



**2012
King County
Sexually Transmitted Diseases
Epidemiology Report**

**Public Health – Seattle and King County
2012 Sexually Transmitted Diseases Epidemiology Report**

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Executive Summary

The 2012 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 (STIs) in King County.

Key findings in the epidemiology of STIs in King County in 2012 include:

- **Among men who have sex with men (MSM), the incidence of reported chlamydial infections and gonorrhea increased sharply in 2012, with particular increases in diagnoses of rectal and pharyngeal infections.**¹ Increased screening for extragenital infections and the use of more sensitive tests may be driving much of this increase in incidence by improving case-finding.
- **The ongoing epidemic of syphilis among MSM grew substantially in 2010 and has continued unabated since that time.** After reaching a historical high in 2011, the incidence of early syphilis among MSM decreased slightly in 2012.
- **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 2012 was similar to that historical low.

- **Overall chlamydia incidence is stable, with the highest rates of reported infection observed among young women and MSM.**
- **Rates of all STDs continue to show marked racial and ethnic disparities.** The highest rates of infections among women and heterosexual men are observed among non-Hispanic blacks, and the highest rates of among MSM are observed among Latinos.
- **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 2012.** In 2012, the STD clinic diagnosed 32% of all early syphilis cases, 33% of all gonorrhea cases, 22% of all HIV cases, and 10% of all chlamydial cases reported in King County. As in past years, the Public Health STD Clinic diagnosed more cases of HIV in 2012 than any other single clinical site in Washington State.²
- **Family planning clinics play a critical role in the control of chlamydial infection in King County.** As a group, family planning clinics diagnosed 1302 (19%) of the total reported cases of chlamydial infections in King County. Public Health Family Planning Clinics diagnosed 6.4% of King County chlamydial infection cases in 2012.

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 STIs 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 Some of the 70 cases of HIV diagnosed in the STD Clinic may were not 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 1992-2012 and reported through March 23, 2013.

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. Population data for 2012 are not yet available. To create population estimates for calculating incidence figures for 2012, changes in population estimates from 2010 to 2011 were applied to the 2011 population.

Overall population estimates used for MSM represent 5.5% of men ages 15 and older in King County per year, 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 from National HIV Surveillance System data.

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 2012, 6,891 cases of chlamydial infection were reported among King County residents, representing an overall reported incidence of 353 per 100,000 people (Table 1), similar to the incidence of 336 cases per 100,000 people in 2011 (Table 3). In 2012, 4,151 cases were reported among women, for a reported incidence of 423 per 100,000 women, and 2,740 cases were reported among men, for a reported incidence of 281 per 100,000 men (Table 1). The overall number of cases of chlamydial infection increased slightly from 2011 to 2012, the result of a sharp rise in incidence among MSM but stable incidences among women and heterosexual men.

Age, race and ethnicity

Historically, the incidence of chlamydial infection has varied substantially by age and race in King County. These patterns continued in 2012. (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 Native American women (1,566 per 100,000 women), followed by black (1,513 per 100,000), Latina (740 per 100,000), Asian/Pacific Islander (352 per 100,000), and white (271 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 926 per 100,000, followed by Latino (437 per 100,000), Native American (402 per 100,000), white (223 per 100,000), and Asian/Pacific Islander (159 per 100,000) men (Table 2).
- Among women, the incidence of chlamydial infection was highest among 20-24 year olds (2,504 per 100,000) and 15-19 year olds (2,161 per 100,000), while among men, reported incidence was highest among 20-24 year olds (1,124 per 100,000) followed by 25-29 and 15-19 year olds (732 and 555 per 100,000, respectively) (Table 2, Figure 2). Higher rates among women than men both overall and within race and younger age 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 2012 (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 to 2010 and then rose sharply again from 2010 to 2012. These statewide trends are similar to trends observed nationally. The increase from 2007 to 2008 may have been related, in part, to increased reporting of chlamydial infection cases as a result of a new web-based case reporting system introduced throughout Washington State from 2007 to 2008. (A similar system has been in place in King County since the late 1990s.)

Data from 2012 are notable for the emergence of something of a disparity in trends between men and women. While rates of reported infection in women are stable, the rate in men is up 16% from 2010. The extent to which this increase represents a true increase in infections versus an increase in testing or reporting is not clear. Also of note, the number of infections occurring in women 20-24 now exceeds the number in women aged 15-19. This change reflects an ongoing long-term trend. This change may reflect changes in testing practices. Alternatively, the shift toward later diagnoses may be a consequence of declining levels of sexual activity among

adolescents leading to a shift in when women initial become infected with *C. trachomatis*.

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.

PHSKC and other family planning clinics play an important role in the control of chlamydial infection in King County. Family planning clinics diagnosed 1302 (19%) of the total 6891 cases of chlamydial infections in King County in 2012, and 25% (1031 of 4151) of all cases diagnosed in women. This total includes Public Health family planning clinics, which diagnosed 443 cases of chlamydial infection in 2011.

Table 1: Chlamydial Infection – Number of Reported Cases and Incidence, King County, WA, 2012

	Cases	Incidence per 100,000 population
Sex		
Women	4151	423
Men	2740	281
Total cases	6891	353

Table 2: Chlamydial Infection – Number of Reported Cases and Incidence among Men and Women by Age and Race/Ethnicity King County, WA, 2012

	Women (N=4151)		Men (N=2740)	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
Race/ethnicity* ^				
White, Non-Latino	1448	271	1207	223
Black, Non-Latino	743	1513	491	926
Nat Am, Non-Latino	85	1566	22	402
Asian/PI, Non-Latino	471	352	197	159
Latino	527	740	357	437
Other	107		26	
Multiple	128	358	63	182
Unknown	642		377	
Age*				
0-9 years	0	0	0	0
10-14 years	42	78	1	2
15-19 years	1,206	2,161	324	555
20-24 years	1,612	2,504	737	1,124
25-29 years	691	887	594	732
30-34 years	317	408	390	483
35-44 years	210	146	434	289
45-54 years	57	40	196	136
>=55 years	15	6	60	28
Unknown	1		4	

* 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 2012, among women, 642 case reports were missing race and/or ethnicity, and one was missing age, and among men, 377 case reports were missing race and ethnicity, and 4 were missing age.

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

Table 3: Chlamydial Infection – Number of Reported Cases and Incidence among Men and Women, King County, WA, 1992-2012

Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
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	373	1,612	184	4,897	279
2002	3,483	390	1,750	198	5,233	294
2003	3,796	423	2,031	228	5,827	326
2004	4,108	455	2,061	230	6,172	343
2005	4,070	447	2,188	242	6,261	345
2006	3,956	428	2,016	219	5,974	324
2007	3,930	419	1,856	199	5,791	309
2008	4,010	423	2,058	218	6,068	321
2009	3,972	415	1,983	208	5,955	312
2010	3,961	409	2,088	217	6,050	313
2011	4,131	424	2,368	245	6,499	335
2012	4,151	423	2,740	281	6,891	353

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

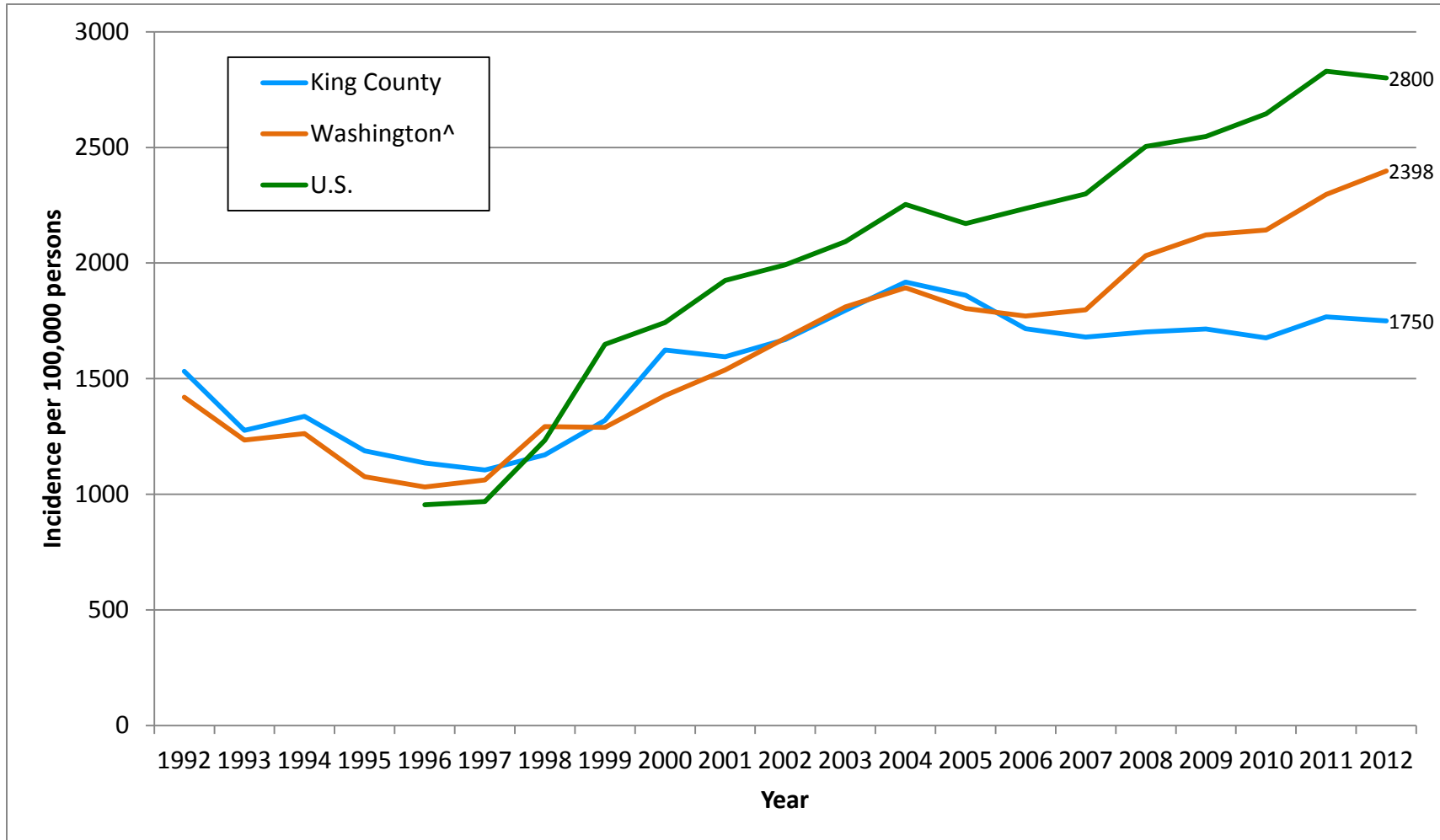
Table 4: Chlamydial Infection – Number of Reported Cases and Incidence among Men and Women Ages 15-29, King County, WA, 1992-2012

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	2,658	1,531	805	452	3,464	985
1993	2,212	1,276	695	390	2,908	827
1994	2,302	1,337	637	358	2,939	840
1995	2,051	1,188	642	359	2,693	766
1996	1,976	1,136	664	367	2,640	744
1997	1,942	1,105	644	353	2,586	722
1998	2,081	1,170	788	426	2,869	790
1999*	2,357	1,320	934	502	3,291	903
2000	2,918	1,624	1,154	617	4,071	1,110
2001	2,877	1,595	1,065	569	3,942	1,072
2002	3,050	1,669	1,215	642	4,265	1,146
2003	3,312	1,795	1,385	725	4,698	1,251
2004	3,589	1,917	1,349	696	4,938	1,296
2005	3,536	1,860	1,508	768	5,045	1,305
2006	3,359	1,716	1,297	642	4,656	1,171
2007	3,359	1,680	1,185	575	4,544	1,119
2008	3,444	1,702	1,374	659	4,818	1,172
2009	3,490	1,715	1,352	645	4,842	1,172
2010	3,340	1,676	1,322	637	4,662	1,143
2011	3,502	1,768	1,435	695	4,937	1,217
2012	3,510	1,750	1,657	807	5,167	1,281

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.

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

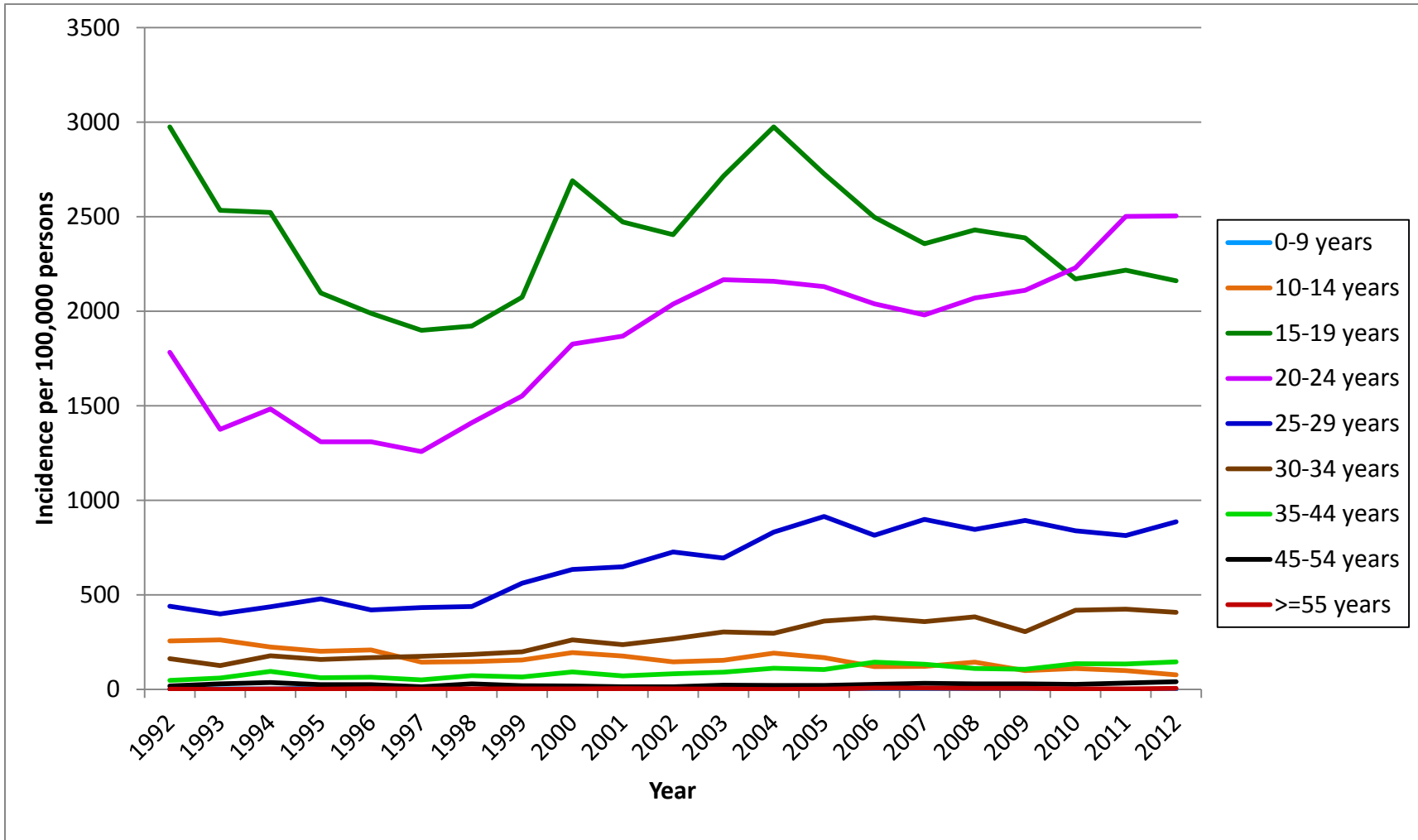
**Figure 1: Chlamydial Infection – Incidence among Women Ages 15-29*
King County, Washington State, and U.S., 1992-2012**



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

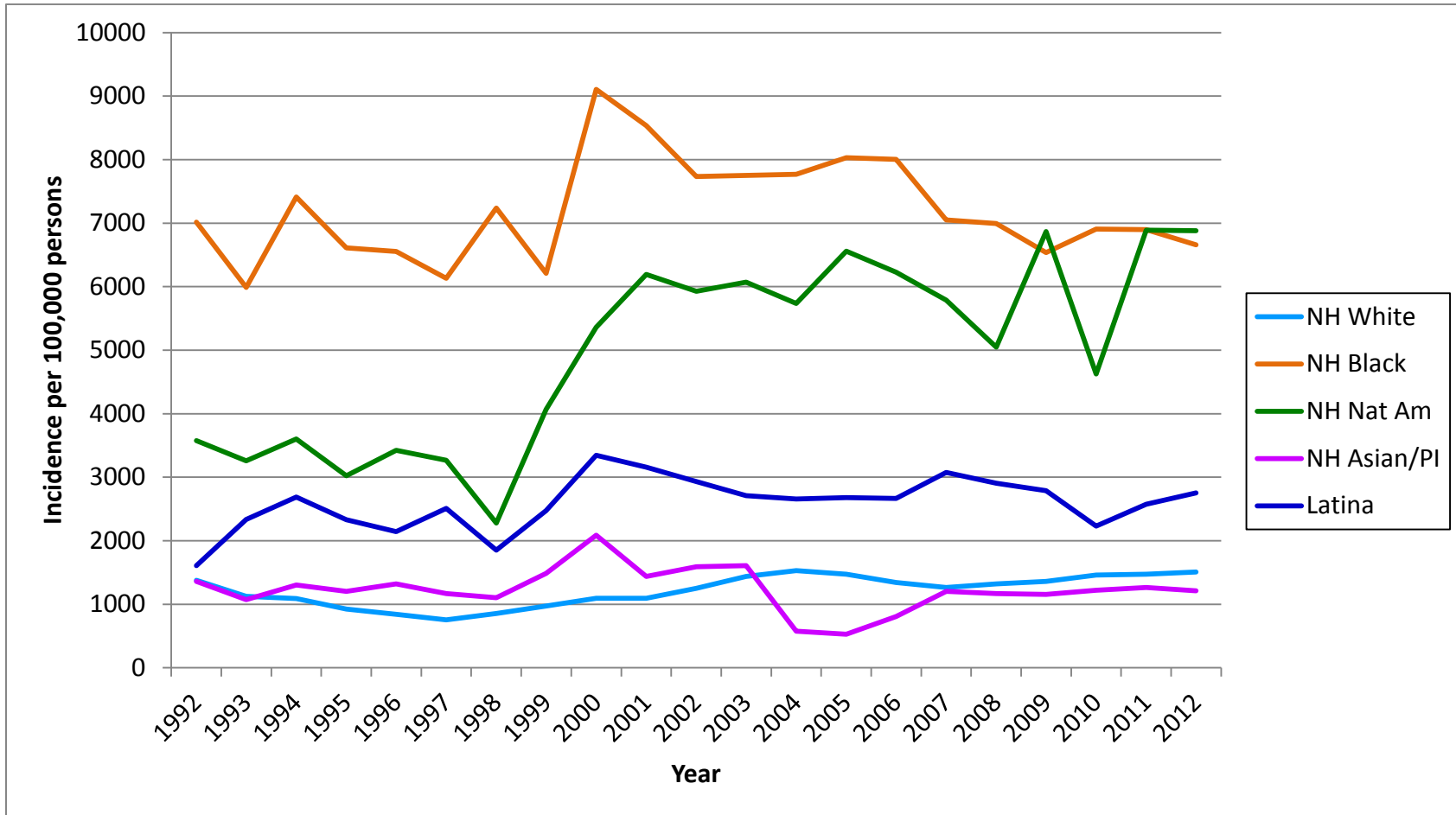
^Washington State rates exclude King County.

**Figure 2: Chlamydial Infection – Incidence among Women by Age
King County, WA, 1992-2012**



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

**Figure 3: Chlamydial Infection – Incidence among Women Ages 15-29 by Race and Ethnicity
King County, WA, 1992-2012**



NH = Non-Hispanic

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/ethnicity-specific incidences.

Gonorrhea

In 2012, 1,560 cases of gonorrhea were reported among residents of King County, resulting in an overall incidence of 80 per 100,000 persons (Table 5). This incidence was up somewhat from 2011. Among women, 333 cases of gonorrhea were reported in 2012 for an incidence of 34 per 100,000. Among men, 1,227 cases were reported in 2012 (126 per 100,000). Gonorrhea incidence remains much higher among MSM (2,114 per 100,000) than among heterosexual men (40 per 100,000) or women (41 per 100,000) ages 15 and older (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. In the past, case report data on sexual orientation were often incomplete, and in some instances case report data on the gender of patients' sex partners may be inaccurate. As a result, Public Health primarily uses data from women to monitor the epidemiology of gonorrhea among heterosexuals. The epidemic among MSM is 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 in 2012 was near the lowest level observed in two decades. Most gonorrhea cases in King County women occur in persons aged 15-29 years (Table 6). 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 2012 (Table 8 & 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 (Figure 5).

Age

The incidence of gonorrhea was highest in the 15-19 and 20-24 year age groups among women in 2012, while in men incidence was highest in the 20-24, 25-29, and 30-34 year-old age groups (Table 6). Among women, incidence decreased among 15-19 and 20-24 year olds from 2011 to 2012 (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 black and Native American women ages 15-29 experiencing an incidence of gonorrhea 15 and 5 times that observed in white women, respectively, in 2012 (Figure 7).

MSM

Both surveillance data gathered through case reports and sentinel data from the Public Health STD Clinic suggest that the number of gonorrhea diagnoses among MSM increased from 2011 to 2012. Overall incidence among MSM in the county increased from 1,576 cases per 100,000 persons in 2011 to a historical high of 2,114 per 100,000 in 2012 (Figure 4), and the number of gonorrhea diagnoses among MSM STD Clinic patients increased similarly from 397 to 500 cases (Figure 16).

The extent to which this increase reflects a true increase in gonorrhea incidence is uncertain. 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. As shown in figures 17 and 18, the number of cases of urethral gonorrhea among MSM seen in the PHSKC STD clinic has varied substantially from year to year, but has been roughly stable from 2003-2012, suggesting that the large increase in gonorrhea reported among MSM may be the result of increased identification of asymptomatic rectal and pharyngeal infections.

Table 5: Gonorrhea – Number of Reported Cases and Incidence, King County, WA, 2012

	Cases	Incidence per 100,000 population
Sex		
Women	333	34
Men	1227	126
Total cases	1560	80

Table 6: Gonorrhea – Number of Reported Cases and Incidence among Men and Women by Age and Race/Ethnicity, King County, WA, 2012

	Women (N=333)		Men (N=1227)	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
Race/ethnicity* ^				
White, Non-Hispanic	96	17	657	113
Black, Non-Hispanic	132	256	192	337
Nat Am, Non-Hispanic	4	70	15	255
Asian/PI, Non-Hispanic	21	15	61	46
Hispanic	22	29	163	186
Other	17		8	
Multiple	4	11	41	110
Unknown	37		90	
Age*				
0-9 years	0	0	0	0
10-14 years	3	6	0	0
15-19 years	90	161	44	75
20-24 years	101	157	256	391
25-29 years	65	83	255	315
30-34 years	27	35	204	253
35-44 years	36	25	268	179
45-54 years	7	5	163	114
>=55 years	4	2	34	16
Unknown	0		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 2012, among women, 37 case reports were missing race and/or ethnicity, and among men, 90 case reports were missing race and/or ethnicity. 3 male cases were missing age.

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

Table 7: Gonorrhea – Number of Reported Cases and Incidence among Men and Women, King County, WA, 1992-2012

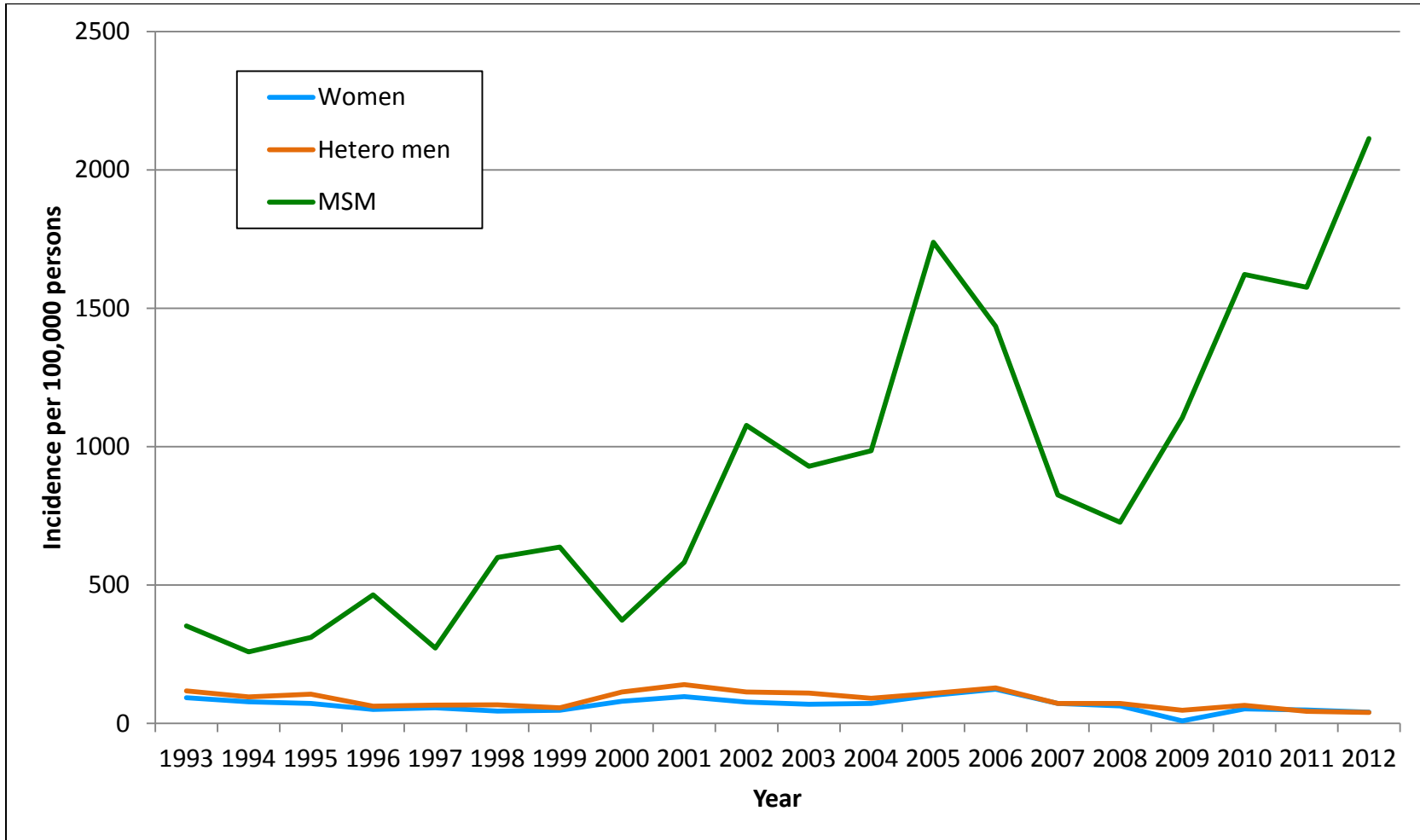
Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	900	112.6	1052	134.8	1952	123.6
1993	649	80.0	878	110.5	1527	95.1
1994	543	66.2	675	83.9	1218	75.0
1995	516	62.3	762	93.6	1278	77.8
1996	354	42.4	559	67.9	913	55.0
1997	395	46.7	519	62.2	914	54.4
1998	324	37.9	655	77.4	979	57.5
1999	347	40.2	608	71.0	955	55.5
2000	583	66.8	894	103.4	1477	85.0
2001	727	82.5	1164	133.2	1891	107.7
2002	584	65.5	1197	135.2	1781	100.2
2003	528	58.9	1119	125.6	1647	92.1
2004	556	61.6	1021	113.7	1577	87.6
2005	788	86.6	1457	161.0	2245	123.7
2006	962	104.0	1506	163.6	2468	133.8
2007	560	59.7	865	92.6	1428	76.3
2008	496	52.4	833	88.2	1329	70.3
2009	295	30.9	820	86.0	1115	58.4
2010	417	43.0	1189	123.6	1606	83.2
2011	394	40.4	1012	104.6	1406	72.4
2012	333	34.0	1227	126.0	1560	79.8

Table 8: Gonorrhea – Number of Reported Cases and Incidence among Men and Women Ages 15-29, King County, WA, 1992-2012

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	411	706	396	1419	403
1993	514	296	530	297	1044	297
1994	451	262	421	237	872	249
1995	420	243	422	236	842	240
1996	287	165	302	167	589	166
1997	325	185	258	141	583	163
1998	262	147	334	180	596	164
1999	286	160	317	171	603	166
2000	436	243	378	202	815	222
2001	552	306	549	293	1101	300
2002	466	255	557	294	1023	275
2003	392	212	464	243	856	228
2004	444	237	419	216	864	227
2005	630	332	648	330	1278	331
2006	716	366	699	346	1416	356
2007	434	217	426	207	860	212
2008	378	187	413	198	791	192
2009	238	117	416	199	654	158
2010	291	145	481	232	772	189
2011	305	153	476	231	781	193
2012	256	129	556	271	812	201

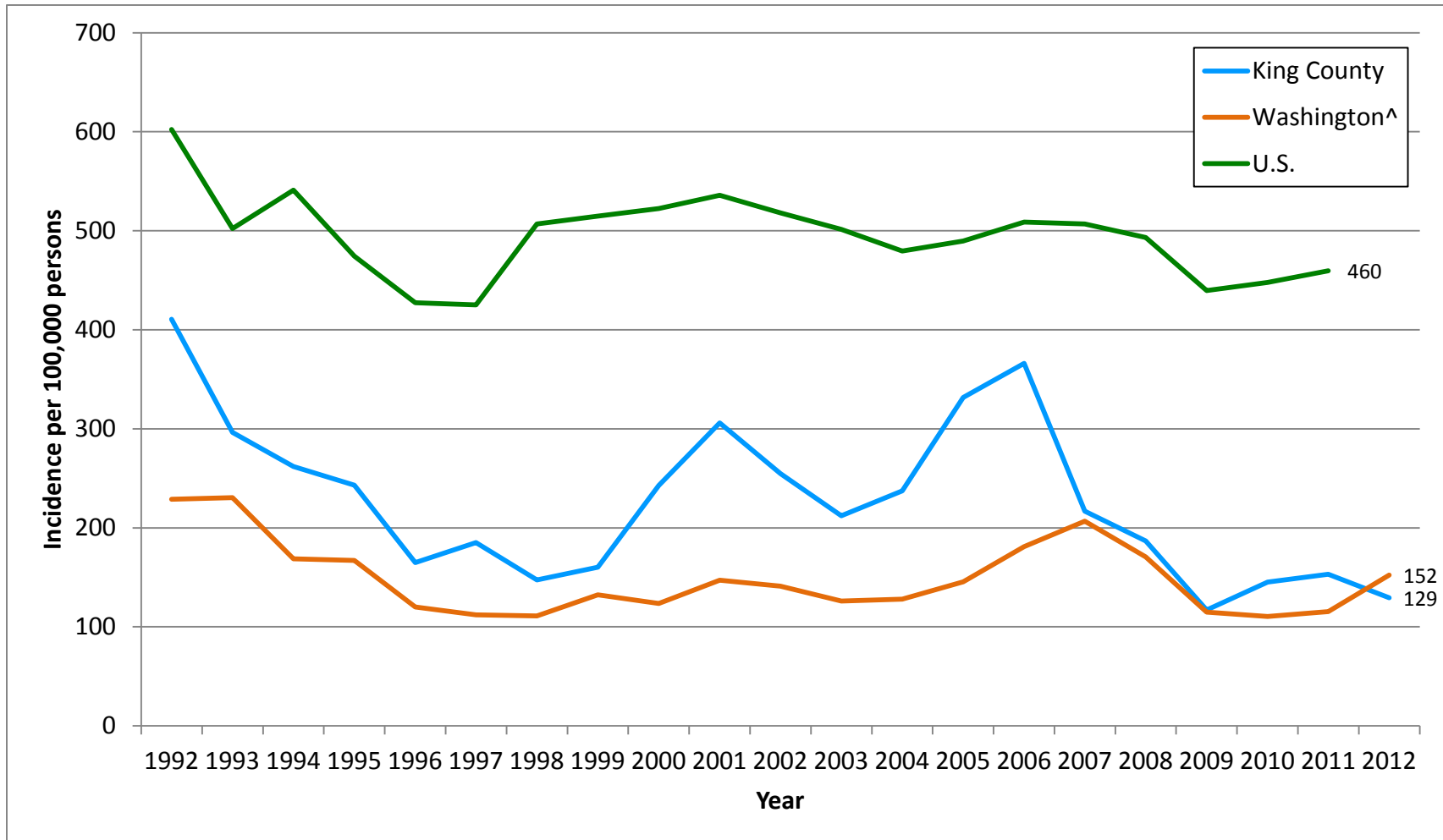
* Cases with unknown age were included in age-specific counts and rates after being distributed among age categories based on the distribution of cases with known age.

**Figure 4: Gonorrhea – Incidence among Women, Heterosexual Men, and MSM
15 years and older, King County, WA, 1993-2012**



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.

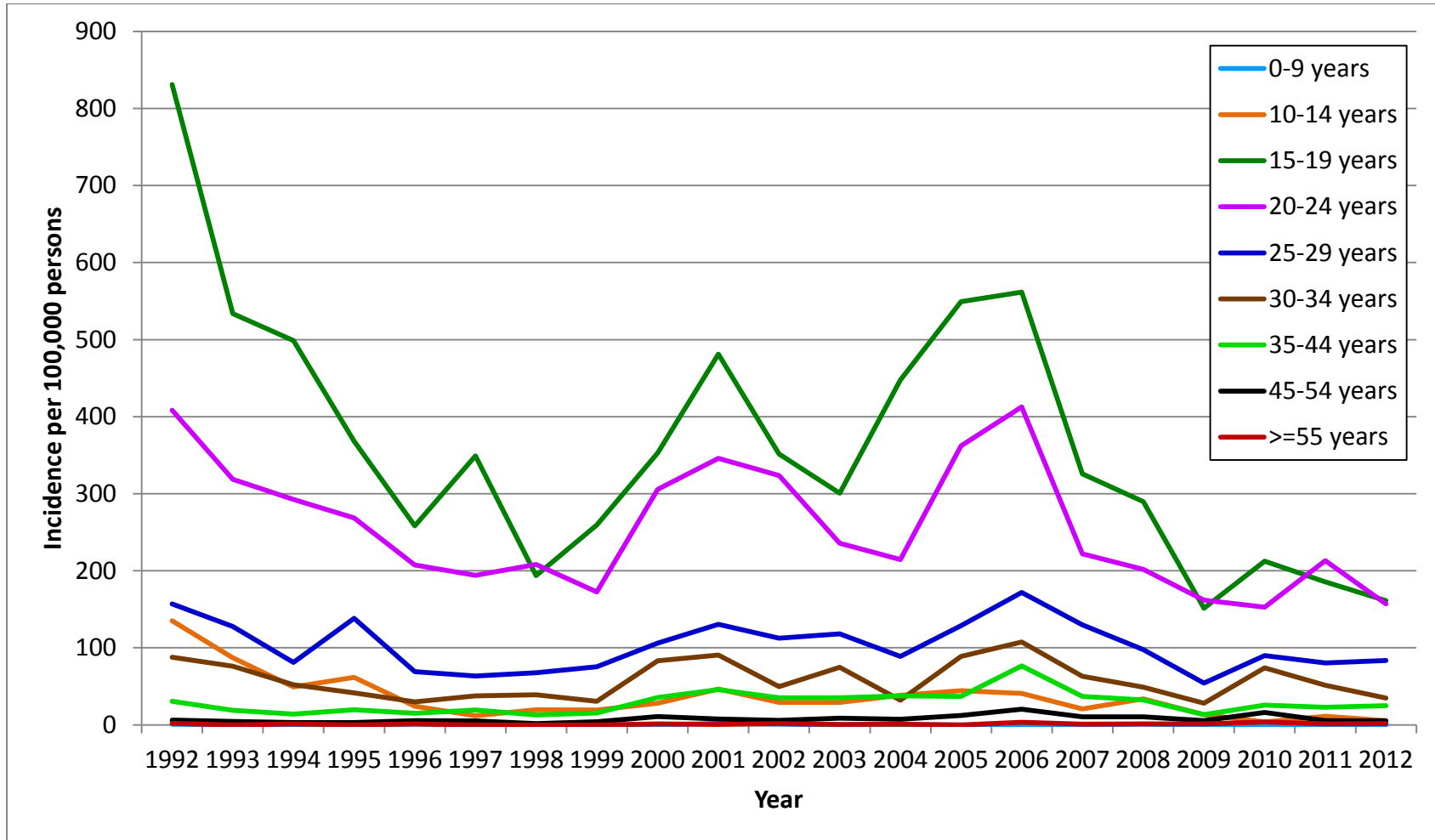
**Figure 5: Gonorrhea – Incidence among Women Ages 15-29
King County, Washington State, and U.S., 1992-2012**



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

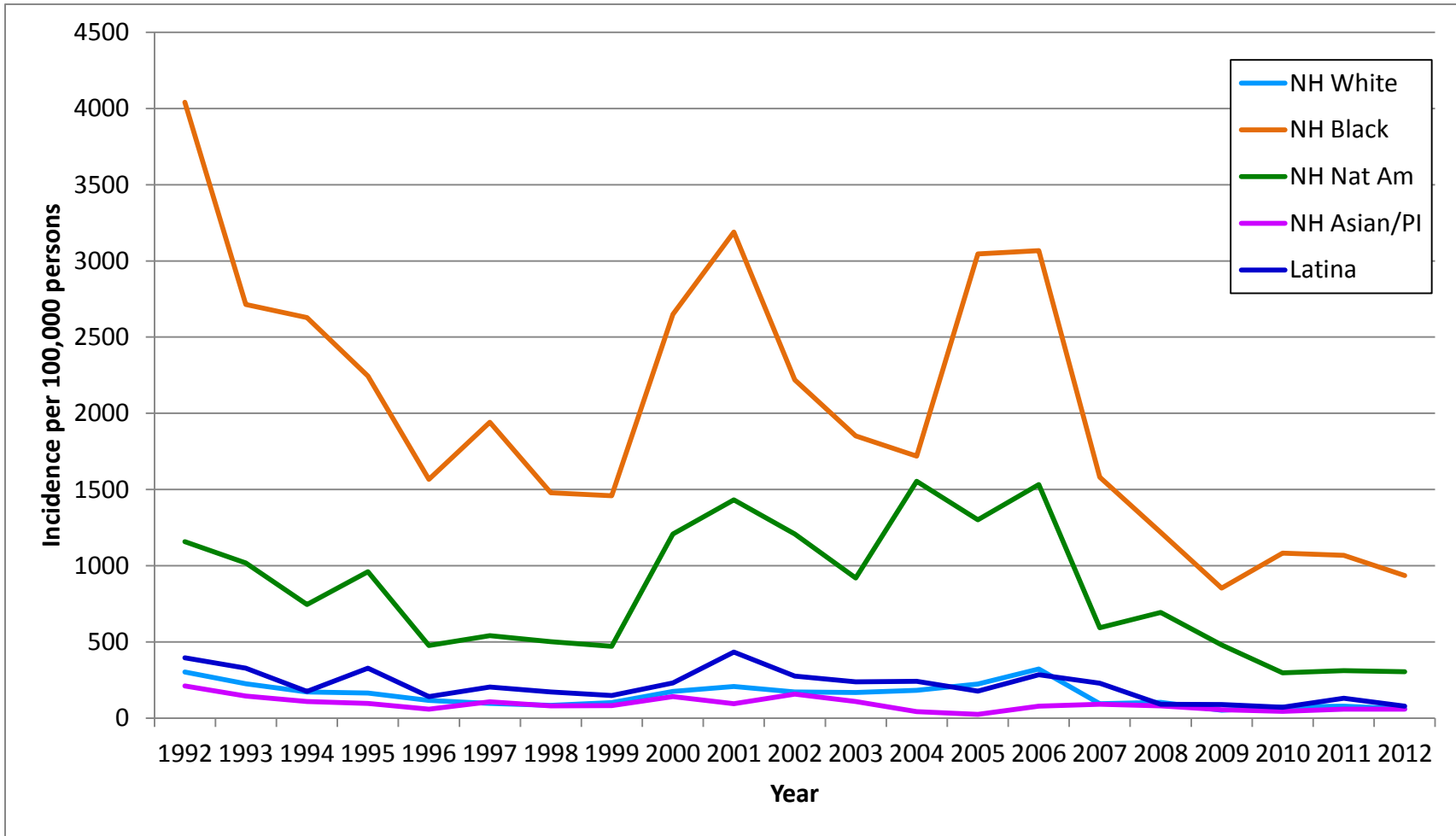
^ Washington State rates exclude King County.

Figure 6: Gonorrhea – Incidence among Women by Age
King County, WA, 1992-2012



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

**Figure 7: Gonorrhea – Incidence among Women Ages 15-29 by Race and Ethnicity
King County, WA, 1992-2012**



NH = Non-Hispanic

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/ethnicity-specific incidences.

Syphilis

King County has experienced an epidemic of syphilis among MSM since 1997. That epidemic grew substantially in 2010 and has continued unabated since that time. The total number of early syphilis (primary, secondary, and early latent) cases reported in King County decreased slightly from a historical high of 371 cases in 2011 to 340 cases in 2012 (Tables 9 and 12). The overall 2012 incidence of early syphilis among King County residents was 17 per 100,000 persons (Table 9).

Gender of sex partners and HIV status

Of all 2012 cases, 89% (304) occurred in MSM (Table 10, Figure 9). The incidence of early syphilis among MSM in 2012 was over 400 times greater (693 per 100,000) than that among heterosexual men (1.5 per 100,000) [Table 13].

HIV-positive MSM have been disproportionately affected by the epidemic of syphilis among MSM since it began in 1997. The estimated incidence of early syphilis among HIV-positive MSM was 3,248 per 100,000 men, compared to 268 per 100,000 among HIV-negative MSM (Figure 11).

Early syphilis incidence among heterosexuals remained very low in 2012, with only 17 of 340 cases occurring among heterosexual men (11 cases) and women (6 cases) [Tables 10 and 13]. In 2012, 55% of MSM early syphilis cases were known to be HIV positive, in contrast to 6% of heterosexual cases.

Syphilis diagnosis

The majority of early syphilis cases in King County seek medical care with symptomatic primary or secondary syphilis. In 2012, 65% of all syphilis cases in MSM had primary or secondary syphilis (Figure 8), and 59% sought medical care because of symptoms (Figure 12). Figure 12 displays the reason for visit among MSM early syphilis cases from 1998-2012, and demonstrates that the proportion of MSM with early syphilis who sought care because of symptoms has decreased slightly since 2010.

Figure 13 displays the reporting source for all cases of syphilis from 1997-2012. In 2007, HIV care providers and community-based organizations 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). Since being introduced as a category, HIV care providers have reported about a third of all cases each year (32% in 2012). The Public Health STD Clinic reported 108 (32%) early syphilis cases in 2012. Family planning clinics, community clinics, county jails, community-based organizations, and “other” public health clinics combined have consistently accounted for less than 15% of the annual reported early syphilis cases in King County since 1998, and in 2012 accounted for 12% of cases combined.

**Table 9: Early Syphilis – Reported Cases and Incidence
King County, WA, 2012**

	Cases	Percent	Incidence per 100,000 population
Sex			
Men	334	98%	34
Women	6	2%	0.6
Total cases	340		17

Table 10: Early Syphilis – Stage of Infection, HIV Status, and Reason for Testing by Sexual Orientation, King County, WA, 2012

	MSM* (N=304)		Heterosexual Men and Women (N=17)	
	Number	Percent	Number	Percent
Stage of Infection				
Primary	70	23%	3	18%
Secondary	130	43%	8	47%
Early latent	104	34%	6	35%
HIV Status				
Positive	166	55%	1	6%
Negative	104	34%	15	88%
Unknown	34	11%	1	6%
Reason for Visit				
Routine exam	81	27%	3	18%
Symptoms	179	59%	8	47%
Known exposure	37	12%	4	24%
None/other	7	2%	2	12%

*MSM: all men who acknowledged sex with a man. These data exclude 19 men for whom gender of sex partners is unknown

Table 11: Early Syphilis – Number of Reported Cases and Incidence among Men and Women, King County, WA, 1992-2012

Year	Women		Men		Total	
	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population	Cases	Incidence per 100,000 population
1992	26	3.3	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	17.7	166	9.2
2005	7	0.8	186	20.6	193	10.6
2006	2	0.2	183	19.9	185	10.0
2007	1	0.1	200	21.4	201	10.7
2008	4	0.4	203	21.5	207	10.9
2009	6	0.6	153	16.1	159	8.3
2010	4	0.4	292	30.4	296	15.3
2011	5	0.5	366	37.8	371	19.1
2012	6	0.6	334	34.3	340	17.4

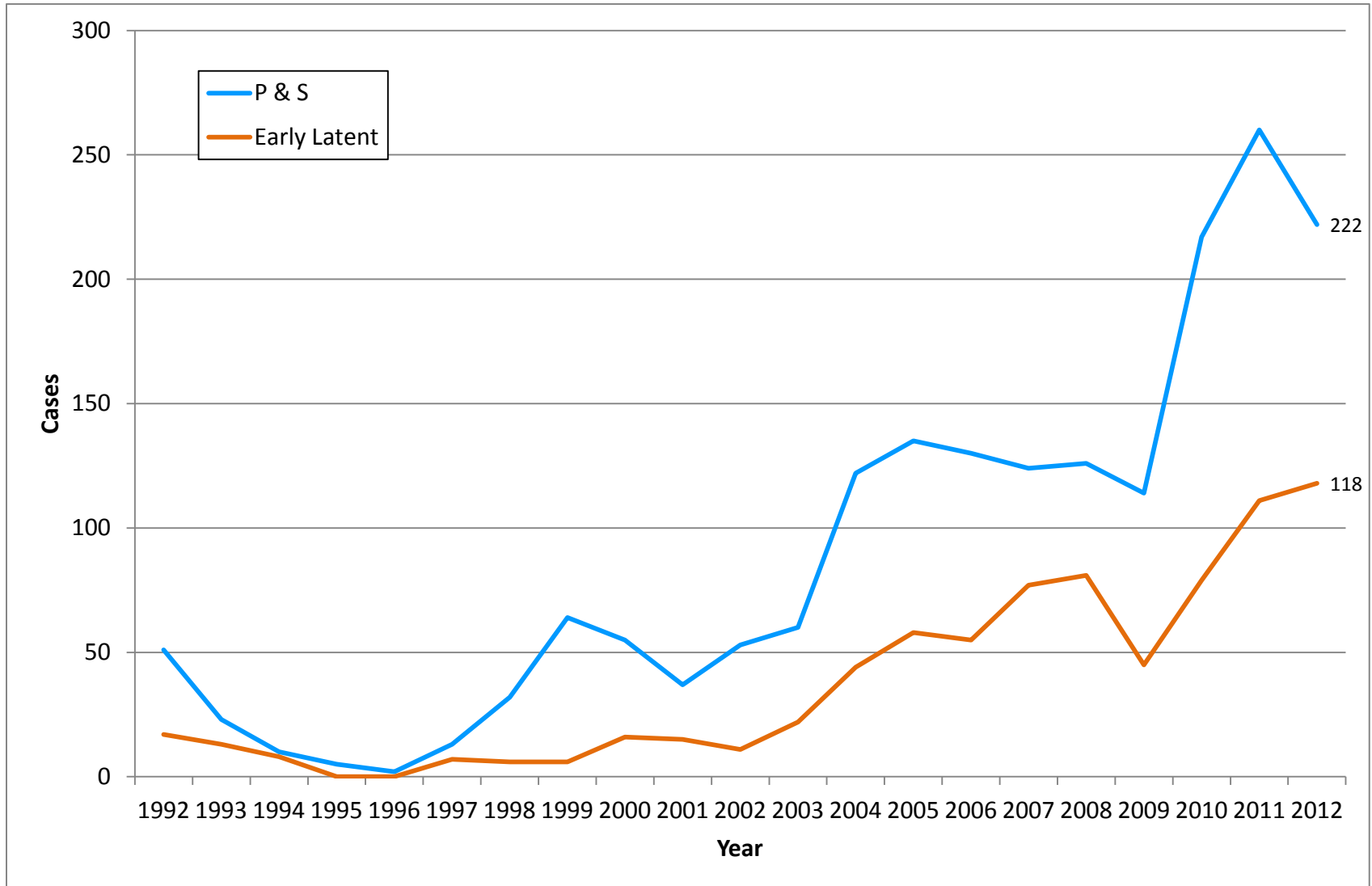
Table 12: Number of Reported Early Syphilis Cases and Incidence among MSM and Heterosexual Men, King County, WA, 1992-2012

Year	Men Who Have Sex with Men		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	349	19	2.8
2005	179	442	6	0.9
2006	174	415	8	1.1
2007	194	463	6	0.8
2008	200	472	3	0.4
2009	142	332	4	0.5
2010	268	620	9	1.2
2011	341	783	17	2.3
2012	304	693	11	1.5

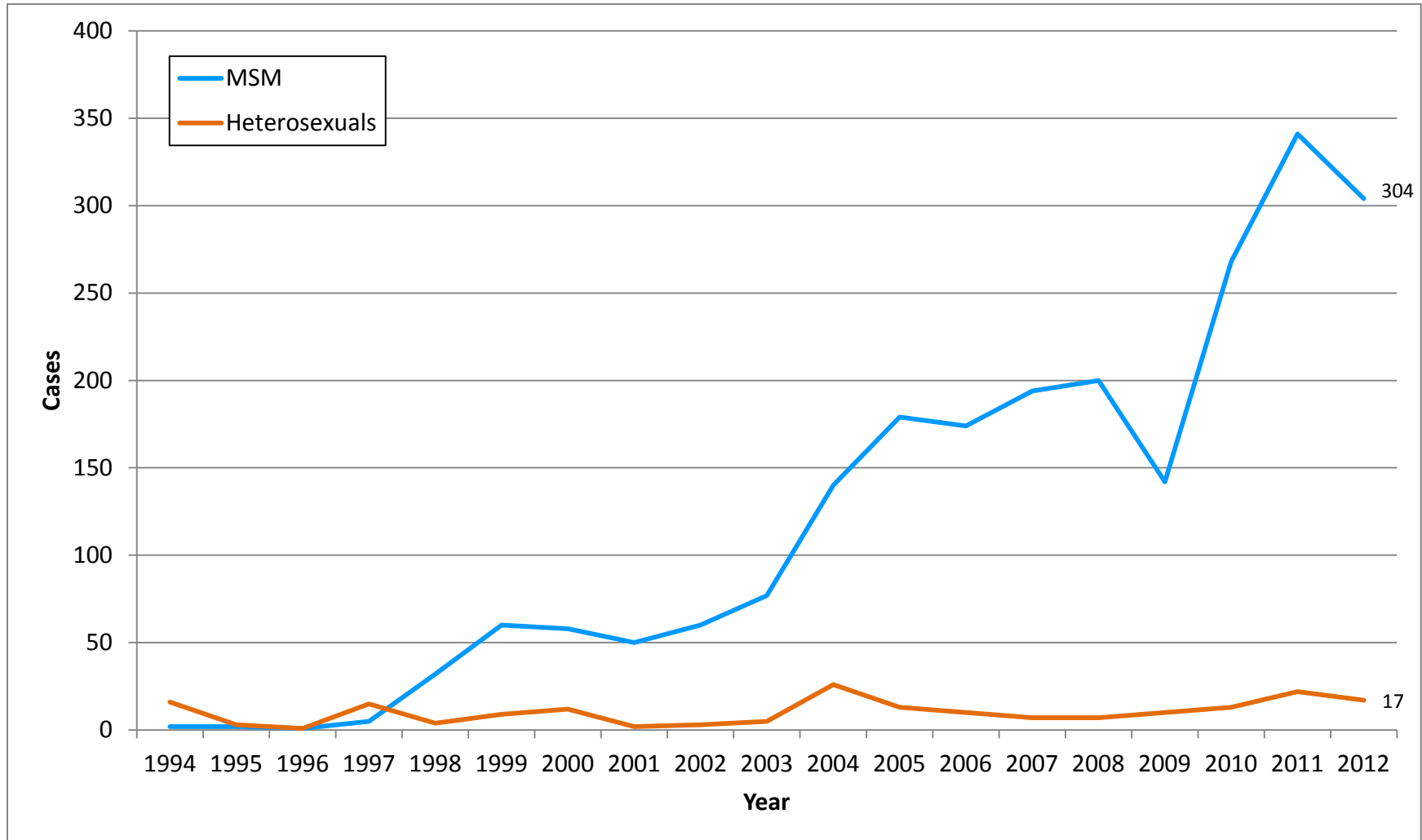
Men were missing sexual orientation data in the following years (numbers missing are included in parentheses): 1992 (42), 1993 (9), 1998 (2), 1999 (1), 2000 (1), 2002 (1), 2005 (1), 2006 (1), 2009 (7), 2010 (15), 2011 (8), 2012 (19).

* 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: Early Syphilis – Reported Cases of Primary and Secondary vs. Early Latent Syphilis
King County, WA, 1992-2012**

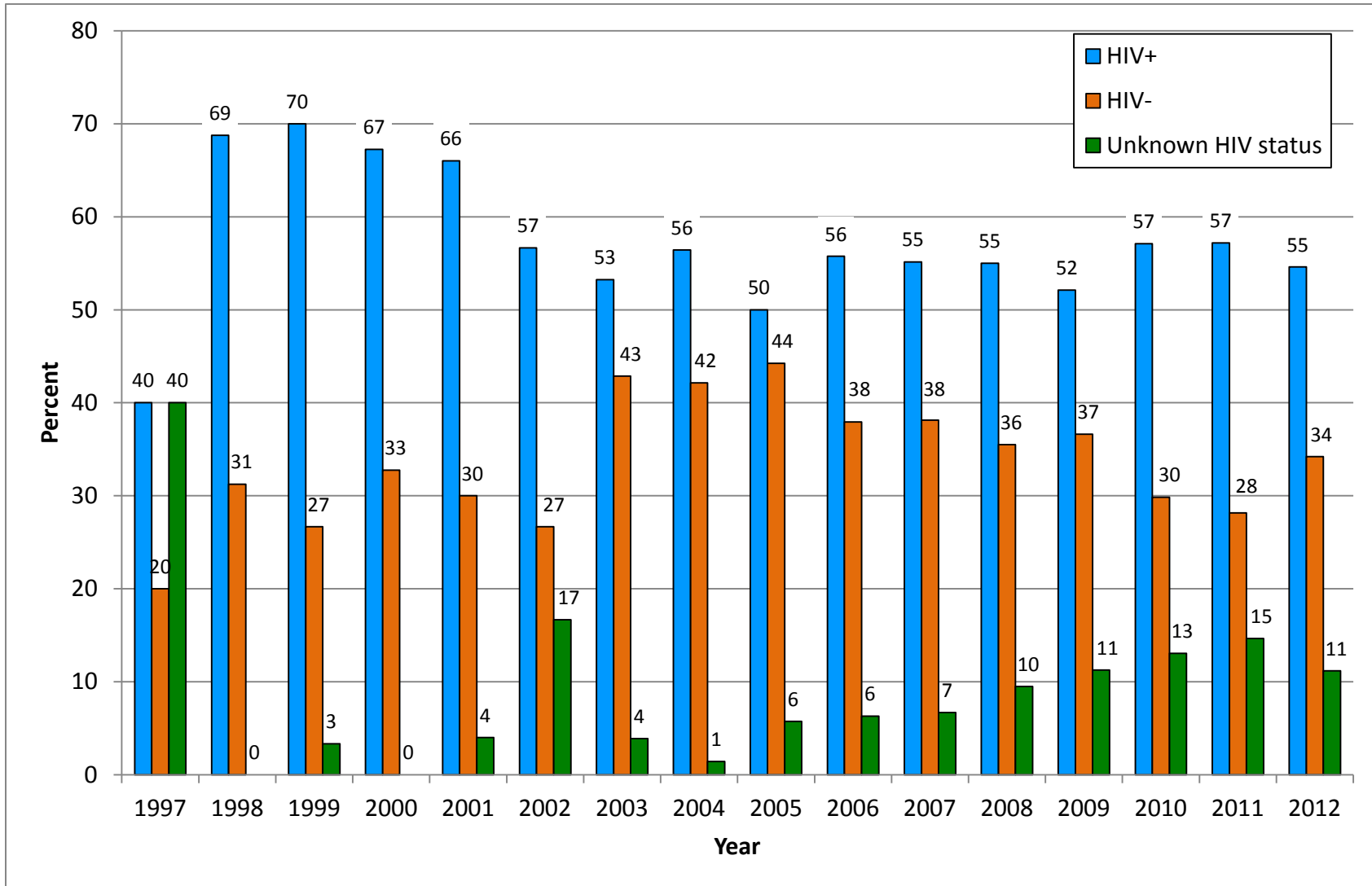


**Figure 9: Early Syphilis – Reported Cases by Sexual Orientation
King County, WA, 1994-2012**



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), 2002 (1), 2005 (1), 2006 (1), 2009 (7), 2010 (15), 2011 (8), 2012 (19).

**Figure 10: Early Syphilis – Percent of Reported Cases among MSM by HIV Status
King County, WA, 1997-2012**



**Figure 11: Early Syphilis – Incidence among MSM by HIV Status
King County, WA, 1997-2012**

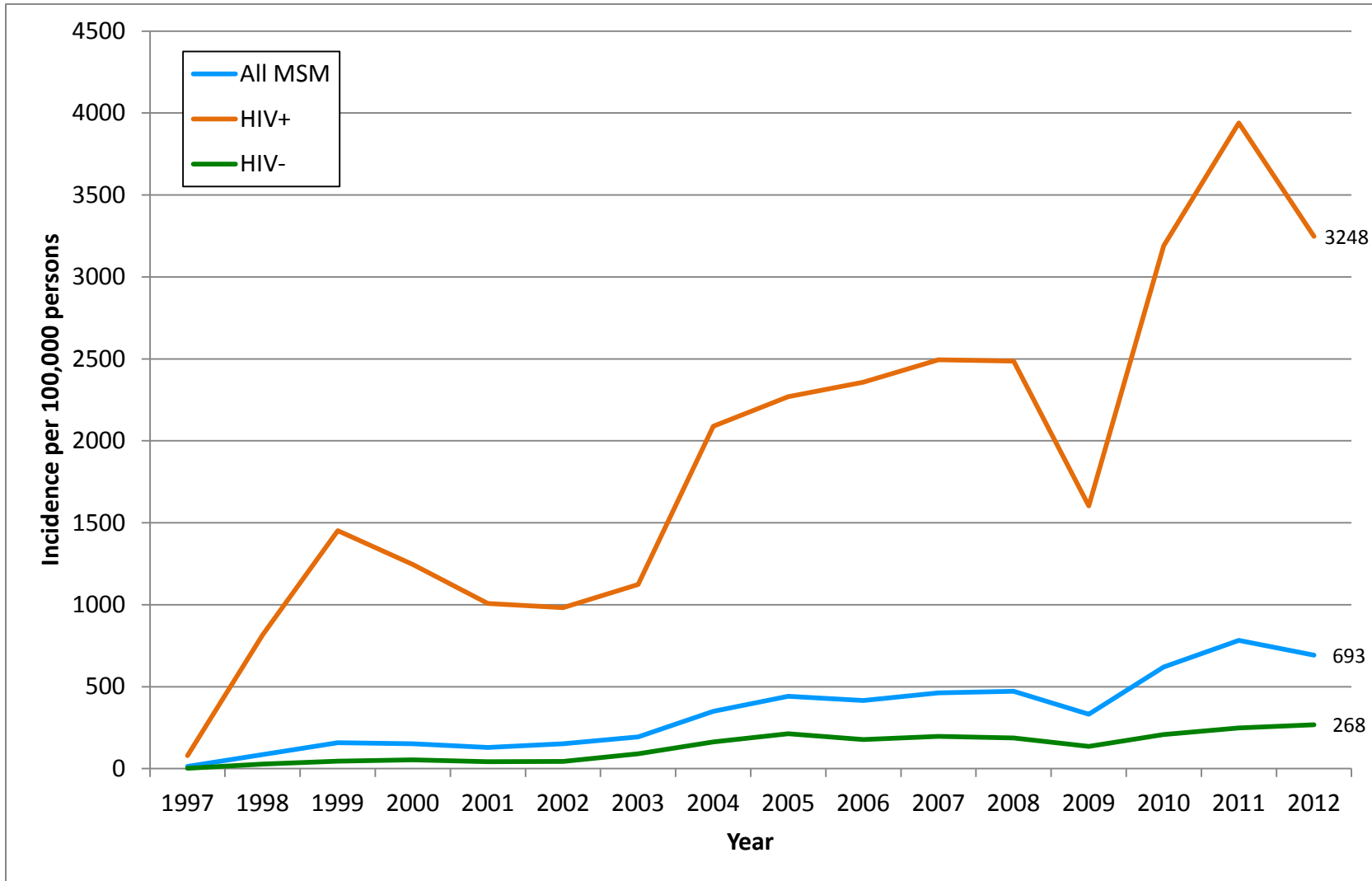
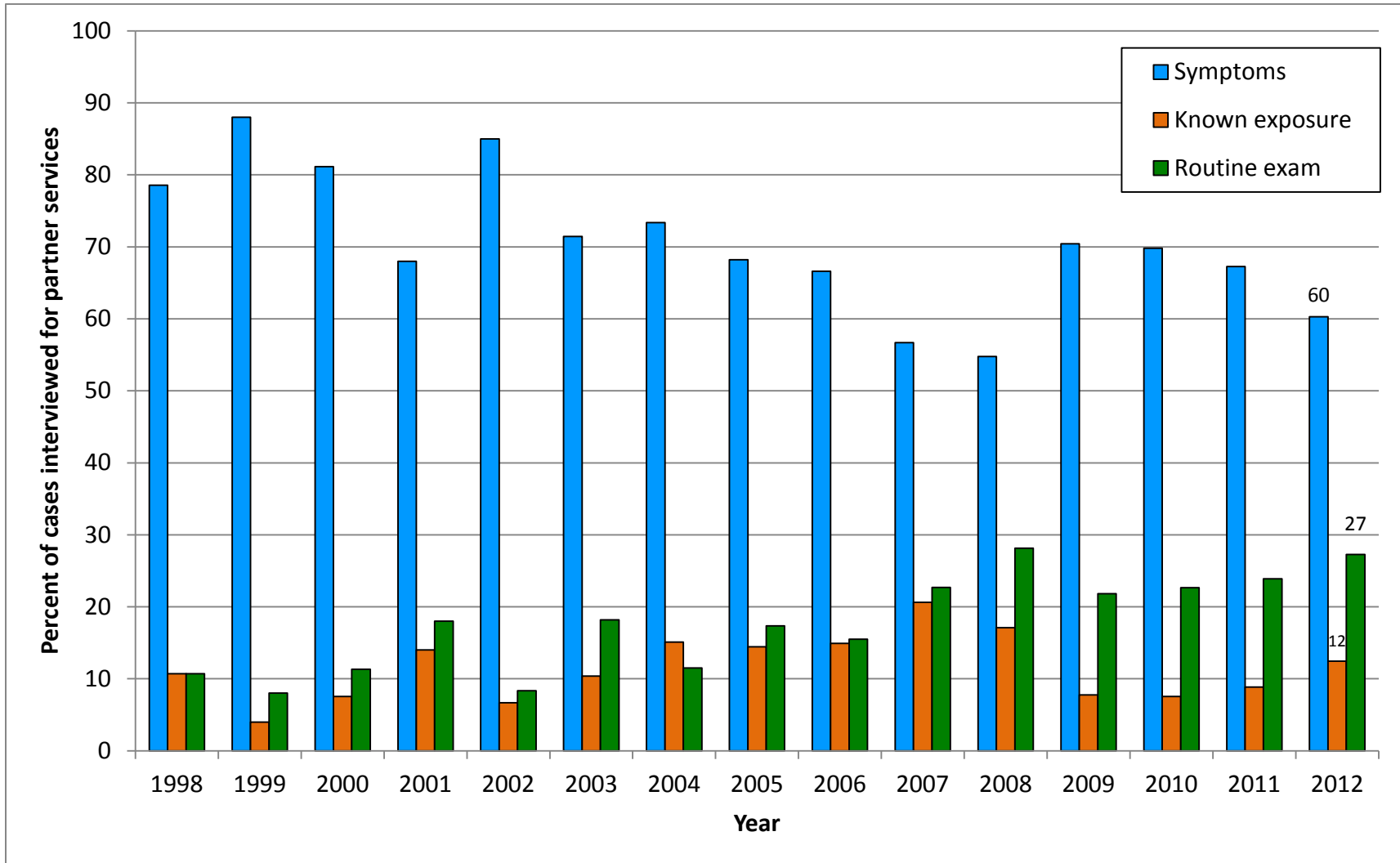
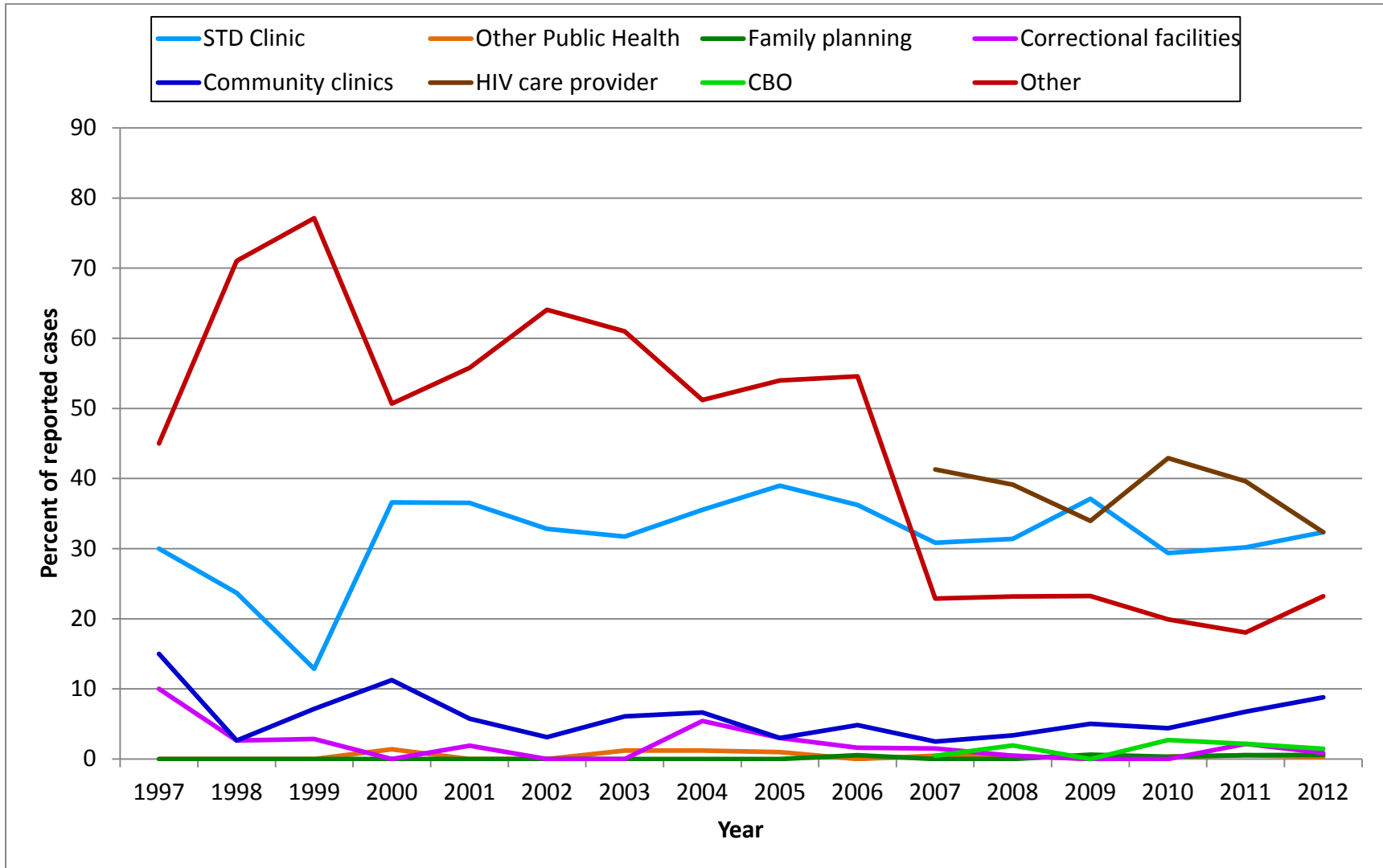


Figure 12: Early Syphilis – Reason for Visit among MSM
King County, WA, 1998-2012



Percentages exclude MSM not interviewed for partner services or who did not report a reason for visit.

**Figure 13: Early Syphilis – Reporting Providers
King County, WA, 1997-2012**



Public Health – Seattle & King County STD Clinic

In 2012, 7,263 patients made 11,262 visits to the Public Health STD Clinic. Of these, 10,548 visits were made by patients seeking STD Clinic services, while 714 visits were made by patients seeking an HIV test only (Table 13). 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 2012, MSM made up 45% of the visits among patients seeking STD Clinic services, while heterosexual men and women accounted for 29% and 24% of these visits, respectively. Among clients seeking only HIV testing, 44% of visits were made by MSM, 32% by heterosexual men, and 21% by women. Among patients seeking STD Clinic services, the number of visits made by MSM continued to increase in 2012, while the number of visits made by heterosexual men and women decreased significantly (Table 17, Figure 14). These changes reflect long-term trends in the population served by the clinic, with the number of MSM patients consistently rising. In 2012, the clinic provided services to 2850 different MSM during 5113 visits, more than in any year in the clinic's history (Tables 17 & 18).

Tables 14-16 display the race/ethnicity (categories include Latinos as a separate race group) and age distribution for STD Clinic patients in 2012. Of note, 19% of all patients seen in the clinic, including 26% of heterosexual men and women receiving care in the clinic, were black. Only 6% of all King County residents are black. Eighty-three percent of patients in 2012 reported that they were uninsured.

The Public Health STD Clinic diagnosed a substantial proportion of all reportable STDs diagnosed in King County in 2012. This included 32% (108 of 340) of all cases of early syphilis, 33% (511 of 1560) of all cases of gonorrhea, 22% (63 of 289) of all cases of HIV, and 10% (697 of 6891) of all cases of chlamydial infection. As in past years, the Public Health STD Clinic diagnosed more cases of HIV in 2012 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 2012 (Figure 16), 565 total cases of gonorrhea were diagnosed in the Public Health STD Clinic, an increase from 505 diagnoses in 2011. This increase was observed entirely among MSM; by contrast, diagnoses among heterosexual men and women decreased slightly (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) for extragenital gonorrhea and chlamydia screening in November 2010. In order to examine trends in gonorrhea diagnoses among MSM not influenced by these changes in screening practices, Figure 17 displays urethral gonorrhea diagnoses among men experiencing symptoms. As with gonorrhea diagnoses overall, diagnoses of symptomatic urethral gonorrhea increased among MSM and decreased among heterosexual men from 2011 to 2012.

Chlamydial infection

In 2012, the STD Clinic diagnosed 708 cases of chlamydial infection (Figure 19), a small increase from 2011 (678 cases). Chlamydial diagnoses decreased among heterosexual men and women, while diagnoses among MSM increased from 345 to 460. As noted above, routine screening with NAATs for rectal and pharyngeal chlamydial infection was implemented in late 2010 and likely contributed to the increase in the overall number of chlamydial diagnoses occurring in the clinic. The number of MSM with symptomatic chlamydial urethritis, which is not affected by changes in screening practices, has remained relatively stable since 2003 (Figure 20).

Syphilis

There were 109 early syphilis diagnoses in 2012 among individuals for whom the gender of sex partners could be determined in the STD Clinic (Figure 22); 95% 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 (1993-2012) and through other HIV testing performed by HIV/STD program staff (2000-2012). Clinic staff diagnosed a total of 65 cases of HIV infection in 2012.

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 61 in 2012 (Figure 24). Trichomoniasis prevalence among tested women was stable between 2010 and 2012 after falling from 2008 to 2010. (Trichomoniasis prevalence is calculated as the total number of diagnoses divided by the number of women tested by culture and/or wet mount.) The number of women

diagnosed with bacterial vaginosis also fell from 679 in 2011 to 597 in 2012, while the prevalence of bacterial vaginosis among women in the clinic was similar to the prevalence observed in 2011 (40%, 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.) These decreases in diagnoses of trichomoniasis and bacterial vaginosis despite stable prevalence appear to result from decreases in the number of women tested for these conditions, which mirrors a trend towards fewer visits to the clinic by women.

Genital Herpes

The number of first clinical episodes of genital herpes diagnosed in the clinic decreased from 137 in 2011 to 104 in 2012 (Figure 26) while the number of visits during which patients were evaluated for recurrent genital herpes has remained relatively stable since 2008 (135 in 2008 compared to 140 in 2012, Figure 27). For the first time since 2000, the greatest proportion of initial herpes diagnoses occurred among women (38%), while heterosexual men continued to account for the greatest proportion of recurrent herpes diagnoses occurred in heterosexual men (42%). This change is likely a reflection of the continued decline in clinic visits by heterosexual men. Among 1,208 asymptomatic patients tested for HSV-2 in 2012, there were 18 HSV-2 diagnoses among MSM, 43 among heterosexual men, and 37 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 male patients were offered free serologic testing for HSV-2.

Table 13: Number of Visits and Patients, PHSKC Clinic, 2012

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

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	2564	3053	4797	134	10548
Patients (unduplicated visits)	1772	2294	2736	115	6917

(B) Clients seen for HIV tests only

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	149	228	316	21	714
Patients (unduplicated visits)	131	187	277	18	613

(C) Clients seen for all services

	Women	Heterosexual Men	MSM*	Men with Unknown Sexual Orientation	Total
Visits	2713	3281	5113	155	11262
Patients (unduplicated visits)	1856	2426	2850	131	7263

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

Table 14: Age and Race of Patients, PHSKC STD Clinic, 2012

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	921	(49.6)	1292	(53.3)	1846	(64.8)	4133	(56.9)
Black	467	(25.2)	653	(26.9)	264	(9.3)	1406	(19.4)
Native American Asian & Pacific Islander	28	(1.5)	27	(1.1)	27	(0.9)	85	(1.2)
Latino	174	(9.4)	156	(6.4)	228	(8.0)	569	(7.8)
Multiple Race	125	(6.7)	172	(7.1)	339	(11.9)	647	(8.9)
Unknown	93	(5.0)	56	(2.3)	75	(2.6)	226	(3.1)
	48	(2.6)	70	(2.9)	71	(2.5)	197	(2.7)
Age								
10-14 years	2	(0.1)	1	(0.0)	0	(0.0)	5	(0.1)
15-19 years	96	(5.2)	65	(2.7)	37	(1.3)	203	(2.8)
20-24 years	450	(24.2)	332	(13.7)	420	(14.7)	1221	(16.8)
25-29 years	448	(24.1)	545	(22.5)	596	(20.9)	1620	(22.3)
30-34 years	315	(17.0)	415	(17.1)	511	(17.9)	1261	(17.4)
35-44 years	294	(15.8)	568	(23.4)	647	(22.7)	1535	(21.1)
45-54 years	166	(8.9)	311	(12.8)	443	(15.5)	937	(12.9)
>=55 years	84	(4.5)	189	(7.8)	196	(6.9)	480	(6.6)
Unknown	1	(0.1)	0	(0.0)	0	(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

[^] 131 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 15: Age and Race of Patients Seen for Services Other than HIV Tests Only, PHSKC STD Clinic, 2012

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	874	(49.3)	1231	(53.7)	1772	(64.8)	3941	(57.0)
Black	443	(25.0)	620	(27.0)	254	(9.3)	1337	(19.3)
Native American Asian & Pacific Islander	26	(1.5)	26	(1.1)	27	(1.0)	82	(1.2)
Latino	167	(9.4)	141	(6.1)	215	(7.9)	532	(7.7)
Multiple Race	123	(6.9)	161	(7.0)	326	(11.9)	619	(8.9)
Unknown	93	(5.2)	52	(2.3)	74	(2.7)	221	(3.2)
	46	(2.6)	63	(2.7)	68	(2.5)	185	(2.7)
Age								
10-14 years	2	(0.1)	0	(0.0)	0	(0.0)	2	(0.0)
15-19 years	93	(5.2)	47	(2.0)	0	(0.0)	177	(2.6)
20-24 years	441	(24.9)	318	(13.9)	35	(1.3)	1183	(17.1)
25-29 years	429	(24.2)	531	(23.1)	406	(14.8)	1576	(22.8)
30-34 years	303	(17.1)	403	(17.6)	585	(21.4)	1211	(17.5)
35-44 years	275	(15.5)	531	(23.1)	487	(17.8)	1443	(20.9)
45-54 years	151	(8.5)	289	(12.6)	614	(22.4)	877	(12.7)
>=55 years	77	(4.3)	175	(7.6)	423	(15.5)	447	(6.5)
Unknown	1	(0.1)	0	(0.0)	186	(6.8)	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

[^] 115 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 of Patients Seen for HIV Tests Only, PHSKC STD Clinic, 2012

	Women		Heterosexual Men [^]		MSM* [^]		Total [^]	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Race								
White	62	(47.3)	81	(43.3)	167	(60.3)	322	(52.5)
Black	40	(30.5)	51	(27.3)	25	(9.0)	118	(19.2)
Native American Asian & Pacific Islander	2	(1.5)	1	(0.5)	0	(0.0)	3	(0.5)
Latino	14	(10.7)	16	(8.6)	27	(9.7)	59	(9.6)
Multiple Race	5	(3.8)	24	(12.8)	40	(14.4)	71	(11.6)
Unknown	4	(3.1)	5	(2.7)	11	(4.0)	20	(3.3)
	4	(3.1)	9	(4.8)	7	(2.5)	20	(3.3)
Age								
10-14 years	0	(0.0)	1	(0.5)	0	(0.0)	3	(0.5)
15-19 years	5	(3.8)	19	(10.2)	6	(2.2)	33	(5.4)
20-24 years	18	(13.7)	19	(10.2)	40	(14.4)	79	(12.9)
25-29 years	30	(22.9)	24	(12.8)	47	(17.0)	101	(16.5)
30-34 years	22	(16.8)	19	(10.2)	58	(20.9)	101	(16.5)
35-44 years	30	(22.9)	49	(26.2)	63	(22.7)	145	(23.7)
45-54 years	19	(14.5)	35	(18.7)	41	(14.8)	98	(16.0)
>=55 years	7	(5.3)	21	(11.2)	22	(7.9)	53	(8.6)
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

[^] 18 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: Number of Visits, PHSKC STD Clinic, 1993-2012

	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
2012	2564	3053	4797	134	714	11262

* 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.

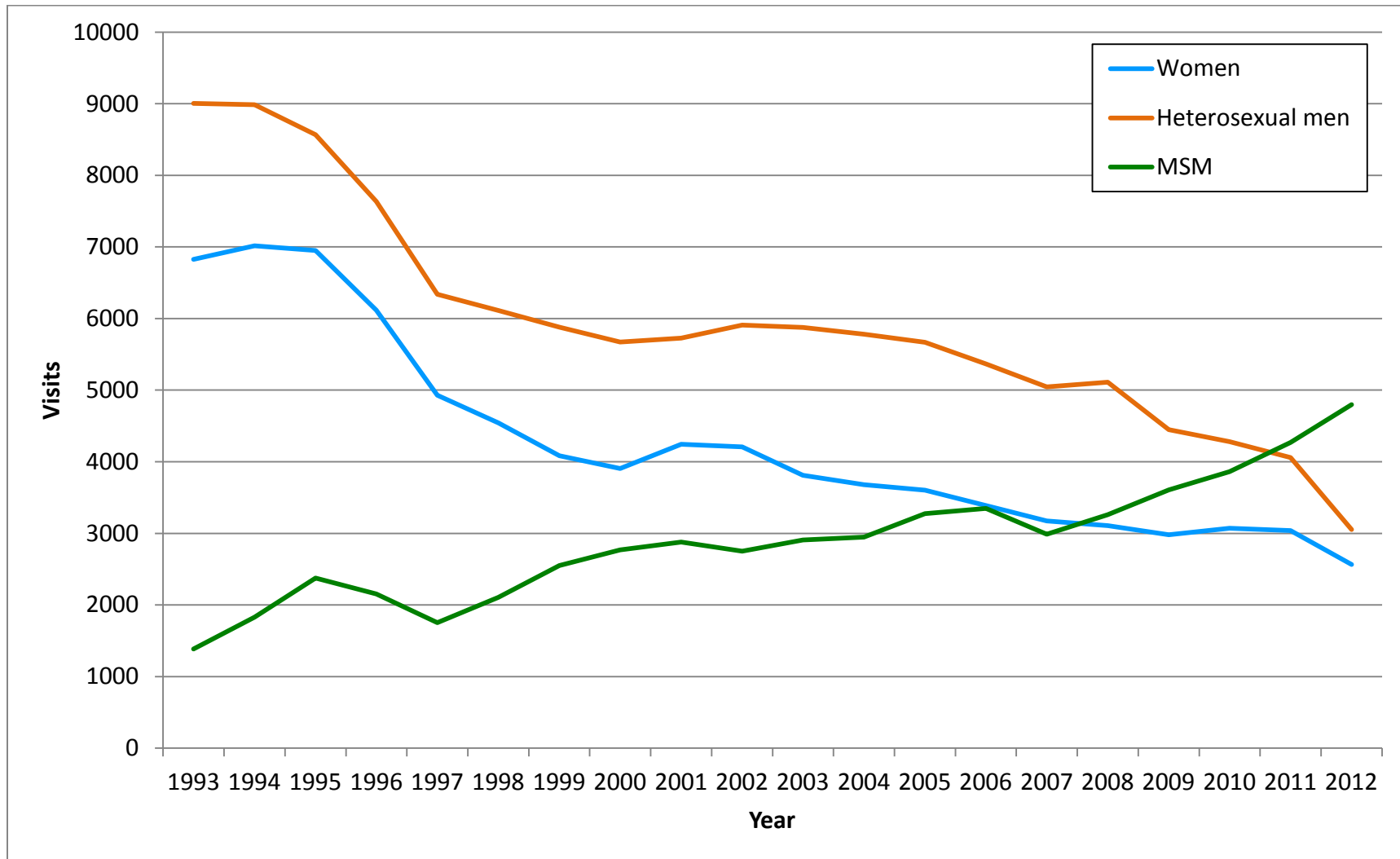
Table 18: Number of Patients (Unduplicated Visits), PHSKC STD Clinic, 1993-2012

	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
2012	1772	2294	2736	115	613	7530

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

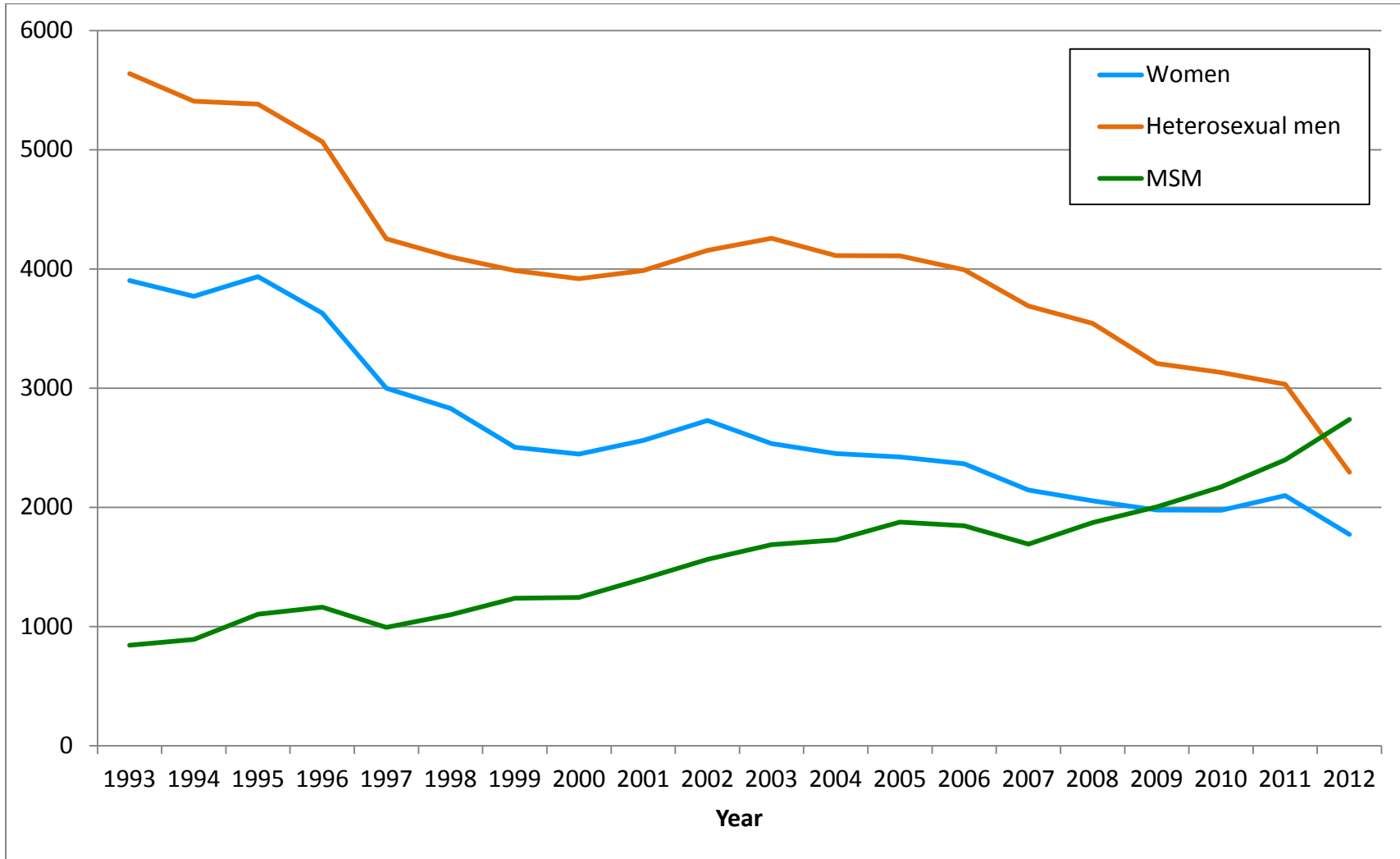
** PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

Figure 14: Number of Visits, PHSKC STD Clinics, 1993-2012



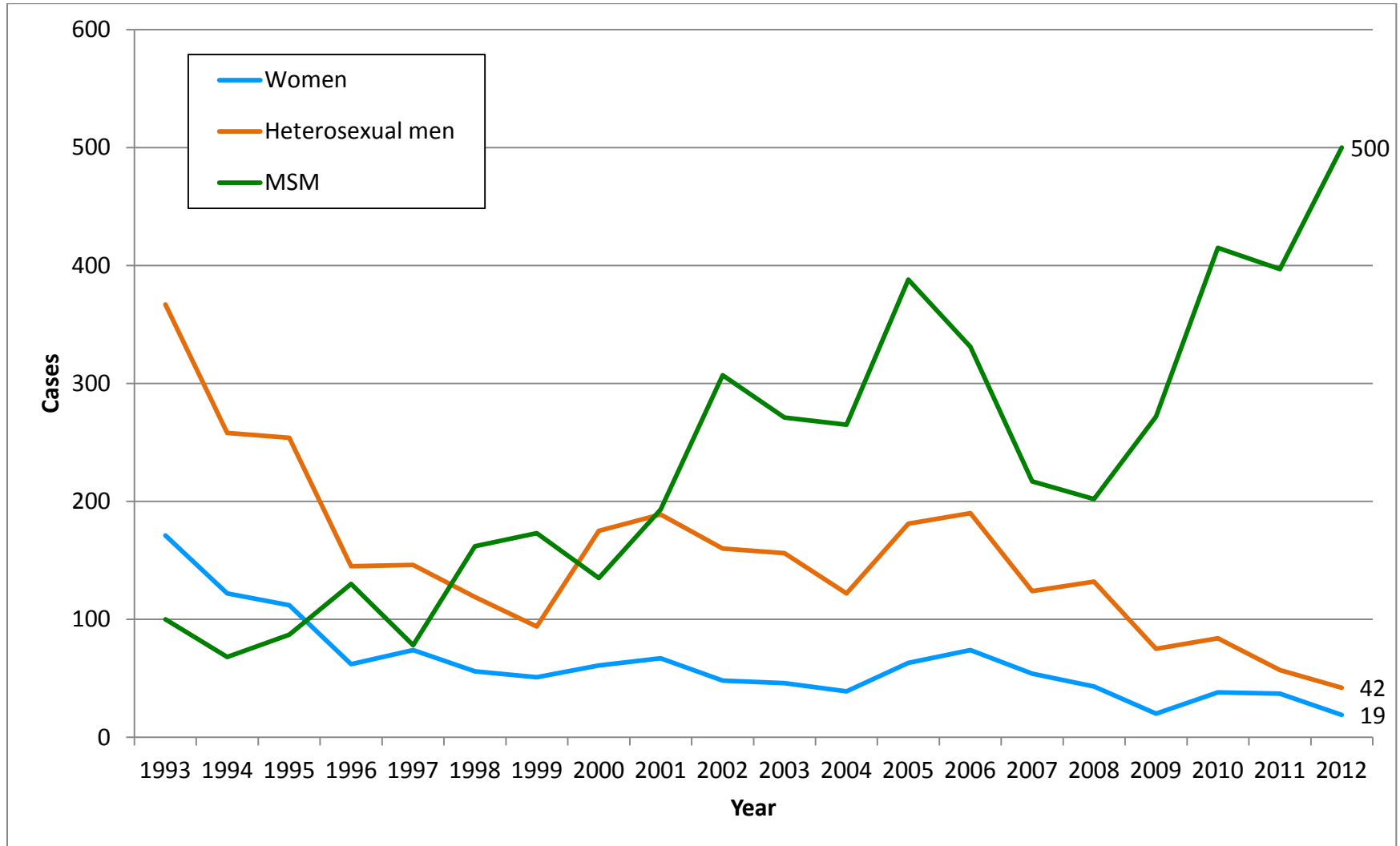
This figure excludes men with missing sexual orientation data and HIV testing visits provided through the HIV/AIDS Program. PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

Figure 15: Number of Patients (Unduplicated Visits), PHSKC STD Clinics, 1993-2012



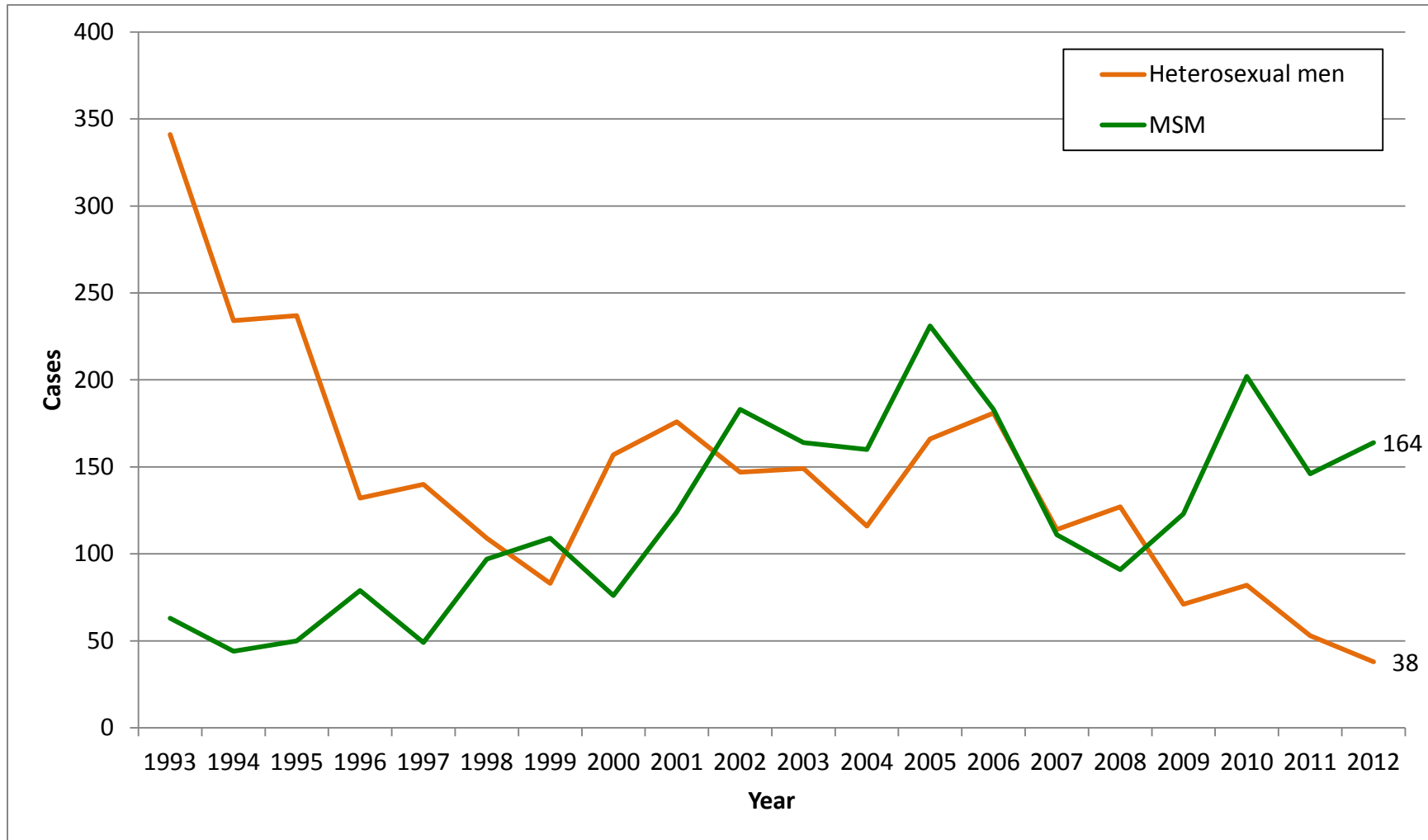
This figure excludes men with missing sexual orientation data and HIV testing visits provided through the HIV/AIDS Program. PHSKC's satellite Broadway STD Clinic was in operation from 1993-1998.

Figure 16: Gonorrhea – Number of Diagnoses by Sex and Sexual Orientation, PHSKC STD Clinic, 1993-2012



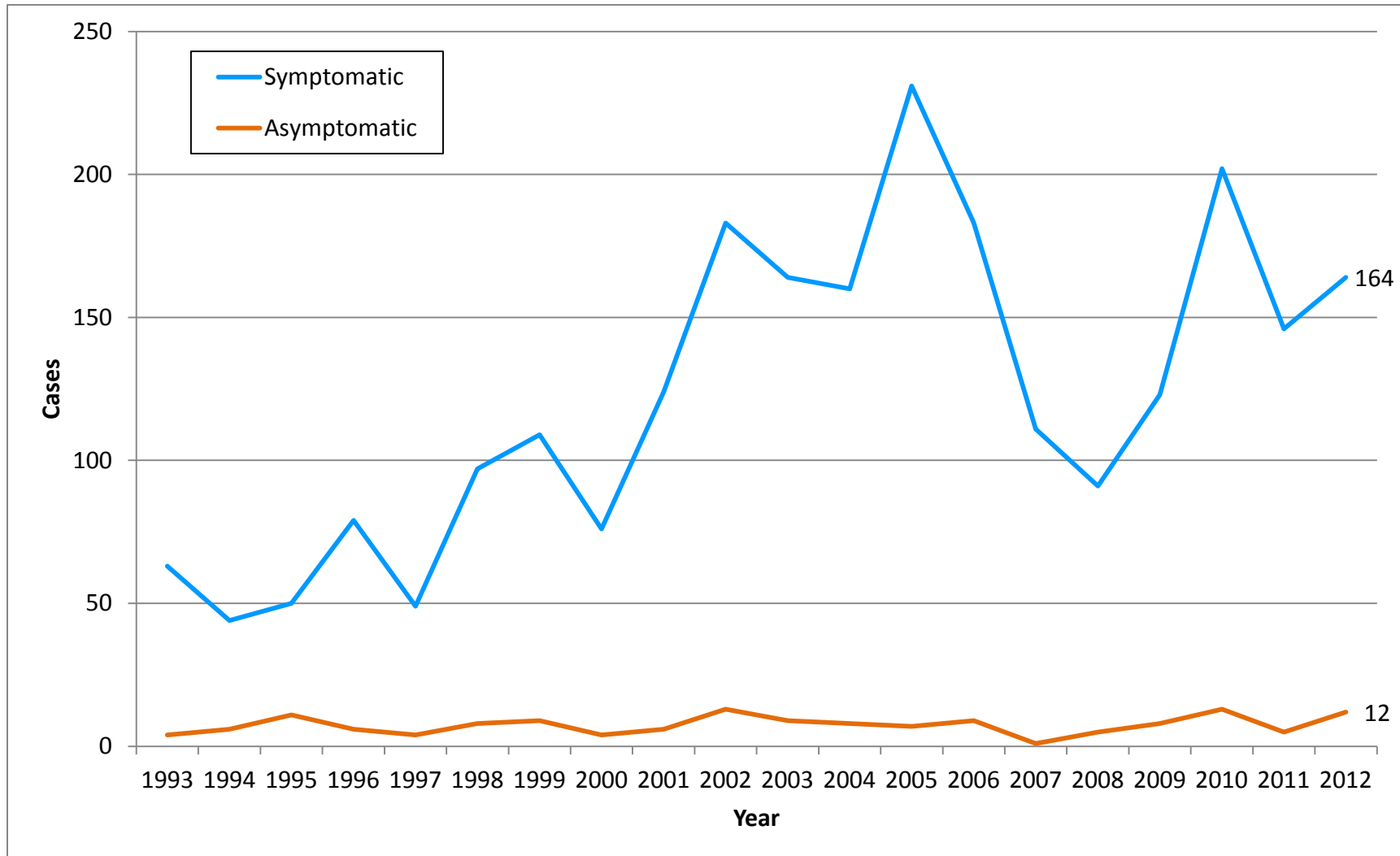
These data exclude 107 cases of gonorrhea among men who were missing sexual orientation information across all years.

**Figure 17: Gonorrhea – Symptomatic Gonococcal Urethritis among MSM and Heterosexual Men
PHSKC STD Clinic, 1993-2012**



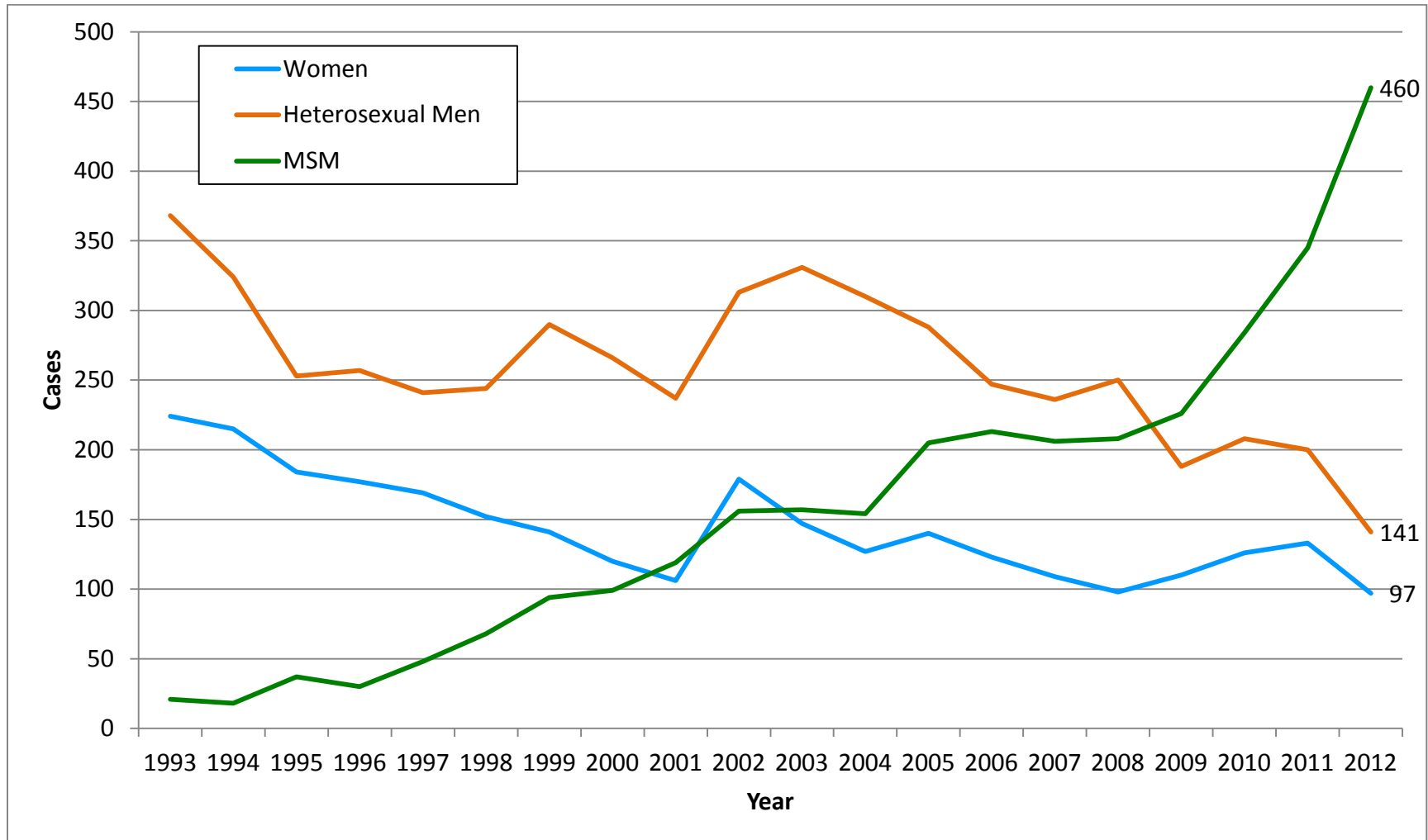
These data exclude 58 cases of symptomatic urethral gonorrhea among men who were missing sexual orientation information across all years. Symptoms include urethral discharge and/or dysuria.

**Figure 18: Gonorrhea – Symptomatic and Asymptomatic Gonococcal Urethritis among MSM
PHSKC STD Clinic, 1993-2012**



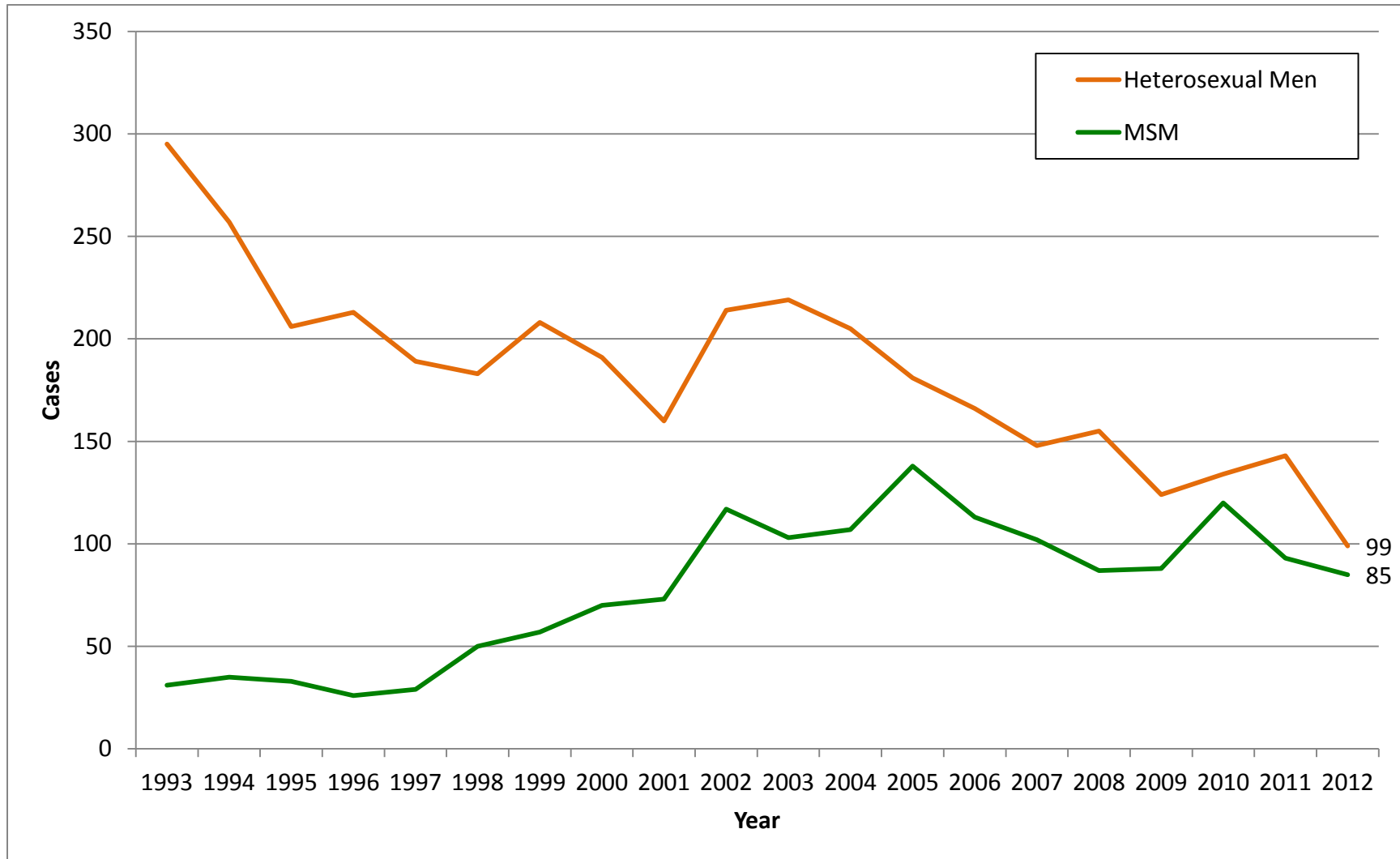
Symptoms include urethral discharge and/or dysuria

**Figure 19: Chlamydial Infection – Number of Diagnoses by Sex and Sexual Orientation
PHSKC STD Clinic, 1993-2012**



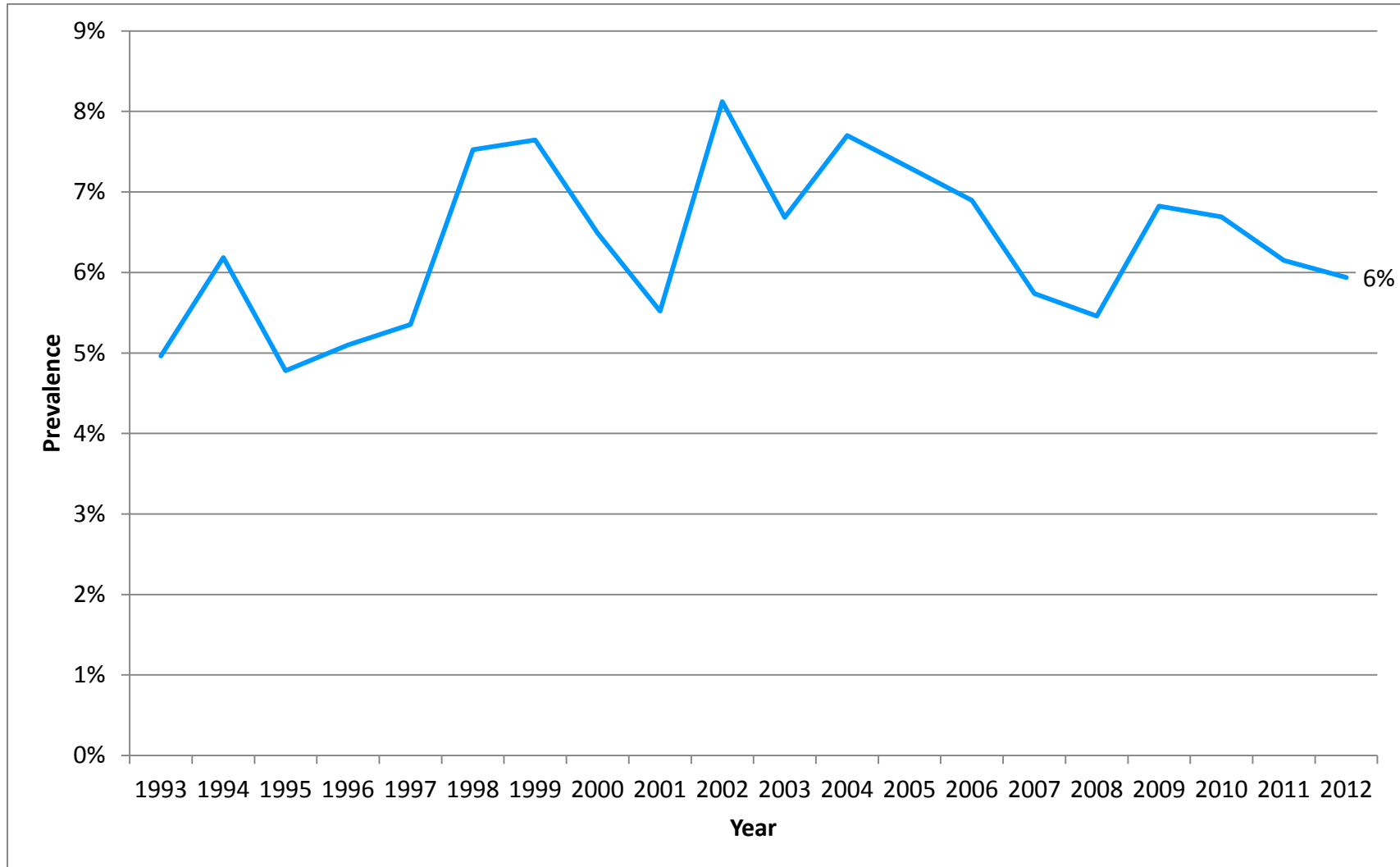
These data exclude 205 cases of chlamydial infection among men who were missing sexual orientation information across all years.

Figure 20: Chlamydial Infection – Symptomatic Chlamydial Urethritis among MSM and Heterosexual Men, PHSKC STD Clinic, 1993-2012



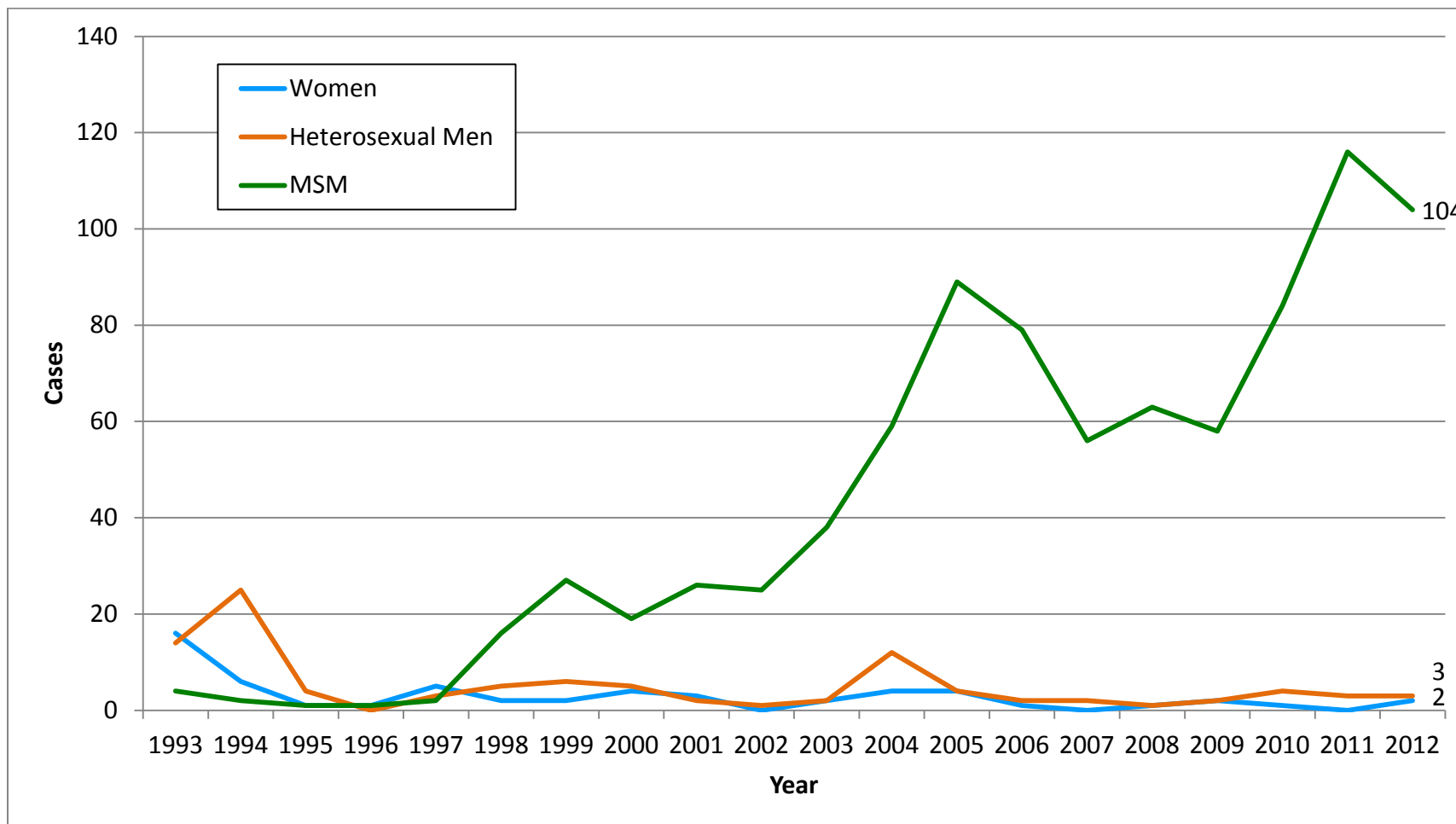
Symptoms include urethral discharge and/or dysuria.

**Figure 21: Chlamydial Infection – Prevalence among Asymptomatic Women Ages 15-29
PHSKC STD Clinic, 1993-2012**



Chlamydia prevalence is defined as the number of cases divided by the total number of women tested.

**Figure 22: Early Syphilis – Number of Diagnoses by Sex and Sexual Orientation
PHSKC STD Clinic, 1993-2012**

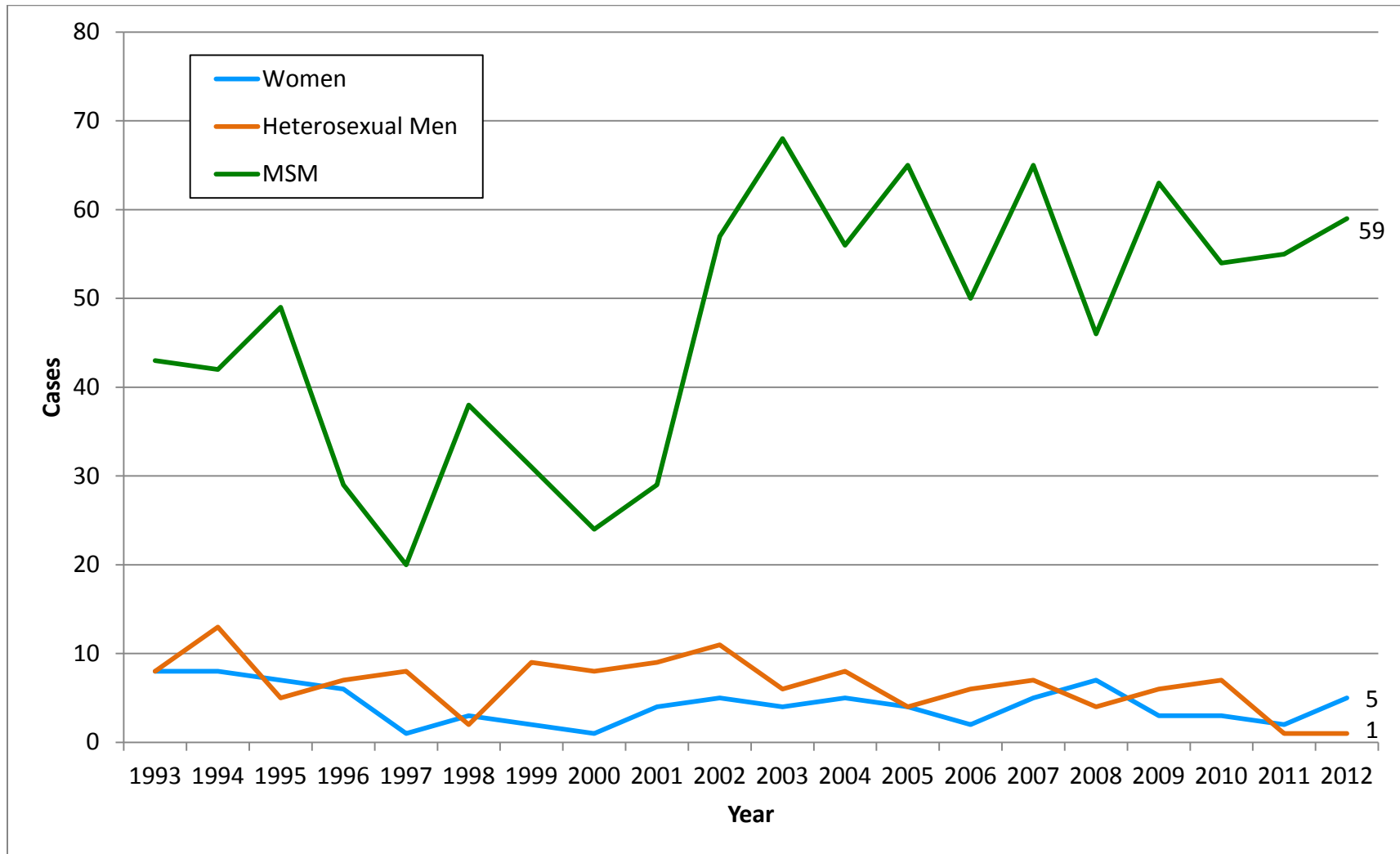


Includes primary, secondary, and early latent syphilis.

These data exclude 49 cases of early syphilis among men who were missing information regarding gender of sex partners.

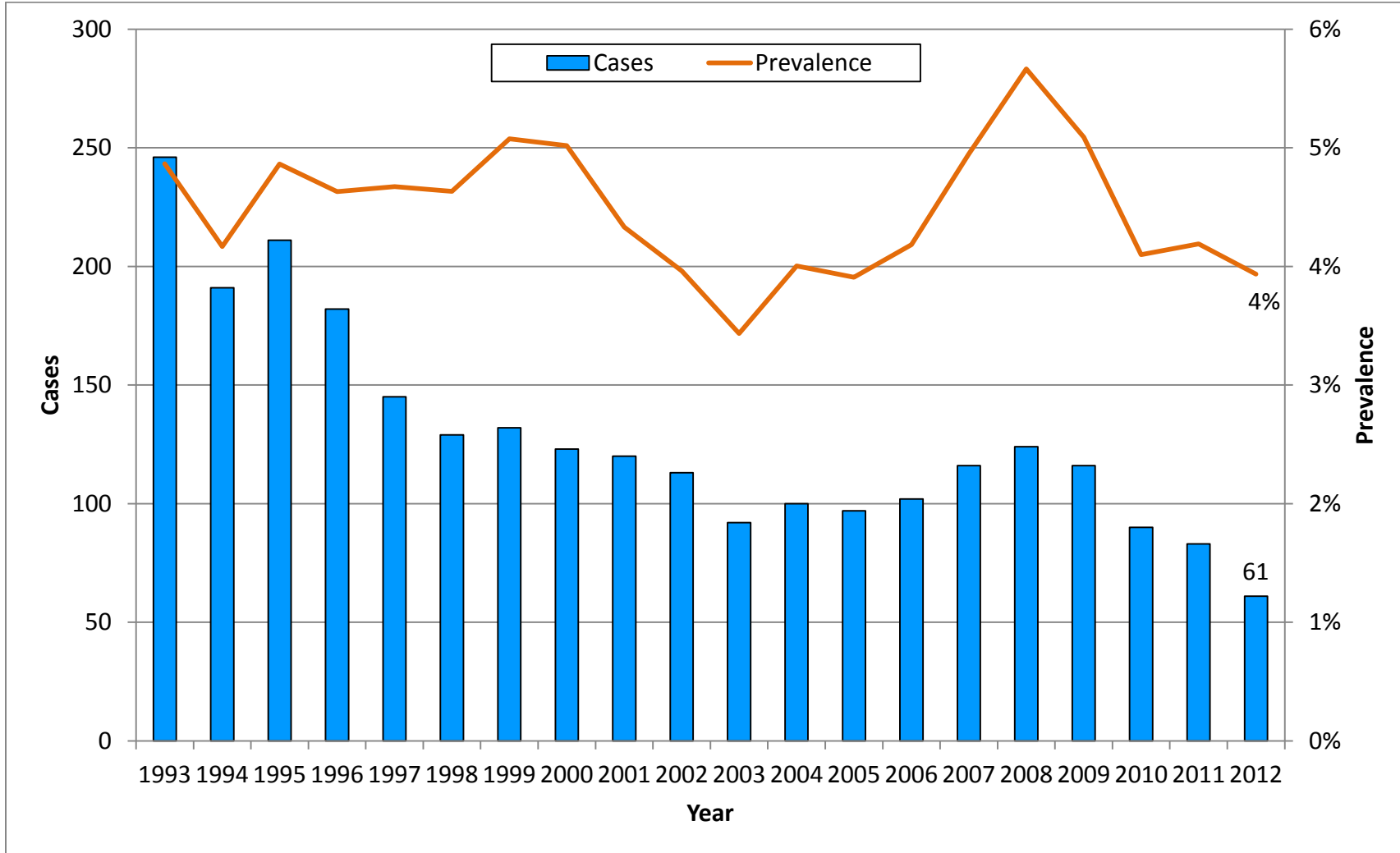
Some cases may have been diagnosed by outside providers and referred to the PHSKC STD Clinic for follow-up.

Figure 23: HIV Infection – Diagnoses by Sex and Sexual Orientation, PHSKC STD Clinic, 1993-2012



These data exclude 8 cases of HIV infection among men who were missing sexual orientation information across all years. Includes tests performed through the HIV/AIDS Program, which joined the PHSKC STD Clinic in 2000. As of September 2003, all antibody-negative MSM received an HIV RNA test.

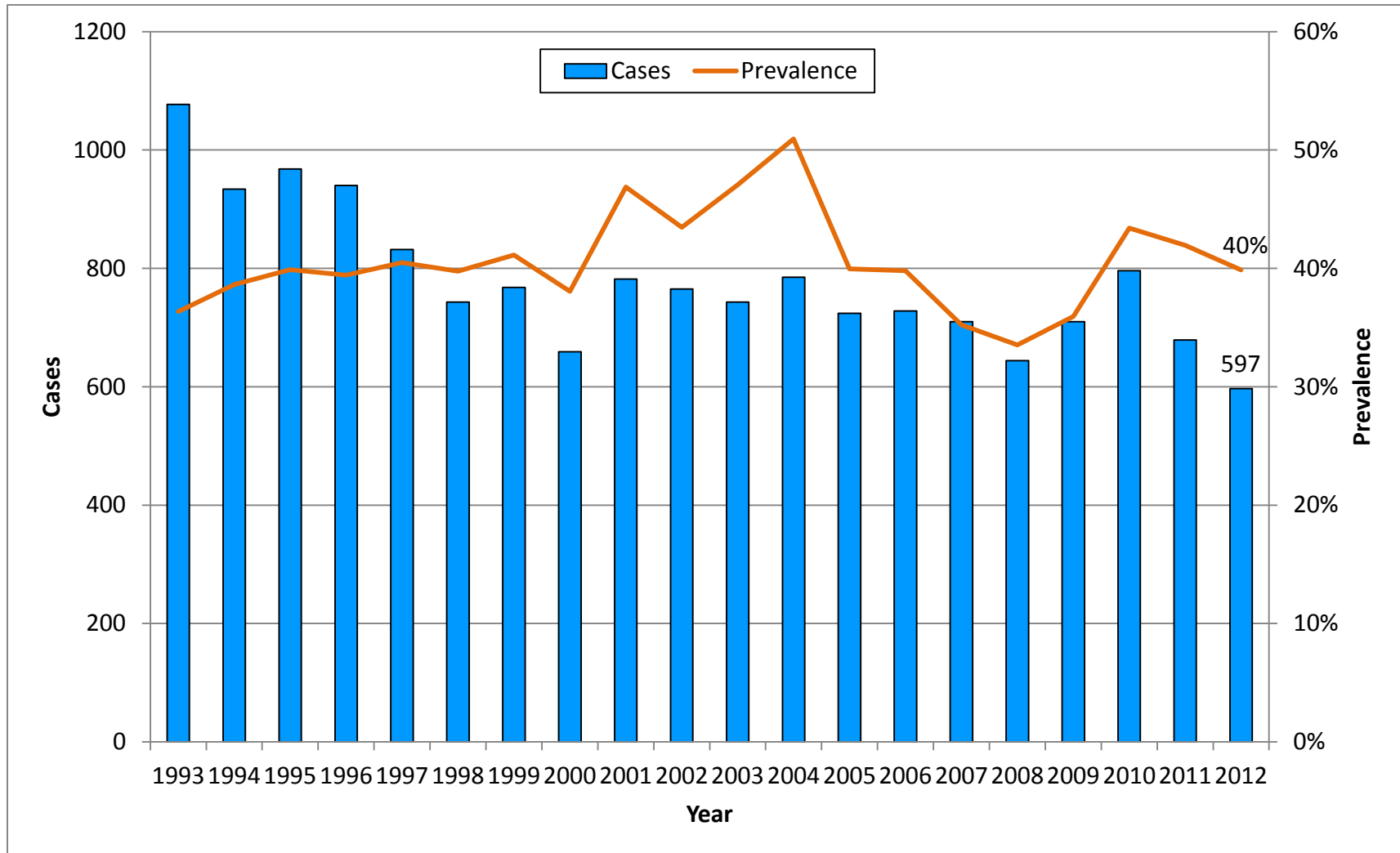
**Figure 24: Trichomoniasis – Number of Diagnoses and Prevalence among Female Patients
PHSKC STD Clinic, 1993-2012**



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

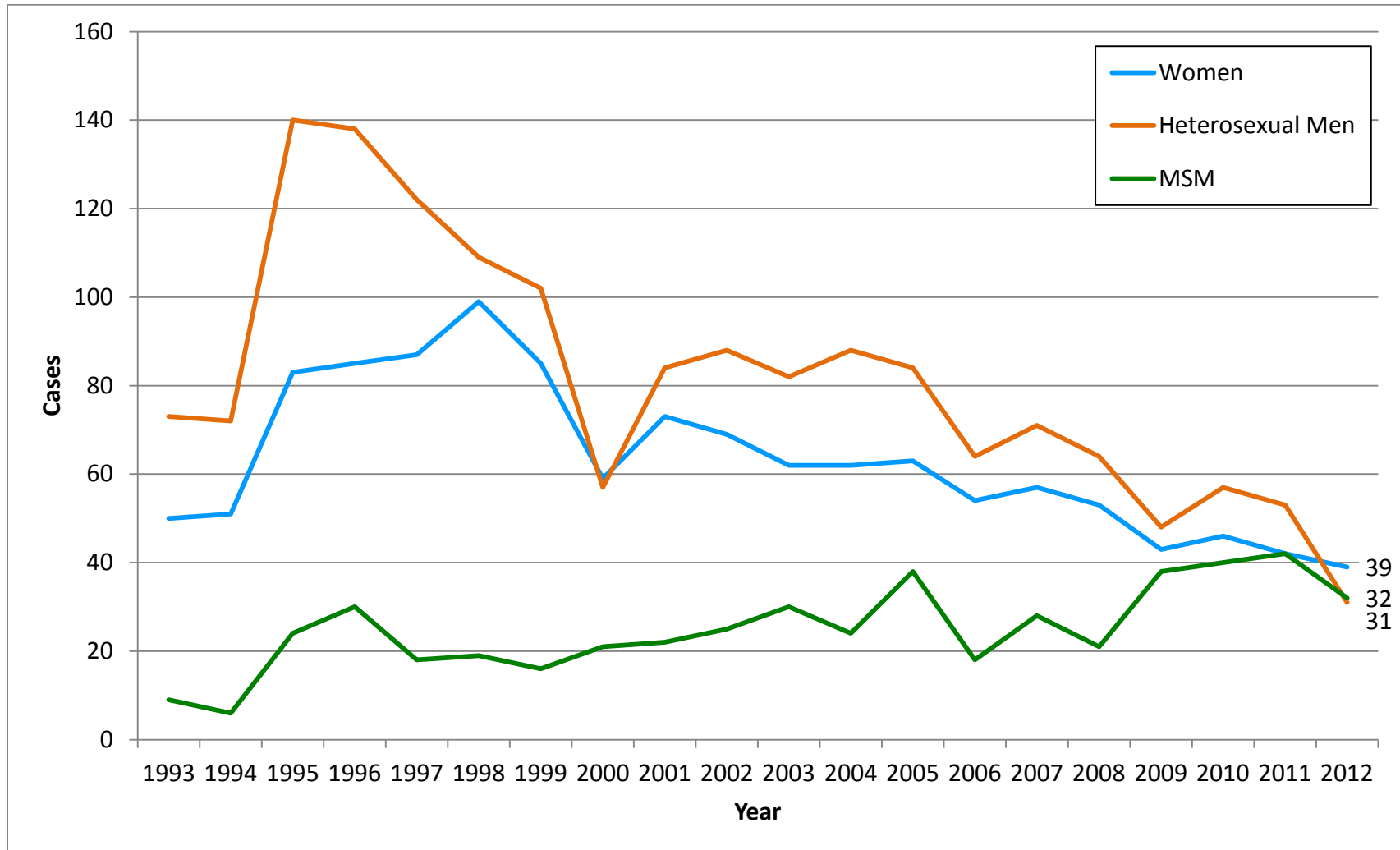
Prevalence is calculated as total diagnoses divided by total annual tests (culture and/or wet mount)

Figure 25: Bacterial Vaginosis – Number of Diagnoses and Prevalence among Female Patients PHSKC STD Clinic, 1993-2012



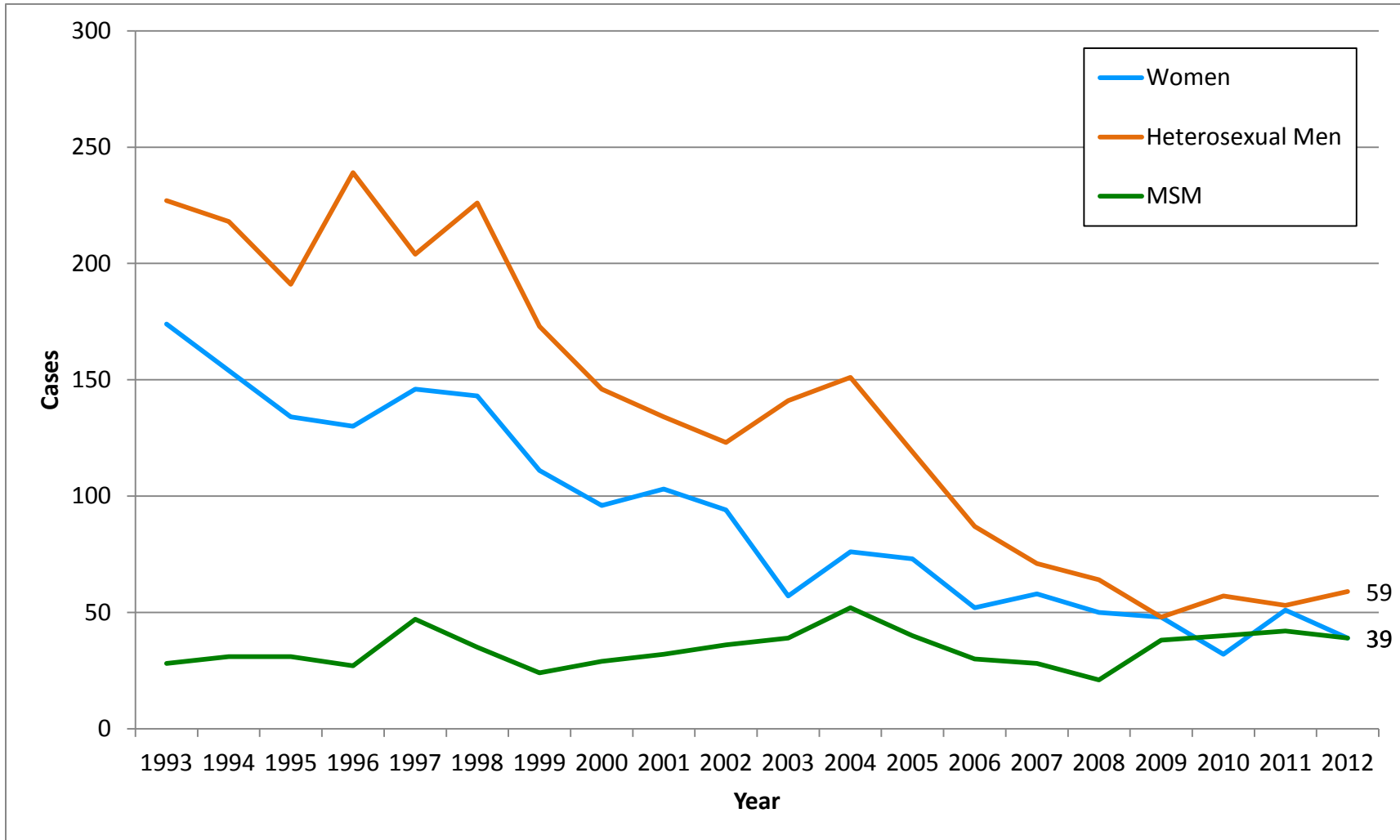
Prevalence is calculated as total diagnoses divided by number of patients with tests for both vaginal PH and clue cells.

**Figure 26: Initial Genital Herpes – Number of Diagnoses by Sex and Sexual Orientation
PHSKC STD Clinic, 1993-2012**



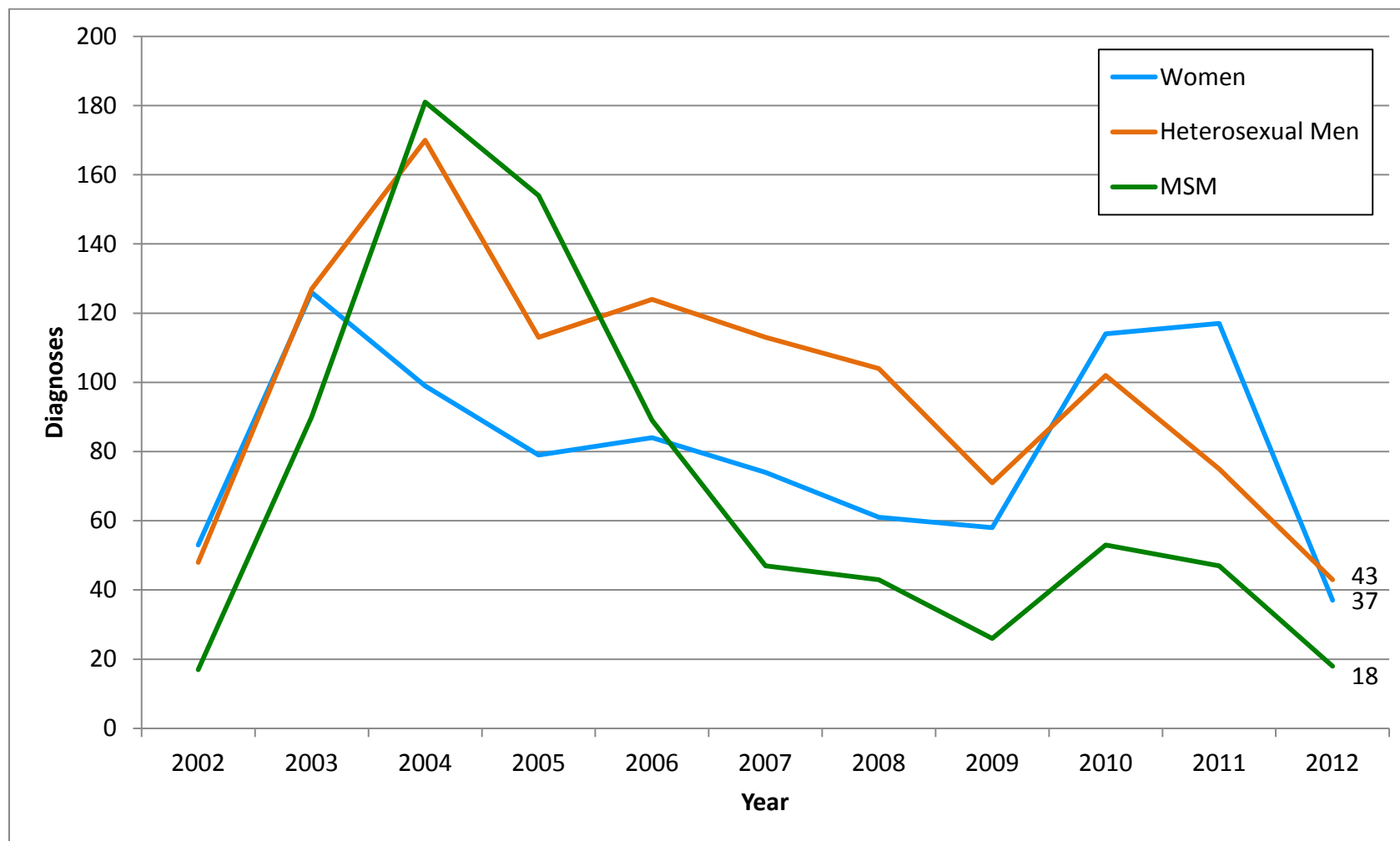
These data exclude 40 cases of initial genital herpes among men who were missing sexual orientation information across all years.

**Figure 27: Recurrent Genital Herpes – Number of Diagnoses by Sex and Sexual Orientation
PHSKC STD Clinic, 1993-2012**



These data exclude 101 cases of recurrent genital herpes among men who were missing sexual orientation information across all years.

Figure 28: Serologic Diagnoses of Herpes Simplex Virus-2 in Patients without Concurrent Clinical Diagnoses, PHSKC STD Clinic, 2002-2012



These data exclude 16 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 - December 31, 2010.

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

The incidence and number of cases of chlamydial infection and gonorrhea reported among MSM increased sharply from 2011 to 2012 (Figures 29-30). In 2012, 1,066 cases of chlamydial infection were reported among MSM for an incidence of 2,431 per 100,000 persons, an increase of 39% from 766 cases in 2011 (1,759 per 100,000 persons). Similarly, the number of reported gonorrhea infections among MSM increased 35% from 686 in 2011 to 927 in 2012 (incidence of 1,576 and 2,114 per 100,000 persons, respectively). By contrast, the number of early syphilis cases reported among MSM decreased from a historical high of 341 cases in 2011 to 304 cases in 2012.

Reporting and screening practices

Interpreting trends in reported numbers of STD cases among MSM is complicated by changes in reporting and screening practices. First, in 2004, the data available for determining whether chlamydial infection and gonorrhea cases in King County occurred among MSM or heterosexual men changed. For years prior to 2004, the numbers of cases among MSM are estimated by adding the numbers of each infection diagnosed among Public Health STD Clinic MSM clients to the number of cases of rectal chlamydial infection and gonorrhea in men reported by non-Public Health STD Clinic providers. These earlier numbers underestimate MSM cases, as they exclude non-rectal infections among MSM diagnosed by non-Public Health STD Clinic providers. Starting in 2004, the State case report form began collecting the gender of cases' sex partners, and these data are available in combination with data from partner services interviews, which include gender of sex partners. Thus, since 2004, cases of chlamydial infection and gonorrhea are identified as occurring among MSM if a male case's case report or partner services interview indicates male sex partners or if it is a

rectal infection. Ascertainment of MSM status is therefore more complete from 2004 onward. Although providers often did not report gender of sex partners on the case report from 2004 to 2006, the completeness of this data has improved over time. In 2012, gender of sex partners was reported in 90% of case reports for gonococcal and chlamydial infections among men.

Second, screening MSM for chlamydial and gonococcal infections at the rectum and pharynx has become more common in King County in the past three years, which may account for some of the increases observed in these infections.

Symptomatic urethritis

The total number of cases of chlamydial infection and gonorrhea diagnosed among King County MSM increased in 2012, continuing a trend that has been ongoing since 2008. However, the number of MSM presenting with symptomatic gonococcal urethritis in the PHSKC STD Clinic and among all reported cases increased only slightly from 2011 to 2012 (Figures 17 & 18), and displays substantial variance from year to year, not a clear trend suggesting increasing incidence. During this same time, both the number of MSM presenting with symptomatic chlamydial urethritis to the clinic (Figure 20) and the number of reported urethral chlamydial infections county-wide have remained relatively stable (Figure 31). Overall, these findings demonstrate that the incidence of urethral gonorrhea and chlamydial infection among MSM - Public Health's best measure of trends in these STIs among MSM - remains alarmingly high, but appears to be roughly stable.

Chlamydial infection and gonorrhea by anatomic site

Examining trends in chlamydial infection among MSM by anatomic site on a countywide basis reveals upward trends which vary in magnitude: while

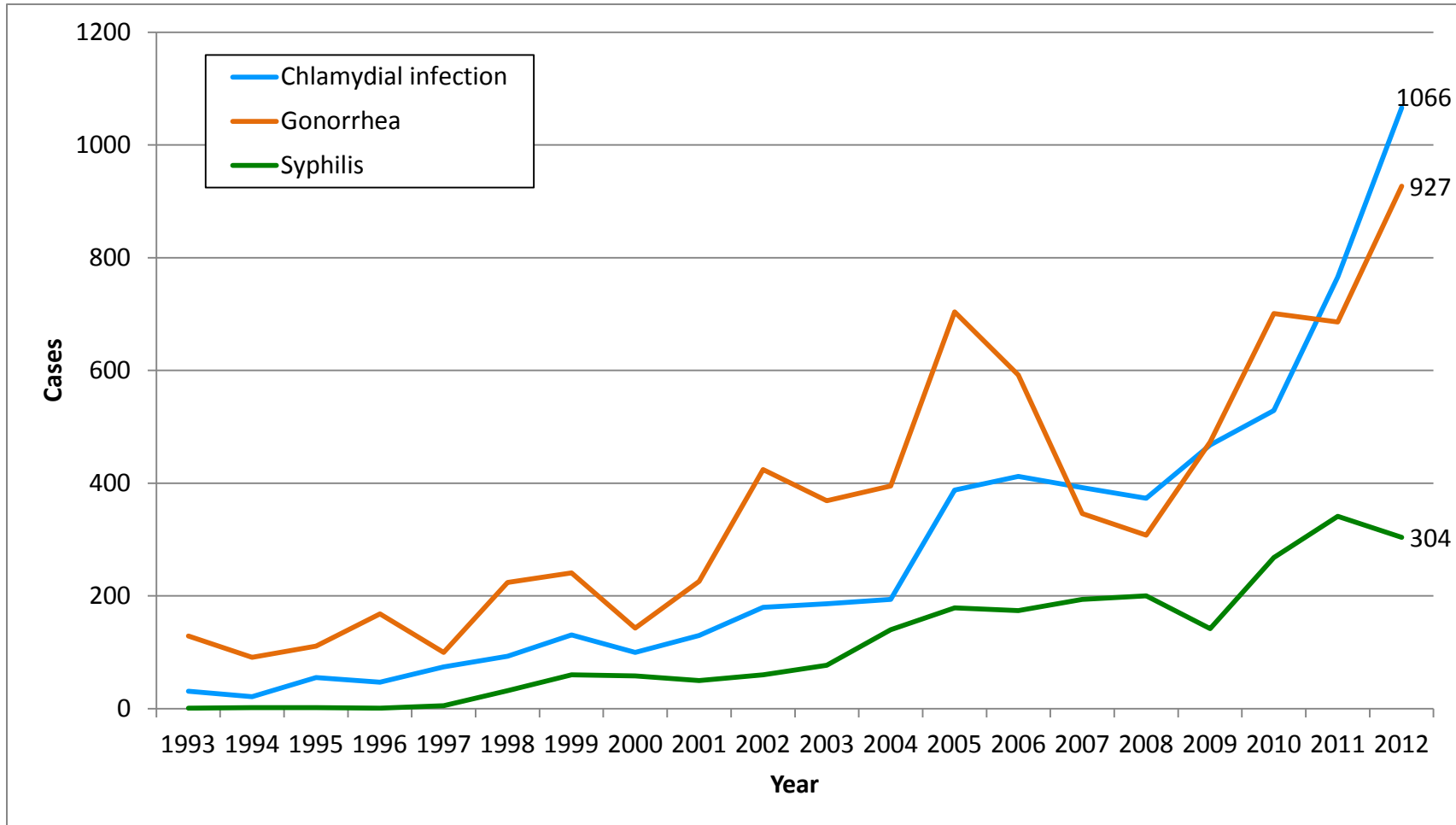
cases of chlamydial urethritis among MSM increased by 15% from 346 cases in 2011 to 397 in 2012, diagnoses of rectal and pharyngeal chlamydial infection increased substantially in this population. Reported rectal infections increased by 63% from 401 in 2011 to 653 in 2012, and pharyngeal infections by 89% from 76 to 144. Of note, 67 (46%) of the 144 cases with pharyngeal infection in 2012 were reported with a pharyngeal infection only (Figure 31).

Similarly, trends in the number of reported gonorrhea cases among MSM varied by anatomic site. After a significant decrease in gonococcal urethritis from 411 in 2010 to 291 in 2011, the number of reported urethral infections increased by 24% to 360 in 2012. Reported rectal infections increased by 31% from 287 in 2011 to 375 in 2012, and pharyngeal infections by 77% from 253 to 449. Compared with chlamydial infection, a greater proportion of cases were diagnosed with gonorrhea at the pharynx alone (275 or 61% of 449 total pharyngeal infections) [Figure 32].

Race and ethnicity

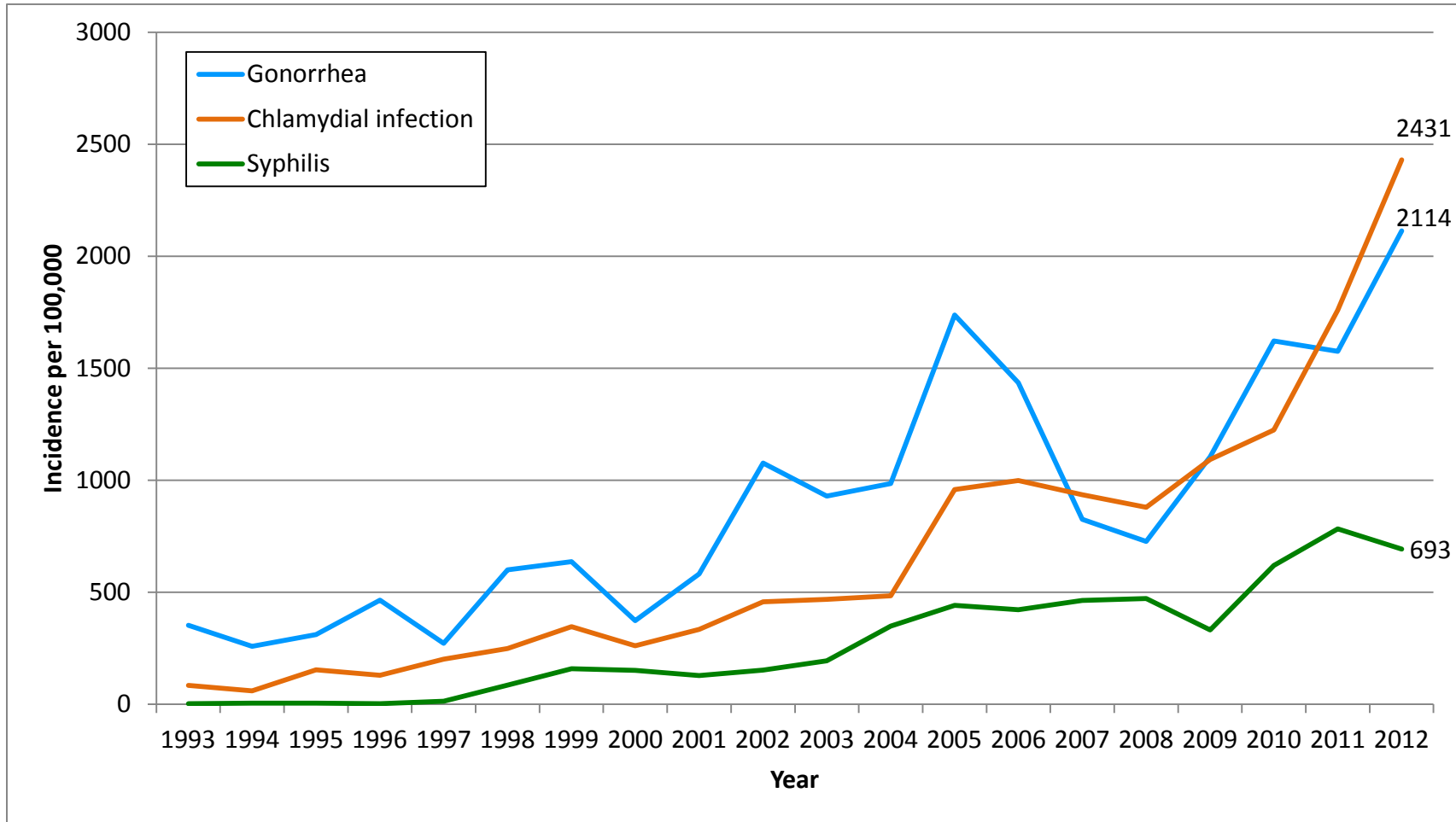
As among women and men overall, the incidence of chlamydial infection, gonorrhea, and early syphilis vary by race among MSM in King County (Figures 33-35); however, the magnitude of these racial disparities is smaller than among women. In 2012, reported incidence for all three infections was greatest among Latino MSM, followed by black, white, and Asian/Pacific Islander MSM. Latino MSM experience incidences 4, 5, and 6 times greater than that observed among white MSM for chlamydial infection, gonorrhea, and early syphilis, respectively. (Native American MSM were not included in these figures because the small size of this population leads to unstable estimates of STI incidence over time.)

Figure 29: Number of Cases of Chlamydial Infection, Gonorrhea, and Early Syphilis among MSM King County, WA, 1993-2012



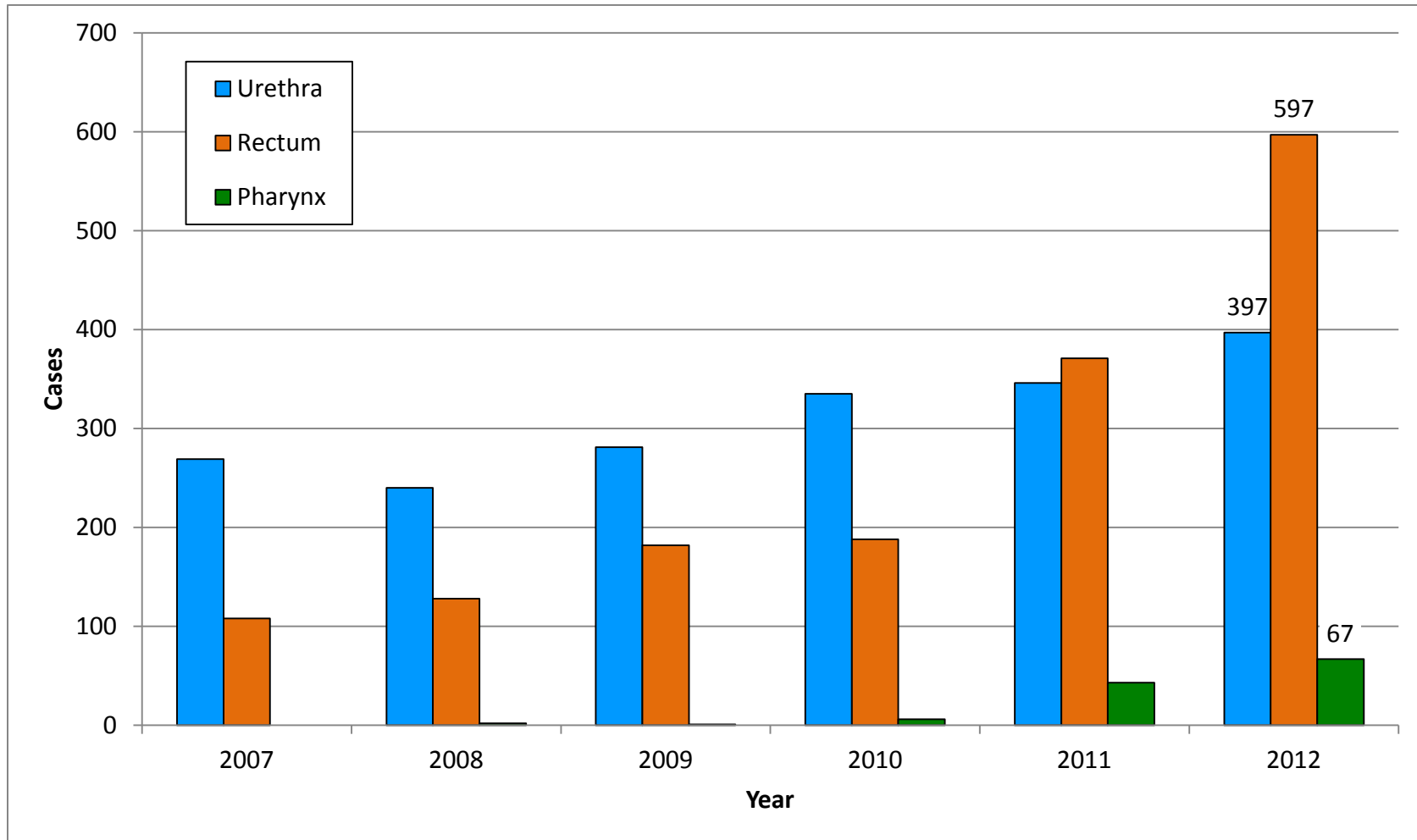
From 1993-2003, MSM gonorrhea and chlamydial infection cases were calculated by summing all PHSKC STD Clinic diagnoses among MSM with all rectal infections reported to PHSKC by other providers. Since 2004, men have been assigned MSM status if the reporting provider indicated they had male sex partners,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

**Figure 30: Incidence of Gonorrhea, Chlamydial Infection, and Early Syphilis among MSM
King County, WA, 1993-2012**



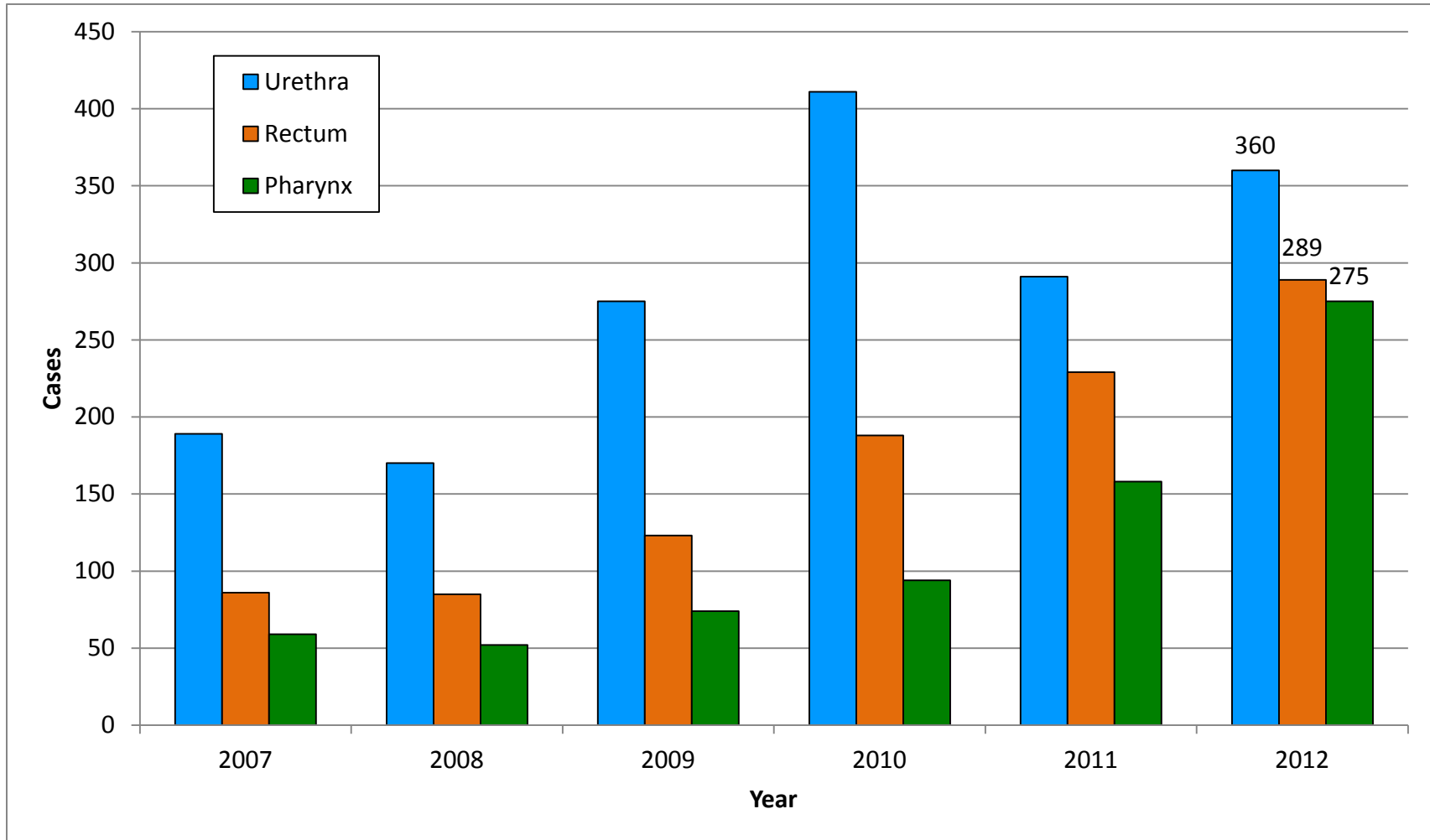
From 1993-2003, MSM gonorrhea and chlamydial infection cases were calculated by summing all PHSKC STD Clinic diagnoses among MSM with all rectal infections reported to PHSKC by other providers. Since 2004, men have been assigned MSM status if the reporting provider indicated they had male sex partners,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

**Figure 31: Cases of Chlamydial Infection among MSM by Anatomic Site*
King County, WA, 2007-2012**



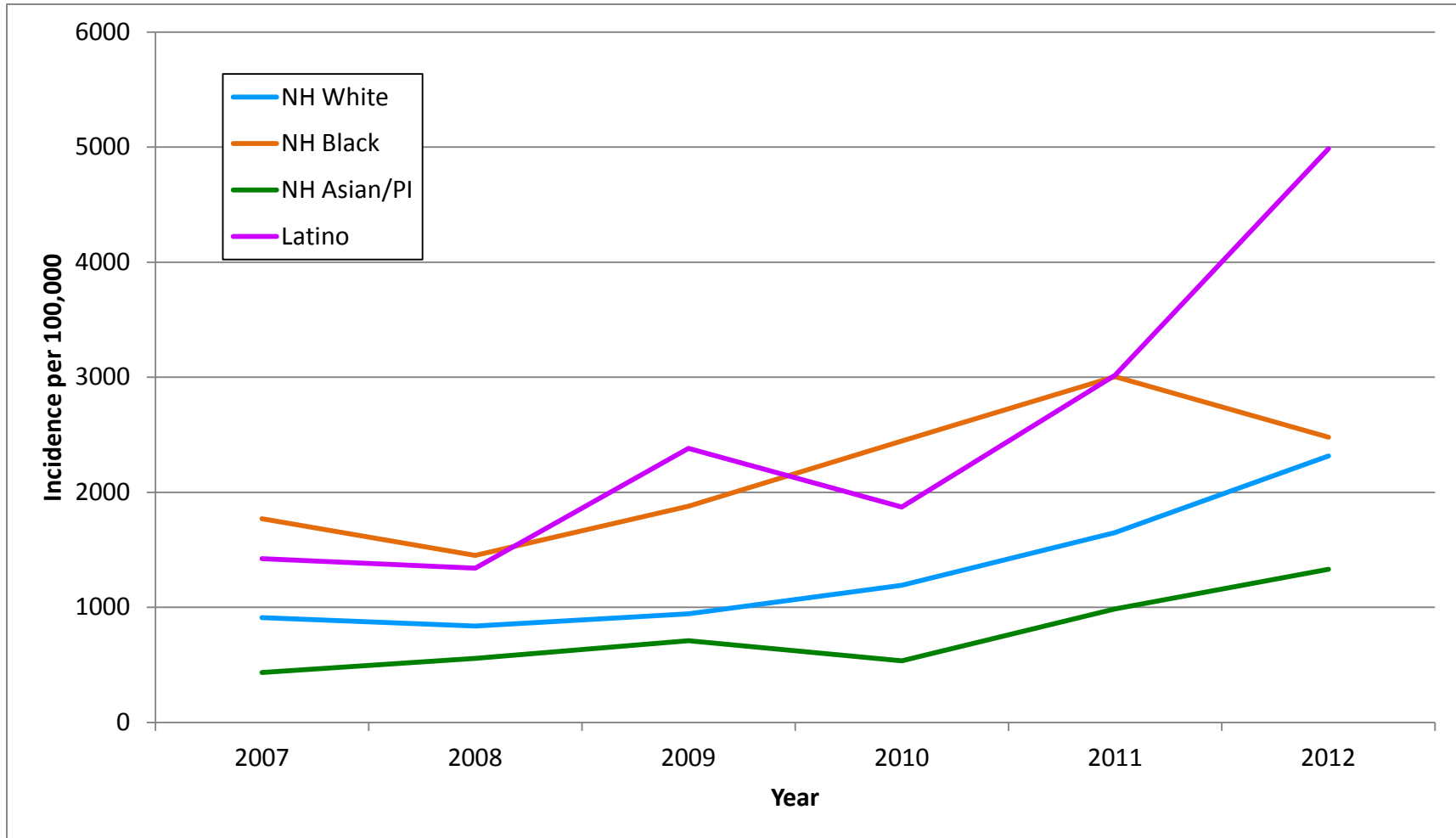
*All urethral chlamydial infection cases, rectal cases without concurrent urethral infections, pharyngeal cases without concurrent urethral or rectal infections.

**Figure 32: Cases of Gonorrhea among MSM by Anatomic Site*
King County, WA, 2007-2012**



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

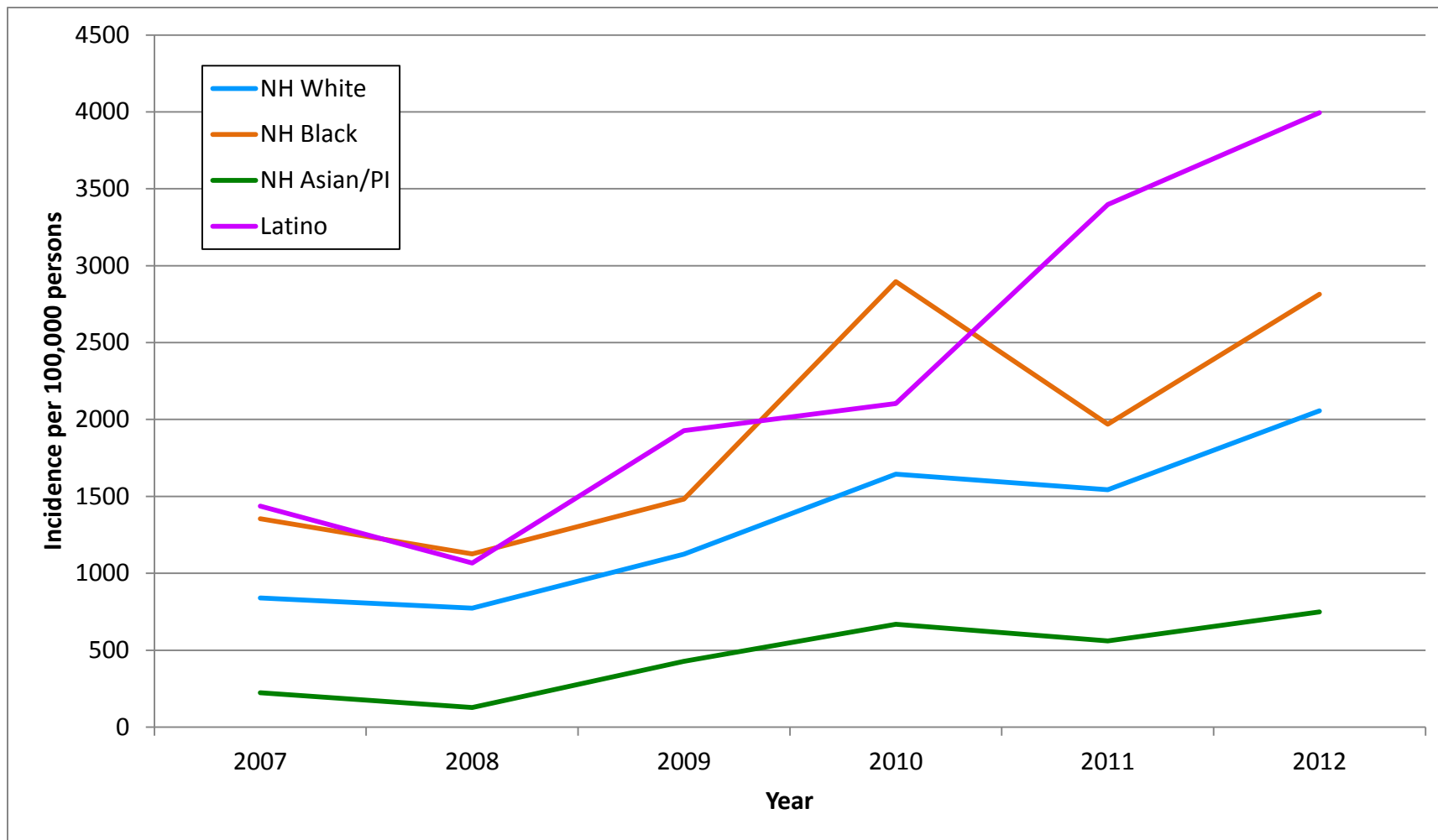
**Figure 33: Incidence of Chlamydial Infection among MSM by Race and Ethnicity
King County, WA, 2007-2012**



NH = Non-Hispanic

Cases with unknown race and ethnicity were distributed according to annual race and ethnicity distributions among cases with known race and ethnicity and included in race/ethnicity-specific incidences.

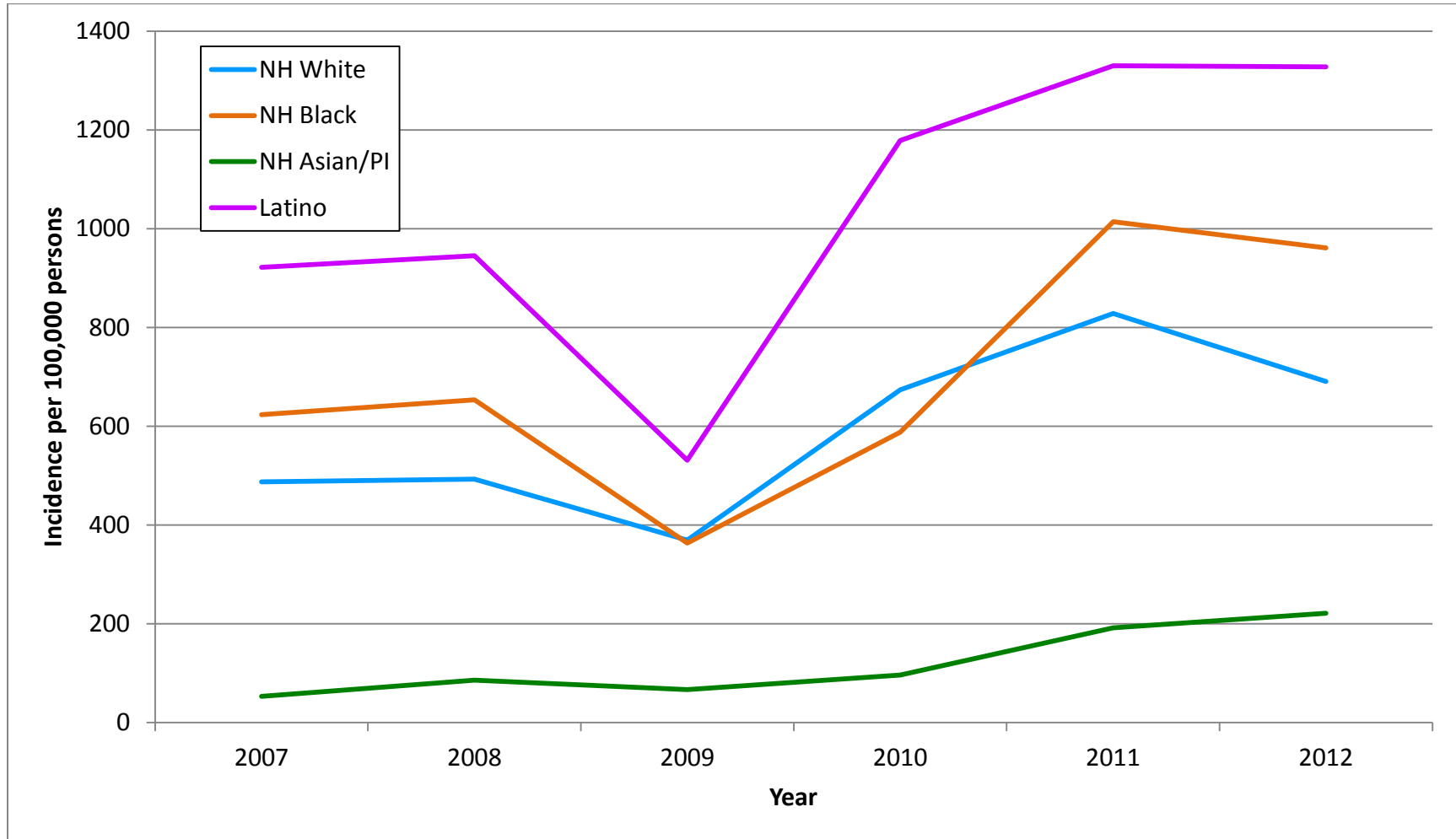
**Figure 34: Incidence of Gonorrhea among MSM by Race and Ethnicity
King County, WA, 2007-2012**



NH = Non-Hispanic

Cases with unknown race and ethnicity were distributed according to annual race and ethnicity distributions among cases with known race and ethnicity and included in race/ethnicity-specific incidences.

**Figure 35: Incidence of Early Syphilis among MSM by Race and Ethnicity
King County, WA, 2007-2012**



NH = Non-Hispanic

Cases with unknown race and ethnicity were distributed according to annual race and ethnicity distributions among cases with known race and ethnicity and included in race/ethnicity-specific incidences.