Arizona Department of Health Services

2011 ANNUAL REPORT SEXUALLY TRANSMITTED DISEASES IN ARIZONA

Office of Disease Integration and Services STD Control Program

STDs in Arizona are increasing at a more rapid pace than in previous years. Most alarming is the 40% increase in Neisseria gonorrhea infections. This is particularly alarming as this bacteria has demonstrated reduced susceptibility to the most effective antibiotics used for its cure.

Arizona Department of Health Services

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JANICE K. BREWER, GOVERNOR
WILL HUMBLE, DIRECTOR

August 8, 2012

Dear Arizona Stakeholder:

The Arizona Department of Health Services (ADHS), Sexually Transmitted Disease (STD) Control Program, is pleased to provide the 2011Arizona STD Annual Report. The report highlights the impact of sexually transmitted diseases (STDs) among the residents of Arizona. The subsequent information, as depicted in the narrative, graphs, and tables herein, highlights the increasing number of STDs affecting our state. All 2011 data are from the ADHS STD Surveillance system as of May 4, 2012.

STDs can cause significant health problems among those who become infected. For instance, untreated chlamydia and gonorrhea can lead to pelvic inflammatory disease (PID). PID can become recurrent among young women and girls often leading to expensive health complications. Other young women may suffer ectopic pregnancies and chronic pelvic pain. Worse still, these STDs can lead to infertility. Untreated syphilis infection can lead to severe consequences including irreversible neurologic, cardiac and internal organ complications. Untreated syphilis in pregnant women can cause syphilis infection in the developing infants leading to serious neurologic and other complications or even death.

The Centers for Disease Control and Prevention (CDC) estimates that there are approximately 19 million new sexually transmitted disease infections occurring nationally each year, almost half of them among young people ages 15 to 24. Despite the fact that STDs are extremely widespread, most people in the United States remain unaware of the risk and consequences of all but the most prominent STD—HIV, the virus that causes AIDS. In addition to the individual health consequences of STDs, care and treatment of STDs add an estimated $17 billion to the nation's healthcare costs each year. Prevention of STDs is more important than ever.

While STDs affect men and women of all backgrounds and economic levels, racial/ethnic minorities, men who have sex with men, and young people bear a disproportionate burden of

STDs in Arizona. The ADHS STD Control Program is working to address these health disparities by collaborating with internal partners as well as local/county/tribal health departments, community based organizations, the Indian Health Service, the CDC, and countless Arizona medical providers to promote STD prevention and intervention statewide.

Although genital herpes, hepatitis B, human papillomavirus, and trichomoniasis are STDs, they are not included in this report. These infections continue to impact a majority of the sexually active population. At some time during the lifetime of every sexually active individual, they may be at risk for these infections. It is important to be tested routinely in order to prevent transmission as well as the manifestations of untreated infection. Sexual health is everyone's responsibility.

Through this report, we hope to disseminate useful and pertinent data to the Arizona public and community leaders. It is our belief that this information can promote dialogue about disease prevention, promote medical treatment and services, and improve the sexual health of all Arizonans.

Please do not hesitate to contact us with further questions regarding STD education, prevention, and screening opportunities.

Sincerely,

Roxanne Ereth, MPH
STD Control Program Manager

RE:re

2011 Annual STD Report:

All case data presented in this report are provisional data derived from the Arizona Department of Health Services (ADHS) sexually transmitted disease (STD) database as of May 4, 2012. For the years 2006 through 2009, rates for this report were calculated using *Population by Five-Year Age Groups, County, and Race/Ethnicity* data from the ADHS Bureau of Public Health Statistics, Health Status and Vital Statistics Section. For the years 2010 and 2011, the 2010 population estimates from the US Census Bureau were used to calculate rates. In addition, as of the date of analysis, provisional Arizona 2011 live birth data was used to calculate congenital syphilis rates. The population in Arizona seems to have been overestimated in the yearly reports produced by the ADHS Bureau of Public Health Statistics, Health Status, and Vital Statistics Section as the population estimates were higher for the State of Arizona compared to the population estimates from the US Census Bureau. If this is indeed an overestimate of the population, some of the rates of disease presented in this report for the State of Arizona may be artificially low in the years prior to 2010.

Overall, the number of cases reported for each disease during 2011 has increased as compared to 2010. Further discussion for each disease follows.

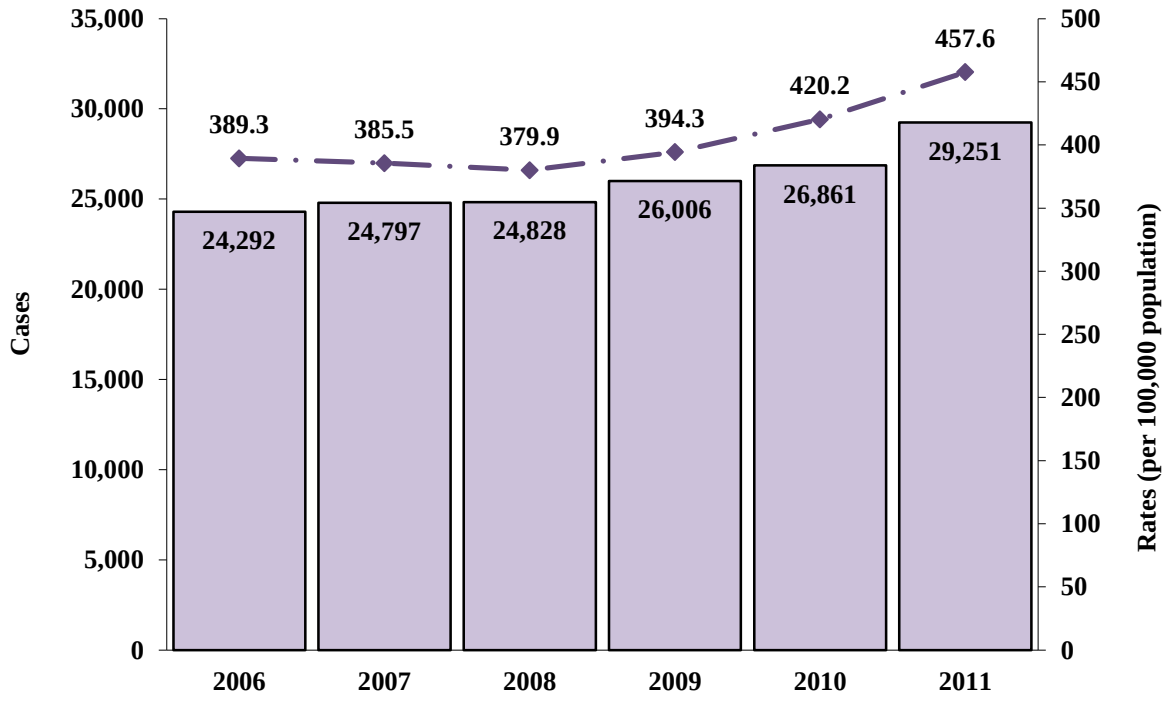
Table 1. Sexually Transmitted Diseases: Cases & Rates per 100,000 Population by County, Arizona, 2011

County	P&S Syphilis		EL Syphilis		Cong Syphilis		Gonorrhea		Chlamydia	
	Cases	Rates*	Cases	Rates*	Cases	Rates*	Cases	Rates*	Cases	Rates*
Apache	*	**3	*	**1	0	0.0	56	78.3	531	742.5
Cochise	0	0.0	*	**3	*	**56	57	43.4	515	392.1
Coconino	*	**2	0	0.0	0	0.0	51	37.9	787	585.5
Gila	0	0.0	0	0.0	0	0.0	9	**17	145	270.5
Graham	0	0.0	0	0.0	0	0.0	8	**22	151	405.7
Greenlee	0	0.0	0	0.0	0	0.0	*	**36	36	426.7
La Paz	0	0.0	0	0.0	0	0.0	*	**15	48	234.3
Maricopa	199	5.2	147	3.9	9	**17	3,209	84.1	16,592	434.7
Mohave	*	**1	0	0.0	0	0.0	16	8.0	368	183.8
Navajo	0	0.0	*	**1	0	0.0	164	152.6	798	742.7
Pima	43	4.4	20	2.0	*	**8	402	41.0	4,103	418.6
Pinal	*	**1	*	**1	*	**20	111	29.5	1,076	286.3
Santa Cruz	0	0.0	0	0.0	0	0.0	8	**17	191	402.8
Yavapai	*	**1	0	0.0	0	0.0	17	8.1	309	146.4
Yuma	8	**4	*	**1	0	0.0	79	40.4	915	467.4
Unknown	*	-	8	-	*	-	391	-	2,737	-
Arizona	262	4.1	186	3.0	13	14.9	4,584	71.7	29,302	458.4

CHLAMYDIA

Reported chlamydia cases in Arizona have steadily increased from 2006 to 2011 (Figure CT 1). The number of chlamydia cases reported in 2011 increased by 2,390 cases over the number of cases reported in 2010, an 8.9% increase. The 2011 annual case rate also increased by 8.9% over the 2010 case rate.

Figure CT 1. Reported Chlamydia Cases and Case Rates, Arizona 2006-2011



Data is provisional and subject to changes, *2010 CDC bridged data used for 2011 case rate population denominators.

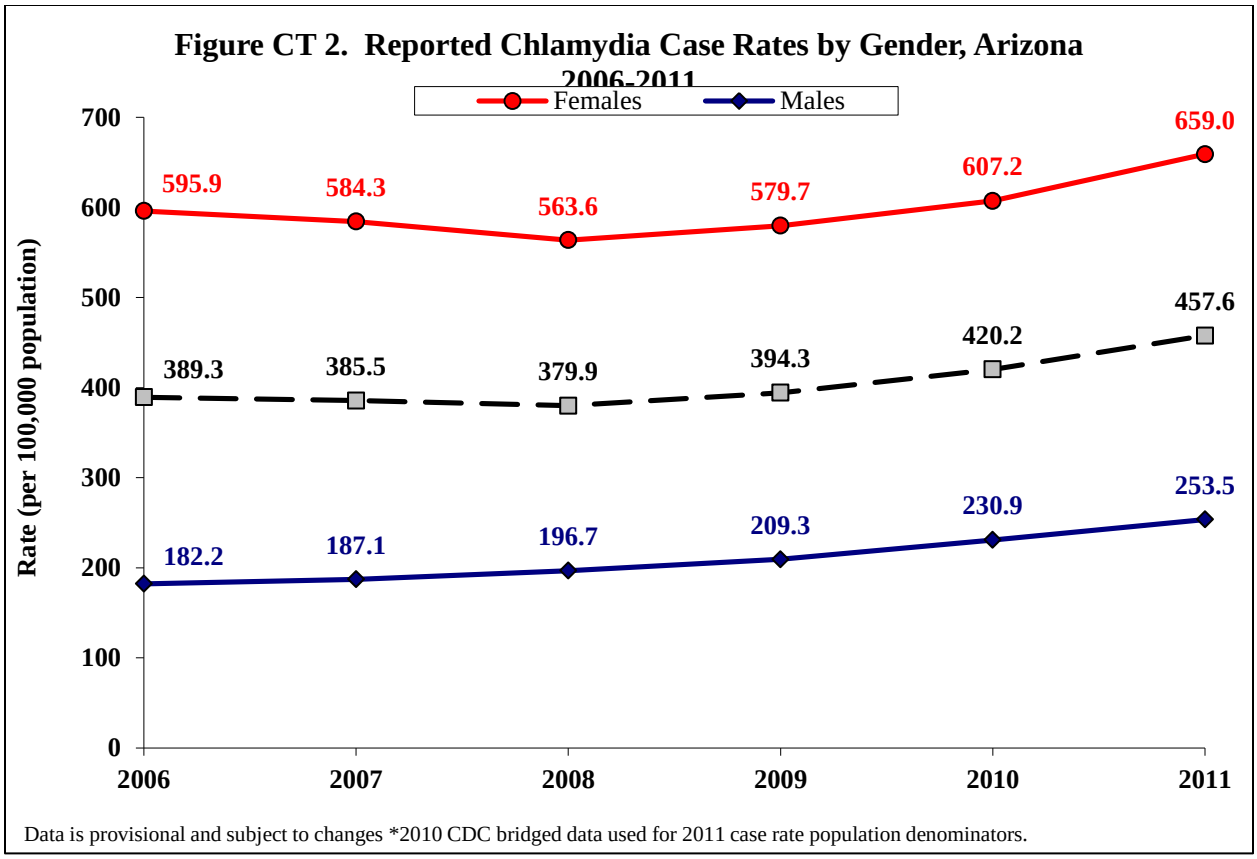
Similar to nationwide trends, adolescents in Arizona, particularly young women, are disproportionately affected by chlamydia. Closer examination of chlamydia rates among young people ages 15-24 reveals extremely high values, nearly 5 times the rates for the state as a whole (Table CT 1). In 2011, cases from this age group comprise 68% of all chlamydia cases in Arizona. This is the same yearly percentage as seen in 2010. In 2011, among 15-19 year olds, the chlamydia case rate remained very high at 1,918.8 cases per 100,000 population and was

2,492.6 per 100,000 population for 20-24 year olds. The rates for each of these age groups continue to trend upward each year. For example, the 2008 case rates for these two age groups were 1,809.7 cases and 1,913.8 cases per 100,000 population, respectively. The chlamydia screening efforts of the Arizona Infertility Prevention Project which screens for chlamydia in women under the age of 26 years can be attributed in part for the increase in cases and rates of chlamydia in the 15-24 age group, as well as females overall in Arizona.

Table CT 1. Reported Chlamydia Cases and Case Rate per 100,000 Population by Age Group, Arizona 2009-2011

	2011		2010		2009	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0-4	18	3.9	34	7.5	19	3.8
5-9	*	**0	*	**1	*	**1
10-14	243	54.2	255	56.8	265	56.7
15-19	8,886	1925.1	8,304	1799.0	8,502	1864.2
20-24	11,039	2494.2	9,930	2243.6	9,292	2034.1
25-29	4,732	1075.5	4,430	1006.8	4,345	865.7
30-34	2,223	533.5	1,997	479.2	1,902	412.3
35-39	1,088	261.7	984	236.7	931	205.1
40-44	516	126.8	467	114.8	452	99.2
45-49	298	69.8	220	51.5	232	51.5
50-54	139	33.5	130	31.3	94	23.4
55-59	63	16.8	61	16.3	51	13.8
60-64	28	8.0	22	6.3	19	6.4
65+	28	3.2	23	2.6	30	3.5
Total	29,302	458.4	26,861	407.2	26,139	396.3
Percent under 20	31%	-	32%	-	34%	-
Percent under 30	85%	-	85%	-	86%	-

From 2006 to 2011, Arizona chlamydia case rates have tended to be around three times higher in females than in males (Figure CT 2). In 2011, the female chlamydia case rate was 2.6 times that of males. This was the same male to female rate ratio in 2010. The IPP program continues to call for universal screening for females under age 26 in specific clinics statewide. The presence of national screening guidelines for women under 26 years of age and lack of such guidelines for men, as well as the differences between female and male access to healthcare and symptom experience can also help to explain these differences in the numbers of reported cases and case rates between males and females.

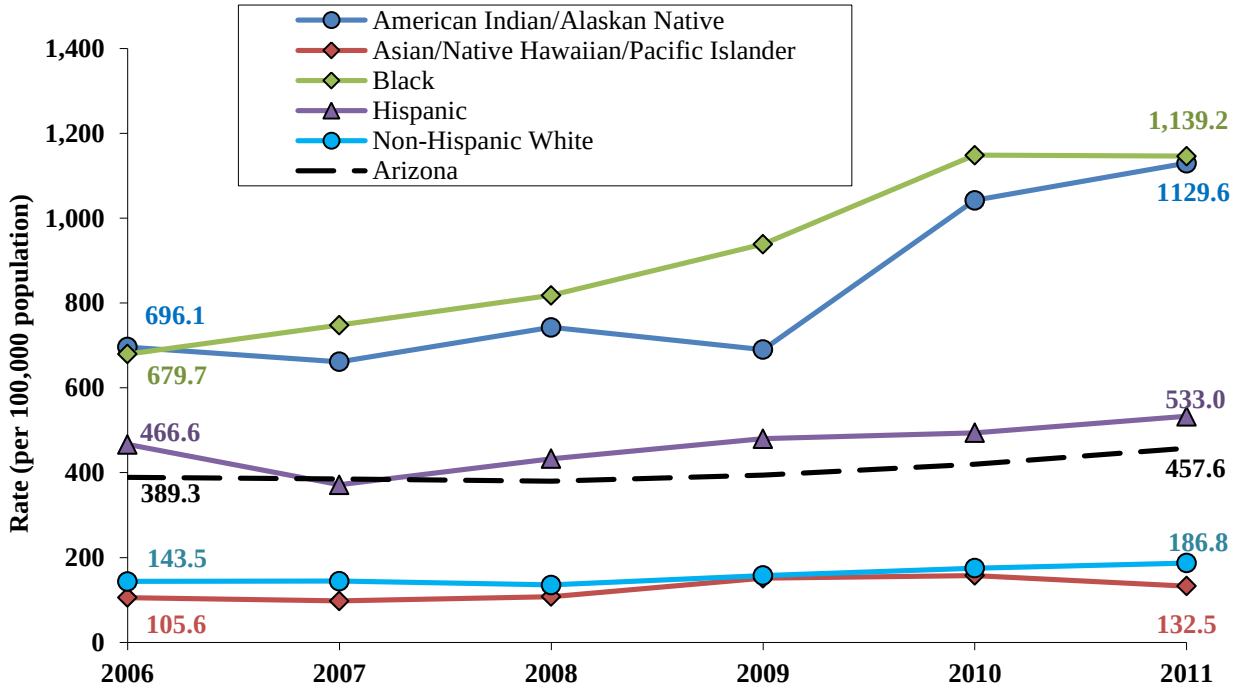


There is a clear health disparity when looking at chlamydia rates in Arizona by race/ethnicity. Blacks and American Indians have maintained disproportionately higher rates of chlamydia from 2006-2011. Unfortunately, the chlamydia rates among Blacks in Arizona have been increasing steadily since 2006 (Figure CT 3). Between 2008 and 2010, the chlamydia rates among Blacks rose sharply from 818.2 to 1,148.5 cases per 100,000 population. The case rate then slightly decreased to 1,139.2 in 2011. In 2011, the chlamydia case rate among the Black population living in Arizona was 6.2 times higher than that of non-Hispanic whites (186.8) cases per 100,000 population). The degree of this disparity has increased from 2009 when the rate among Blacks was 5.9 times higher than that of non-Hispanic whites.

The American Indian population living in Arizona also experiences a disproportionately higher rate of chlamydia. For example, the American Indian 2011 chlamydia rate was 6 times higher than the non-Hispanic white rate for the same year. After a year of declining rates between 2008 and 2009, the American Indian population in Arizona experienced an increase in the rate of reported chlamydia from 690.3 to 1,129.6 cases per 100,000 population in 2011. The

number of chlamydia cases reported among American Indians increased from 2,389 in 2009 to 2,908 in 2011. A portion of the increase in chlamydia rates among American Indians in Arizona can be attributed to the difference between the estimated American Indian population in 2009 (346,080 persons) and a much lower counted 2010 Census population (257,426).

Figure CT 3. Reported Chlamydia Case Rates by Race/Ethnicity, Arizona 2006-2011



Data is provisional and subject to changes *2010 CDC bridged data used for 2011 case rate population denominators.

Of note, the number of unknown race/ethnicity cases had steadily increased between 2004 and 2007 from 2,920 to 7,920, decreasing the reliability of chlamydia analysis by race. The ADHS STDCP began, in early 2009, to actively contact providers to complete missing race/ethnicity reporting in historic cases in order to improve the completeness of this data. As a result, the number of reported chlamydia cases that are missing race has decreased each year since implementation. In 2011, there were 5,966 cases with missing race data. This represents a decrease in the percent of reported cases with missing race from 32% in 2007 to 21% in 2011.

Because partner services interviews are not generally completed for chlamydia and gonorrhea (cases diagnosed in the Maricopa County STD Clinic and Pima County STD Clinic are the exception), the Arizona surveillance database is generally incomplete in terms of sexual

orientation and HIV co-morbidity analyses for these two diseases. During 2010, however, the ADHS STDCP partnered with the ADHS HIV Surveillance Program to undertake a large co-morbidity analysis which included chlamydia/gonorrhea/syphilis and HIV co-morbidity as well as sexual preference among cases that are co-morbid. Results from this analysis were completed in 2011. Complete results of this analysis can be located on the ADHS website at http://www.azdhs.gov/phs/hiv/pdf/EpidemicProf/integrated_epi_prof_2010.pdf. In summary for chlamydia, the analysis found that 2.2% of all reported HIV/AIDS cases from 1998-2008 had a history of a chlamydial infection. As well, 0.9% of males and 0.1% of females in Arizona who are reported with an infection of chlamydia had an HIV infection at some point in the studied time period. These odds of HIV infection are similar to the general population in Arizona [HIV Integrated Epidemic Profile].

GONORRHEA

During 2011, there was a marked increase in reported cases of gonorrhea. From 2006 through 2009, gonorrhea cases had decreased by 46% and gonorrhea rates had decreased by 49%. This was followed by a leveling off in cases and rates in 2010 (Figure GC1). There were 4,564 cases of gonorrhea reported in Arizona in 2011, with a corresponding case rate of 71.4 per 100,000 population. This is an increase of 1,315 cases (40%) over 2010 case reports. In 2011, the rate also increased by 40% over the 2010 rate.

In response to a CDC alert in autumn 2010 of case increases among tribal areas nationally, and in some Arizona Tribal areas, the STDCP staff developed and implemented a gonorrhea outbreak surveillance system based on the Historical Limits Method. This system monitors selected surveillance sites throughout the state. In addition, the STDCP is in the process of developing a gonorrhea monitoring program that will allow state epidemiologists to monitor possible cases of resistant gonorrhea. This monitoring program will identify individuals who test positive for gonorrhea twice within a 30 to 60 day time period.

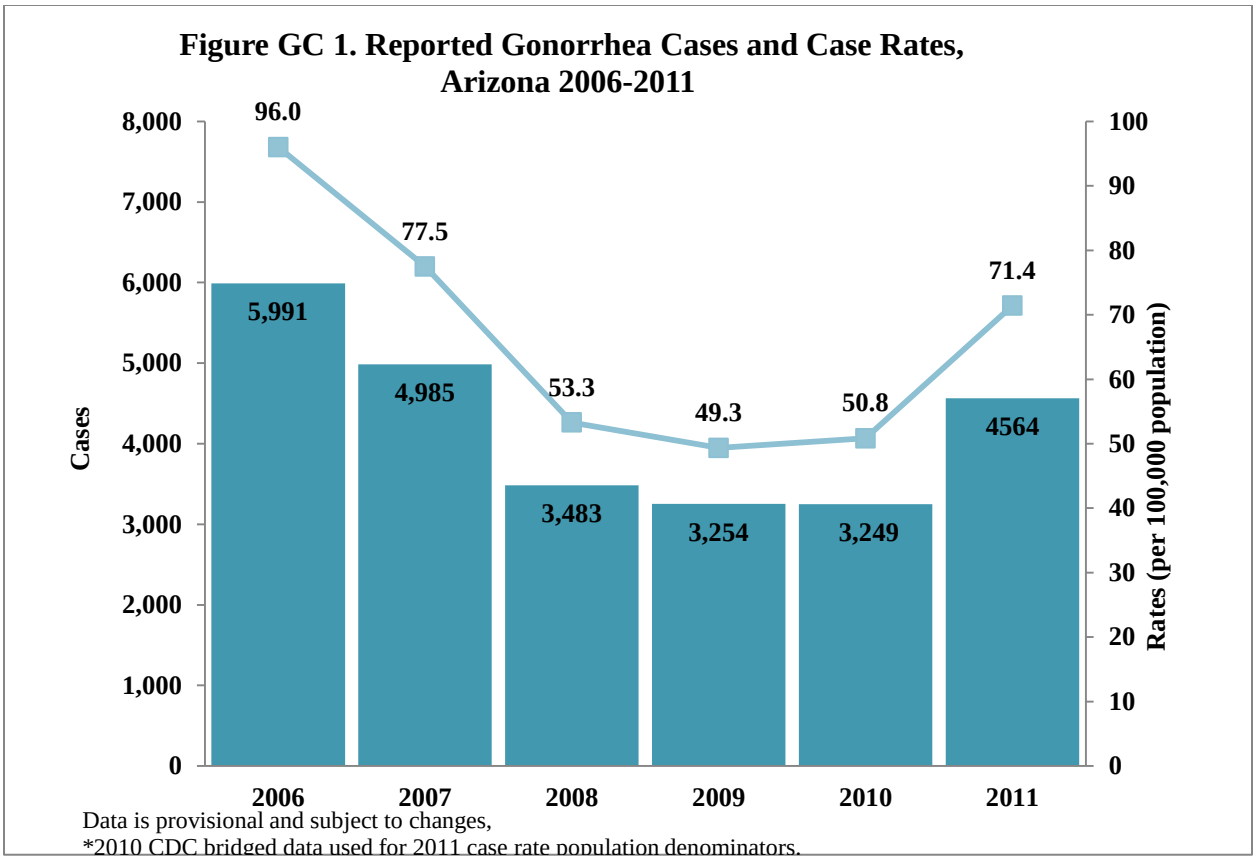


Table GC1 presents gonorrhea cases and rates by age group from 2009 - 2011. Consistent with the last decade in Arizona, in 2011 individuals aged 15-29 years experienced the highest burden of gonorrhea. Compared to 2010, the case rate in 2011 increased in every age group. Similar to 2010, the highest rates of gonorrhea in 2011 were among individuals aged 20-24 years (245.2 cases per 100,000 population in 2010, and 349.3 cases per 100,000 population in 2011).

Table GC1. Reported Gonorrhea Cases and Case Rates per 100,000 by Age Group, Arizona 2009 - 2011

	2011		2010		2009	
Age Group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0 – 4	*	**0	*	**1	*	**1
5—9	*	**0	*	**0	0	0.0
10—14	33	7.4	26	5.8	31	6.6
15 – 19	1088	235.7	789	170.9	738	161.8
20 – 24	1550	350.2	1085	245.2	1066	233.4
25 – 29	756	171.8	575	130.7	573	114.2
30 – 34	451	108.2	317	76.1	330	71.5
35 – 39	240	57.7	185	44.5	200	44.1
40 – 44	203	49.9	125	30.7	118	25.9
45 – 49	137	32.1	71	16.6	100	22.2
50 – 54	61	14.7	52	12.5	62	15.4
55 – 59	38	10.1	14	3.7	11	3.0
60 – 64	11	3.1	6	1.7	16	5.4
65 and older	13	1.5	*	**1	9	1.0
Total	4584	71.7	3255	50.9	3257	49.4
Percentage under 30	74.8%	-	76.2%	-	74.0%	-
Percentage Over 40	25.2%	-	23.8%	-	26.0%	-

From 2010 to 2011, gonorrhea cases in Arizona increased in both males and females. However, gonorrhea morbidity in Arizona continues to be higher in males than in females (Figure GC2). In 2011, there were 2,350 cases of gonorrhea in males, and 2,212 cases of gonorrhea in females. Overall, from 2006 through 2009, the percentage difference in rates of gonorrhea between males and females increased. However, from 2009 through 2011, the percentage difference in rates between males and females decreased. In 2009, the rate was 17% higher in males; in 2010, the rate was 11% higher in males; in 2011, the rate is only 7% higher in males. From 2010 to 2011 females experienced a slightly higher percentage increase in gonorrhea case rates (42%) compared to males (39%). Specifically, in males, gonorrhea case rates increased from 53.4 to 74.0 per 100,000 population; in females, gonorrhea case rates increased from 48.3 to 68.8 per 100,000 population. While the STDCP does not receive information on sexual orientation from providers, the rate increases in both males and females and the shrinking percentage difference in rates between males and females suggest that the

overall increase in gonorrhea is likely not significantly influenced by the sexual orientation of gonorrhea case-patients..

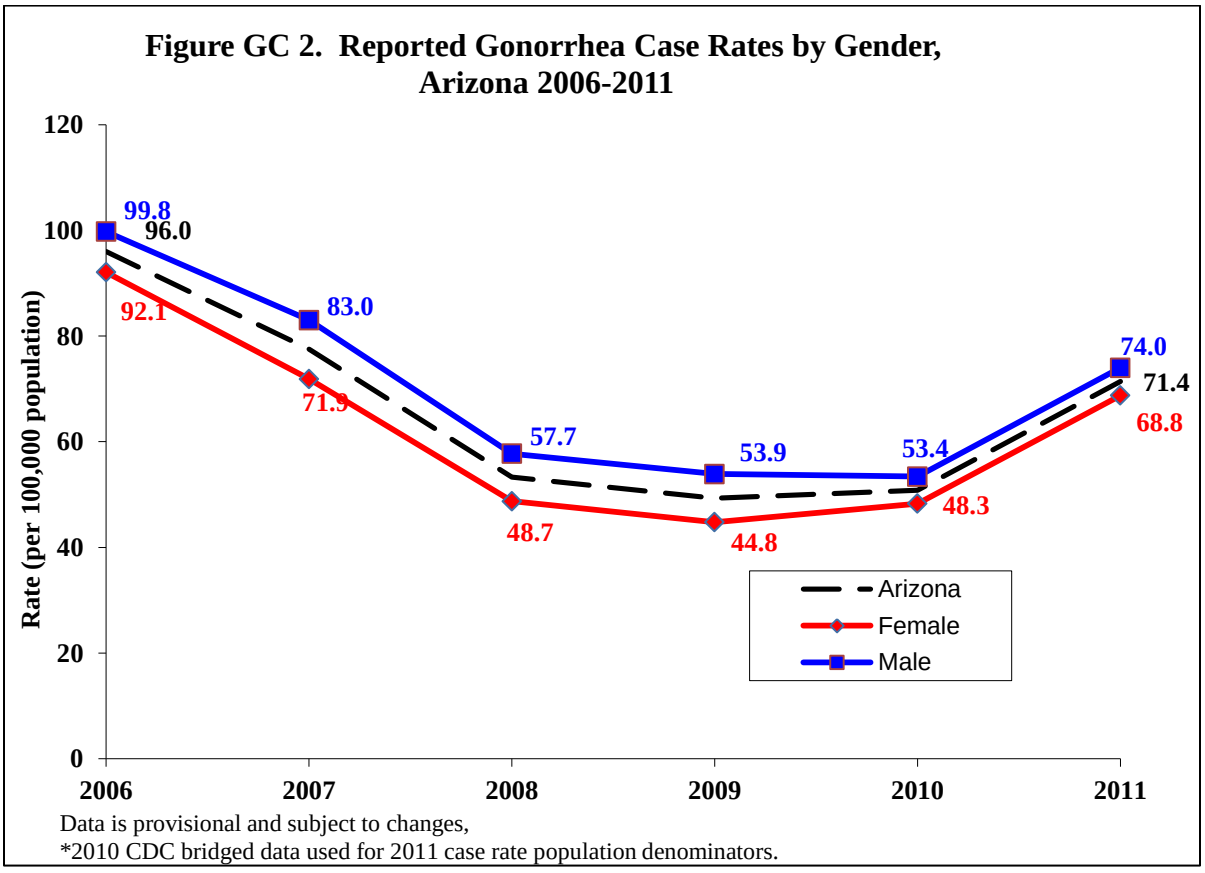
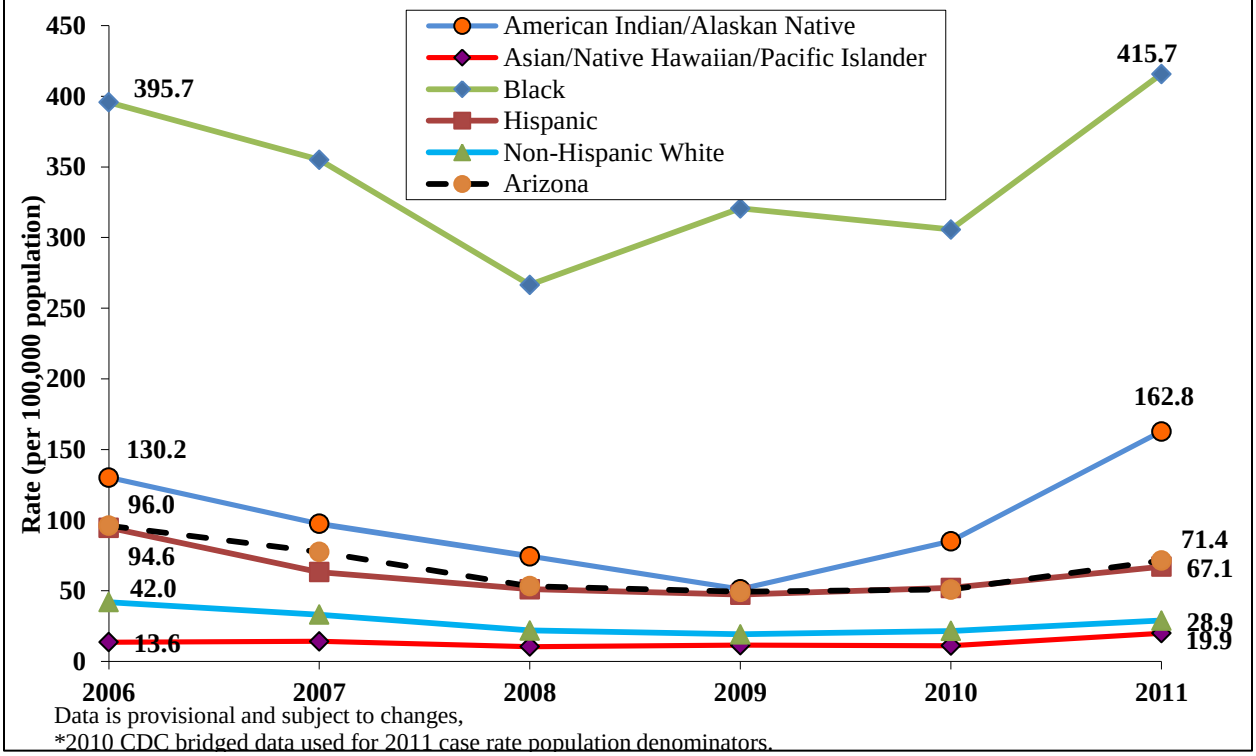


Figure GC 3 depicts race-specific rates in Arizona and shows a general increase in gonorrhea case rates for all races. From 2010 to 2011, gonorrhea case rates increased by 91% among American Indians, and 36% among Blacks. Gonorrhea case rates among Blacks in Arizona are disproportionately higher than those among all other racial and ethnic groups. In fact, the 2011 rate for Blacks was 14.4 times higher than those of non-Hispanic whites.

Gonorrhea rates among Native Americans had been steadily decreasing from 2006 to 2009. However, from 2009 to 2010, rates of gonorrhea increased by 66% from 51.1 to 85.1 per 100,000 population. This percentage increased further from 2010 to 2011, where rates of gonorrhea increased by 91% from 85.1 to 162.8 per 100,000 population. Over the two year period from 2009-2011, the rate of gonorrhea for American Indians in Arizona has tripled. This large increase in gonorrhea among Native Americans is primarily due to gonorrhea outbreaks in

tribal areas in the northeastern quadrant of Arizona. The STDCP is working closely with the ADHS Tribal Liaison and representatives from IHS and Tribal health authorities to carefully monitor and reverse this trend.

Figure GC 3. Reported Gonorrhea Case Rates by Race/Ethnicity, Arizona 2006-2011

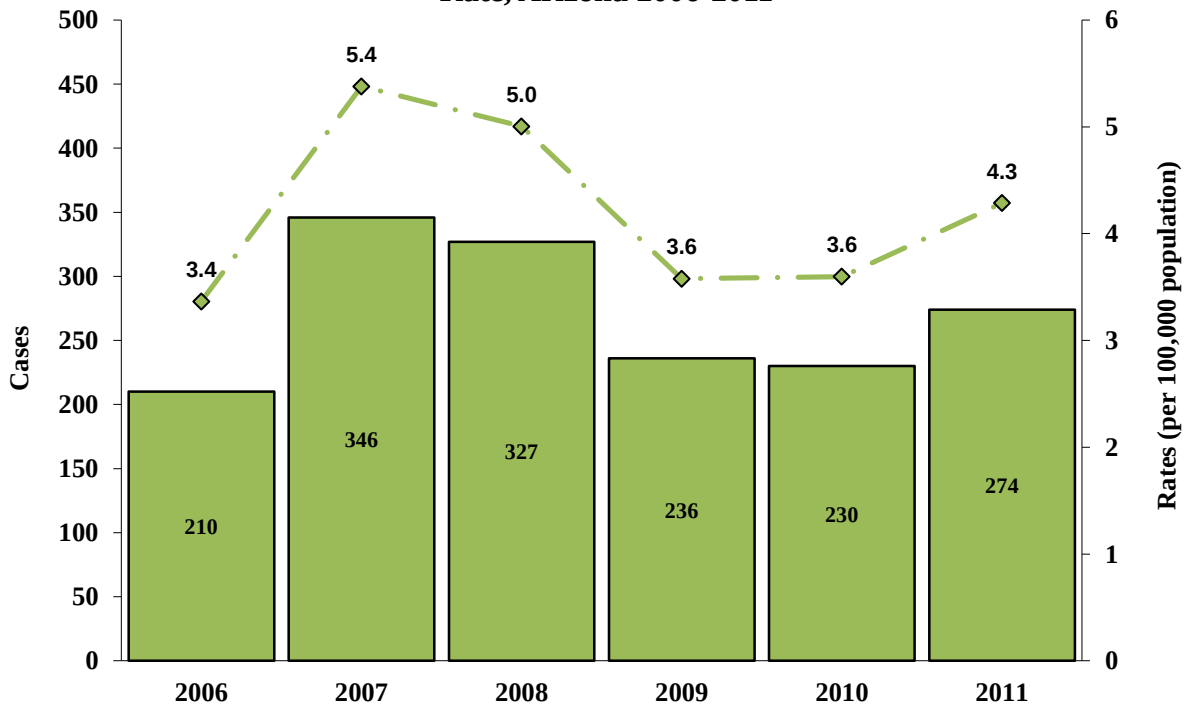


Data is provisional and subject to changes,
*2010 CDC bridged data used for 2011 case rate population denominators.

SYPHILIS

Arizona experienced an increase in primary and secondary (P&S) syphilis cases in 2011 with 274 cases reported (Figure S1). The rate also increased in 2011 (4.3 cases per 100,000 population) compared to 2010 (3.6 per 100,000 population). 2011 is the first year since 2007 that Arizona has reported a year to year increase in both reported cases and rate of P&S syphilis.

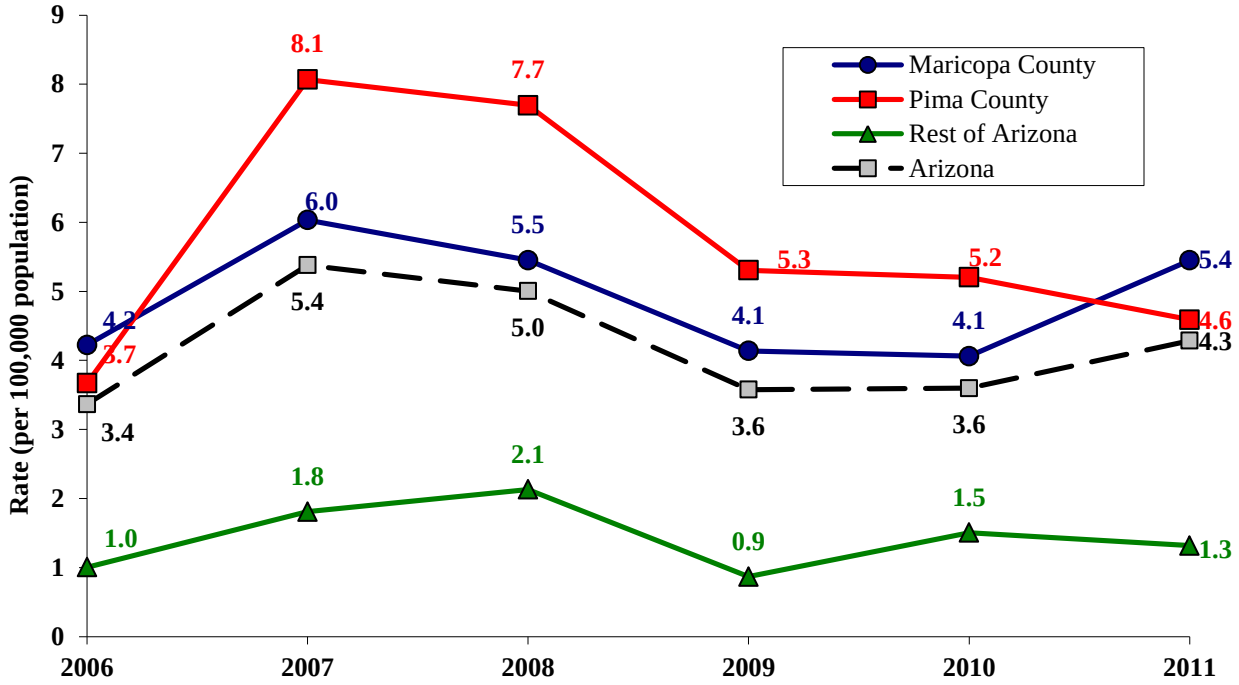
Figure S1. Reported Primary and Secondary Syphilis Cases and Case Rate, Arizona 2006-2011



Maricopa County and Pima County, the two most populous of Arizona's 15 counties, accounted for approximately 92% of all P&S syphilis cases reported in Arizona. In 2011 Maricopa County experienced an increase in P&S cases, with 208 cases reported, compared to 155 cases reported in 2010. This resulted in a rate increase for Maricopa County from 4.1 cases per 100,000 population in 2010 to 5.4 cases per 100,000 population in 2011 (Figure S2), a 32% increase. This trend is being monitored but may be a result of new media campaigns initiated by Maricopa County Health Department, extended clinic hours at the Maricopa County Health Department STD Clinic and new outreach and testing events conducted by a CBO at sites frequented by MSM. From 2010 to 2011, the number of cases reported and the rate of P&S syphilis declined for Pima County as did the case count and rate for the remaining 13 counties. This is the first year since 2006 that Maricopa County's rates have exceeded Pima County's. The STDCP will continue monitoring an increase in P & S cases in Yuma County (2010 population, 195,751 US Census 2010). This county had a 4.5-fold increase in cases from 2 in 2010, to 9 in 2011. Since 2002, Yuma County has never reported more than 5 cases in a single

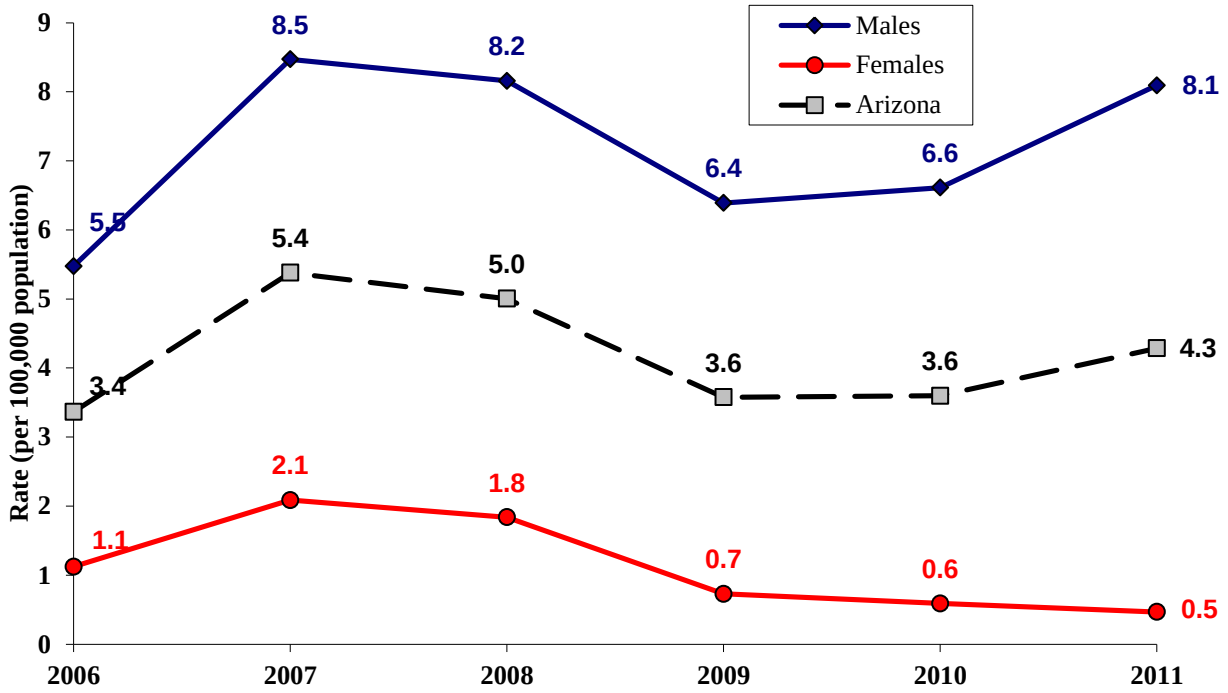
year. This increase in case count in Yuma County corresponds to an increase in rate from 1.0 P&S syphilis cases per 100,000 population in 2010 to 4.6 per 100,000 population in 2011.

Figure S2. Reported Primary and Secondary Syphilis Case Rates by County of Residence, Arizona 2006-2011



For over six years, Arizona has experienced a large disparity in the rates of P&S syphilis cases experienced by males compared to females (Figure S3). Since 2007, the rate of P&S syphilis in Arizona males has fluctuated. In 2007, the rate of P&S syphilis increased from 5.5 cases per 100,000 males in 2006 to 8.5 in 2007. By 2009, the rate had fallen to 6.4. In 2010, the rate among males increased to 6.6, and in 2011 the rate increased again to 8.1. The rate of P&S syphilis among females in Arizona has steadily declined since 2008, reaching a 6-year low of 0.5 cases of P&S syphilis per 100,000 females. The recent increase in male cases and the continued decrease in female cases resulted in a rate of P&S syphilis among men that is approximately 16 times higher than the rate among females in 2011.

Figure S3. Reported Primary and Secondary Syphilis Case Rates by Gender, Arizona 2006-2011



Overall, individuals under 30 accounted for approximately 49% of all P&S syphilis cases diagnosed in Arizona in 2011(Table S1). In 2009, this group accounted for approximately 40% of reported cases and 41% in 2010. In 2011, the 20-24 age group had the highest rate of reported P&S syphilis (14.2 per 100, 000 population). The age groups 25-29 (12.5 per 100, 000 population) and 30-34 (8.2 per 100, 000 population) had the second and third highest rates, respectively. In 2010, the age groups 20-24 (9.3) and 25-29 (8.6) also had the first and second highest rate of reported P&S syphilis. However, in 2010, the age group with the third highest rate was 35-39 (7.0). It appears that reported cases of P&S syphilis in Arizona are shifting toward a younger demographic.

Among males, the age group 20-24 had the highest rate of P&S syphilis in 2011 (24.8 per 100,000 male population); the second and third highest rate were among 25-29 (23 per 100,000 male population) and 35-39 (14.3 per 100,000 male population) year olds, respectively (data not shown). However, among females, the age group 30-34 had the highest rate of P&S syphilis in 2011 (2.0 per 100,000 female population); the second and third highest rates were among 20-24

(2.3 per 100,000 female population) and 25-29 (1.4 per 100,000 female population), respectively (data not shown).

Table S1. Reported Primary and Secondary Cases and Case Rate per 100,000 Population by Age Group, Arizona 2009 - 2011

	2011		2010		2009	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0-4	0	0.0	0	0.0	0	0.0
5-9	0	0.0	0	0.0	0	0.0
10-14	0	0.0	0	0.0	0	0.0
15-19	17	3.7	16	3.5	12	2.6
20-24	63	14.2	40	9.3	35	7.7
25-29	55	12.5	39	8.6	44	8.8
30-34	34	8.2	28	6.7	28	6.1
35-39	30	7.2	29	7.0	24	5.3
40-44	31	7.6	24	5.9	40	8.8
45-49	20	4.7	25	5.9	20	4.4
50-54	12	2.9	14	3.4	12	3.0
55-59	*	**1	9	2.4	9	2.4
59-64	*	**1	*	**1	*	**2
65+	*	**1	*	**0	*	**0
Total	274	4.3	230	3.6	231	3.5
Percent under 30	49%	-	41%	-	40%	-
Percent Under 40	73%	-	66%	-	61%	-

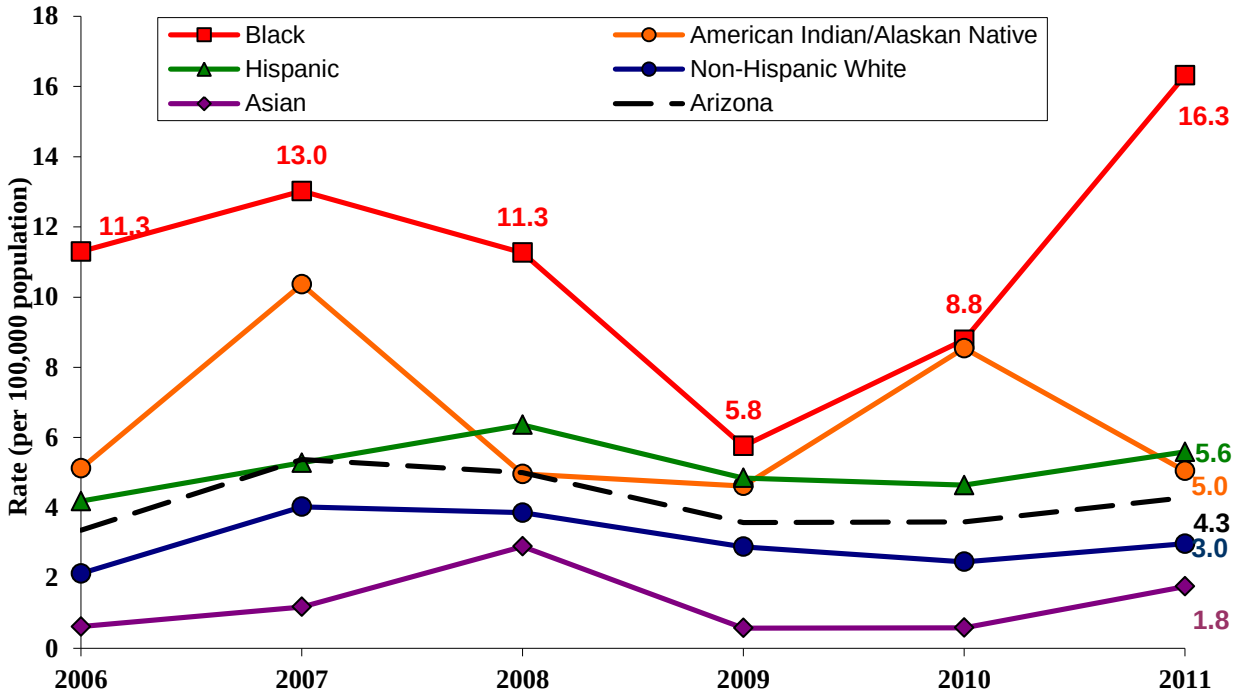
When comparing racial/ethnic groups in Arizona over the previous 5 years, the highest rates of P&S syphilis have been among the Black population (Figure S4). From 2007 to 2009 the rate of P&S syphilis among this population decreased approximately 55%. However, from 2009 to 2011 their rate of P&S syphilis increased from 5.8 cases per 100,000 in 2009 (15 cases) to 8.8 in 2010 (21 cases), and to 16.3 in 2011 (39 cases). This represents a rate increase of nearly 65% from 2009 to 2011. Due to this increase, the rate of P&S syphilis among the Black population was nearly 5.4 times higher than the rate in Non-Hispanic White population in 2011.

The rate of P&S syphilis among the American Indian population in Arizona has also seen fluctuations in the previous six years (Fig. S4)). In 2008, the rate of P&S syphilis in the American Indian population dropped to 5.0 cases per 100,000 population from 10.4 in 2007. The rate decreased again to 4.6 in 2009. By 2010, the rate had increased to 8.5 and in 2011 the

rate decreased to 5.0. It is difficult to interpret these data due to the fact that the 2010 census count for the Native American population in Arizona was approximately 100,000 lower than the 2009 estimation. The fact that the rate has decreased is encouraging. However, the STDCP will still monitor this population closely and maintain its good working relationship with the tribes and IHS facilities to ensure the downward trend continues.

Despite the recent trend in decreasing P&S syphilis rates among Hispanic, Non-Hispanic White, and Asian populations, all three populations experienced a rate increase in 2011. Among the Hispanic population, the rate increased from 4.6 cases of P&S syphilis per 100,000 (88 cases) in 2010, to 5.6 (106 cases) in 2011. Among the Non-Hispanic White population, the rate increased from 2.5 (91 cases) in 2010 to 3.0 (110 cases) in 2011. Among the Asian population, the rate increased from 0.6 (1 case) in 2010 to 1.8 (3 cases) in 2011.

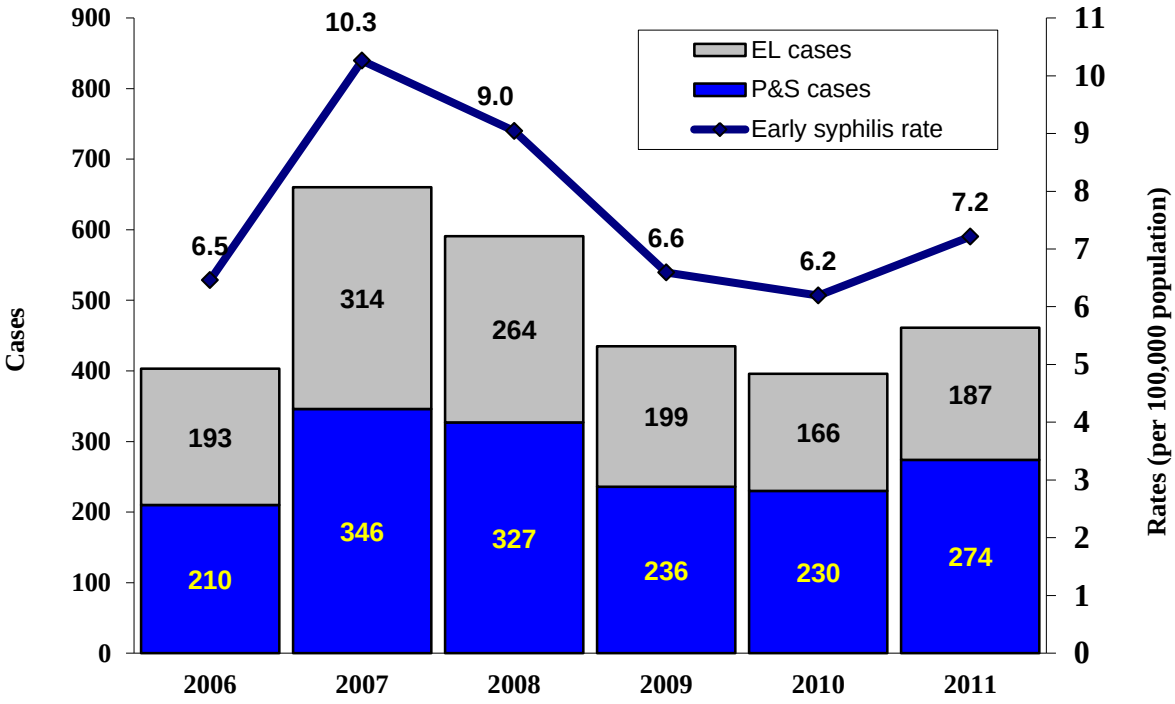
Figure S4. Reported Primary and Secondary Syphilis Case Rates by Race/ Ethnicity, Arizona 2006-2011



The rate of early syphilis (primary, secondary, and early latent syphilis) cases in the state of Arizona closely follows the pattern seen for P&S syphilis from 2006 through 2011 (Figure. S5).

As the number of reported cases of P&S syphilis in the state increased or decreased, so did reported cases of early latent syphilis cases. Thus, the rate of early syphilis rose in 2007 and declined for three consecutive years through 2010. This decline ended in 2011 when the rate of early syphilis rose to 7.0 cases per 100,000 population from 6.2 in 2010. Since 2006 the percentage of early latent cases comprising early syphilis has dropped steadily from 49% in 2006 to 41% in 2011.

Figure S5. Reported Early Syphilis Cases and Case Rates by Stage , Arizona 2006-2011



Once again, MSM make up a large percentage of reported P&S syphilis cases in Arizona. Since 2009, MSM have accounted for over 75% of male cases reported from Maricopa and Pima County (Figure S6). Figure S7 highlights that over the last 6 years in Maricopa County, at least 65% of reported male P&S syphilis cases self-reported as MSM. However, in Pima County this trend has only recently occurred. Prior to 2010, self-reported MSM only accounted for approximately 35% of male cases reported in Pima County (Figure S8). It wasn't until 2010 and 2011 that MSM accounted for over 65% of reported male cases.

Figure S6. Reported Primary and Secondary Syphilis Case among All Males and the Percentage of Male Cases that Self-Identify as MSM, Maricopa and Pima Counties, 2006-2011

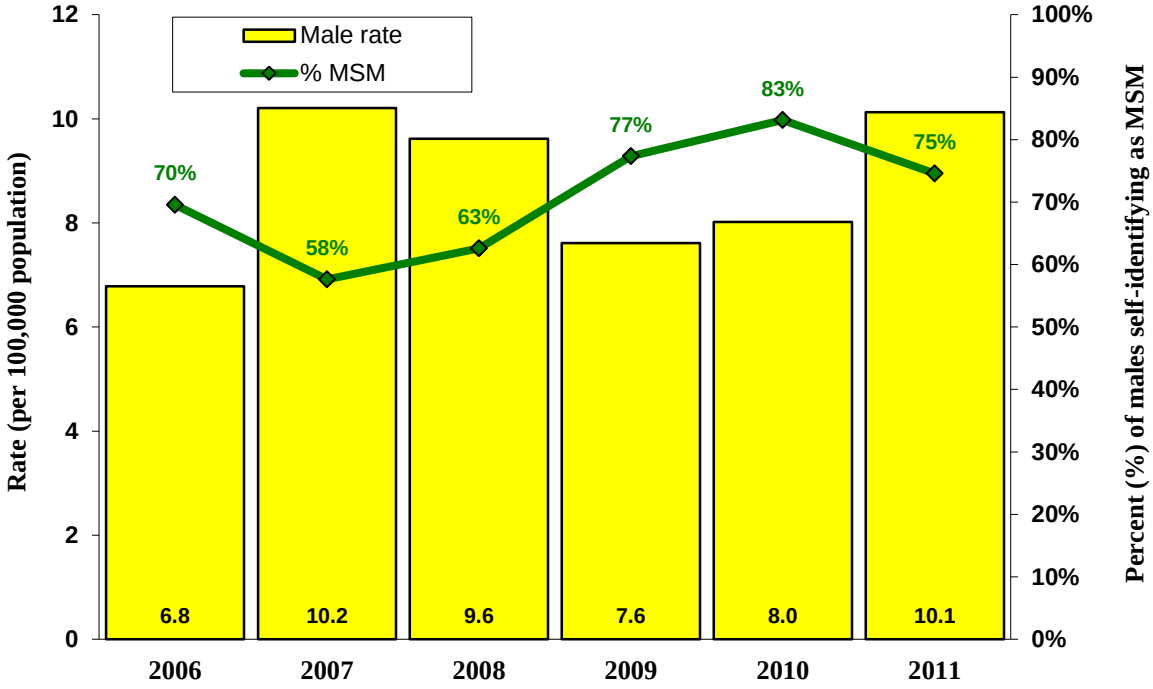


Figure S7. Reported Primary and Secondary Syphilis Cases by Gender and Sexual Preference, Maricopa County 2006-2011

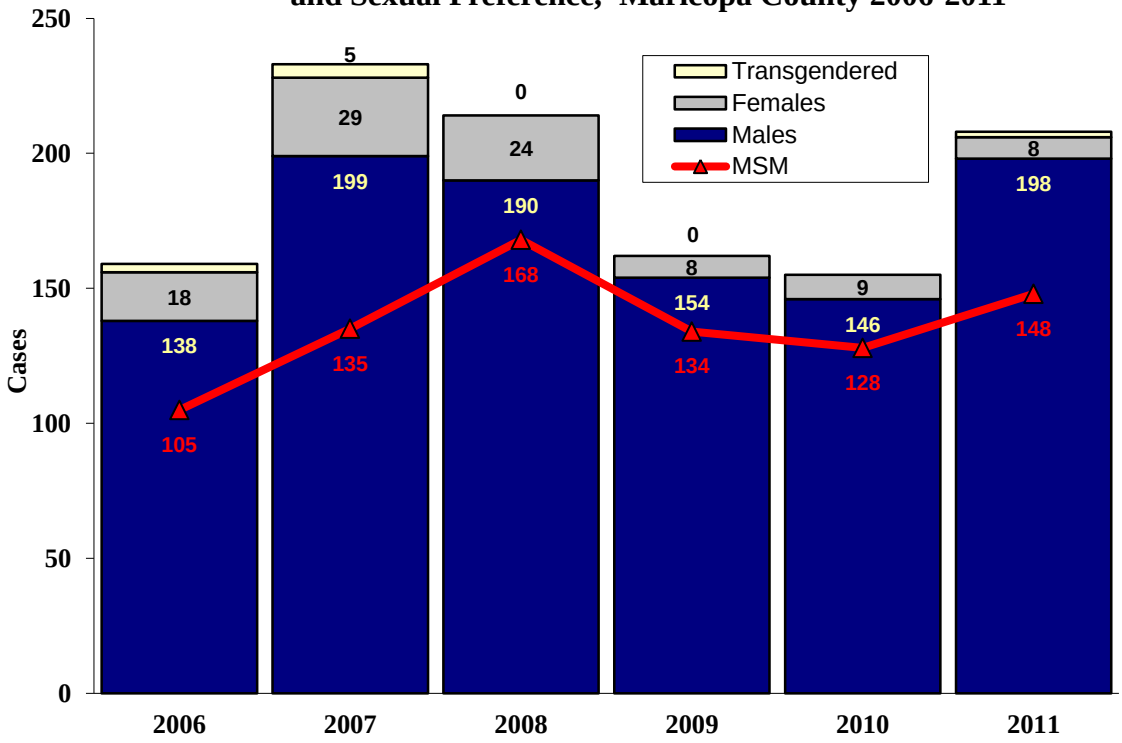
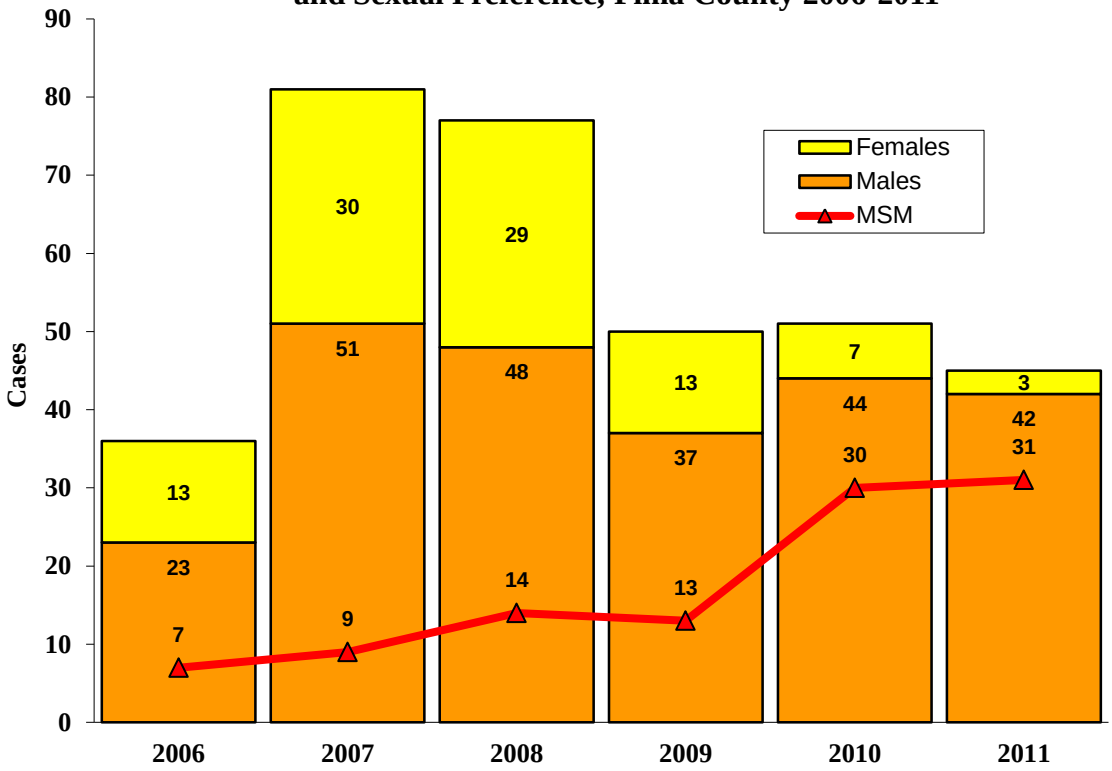


Figure S8. Reported Primary and Secondary Syphilis Cases by Gender and Sexual Preference, Pima County 2006-2011



CONGENITAL SYPHILIS

The preliminary 2011 number of reported congenital syphilis and syphilitic stillbirth cases in Arizona decreased for a third consecutive year (Fig. CS1). This decrease may be attributable to several factors. Over the past 4 years, both the rate of P&S syphilis among Arizona women and the number of infants delivered in the state have decreased steadily. The decrease may also reflect increased local and statewide awareness generated by recent prevention activities. For example, an epidemiologic aid analysis and a rapid community assessment completed in conjunction with the Centers for Disease Control and Prevention, and multiple educational programs including a Congenital Syphilis Conference held in collaboration with the Maricopa Public Health Department in November 2009. The Arizona STD Control Program will continue to closely monitor congenital syphilis throughout the state.

In order to better understand the burden of congenital syphilis in the state, the Arizona STDCP has undertaken a cross-match analysis to identify any unreported cases. For the current report year, a cross-match analysis was done to look for 2010 unidentified cases. This cross-match analysis involved matching women with syphilis-related lab tests in the state database to

the Arizona fetal live birth and stillbirth records for 2010. The methods for this type of analysis were published in the April 2010 issue of *Sexually Transmitted Diseases.* The 2010 analysis identified 2 unreported cases for 2010 (1 live birth and 1 stillbirth). This alters the total for 2010 from 16 to 18. The live birth case identified was properly investigated in a timely manner by a local health department in 2010. However, for an unknown reason the form was never submitted to the state health department. The stillbirth in 2010 was first identified by a local health department during a routine syphilis investigation in 2011 and was properly reported in 2011 as a 2010 case. However, the stillbirth was also later identified as Arizona STDCP staff investigated potential matches identified by the cross-match analysis. The cross-match analysis has proven a valuable tool in helping to identify unreported cases of congenital syphilis in the state of Arizona.

Figure CS1. Reported and Matched Congenital Syphilis Cases (by Birth Year) in Arizona by Live Birth and Stillbirth, 2006-2011