



**2011
King County
Sexually Transmitted Diseases
Epidemiology Report**

**Public Health – Seattle and King County
2011 Sexually Transmitted Diseases Epidemiology Report**

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Executive Summary

The 2011 Sexually Transmitted Diseases Epidemiology report describes recent trends in chlamydial infection, gonorrhea, and early syphilis among King County residents. Left untreated, these infections may cause serious long-term health consequences. The report also provides information about patients using the Public Health – Seattle & King County STD Clinic, as well as trends in diagnoses of several other sexually transmitted infections at the STD Clinic. 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 findings in the epidemiology of sexually transmitted diseases (STD) in King County in 2011 include:

- **The incidence of early syphilis among men who have sex with men (MSM), particularly HIV-infected MSM, continued to increase in 2011. Surveillance data suggest that rates of gonorrhea and chlamydial infection in MSM are either stable or declining as ascertainment and treatment of asymptomatic rectal and pharyngeal infections has increased.¹**
- **Gonorrhea rates were stable among heterosexuals and remain at near record low levels among women.** The rate of gonorrhea among heterosexuals in 2009 was the lowest level recorded since case report data became available in an electronic format in 1992; incidence among heterosexuals in 2011 was similar to that historic low.
- **Overall chlamydia incidence is stable, with the highest rates of reported infection observed among young women.**
- **Rates of all STDs continue to show marked racial and ethnic disparities.**

- **The Public Health STD Clinic remains a vital resource for residents and health care providers in King County, diagnosing a substantial proportion of all reportable STDs reported in King County in 2011.** In 2011, the STD clinic diagnosed 30% of all early syphilis cases, 33% of all gonorrhea cases, 21% of all HIV cases, and 11% of all chlamydial cases reported in King County. As in past years, the Public Health STD Clinic diagnosed more cases of HIV in 2011 than any other single clinical site in Washington State.³
- **Family planning clinics play a critical role in the control of chlamydial infection in King County.** As a group, family planning clinics diagnosed 1191 (19%) of the total reported cases of chlamydial infections in King County. Public Health Family Planning Clinics diagnosed 7% of King County chlamydial infection cases in 2011.

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

Data sources

King County morbidity data:

This report describes case numbers and rates of infection for three sexually transmitted infections in King County. 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 HIV/STD 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 1992-2011 and reported through February 27, 2012.

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 2010. Estimates of the 2010 population by age, race, and ethnicity were obtained from the Centers for Disease Control and Prevention. Population data for 2011 are not yet available; population data from 2010 were utilized to calculate incidence figures for 2011.

Overall population estimates used for MSM represent 5.8% of men ages 15 and older in King County per year; these figures are comparable to estimates for the percent of the male population that is MSM from several population-based studies.¹⁻

³ Population estimates for HIV-positive and negative MSM were provided by the Public Health HIV/AIDS Epidemiology Unit.

Data limitations:

Notifiable disease data have 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 under-reporting 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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Chlamydial Infection

In 2011, 6,492 cases of chlamydial infection were reported among King County residents, representing an overall reported incidence of 336 per 100,000 people (Table 1), similar to the incidence of 311 cases per 100,000 people in 2010 (Table 3). In 2011, 4,120 cases were reported among women, for a reported incidence of 425 per 100,000 women, and 2,372 cases were reported among men, for a reported incidence of 247 per 100,000 men (Table 1). While the overall number of chlamydial infection cases was stable from 2010 to 2011, incidence of chlamydial infection among heterosexual men and women declined somewhat from 2010 to 2011, while incidence among MSM increased significantly.

Age, race and ethnicity

Historically, the incidence of chlamydial infection has varied substantially by age and race in King County. These patterns continued in 2011. (Throughout this report, Latino ethnicity is treated as a separate racial group, and all other racial groups exclude Latinos.):

- Among women, reported incidence was highest among black women (1,351 per 100,000 women), followed by Native American (1241 per 100,000), Latina (690 per 100,000), Asian (346 per 100,000), and white (254 per 100,000) women (Table 2). This pattern of disparity was also evident when analysis was restricted to women ages 15-29 (Figure 3).
- Among men, black men had the highest reported incidence of chlamydial infection with an incidence of 899 per 100,000, followed by Latino men (345 per 100,000). Incidence of reported chlamydial infection was less variable among Native American (256 per 100,000), Asian (110 per 100,000), and white (175 per 100,000) men than was the case among women (Table 2).
- Among women, the incidence of chlamydial infection was highest among 20-24 year olds (2,496 per 100,000) and 15-19 year olds (2,182 per 100,000), while among men, reported incidence was highest among 20-24 year olds (999 per 100,000) followed by 25-29 and 15-19 year olds (605 and 476 per 100,000, respectively) (Table 2, Figure 2). 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 two sources of data to assess trends in chlamydial infection in the population:

- 1) Numbers of cases reported to Public Health by diagnosing providers and laboratories;
- 2) Trends in infection in the Public Health STD Clinic.

The incidence of reported chlamydial infection among 15-29 year-old women in King County is substantially lower than that observed nationally or in Washington State as a whole (Figure 1). Trends in King County have also varied from those observed elsewhere in the state and nationally. The incidence of reported chlamydial infection among women age 15-29 rose from 2002 to 2004, declined and then stabilized from 2004 to 2010, and rose again between 2010 and 2011 (Table 4, Figure 1). In contrast, the incidence of reported chlamydial infection among 15-29 year-old Washington State (excluding King County) women rose sharply from 2007 to 2008 on a statewide basis, stabilized from 2008-10 and then rose in parallel with King County from 2010-11. The reasons for observed changes in reported incidence are not clear. The increase from 2007 to 2008 may have been related, in part, to increased reporting of chlamydia cases as a result of a new web-based case reporting system introduced throughout Washington State from 2007-2008. (A similar system has been in place in King County since the late 1990s.)

Limitations of data

Public Health does not currently monitor the number of chlamydial tests performed in the population. Therefore, 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 that did not previously have screening programs. Changes in testing technology may also 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 the Infertility Prevention Project (IPP), a national chlamydial testing program, were using NAATs by the end of 1999.

The increases in reported incidence among young women were not clearly evident in sentinel surveillance data collected in the Public Health STD Clinic. Among STD clinic patients, the number of diagnoses of chlamydial infection among women has been roughly stable since 2003 (Figure 19). Similarly, the number of men seeking evaluation for symptomatic chlamydial urethritis has been relatively stable since 2007 (Figure 20).

PHSKC and other family planning clinics play an important role in the control of chlamydial infection in King County. Family planning clinics diagnosed 1191 (19%) of the total 6492 cases of chlamydial infections in King County in 2011, and 23% (943 or 3899) of all cases diagnosed in women. This total includes Public Health family planning clinics, which diagnosed 475 cases of chlamydial infection in 2011.

Table 1: Number of Reported Cases and Chlamydia Incidence, King County, WA, 2011

	Cases	Incidence per 100,000 population
Sex		
Women	4120	425
Men	2372	247
Total cases	6492	336

Table 2: Number of Reported Cases and Chlamydia Incidence in Men and Women, by Age and Race King County, WA, 2011

		Women (N=3,906)		Men (N=2,039)	
		Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
Race/ethnicity* ^					
	White, Non-Latino	1413	254	987	175
	Black, Non-Latino	755	1351	538	899
	Nat Am, Non-Latino	87	1214	18	256
	Asian/PI, Non-Latino	489	346	144	110
	Latino	480	690	276	345
	Other	76		28	
	Multiple	135		47	
	Unknown	685		334	
Age*					
	0-9 years	1	1	0	0
	10-14 years	54	100	8	14
	15-19 years	1,252	2,182	286	476
	20-24 years	1,602	2,496	655	999
	25-29 years	638	808	494	605
	30-34 years	320	430	318	411
	35-44 years	196	135	381	252
	45-55 years	49	34	187	128
	>=56 years	7	3	40	21
	Unknown	1		3	

* 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 2011, among women, 685 case reports were missing race and/or ethnicity, and one was missing age, and among men, 334 case reports were missing race and ethnicity, and 3 were missing age.

^Race/ethnicity specific rates exclude cases reported with "multiple" or "other" races.

**Table 3: Number of Reported Chlamydia Cases and Incidence among Men and Women
King County, WA, 1992-2011**

Year	Women		Men		Total	
	Cases	Incidence per 100,000	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000
1992	3,000	375	965	124	3,965	251
1993	2,563	316	813	102	3,376	210
1994	2,742	334	811	101	3,553	219
1995	2,410	291	802	98	3,212	196
1996	2,356	282	880	107	3,236	195
1997	2,247	266	903	108	3,150	188
1998	2,447	286	1,071	127	3,518	207
1999**	2,719	315	1,357	158	4,076	237
2000	3,388	388	1,653	191	5,041	290
2001	3,285	372	1,612	184	4,897	279
2002	3,483	391	1,750	198	5,233	295
2003	3,796	425	2,031	229	5,827	327
2004	4,108	457	2,061	232	6,172	345
2005	4,070	448	2,188	243	6,261	346
2006	3,956	429	2,016	221	5,974	325
2007	3,900	417	1,843	199	5,748	309
2008	3,972	420	2,031	216	6,003	319
2009	3,917	409	1,958	206	5,875	308
2010	3,906	408	2,039	214	5,946	311
2011	4,120	425	2,372	247	6,492	336

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

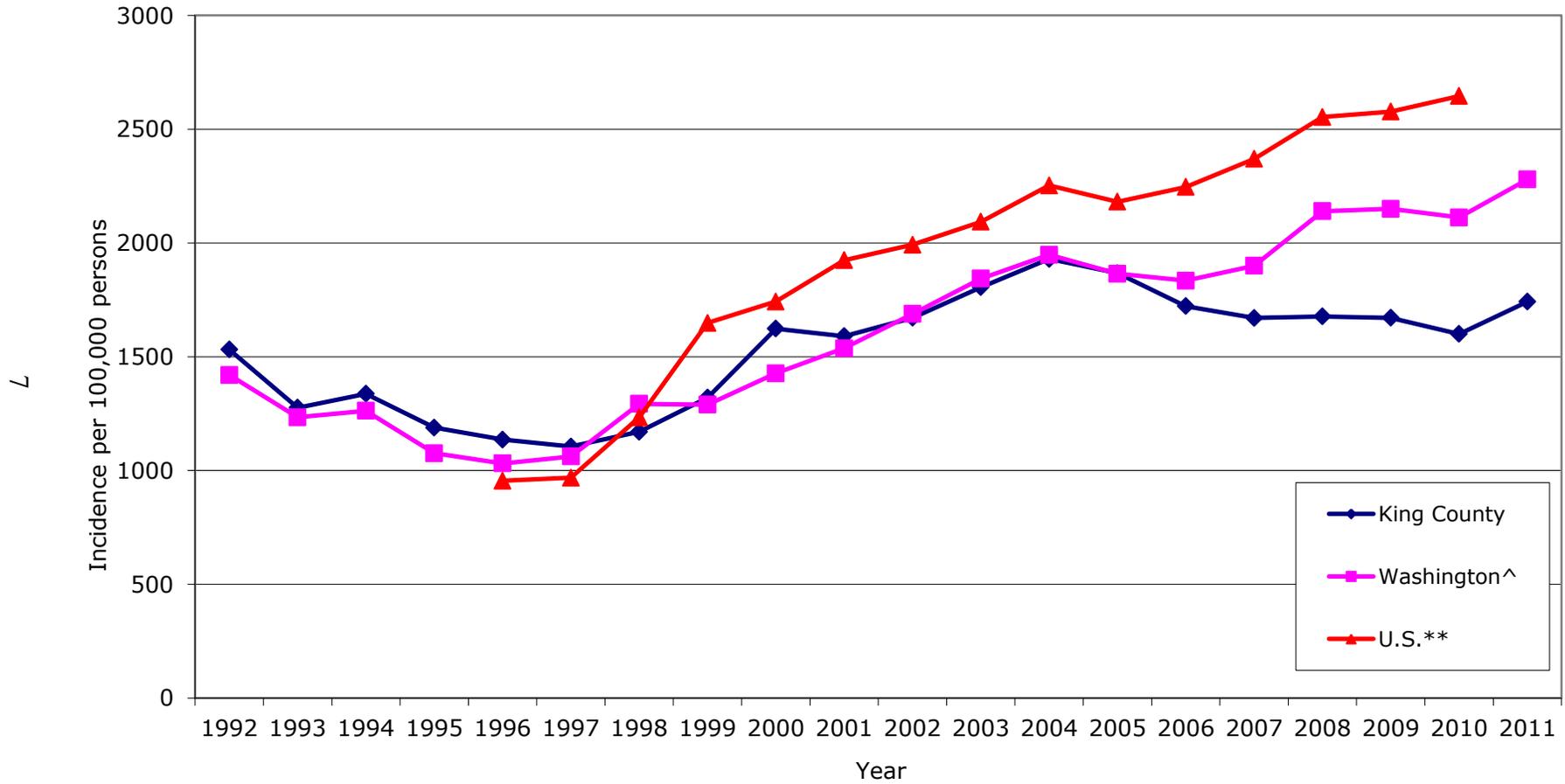
Table 4: Incidence of Reported Chlamydial Infection among Men and Women Ages 15-29,* King County, WA, 1992-2011

Year	Women, ages 15-29		Men, ages 15-29		Total, ages 15-29	
	Cases	Incidence per 100,000	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000
1992	2,658	1,392	805	452	3,464	985
1993	2,212	1,160	695	390	2,908	827
1994	2,302	1,290	637	358	2,939	840
1995	2,051	1,149	642	359	2,693	766
1996	1,976	1,108	664	367	2,640	744
1997	1,942	1,093	644	353	2,586	722
1998	2,081	1,160	788	426	2,869	790
1999**	2,357	1,291	934	502	3,291	903
2000	2,918	1,430	1,154	617	4,071	1,110
2001	2,877	1,397	1,065	566	3,942	1,069
2002	3,050	1,441	1,215	642	4,265	1,147
2003	3,312	1,634	1,385	727	4,698	1,256
2004	3,589	1,747	1,349	699	4,938	1,303
2005	3,536	1,721	1,508	692	5,045	1,307
2006	3,359	1,723	1,297	642	4,656	1,172
2007	3,334	1,671	1,179	570	4,513	1,111
2008	3,408	1,677	1,353	642	4,761	1,150
2009	3,440	1,671	1,338	628	4,778	1,140
2010	3,292	1,600	1,295	607	4,587	1,095
2011	3,493	1,742	1,437	693	4,930	1,208

* 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.

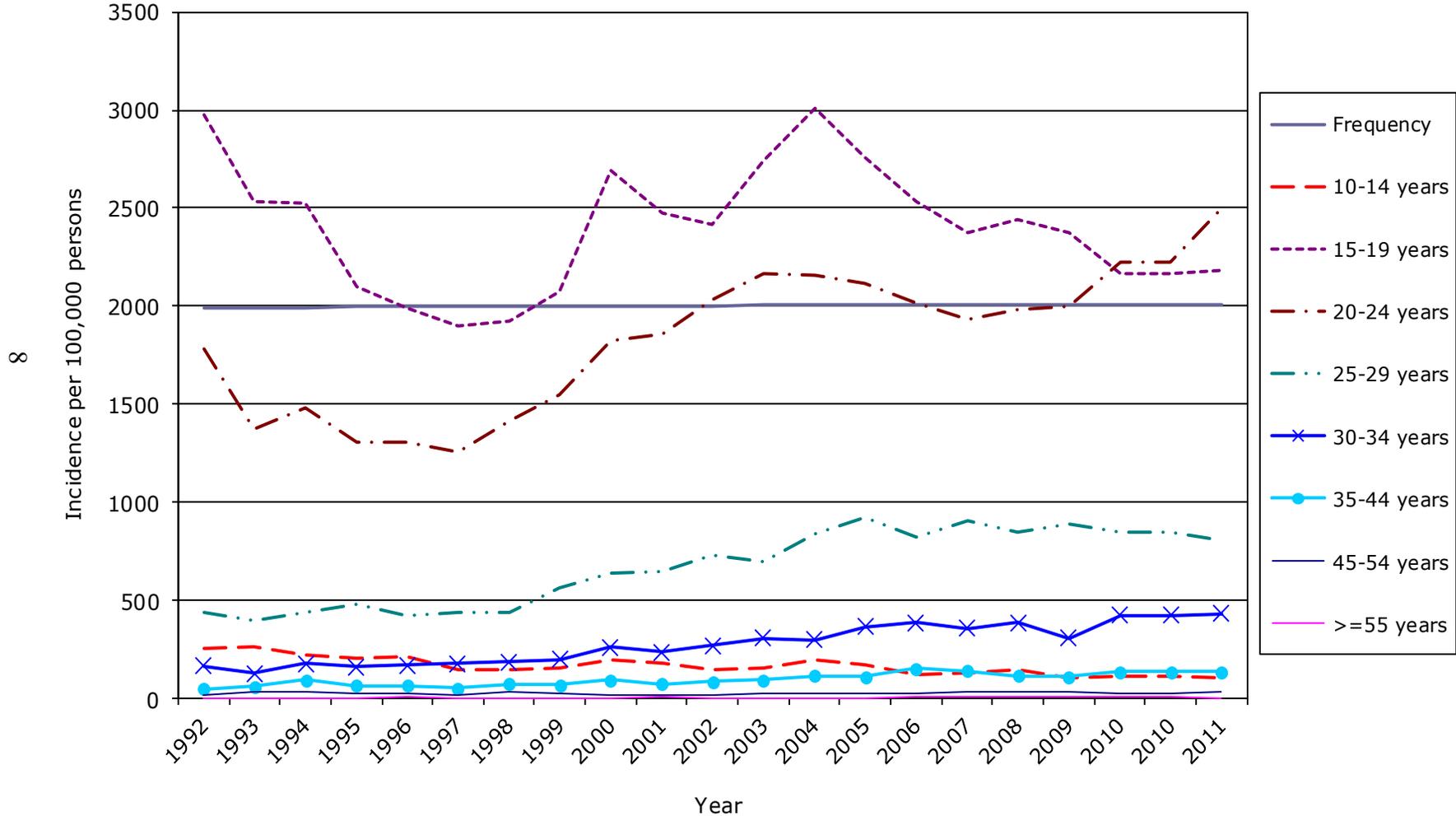
** Some PHSKC clinics began using NAATS testing for chlamydial infection in 1994, and all PHSKC clinics were using NAATs by 1999.

Figure 1: Chlamydia Incidence among Women Ages 15-29*, 1992-2011
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 2011 were not available at the time this report was prepared.
 ^ Washington State rates exclude King County.

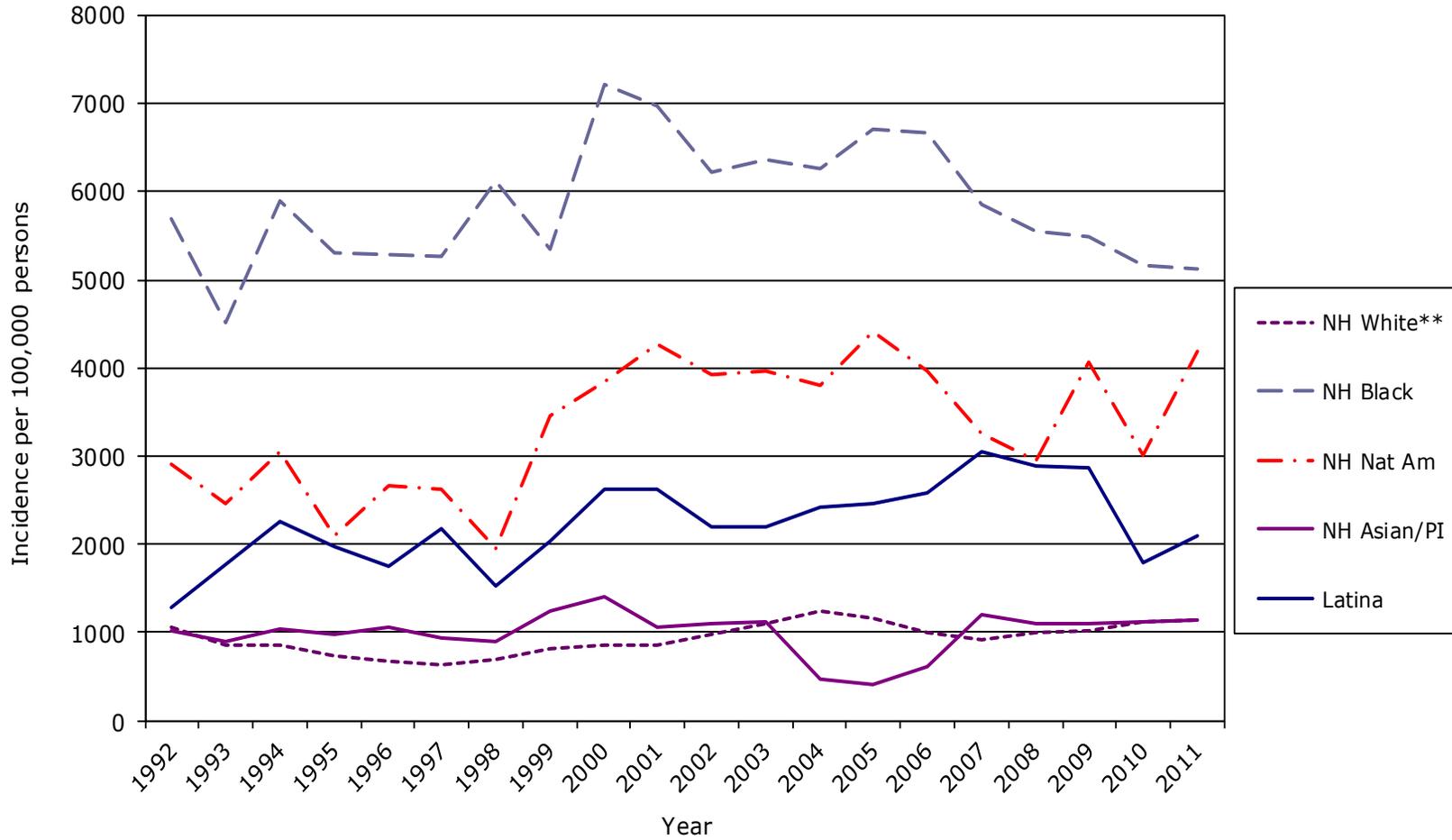
Figure 2: Reported Chlamydial Infection by Age* among Women
King County, WA, 1992-2011



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

Figure 3: Reported Chlamydial Infection by Race and Ethnicity Among Women Ages 15-29*
King County, WA, 1992-2011

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* 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.

** NH: Non-Hispanic

Gonorrhea

In 2011, 1,403 cases of gonorrhea were reported among residents of King County, resulting in an overall incidence of 73 per 100,000 persons (Table 5). This incidence was down somewhat from 2010. Among women, 393 cases of gonorrhea were reported in 2010, for an incidence of 40.6 per 100,000. Among men, 1010 cases were reported in 2011 (105.5 per 100,000, Table 7). Gonorrhea incidence remains much higher among MSM (1583 per 100,000) than among heterosexual men (44 per 100,000) or women (48 per 100,000, Figure 4).

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 overall incidence of gonorrhea among women is currently near the lowest level observed in two decades. Most gonorrhea cases in King County women occur in persons aged 15-29 years. In this group, incidence of gonorrhea fell sharply from 2006 to 2009, increased somewhat from 2009 to 2010, and was essentially unchanged from 2010 to 2011 (Figure 5). The drop in gonorrhea incidence among women between 2006 and 2010 was observed statewide, and to a lesser extent in other Western states, as reflected in national data shown in figure 5.

Age

The incidence of gonorrhea was highest in the 15-19 and 20-24 year age groups among women in 2010, while in men incidence was highest in the 20-24, 25-29, and 30-34 year-old age groups (Table 6). Among women, incidence increased among 20-24 year olds and decreasing slightly among 15-19 year olds from 2010 to 2011 (Figure 6; Figures 6 and 7 include women only to better illustrate trends in gonorrhea among heterosexuals.)

Race and ethnicity

The large decline in gonorrhea incidence among women observed between 2005 and 2009 affected all racial and ethnic groups, with the greatest absolute decline observed among African American women (Figure 7). However, as in the past, large racial disparities in gonorrhea incidence persist, with African American women age 15-29 experiencing an incidence of gonorrhea 12 times that observed in white women (Table 6).

MSM

In addition to surveillance data gathered through case reports, data from the Public Health STD Clinic also suggest that gonorrhea morbidity among MSM was relatively unchanged from 2010 to 2011. The total number of gonorrhea diagnoses among MSM STD Clinic patients was 397 cases in 2011, down only slightly from 417 cases in 2010 (Figure 16). However, some evidence suggests that this stability may be masking a decline in gonorrhea among MSM. Public Health monitors symptomatic urethral gonorrhea among men as a measure of morbidity that is relatively unaffected by changes in screening and testing practices from year to year. Between 2010 and 2011, the number of cases of symptomatic gonococcal urethritis among MSM seen in the Public Health STD Clinic declined by 25% (Figure 17).

Table 5: Number of Reported Gonorrhea Cases and Gonorrhea Incidence, King County, WA, 2011

	Cases	Incidence per 100,000 population
Sex		
Women	393	41
Men	1010	105
Total cases	1403	73

Table 6: Number of Reported Gonorrhea Cases and Incidence, in Men and Women, by Age and Race, King County, WA, 2011

	Women (N=393)		Men (N=1010)	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000
Race/ethnicity* ^				
White, Non-Hispanic	117	21	517	86
Black, Non-Hispanic	138	244	188	297
Nat Am, Non-Hispanic	6	83	6	81
Asian/PI, Non-Hispani	21	15	45	32
Hispanic	34	48	148	175
Other	15		7	
Multiple	3		20	
Unknown	59		79	
Age*				
0-9 years	0	0	0	0
10-14 years	6	11	0	0
15-19 years	104	181	40	67
20-24 years	137	213	193	294
25-29 years	63	80	241	295
30-34 years	39	52	149	192
35-44 years	33	23	211	139
45-55 years	8	6	127	87
>=56 years	3	1	48	25
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 2011, among women, 59 case reports were missing race and/or ethnicity, and among men, 79 case reports were missing race and/or ethnicity. One male case was missing age.

^Race/ethnicity specific rates exclude cases reported with "multiple" or "other" races.

**Table 7: Number of Reported Gonorrhea Cases and Incidence among Men and Women
King County, WA, 1992-2011**

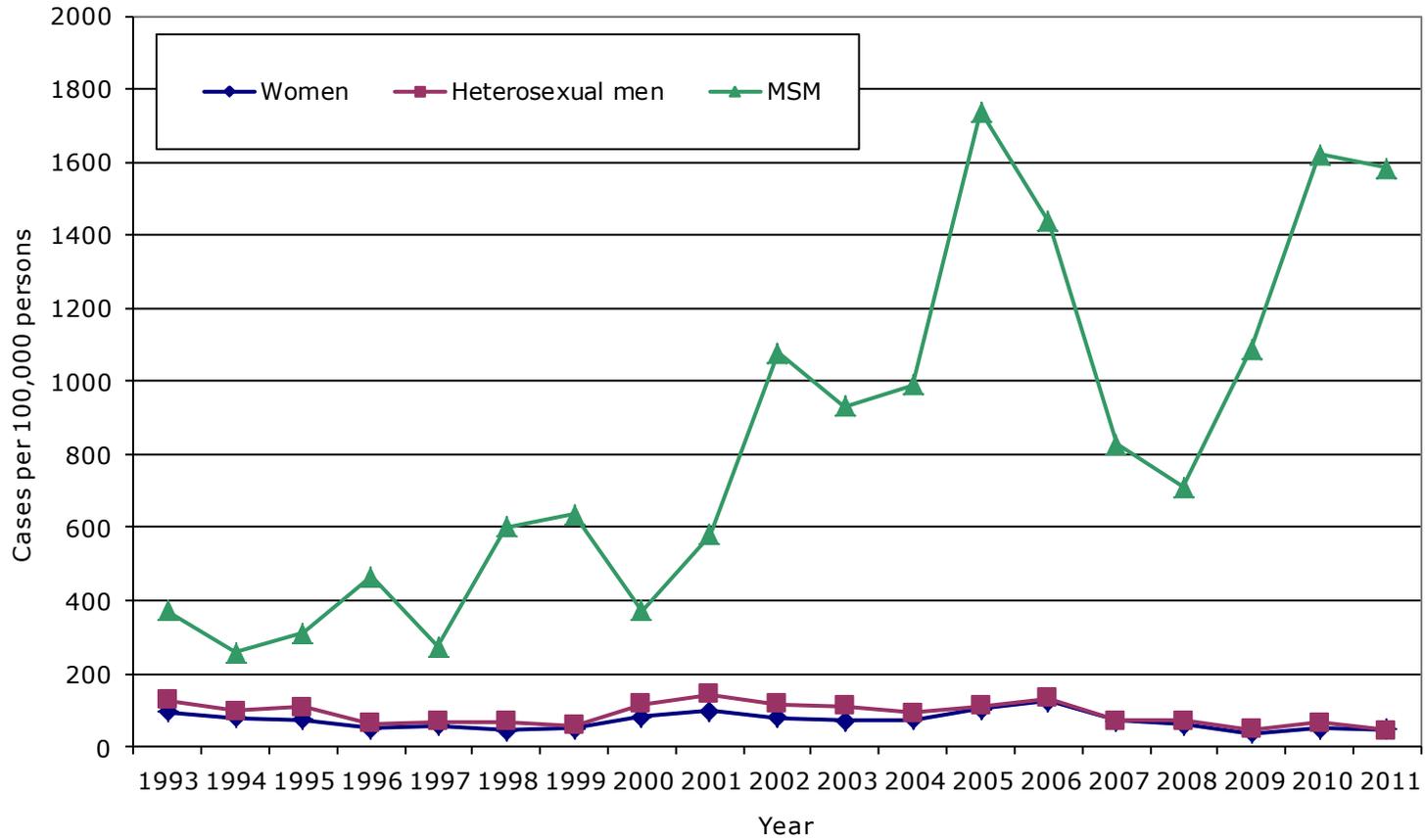
Year	Women		Men		Total	
	Cases	Incidence per 100,000	Cases	Incidence per 100,000	Cases	Incidence per 100,000
1992	900	112.6	1052	134.8	1952	123.8
1993	649	80.0	878	110.5	1527	95.1
1994	543	66.2	675	83.9	1218	74.9
1995	516	62.3	762	93.6	1278	77.9
1996	354	42.4	559	67.9	913	55.0
1997	395	46.7	519	62.2	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	554	59.3	856	92.3	1413	75.9
2008	489	51.7	815	86.8	1304	69.2
2009	288	30.1	808	84.9	1084	57.5
2010	404	42.2	1166	122.6	1570	82.2
2011	393	40.6	1010	105.0	1403	72.6

Table 8: Number of Reported Gonorrhea Cases and Incidence among Men and Women ages 15-29,* King County, WA, 1992-2011

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	429	215.0	424	205.0	853	209.9
2008	373	183.6	402	190.8	775	187.2
2009	231	112.2	410	192.3	641	153
2010	288	143.6	481	231.9	769	188.5
2011	304	151.6	474	228.7	778	190.8

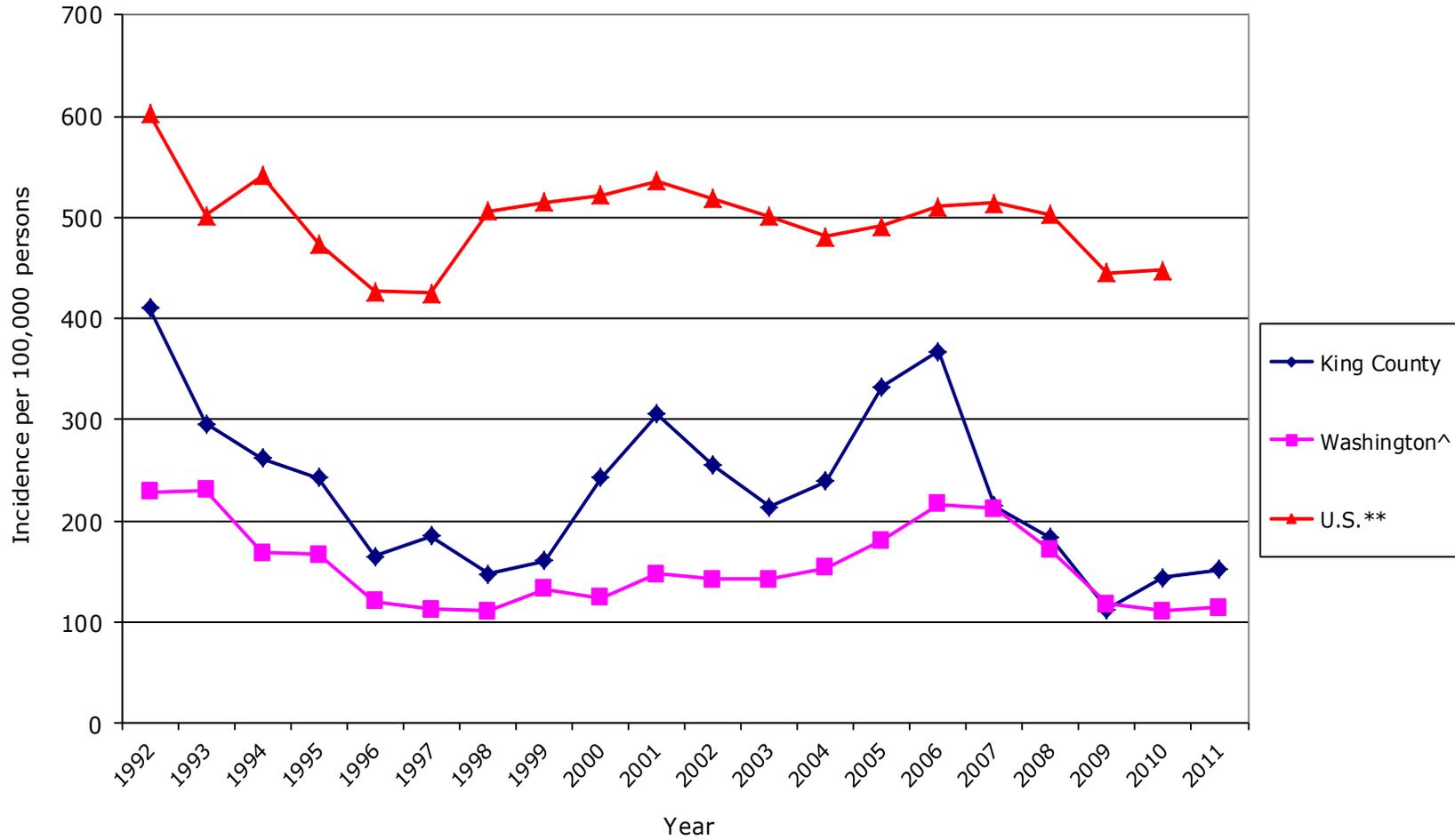
* Cases with unknown age were included in age-specific counts and rates after being distributed among age categories based on the distribution of cases with known age.

Figure 4: Incidence of Reported Gonorrhea among Women, Heterosexual Men, and MSM* 15 years and older, King County, WA, 1992-2011



* In 2004, a field for gender of sex partners was added to the STD case report form. Before 2004, ascertainment of MSM status was likely less complete than in 2004 and after

Figure 5: Gonorrhea Incidence among Women ages 15-29,* 1992-2011
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 a ge-specific rates.
 ** National data for 2011 were not available at the time this report was prepared.
 ^ Washington State rates exclude King County.

Figure 6: Gonorrhea Incidence by Age* among Women
King County, WA, 1992-2011

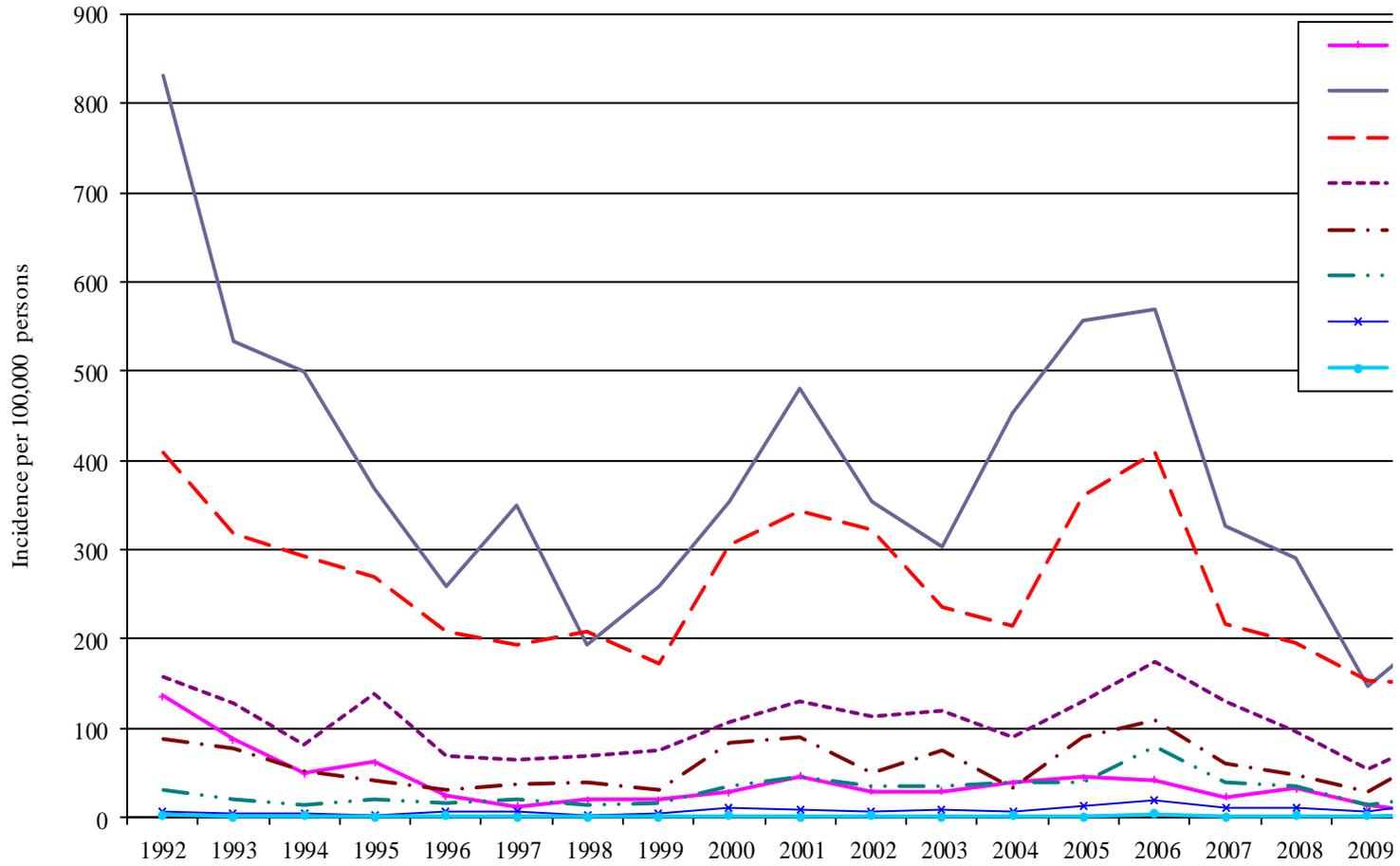
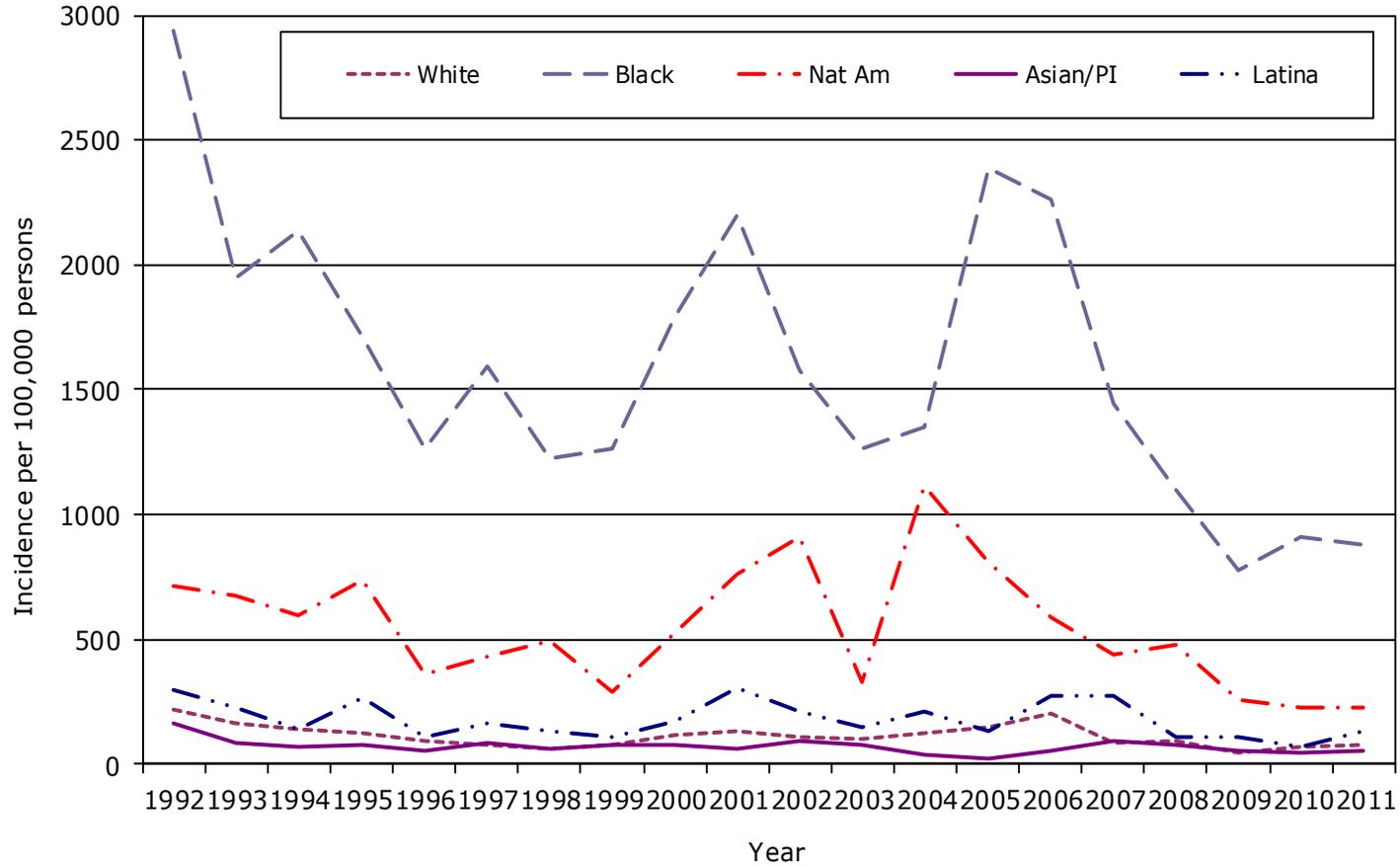


Figure 7: Gonorrhea Incidence by Race and Ethnicity among Women Ages 15-29*
King County, WA, 1992-2011



* Cases with unknown race, ethnicity, and age were distributed according to annual race, ethnicity and age

Syphilis

King County has experienced an epidemic of syphilis among MSM since 1997. That epidemic continued unabated in 2011. The total number of early syphilis (primary, secondary and early latent) cases reported in King County increased 26% from 2010 to 2011, from 289 cases in 2010 to 363 cases in 2011 (Tables 9 and 12). The overall 2011 incidence of early syphilis among King County residents was 19 per 100,000 persons (Table 9). Of all 2011 cases, 92% (333) occurred in MSM (Table 10, Figure 9). The incidence of early syphilis among MSM in 2011 was over 300 times greater (770.8 per 100,000) than that among heterosexual men (2.4 per 100,000) [Table 13].

Syphilis epidemic

HIV-positive MSM have been disproportionately affected by the epidemic of syphilis among MSM since it began in 1997. In 2011, the estimated incidence of early syphilis among HIV-positive MSM was 4083 per 100,000 men, compared to 233 per 100,000 among HIV-negative MSM (Figure 11). Since 2005, this disparity between HIV-positive and negative MSM has grown, primarily due to steadily increasing incidence among HIV-positive MSM. In 2011, the proportion of MSM with early syphilis who were HIV-negative or had an unknown HIV status fell below 40% for the first time since 2001 (Figure 10).

Early syphilis incidence among heterosexuals remained very low in 2011, with only 22 of 363 cases occurring among heterosexual men (18 cases) and women (4 cases, Tables 10, 12, and 13). In 2011, 61% of MSM syphilis cases were HIV positive, in contrast to 14% of heterosexual cases.

Syphilis diagnosis

The majority of early syphilis cases in King County seek medical care with symptomatic primary or secondary syphilis. In 2011, 71% of all syphilis cases in MSM had primary or secondary syphilis (Figure 8), and 68% sought medical care because of symptoms. Figure 12 displays the reason for visit among MSM early syphilis cases from 1993-2011, and demonstrates that the proportions of MSM with early syphilis who sought care because of symptoms, partner notification or screening has remained relatively stable since 2009.

Figure 13 displays the reporting source for all cases of syphilis from 1997-2011. In 2008, HIV care providers were 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). In 2011, "other" providers reported 138 (40%) early syphilis cases, down from 48% in 2010 (Figure 13). Consistent with this change, the proportion of cases diagnosed by HIV care providers rose from 8% in 2009 to 16% 2011. The Public Health STD Clinic reported 110 (30%) new early syphilis cases in 2011. 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 2011 accounted for 10% of cases combined.

**Table 9: Reported Cases and Incidence of Early Syphilis
King County, WA, 2011**

		Cases	Percent	Incidence per 100,000 population
Sex	Men	359	99	38
	Women	4	1	0.4
Total cases		363		19

**Table 10: HIV Status and Risk Behaviors among Syphilis Cases
By Sexual Orientation, King County, WA, 2011**

		MSM* (N=333)		Heterosexual Men and Women (N=22)	
		Number	Percent	Number	Percent
Stage	Primary	84	25%	9	41%
	Secondary	149	45%	10	45%
	Early latent	100	30%	3	14%
HIV	Positive	204	61%	3	14%
	Negative	89	27%	17	77%
	Unknown	40	12%	2	9%
Methamphetamine Use					
	Yes	114	34%	1	5%
	No	162	49%	20	91%
	Unknown	57	17%	1	5%
Anonymous sex partners during infectious period					
	Yes	193	58%	7	32%
	No	58	17%	6	27%
	Unknown	12	4%	0	0%
Partners met in bathhouses					
	Yes	97	29%	0	0%
	No	198	59%	22	100%
	Unknown	38	11%	0	0%
Internet use to meet partners					
	Yes	148	44%	1	5%
	No	147	44%	12	55%
	Unknown	38	11%	0	0%
Has traded sex for money or drugs (sex worker)**					
	Yes	16	5%	1	25%
	No	260	78%	3	75%
	Unknown	57	17%	1	25%
Sex with a known sex worker^					
	Yes	7	2%	0	0%
	No	270	81%	8	89%
	Unknown	56	17%	1	11%
Reason for Visit					
	Routine exam	77	23%	2	9%
	Symptoms	224	67%	18	82%
	Exposed	30	9%	2	9%
	None/other	2	1%	0	0%

*MSM: all men who acknowledged sex with a man. These data exclude 13 men for whom gender of sex partners is unknown

** Among heterosexuals, limited to women, ^ Among heterosexuals, limited to men

**Table 11: Total and Anonymous Sex Partners Reported by Syphilis Cases
by Gender and Sexual Orientation
King County, WA, 2011**

	MSM N=320*			Heterosexual Men and Women N=21		
	Total	Mean	Median	Total	Mean	Median
Total sex partners during infectious period	2,084	6.2	3	38	1.8	1
Anonymous sex partners* during infectious period	1,349	4.2	1	18	0.86	1

* Twelve MSM were missing information on number of anonymous sex partners

**Table 12: Number of Reported Early Syphilis Cases and Incidence
among Men and Women, King County, WA, 1992-2011**

Year	Women		Men		Total	
	Cases	Incidence per 100,000	Cases	Incidence per 100,000	Cases	Incidence per 100,000
1992	26	3.3	42	5.4	68	4.3
1993	21	2.6	15	1.9	36	2.2
1994	6	0.7	12	1.5	18	1.1
1995	1	0.1	4	0.5	5	0.3
1996	0	0.0	2	0.2	2	0.1
1997	10	1.2	10	1.2	20	1.2
1998	1	0.1	37	4.4	38	2.2
1999	3	0.3	67	7.8	70	4.1
2000	4	0.5	67	7.8	71	4.1
2001	1	0.1	51	5.8	52	3.0
2002	0	0.0	64	7.2	64	3.6
2003	2	0.2	80	9.0	82	4.6
2004	7	0.8	159	17.9	166	9.3
2005	7	0.8	186	20.7	193	10.7
2006	2	0.2	183	20.0	185	10.1
2007	1	0.1	193	20.8	194	10.4
2008	4	0.4	200	21.3	204	10.8
2009	5	0.5	155	16.3	160	8.4
2010	4	0.4	285	30.0	289	15.1
2011	4	0.4	359	37.7	363	19.0

Table 13: Number of Reported Early Syphilis Cases and Incidence Among MSM and Heterosexual Men, King County, WA, 1992-2011

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	467	2	0.3
2009	145	337	3	0.4
2010	265	616	9	1.2
2011	333	771	18	2.4

* Men were missing sexual orientation data in the following years (numbers missing are included in parentheses): 1992 (42), 1993 (9), 1998 (2), 1999 (1), 2000 (1), and 2002 (1), 2005(1), 2006(1), 2007(1), 2009 (7), 2010 (15), 2011 (8)

** 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 8: Reported Cases of Primary and Secondary vs. Early Latent Syphilis
King County, WA 1992-2011

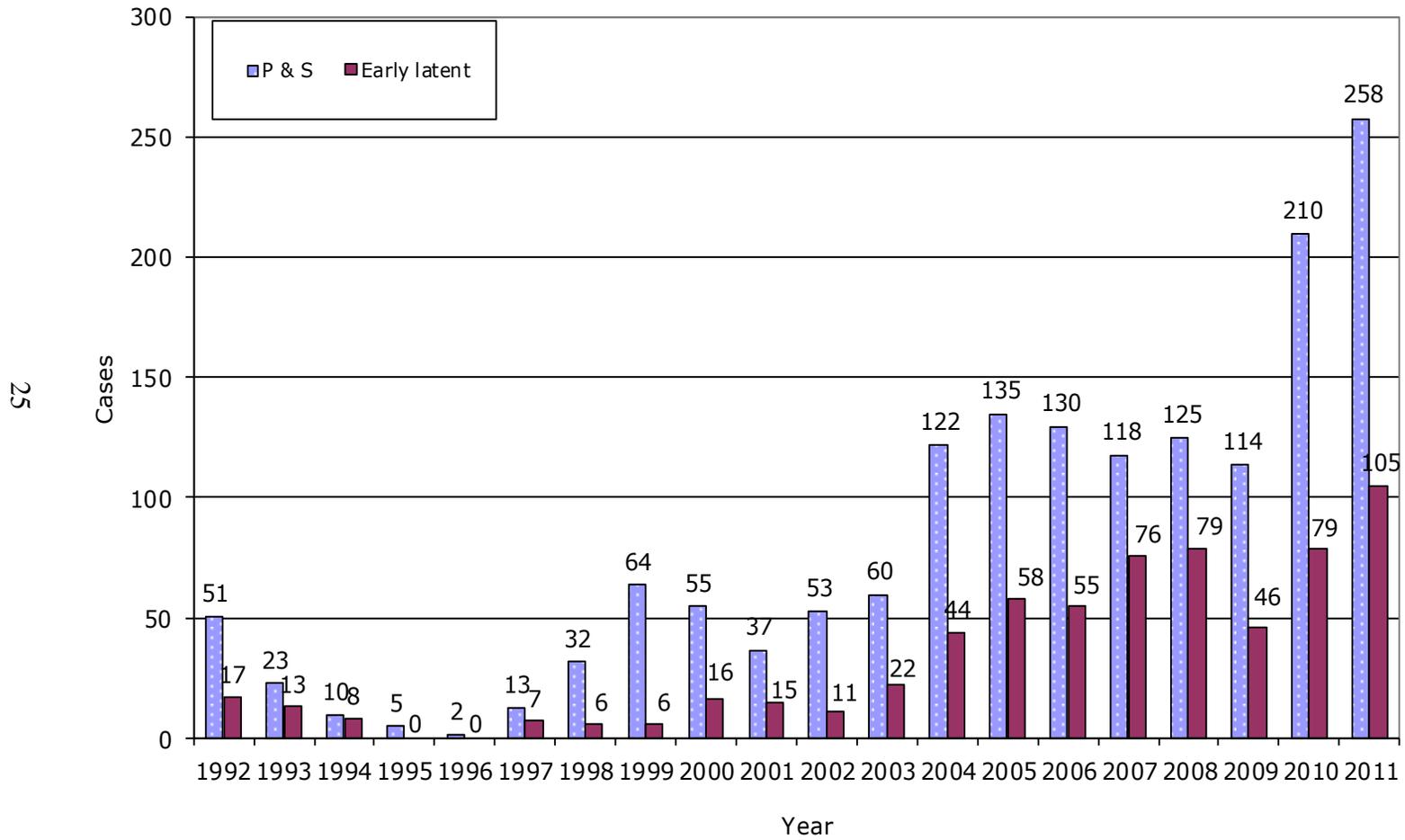
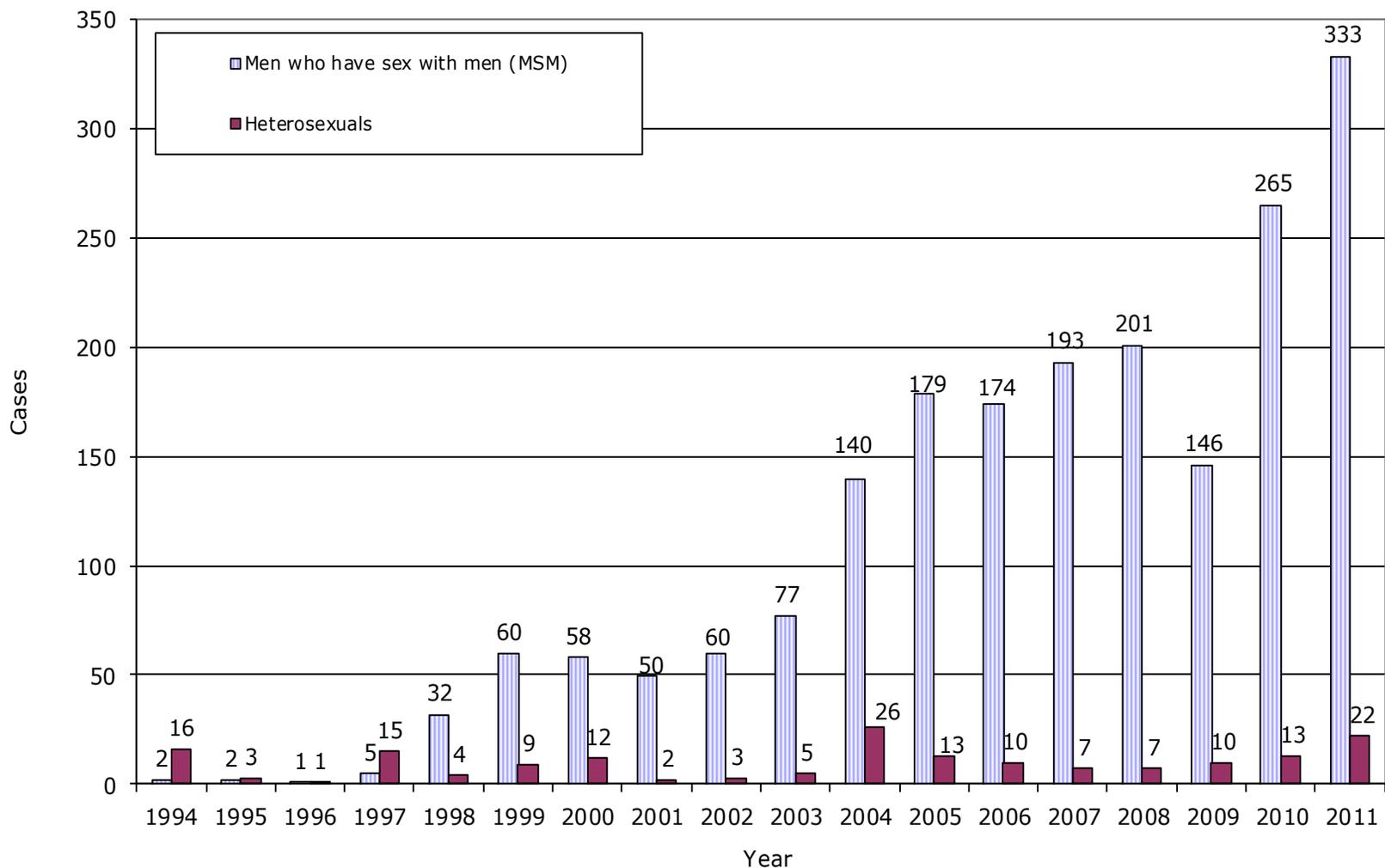


Figure 9: Reported Cases of Early Syphilis by Sexual Orientation*,
King County, WA, 1994-2011



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

Figure 10: Percent of Reported Early Syphilis Cases among MSM by HIV Status
King County, WA, 1997-2011

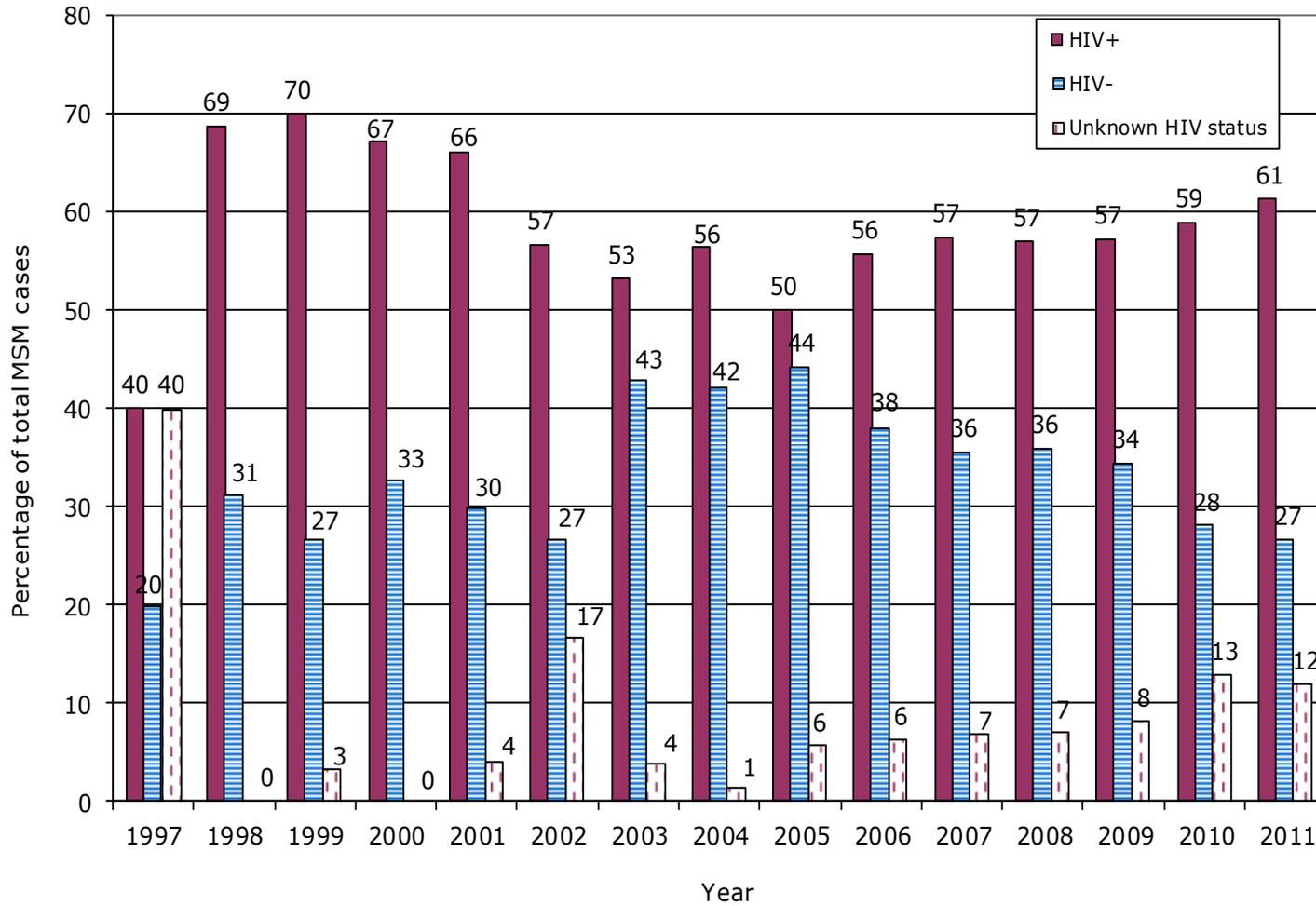


Figure 11: Early Syphilis Incidence among MSM by HIV Status
King County, WA, 1997-2011

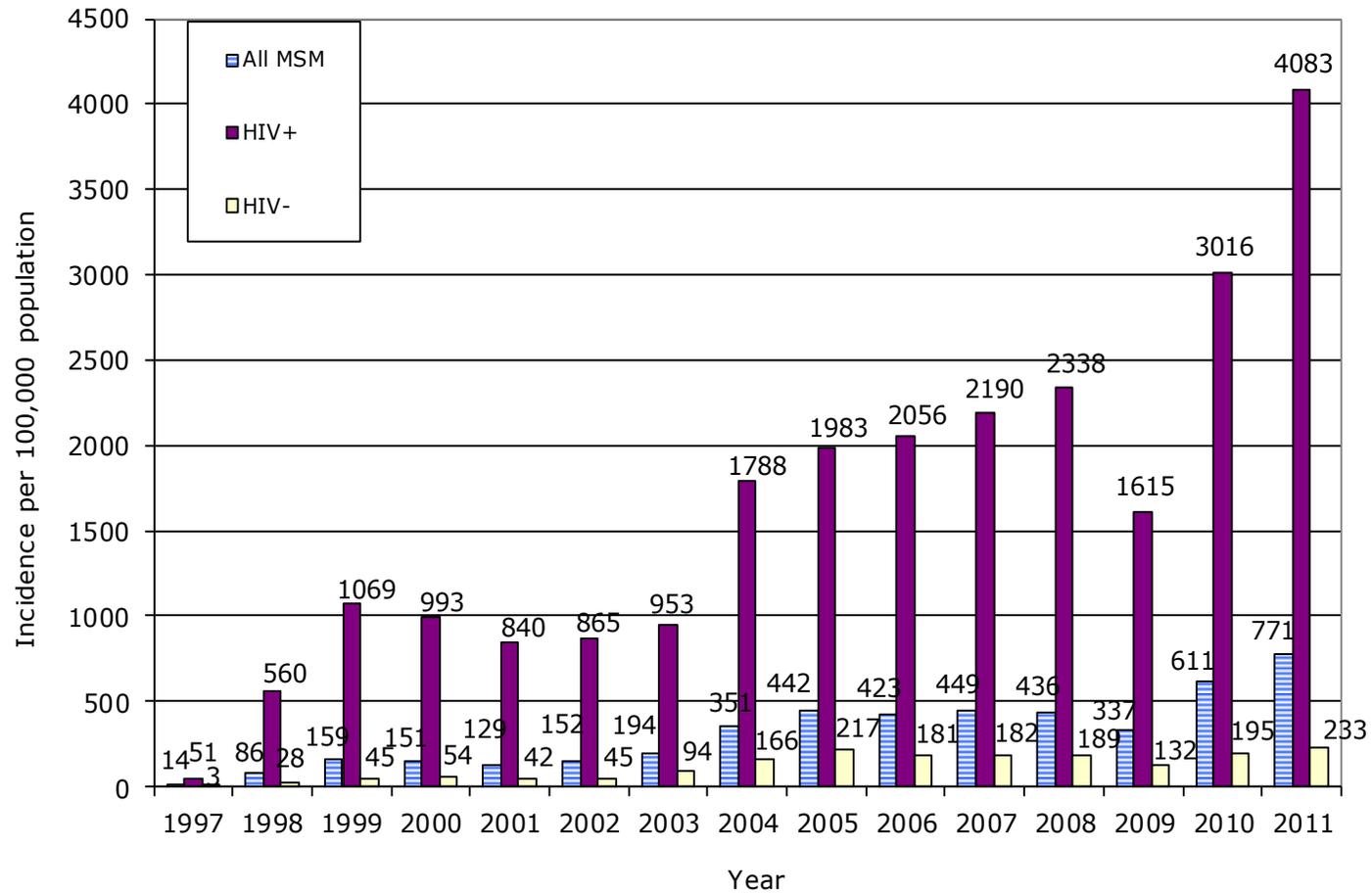
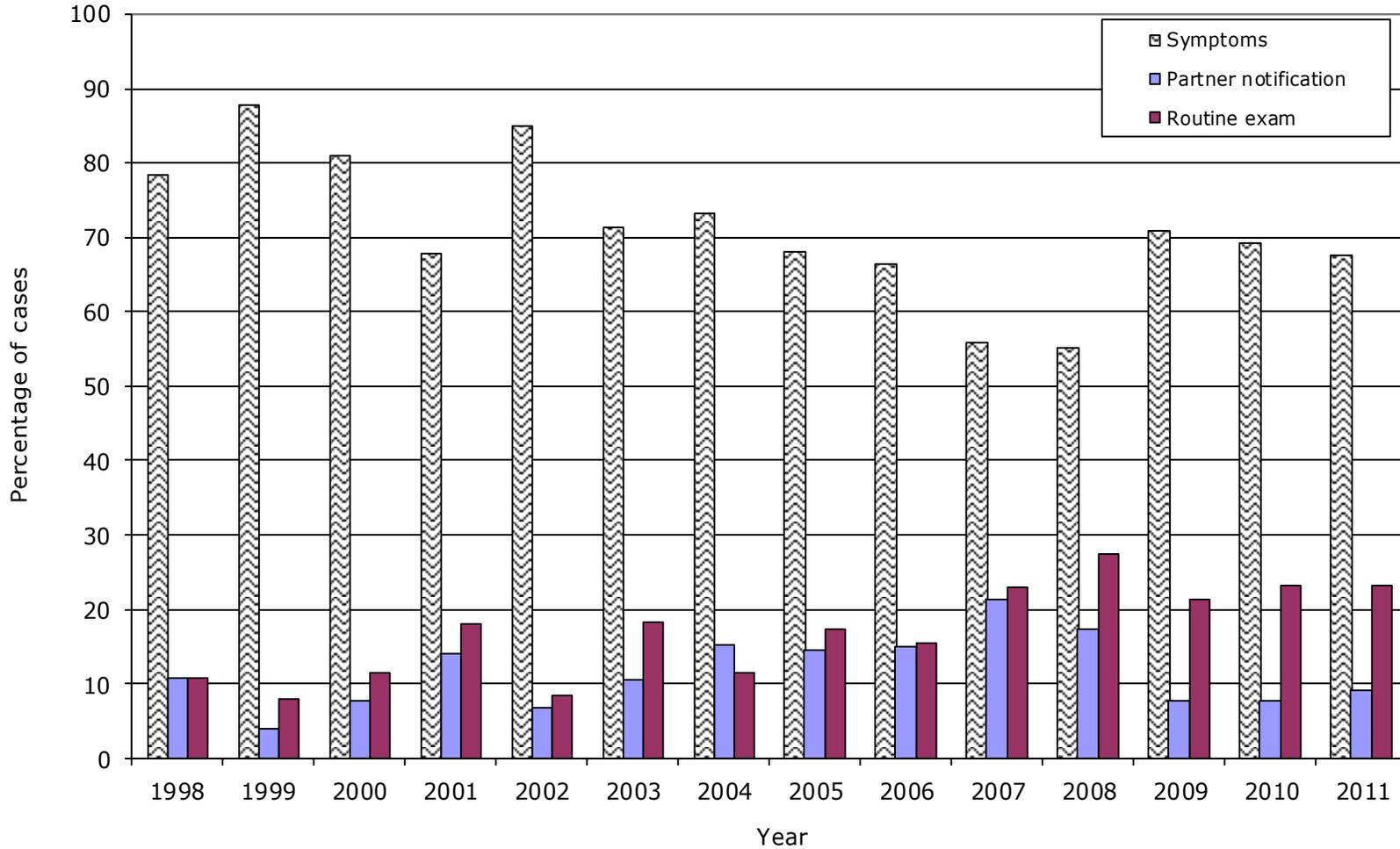
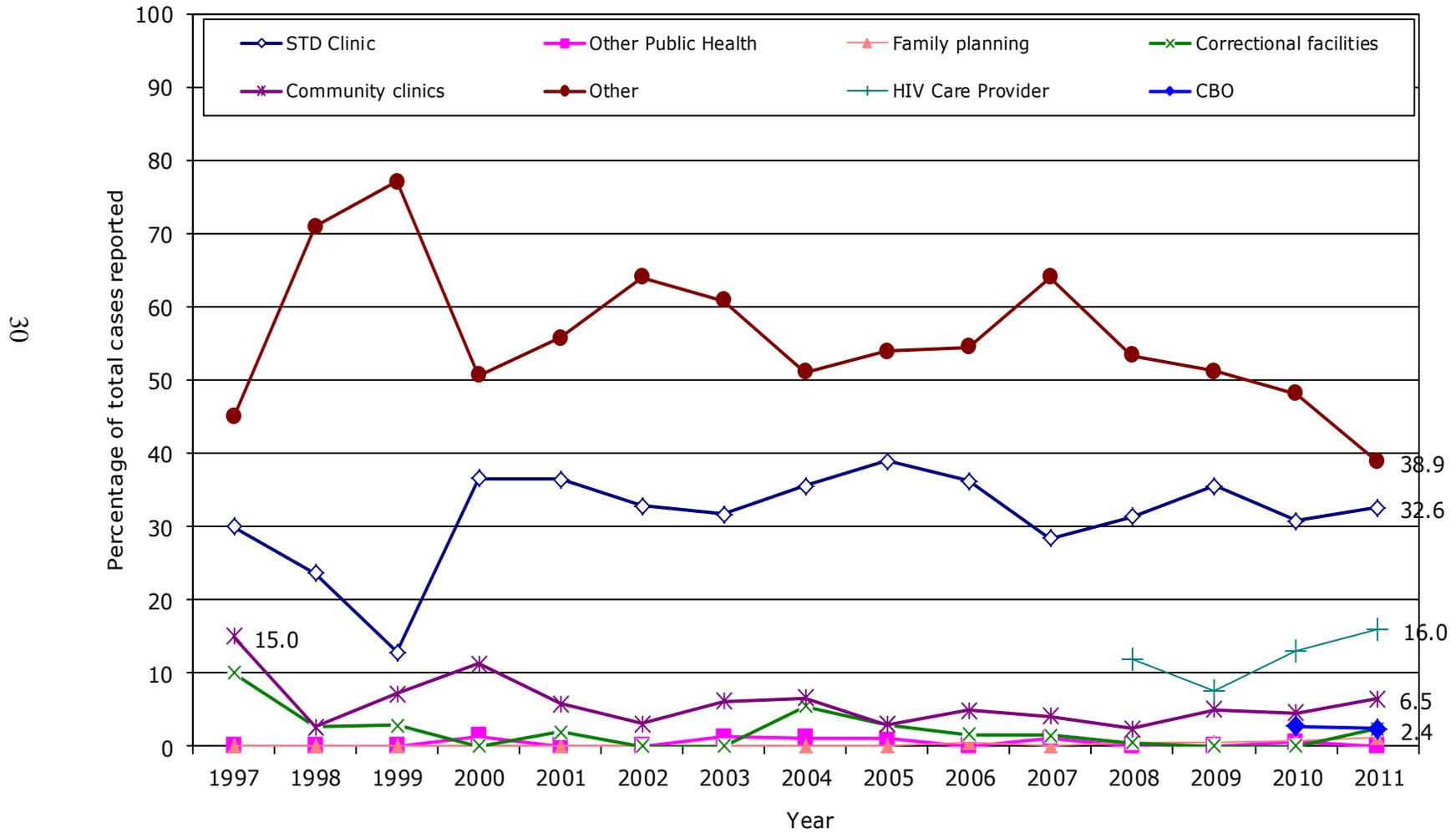


Figure 12: Reason for Visit among MSM reported with Early Syphilis*
King County, WA, 1993-2011



* Percentages exclude MSM reported without a reason for visit and who were not interviewed

Figure 13: Reporting Provider for Reported Early Syphilis Cases, King County, WA 1992-2011



Public Health – Seattle & King County STD Clinic

In 2011, 8,056 patients made 12,272 visits to the Public Health STD Clinic. Of these, 11,780 visits were made by patients seeking STD Clinic services, while 492 visits were made by patients seeking an HIV test only (Table 14). Patients seeking only HIV testing were seen by disease intervention specialists (DIS), public health staff that perform HIV testing and counseling among other functions. 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 2011, heterosexual men made up 34% of the visits among patients seeking STD Clinic services, while MSM and women accounted for 34% and 26% of these visits respectively. Among clients seeking only HIV testing, 36% of visits were made by heterosexual men, 36% by MSM, and 20% by women. Among patients seeking STD Clinic services, the number of visits made by MSM continued to increase in 2011, while the number of visits made by heterosexual men decreased slightly and the number made by women remained roughly stable (Table 18, Figure 14). These changes reflect long-term trends in the population served by the clinic, with the number of MSM patients consistently rising. In 2011, the clinic provided services to MSM during 4,268 visits, more than in any year in the clinic's history (Table 18).

Tables 15-17 display the race/ethnicity (categories include Latinos as a separate race group) and age distribution for STD Clinic patients in 2011. Of note, 20% of all patients seen in the clinic, including 26% of heterosexual patients receiving care in the clinic, were African American. Only 6% of all King County residents are African American. Eighty-two percent of patients in 2010 were uninsured.

The Public Health STD Clinic diagnosed a substantial proportion of all reportable STDs diagnosed in King County in 2011. This included 30% (110 of 363) of all cases of early syphilis, 33% (463 of 1,403) of all cases of gonorrhea, 21% (58 of 276) of all cases of HIV, and 11% (683 of 6,492) of all cases of chlamydial infection. As in past years, the Public Health STD Clinic diagnosed more cases of HIV in 2011 than any other single clinical site in Washington State. In addition to cases diagnosed among King County residents, the STD Clinic serves many patients living in neighboring counties as well. Clinic diagnoses described below include all patients diagnosed at the STD Clinic, regardless of county of residence.

Gonorrhea

In 2011 (Table 7), the total number of cases of gonorrhea diagnosed in the Public Health STD Clinic was similar (505 cases) to the number of cases diagnosed 2010 (542 cases), with small decreases in diagnoses among heterosexual men and MSM, and stable numbers among women (Figure 16). The number of cases of gonorrhea in MSM remains substantially higher than numbers observed in the late 1990s. However, some of the observed increase reflects increased screening for rectal and pharyngeal gonorrhea among MSM originally implemented in the late 1990s, and the adoption of more sensitive nucleic acid amplification tests (NAATs). In order to examine trends in gonorrhea diagnoses among MSM not influenced by this increase in screening, Figure 17 displays urethral gonorrhea diagnoses among men experiencing symptoms. The decreases observed in symptomatic urethral gonorrhea diagnoses among heterosexual men and MSM from 2010 to 2011 are similar to the declines observed for gonorrhea diagnoses among men overall in the clinic.

Chlamydial infection

In 2011, the STD Clinic diagnosed 678 cases of chlamydial infection (Figure 19), a small increase from 2010 (618 cases). Chlamydial diagnoses remained stable among heterosexual men and women, while diagnoses among MSM increased from 284 to 345. As noted above, routine screening with NAATS for rectal and pharyngeal chlamydial infection was implemented in 2010 and likely contributed to the increase in the overall number of chlamydial diagnoses occurring in the clinic. Indeed, the number of MSM with symptomatic chlamydial urethritis actually decreased slightly from 2010 to 2011 (Figure 20) and the prevalence of chlamydial infection among asymptomatic women also declined somewhat from 2010 to 2011 (Figure 21).

Syphilis

There were 116 early syphilis diagnoses in 2011 among individuals for whom the gender of sex partners could be determined in the STD Clinic (Figure 22); 99% of these occurred among MSM, reflective of an ongoing syphilis epidemic among MSM in King County (Figure 9).

HIV

Figure 23 displays new HIV diagnoses from the STD Clinic (1993-2011) and through other HIV testing performed by HIV/STD program staff (2000-2011). Clinic staff diagnosed a total of 58 cases of HIV infection in 2011.

Trichomoniasis and Bacterial Vaginosis

The number of trichomoniasis cases diagnosed in the STD Clinic has decreased in recent years, from 124 diagnoses in 2008 to 83 in 2010 (90, Figure 24). Trichomoniasis prevalence among women was stable between 2010 and 2011 after falling from 2008 to 2010. The number of women

diagnosed with bacterial vaginosis also fell from 2010 to 2011, while the prevalence of bacterial vaginosis among women in the clinic was similar to the prevalence observed in 2010 (Figure 25). (Bacterial vaginosis prevalence is 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.)

Genital Herpes

The number of initial and recurrent genital herpes diagnoses has remained relatively stable since 2006 (137 initial genital herpes diagnoses in 2011 compared to 136 in 2006) while the number of recurrent diagnoses increased slightly in 2011, from 129 in 2010 to 146 in 2011, Figures 26 and 27). The largest proportion of both initial and recurrent herpes diagnoses occurred in heterosexual men (38% of both initial and recurrent cases) followed by women (30% and 37% of cases, respectively) and MSM (30% and 30% respectively, Figures 26 and 27). Among 1,851 asymptomatic patients tested for HSV-2 in 2011, there were 47 HSV-2 diagnoses among MSM, 75 among heterosexual men, and 117 in women (Figure 28). Increases in the number of HSV-2 diagnoses observed in 2010, and subsequent decreases among heterosexual men and MSM, are likely related, in part, to implementation of a research project in April of 2010 through which HIV-uninfected patients were offered free serologic testing for HSV-2.

Table 14: Number of PHSKC STD Clinic Visits and Patients, 2011

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

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	3039	4058	4268	415	11780
Patients (unduplicated visits)	2098	3033	2398	242	7771

(B) Clients seen for HIV tests only

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	97	176	179	40	492
Patients (unduplicated visits)	59	101	99	26	285

(C) Clients seen for all services

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	3136	4234	4447	455	12272
Patients (unduplicated visits)	2157	3134	2497	268	8056

* 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 of PHSKC STD Clinic Patients, 2011

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	1036	(48.0)	1663	(53.6)	1667	(67.4)	4564	(56.6)
Black	555	(25.7)	808	(26.0)	215	(8.7)	1634	(20.3)
Native American	41	(1.9)	26	(0.8)	15	(0.6)	87	(1.1)
Asian & Pacific Islander	208	(9.6)	198	(6.4)	180	(7.3)	611	(7.6)
Latino	146	(6.8)	228	(7.3)	271	(11.0)	667	(8.3)
Multiple Race	105	(4.9)	64	(2.1)	54	(2.2)	228	(2.8)
Unknown	66	(3.1)	110	(3.7)	72	(2.9)	267	(3.3)
Age								
10-14 years	1	(0.0)	1	(0.0)	2	(0.1)	6	(0.1)
15-19 years	147	(6.8)	70	(2.3)	52	(2.1)	282	(3.5)
20-24 years	561	(26.0)	493	(15.9)	403	(16.3)	1491	(18.5)
25-29 years	553	(25.6)	688	(22.2)	492	(19.9)	1800	(22.3)
30-34 years	320	(14.8)	523	(16.9)	410	(16.6)	1293	(16.0)
35-44 years	313	(14.5)	671	(21.6)	585	(23.6)	1637	(20.3)
45-55 years	190	(8.8)	448	(14.4)	384	(15.5)	1075	(13.3)
>=56 years	72	(3.3)	209	(6.7)	146	(5.9)	474	(5.9)
Unknown	0	(0.0)	0	(0.0)	0	(0.0)	2	(0.0)

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

[^] 324 men with unknown sexual orientation are excluded from the race/age distribution heterosexual men and MSM, but are included in total race and age distributions

**Table 16: Age and Race of PHSKC STD Clinic Patients
Seen for Services Other than HIV Tests Only, 2011**

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	962	(48.1)	1701	(53.6)	1473	(67.5)	4403	(57.8)
Black	522	(25.7)	802	(26.1)	180	(8.6)	1580	(20.8)
Native American	32	(1.9)	28	(0.9)	15	(0.6)	86	(1.0)
Asian & Pacific Islander	180	(9.6)	161	(6.1)	149	(7.4)	584	(6.7)
Latino	120	(6.8)	216	(7.4)	211	(10.9)	644	(7.6)
Multiple Race	94	(4.9)	58	(2.1)	54	(2.1)	221	(2.8)
Unknown	58	(3.0)	110	(3.8)	65	(2.8)	255	(3.3)
Age								
10-14 years	1	(0.0)	1	(0.0)	1	(0.0)	4	(0.1)
15-19 years	147	(7.0)	64	(2.1)	52	(2.2)	274	(3.5)
20-24 years	550	(26.2)	477	(15.9)	387	(16.3)	1446	(18.6)
25-29 years	542	(25.8)	669	(22.3)	480	(20.2)	1751	(22.5)
30-34 years	305	(14.5)	508	(16.9)	390	(16.4)	1241	(16.0)
35-44 years	298	(14.2)	656	(21.9)	569	(24.0)	1590	(20.5)
45-55 years	186	(8.9)	430	(14.3)	360	(15.2)	1022	(13.1)
>=56 years	69	(3.3)	197	(6.6)	136	(5.7)	445	(5.7)
Unknown	0	(0.0)	0	(0.0)	0	(0.0)	7773	(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

[^] 298 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 of PHSKC STD Clinic Patients Seen for HIV Tests Only, 2011

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	27	(45.8)	53	(52.5)	63	(63.6)	161	(56.5)
Black	16	(27.1)	24	(23.8)	10	(10.1)	54	(18.9)
Native American	1	(1.7)	0	(0.0)	0	(0.0)	1	(0.4)
Asian/Pacific Islander	7	(11.9)	14	(13.9)	5	(5.1)	27	(9.5)
Latino	2	(3.4)	2	(2.0)	3	(3.0)	7	(4.2)
Multiple Race	3	(5.1)	3	(3.0)	5	(5.1)	12	(8.1)
Unknown	3	(5.1)	5	(5.0)	13	(13.1)	23	(2.5)
Age								
10-14 years	0	(0.0)	0	(0.0)	1	(1.0)	2	(0.7)
15-19 years	0	(0.0)	6	(5.9)	0	(0.0)	8	(2.8)
20-24 years	11	(18.6)	16	(15.8)	16	(16.2)	45	(15.8)
25-29 years	11	(18.6)	19	(18.8)	12	(12.1)	49	(17.2)
30-34 years	15	(25.4)	15	(14.9)	20	(20.2)	52	(18.2)
35-44 years	15	(25.4)	15	(14.9)	16	(16.2)	47	(16.5)
45-55 years	4	(6.8)	18	(17.8)	24	(24.2)	53	(18.6)
>=56 years	3	(5.1)	12	(11.9)	10	(10.1)	29	(10.2)
Unknown	0	(0.0)	0	(0.0)	0	(0.0)	0	(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

[^] 26 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, 1993-2011

	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	3904	5671	2769	218		12562
2001	4244	5725	2878	299		13146
2002	4208	5909	2752	325		13194
2003	3812	5874	2906	257		12849
2004	3681	5781	2949	316		12727
2005	3603	5670	3274	295		12842
2006	3388	5366	3347	297	1726	14124
2007	3172	5046	2989	260	1388	12855
2008	3108	5112	3262	193	1137	12812
2009	2981	4449	3605	213	1036	12284
2010	3070	4282	3861	345	769	12327
2011	3039	4058	4268	415	492	12272

* 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.

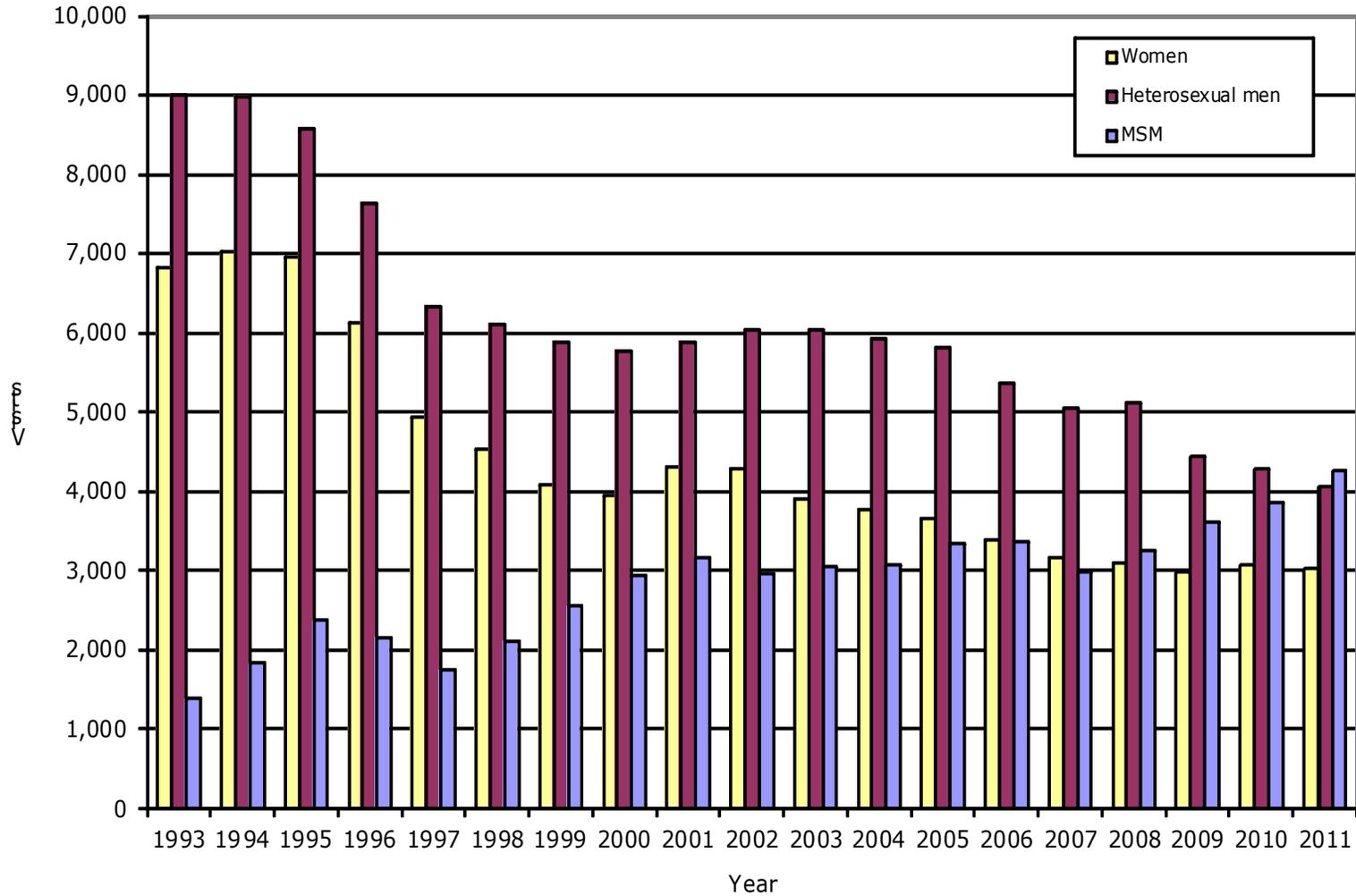
Table 19: Number of PHSKC STD Clinic Patients (Unduplicated Visits per Year), 1993-2011

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	HIV Test Only Patients	Total
1993	3902	5639	843	443		10827
1994	3770	5406	891	398		10465
1995	3935	5383	1102	305		10725
1996	3629	5067	1161	184		10041
1997*	3000	4252	993	222		8467
1998	2830	4101	1099	198		8228
1999**	2503	3986	1236	150		7875
2000	2446	3918	1243	169		7776
2001	2561	3987	1401	230		8179
2002	2728	4156	1562	248		8694
2003	2534	4256	1686	200		8676
2004	2451	4112	1726	193		8482
2005	2422	4110	1875	173		8580
2006	2365	3993	1845	199	1028	9430
2007	2144	3689	1690	172	889	8584
2008	2054	3543	1871	155	659	8282
2009	1977	3207	2003	161	601	7949
2010	1974	3132	2170	185	457	7918
2011	2098	3033	2398	242	285	8056

* 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.

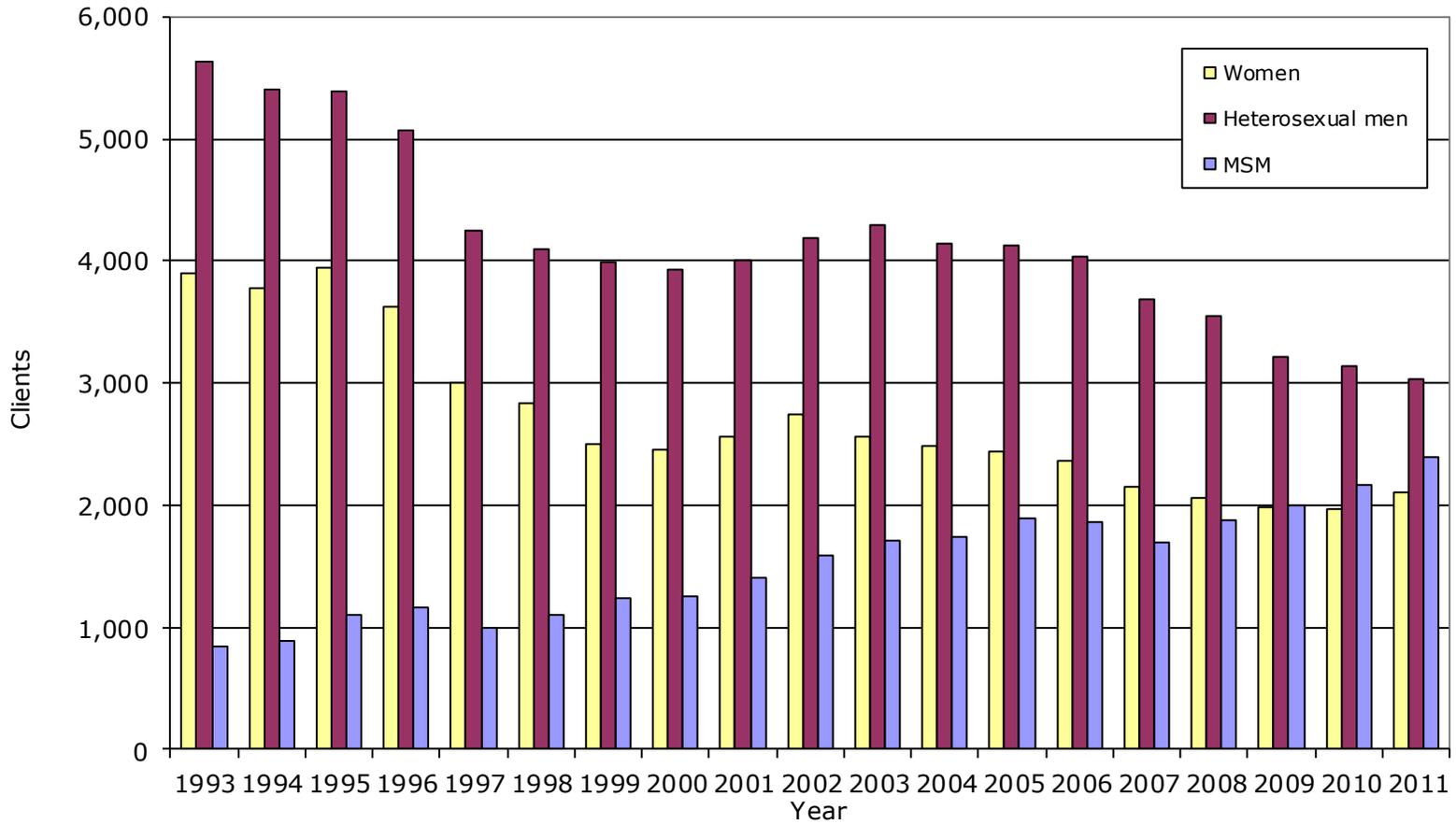
Figure 14: Visits* to Public Health - Seattle and King County STD Clinics**, 1993-2011



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

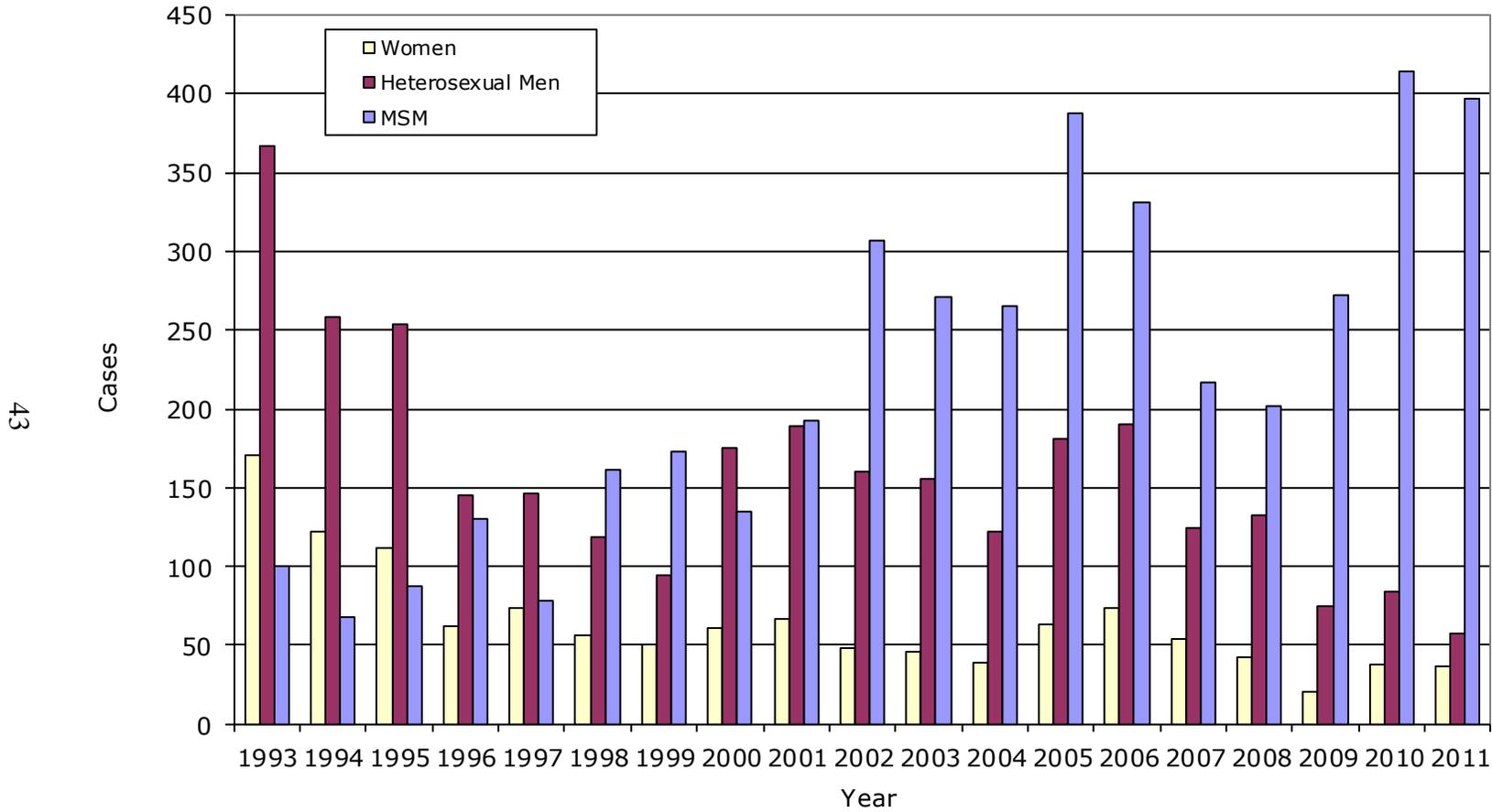
** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

Figure 15: Patients* Visiting the PHSKC STD Clinics by Year
(Unduplicated Visits), 1993-2011



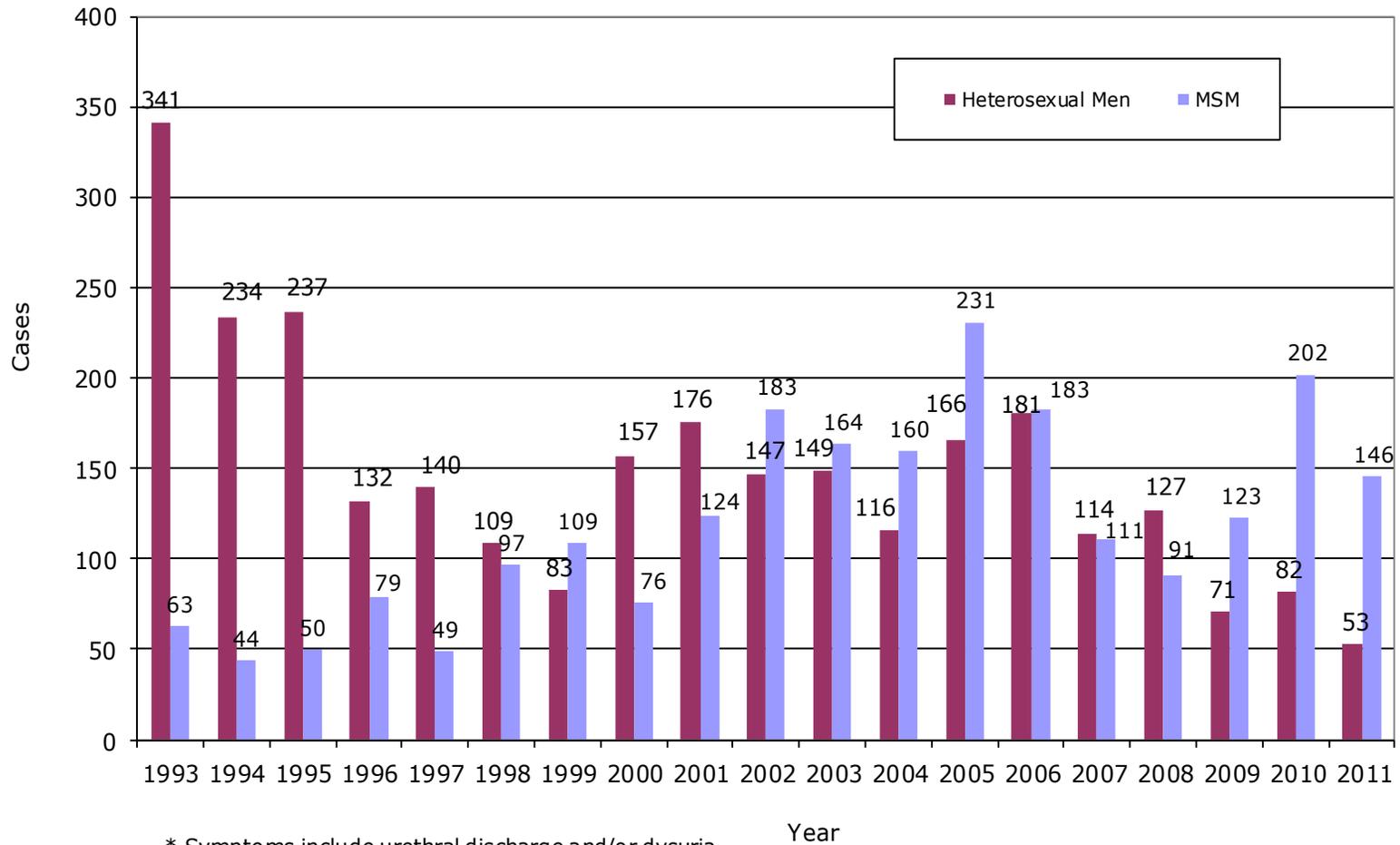
*This figure excludes men with missing sexual orientation data, and HIV testing visits provided through the HIV/AIDS Program (HAP).

Figure 16: Gonorrhea Diagnoses*, PHSKC STD Clinic
1993-2011



* These data exclude 103 cases of gonorrhea among men who were missing sexual orientation information across

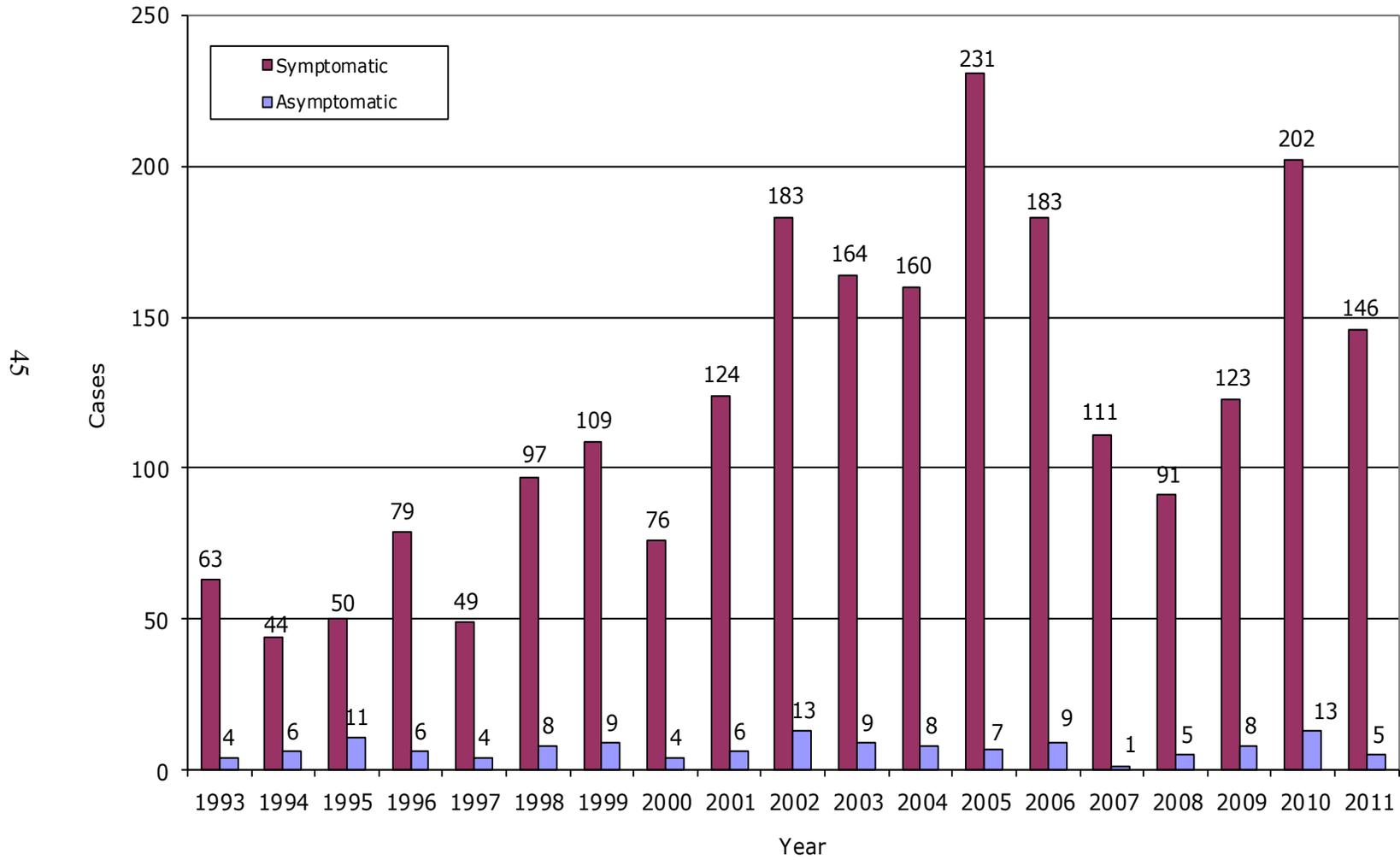
Figure 17: Symptomatic* Gonococcal Urethritis among Men**
PHSKC STD Clinic, 1993-2011



* Symptoms include urethral discharge and/or dysuria

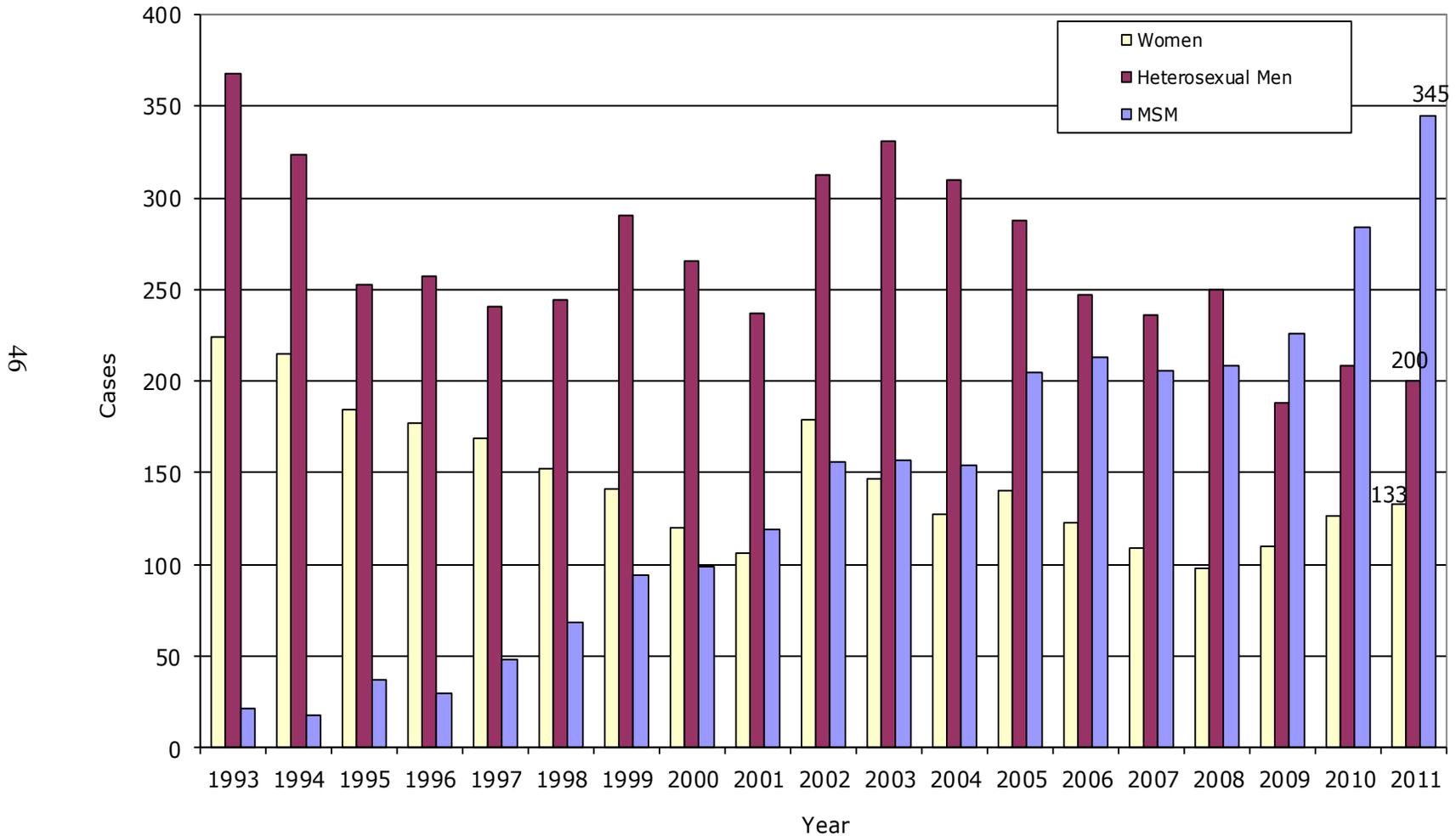
** These data exclude 58 cases of symptomatic urethral gonorrhoea among men who were missing sexual orientation information across all years

Figure 18: Symptomatic* and Asymptomatic Gonococcal Urethritis among MSM
PHSKC STD Clinic, 1993-2011



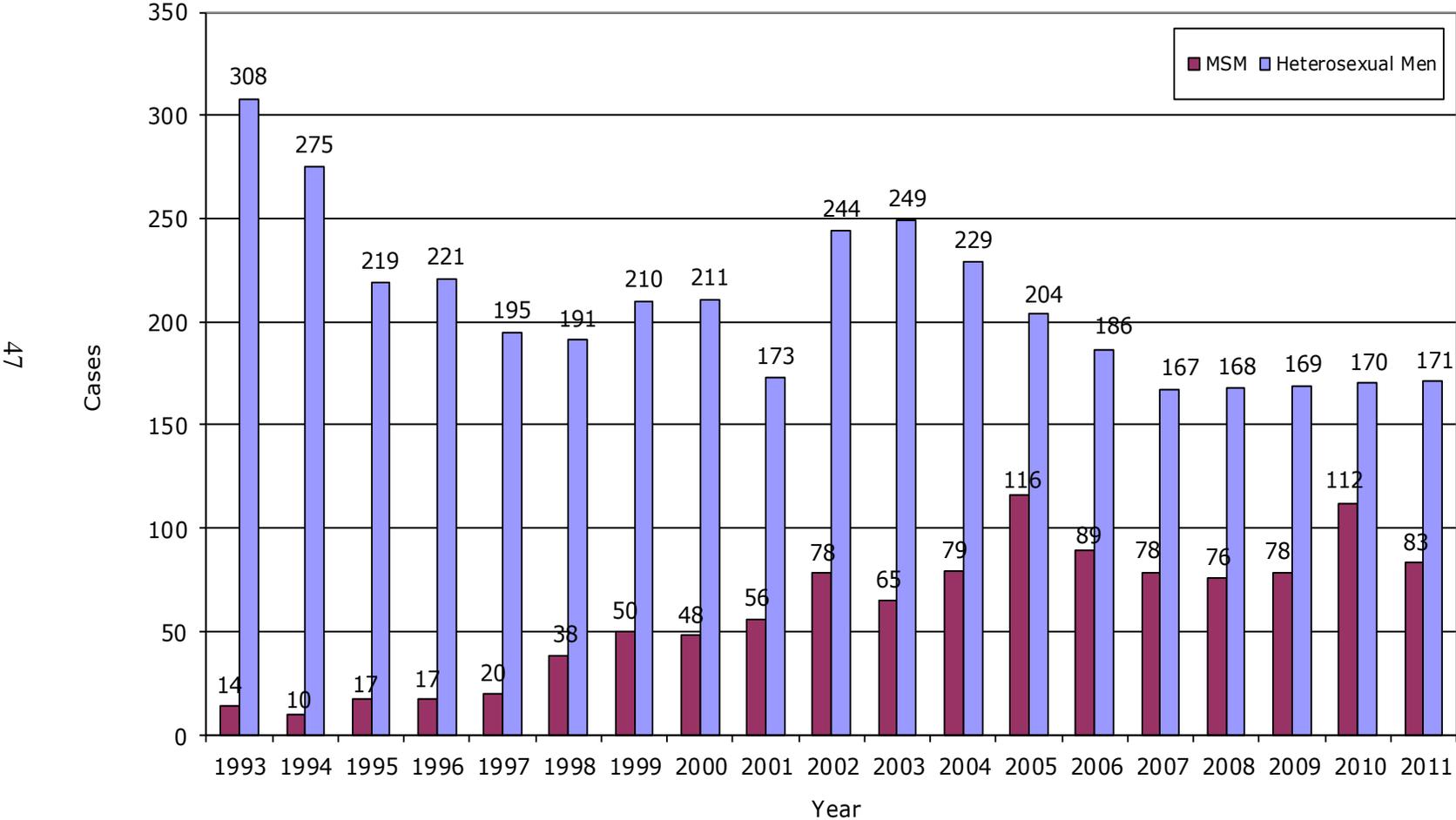
* Symptoms include urethral discharge and/or dysuria

Figure 19: Chlamydial Infection Diagnoses*, PHSKC STD Clinic
1993-2011



* These data exclude 195 cases of chlamydial infection among men who were missing sexual orientation information across all years

Figure 20: Symptomatic Chlamydial Urethritis* among Men
PHSKC STD Clinic, 1993-2011



* Symptoms include urethral discharge and/or dysuria

Figure 21: Chlamydia Prevalence among Asymptomatic Women Ages 15-29
PHSKC STD Clinic, 1993-2011

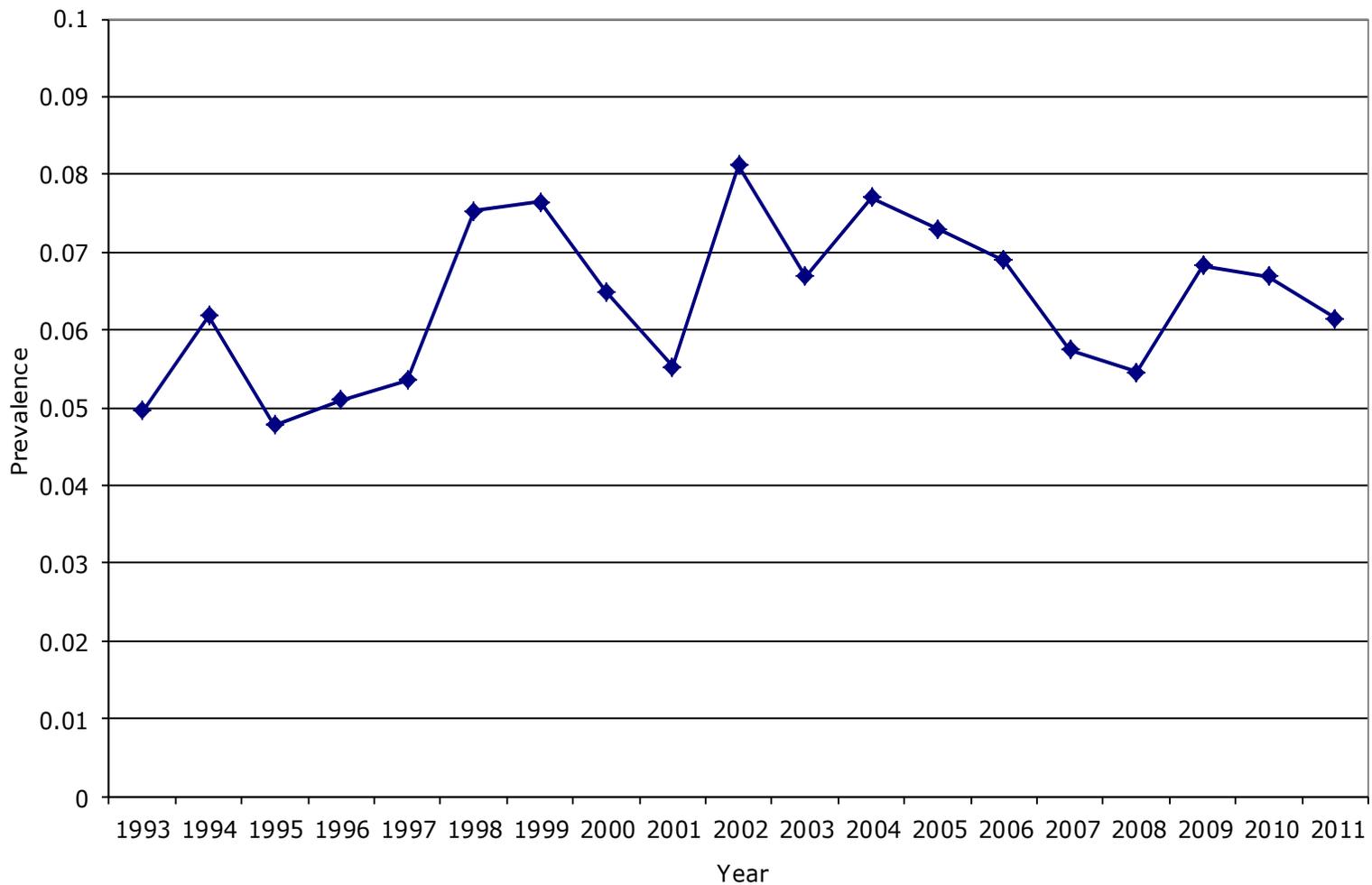
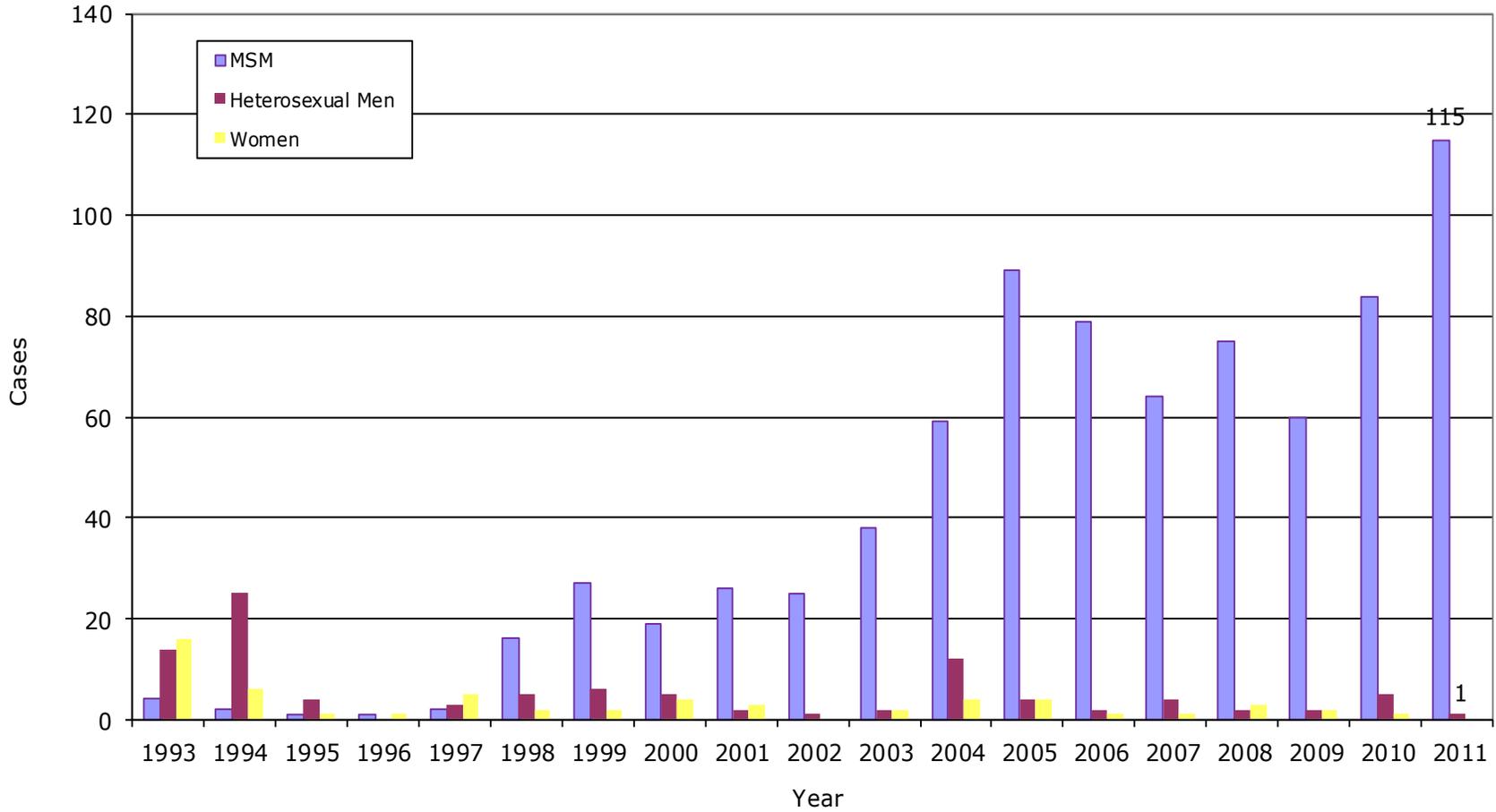
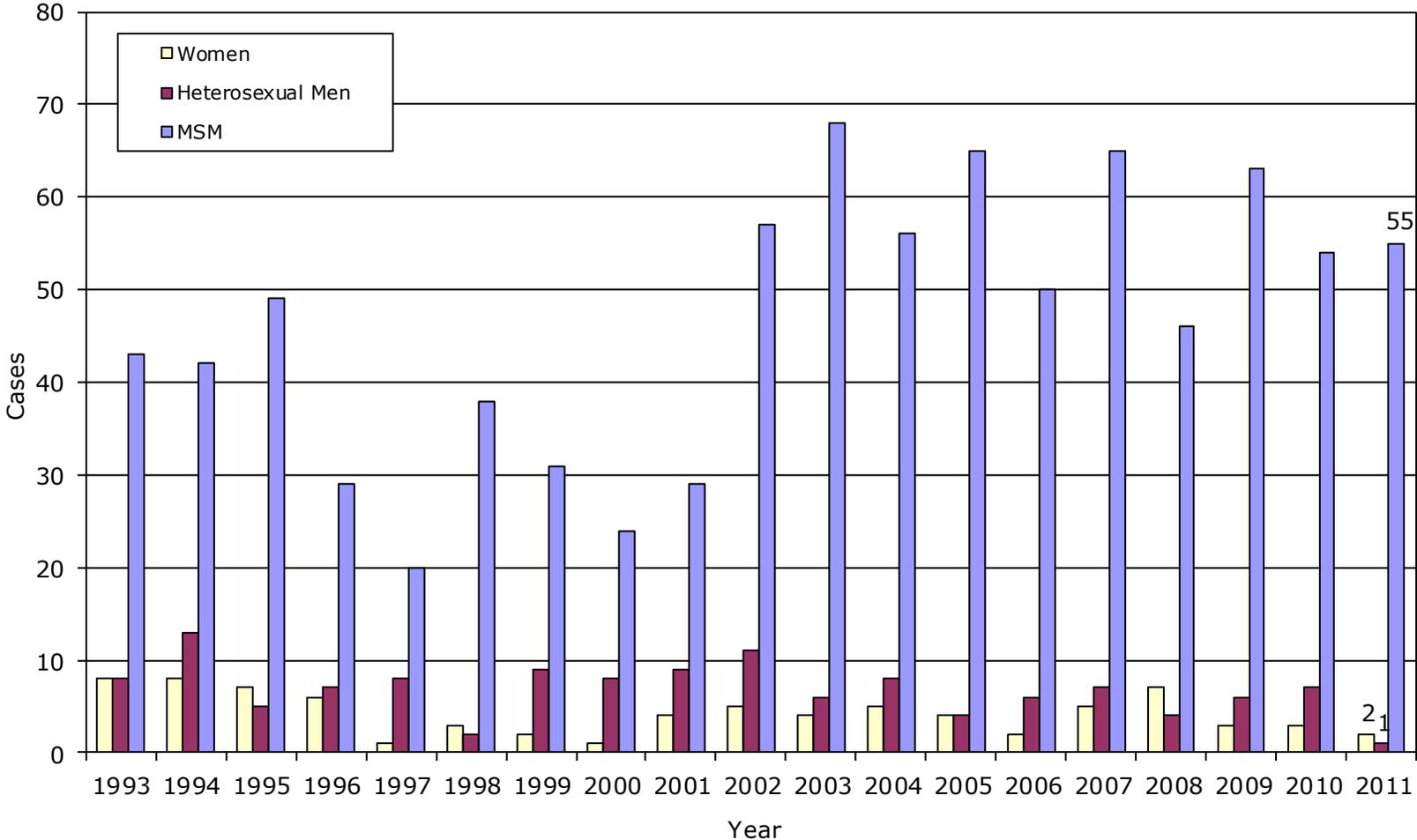


Figure 22: Early* Syphilis Diagnoses**[^]
PHSKC STD Clinic, 1993-2011



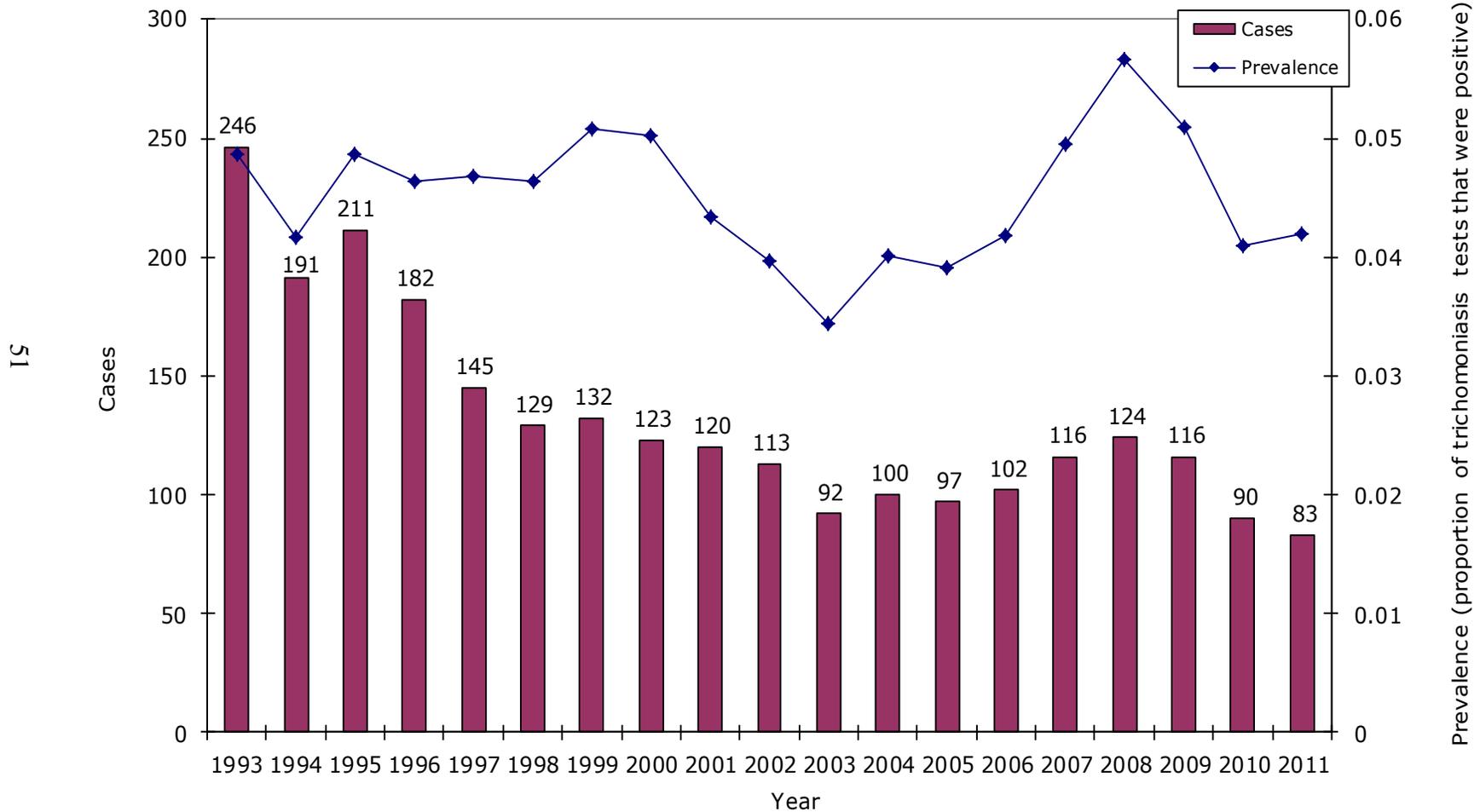
* Includes primary, secondary, and early latent syphilis diagnoses
 ** These data exclude 59 cases of early syphilis among men who were missing sexual orientation information across all years
 ^ Some patients may have been diagnosed by outside providers and referred to the PHSKC STD Clinic for follow up

Figure 23: HIV Diagnoses*, PHSKC STD Clinic**
1993-2011



* These data exclude 10 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.

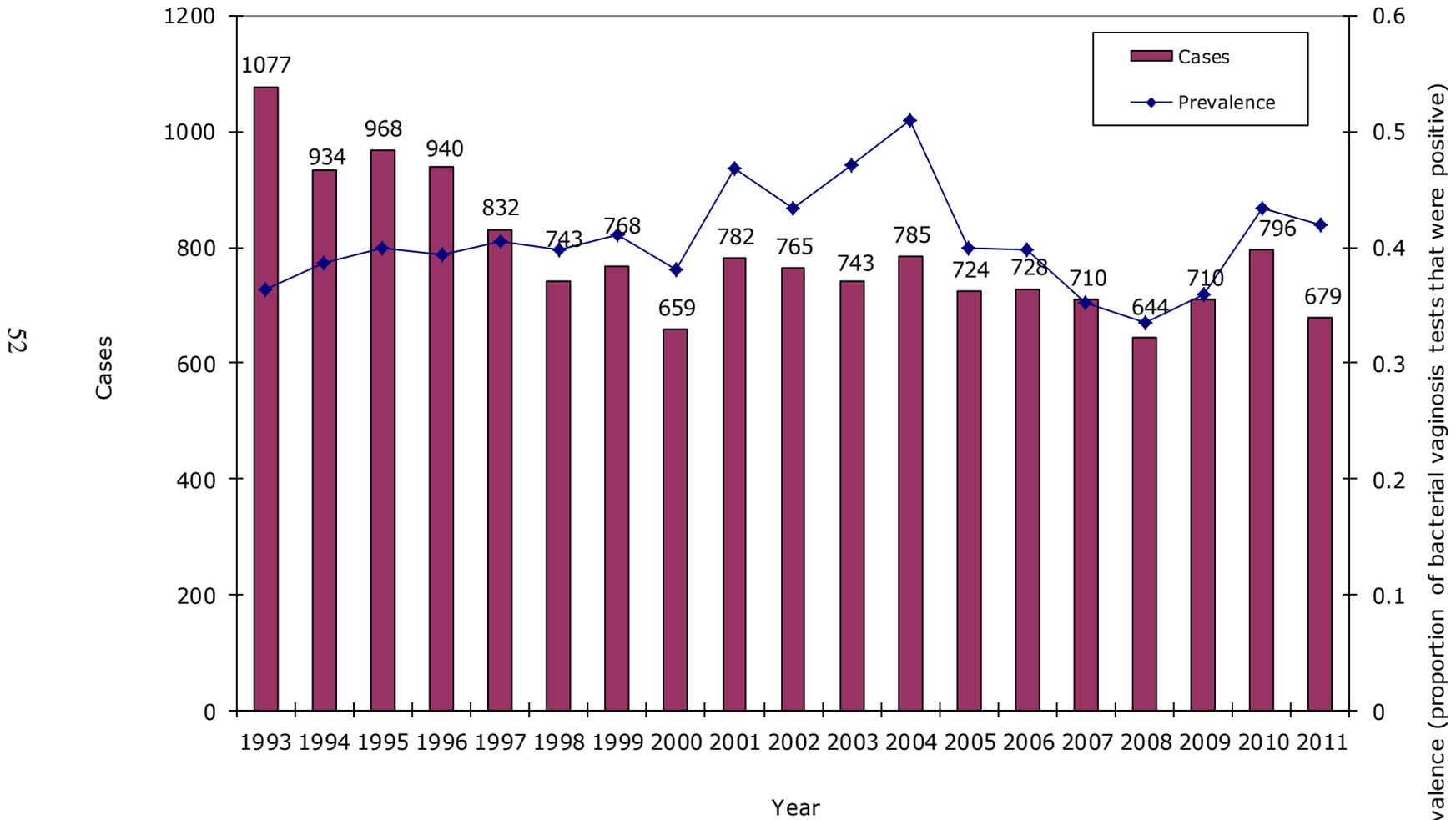
Figure 24: Trichomoniasis Diagnoses* and Prevalence** Among Female Patients
PHSKC STD Clinic, 1993-2011



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

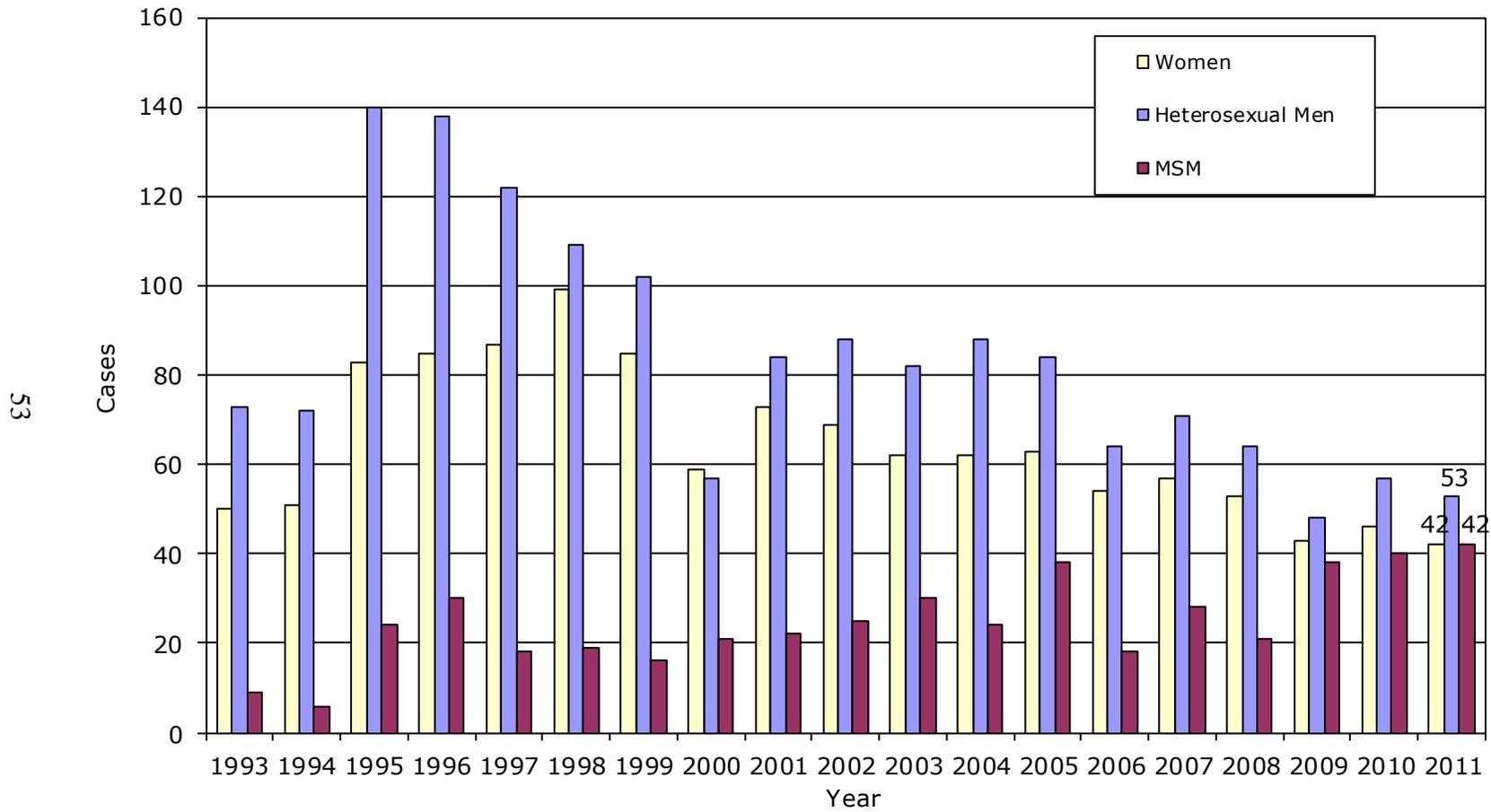
**Prevalence is calculated as total annual diagnoses/total annual tests (culture and/or wet mount)

Figure 25: Bacterial Vaginosis Diagnoses and Prevalence* Among Female Patients
PHSKC STD Clinic, 1993-2011



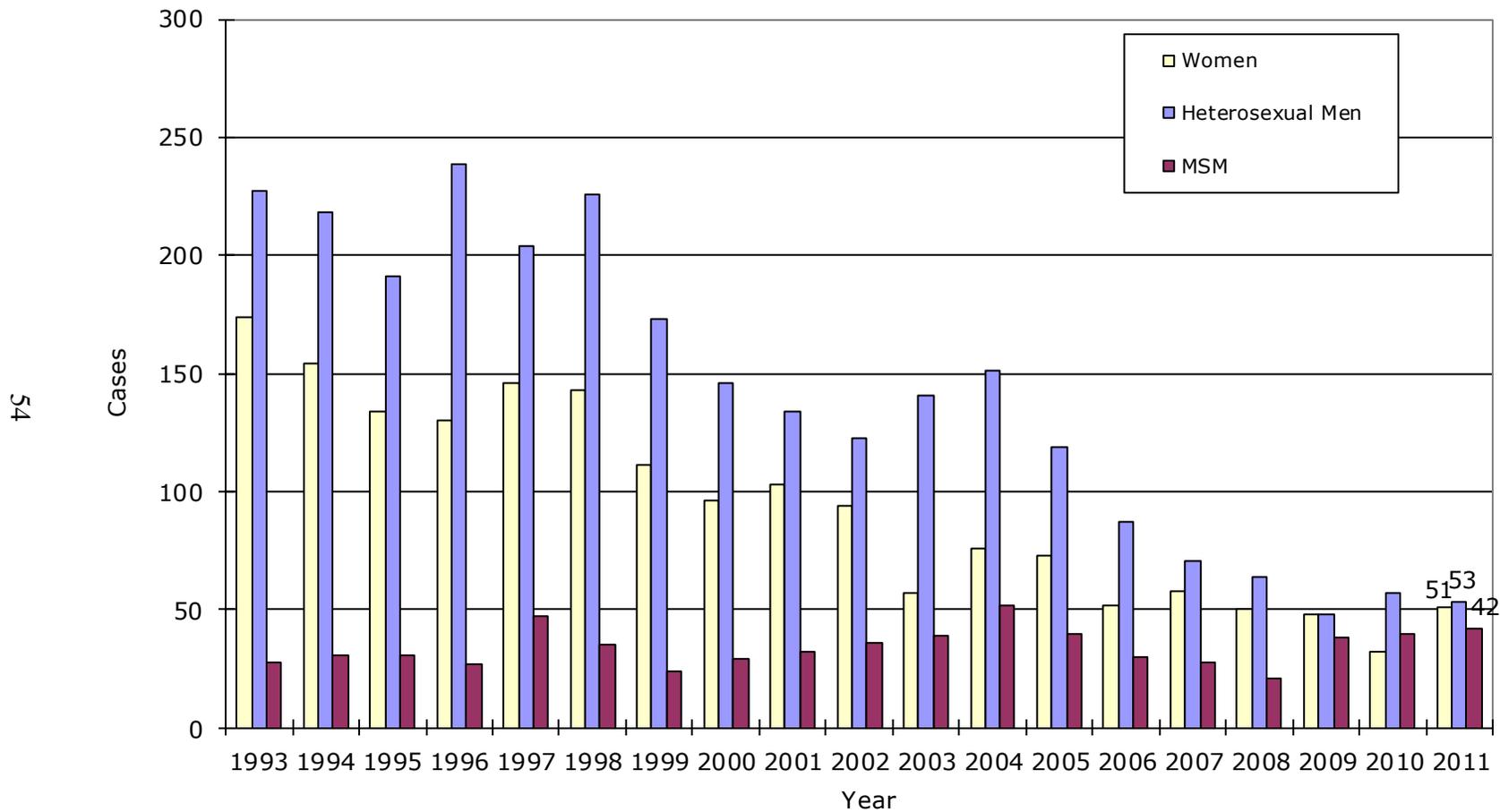
*Prevalence is calculated as total annual diagnoses/annual patients with tests for both vaginal PH and clue cells.

Figure 26: Initial Genital Herpes Diagnoses*
PHSKC STD Clinic, 1993-2011



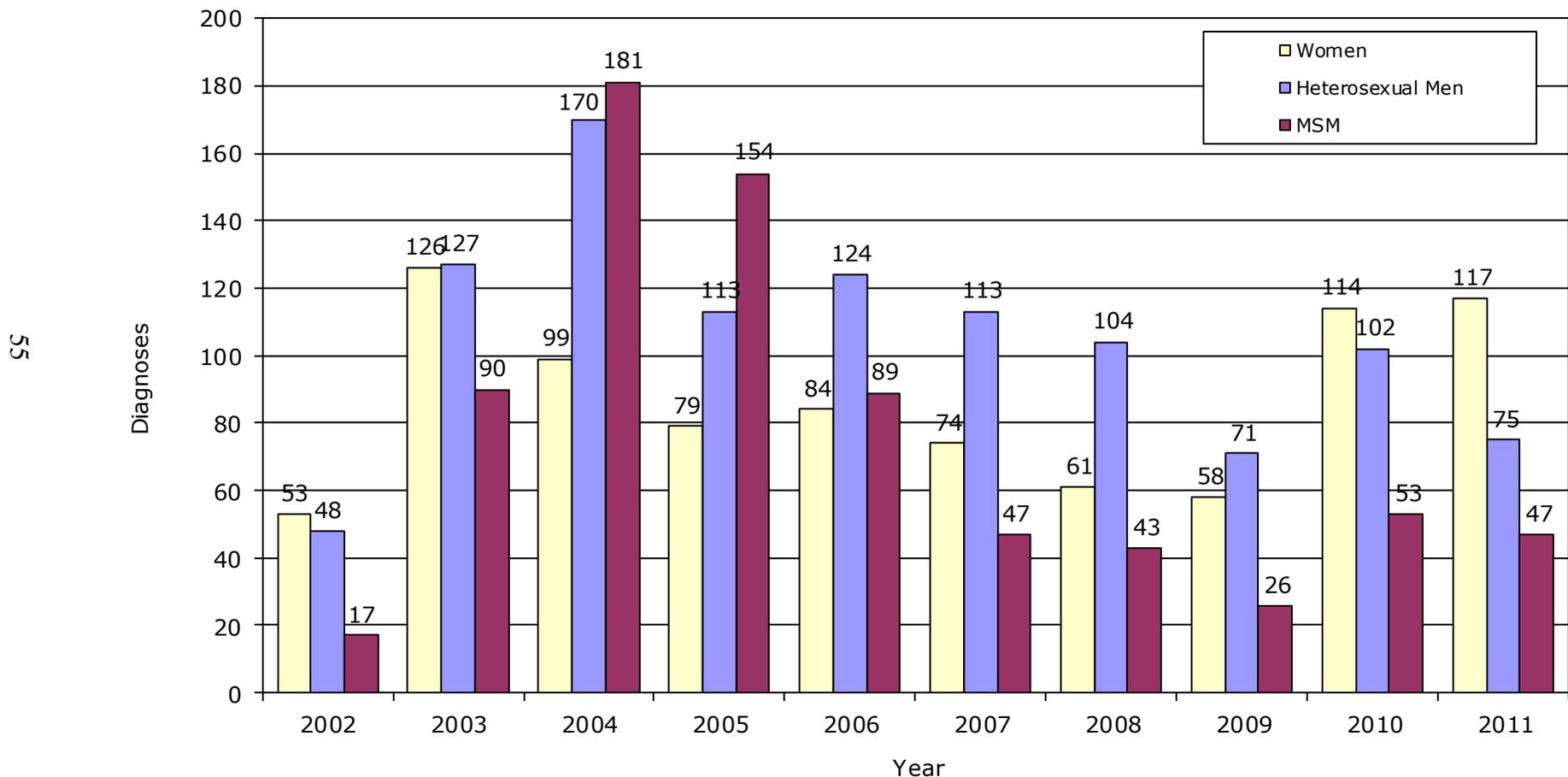
* These data exclude 38 cases of initial genital herpes among men who were missing sexual orientation information across all years

Figure 27: Recurrent Genital Herpes Diagnoses*
PHSKC STD Clinic, 1993-2011



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

Figure 28: Serologic Diagnoses of HSV-2 in Patients* without Symptoms
PHSKC STD Clinic, 1993-2011**



* These data exclude 23 cases of serologic herpes among men who were missing sexual orientation information across all years

** Free serologic testing for HSV-2 was available for MSM STD Clinic patients through research projects from October 15, 2003 - April 30, 2006 and for HIV-uninfected patients from April 20, 2010 - Dec 31, 2010.

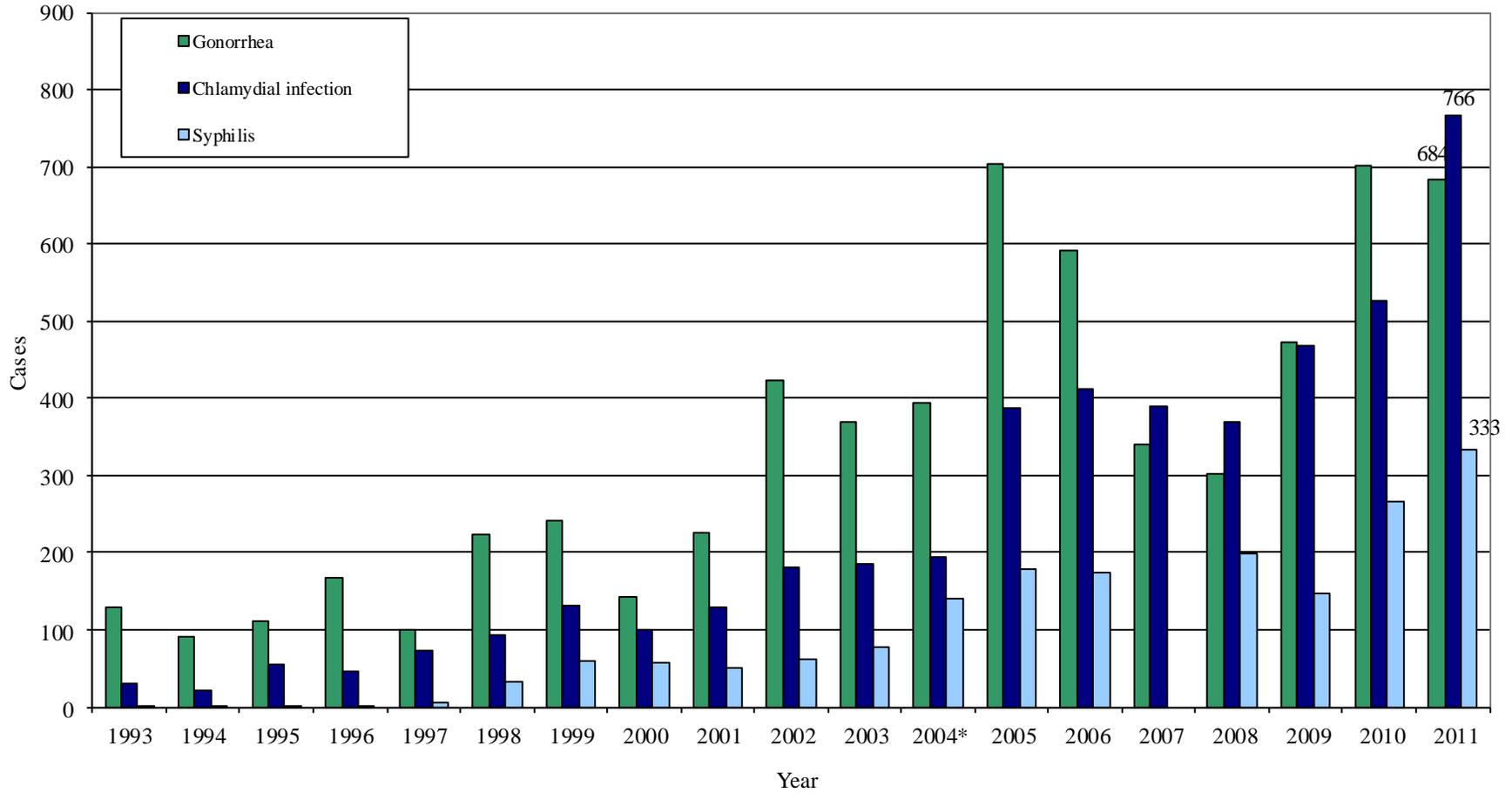
STDs in King County Men Who Have Sex with Men (MSM)

The incidence and number of cases gonorrhea reported among MSM were similar in 2010 and 2011. In contrast, the number of cases of chlamydial infection increased sharply among MSM over the past year (from 527 cases in 2010 to 766 cases in 2011, Figures 29-30). The number of early syphilis cases reported among MSM also increased from 2010 (263 cases) to 2011 (333 cases).

Interpreting recent data on reported numbers of STD cases among MSM is complicated by recent changes in reporting and screening practices. In 2007, the algorithm used to determine whether King County gonorrhea and chlamydial infection cases occurred among MSM or heterosexual men changed. This change affected data collected since 2004 when the state's case report form began collecting data on the gender of cases' sex partners. 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 chlamydial infections in men reported by non-Public Health STD Clinic providers. These earlier estimates were underestimated MSM cases, as they excluded non-rectal infections among MSM diagnosed by non-Public Health STD Clinic providers. In 2007, interview data (including information regarding the gender of sex partners) from partner management interviews became available in combination with case report data, making it feasible to more completely identify MSM cases using combined case report and interview data back to 2004. Therefore, ascertainment of MSM status is more complete from 2004 onward than in previous years. The completeness of reporting for gender of sex partners has improved over time; in 2011, gender of sex partners was reported in 82% of case reports for gonococcal and chlamydial infections among men.

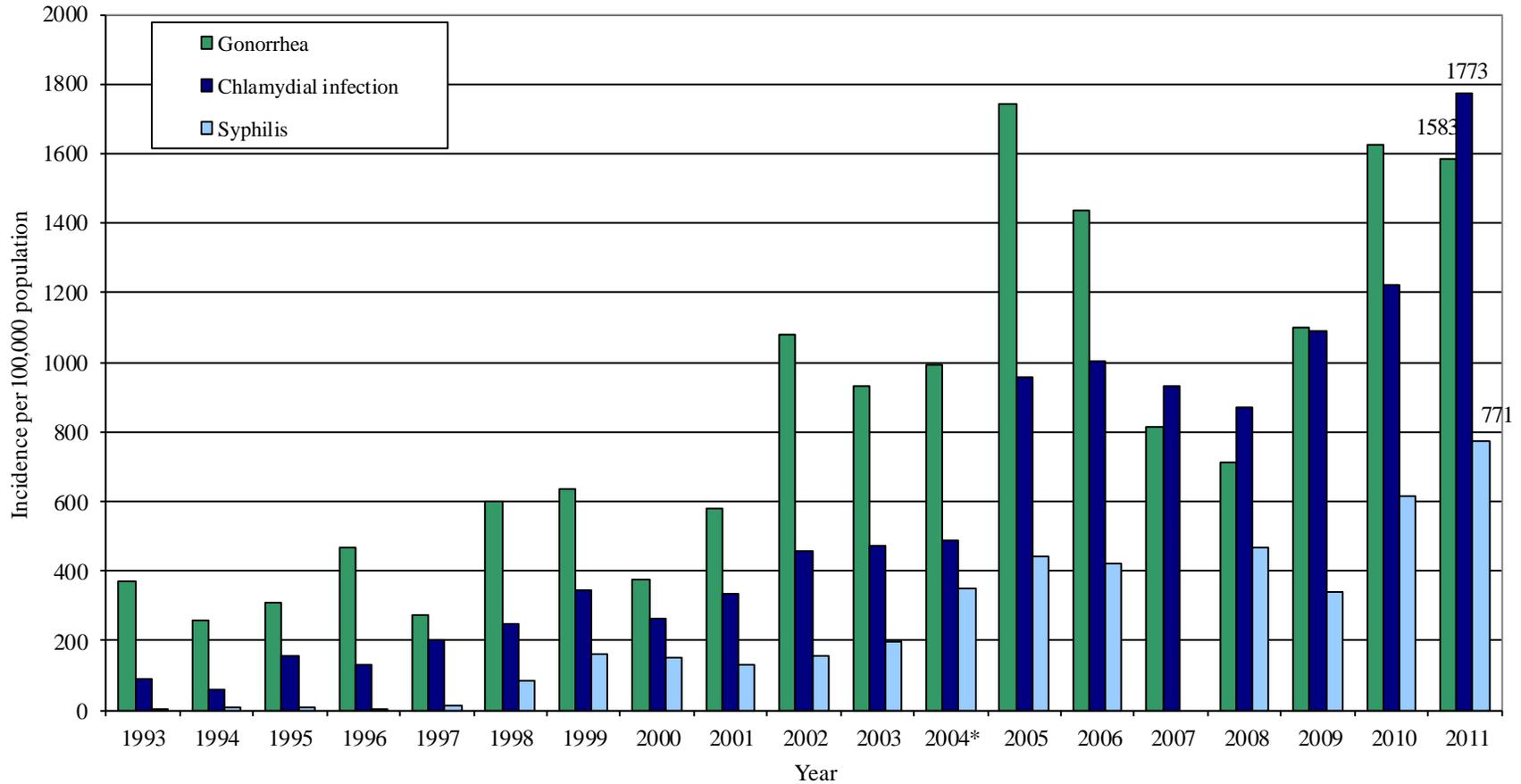
The number of chlamydia cases diagnosed among King County MSM increased in 2011. Despite this, the number of MSM presenting with symptomatic chlamydial urethritis in the PHSKC STD Clinic decreased from 2010 to 2011 (Figure 20), as did the number of MSM diagnosed with symptomatic gonococcal urethritis (Figure 31). While the decrease in symptomatic gonococcal urethritis is consistent with an overall decline in gonorrhea incidence among MSM in King County, trends are less consistent for chlamydial infection among MSM. Examining trends in chlamydial infection among MSM by anatomic site on a countywide basis reveals upward trends which vary in magnitude: while cases of chlamydial urethritis among MSM increased by only a small amount from 2010 to 2011, diagnoses of rectal and pharyngeal chlamydial infection increased substantially in this population (from 211 rectal cases in 2010 to 401 in 2011, and from 9 to 76 pharyngeal infections from 2010 to 2011; of note, 43 of the 76 cases with pharyngeal infection in 2011 were reported with a pharyngeal infection only, Figure 33). Screening MSM for chlamydial and gonococcal infections at the rectum and pharynx has become more common in King County in the past two years. This may account for some of the increases observed in chlamydial infection. Similar trends were observed with gonococcal infections among MSM from 2010 to 2011, with increases among men infected at the pharynx and rectum (Figure 32). However, the decreases in men with gonococcal urethritis were so large that the overall number of gonorrhea cases among men was stable from 2010 to 2011.

**Figure 29: Number of Cases of Gonorrhea, Chlamydia, and Early Syphilis among MSM*
King County, WA, 1993-2011**



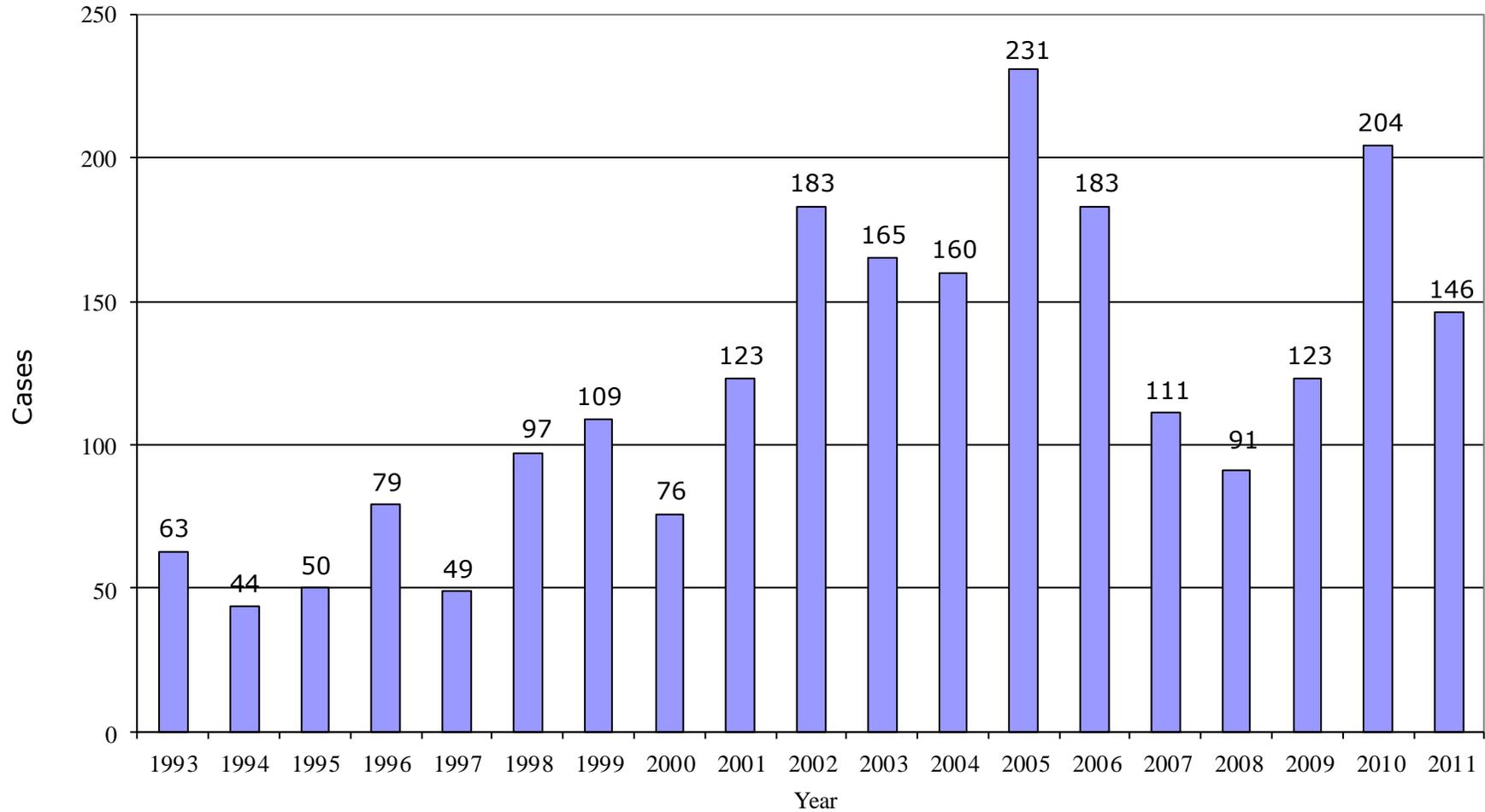
*From 1993-2003, MSM gonorrhea and chlamydial infection cases were calculated by summing all PHSKC STD Clinic diagnoses among MSM with all rectal infections reported to PHSKC by other providers. Since 2004, men have been assigned MSM status if the reporting provider indicated they had male sex partners,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

**Figure 30: Incidence of Gonorrhea, Chlamydial Infection, and Early Syphilis Among MSM*
King County, WA 1993-2011**



*From 1993-2003, MSM gonorrhea and chlamydial infection 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.

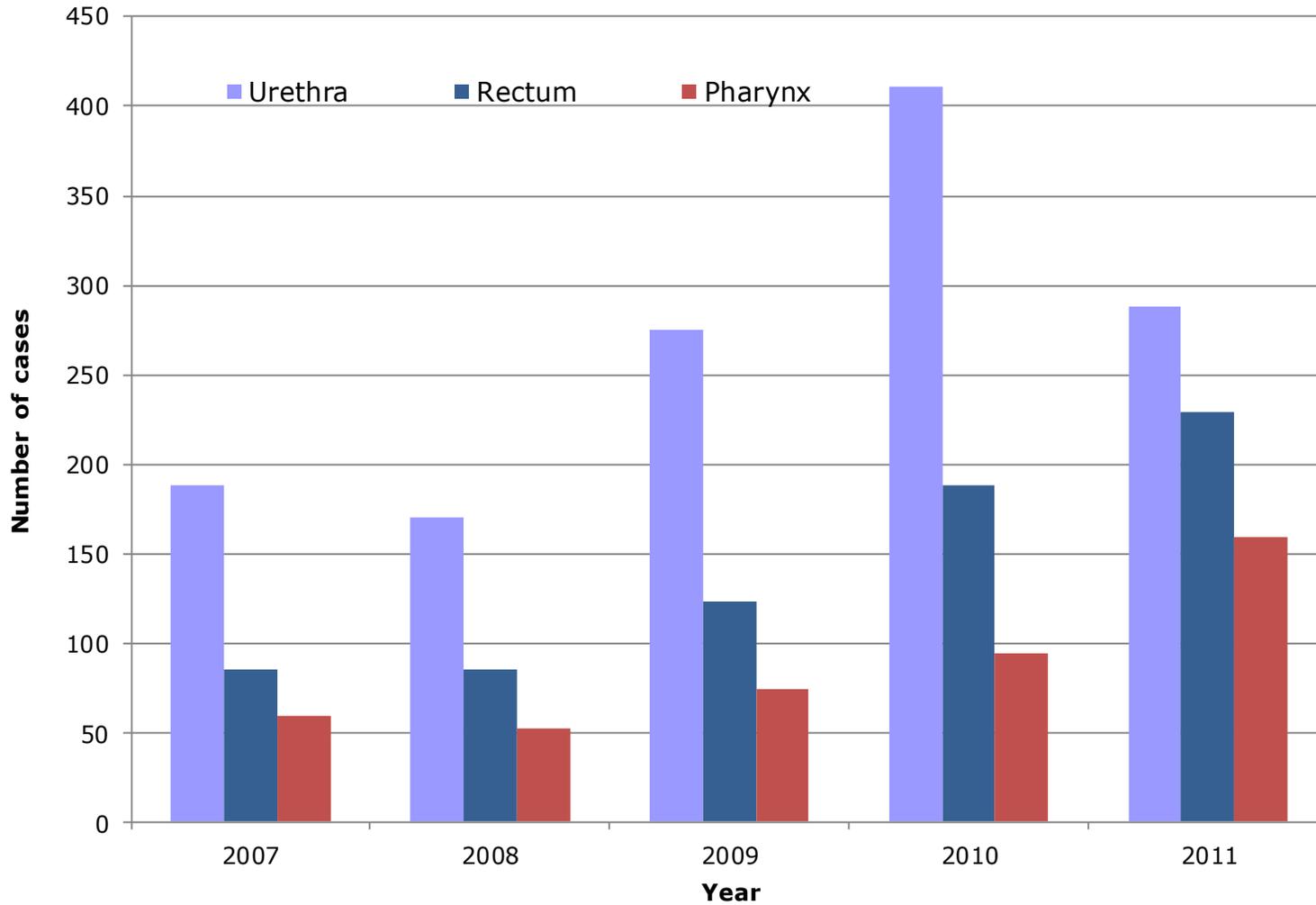
Figure 31: Symptomatic* Gonococcal Urethritis among MSM
PHSKC STD Clinic, 1993-2011**



* Symptoms include urethral discharge and/or dysuria

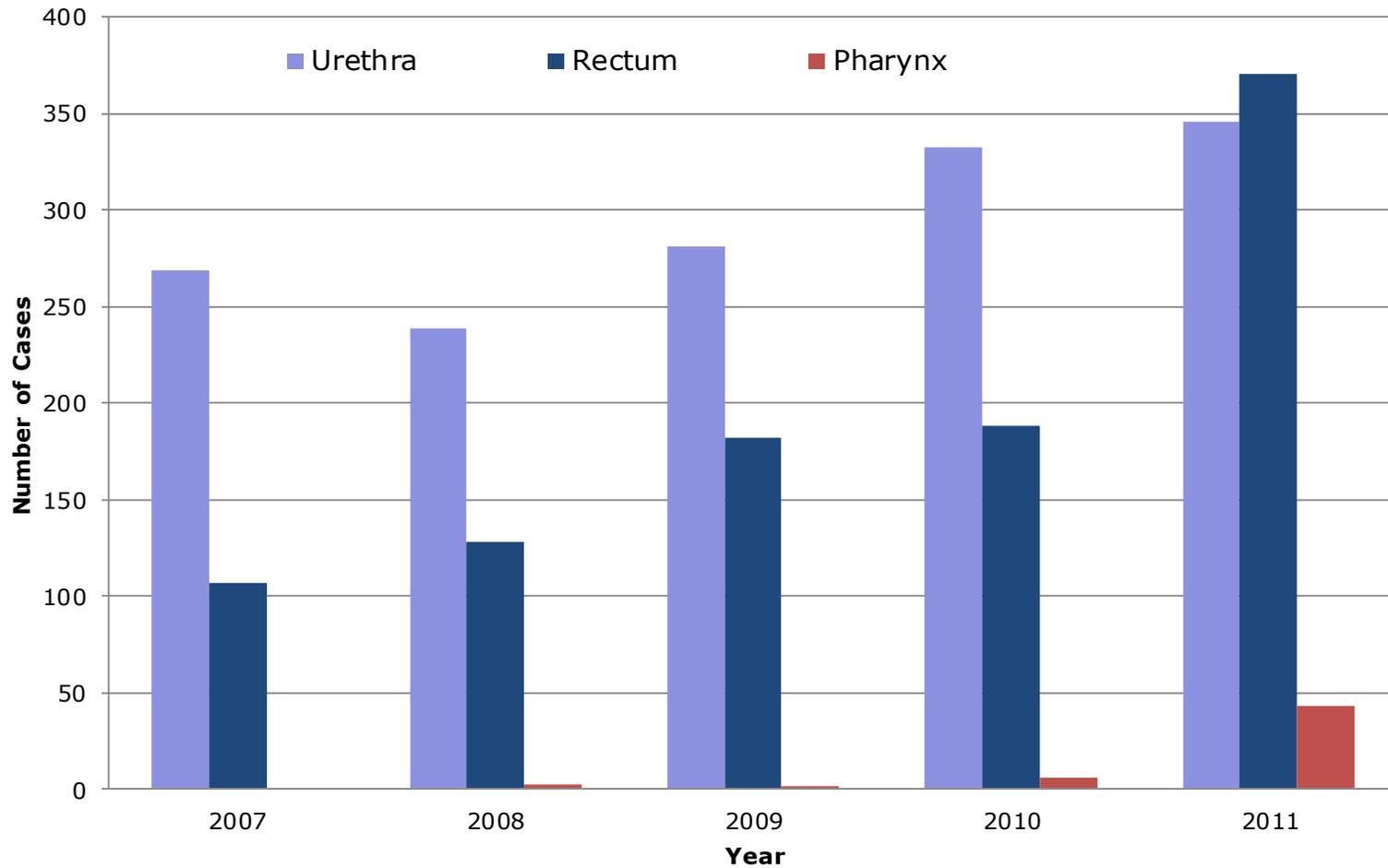
** These data exclude 50 cases of symptomatic urethral gonorrhoea among men who were missing sexual orientation information across all years

Figure 32: Gonorrhea cases among King County MSM, ordered by anatomic site *



* All urethral gonorrhea cases, rectal cases without concurrent urethral infections, pharyngeal cases without concurrent urethral or rectal infection

Figure 33: Chlamydial infection cases among King County MSM, ordered by anatomic site*



* All urethral chlamydial infections, rectal cases without concurrent urethral infection, pharyngeal cases without concurrent urethral or rectal infection

References

- 1.** Anderson JE, Mosher WD, Chandra A. Measuring HIV risk in the U.S. population aged 15-44: results from Cycle 6 of the National Survey of Family Growth. *Adv Data*. Oct 23 2006(377):1-27.
- 2.** Laumann EO, Gagnon JH, Michael RT, Michaels S. *The Social Organization of Sexuality: Sexual Practices in the United States*. Chicago: University of Chicago Press; 1994.
- 3.** Brewer DD, Golden MR, Handsfield HH. Unsafe sexual behavior and correlates of risk in a probability sample of men who have sex with men in the era of highly active antiretroviral therapy. *Sex Transm Dis*. Apr 2006;33(4):250-255.