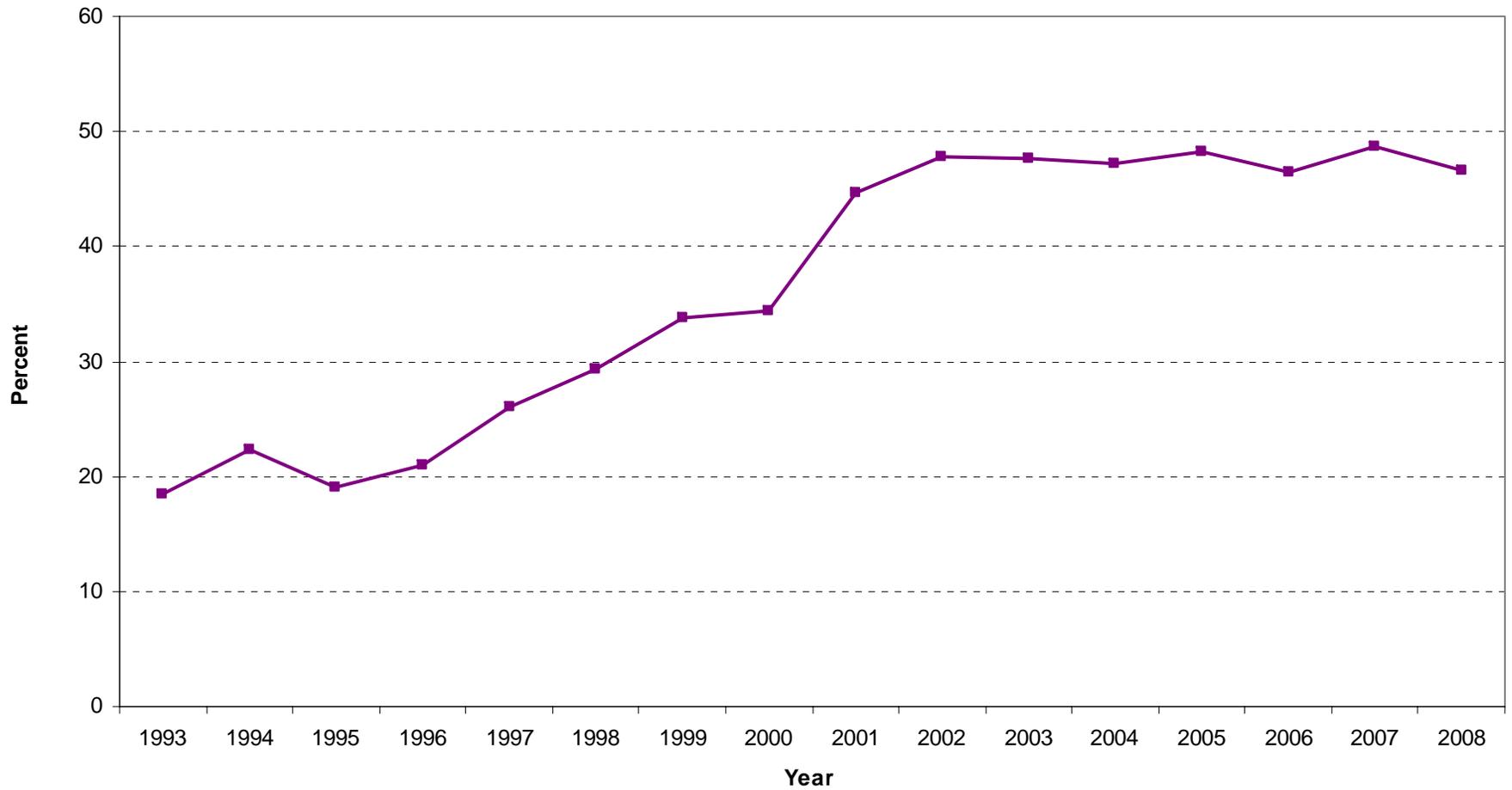
** These data exclude 50 cases of symptomatic urethral gonorrhea among men who were missing sexual orientation

Figure 34: Numbers of sex partners in preceding 2 months among MSM* seen at the PHSKC STD Clinic, 1993-2008



* Patients are unduplicated; each patient is represented only once per year.

**Figure 35: Percent of MSM Patients* Reporting Unprotected
Anal Intercourse in Preceding 2 Months
PHSKC STD Clinic, 1993-2008**



* Patients are unduplicated; each patient is represented only once per year.

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