

**SEXUALLY
TRANSMITTED
DISEASE
MORBIDITY**

1999

WASHINGTON STATE



**INFECTIOUS DISEASE AND REPRODUCTIVE HEALTH:
STD/TB SERVICES AND IDRH ASSESSMENT UNIT**

**SEXUALLY
TRANSMITTED
DISEASE
MORBIDITY
1999**

WASHINGTON STATE



For more information or
additional copies of this report contact:

Infectious Disease and Reproductive Health
STD/TB Services
NewMarket Industrial Campus
7211 Cleanwater Lane, Building 14
P.O. Box 47842
Olympia, WA 98504-7842

(360) 236-3460
FAX: (360) 236-3470

January 2000

Sexually Transmitted Disease Morbidity ~ 1999
Washington State
TABLE OF CONTENTS

Executive Summary	1
Chlamydia	3
Figure 1. Reported Chlamydia Cases and Incidence Rates, 1988-1999	5
Figure 2. Age-Specific Chlamydia Incidence Rates by Gender, 1999	6
Figure 3. Chlamydia Incidence Rates by Race, 1993-1999	7
Figure 4. Chlamydia Incidence Rates by County, 1999 on Washington State Map.....	8
Figure 5. Chlamydia Incidence Rates by County, 1999, Ranked from Highest to Lowest	9
Figure 6. Reported Chlamydia Cases by County, 1999.....	10
Gonorrhea	11
Figure 7. Reported Gonorrhea Cases and Incidence Rates, 1988-1999	13
Figure 8. Age-Specific Gonorrhea Incidence Rates by Sex, 1999	14
Figure 9. Gonorrhea Incidence Rates by Race, 1993-1999	15
Figure 10. Gonorrhea Incidence Rates by County, 1999 on Washington State Map.....	16
Figure 11. Gonorrhea Incidence Rates by County, 1999, Ranked from Highest to Lowest	17
Figure 12. Gonorrhea Incidence Rates by Race, 1993-1999	18
Syphilis	19
Figure 13. Reported Syphilis Cases by Disease Stage, 1999.....	21
Figure 14. Reported Syphilis Cases by County, 1999 on Washington State Map	22
Figure 15. P & S Syphilis Incidence Rates/Cases, King Co. Vs. Washington State, 1999	23
Figure 16. P & S Syphilis Incidence Rates by Gender, 1993-1999.....	24
Other Sexually Transmitted Diseases	25
Tables	26
Table 1. Reported Chlamydia Cases and Incidence Rates by Sex and County, 1999	26
Table 2. Reported Chlamydia Cases and Incidence Rates by Age (15-24 years) and County, 1999	27
Table 3. Reported Gonorrhea Cases and Incidence Rates by Sex and County, 1999	28
Table 4. Reported Gonorrhea Cases and Incidence Rates by Age (15-24 years) and County, 1999	29
Table 5. Reported STD Cases and Incidence Rates by Disease and County, 1999.....	30
Appendix	32
Data Sources and Methods	32
Glossary	32
Guidelines to Prevent Misuse of Data	34
References	35

EXECUTIVE SUMMARY

The 1999 annual Sexually Transmitted Disease (STD) summary includes morbidity data and incidence rates for Washington State's legally reportable STDs. These include gonorrhea, chlamydia, syphilis, herpes simplex-initial genital infection and neonatal, nongonococcal urethritis (NGU), acute pelvic inflammatory disease (PID) (not caused by gonorrhea or chlamydia), chancroid, lymphogranuloma venereum (LGV) and granuloma inguinale (GI). Sexually transmitted diseases are the most commonly reported communicable diseases in Washington State.

Chlamydia

In 1999, chlamydia was the most commonly reportable STD in Washington State. Reported cases totaled 11,964, yielding a statewide incidence rate of 207.7 per 100,000 population. Females continued to be selectively tested more frequently and, consequently, diagnosed at a higher rate than males. The statewide chlamydia incidence rate for females was 307.2 per 100,000, which was over three times the incidence rate for males—107.5 per 100,000. Chlamydia cases and rates have increased 7.4% over the previous year, though this increase may be the result of more sensitive testing methods rather than an actual increase in incidence rate.

Gonorrhea

In 1999, reported gonorrhea cases increased slightly to 2,132 from an all-time low of 1,949 cases in 1998, yielding a statewide gonorrhea incidence rate of 37.0 per 100,000 population. Gonorrhea screening is universal in all public STD clinics in Washington State and the gender-specific incidence rates may accurately reflect true disease incidence. The female gonorrhea rate was 34.9 per 100,000 and the male gonorrhea rate was 39.1 per 100,000 for the state as a whole. The slight increase in the 1999 male gonorrhea rate was attributable to an increase in the rate in Pierce County and an ongoing gonorrhea outbreak among men who have sex with men in Seattle-King County.

Syphilis

Primary, secondary, and early latent cases of syphilis totaled 94 in 1999. The statewide early syphilis rate was 1.6 per 100,000 population. When the 110 cases of late latent/late syphilis are included in this calculation, the statewide syphilis rate rises to 3.5 per 100,000. An outbreak of syphilis among men who have sex with men in Seattle nearly doubled the number of primary and secondary cases statewide from 44 in 1998 to 77 in 1999.

Other STDs

In 1999, 1,952 cases of initial genital herpes were reported, yielding an incidence rate of 33.9 per 100,000 population. Among males, there were 1,051 new cases of NGU reported; among females, 297 new cases of acute PID (not attributable to chlamydial or gonococcal infection) were reported. These data may be of limited utility in that these conditions are considered to be significantly under-reported and are proposed for removal, with the exception of herpes, from the list of reportable diseases. No cases of chancroid, lymphogranuloma (LGV) or granuloma inguinale (GI) were identified in 1999.

CHLAMYDIA

Chlamydia trachomatis is the most common reported bacterial STD in the United States. New estimates indicate approximately 3 million new infections each year (Kaiser Family Foundation, 1998). Most chlamydia infections in women, and many in men, are asymptomatic. Comprehensive screening and treatment of infected individuals have been shown to significantly reduce the prevalence of chlamydia infections.

Since 1988, Washington State has participated in chlamydia screening and prevalence monitoring activities through the federal Infertility Prevention Project (IPP). All women attending STD clinics, and women seeking reproductive health care in other facilities who meet selective screening criteria, are the populations targeted for chlamydia screening. Genital tract infections with chlamydia are a major cause of pelvic inflammatory disease (PID), ectopic pregnancy and infertility among women; thus IPP is directed specifically at the female population. Active disease surveillance among women has resulted in higher rates of chlamydia incidence among this population. Recent efforts at improving the standard of care for male partners of infected women have resulted in increased reporting of male cases. A more sensitive testing method for detecting chlamydia infection in cervical specimens from women and in urine samples from men has been used in Washington State.

State-Level Chlamydia Trends

Figure 1 reports the number of chlamydia cases and the calculated incidence rate for Washington State. After nearly a decade of decline, reported chlamydia cases have increased 25.6% and rates have increased 22.3% from 1997 to 1999. Several factors may contribute to the observed increase, in approximate order of significance:

- More sensitive laboratory techniques
- Increase in routine screening
- Improved STD surveillance and reporting methods
- Increased transmission risk behaviors

Though the number and rate of chlamydia infection has increased over the last several years, the incidence rate for Washington State remains well below the most recent projected national incidence rate of 236.6 (CDC,1998).

Figure 2 presents the age-specific incidence rate by gender for chlamydia cases reported in Washington State in 1999. Of immediate note in this figure are the disproportionate incidence rates among younger women:

- Peak female age-specific rates in 15-19 year olds
- Peak male age-specific incidence in 20-24 year olds
- 70.3% of all cases reported in the 15-24 age group
- Increase from 1998 noted primarily in males 20-29 and females 20-24

Several factors contribute to this pattern, including potentially selective screening of young women and a higher incidence of sexual activity in this age group. The overall rate of

chlamydia among women is observed to be 307.2 per 100,000 while the male rate is almost three times less at 107.5 per 100,000. Men diagnosed with nongonococcal urethritis are often treated presumptively and no laboratory tests are performed - which would trigger a report to the local health jurisdiction and the Department of Health. For this reason, chlamydia may be significantly under-reported among males. In light of this, and the well documented disparity in screening males versus females in reproductive health settings, the true chlamydia morbidity may be much closer to 1:1 for males and females.

The trend in chlamydia incidence rates by race and Hispanic origin is shown in Figure 3. Increases are noted in 1999 for all categories, though of particular note is the magnitude of increase among non-whites and those of Hispanic origin. It should be noted here that direct comparison between race and Hispanic origin is not possible in that these are not mutually exclusive categories (e.g., cases can be counted as Hispanic *and* White, or Hispanic *and* Black, etc.). Race and ethnicity are risk markers that correlate with other more fundamental determinants of health status such as:

- Poverty
- Access to health care
- Health care seeking behavior
- Illicit drug use
- Living in communities with high prevalence of STDs

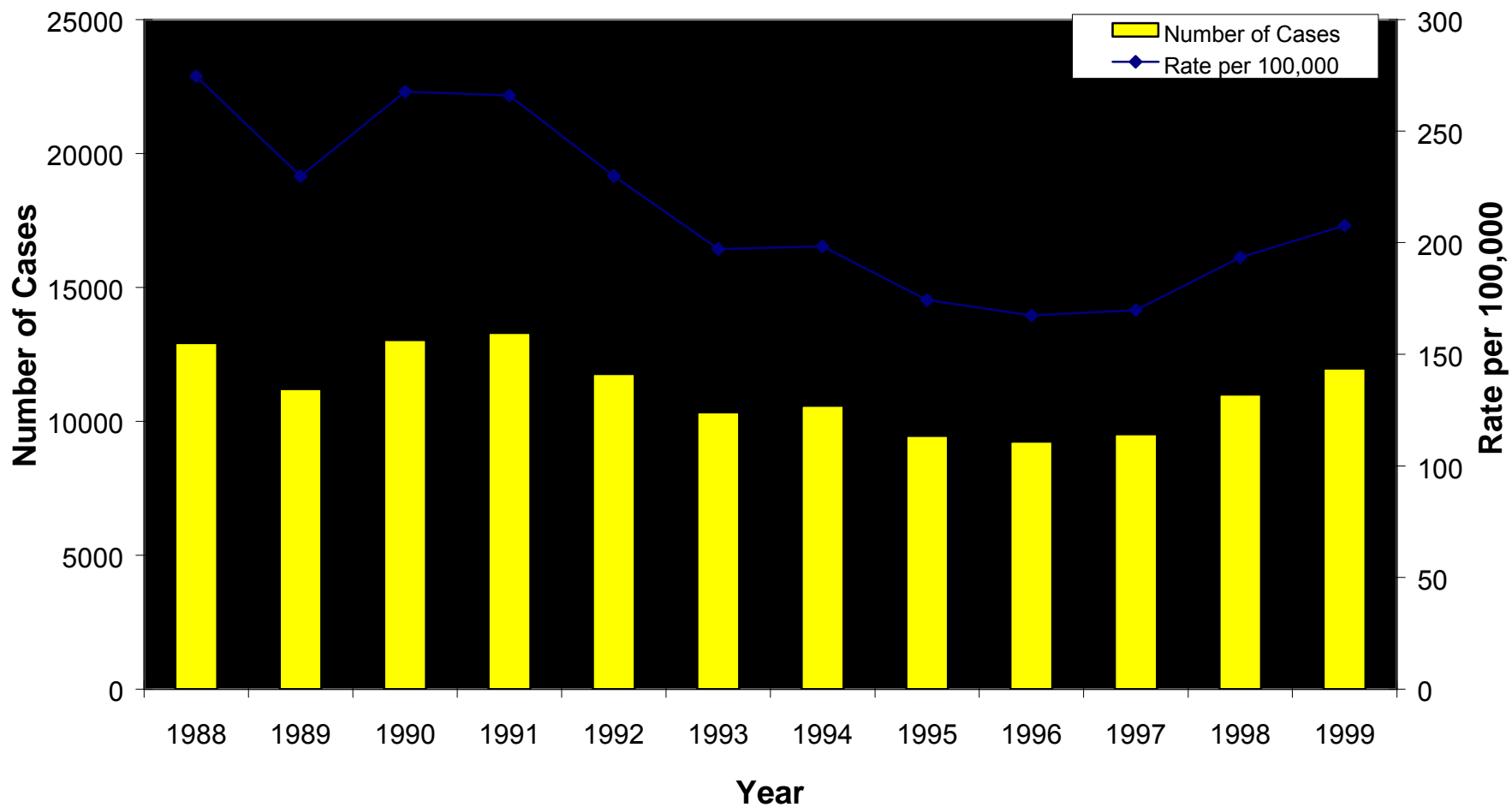
Caution is ordinarily advised when interpreting incidence rates by race when a significant portion of cases are reported without this information. However, additional analysis of chlamydia reports, assuming the unlikely event that all cases missing race information are white, yielded identical rankings by race as those presented in Figure 3.

County-Level Chlamydia Trends

To assess the burden of disease and compare this burden across counties of differing population sizes, county-specific incidence rates were calculated (Figure 4). Thirty-five of Washington's 39 counties reported at least five cases of chlamydia. Figure 5 shows these county-specific incidence rates ranked from highest to lowest.

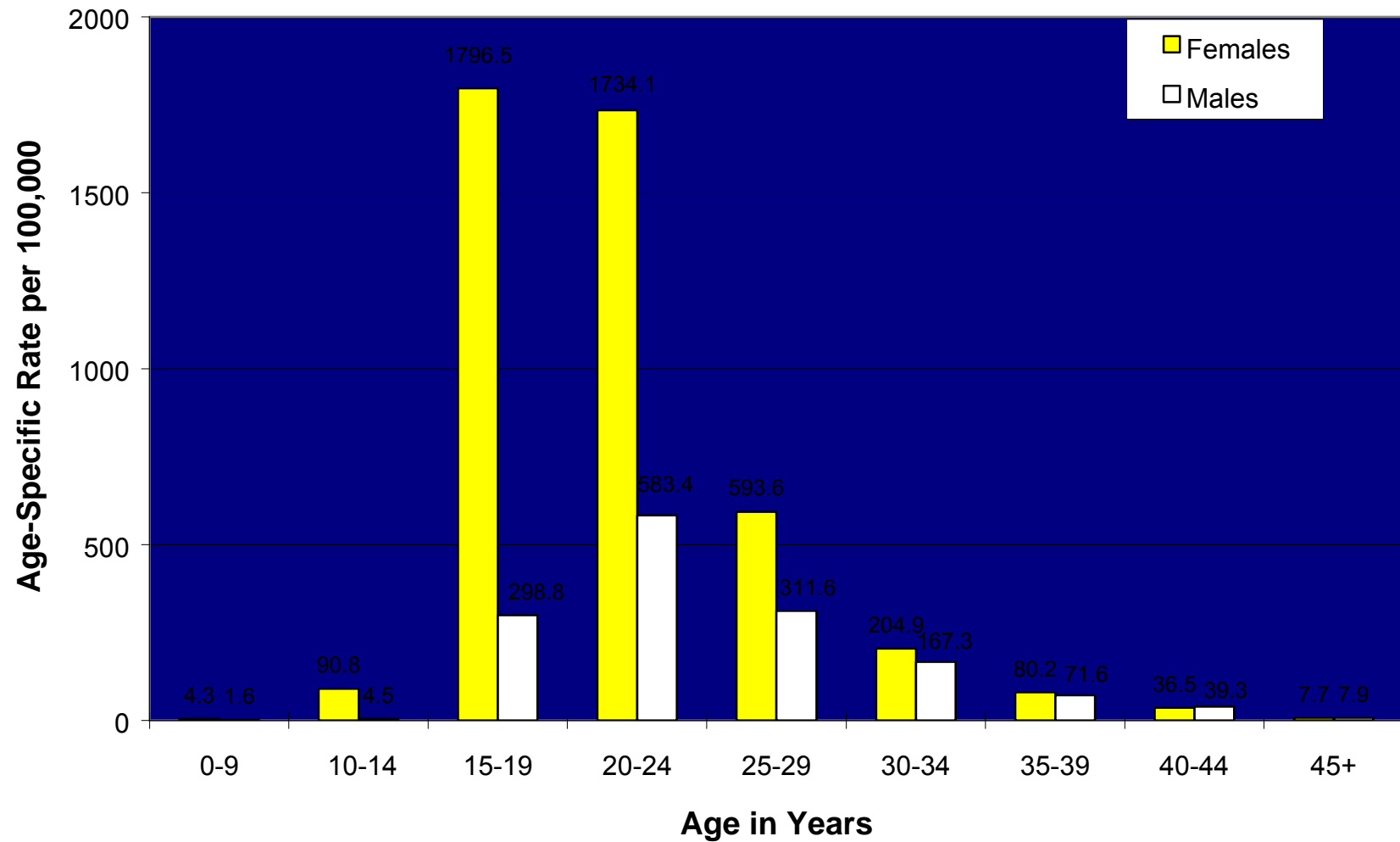
The largest number of chlamydia cases (3,949) was reported by King county as seen in Figure 6. King county had the largest number of male cases (1,295) and the highest male incidence rate at 153.0 per 100,000. King county also had the largest number of female chlamydia cases (2,654), yet the incidence rate of 310.8 per 100,000 for females was ranked tenth among counties in Washington State. The highest county-specific incidence rate for chlamydia among women was Franklin County with a rate of 642.9 per 100,000. Due to under-diagnosing, under-reporting, and the asymptomatic nature of the disease, chlamydia incidence rates are considered conservative. These assumptions make county-to-county comparisons generally unreliable, especially among counties with relatively small populations.

Figure 1. Reported Chlamydia Cases and Incidence Rates*, Washington State, 1988-1999



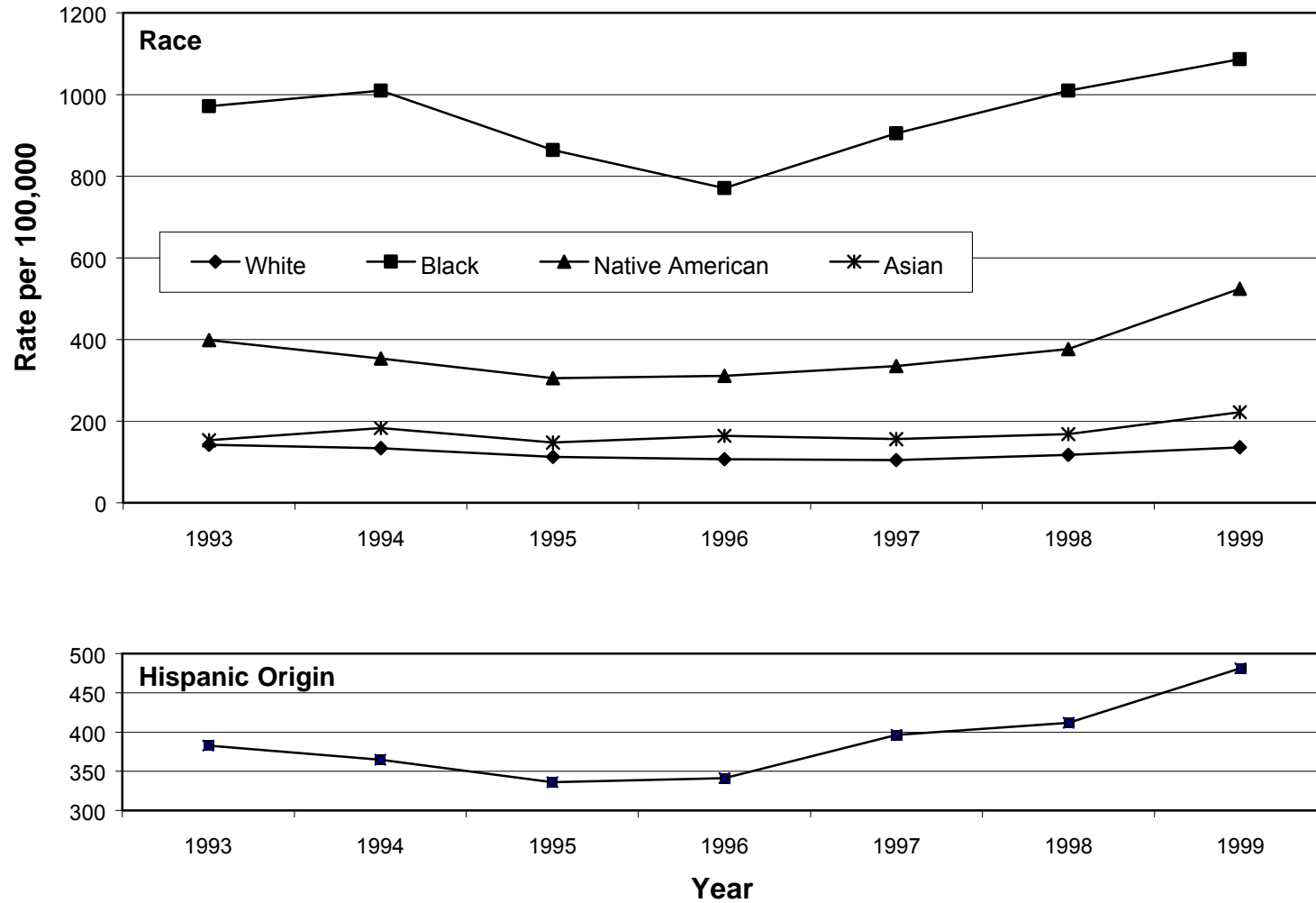
* This is the crude rate, not adjusted for age.

Figure 2. Age-Specific Chlamydia Incidence Rates* by Gender, Washington State, 1999



* Age missing for 213 (2.39%) female cases and 60 (1.94%) male cases and excluded from calculated rate.

Figure 3. Chlamydia Incidence Rates* by Race, Washington State, 1993-1999**

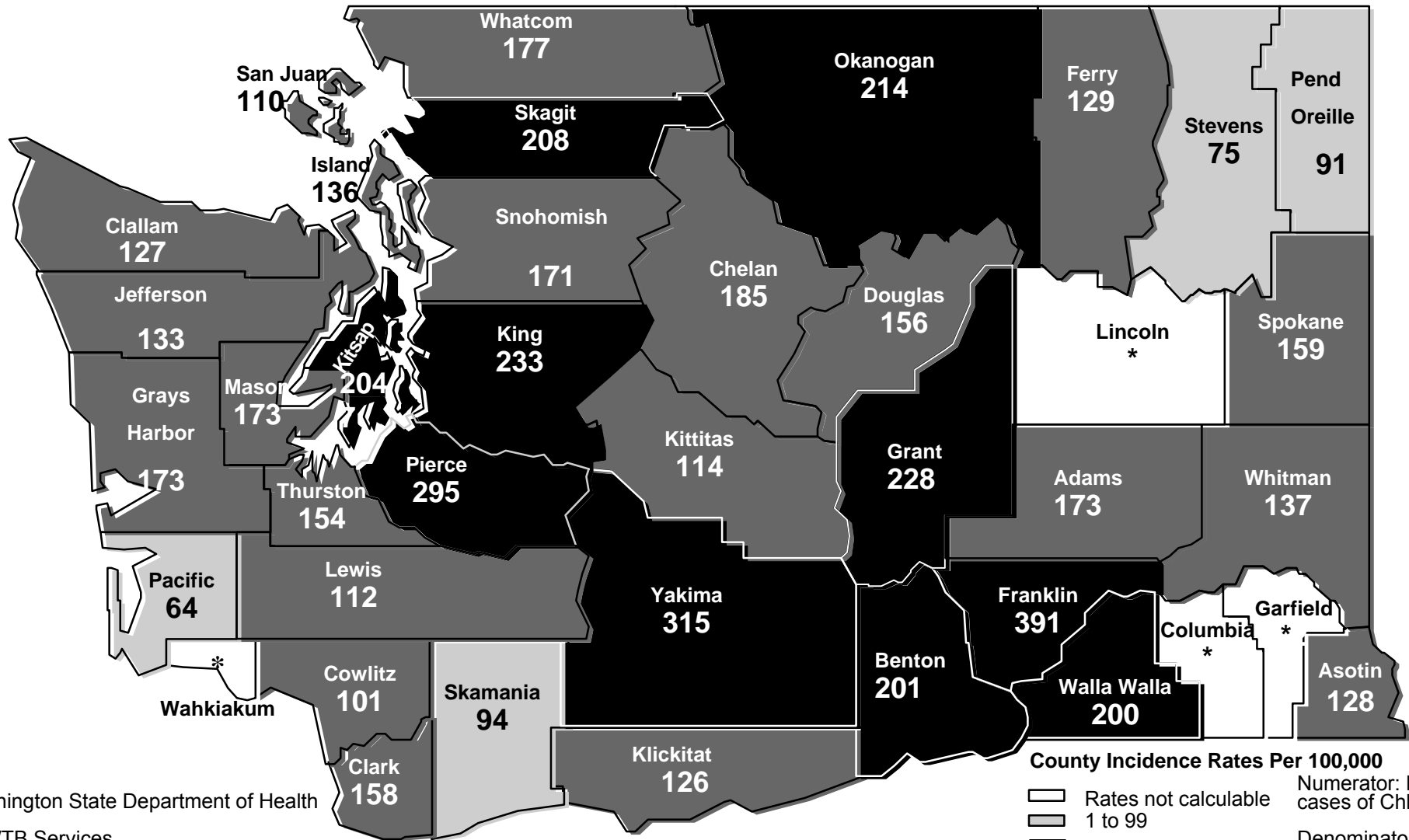


* This is the crude rate, not adjusted for age. Race data missing for 18.3% of cases; ethnicity data missing for 20.5% of cases. Because of missing data, comparisons between races/ethnicities is not advised.

** Race and ethnicity counted separately, e.g. a case can be both "White" and "Hispanic."

Figure 4. Chlamydia Incidence Rates By County

Washington State/ 1999



County Incidence Rates Per 100,000

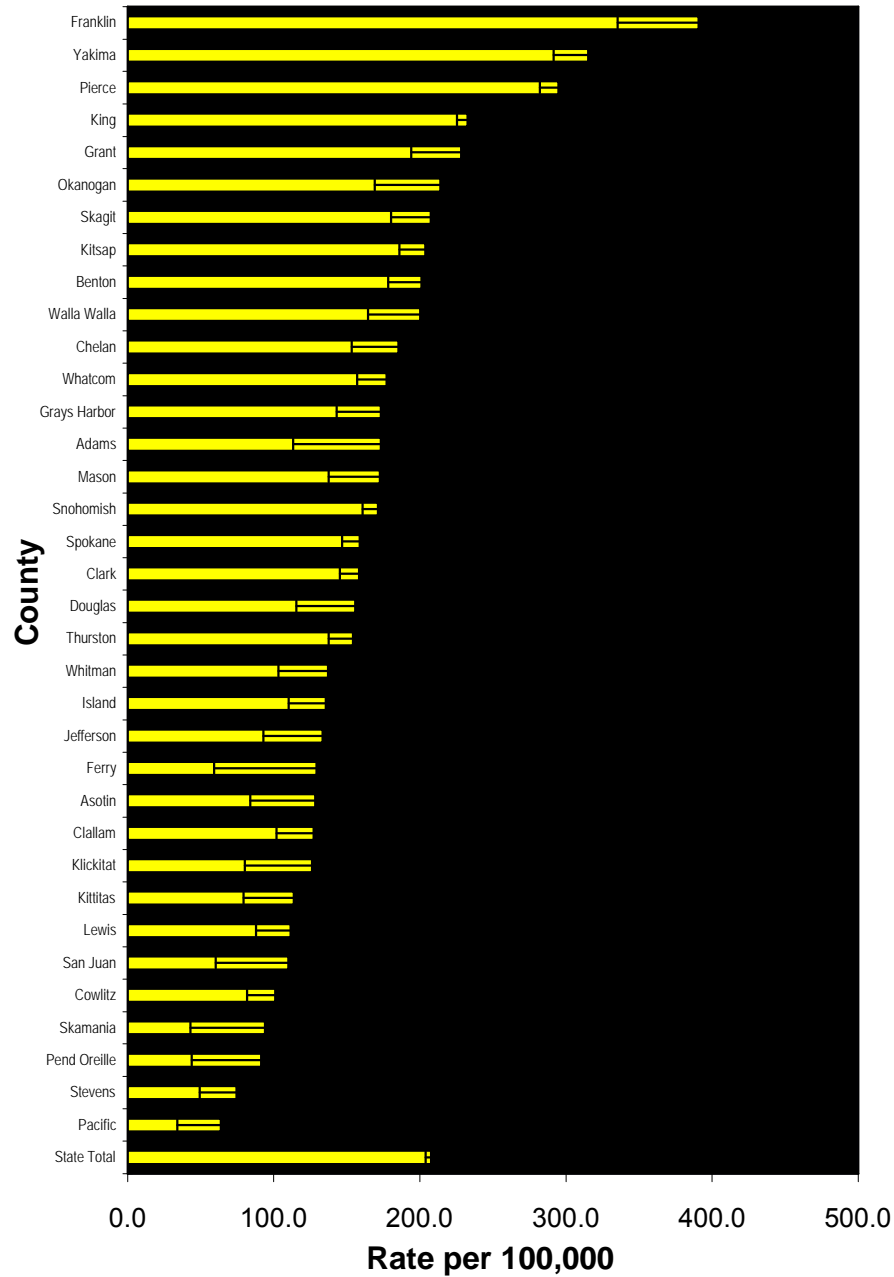
- Rates not calculable
- 1 to 99
- 100 to 199
- 200 or Greater

Numerator: Reported cases of Chlamydia

Denominator: Washington State Adjusted Population Estimates, DSHS, 1999

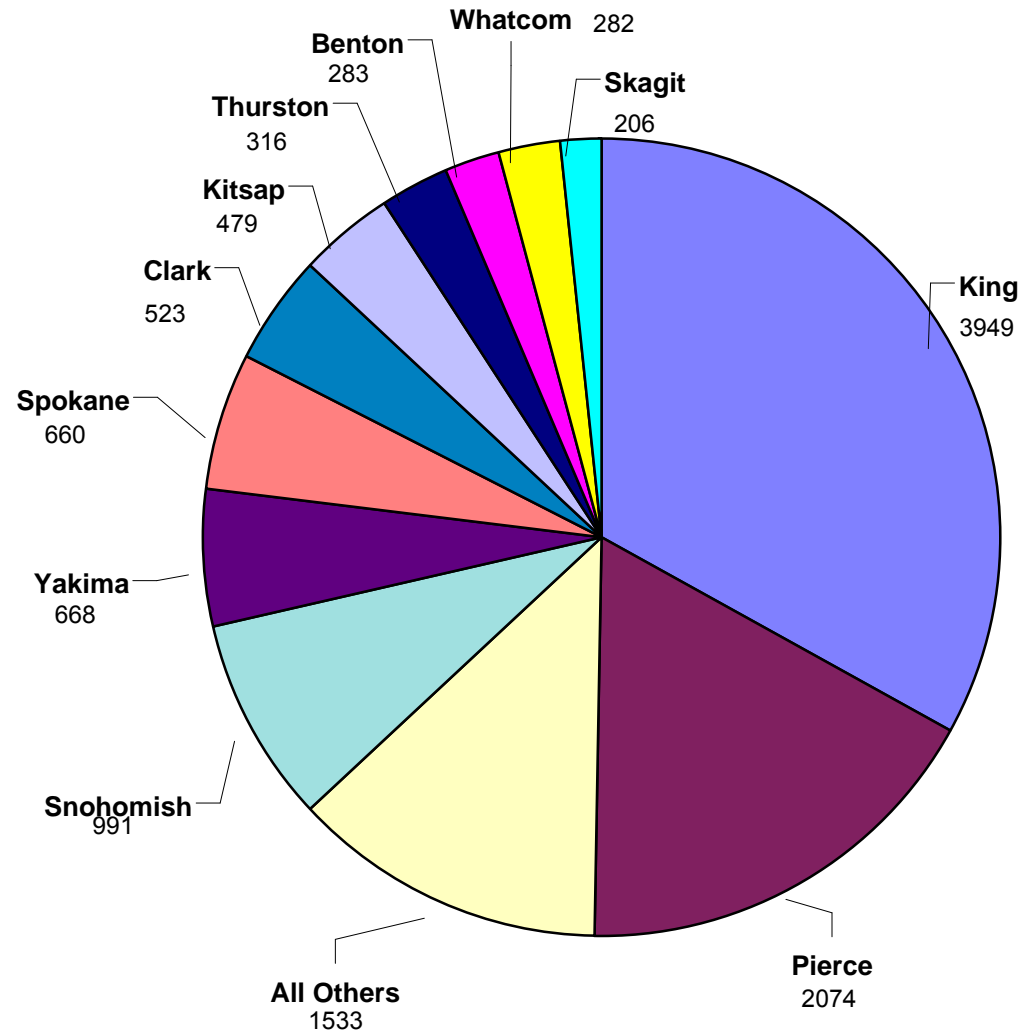
* Rates are not calculated from 0 to 4 cases because they are unreliable.

Figure 5. Chlamydia Incidence Rates* by County,(95% CI) Washington State, 1999
Ranked from Highest to Lowest**



* This is the crude rate, not adjusted for age. Counties with fewer than 5 cases not shown. —|— = Confidence Interval
 ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

Figure 6. Reported Chlamydia Cases by County of Residence, Washington State, 1999



GONORRHEA

Infections due to *Neisseria gonorrhoeae* remain a major cause of morbidity in the United States. Negative sequelae of gonorrhea include PID, tubal infertility, ectopic pregnancy, and chronic pelvic pain. Epidemiologic studies provide strong evidence that gonococcal infections may facilitate HIV transmission, and biological studies have begun to elucidate the specific mechanisms through which this occurs.

State-Level Gonorrhea Trends

National gonorrhea rates have precipitously declined from 1974 to the present. The United States, as a whole, is on the way to achieving the Healthy People Year 2000 goal of 100 per 100,000 for gonorrhea incidence. Paralleling national trends, the Washington State gonorrhea incidence, as seen in Figure 7, exhibits the following significant trends or characteristics:

- Gonorrhea incidence has fallen 77.4% from 1988 to 1999
- Disease control efforts have, in part, been credited with the decrease
- Most gonorrhea cases are symptomatic and seek medical care, reported cases are considered to be an accurate reflection of true disease incidence
- Observed gonorrhea rates have remained consistently higher among African Americans than any other racial group
- Incidence peaks among males in the 20 – 24 age group and in the 15 – 19 age group for females
- The slight statewide increase from 1998 to 1999 is influenced by an outbreak in Pierce County, where the rate has increased 53.4% in the last year.

It remains to be determined whether the observed increase in Pierce County is an accurate measure of increased transmission, an artifact of improved surveillance or a combination of both and this increase warrants additional investigation. Similarly, an outbreak of gonorrhea beginning in 1998 among men who have sex with men (MSM) in Seattle-King County has also helped to widen the incidence rate gap between the genders by increasing the number of cases of gonorrhea among men. Gonococcal infections in MSM reported by the PHSKC STD clinic more than doubled from 1997 to 1998 and 19% of those cases were known to be infected with HIV. It has been estimated that the rate of gonococcal infection in MSM in King County increased from 180 per 100,000 in 1997 to 420 per 100,000 in 1999 in contrast to the rate among presumed heterosexuals in King County of 50 per 100,000 (MMWR, 1999).

The age distribution of gonorrhea also differs between genders and age groups as seen in Figure 8. Nationally, gonorrhea incidence for females peaks among 15-19 year olds and for males peaks among 20-24 year olds. Washington State reflected this trend in 1999. Among women, the peak incidence, 187.6 per 100,000, was among 15-19 year olds and peak gonorrhea incidence among men was found in the 20-24 year old age group. Contributing factors to the different age distributions of gonorrhea incidence among men and women are the age gap between men and women in sexual relationships as well as the previously noted outbreak among MSM whose median reported age was 32 (*ibid.*).

In Washington State, marked decreases in gonorrhea incidence have been seen across all racial and ethnic groups (Figure 9). The largest and most significant decrease has occurred among the African-American population, where the gonorrhea incidence rate has decreased 61.9% from 916.9 per 100,000 persons in 1993 to 348.6 per 100,000 in 1999. Rates have remained relatively stable at approximately that level through the most recent 4 report years. Though the decrease observed since 1993 is remarkable, racial disparities in disease burden clearly continue to exist. In contrast to chlamydial infection (Figure 3), which remains widely prevalent in all races and among those of Hispanic origin due to duration of infectiousness among those who are asymptomatic, gonococcal infection appears to have retreated deeper into core populations. In Washington State, 20.5% of reported cases of gonorrhea had missing race data and 24.6% of case reports were missing ethnicity data. Caution is ordinarily advised when interpreting incidence rates by race when a significant portion of cases are reported without this information. However, additional analysis of gonorrhea reports, assuming the unlikely event that all cases missing race information are white, yielded identical rankings by race as those presented in Figure 9.

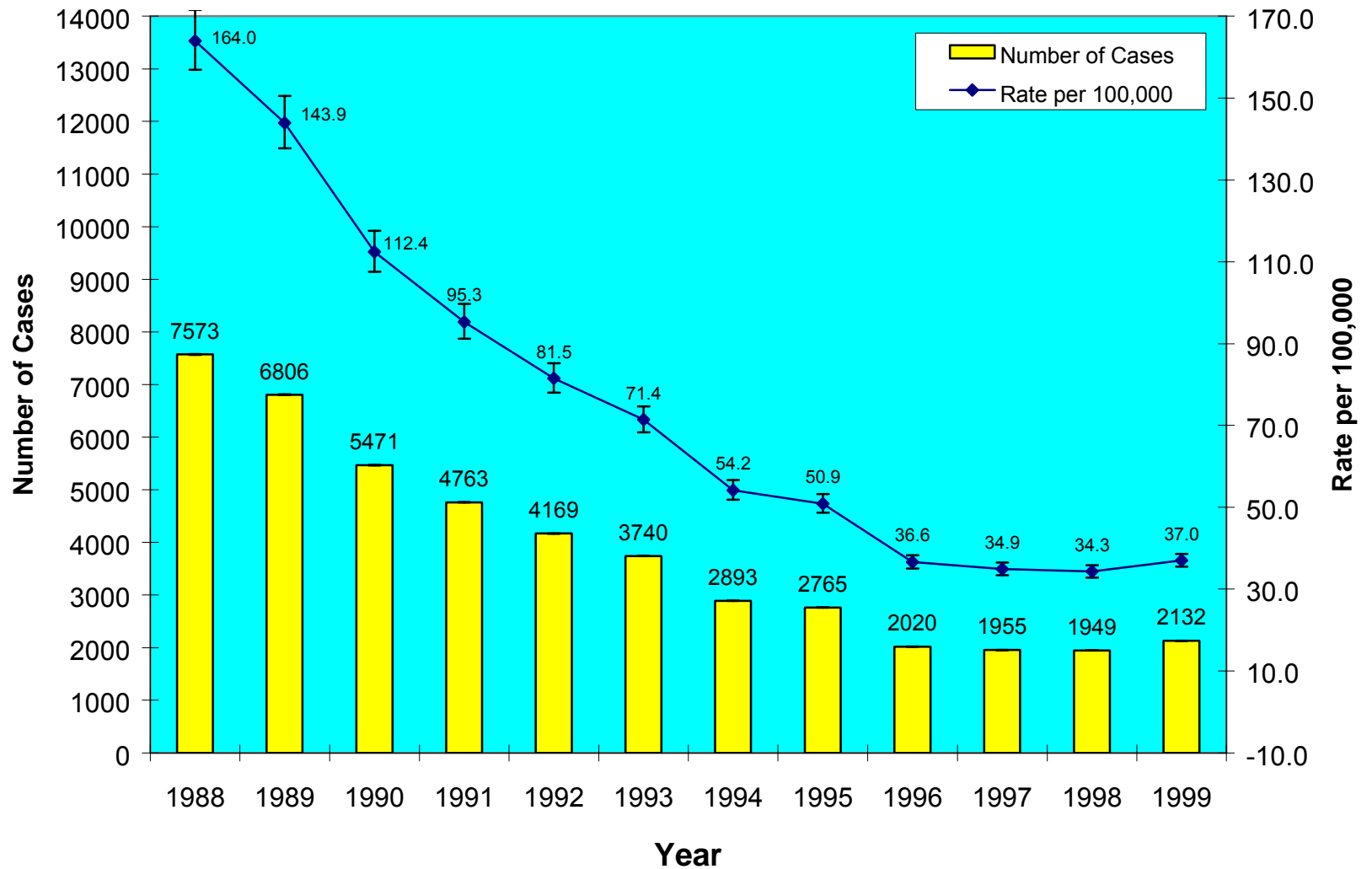
County-Level Gonorrhea Trends

The distribution of gonorrhea not only differs by gender, age, and race, as noted above, it also differs by geography. At the county-level, gonorrhea incidence impacts dense urban versus rural counties differently (Figures 9, 11, 12):

- Highest gonorrhea incidence rate is observed for Pierce County, 89.3 per 100,000
- King County has second highest observed rate at 54.3 per 100,000
- All other Washington counties exhibit less than half the incidence rate of Pierce or King counties.

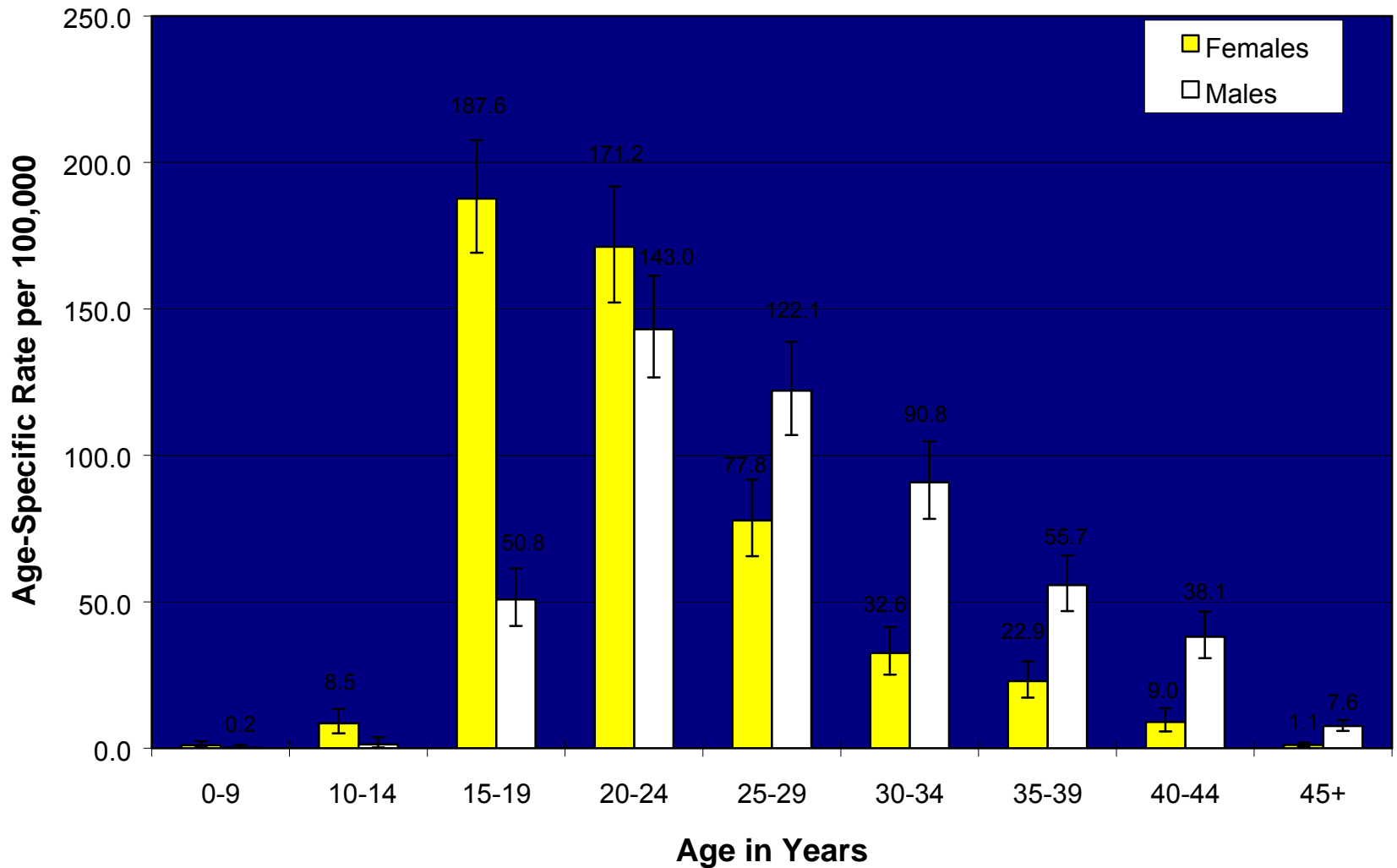
To further illustrate the differences in gonorrhea disease burden across counties, gender-specific and age-specific rates were calculated. Gonorrhea incidence rates for males and females by county are presented in Table 3. For most counties in Washington State, there were either no gonorrhea cases or too few cases to calculate a stable incidence rate by gender. Among the 15 counties with enough cases to allow calculation of a gender-specific incidence rate, Pierce County has the highest rates for males and females at 80.2 per 100,000 and 98.5 per 100,000, respectively. King County had the highest number of cases among males (591) while Pierce County had the highest number of female cases reported (344) for the current report year.

Figure 7. Reported Gonorrhea Cases and Incidence Rates* (95% CI), Washington State, 1988-1999**



* This is the crude rate, not adjusted for age. —|— = Confidence Interval
 ** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

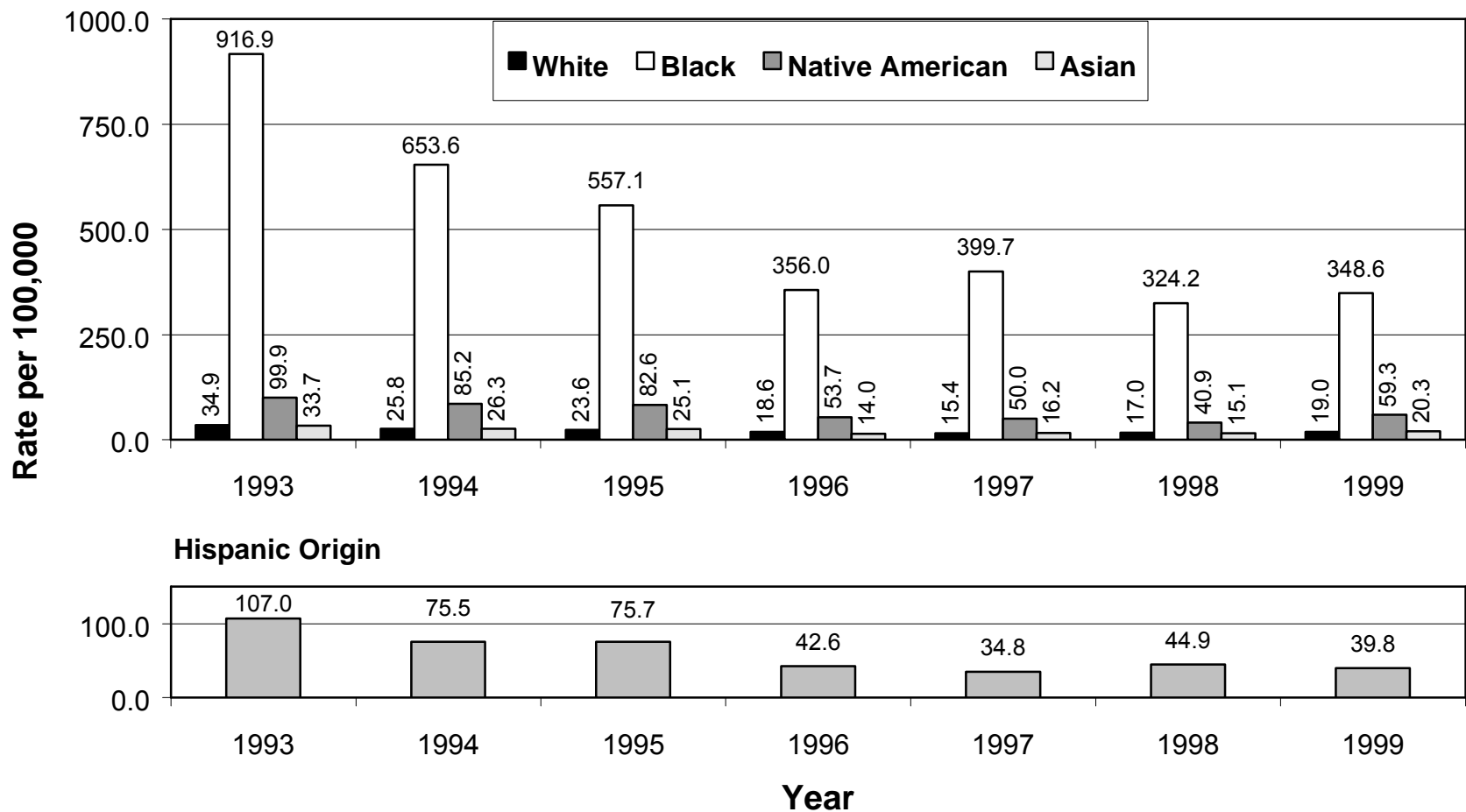
Figure 8. Age-Specific Gonorrhea Rates* (95% CI) by Gender, Washington State, 1999**



* Age missing for 18 (1.8%) female cases and 22 (1.9%) male cases and excluded from calculated rate.

** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate. —|— = Confidence Interval

Figure 9. Gonorrhea Incidence Rates* by Race/Ethnicity, Washington State, 1993-1999**

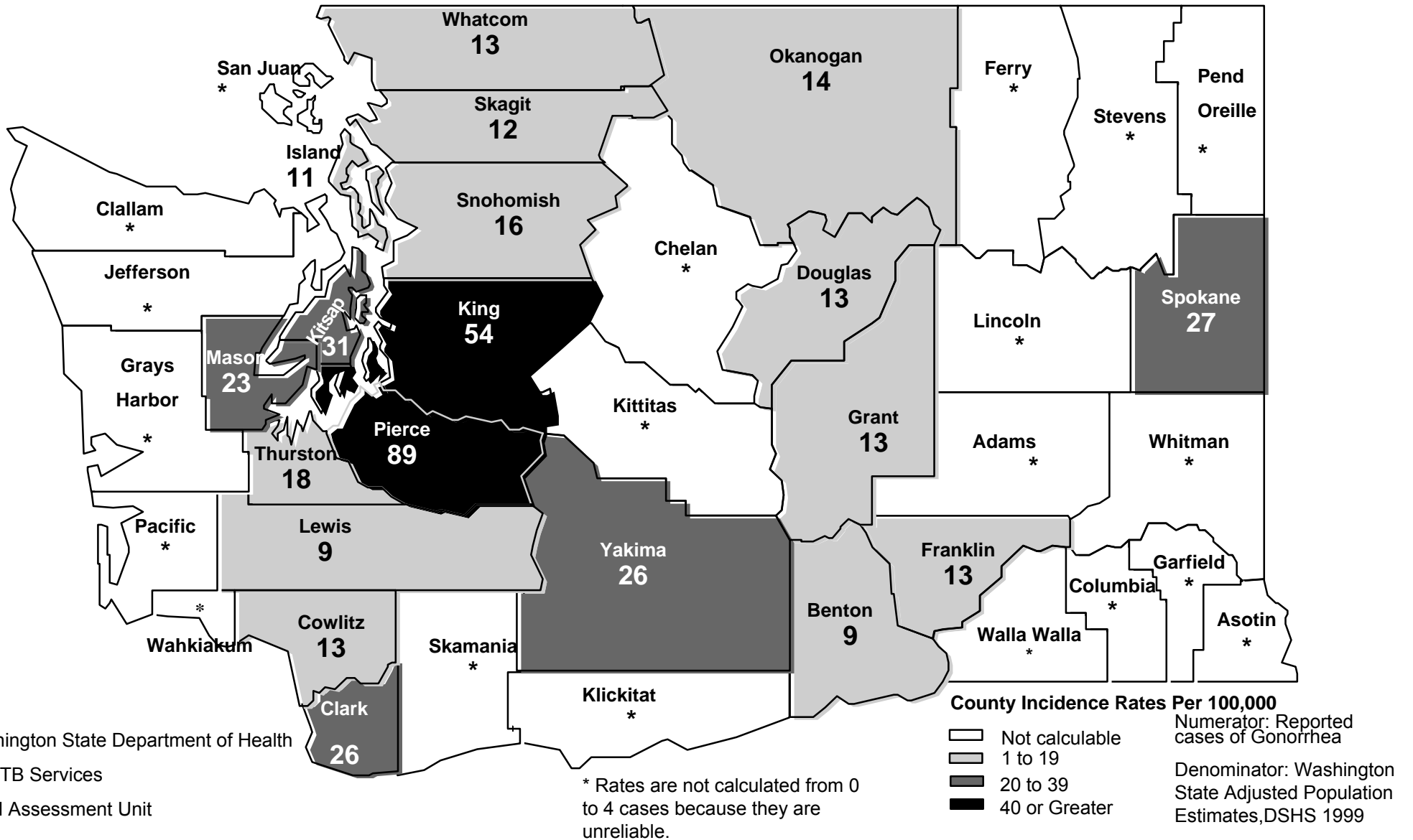


* This is the crude rate, not adjusted for age. Race data missing for 20.5% of cases; ethnicity data missing for 24.6% of cases. Because of missing data, comparisons between races/ethnicities are not advised.

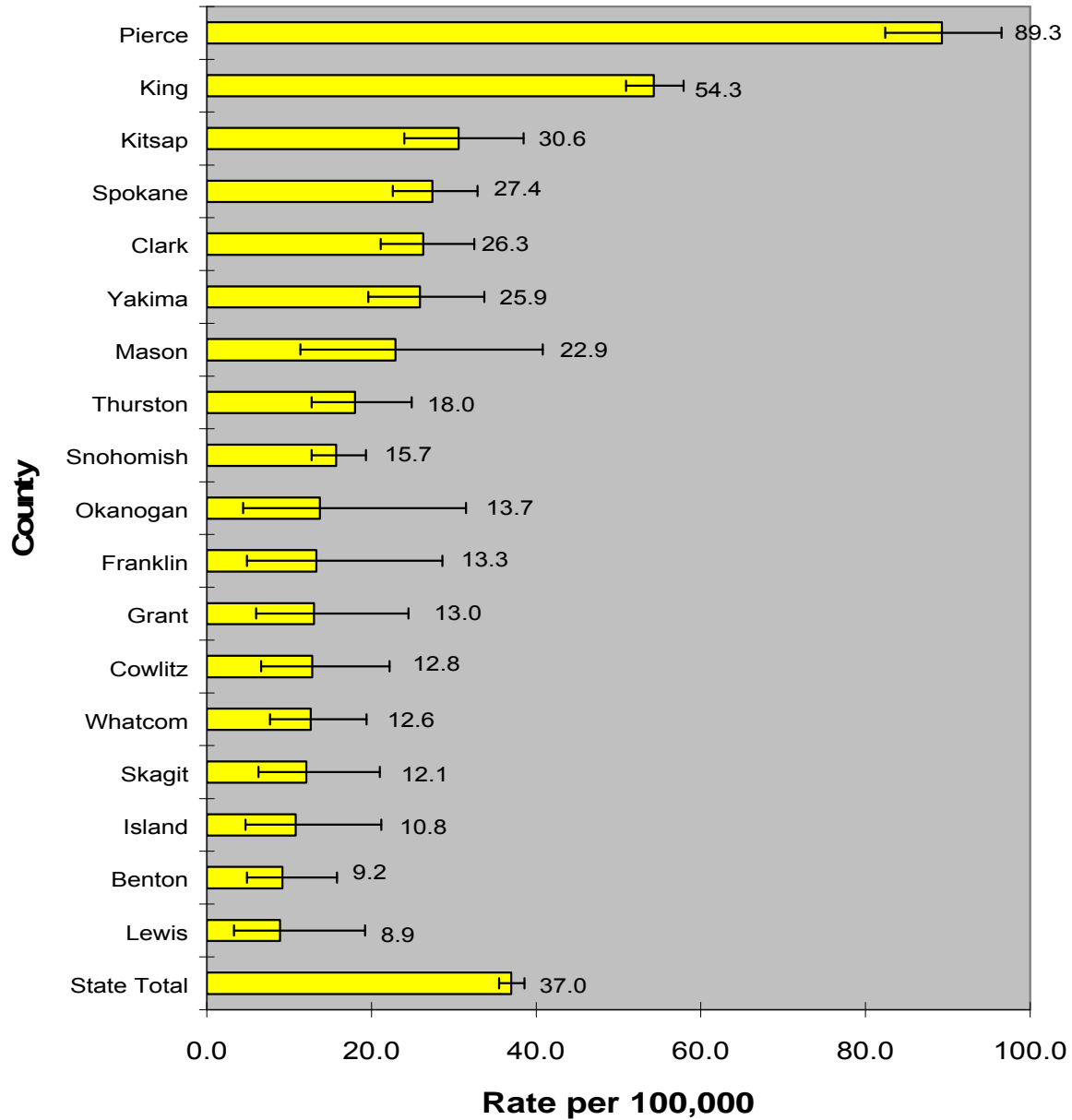
** Race and ethnicity counted separately, e.g. a case can be both "White" and "Hispanic."

Figure 10. Gonorrhea Incidence Rates By County

Washington State/ 1999



**Figure 11. Gonorrhea Incidence Rates*
(95% CI)** by County, Washington State, 1999
Ranked from Highest to Lowest**

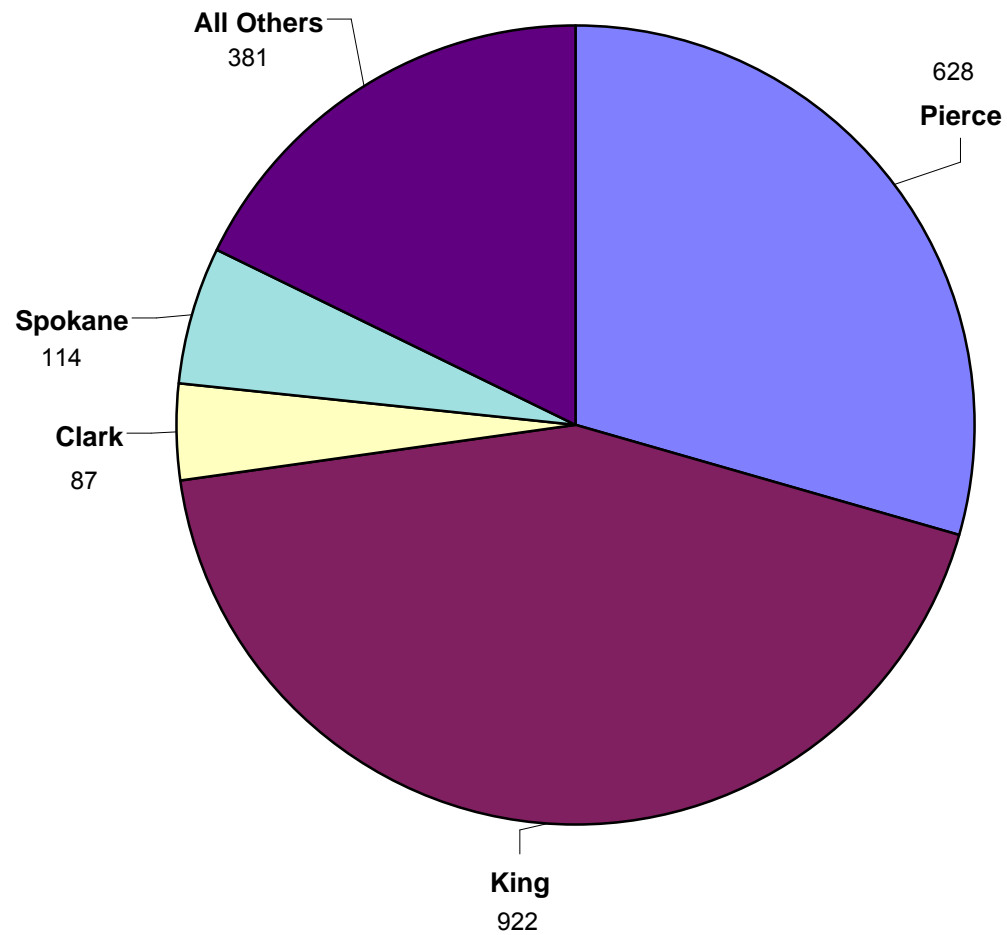


* This is the crude rate, not adjusted for age. Counties with fewer than 5 cases not shown.

** 95% Confidence Intervals (CI) evaluate the influence of chance on the rate.

—| = Confidence Interval

Figure 12. Reported Gonorrhea Cases by County of Residence, Washington State, 1999



SYPHILIS

Syphilis infection has four distinct stages--primary, secondary, latent and tertiary. Primary syphilis infection is characterized by a painless genital ulcer which will resolve spontaneously without treatment. Secondary infection most commonly presents as a rash of varying duration and which may be recurrent. An infected person who does not get treatment may infect others during the first two stages (primary, secondary). Early latent syphilis is defined as an infection which is less than one year old and can be perinatally infectious or if a secondary relapse occurs. Trans-placental transmission of syphilis is a potential cause of fetal loss and congenital abnormalities. In the tertiary stage, untreated syphilis, although not contagious, can cause serious heart abnormalities, mental disorders, blindness, other neurological problems and death. All four stages of syphilis were reported in Washington State in the current report year (Figure 13).

State-Level Syphilis Trends

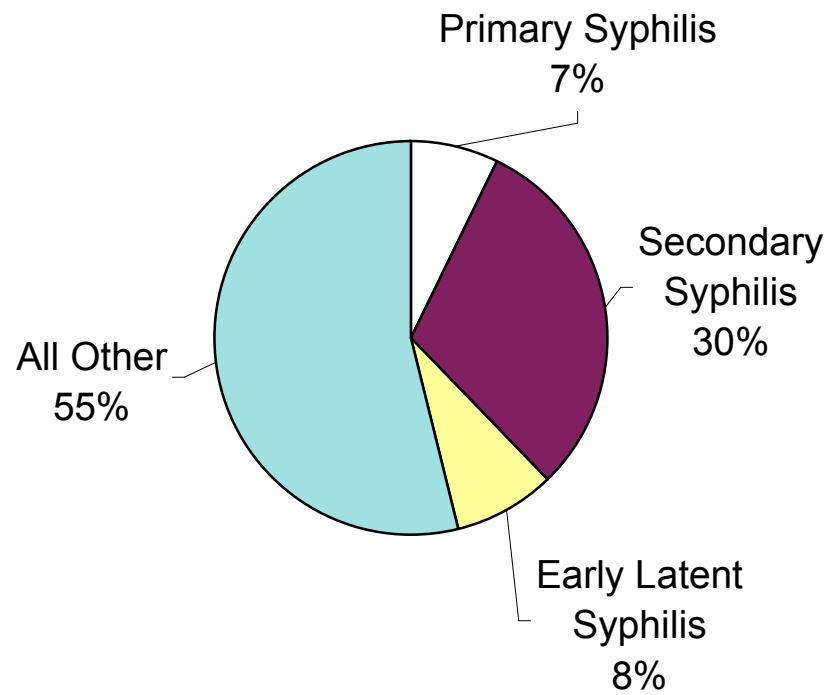
- Incidence rate for all stages of disease has increased 40% since 1998 from 2.5 per 100,000 to 3.5 per 100,000 in 1999
- This increase is largely due to an outbreak of syphilis among men who have sex with men in King County
- Lower proportion of Early Latent and Primary syphilis highlights the importance of screening and education to at-risk communities

Slightly less than 60% of the total syphilis incidence in Washington State in 1999 was reported from King County (Figure 14, 15). This pattern has been observed since 1997 in contrast to previous report years where a greater proportion of cases were reported from counties other than King County. There continues to be a large disparity between male and female rates (Figure 16), which strongly suggests that the ongoing outbreak in Seattle-King County is somewhat different than the previous outbreak observed in the early 1990s.

In 1996, King County reported only a single case of P & S syphilis. By 1999, incidence had increased to 71 cases and this outbreak has been determined to be centered primarily among men who have sex with men. Public Health Seattle King County (PHSKC) has estimated that the annual rate of infectious syphilis among MSM increased from zero in 1996 to 90 per 100,000 in 1998 and has projected an annual rate of 200 per 100,000 for the 1999 report year. The annual infectious syphilis rate among HIV infected MSM was estimated at 1500 per 100,000 (MMWR, 1999). More revealing, two thirds of these cases were known to be HIV infected at the time of their syphilis diagnosis and most were in care for HIV at the time of their syphilis infection. It has been proposed that the transmission behaviors responsible for this outbreak have occurred primarily in anonymous sex settings. These findings strongly reinforce the importance of routine STD screening for MSM in the primary care setting and an open dialog between patients and providers on the continuing risks posed by unprotected sexual activity.

Reported cases of P & S and Early Latent have risen sharply to 94 since a low of 14 cases reported in 1996. Of note in Figure 12 is the relatively high proportion of secondary stage disease versus primary and early latent. The expected ratio would be approximately one to one in the relationship between P & S and Early Latent. The fact that there is a larger proportion of secondary disease suggests that for reasons discussed above there continues to be an unrecognized burden of disease and that continued surveillance, education and sustainable interventions are necessary for the control of infectious syphilis.

Figure 13. Syphilis Cases by Disease Stage*, Washington State, 1999



*Reported syphilis cases, n=204

Figure 14. Number of Primary and Secondary Syphilis Cases By County Washington State/ 1999

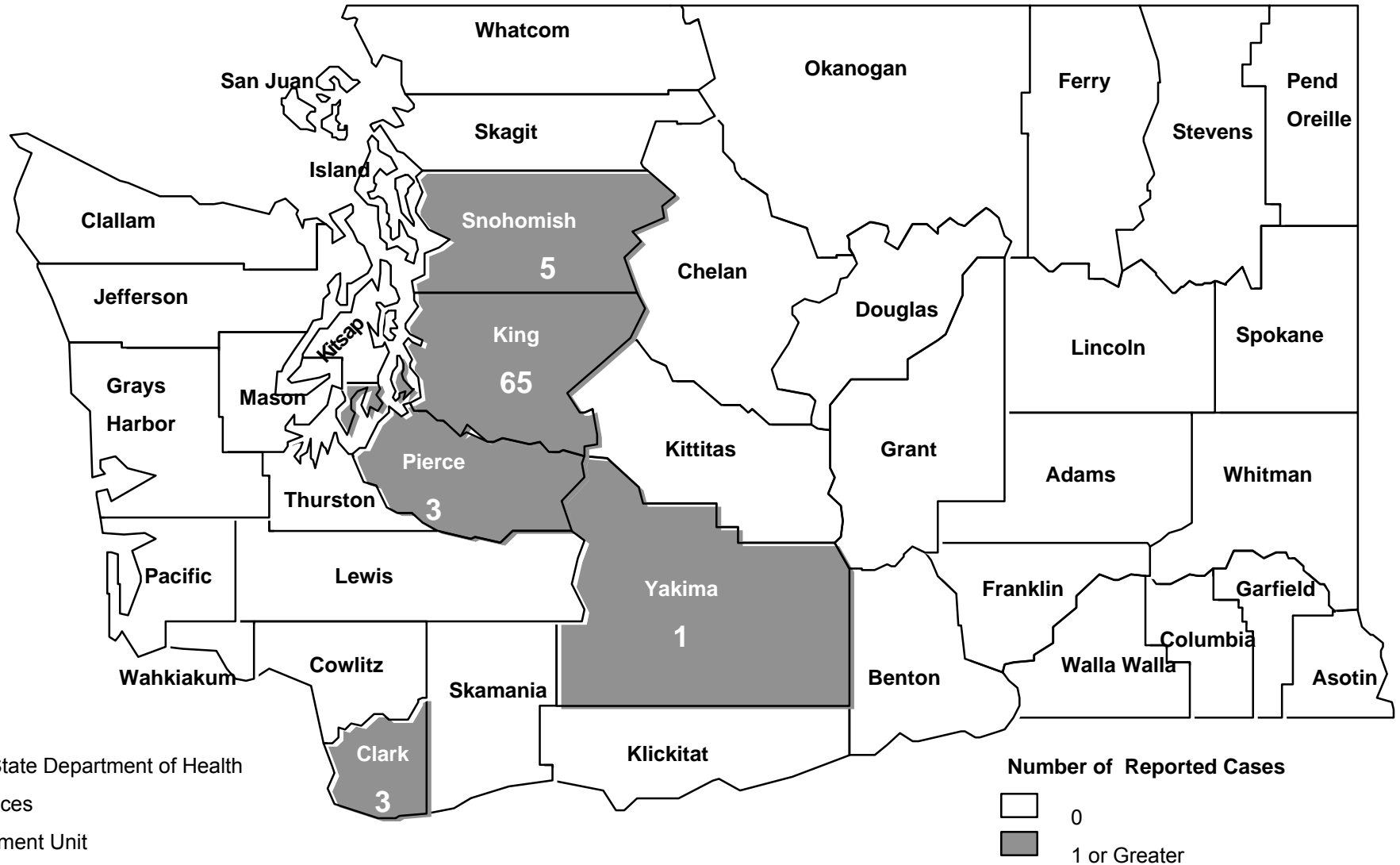
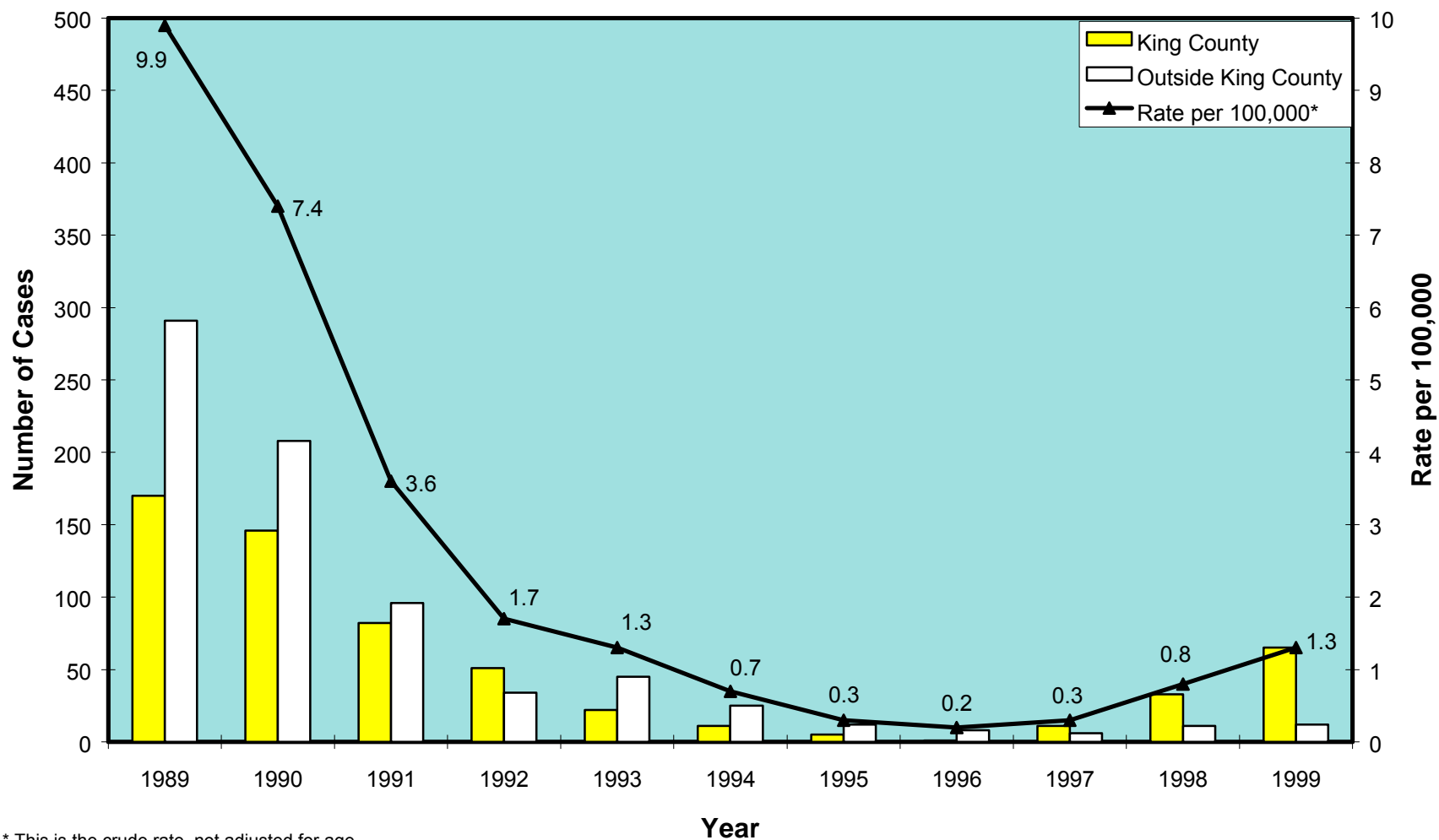
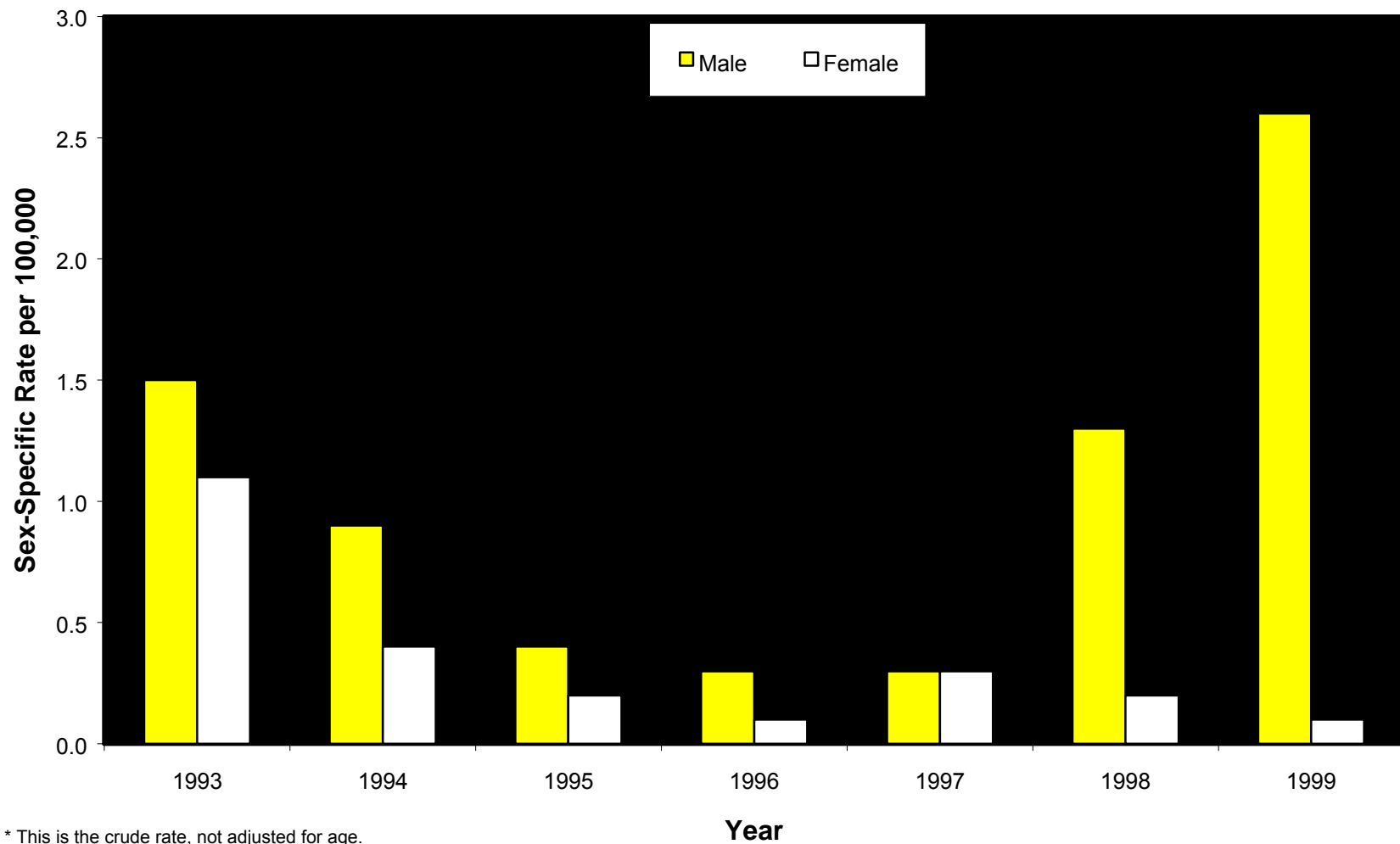


Figure 15. Reported Primary & Secondary Syphilis Cases and Incidence Rates*, King County vs. Washington State, 1989-1999



* This is the crude rate, not adjusted for age.

Figure 16. Primary & Secondary Syphilis Incidence Rates*, Males vs. Females, 1993-1999



* This is the crude rate, not adjusted for age.

OTHER STDs

In addition to chlamydia, gonorrhea, and syphilis there are six additional STDs that are currently reportable to the state Department of Health. Initial genital herpes infection, nongonococcal urethritis (NGU), acute pelvic inflammatory disease (PID), chancroid, lymphogranuloma venereum (LGV), and granuloma inguinale (GI) currently require reporting by health care providers. It is proposed that, with the exception of herpes infection, these diseases be removed from the list of reportable conditions.

Nongonococcal Urethritis (NGU) and Pelvic Inflammatory Disease (PID)

There are two gender-specific STDs, both syndromes, reported in Washington State - NGU for men and acute PID for women. NGU cases totaled 1,051 in 1999 with an estimated incidence rate of 36.6 per 100,000 males. The statewide acute PID incidence rate for females was 10.3 per 100,000 (297 cases). Similar to other STDs in Washington State, NGU and acute PID cases are concentrated in the large, urban population centers of the state--King, Pierce, Snohomish, Clark, Kitsap, Spokane and Yakima counties (Table 5). Both diseases are considered to be under-diagnosed and under-reported; therefore, caution should be used when interpreting these data.

Genital Herpes, Initial Infection

Washington State is one of a handful of states that has reporting of genital herpes. Only the initial infection is tracked in the state surveillance system. In 1999, 1,953 cases of initial herpes infection were reported (33.9 per 100,000 persons). Unlike chlamydia and gonorrhea, a suspected herpes infection does not require laboratory confirmation in order for the case to be reported to the state health department. Given recent CDC estimates of genital herpes prevalence in the United States (CDC, 1998), cases of initial genital herpes reported in Washington State are probably an underestimation of true incidence.

Others

Chancroid, LGV, and GI are very rare STDs. Only 20 states reported any cases of chancroid in 1998, with four states reporting 71% of the total 189 cases. Two chancroid cases were reported in Washington State in 1997, one in 1998, and no cases were reported in 1999. No cases of LGV or GI were reported in 1999.

**STATE OF WASHINGTON
STD MORBIDITY REPORT - 1999
REPORTED CHLAMYDIA CASES AND INCIDENCE RATES
BY SEX AND COUNTY**

Table 1

COUNTY	1999 POPULATION		CHLAMYDIA			
	MALE	FEMALE	MALE	RATE/100,000	FEMALE	RATE/100,000
Adams	7,534	7,474	4	*	22	294
Asotin	9,774	10,462	4	*	22	210
Benton	69,593	71,078	31	45	252	355
Chelan	31,129	31,987	24	77	93	291
Clallam	33,048	33,666	9	27	76	226
Clark	162,793	167,453	132	81	391	233
Columbia	1,949	2,031	0	*	2	*
Cowlitz	46,506	47,480	7	15	88	185
Douglas	15,648	15,776	7	45	42	266
Ferry	3,594	3,369	1	*	8	237
Franklin	22,790	22,240	33	145	143	643
Garfield	1,028	1,072	0	*	0	*
Grant	34,363	34,843	23	67	135	387
Grays Harbor	33,653	33,339	24	71	92	276
Island	38,187	35,586	25	65	75	211
Jefferson	13,130	13,105	11	84	24	183
King	843,831	853,846	1,295	153	2,654	311
Kitsap	119,752	115,400	110	92	369	320
Kittitas	15,173	15,603	11	72	24	154
Klickitat	9,072	9,141	4	*	19	208
Lewis	33,338	33,897	17	51	58	171
Lincoln	4,341	4,266	0	*	4	*
Mason	24,549	23,530	18	73	65	276
Okanogan	18,221	18,217	19	104	59	324
Pacific	10,010	10,378	1	*	12	116
Pend Oreille	5,505	5,434	1	*	9	166
Pierce	354,184	349,397	559	158	1,515	434
San Juan	6,363	6,370	1	*	13	204
Skagit	48,969	50,303	41	84	165	328
Skamania	4,814	4,764	2	*	7	147
Snohomish	288,631	290,335	252	87	739	255
Spokane	205,093	210,619	161	79	499	237
Stevens	18,009	18,203	5	28	22	121
Thurston	100,328	104,748	67	67	249	238
Wahkiakum	1,800	1,863	1	*	3	*
Walla Walla	27,645	26,761	24	87	85	318
Whatcom	78,473	80,746	52	66	230	285
Whitman	20,603	19,543	18	87	37	189
Yakima	104,821	107,187	88	84	580	541
STATE TOTAL	2,868,244	2,891,512	3,082	107	8,882	307

*Rates are not calculated from 0 to 4 cases because they are unreliable.

**STATE OF WASHINGTON
STD MORBIDITY REPORT - 1999
REPORTED CHLAMYDIA CASES AND INCIDENCE RATES
BY AGE (15-24 YEARS) AND COUNTY**

Table 2

COUNTY	1999 POPULATION			CHLAMYDIA					
	15-17	18-19	20-24	15-17	RATE/100,00	18-19	RATE/100,00	20-24	RATE/100,000
Adams	877	410	848	5	570	4	*	8	943
Asotin	976	498	1,008	7	717	8	1,606	7	694
Benton	6,803	3,686	7,298	62	911	63	1,709	97	1,329
Chelan	2,648	1,630	2,941	24	906	21	1,288	34	1,156
Clallam	2,769	1,485	2,997	25	903	17	1,145	22	734
Clark	15,337	9,060	19,490	97	632	104	1,148	184	944
Columbia	192	89	203	0	*	1	*	1	*
Cowlitz	4,133	2,696	4,691	15	363	29	1,076	22	469
Douglas	1,468	808	1,537	12	817	11	1,361	17	1,106
Ferry	383	220	444	3	*	5	2,273	0	*
Franklin	2,357	1,370	2,642	33	1,400	27	1,971	73	2,763
Garfield	141	14	91	0	*	0	*	0	*
Grant	3,367	1,973	3,654	30	891	42	2,129	46	1,259
Grays Harbor	3,120	1,723	3,379	42	1,346	21	1,219	34	1,006
Island	2,820	1,718	6,128	2	*	20	1,164	56	914
Jefferson	1,106	483	1,160	4	*	13	2,692	10	862
King	67,111	42,212	95,291	627	934	666	1,578	1,210	1,270
Kitsap	9,971	6,703	16,105	82	822	90	1,343	183	1,136
Kittitas	1,523	2,671	4,705	2	*	6	225	15	319
Klickitat	964	419	914	3	*	6	1,432	10	1,094
Lewis	3,454	1,940	3,426	13	376	10	515	28	817
Lincoln	495	122	424	2	*	0	*	1	*
Mason	2,266	1,238	2,666	19	838	15	1,212	22	825
Okanogan	1,829	867	1,847	19	1,039	23	2,653	18	975
Pacific	897	381	895	8	892	2	*	1	*
Pend Oreille	574	220	558	4	*	2	*	2	*
Pierce	29,603	22,142	52,879	349	1,179	459	2,073	712	1,346
San Juan	550	129	453	6	1,091	1	*	2	*
Skagit	4,139	2,501	4,719	44	1,063	49	1,959	61	1,293
Skamania	502	264	493	4	*	1	*	2	*
Snohomish	25,030	15,677	31,259	195	779	185	1,180	339	1,084
Spokane	18,073	13,186	30,158	112	620	139	1,054	225	746
Stevens	2,199	856	1,954	4	*	11	1,285	8	409
Thurston	9,200	5,758	11,815	52	565	70	1,216	110	931
Wahkiakum	174	88	181	0	*	2	*	1	*
Walla Walla	2,553	2,569	4,528	32	1,253	24	934	37	817
Whatcom	7,405	5,930	13,429	50	675	59	995	108	804
Whitman	1,232	4,719	9,245	3	*	10	212	35	379
Yakima	9,800	6,379	11,076	120	1,224	114	1,787	239	2,158
STATE TOTAL	248,041	164,834	357,531	2,111	851	2,330	1,414	3,980	1,113

*Rates are not calculated from 0 to 4 cases because they are unreliable.

**STATE OF WASHINGTON
STD MORBIDITY REPORT - 1999
REPORTED GONORRHEA CASES AND INCIDENCE RATES
BY SEX AND COUNTY**

Table 3

COUNTY	1999 POPULATION		GONORRHEA			
	MALE	FEMALE	MALE	RATE/100,000	FEMALE	RATE/100,000
Adams	7,534	7,474	0	*	1	*
Asotin	9,774	10,462	0	*	0	*
Benton	69,593	71,078	5	7	8	11
Chelan	31,129	31,987	2	*	2	*
Clallam	33,048	33,666	1	*	2	*
Clark	162,793	167,453	34	21	53	32
Columbia	1,949	2,031	0	*	0	*
Cowlitz	46,506	47,480	4	*	8	17
Douglas	15,648	15,776	1	*	1	*
Ferry	3,594	3,369	0	*	0	*
Franklin	22,790	22,240	2	*	4	*
Garfield	1,028	1,072	0	*	0	*
Grant	34,363	34,843	3	*	6	17
Grays Harbor	33,653	33,339	1	*	2	*
Island	38,187	35,586	5	13	3	*
Jefferson	13,130	13,105	0	*	1	*
King	843,831	853,846	591	70	331	39
Kitsap	119,752	115,400	35	29	37	32
Kittitas	15,173	15,603	0	*	2	*
Klickitat	9,072	9,141	0	*	1	*
Lewis	33,338	33,897	3	*	3	*
Lincoln	4,341	4,266	0	*	0	*
Mason	24,549	23,530	7	29	4	*
Okanogan	18,221	18,217	2	*	3	*
Pacific	10,010	10,378	0	*	0	*
Pend Oreille	5,505	5,434	0	*	0	*
Pierce	354,184	349,397	284	80	344	98
San Juan	6,363	6,370	0	*	0	*
Skagit	48,969	50,303	3	*	9	18
Skamania	4,814	4,764	0	*	0	*
Snohomish	288,631	290,335	43	15	48	17
Spokane	205,093	210,619	46	22	68	32
Stevens	18,009	18,203	0	*	4	*
Thurston	100,328	104,748	16	16	21	20
Wahkiakum	1,800	1,863	0	*	0	*
Walla Walla	27,645	26,761	0	*	0	*
Whatcom	78,473	80,746	11	14	9	11
Whitman	20,603	19,543	1	*	2	*
Yakima	104,821	107,187	23	22	32	30
STATE TOTAL	2,868,244	2,891,512	1,123	39	1,009	35

*Rates are not calculated from 0 to 4 cases because they are unreliable .

STATE OF WASHINGTON
 STD MORBIDITY REPORT - 1999
 REPORTED GONORRHEA CASES AND INCIDENCE RATES
 BY AGE (15-24 YEARS) AND COUNTY

Table 4

COUNTY	1999 POPULATION			GONORRHEA					
	15-17	18-19	20-24	15-17	RATE/100,000	18-19	RATE/100,00	20-24	RATE/100,000
Adams	877	410	848	0	*	0	*	1	*
Asotin	976	498	1,008	0	*	0	*	0	*
Benton	6,803	3,686	7,298	0	*	2	*	4	*
Chelan	2,648	1,630	2,941	0	*	1	*	1	*
Clallam	2,769	1,485	2,997	1	*	0	*	0	*
Clark	15,337	9,060	19,490	17	111	16	177	27	139
Columbia	192	89	203	0	*	0	*	0	*
Cowlitz	4,133	2,696	4,691	2	*	1	*	3	*
Douglas	1,468	808	1,537	0	*	0	*	1	*
Ferry	383	220	444	0	*	0	*	0	*
Franklin	2,357	1,370	2,642	0	*	0	*	2	*
Garfield	141	14	91	0	*	0	*	0	*
Grant	3,367	1,973	3,654	2	*	2	*	2	*
Grays Harbor	3,120	1,723	3,379	1	*	1	*	0	*
Island	2,820	1,718	6,128	0	*	2	*	3	*
Jefferson	1,106	483	1,160	0	*	0	*	0	*
King	67,111	42,212	95,291	78	116	88	208	208	218
Kitsap	9,971	6,703	16,105	12	120	11	164	28	174
Kittitas	1,523	2,671	4,705	0	*	1	*	1	*
Klickitat	964	419	914	0	*	0	*	1	*
Lewis	3,454	1,940	3,426	1	*	0	*	1	*
Lincoln	495	122	424	0	*	0	*	0	*
Mason	2,266	1,238	2,666	0	*	1	*	3	*
Okanogan	1,829	867	1,847	1	*	1	*	0	*
Pacific	897	381	895	0	*	0	*	0	*
Pend Oreille	574	220	558	0	*	0	*	0	*
Pierce	29,603	22,142	52,879	76	257	96	434	174	329
San Juan	550	129	453	0	*	0	*	0	*
Skagit	4,139	2,501	4,719	3	*	4	*	2	*
Skamania	502	264	493	0	*	0	*	0	*
Snohomish	25,030	15,677	31,259	8	32	12	77	28	90
Spokane	18,073	13,186	30,158	15	83	21	159	25	83
Stevens	2,199	856	1,954	0	*	2	*	2	*
Thurston	9,200	5,758	11,815	3	*	7	122	11	93
Wahkiakum	174	88	181	0	*	0	*	0	*
Walla Walla	2,553	2,569	4,528	0	*	0	*	0	*
Whatcom	7,405	5,930	13,429	1	*	2	*	9	67
Whitman	1,232	4,719	9,245	0	*	1	*	1	*
Yakima	9,800	6,379	11,076	8	82	8	125	16	144
STATE TOTAL	248,041	164,834	357,531	229	92	280	170	554	155

*Rates are not calculated from 0 to 4 cases because they are unreliable.

STATE OF WASHINGTON
STD MORBIDITY REPORT - 1999
REPORTED STD CASES AND INCIDENCE RATES BY DISEASE AND COUNTY

Table 5

COUNTY	POPULATION	CHLAMYDIA			GONORRHEA		
		CASES	RATE/100,000	RANK	CASES	RATE/100,000	RANK
Adams	15,008	26	173	14	1	*	*
Asotin	20,236	26	128	25	0	*	*
Benton	140,671	283	201	9	13	9	17
Chelan	63,116	117	185	11	4	*	*
Clallam	66,714	85	127	26	3	*	*
Clark	330,246	523	158	18	87	26	5
Columbia	3,980	2	*	*	0	*	*
Cowlitz	93,986	95	101	31	12	13	12
Douglas	31,424	49	156	19	2	*	*
Ferry	6,963	9	129	24	0	*	*
Franklin	45,030	176	391	1	6	13	14
Garfield	2,100	0	*	*	0	*	*
Grant	69,206	158	228	5	9	13	13
Grays Harbor	66,992	116	173	13	3	*	*
Island	73,773	100	136	22	8	11	16
Jefferson	26,235	35	133	23	1	*	*
King	1,697,677	3,949	233	4	922	54	2
Kitsap	235,152	479	204	8	72	31	3
Kittitas	30,776	35	114	28	2	*	*
Klickitat	18,213	23	126	27	1	*	*
Lewis	67,235	75	112	29	6	9	18
Lincoln	8,607	4	*	*	0	*	*
Mason	48,079	83	173	15	11	23	7
Okanogan	36,438	78	214	6	5	14	10
Pacific	20,388	13	64	35	0	*	*
Pend Oreille	10,939	10	91	33	0	*	*
Pierce	703,581	2,074	295	3	628	89	1
San Juan	12,733	14	110	30	0	*	*
Skagit	99,272	206	208	7	12	12	15
Skamania	9,578	9	94	32	0	*	*
Snohomish	578,966	991	171	16	91	16	9
Spokane	415,712	660	159	17	114	27	4
Stevens	36,212	27	75	34	4	*	*
Thurston	205,076	316	154	20	37	18	8
Wahkiakum	3,663	4	*	*	0	*	*
Walla Walla	54,406	109	200	10	0	*	*
Whatcom	159,219	282	177	12	20	13	11
Whitman	40,146	55	137	21	3	*	*
Yakima	212,008	668	315	2	55	26	6
STATE TOTAL	5,759,756	11,964	208		2,132	37	

*Rates are not calculated from 0 to 4 cases because they are unreliable.

Appendix

Data Sources and Methods

Confidential case reports, completed by public and private health care providers, and submitted by local health jurisdictions are the primary data source for reported cases of sexually transmitted diseases. Chlamydia, gonorrhea, and syphilis reports require laboratory confirmation to be counted. Genital herpes, NGU and acute PID are reported without laboratory confirmation.

Numerous persons and agencies submit confidential case reports and the quality and usefulness of specific data elements can vary widely. Information on race and ethnicity are frequently missing and should be considered unreliable in quantitative analysis. Other data are completely reported, e.g., provider of care, age, sex and county of residence. In 1998, the confidential database that houses STD case report information was modified to be dynamic, allowing for case report information to be corrected or changed as new information on identified cases becomes available. Because of this change, the statistics reported in this report are for STD case information known as of January 14, 2000.

Glossary

Age-Specific Incidence Rate - A rate for a specified age group. The numerator, e.g., reported cases, and denominator, e.g., mid-year population, refer to the same age group. Age-specific incidence rates allow for the comparison of disease rates across age groups. If age is unknown, it is not included in the calculation of this rate. This rate can also be calculated by gender to account for the different disease distribution for males and females.

Case - An episode of disease. If a person is diagnosed with more than one STD in a year, each infection is counted separately.

Confidence Interval - The confidence interval (CI) evaluates the influence of chance or random variability on the statistical estimate or rate (Selvin, 1996). Surveillance data, even based on complete counts, may be affected by chance. If variation in the occurrence of the disease is random and not affected by differences in diagnosing or reporting, then confidence intervals may be calculated to facilitate comparisons over time, between groups, or between geographic locations (e.g., counties). In this situation, calculated confidence intervals should be based on a Poisson probability distribution. In general, if confidence intervals for two separate rates overlap, there is no statistically significant difference between the two rates.

Narrow confidence intervals for rates indicate with greater certainty that the calculated rate is a reliable approximation of the true rate. Conversely, wide confidence intervals signal greater variability and less certainty that the calculated rate is a good estimate of the true rate.

Crude Rate - The number of events, e.g., reported cases, divided by the total mid-year population. This rate is not “adjusted” or “standardized” for different population

discrepancies. In general, no rates should be calculated if the number of events is fewer than five because the rates are considered unstable.

Data Errors, sources of - Errors could exist in the data due to under-diagnosing, under-reporting, inability of certain populations to access medical services, error in laboratory reporting, or differential reporting or screening by source of care. Therefore, the calculated STD rates may be under-estimated.

Data Limitations - Clinically diagnosed cases of STDs (with laboratory confirmation) may be missed through this surveillance system. Presumptively diagnosed cases may be missed through this surveillance system, as would asymptomatic cases not presenting with any related illness. However, clinical practice recommendations from the CDC state all bacterial STDs should receive laboratory confirmation. Depending upon diagnosing practices, completeness of reporting may vary by source of health care. Some items are known to be under-reported or misreported, e.g., race, ethnicity, and marital status.

Denominator - The lower portion of a fraction used to calculate a rate or ratio; usually, this is the mid-year population. The source for denominator data used in this report was: Washington State Adjusted Population Estimates, Department of Social and Health Services (DSHS), April 1999.

Incidence Rate - The number of new cases of a disease (not persons) in a given year divided by the total mid-year population (age and sex appropriate) as a rate per 100,000 population. Incidence rates allow comparisons between two or more populations by standardizing the denominator and are the most appropriate statistic to use when investigating differences between groups. Incidence rates are not calculated for numerators of less than five cases, including zero cases, because the calculated rate is unreliable and subject to wide confidence intervals.

Numerator - The upper portion of a fraction used to calculate a rate or a ratio, e.g., new cases identified and submitted by providers to local health jurisdictions and forwarded to the State Department of Health, STD/TB Services.

Race and Ethnicity - The STD confidential case report includes race and ethnicity as two separate categories. Race options include White, Black, Asian/Pacific Islander, American Indian/Alaska Native, and Other/Unknown. Ethnicity options include Hispanic, Non-Hispanic, and Unknown. Following the enumeration technique of the United States Census Bureau and the Washington State Center for Health Statistics, race and ethnicity are counted separately. For example, if a case report indicates “White” and “Hispanic”, the case is counted both as White and as Hispanic. However, historical practice in disease surveillance by the Centers for Disease Control and Prevention often conflates Hispanic as a racial category. In light of this difference, care must be taken in comparing Washington State data with national or other state data.

Unstable Rates - When the number of events and/or the size of the source population is small, rates exhibit wide random variability. The addition or deletion of a few cases can have a dramatic effect on the size of the calculated rate. Unstable rates result in wide confidence intervals --generally, the smaller the numbers, the wider the interval-- and reduces the ability to detect statistically significant differences.

VISTA - A menu-driven data analysis program developed for public health assessment by Public Health, Seattle-King County. When the analysis is defined, the software activates the appropriate numerator and denominator files, analyzes them using the Statistical Package for the Social Sciences (SPSS) and then displays the results in a Microsoft Excel spreadsheet. The spreadsheet can then be used to make a wide range of Excel charts and tables.

Guidelines to Prevent Misuse of Data

Ready access to data by persons unfamiliar with the sources or unacquainted with epidemiology and statistics sometimes leads to misinterpretation or misrepresentation of information. This could result in inappropriate decision-making and potential misdirection of resources. The following guidelines may help prevent data misuse and should always be considered when reviewing data from any source:

1. Understand what you are looking at. What do the data cover? Do the data represent STD infections or persons with an STD? Do the numbers reflect new (incident) cases or cumulative numbers of cases? Are trends presented appropriately, using the same criteria for the numerator and denominator over the period of investigation?
2. Know the limitations of the data source. How is the information collected? How accurate and complete are the data? Are the data representative of a larger group or specific to a particular subset only?
3. Small increases and decreases in numbers can look large if the baseline numbers are small to begin with. For example, if two cases of chlamydia are counted in a particular county in one year and three cases are counted in the next year, this is an increase of 50%. This may sound significant, but a change of one case is not. Caution is warranted.
4. Look for consistencies with other sources of information. Results for an investigation are more believable if they are supported by similar findings from other known studies. This does not mean that new findings should be ignored, but they may deserve a little more attention in establishing their conclusions.

In summary, data should never be taken at surface value. They should be closely scrutinized, analyzed, and placed into context before any decisions are made.

References

Fleming, D.T., et al. *Herpes Simplex Virus Type 2 in the United States, 1976 to 1994*, **Journal of the American Medical Association**, vol. 337, no. 16, October 16, 1997, pp 1105-11.

Resurgent Bacterial Sexually Transmitted Disease Among Men Who Have Sex With Men – King County, Washington, 1997-1999, MMWR Weekly, 48(35); 773-777, Centers for Disease Control and Prevention, Atlanta, Georgia, September 1999

Selvin, S. **Statistical Analysis of Epidemiologic Data**. Oxford University Press, New York and Oxford, 1996, pgs. 21-3.

Sexually Transmitted Diseases in America: How Many Cases and at What Cost?. Kaiser Family Foundation, Menlo Park, California, December 1998.

Sexually Transmitted Disease Surveillance, 1997. Centers for Disease Control and Prevention, National Center for HIV, STD, and TB Prevention, Division of STD Prevention, Atlanta, Georgia, September 1998.