INVASIVE HAEMOPHILUS INFLUENZAE DISEASE IN MARICOPA COUNTY

January 1, 2000-December 31, 2007

Office of Epidemiology
Division of Disease Control
Maricopa County Department of Public Health

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*This report is generated from *Invasive Haemophilus influenzae Disease Data in Maricopa County 2000-2007*, completed 3/4/10 by Benita McKinney. For questions please contact Benita McKinney at mckinneb001@mail.maricopa.gov or Vjollca Berisha at vjollcaberisha@mail.maricopa.gov

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Purpose of the Report

The following is a descriptive report of invasive Haemophilus *influenzae* cases as reported to the Maricopa County Department of Public, Division of Disease Control, Office of Epidemiology during the years 2000-2007. The report will encompass the following:

- A brief overview of the Haemophilus *influenzae* bacterium and its characteristics
- Methodology
- Case demographics, serotype data, and disease trends
- A discussion addressing data quality and timeliness of reporting

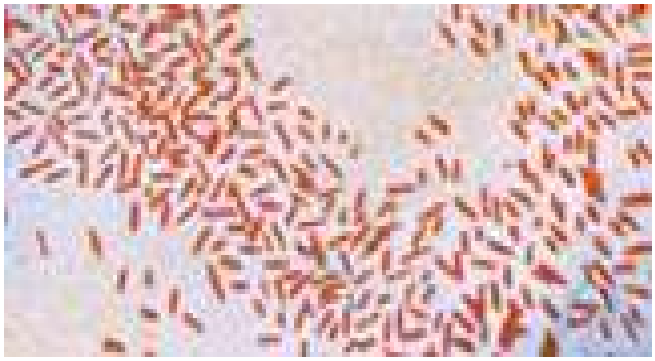
The purpose of this report is twofold: first to define the illness and its trends in Maricopa County during this time period and second to identify potential areas of improvement in data quality.

Overview of Haemophilus *influenzae*

Etiologic Agent

Haemophilus influenzae is a gram negative coccobacilli bacterium which is characterized as being capsulated or unencapsulated. Among the organisms having a polysaccharide capsule there are six serotypes designated as *a-f* with serotype *b* being the most clinically significant. Unencapsulated organisms, those not having a polysaccharide capsule, are categorized as non-typeable.

Figure1. Haemophilus *influenzae* bacterium



Clinical Description

Haemophilus *influenzae* disease manifests within various locations in the body causing infections such as the more prevalent bacteremia, meningitis, epiglottitis, and pneumonia to the less prevalent endocarditis. In the United States complications from Haemophilus *influenzae type b* (Hib) include fatalities in 3-6% of the cases and as many as 20% of the cases have permanent hearing damage or other long term health concerns (Centers for Disease Control and Prevention [CDC], 2008). Symptoms of H. *influenzae* infections are generalized and dependent upon where it has manifested in the body. The generalization of symptoms may present obstacles to diagnosing the disease. Although, Hib is the most clinically significant, the other serotypes are just as adept at causing illness.

Reservoirs

The reservoir for this organism is the human respiratory tract. During the pre-vaccine era, the organism could be isolated from the nasopharynx of children that were often asymptomatic indicating colonization rather than infection. A recent study concluded that infants who are immunized are less likely to become colonized than those who have not been immunized. The authors determined that an association existed between levels of serum antibodies against Hib and the likelihood of being colonized (Fernandez, J., Levine, O., Sanchez, J., Balter, S., LaClaire, L., & Feris, J., 2000).

Modes of Transmission

The mode of transmission occurs via person to person through nasopharyngeal droplets or direct contact with respiratory tract secretions. Entry into uninfected individuals occurs through the nasopharynx as a result of contact with nasopharyngeal droplets of an infected person or one who is a carrier. Contact includes the sharing of utensils, coughing or kissing.

Incubation Period and Period of Communicability

The symptoms of H. *influenzae* usually occur within one to four days after exposure (American Academy of Pediatrics, 2006). Conclusive secondary attack rates have not been established for either household members or children that attend daycare.

Epidemiology

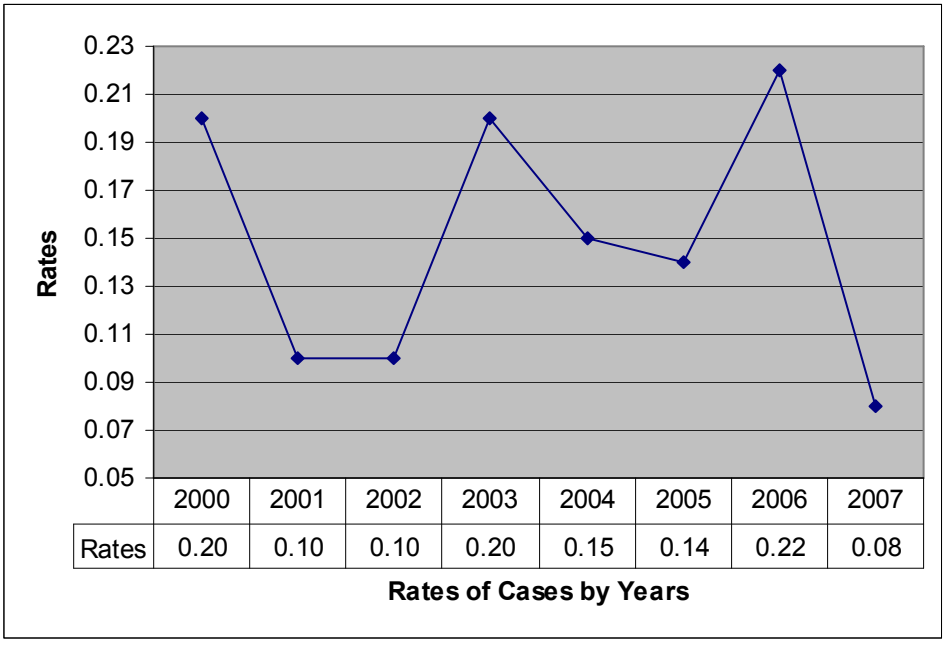
The World Health Organization ([WHO], 2005) reports that worldwide Haemophilus *influenzae* type b (Hib) is responsible for approximately 3 million cases and 386,000 deaths. These cases primarily occur in developing countries where the disease is not readily recognized, antibiotic treatment is scarce and a vaccine is not available. WHO (2008) reports that as of 2007, many African and Asian countries still do not have an available Hib vaccine.

The vaccine was first used in the United States in 1988. The first vaccine was licensed for children 18-59 months old and two years later the second vaccine was licensed for use in infants. During the nine years following the initiation of Hib vaccinations the incidence in children less than five years old declined by 99% (CDC, 1998) from 34 per 100,000 (CDC, 1998) to the current rate of 1 case per 100,000 in children less than five years old (CDC, 2008). New standards established in CDC's Healthy People 2010 indicate that the goal is to eliminate infections in children under the age of five years old by creating a herd immunity effect.

The Centers for Disease Control and Prevention is monitoring the progress of this goal by performing enhanced surveillance in ten states representing approximately 36 million individuals (CDC Active Bacterial Core Surveillance, 2008).

The following is a graph of U. S. Hib rates in children less than five years old for years 2000-2007.

Graph1. U.S. Haemophilus *influenzae* serotype b Rates in Ages 0-4 Years old for Years 2000-2007



CDC Active Bacterial Core Surveillance Reports for Years 2000-2007

The Centers for Disease Control and Prevention Active Bacterial Core Surveillance (ABC) projects the number of cases and fatalities for the U.S. based on their areas of enhanced surveillance. Table 1 below represents past case projections and the case fatality rates. As a comparison, the actual number of cases reported to the Centers for Disease Control and Surveillance is presented in Table 2. It should be noted that the number of reported cases has steadily increased over the years. This increase in reported cases is likely due to the enhanced active surveillance in the project areas. Although the number of reported cases has been increased, it is still assumed that many cases are not being reported and this account for the discrepancy between the reported and the estimated number of cases.

Table1. U.S. Projected Number of invasive Haemophilus *influenzae* Cases and Case Fatality Rates for 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007	Total
# of Cases	3400	3800	3850	3725	4150	4200	4800	4700	32,625
Rate	1.2	1.3	1.3	1.3	1.4	1.4	1.6	1.6	1.4
# of Deaths	700	625	600	550	725	600	700	700	5200
Case Fatality Rate	20.6%	16.4%	15.6%	14.8%	17.5%	14.3%	14.6%	14.9%	15.9%

Rates are per 100,000 based on the 2000 U.S. Census Projected Population
Provided by the Active Bacterial Core Surveillance (ABC)

Table2. Number of U.S. Reported invasive Haemophilus *influenzae* Cases and Rates for 2000-2007

	2000*	2001*	2002*	2003*	2004*	2005*	2006*	2007**	Total
# of Cases	1,398	1,597	1,743	2,013	2,085	2,304	2,496	2,541	16,177
Rate	0.5	0.6	0 .6	0.7	0 .7	0.8	0.8	0.8	0 .7

Rates are per 100,000 based on the 2000 U.S. Census Projected Population
*CDC. Summary of notifiable diseases, United States, 2007
**CDC. Summary of notifiable diseases, United States, 2008

Social Risk Factors

Social risk factors for Hib include socioeconomic status, household size, and ethnicity. United States statistics indicate Native Americans and Alaskan Natives are more likely to be diagnosed with a Hib than the rest of the population (CDC, 2008). This increased diagnosis rate is likely due to lower vaccination rates among these groups. Finally, the

greatest risk factor is age, with most cases being infected under the age of five years old and a peak age of diagnosis occurring at six to seven months old.

Prevention

There are two manners in which natural immunity can be acquired. First, immunity is acquired maternally through breastfeeding or the placenta. Second, immunity is thought to occur as a result of natural exposure to the organism. Today, in developed countries, immunity to Hib is more commonly acquired through a series of vaccinations. As historically Hib was the most clinically significant serotype of the bacterium Haemophilus *influenzae* currently is the only serotype that is vaccine preventable.

The following table is the current vaccination schedule for Hib as recommended by the Advisory Committee on Immunization Practices (ACIP) (CDC, 1991).

Table3. ACIP-Recommended Haemophilus influenzae type b (Hib) Routine Vaccination Schedule

Vaccine	2 Months	4 Months	6 Months	12-15 Months
PRP-T*	Dose 1	Dose 2	Dose 3	Booster
PRP-OMP**	Dose 1	Dose 2		Booster

* polyribosylribitol phosphate conjugated to tetanus toxoid
** polyribosylribitol phosphate conjugated to an outer-membrane protein of Neisseria meningitidis

Chemoprophylaxis

Control measures include providing chemoprophylaxis to exposed unimmunized or incompletely immunized household, childcare, or nursery contacts.

Haemophilus *influenzae* Surveillance in Maricopa County for 2000-2007

As directed by Arizona Administrative Code (AAC) R9-6-333 invasive Haemophilus *influenzae* must be reported within five days after diagnosis and case has been established. A potential case is defined and classified as follows:

Clinical Description

Invasive disease due to Haemophilus *influenzae* may produce any of several clinical syndromes including meningitis, bacteriemia, epiglottitis, or pneumonia

Laboratory Criteria for Diagnosis

Isolation of *H. influenzae* from a normally sterile site

Case Classification

Confirmed: A clinically compatible illness that is culture-confirmed

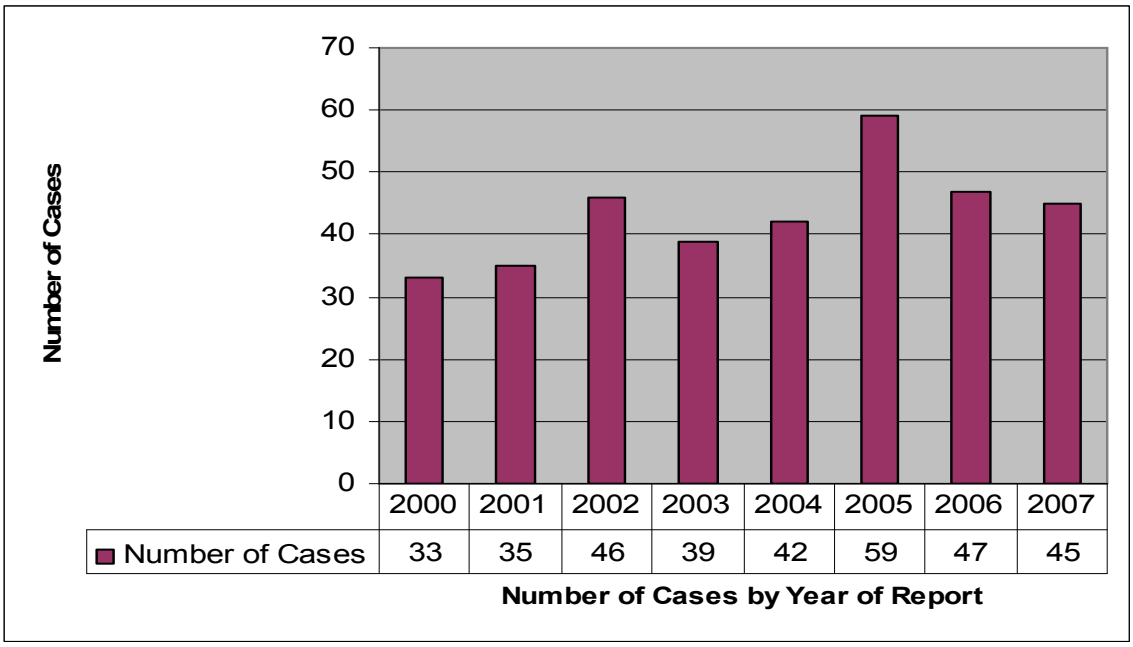
Probable: A clinically compatible illness with detection of *H. influenzae* type b antigen in cerebrospinal fluid.

In addition to reporting the case, Arizona Administrative Code mandates that all Haemophilus *influenzae* isolates be submitted to the Arizona State Public Health Laboratory for serotyping.

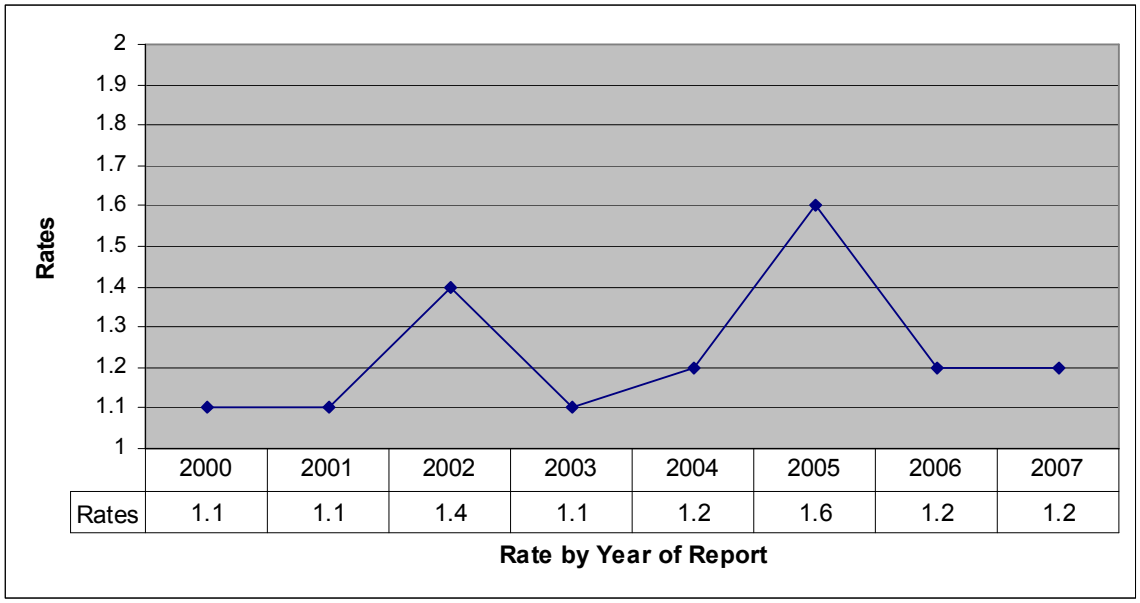
Case Investigation Methodology

A total of 651 Communicable Disease Reports for H. *influenzae* were received by the Maricopa County Department of Public Health during the years 2000-2007. Three hundred of these reports were ruled out due to one or more of the following reasons: specimen source not being a sterile site, out of jurisdiction, duplicate report received or isolate being of a different Haemophilus species. Five cases were identified through death certificates and eliminated due to an investigation not being completed. The remaining cases included in the analysis consists of those classified as probable (2) and confirmed (344) for a total of 346 meeting the case definition during the years 2000-2007. Graphs 2 and 3 represent the number and rates of cases reported by years.

Graph2. Number of Haemophilus *influenzae* Cases in Maricopa County by Year of Report for 2000-2007 (N=346)



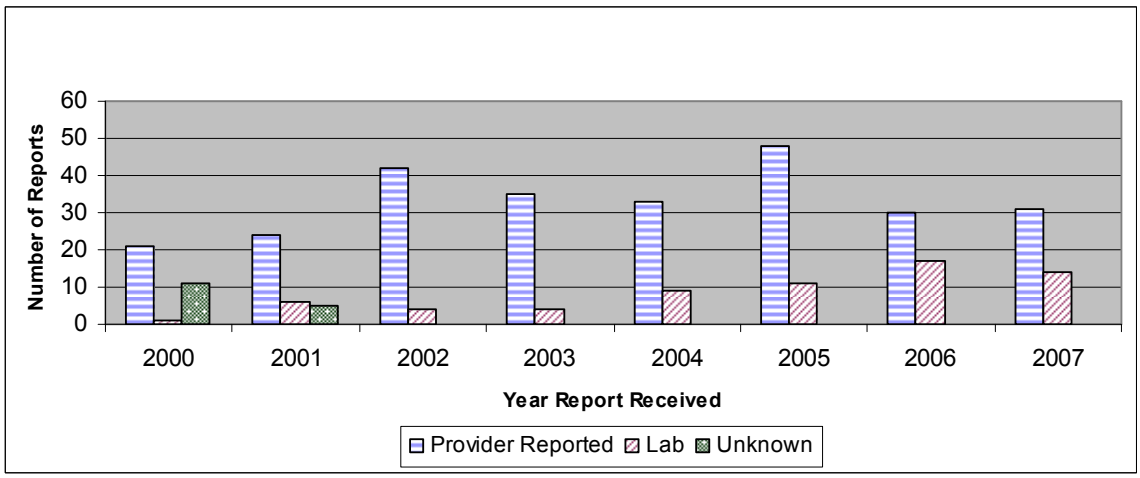
Graph3. Maricopa County Haemophilus *influenzae* Rates by Year of Report for Years 2000-2007 (N=346)



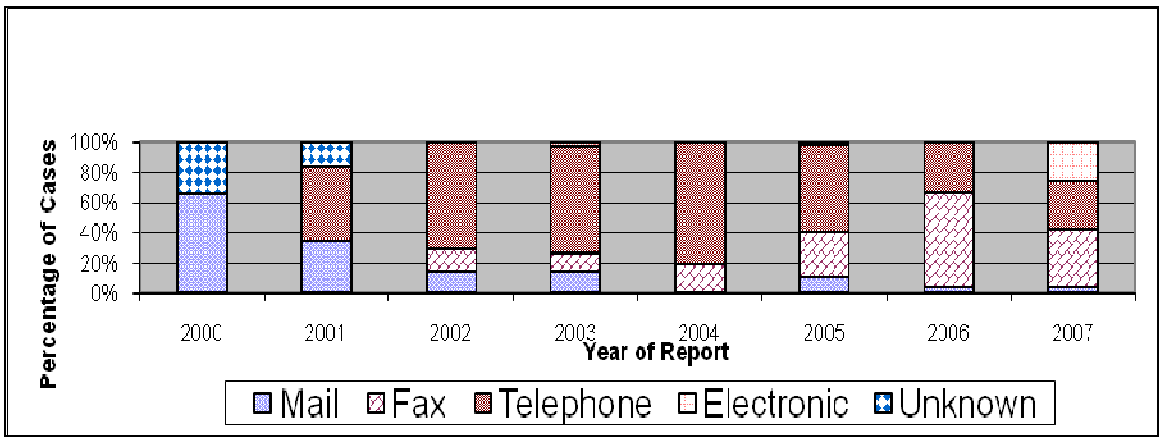
Rates are per 100,000 based on U.S. 2000-2007 Census Data for Maricopa County

Cases are typically reported by health care providers, with 81% (280) of cases coming from providers. Laboratories reported 19% (66) of cases. Graph 4 summarizes the number of cases received during this time period and the sources of report by year of disease onset. The modes of reporting used by healthcare providers are summarized in Graph 5. The graph indicates that the use of mail to report cases is rapidly declining due to quicker methods such as the use of electronic reporting, telephone, and fax.

Graph4. Maricopa County Sources of H. *influenzae* Reports for Years 2000-2007 (N=346)



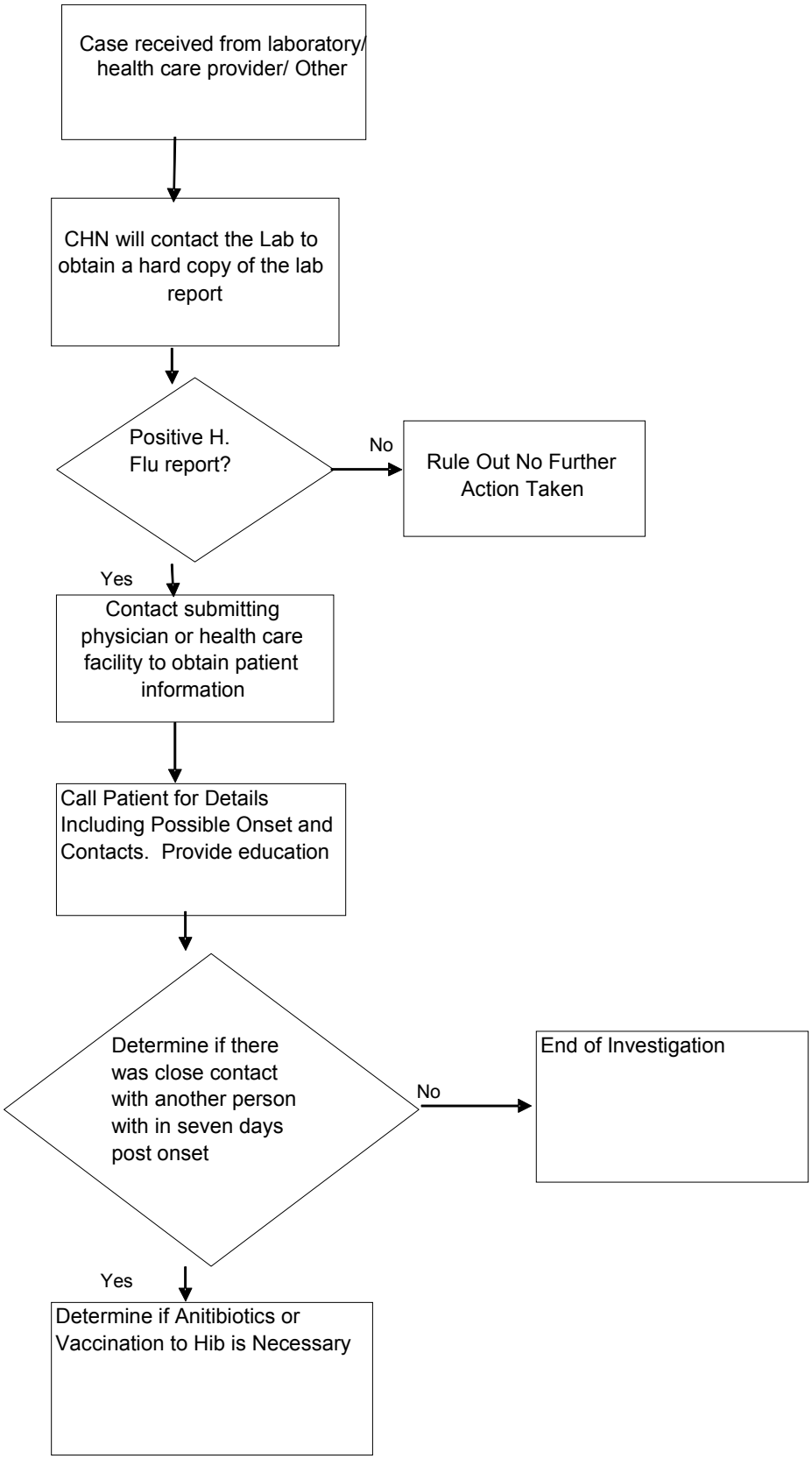
Graph5. Modes of Reporting Used by Healthcare Providers for Haemophilus *influenzae* in Maricopa County for Years 2000-2007 (N=280)



Case Investigation Procedure

Once a case is received by the Office of Epidemiology, a Community Health Nursing (CHN) staff member will begin investigating the case immediately. The investigation includes confirming the diagnosis, identifying personal contacts, providing chemoprophylaxis if necessary and implementing control measures as needed. The following flowchart is a diagram of the steps implemented to complete an investigation.

Diagram 1. Case Investigation Procedures for H. *influenzae*



Epidemiologic Trends in Maricopa County, 2000-2007

The rate of reported infections remained steady between the years 2000-2007. The most cases were reported in the year 2005, and the highest case fatality rates occurred in 2003 and 2005. Of the 346 cases reported during 2000-2007 there were 18 deaths resulting in a case fatality rate of 5.2% (Refer to Table 4).

Table4. Number of invasive Haemophilus *influenzae* Cases and Case Fatality Rates for Years 2000-2007 in Maricopa County

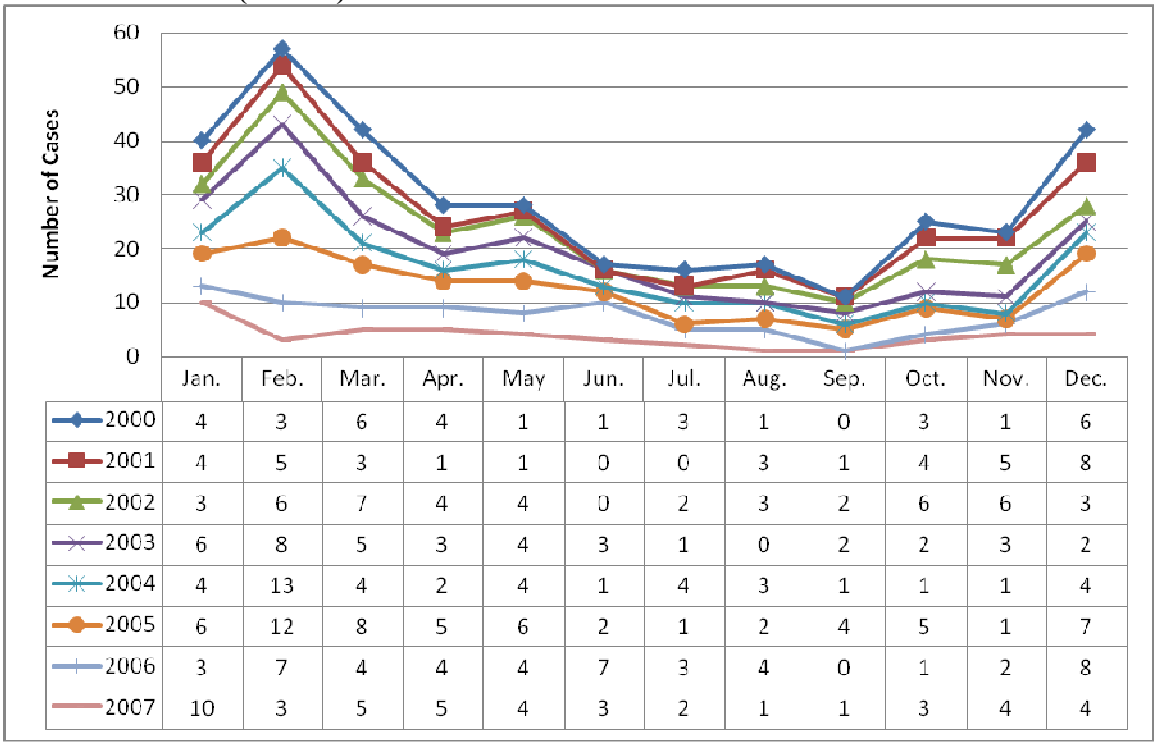
	2000	2001	2002	2003	2004	2005	2006	2007	Total
# of Cases	33	35	46	39	42	59	47	45	346
Rate*	1.1	1.1	1.4	1.1	1.2	1.6	1.2	1.2	1.2
# of Deaths	0	1	2	5	2	5	3	0	18
Case Fatality Rate	0.0%	2.9%	4.3%	12.8%	4.8%	8.5%	6.4%	0.0%	5.2%

*Rates are per 100,000 based on 2000-2007 U.S. Census Populations for Maricopa County

Seasonality

Haemophilus *influenzae type b* has two peak seasons during the year that were more prominent before the vaccine era began. These peaks reportedly occurred March thru May and September thru December. Graph 6 is a representation of Maricopa County's cases by month.

Graph6. Maricopa County Haemophilus *influenzae* Cases by Month of Onset for Years 2000-2007 (N=346)

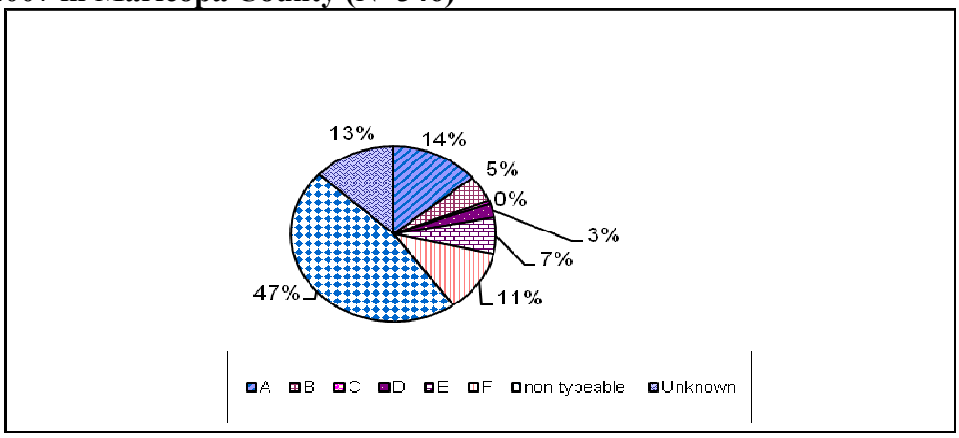


	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2000	4	3	6	4	1	1	3	1	0	3	1	6
2001	4	5	3	1	1	0	0	3	1	4	5	8
2002	3	6	7	4	4	0	2	3	2	6	6	3
2003	6	8	5	3	4	3	1	0	2	2	3	2
2004	4	13	4	2	4	1	4	3	1	1	1	4
2005	6	12	8	5	6	2	1	2	4	5	1	7
2006	3	7	4	4	4	7	3	4	0	1	2	8
2007	10	3	5	5	4	3	2	1	1	3	4	4

Distribution by Serotypes

During the years 2000-2007 the H. *influenzae* organism isolated most often from sterile sites were non-typeable isolates (162 specimens). Serotype *c* was isolated from 2 specimens making it the serotype that was the least often isolated. Graph 7 shows the contribution each serotype made to the 346 cases.

Graph7. Number of Reported Haemophilus *influenzae* Serotypes for Years 2000-2007 in Maricopa County (N=346)



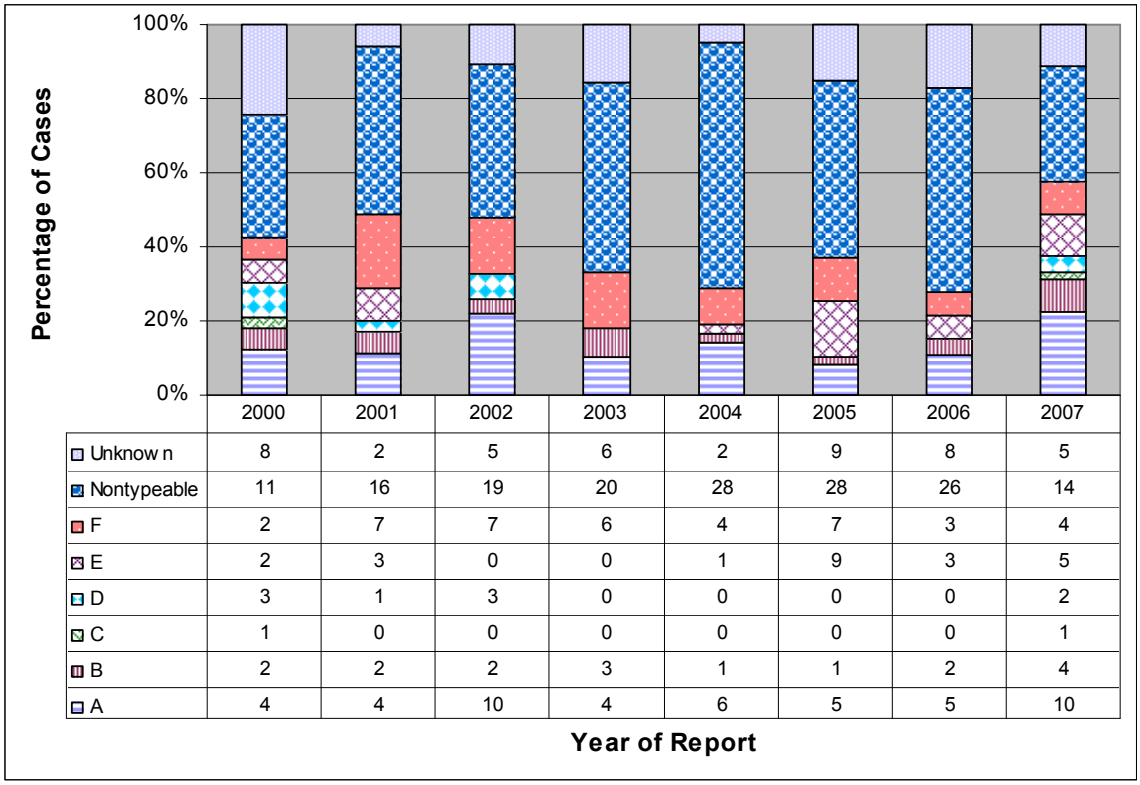
Two hundred and eighty-nine reported cases were categorized as having bacteremia/sepsis. Meningitis was the second most common syndrome with 44 cases reported. Table 5 illustrates the association between serotypes and diagnosis.

Table5. Syndromes by Haemophilus *influenzae* Serotypes for Years 2000-2007 in Maricopa County

	Bacteremia/Sepsis	Meningitis	Pneumonia	Unspecified	Total
A	33	15	0	0	48
B	15	2	0	0	17
C	2	0	0	0	2
D	9	0	0	0	9
E	21	0	2	0	23
F	32	5	3	0	40
Nontypeable	140	19	3	0	162
Unknown	37	3	3	2	45
Total	289	44	11	2	346

Graph 8 is a representation of serotypes by year of report. Each year during the years 2003-2006 the number of non-typeable H. *influenzae* organisms was greater than all other serotypes combined.

Graph8. Haemophilus *influenzae* Serotype Percentages for Years 2000-2007 in Maricopa County (N=346)

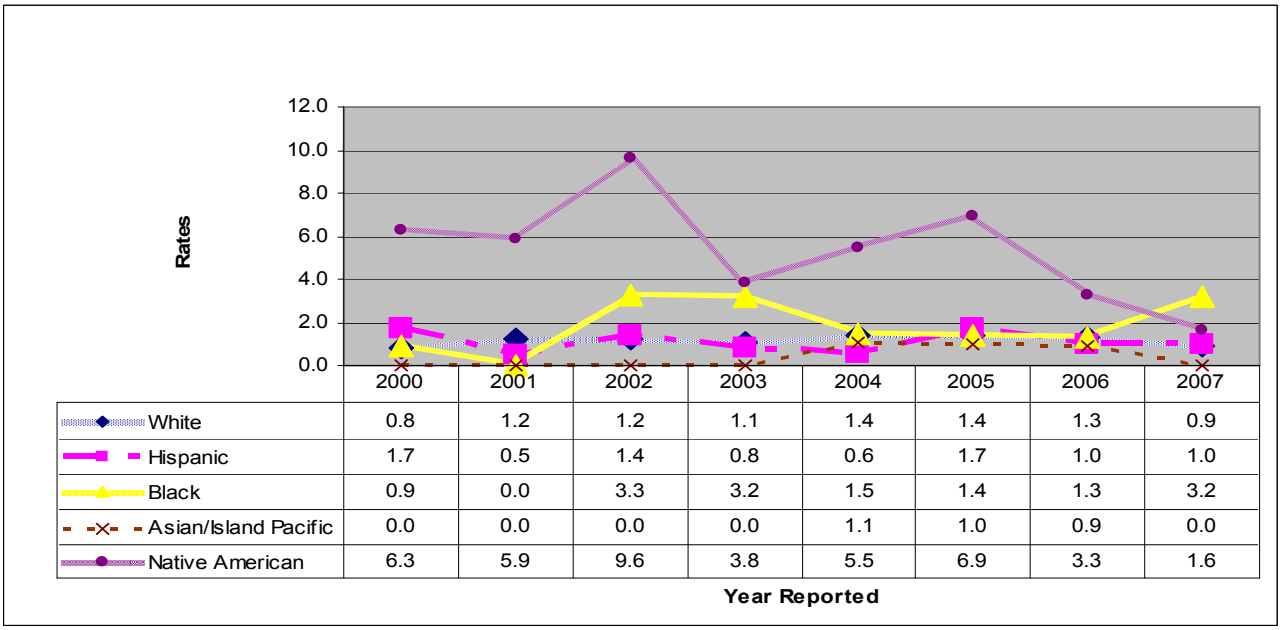


Case Demographics

Cumulatively, 52% of the cases were female, 58% were white, and the age group most represented was 0-4 years old (26%). Serotype b accounted for 5% of the total cases and had an infection rate of 0.18 per 100,000 in those less than five years old.

Graph 9 represents the case rates by race/ethnicity and year of report. The graph indicates that the rates for Native Americans are much greater in most years than any other group.

Graph9. Rates for Maricopa County Haemophilus *influenzae* Cases by Race for Years 2000-2007

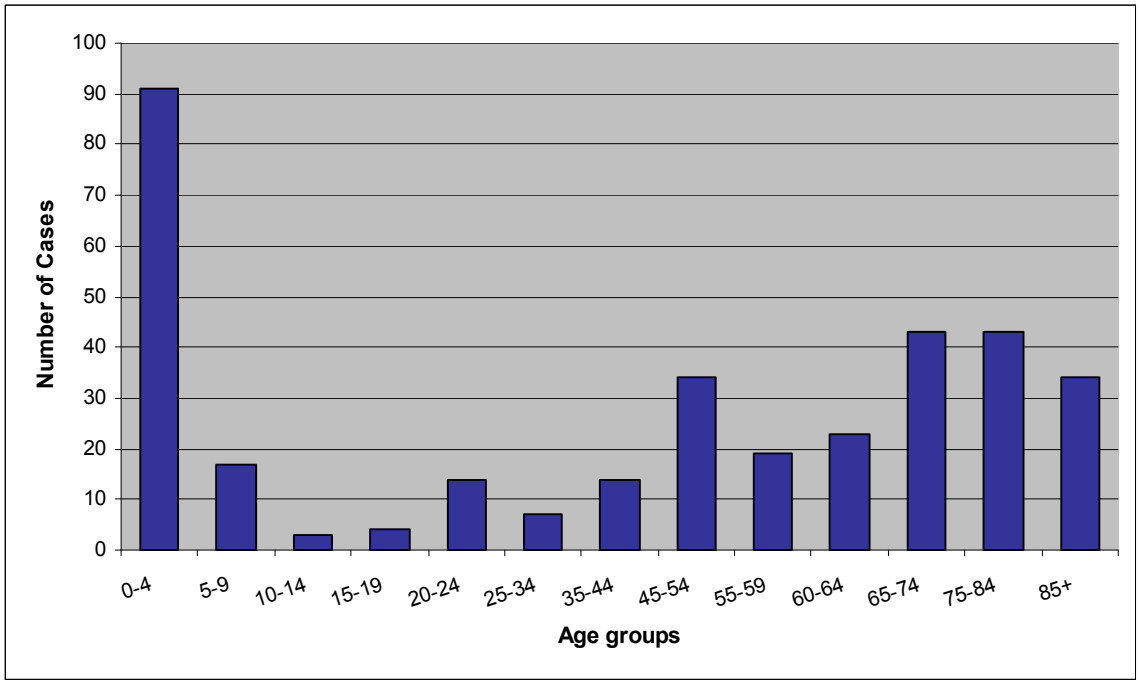


	2000	2001	2002	2003	2004	2005	2006	2007
White	0.8	1.2	1.2	1.1	1.4	1.4	1.3	0.9
Hispanic	1.7	0.5	1.4	0.8	0.6	1.7	1.0	1.0
Black	0.9	0.0	3.3	3.2	1.5	1.4	1.3	3.2
Asian/Island Pacific	0.0	0.0	0.0	0.0	1.1	1.0	0.9	0.0
Native American	6.3	5.9	9.6	3.8	5.5	6.9	3.3	1.6

*Rates are Per 100,000 based on 2000-2007 U.S. Census Populations for Maricopa County

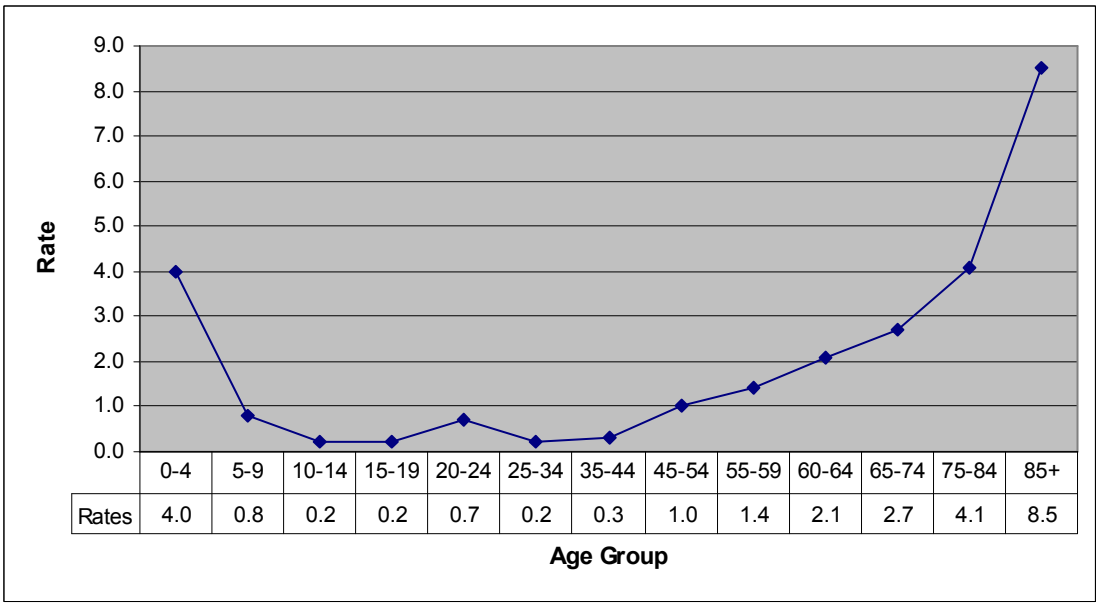
Graph 10 is a representation of the number of cases by age groups. It indicates that the very young and those sixty-five and older are more likely to be diagnosed with invasive H. *influenzae*.

Graph10. Maricopa County Haemophilus *influenzae* Cases by Age Groups for Years 2000-2007 (N=346)



Graph 11 presents the rates of reported cases for each age group. The graph demonstrates a steady increase between the ages of 55 and 84 years old but beyond this age there is a steep increase.

Graph11. Rates for Haemophilus *influenzae* Cases in Maricopa County by Age Group for Years 2000-2007

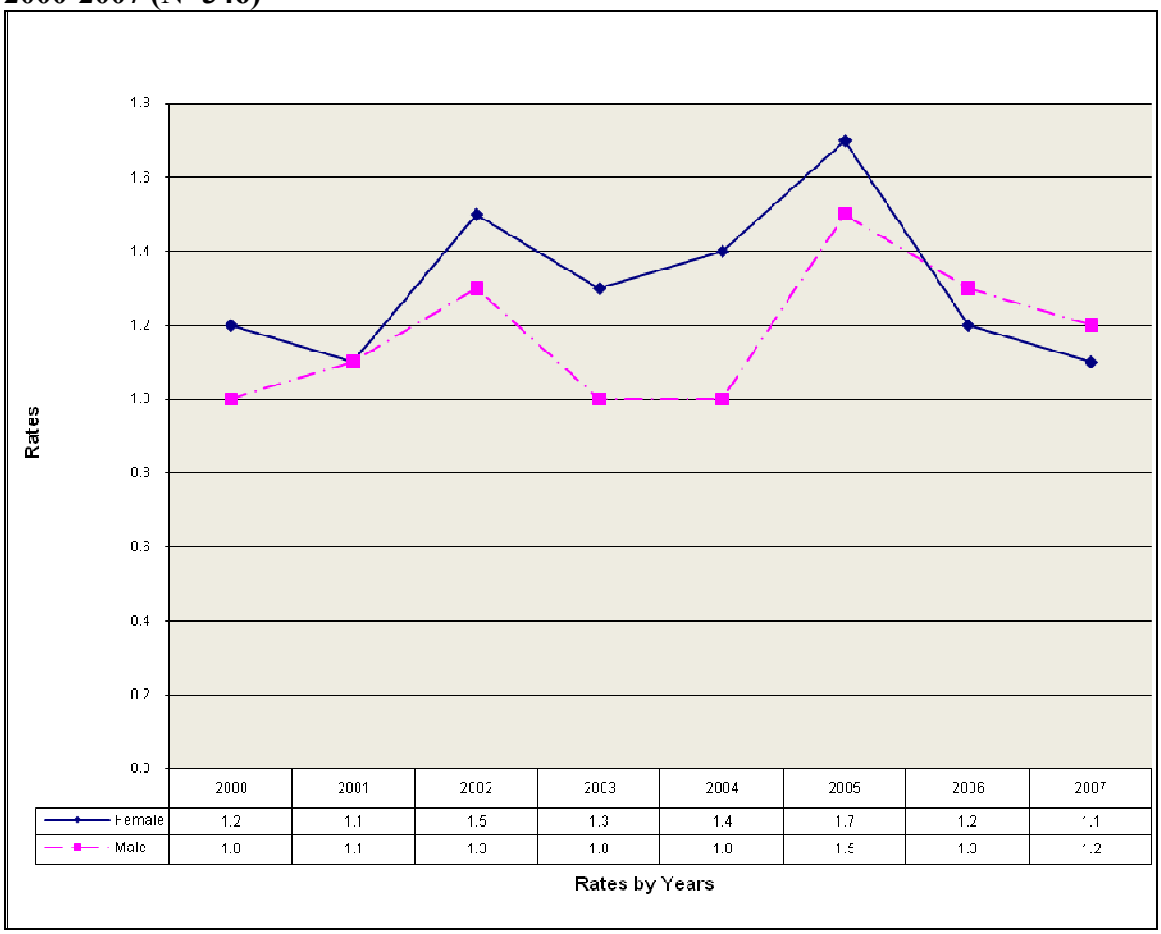


	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-59	60-64	65-74	75-84	85+
Rates	4.0	0.8	0.2	0.2	0.7	0.2	0.3	1.0	1.4	2.1	2.7	4.1	8.5

Rates per 100,000 according to the 2000-2007 U.S. Population Census for Maricopa County

Graph 12 presents the rates of cases by gender and year of report. The rates demonstrate that in most years females exceed males. The exception is 2001 when the two were equal.

Graph12. Maricopa County Haemophilus *influenzae* Rates by Gender for Years 2000-2007 (N=346)

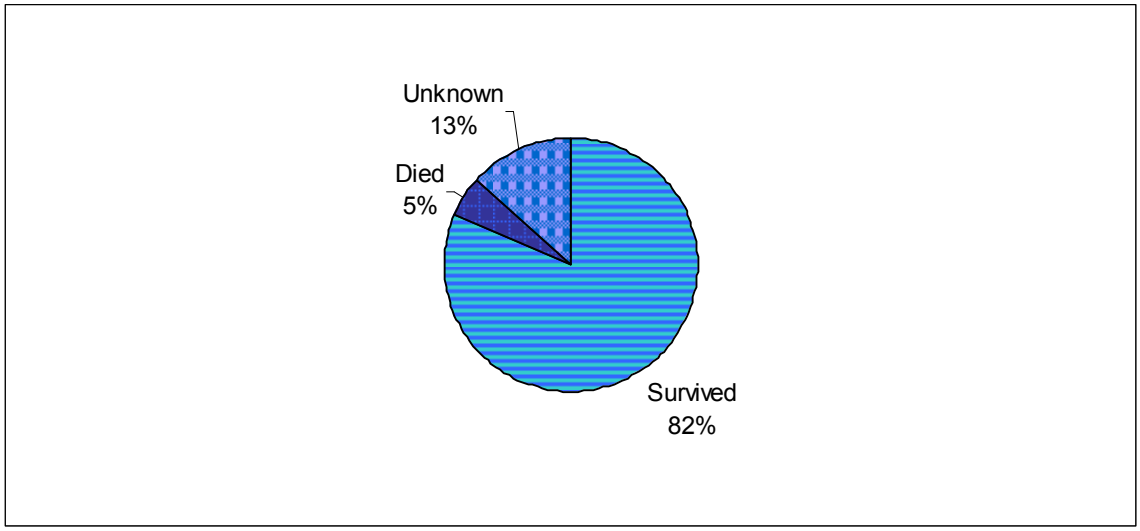


Rates per 100,000 per 2000-2007 U.S. Population Census for Maricopa County

Outcome

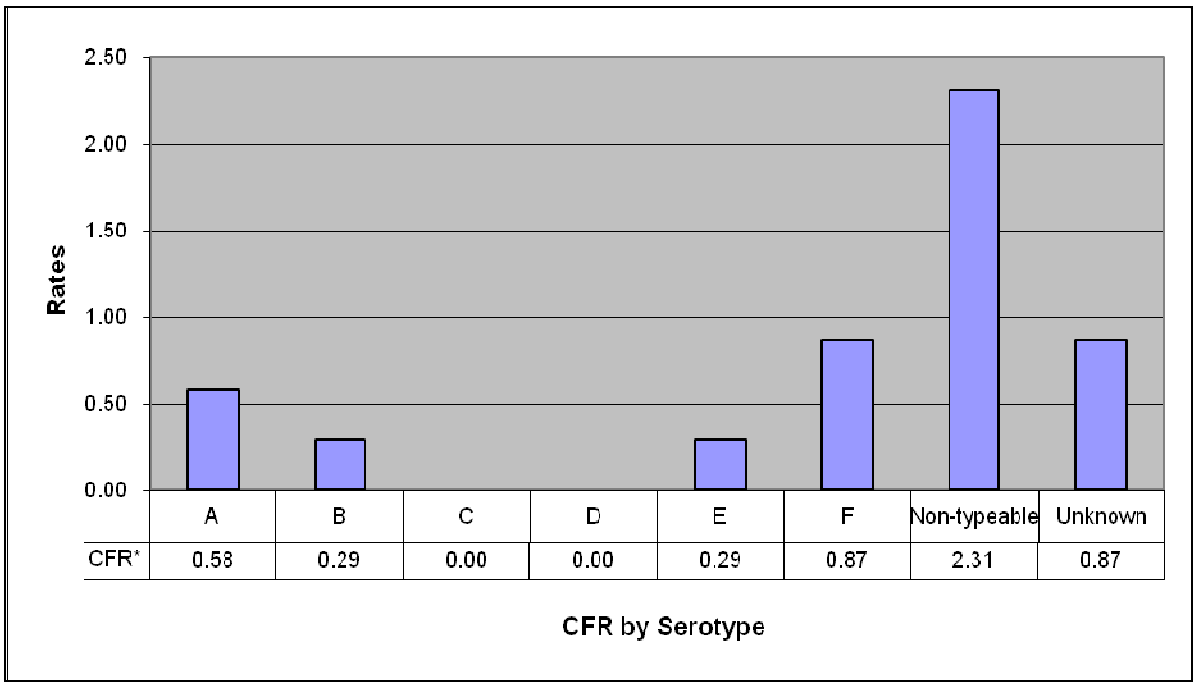
The case fatality rate (CFR) for Haemophilus *influenzae* during the years 2000-2007 was 5.2%. Individuals who were four years old or less and those who were over the age of 65 were most likely to succumb to the infection representing 22.2% (1.6% CFR) and 50.0% (2.6% CFR) of the fatal cases respectively. Graph 13 is a representative of outcome percentages.

Graph13. Maricopa County Haemophilus *influenzae* Cases by Outcome for Years 2000-2007 (N=346)



Haemophilus *influenzae* isolates classified as non-typeable were more likely to be associated with a fatal case than any other serotype, 44.4%, and had a case fatality rate of 2.3%. Reportedly, none of the cases diagnosed with an invasive disease caused by serotypes *c or d* resulted in a fatality (Graph 14).

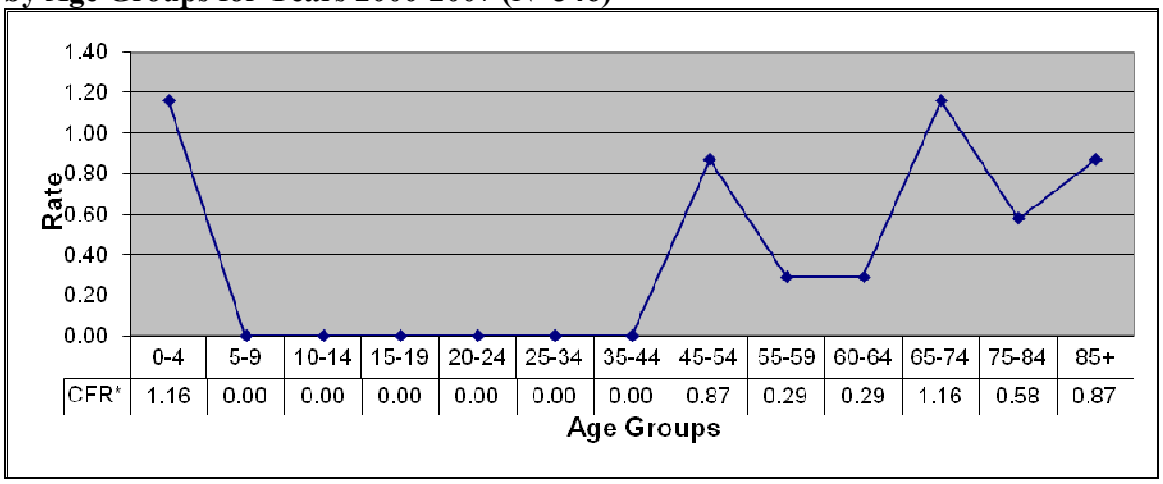
Graph14. Maricopa County Haemophilus *influenzae* Case Fatality Rates by Serotypes for Years 2000-2007



*Expressed as a percentage of total cases

Graph 15, represent the association between outcome and age. It should be noted that no deaths were reported for individuals who were within the age range of 5-34 years old during the years 2000-2007.

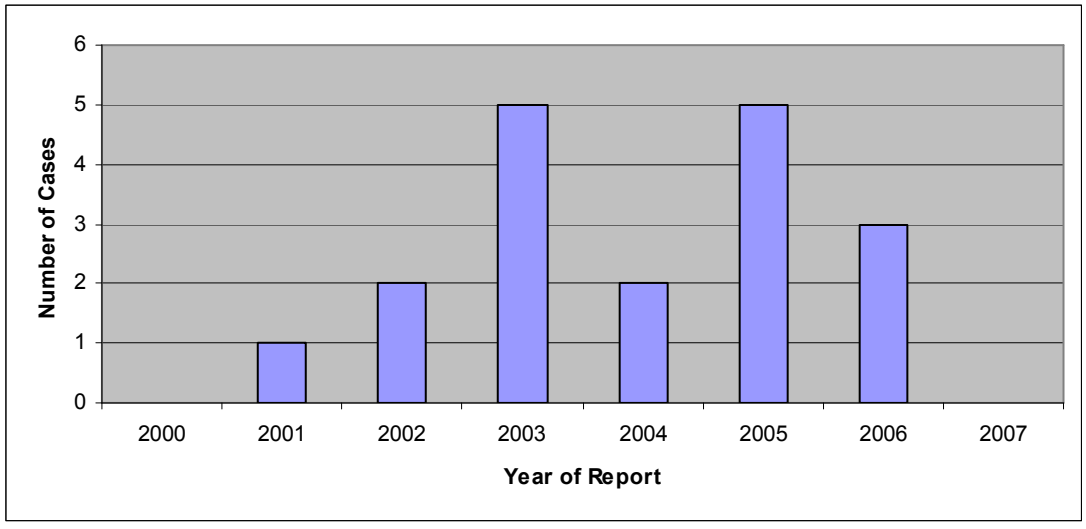
Graph15. Case Fatality Rates for Maricopa County Haemophilus *influenzae* Cases by Age Groups for Years 2000-2007 (N=346)



	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-59	60-64	65-74	75-84	85+
CFR*	1.16	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.29	0.29	1.16	0.58	0.87

Graph 16 is a representation of the number of deaths occurring by year the case was reported. In 2003 and 2005, a Haemophilus *influenzae* infection was associated with five deaths in each year.

Graph16. Maricopa County Haemophilus *influenzae* Cases with a Fatal Outcome by Year Case was Reported and Death Occurred (N=18)*



* No deaths were reported for years 2000 and 2007

Vaccinations

Twenty-eight cases reported being vaccinated for Haemophilus *influenzae* serotype b (Hib) either completing the vaccine series (43.0%) or partially completing the series, (57.0%). The most common serotype isolated from these twenty-eight cases was serotype *a* which made up 43.0% of total cases.

According to the data collected during the investigations, whites were more likely to report being vaccinated. Table 6 represents the percentage of children reportedly vaccinated, during the investigation of Haemophilus *influenzae* cases, by race/ethnicity.

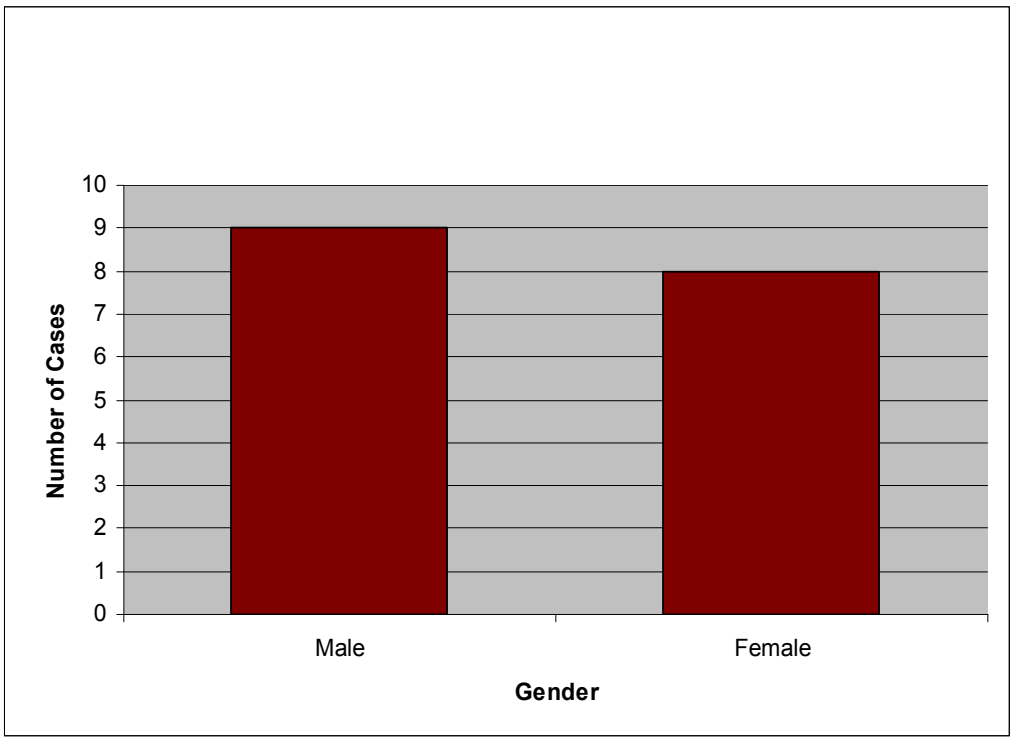
Table6. Maricopa County Haemophilus *influenzae* serotype b vaccinated cases by race for years 2000-2007

Race	Vaccinated	Percentage of Cases
White	13	46.0%
Hispanic	3	11.0%
Black	5	18.0%
Unknown	7	25.0%
Total	28	100.0%

Haemophilus *influenzae* serotype *b*

Seventeen cases were diagnosed with Haemophilus *influenzae* serotype b. Four of the seventeen cases were diagnosed in children under five years old. CDC estimates that the national rate of infection for children under five years old is less than 1 per 100,000 and Maricopa County is similar to that of the rest of U.S with a rate of 0.2 per 100,000. The following graphs (17, 18 and 19) and Table 7 exemplify demographics specific to these cases.

Graph17. Maricopa County Haemophilus *influenzae* serotype *b* cases by Gender for Years 2000-2007 (N=17)



Graph18. Maricopa County Haemophilus *influenzae* serotype *b* Cases by Race for Years 2000-2007 (N= 17)

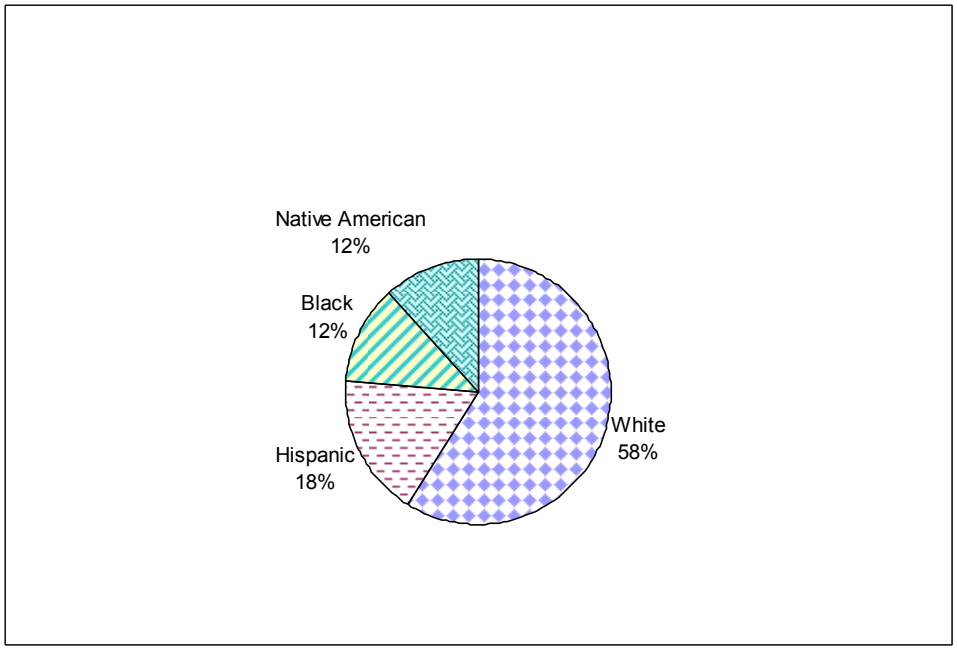


Table7. Maricopa County Haemophilus *influenzae* serotype *b* Cases by Race and Age Rates (per 100,000)

Age in Years	White	Hispanic	Black	Native American	Total*
0-4	.10 (1)	.20 (2)	0 (0)	2.26 (1)	.18 (4)
5-14	0 .0(0)	0 .0(0)	0.0 (0)	0.0 (0)	0 .0(0)
15-19	0.0 (0)	0.0 (0)	0.0 (0)	0 .0(0)	0.0 (0)
20-34	.03 (1)	0 .0(0)	.41 (1)	.77 (1)	.05 (3)
35-44	0.0 (0)	0.0 (0)	0 .0(0)	0.0 (0)	0.0 (0)
45-54	0.0 (0)	0 .0(0)	0.0 (0)	0.0 (0)	0.0 (0)
55-64	.10 (2)	.32 (1)	0.0 (0)	0.0 (0)	.12 (3)
65-84	.21 (5)	0 (0)	1.77 (1)	0 (0)	.22 (6)
85+	.27 (1)	0 (0)	0 (0)	0 (0)	.25 (1)
TOTAL**	.06 (10)	.04 (3)	.19 (2)	.46 (2)	.06 (17)***

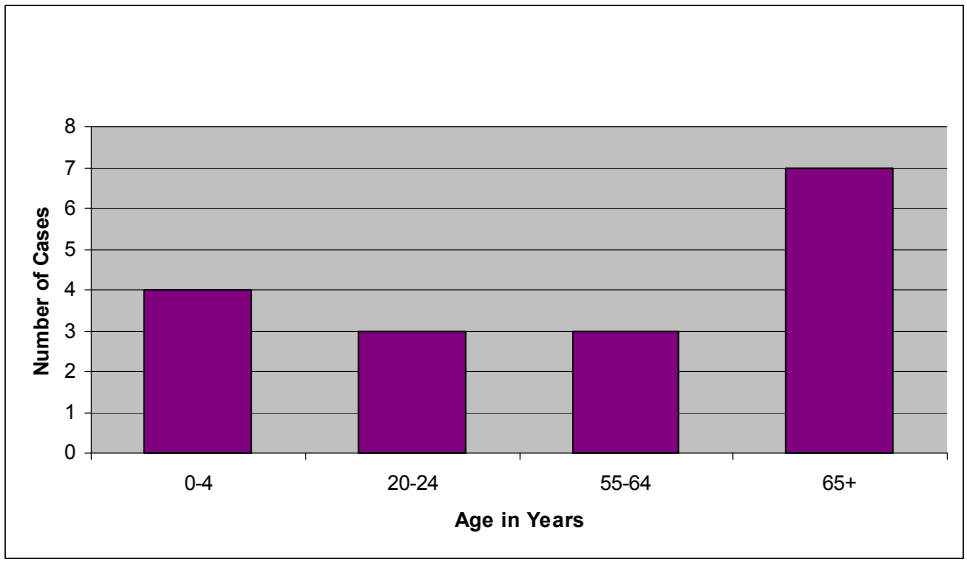
*Total population includes all races and ethnicities ie number of cases divided by county population for stated age group multiplied by 100,000

**Specific to cases in stated race/ethnicity ie number of cases within race divided by county population for stated race

***Total population including all races and age groups ie number cases divided by county population

(x) Number of cases

Graph19. Maricopa County Haemophilus *influenzae* Type b Cases by Age for Years 2000-2007 (N=17)



Haemophilus *influenzae* Data Quality in Maricopa County, 2000-2007

Case data are collected from health care provider and laboratory reports and subsequent county investigations. The quality of disease surveillance is determined by the quality of the collected data. One method for assessing data quality is to measure the number of cases with missing or incomplete data that are present in the database. The following table exemplifies the number of Haemophilus *influenzae* cases that have missing or incomplete data for selected variables. Table 8 shows that basic patient demographic information is being obtained which enables the county's community health nurses to begin an investigation. The table also illustrates that the ever important information regarding pregnancy is being obtained 97.7% of the time for females between the ages of 14-55 years old. Finally, the serotype was identified for 87.0% of the cases.

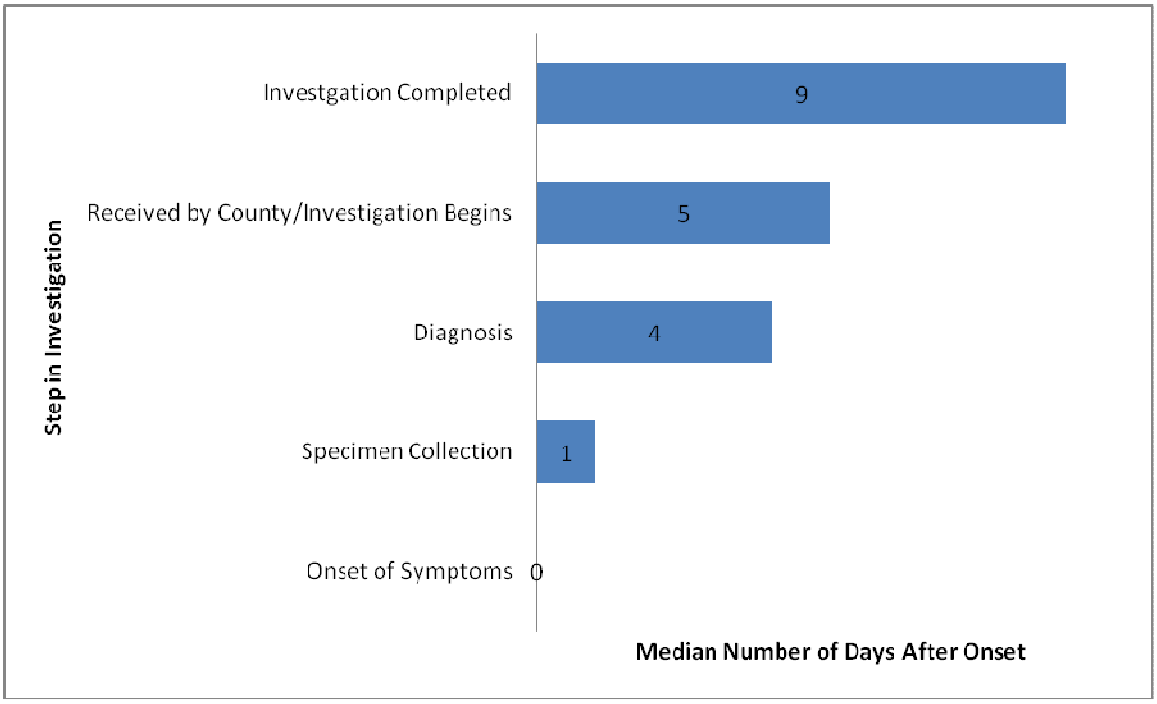
Table8. Maricopa County Haemophilus *influenzae* Data Quality Analysis for Years 2000-2007

Field Analyzed	Total Number of Cases Reported	Total Number of Cases with Field Complete	% Of Cases with Field Complete	Total Number of Cases with Field Missing	% of Cases with Field Missing
Last Name	346	346	100.0%	0	0.0%
First Name	346	346	100.0%	0	0.0%
Date of Birth	346	346	100.0%	0	0.0%
Gender	346	346	100.0%	0	0.0%
Male	181	181	100.0%	0	0.0%
Female	165	165	100.0%	0	0.0%
Complete Patient Address	346	336	97.1%	10	2.9%
Outcome (Died/Survived)	346	300	86.7%	46	13.3%
Race/Ethnicity	346	338	97.7%	8	2.3%
Pregnant (Females between the ages of 14-55 yrs.)	38	35	92.1%	3	7.9%
Date of Diagnosis	346	339	98.0%	7	2.0%
Date of Onset	346	315	91.0%	31	9.0%
Date Report Received	346	346	100.0%	0	0.0%
Reporting Source	346	330	95.4%	16	4.6%
Serotype	346	301	87.0%	45	13.0%
Supplemental Longform Completed	346	303	87.5%	43	12.4%

Investigation Timeliness in Maricopa County, 2000-2007

Ideally, infectious disease cases should be reported and the investigation completed before the end of the known incubation period so that further spread of the disease can be avoided. Unfortunately, this is not always possible. Nevertheless, it is still important for the case to be reported and the investigation to occur in a timely manner. The following graph represents the median number of days for each step of the case identification and investigation for the years 2000-2007. Cases for which a definite end or beginning of investigation could not be determined or cases missing other pertinent dates such as onset of disease were omitted from the analysis, 103 (30%) cases. The remaining cases used for this analysis represented 70% (243) of the confirmed cases.

Graph20. Median Length of Days from Onset of Disease to Completion of Case Investigation for Maricopa County Haemophilus *influenzae* Cases for Years 2000-2007 (N=243)



Current and future research

Current literature illustrates that although strides have been made in the developed world to effectively decrease Hib there are still unresolved issues. For instance, In the United States the incidence rate has dropped significantly due to the inception of the vaccine (Centers for Disease Control and Prevention, 2008) yet this period of enjoyment could be

short-lived due to a genetic adaptation of the organism allowing it become more virulent and causing vaccine failures (Cerquetti et al, 2005).

Such issues also include the rise in the number of the unencapsulated, non-typeable, form of the bacteria isolated from sterile sites. In a study researchers, using data from several states, determined that non-typeable serotypes were more commonly isolated from sterile sites than any other serotype (Dworkin, Park, & Borchardt, 2007). Although Maricopa County's data was not apart of this study the results are consistent with data presented in previous sections of this summary. Future studies should determine if the unencapsulated organism has adapted to be more virulent or was its magnitude overlooked in the beginning. An intriguing question for future consideration is now that H. *influenzae serotype b* is somewhat contained in the United States will it become necessary to increase surveillance and create a vaccine for the emerging unencapsulated form of H. *influenzae.*

As the data for Maricopa County and past studies have shown African Americans and Native Americans/Alaskan Natives are disproportionately affected by H. *influenzae* primarily type b. Two thoughts abound as to the cause one is that African Americans and Native Americans/Alaskan Natives are genetically more susceptible and the other is that both groups are typically in lower socioeconomic strata causing them to reside in close confined areas (Rust & Cavaliere, 2006)**.** Studies have yet proved, sufficiently, either thought therefore more research is needed in this area to find the cause.

Conclusions

1. The rate of children less than five years old diagnosed in Maricopa County between the years 2000-2007 with Haemophilus *influenzae* type b was less than the US national rate for the same age group and time period. In fact, Maricopa County's rate is close to the U.S. Healthy People 2010 goal.

2. The majority of Haemophilus infections presented as bacteremia/sepsis

3. The majority of infections that are caused by Haemophilus *influenzae* were non-typeable, these organisms were responsible for more deaths than any other serotype.

4. Individuals most commonly infected with Haemophilus *influenzae,* all serotypes and non-typeable*,* were over the age of sixty-five and those less than five years old.

Future actions should include:

- Increasing the quantity and quality of investigations by the Maricopa County Health Department

- Encouraging clinical laboratories to send more isolates to the Arizona State Public Health Laboratory for serotyping thereby decreasing the number of unknown serotype

- Investigating the rising number of non-typeable isolates

- Investigating the causes for the disproportionate number of cases among African Americans and Native Americans

Appendix

A. Seasonality

A. Table 1-Haemophilus *influenzae* by Month for Years 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007	Total
January	**4**	**4**	**3**	**6**	**4**	**6**	**3**	**10**	**40**
February	**3**	**5**	**6**	**8**	**13**	**12**	**7**	**3**	**57**
March	**6**	**3**	**7**	**5**	**4**	**8**	**4**	**5**	**42**
April	**4**	**1**	**4**	**3**	**2**	**5**	**4**	**5**	**28**
May	**1**	**1**	**4**	**4**	**4**	**6**	**4**	**4**	**28**
June	**1**	**0**	**0**	**3**	**1**	**2**	**7**	**3**	**17**
July	**3**	**0**	**2**	**1**	**4**	**1**	**3**	**2**	**16**
August	**1**	**3**	**3**	**0**	**3**	**2**	**4**	**1**	**17**
September	**0**	**1**	**2**	**2**	**1**	**4**	**0**	**1**	**11**
October	**3**	**4**	**6**	**2**	**1**	**5**	**1**	**3**	**25**
November	**1**	**5**	**6**	**3**	**1**	**1**	**2**	**4**	**23**
December	**6**	**8**	**3**	**2**	**4**	**7**	**8**	**4**	**42**
Total	**33**	**35**	**46**	***39***	***42***	***59***	**47**	***45***	**346**

B. Cases and Deaths of Invasive Haemophilus *influenzae* by Serotype

B. Table 1-Cases and Death of Haemophilus *influenzae* by Serotype in 2000

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate (%)
A	**4**	**12.1**	**.13**	**0**	**0**	**0.0%**
B	**2**	**6.1**	**.07**	**0**	**0**	**0.0%**
C	**1**	**3.0**	**.03**	**0**	**0**	**0.0%**
D	**3**	**9.1**	**.10**	**0**	**0**	**0.0%**
E	**2**	**6.1**	**.07**	**0**	**0**	**0.0%**
F	**2**	**6.1**	**.07**	**0**	**0**	**0.0%**
Non-typeable	**11**	**33.3**	**.36**	**0**	**0**	**0.0%**
Unknown	**8**	**24.2**	**.26**	**0**	**0**	**0.0%**
Total	**33**	**100.0%**	**1.1**	**0**	**0.0%**	**0.0%**

B. Table 2-Cases and Death of Haemophilus *influenzae* by Serotype in 2001

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate (%)
A	**4**	**11.4**	**.12**	**0**	**0.0**	**0.0%**
B	**2**	**5.7**	**.06**	**0**	**0.0**	**0.0%**
C	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
D	**1**	**2.9**	**.03**	**0**	**0.0**	**0.0%**
E	**3**	**8.6**	**.09**	**0**	**0.0**	**0.0%**
F	**7**	**20.0**	**.22**	**0**	**0.0**	**0.0%**
Non-typeable	**16**	**45.7**	**.50**	**0**	**0.0**	**0.0%**
Unknown	**2**	**5.7**	**.06**	**1**	**100.0**	**2.7%**
Total	**35**	**100.0%**	**1.1**	**1**	**100.0%**	**2.7%**

B. Table 3-Cases and Death of Haemophilus *influenzae* by Serotype in 2002

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**10**	**21.7**	**.30**	**1**	**50.0**	**2.2%**
B	**2**	**4.4**	**.06**	**0**	**0.0**	**0.0%**
C	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
D	**3**	**6.5**	**.09**	**0**	**0.0**	**0.0%**
E	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
F	**7**	**15.2**	**.21**	**0**	**0.0**	**0.0%**
Non-typeable	**19**	**41.3**	**.58**	**1**	**50.0**	**2.2%**
Unknown	**5**	**10.9**	**.15**	**0**	**0.0**	**0.0%**
Total	**46**	**100.0%**	**1.4**	**2**	**100.0%**	**4.4%**

B. Table 4-Cases and Death of Haemophilus *influenzae* by Serotype in 2003

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**4**	**10.3**	**.12**	**0**	**0.0**	**0.0%**
B	**3**	**7.7**	**.08**	**1**	**20.0**	**2.56%**
C	**0**	**0.0**	**0**	**0**	**0.0**	**0.00%**
D	**0**	**0.0**	**0**	**0**	**0.0**	**0.00%**
E	**0**	**0.0**	**0**	**0**	**0.0**	**0.00%**
F	**6**	**15.4**	**.18**	**2**	**40.0**	**5.13%**
Non-typeable	**20**	**51.3**	**.59**	**1**	**20.0**	**2.56%**
Unknown	**6**	**15.4**	**.18**	**1**	**20.0**	**2.56%**
Total	**39**	**100.0%**	**1.1**	**5**	**100.0%**	**12.82%**

B. Table 5-Cases and Death of Haemophilus *influenzae* by Serotype in 2004

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**6**	**14.3**	**.17**	**0**	**0.0**	**0.0%**
B	**1**	**2.4**	**.03**	**0**	**0.0**	**0.0%**
C	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
D	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
E	**1**	**2.4**	**.03**	**0**	**0.0**	**0.0%**
F	**4**	**9.5**	**.11**	**0**	**0.0**	**0.0%**
Non-typeable	**28**	**66.7**	**.80**	**1**	**50.0**	**2.4%**
Unknown	**2**	**4.8**	**.06**	**1**	**50.0**	**2.4%**
Total	**42**	**100.0%**	**1.2**	**2**	**100.0%**	**4.8%**

B. Table 6-Cases and Death of Haemophilus *influenzae* by Serotype in 2005

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**5**	**8.5**	**.14**	**1**	**20.0**	**1.69%**
B	**1**	**1.7**	**.03**	**0**	**0.0**	**0.0%**
C	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
D	**0**	**0.0**	**0**	**0**	**0.0**	**0.0%**
E	**9**	**15.3**	**.25**	**1**	**20.0**	**1.69%**
F	**7**	**11.9**	**.19**	**1**	**20.0**	**1.69%**
Non-typeable	**28**	**47.5**	**.77**	**2**	**40.0**	**3.39%**
Unknown	**9**	**15.3**	**.25**	**0**	**0.0**	**0.0%**
Total	**59**	**100.0%**	**1.6**	**5**	**100.0%**	**8.47%**

B. Table 7-Cases and Death of Haemophilus *influenzae* by Serotype in 2006

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**5**	**10.6**	**.13**	**0**	**0.0**	**0.0%**
B	**2**	**4.3**	**.05**	**0**	**0.0**	**0.0%**
C	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
D	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
E	**3**	**6.4**	**.08**	**0**	**0.0**	**0.0%**
F	**3**	**6.4**	**.08**	**0**	**0.0**	**0.0%**
Non-typeable	**26**	**55.3**	**.69**	**3**	**100.0**	**6.4%**
Unknown	**8**	**17.0**	**.21**	**0**	**0.0**	**0.0%**
Total	**47**	**100.0%**	**1.24**	**3**	**100.0%**	**6.4%**

B. Table 8-Cases and Death of Haemophilus *influenzae* by Serotype in 2007

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	10	**22.2**	**.26**	**0**	**0.0**	**0.0%**
B	4	**8.9**	**.10**	**0**	**0.0**	**0.0%**
C	1	**2.2**	**.03**	**0**	**0.0**	**0.0%**
D	2	**4.4**	**.05**	**0**	**0.0**	**0.0%**
E	5	**11.1**	**.13**	**0**	**0.0**	**0.0%**
F	4	**8.9**	**.10**	**0**	**0.0**	**0.0%**
Non-typeable	14	**31.1**	**.36**	**0**	**0.0**	**0.0%**
Unknown	5	**11.1**	**.13**	**0**	**0.0**	**0.0%**
Total	45	**100.00%**	**1.2**	**0**	**0.0%**	**0.0%**

B. Table 9-Cases and Death by Haemophilus influenzae by Serotype for 2000-2007

	Cases			Deaths		
Serotype	#	%	Rate	#	%	Case Fatality Rate
A	**48**	**13.9**	**.17**	**2**	**11.1**	**.58%**
B	**17**	**4.9**	**.06**	**1**	**5.6**	**.29%**
C	**2**	**.6**	**.01**	**0**	**0.0**	**0.0%**
D	**9**	**2.6**	**.03**	**0**	**0.0**	**0.0%**
E	**23**	**6.7**	**.08**	**1**	**5.6**	**.29%**
F	**40**	**11.6**	**.14**	**3**	**16.7**	**.87%**
Non-typeable	**162**	**46.8**	**.58**	**8**	**44.4**	**2.31%**
Unknown	**45**	**13.0**	**.18**	**3**	**16.7**	**.87%**
Total	**346**	**100.0%**	**1.3**	**18**	**100.0%**	**5.20%**

C. Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity for Years 2000-2007

C. Table 1-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2000

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**16**	**48.5**	**.78**	**0**	**0.0**	**0.0%**
Hispanic	**13**	**39.4**	**1.70**	**0**	**0.0**	**0.0%**
Black	**1**	**3.0**	**.91**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	**3**	**9.1**	**6.30**	**0**	**0.0**	**0.0%**
Other	**0**	**0.0**		**0**	**0.0**	**0.0%**
Unknown	**0**	**0.0**		**0**	**0.0**	**0.0%**
Total	**33**	**100.0%**	**1.07**	**0**	**0.0%**	**0.0%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 2-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2001

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**26**	**74.3**	**1.24**	**1**	**100.0**	**2.9%**
Hispanic	**4**	**11.4**	**.48**	**0**	**0.0**	**0.0%**
Black	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**0**	**0.0**	**0.0**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	**3**	**8.6**	**5.91**	**0**	**0.0**	**0.0%**
Other	**0**	**0.0**		**0**	**0.0**	**0.0%**
Unknown	**2**	**5.7**		**0**	**0.0**	**0.0%**
Total	**35**	**100.0%**	**1.09**	**1**	**100.0%**	**2.9%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 3-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2002

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**25**	**54.4**	**1.18**	**1**	**50.0**	**2.2%**
Hispanic	**12**	**26.1**	**1.36**	**1**	**50.0**	**2.2%**
Black	**4**	**8.7**	**3.30**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**0**	**0.00**	**0**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	**5**	**10.9**	**9.62**	**0**	**0.0**	**0.0%**
Other	**0**	**0.0**		**0**	**0.0**	**0.0%**
Unknown	**0**	**0.0**		**0**	**0.0**	**0.0%**
Total	**46**	**100.0%**	**1.39**	**2**	**100.0%**	**4.4%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 4-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2003

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**24**	**61.5**	**1.11**	**2**	**40.0**	**5.13%**
Hispanic	**7**	**18.0**	**.75**	**1**	**20.0**	**2.56%**
Black	**4**	**10.3**	**3.18**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**0**	**0.00**	**0**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	**2**	**5.1**	**3.76**	**1**	**20.0**	**2.56%**
Other	**1**	**2.6**		**0**	**0.0**	**0.0%**
Unknown	**1**	**2.6**		**1**	**20.0**	**2.56%**
Total	**39**	**100.0%**	**1.15**	**5**	**100.0%**	**12.82%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 5-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2004

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**30**	**71.4**	**1.37**	**2**	**100.0**	**4.8%**
Hispanic	**6**	**14.3**	**.61**	**0**	**0.0**	**0.0%**
Black	**2**	**4.8**	**1.51**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**1**	**2.4**	**1.10**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	**3**	**7.1**	**5.46**	**0**	**0.0**	**0.0%**
Other	**0**	**0.0**		**0**	**0.0**	**0.0%**
Unknown	**0**	**0.0**		**0**	**0.0**	**0.0%**
Total	**42**	**100.0%**	**1.20**	**2**	**100.0%**	**4.8%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 6-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2005

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**31**	**52.5**	**1.38**	**0**	**0.0**	**0.0%**
Hispanic	**18**	**30.5**	**1.71**	**2**	**40.0**	**3.39%**
Black	**2**	**3.4**	**1.42**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**1**	**1.7**	**1.01**	**1**	**20.0**	**1.69%**
Native American/Alaskan Native	**4**	**6.8**	**6.92**	**1**	**20.0**	**1.69%**
Other	**1**	**1.7**		**0**	**0.0**	**0.0%**
Unknown	**2**	**3.4**		**1**	**20.0**	**1.69%**
Total	**59**	**100.0%**	**1.62**	**5**	**100.0%**	**8.47%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table7-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2006

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**30**	**63.8**	**1.31**	**2**	**66.7**	**4.3%**
Hispanic	**11**	**23.4**	**.98**	**0**	**0.0**	**0.0%**
Black	**2**	**4.3**	**1.33**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**1**	**2.1**	**.93**	**1**	**33.3**	**2.1%**
Native American/Alaskan Native	**2**	**4.3**	**3.32**	**0**	**0.0**	**0.0%**
Other	**1**	**2.1**		**0**	**0.0**	**0.0%**
Unknown	**0**	**0.0**		**0**	**0.0**	**0.0%**
Total	**47**	**100.0%**	**1.24**	**3**	**100.0%**	**6.4%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 8-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2007

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	21	**46.7**	**.91**	**0**	**0.0**	**0.0%**
Hispanic	12	**26.7**	**1.01**	**0**	**0.0**	**0.0%**
Black	5	**11.1**	**3.15**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	0	**0.0**	**0**	**0**	**0.0**	**0.0%**
Native American/Alaskan Native	1	**2.2**	**1.62**	**0**	**0.0**	**0.0%**
Other	3	**6.7**		**0**	**0.0**	**0.0%**
Unknown	3	**6.7**		**0**	**0.0**	**0.0%**
Total	45	**100.0%**	**1.16**	**0**	**0.0%**	**0.0%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

C. Table 9-Cases & Deaths of Haemophilus *influenzae* by Race/Ethnicity in 2000-2007

	Cases			Deaths		
Race	#	%	Rate*	#	%	Case Fatality Rate**
White	**203**	**58.7**	**1.16**	**8**	**44.4**	**2.31%**
Hispanic	**83**	**24.0**	**1.07**	**4**	**22.2**	**1.16%**
Black	**20**	**5.8**	**1.89**	**0**	**0.0**	**0.0%**
Asian/Pacific Islander	**3**	**.9**	**.41**	**2**	**11.1**	**.58%**
Native American/Alaskan Native	**23**	**6.7**	**5.25**	**2**	**11.1**	**.58%**
Other	**6**	**1.7**		**0**	**0.00**	**0.0%**
Unknown	**8**	**2.3**		**2**	**11.1**	**.58%**
Total	**346**	**100.0%**	**1.25**	**18**	**100.0%**	**5.20%**

***Individual race rates were calculated using race specific population; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2000-2007

D. Table 1-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2000

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**18**	**54.6**	**1.17**	**0**	**0.0**	**0.0%**
Male	**15**	**45.5**	**.98**	**0**	**0.0**	**0.0%**
Total	**33**	**100.0%**	**1.07**	**0**	**0.0%**	**0.0%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 2-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2001

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**17**	**48.6**	**1.06**	**1**	**100.0**	**2.9%**
Male	**18**	**51.4**	**1.12**	**0**	**0.0**	**0.0%**
Total	**35**	**100.0%**	**1.09**	**1**	**100.0%**	**2.9%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 3-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2002

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**25**	**54.4**	**1.52**	**1**	**50.0**	**2.2%**
Male	**21**	**45.7**	**1.27**	**1**	**50.0**	**2.2%**
Total	**46**	**100.0%**	**1.39**	**2**	**100.0%**	**4.4%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 4-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2003

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**22**	**56.4**	**1.30**	**3**	**60.0**	**7.69%**
Male	**17**	**43.6**	**1.00**	**2**	**40.0**	**5.13%**
Total	**39**	**100.0%**	**1.14**	**5**	**100.0%**	**12.82%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 5-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2004

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**24**	**57.1**	**1.38**	**2**	**50.0**	**4.8%**
Male	**18**	**42.9**	**1.02**	**0**	**0.0**	**0.0%**
Total	**42**	**100.0%**	**1.20**	**2**	**100.0%**	**4.8%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 6-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2005

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**31**	**52.5**	**1.71**	**3**	**60.0**	**5.08%**
Male	**28**	**47.5**	**1.53**	**2**	**40.0**	**3.39%**
Total	**59**	**100.0**	**1.62**	**5**	**100.0**	**8.47%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table7-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2006

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**23**	**48.9**	**1.23**	**1**	**33.3**	**2.1%**
Male	**24**	**51.1**	**1.26**	**2**	**66.7**	**4.3%**
Total	**47**	**100.0%**	**1.24**	**3**	**100.0%**	**6.4%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 8-Cases & Deaths of Haemophilus *influenzae* in MC by Gender in 2007

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**21**	**46.7**	**1.09**	**0**	**0.0**	**0.0%**
Male	**24**	**53.3**	**1.23**	**0**	**0.0**	**0.0%**
Total	**45**	**100.0%**	**1.16**	**0**	**0.0%**	**0.0%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

D. Table 9-Case & Deaths of Haemophilus *influenzae* in MC by Gender in 2000-2007

	Cases			Deaths		
Gender	#	%	Rate*	#	%	Case Fatality Rate**
Female	**181**	**52.3**	**1.31**	**11**	**61.1**	**3.18%**
Male	**165**	**47.7**	**1.18**	**7**	**38.9**	**2.02%**
Total	**346**	**100.0%**	**1.25**	**18**	**100.0%**	**5.20%**

***Individual gender rates were calculated using gender subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

E. Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2000-2007

E. Table 1-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2000

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	13	39.4	5.37	0	0.0	0.0%
5-9	3	9.1	1.26	0	0.0	0.0%
10-14	0	0.0	0	0	0.0	0.0%
15-19	1	3.0	.47	0	0.0	0.0%
20-24	1	3.0	.45	0	0.0	0.0%
25-34	0	0.0	0	0	0.0	0.0%
35-44	0	0.0	0	0	0.0	0.0%
45-54	1	3.0	.27	0	0.0	0.0%
55-59	1	3.0	.75	0	0.0	0.0%
60-64	2	6.1	1.86	0	0.0	0.0%
65-74	5	15.2	2.65	0	0.0	0.0%
75-84	4	12.1	3.08	0	0.0	0.0%
85+	2	6.1	4.98	0	0.0	0.0%
Total	33	100.0%	1.07	0	0.0%	0.0%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 2-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2001

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	7	20.0	2.7	0	0.0	0.0%
5-9	0	0.0	0	0	0.0	0.0%
10-14	1	2.9	.43	0	0.0	0.0%
15-19	0	0.0	0	0	0.0	0.0%
20-24	1	2.9	.42	0	0.0	0.0%
25-34	0	0.0	0	0	0.0	0.0%
35-44	1	2.9	.20	0	0.0	0.0%
45-54	7	20.0	1.79	0	0.0	0.0%
55-59	2	5.7	1.40	0	0.0	0.0%
60-64	4	11.4	3.52	1	100.0	2.9%
65-74	4	11.4	2.11	0	0.0	0.0%
75-84	4	11.4	2.98	0	0.0	0.0%
85+	4	11.4	9.27	0	0.0	0.0%
Total	35	100.0%	1.09	1	100.0%	2.9%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 3-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2002

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	16	34.8	6.03	1	50.0	2.2%
5-9	2	4.4	.79	0	0.0	0.0%
10-14	1	2.2	.41	0	0.0	0.0%
15-19	0	0.0	0	0	0.0	0.0%
20-24	2	4.4	.81	0	0.0	0.0%
25-34	3	6.7	.58	0	0.0	0.0%
35-44	1	2.2	.20	0	0.0	0.0%
45-54	3	6.5	.74	0	0.0	0.0%
55-59	1	2.2	.64	0	0.0	0.0%
60-64	4	8.7	3.3	0	0.0	0.0%
65-74	7	15.2	3.7	1	50.0	2.2%
75-84	2	4.4	1.5	0	0.0	0.0%
85+	4	8.7	9	0	0.0	0.0%
Total	46	100.0%	1.4	2	100.0%	4.4%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 4-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2003

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	5	12.8	1.89	0	0.0	0.0%
5-9	2	5.1	.80	0	0.0	0.0%
10-14	0	0.0	0	0	0.0	0.0%
15-19	0	0.0	0	0	0.0	0.0%
20-24	4	10.3	1.62	0	0.0	0.0%
25-34	1	2.6	.19	0	0.0	0.0%
35-44	1	2.6	.19	0	0.0	0.0%
45-54	5	12.8	1.19	1	20.0	2.56%
55-59	3	7.7	1.80	0	0.0	0.0%
60-64	3	7.7	2.31	0	0.0	0.0%
65-74	4	10.3	2.06	1	20.0	2.56%
75-84	4	10.3	2.87	0	0.0	0.0%
85+	7	18.0	14.53	3	60.0	7.69%
Total	39	100.0%	1.15	5	100.0%	12.82%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 5-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2004

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	10	23.8	3.47	0	0.0	0.0%
5-9	2	4.8	.76	0	0.0	0.0%
10-14	1	2.4	.39	0	0.0	0.0%
15-19	1	2.4	.43	0	0.0	0.0%
20-24	2	4.8	.80	0	0.0	0.0%
25-34	0	0.0	0	0	0.0	0.0%
35-44	3	7.1	.58	0	0.0	0.0%
45-54	5	11.9	1.14	1	50.0	2.4%
55-59	2	4.8	1.12	0	0.0	0.0%
60-64	2	4.8	1.44	0	0.0	0.0%
65-74	5	11.9	2.52	1	50.0	2.4%
75-84	6	14.3	4.23	0	0.0	0.0%
85+	3	7.1	5.91	0	0.0	0.0%
Total	42	100.0%	1.20	2	100.0%	4.8%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 6-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2005

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	14	23.7	4.60	2	40.0	3.39%
5-9	1	1.7	.37	0	0.0	0.0%
10-14	0	0.0	0	0	0.0	0.0%
15-19	1	1.7	.41	0	0.0	0.0%
20-24	1	1.7	.40	0	0.0	0.0%
25-34	2	3.4	.35	0	0.0	0.0%
35-44	3	5.1	.56	0	0.0	0.0%
45-54	6	10.2	1.30	1	20.0	1.69%
55-59	4	6.8	2.08	0	0.0	0.0%
60-64	3	5.1	2.02	0	0.0	0.0%
65-74	5	8.5	2.45	0	0.0	0.0%
75-84	13	22.0	8.96	2	40.0	3.39%
85+	6	10.2	11.07	0	0.0	0.0%
Total	59	100.0%	1.62	5	100.0%	8.47%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 7-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2006

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	15	31.9	4.77	1	33.3	2.1%
5-9	3	6.4	1.05	0	0.0	0.0%
10-14	0	0.0	0	0	0.0	0.0%
15-19	1	2.1	.40	0	0.0	0.0%
20-24	2	4.3	.80	0	0.0	0.0%
25-34	0	0.0	0	0	0.0	0.0%
35-44	1	2.1	.18	0	0.0	0.0%
45-54	5	10.6	1.03	0	0.0	0.0%
55-59	3	6.4	1.46	1	33.3	2.1%
60-64	1	2.1	.64	0	0.0	0.0%
65-74	7	14.9	3.30	1	33.3	2.1%
75-84	5	10.6	3.40	0	0.0	0.0%
85+	4	8.5	6.89	0	0.0	0.0%
Total	47	100.0%	1.24	3	100.0%	6.3%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 8-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2007

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	11	24.4	3.40	0	0.0	0.0%
5-9	4	8.9	1.36	0	0.0	0.0%
10-14	0	0.0	0	0	0.0	0.0%
15-19	0	0.0	0	0	0.0	0.0%
20-24	1	2.2	.40	0	0.0	0.0%
25-34	1	2.2	.17	0	0.0	0.0%
35-44	4	8.9	.71	0	0.0	0.0%
45-54	2	4.4	.40	0	0.0	0.0%
55-59	3	6.7	1.44	0	0.0	0.0%
60-64	4	8.9	2.35	0	0.0	0.0%
65-74	6	13.3	2.70	0	0.0	0.0%
75-84	5	11.1	3.37	0	0.0	0.0%
85+	4	8.9	6.48	0	0.0	0.0%
Total	45	100.0%	1.03	0	0.0%	0.0%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**

****Case Fatality Rates calculated using total number of cases.**

E. Table 9-Cases & Deaths of Haemophilus *influenzae* in MC by Agegroup in 2000-2007

	Cases			Deaths		
Age (in years)	#	%	Rate*	#	%	Case Fatality Rate**
0-4	91	26.3	4.01	4	22.2	1.16%
5-9	17	4.9	.81	0	0.0	0.0%
10-14	3	.9	.15	0	0.0	0.0%
15-19	4	1.2	.21	0	0.0	0.0%
20-24	14	4.1	.72	0	0.0	0.0%
25-34	7	2.0	.16	0	0.0	0.0%
35-44	14	4.1	.34	0	0.0	0.0%
45-54	34	9.8	.98	3	16.7	.87%
55-59	19	5.5	1.37	1	5.6	.29%
60-64	23	6.7	2.11	1	5.6	.29%
65-74	43	12.4	2.69	4	22.2	1.16%
75-84	43	12.4	4.10	2	11.1	.58%
85+	34	9.8	8.47	3	16.7	.87%
Total	346	100.0%	1.25	18	100.0%	5.20%

***Individual agegroup rates were calculated using agegroup subpopulation; the total rate is based on the total population.**
****Case Fatality Rates calculated using total number of cases.**

F. Population Estimates for Maricopa County, 2000-2007

F. Table 1-MC Population for years 2000-2007, by Race/Ethnicity per U.S. Census Bureau

Year	Race/Ethnicity						
	White	Hispanic	Black	Native Am./Alaskan Native	Asian/Island Pacific	Other	Total
2000	2,046,444	763,341	110,195	47,60	69,928	34,634	3,072,149
2001	2,091,450	829,443	115,913	50,730	76,137	37,171	3,200,844
2002	2,124,085	882,774	121,056	51,961	81,286	39,263	3,300,425
2003	2,154,117	932,070	125,760	53,190	85,813	41,566	3,392,516
2004	2,195,688	985,790	132,286	54,938	91,200	44,241	3,504,143
2005	2,248,480	1,052,764	141,055	57,820	98,886	47,564	3,646,569
2006	2,286,987	1,121,985	150,801	60,185	107,778	50,862	3,778,598
2007	2,309,547	1,182,656	158,688	61,605	114,246	53,439	3,880,181
2000-2007	17,456,798	7,750,823	1,055,754	438,036	725,274	348,740	27,775,425

F. Table 2-MC Population for Years 2000-2007, by Gender per U.S. Census Bureau

Gender	Year							
	2000	2001	2002	2003	2004	2005	2006	2007
Female	1,535,676	1,597,427	1,645,438	1,690,266	1,743,562	1,813,086	1,876,914	1,926,105
Male	1,536,473	1,603,417	1,654,987	1,702,250	1,760,581	1,833,483	1,901,684	1,954,076
Total	3,072,149	3,200,844	3,300,425	3,392,516	3,504,143	3,646,569	3,778,598	3,880,181

F. Table 3- MC Population for Years 2000-2007, by Gender per U.S. Census Bureau

Gender	Years 2000-2007
Female	13,828,474
Male	13,946,951
Total	27,775,425

F. Table 4-MC Population for years 2000-2007 by Age Per U.S. Census Bureau

Age (In years)	Year							
	2000	2001	2002	2003	2004	2005	2006	2007
0-4	241,974	255,183	265,178	276,474	288,381	304,037	314,742	323,861
5-9	238,222	245,505	251,549	255,739	262,619	272,035	285,086	294,409
10-14	222,056	234,051	242,454	250,143	257,625	266,011	273,966	279,646
15-19	214,672	216,789	219,526	224,296	231,816	242,268	251,957	260,467
20-24	224,444	239,588	246,882	249,012	249,274	249,676	249,235	248,418
25-34	488,329	504,371	519,991	532,429	549,726	569,515	585,795	595,579
35-44	475,907	490,375	499,483	506,601	518,979	537,454	555,797	564,758
45-54	366,464	391,744	405,171	420,438	437,632	461,087	481,996	501,230
55-59	133,812	142,527	156,534	166,442	178,257	192,169	205,878	208,977
60-64	107,290	113,743	120,573	129,762	139,015	148,792	157,040	170,461
65-74	188,816	189,548	191,064	193,823	198,373	204,272	212,154	222,478
75-84	130,036	134,289	136,853	139,200	141,770	145,039	146,867	148,197
85+	40,127	43,131	45,167	48,157	50,676	54,214	58,085	61,700
Total	3,072,149	3,200,844	3,300,425	3,392,516	3,504,143	3,646,569	3,778,598	3,880,181

F. Table 5-MC Population for years 2000-2007 by Age Per U.S. Census Bureau

Age (in Years)	Years 2000-2007
0-4	2,269,830
5-9	2,105,164
10-14	2,025,952
15-19	1,861,791
20-24	1,956,529
25-34	4,345,735
35-44	4,149,354
45-54	3,465,762
55-59	1,384,596
60-64	1,086,676
65-74	1,600,528
75-84	1,122,251
85+	401,257
Total	27,775,425

F. Table 6-MC Population, 2000, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	119,413	97,104	9,544	4,558	5,047	6,308	241,974
5-9	125,584	87,461	10,546	4,730	4,751	5,150	238,222
10-14	126,795	71,987	10,354	4,469	4,393	4,058	222,056
15-19	121,915	71,357	9,224	4,417	4,443	3,316	214,672
20-24	119,951	82,685	8,267	5,259	5,558	2,724	224,444
25-29	140,908	81,013	8,991	5,053	8,274	2,454	246,693
30-34	150,278	68,174	9,282	4,358	7,510	2,034	241,636
35-39	168,355	56,866	9,786	3,963	6,723	1,973	247,666
40-44	165,771	42,846	9,000	3,166	5,796	1,662	228,241
45-49	147,542	31,450	7,033	2,355	4,799	1,325	194,504
50-54	136,761	23,287	5,213	1,848	3,819	1,032	171,960
55-59	110,035	15,646	3,658	1,139	2,588	746	133,812
60-64	89,910	10,957	2,900	857	2,086	580	107,290
65-69	84,156	8,325	2,214	521	1,626	434	97,276
70-74	81,783	6,227	1,664	359	1,171	336	91,540
75-79	71,992	4,040	1,145	279	682	234	78,372
80-84	48,071	2,217	725	143	376	132	51,664
85+	37,224	1,699	649	133	286	136	40,127
TOTAL	2,046,444	763,341	110,195	47,607	69,928	34,634	3,072,149

F. Table 7-MC Population, 2001, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	121,627	105,728	10,352	4,916	5,671	6,889	255,183
5-9	124,878	94,043	10,735	4,822	5,197	5,830	245,505
10-14	129,921	78,998	10,910	4,887	4,804	4,531	234,051
15-19	122,849	71,500	9,747	4,477	4,647	3,569	216,789
20-24	126,994	89,431	8,817	5,756	5,588	3,002	239,588
25-29	134,819	89,155	9,197	5,225	8,664	2,465	249,525
30-34	154,435	75,460	9,535	4,740	8,509	2,167	254,846
35-39	165,105	62,274	10,058	4,138	7,206	1,940	250,721
40-44	170,940	47,751	9,524	3,466	6,284	1,689	239,654
45-49	153,681	34,956	7,453	2,473	5,281	1,379	205,223
50-54	147,053	26,180	5,866	2,048	4,333	1,041	186,521
55-59	116,137	17,511	3,882	1,262	2,973	762	142,527
60-64	94,696	12,098	3,065	950	2,325	609	113,743
65-69	83,881	8,813	2,372	586	1,762	440	97,854
70-74	81,367	6,635	1,712	364	1,290	326	91,694
75-79	72,362	4,450	1,215	312	826	247	79,412
80-84	50,794	2,542	808	161	436	136	54,877
85+	39,911	1,918	665	147	341	149	43,131
TOTAL	2,091,450	829,443	115,913	50,730	76,137	37,171	3,200,844

F. Table 8- MC Population, 2002, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	123,416	112,615	10,876	5,076	6,152	7,043	265,178
5-9	124,653	99,304	10,931	4,810	5,655	6,196	251,549
10-14	131,472	84,673	11,375	4,979	5,065	4,890	242,454
15-19	123,926	72,420	10,155	4,548	4,755	3,722	219,526
20-24	130,263	92,792	9,238	5,650	5,694	3,245	246,882
25-29	133,466	95,610	9,394	5,454	8,912	2,564	255,400
30-34	155,953	82,042	9,984	4,811	9,434	2,367	264,591
35-39	160,734	66,382	10,117	4,101	7,517	1,960	250,811
40-44	174,407	51,955	9,959	3,741	6,775	1,835	248,672
45-49	159,376	38,256	8,025	2,602	5,672	1,448	215,379
50-54	147,511	28,140	6,292	2,106	4,642	1,101	189,792
55-59	127,243	19,406	4,260	1,420	3,350	855	156,534
60-64	100,095	13,102	3,242	956	2,501	677	120,573
65-69	84,278	9,472	2,573	626	1,983	460	99,392
70-74	80,803	6,934	1,778	405	1,398	354	91,672
75-79	72,065	4,793	1,304	325	887	251	79,625
80-84	52,707	2,814	844	189	529	145	57,228
85+	41,717	2,064	709	162	365	150	45,167
TOTAL	2,124,085	882,774	121,056	51,961	81,286	39,263	3,300,425

F. Table 9-MC Population, 2003, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	125,547	120,296	11,370	5,244	6,694	7,323	276,474
5-9	124,379	102,909	11,139	4,777	5,935	6,600	255,739
10-14	132,065	90,712	11,768	5,092	5,368	5,138	250,143
15-19	125,888	74,315	10,612	4,691	4,822	3,968	224,296
20-24	131,903	92,767	9,744	5,508	5,637	3,453	249,012
25-29	133,580	101,766	9,427	5,594	9,008	2,778	262,153
30-34	154,760	87,521	10,314	5,013	10,195	2,473	270,276
35-39	157,137	70,925	10,137	4,149	8,006	2,002	252,356
40-44	175,335	55,804	10,341	3,819	7,009	1,937	254,245
45-49	165,356	41,413	8,428	2,737	6,108	1,590	225,632
50-54	149,482	30,209	6,709	2,178	5,040	1,188	194,806
55-59	134,416	21,250	4,631	1,551	3,671	923	166,442
60-64	107,405	14,384	3,540	1,010	2,655	768	129,762
65-69	86,461	10,073	1,271	702	2,189	1,912	102,608
70-74	79,793	7,268	1,903	408	1,502	341	91,215
75-79	72,261	5,118	1,359	348	989	272	80,347
80-84	54,046	2,987	899	200	556	165	58,853
85+	44,303	2,353	756	169	429	147	48,157
TOTAL	2,154,117	932,070	124,348	53,190	85,813	42,978	3,392,516

F. Table 10-MC Population, 2004, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	127,998	127,931	12,093	5,481	7,269	7,609	288,381
5-9	125,262	107,870	11,448	4,864	6,202	6,973	262,619
10-14	132,327	96,472	12,342	5,167	5,740	5,577	257,625
15-19	128,754	77,846	11,128	4,888	5,007	4,193	231,816
20-24	132,431	91,657	10,434	5,378	5,720	3,654	249,274
25-29	138,200	107,745	9,922	5,821	9,169	3,154	274,011
30-34	152,773	93,769	10,701	5,075	10,802	2,595	275,715
35-39	155,720	75,339	10,311	4,206	8,597	2,077	256,250
40-44	177,828	60,467	10,766	4,046	7,625	1,997	262,729
45-49	170,123	45,013	9,025	2,912	6,455	1,708	235,236
50-54	153,634	32,584	7,156	2,314	5,400	1,308	202,396
55-59	142,787	23,526	5,116	1,706	4,103	1,019	178,257
60-64	114,730	15,772	3,762	1,050	2,903	798	139,015
65-69	89,569	10,811	2,837	790	2,343	580	106,930
70-74	79,177	7,706	2,060	463	1,663	374	91,443
75-79	71,946	5,439	1,418	356	1,088	289	80,536
80-84	55,973	3,258	964	218	628	193	61,234
85+	46,456	2,585	803	203	486	143	50,676
TOTAL	2,195,688	985,790	132,286	54,938	91,200	44,241	3,504,143

F. Table 11-MC Population, 2005, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	131,677	136,732	13,096	6,168	8,239	8,125	304,037
5-9	126,513	114,259	12,201	4,989	6,598	7,475	272,035
10-14	132,779	102,902	12,887	5,242	6,216	5,985	266,011
15-19	131,494	83,782	11,850	5,215	5,339	4,588	242,268
20-24	133,199	90,496	10,839	5,350	5,921	3,871	249,676
25-29	144,183	114,068	10,949	6,159	9,421	3,407	288,187
30-34	149,574	101,693	10,804	5,212	11,348	2,697	281,328
35-39	158,240	81,547	10,988	4,348	9,693	2,268	267,084
40-44	178,687	65,745	11,160	4,242	8,380	2,156	270,370
45-49	176,527	49,750	9,890	3,130	7,018	1,806	248,121
50-54	159,798	35,640	7,776	2,462	5,843	1,447	212,966
55-59	152,499	26,202	5,680	1,954	4,685	1,149	192,169
60-64	121,749	17,584	4,195	1,125	3,250	889	148,792
65-69	93,149	11,692	3,079	862	2,584	624	111,990
70-74	79,048	8,314	2,192	507	1,812	409	92,282
75-79	72,515	5,889	1,570	369	1,284	306	81,933
80-84	57,360	3,553	1,024	273	691	205	63,106
85+	49,489	2,916	875	213	564	157	54,214
TOTAL	2,248,480	1,052,764	141,055	57,820	98,886	47,564	3,646,569

F. Table 12-MC Population, 2006, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	132,260	144,480	14,056	6,408	8,940	8,598	314,742
5-9	128,715	122,574	13,338	5,190	7,482	7,787	285,086
10-14	132,488	109,537	13,365	5,242	6,778	6,556	273,966
15-19	133,301	89,898	12,591	5,535	5,703	4,929	251,957
20-24	132,580	89,518	11,555	5,283	6,177	4,122	249,235
25-29	149,249	119,813	11,751	6,471	9,771	3,678	300,733
30-34	144,085	109,317	11,405	5,291	12,156	2,808	285,062
35-39	162,766	88,738	11,506	4,668	10,953	2,499	281,130
40-44	175,993	71,214	11,800	4,369	9,049	2,242	274,667
45-49	181,341	54,447	10,639	3,374	7,667	1,956	259,424
50-54	164,687	38,961	8,310	2,556	6,451	1,607	222,572
55-59	161,916	28,900	6,446	2,133	5,236	1,247	205,878
60-64	127,309	19,346	4,537	1,230	3,656	962	157,040
65-69	97,665	12,840	3,333	934	2,833	695	118,300
70-74	79,506	8,907	2,411	578	1,996	456	93,854
75-79	72,423	6,320	1,670	377	1,437	318	82,545
80-84	57,961	3,889	1,116	300	826	230	64,322
85+	52,742	3,286	972	246	667	172	58,085
Total	2,286,987	1,121,985	150,801	60,185	107,778	50,862	3,778,598

F. Table 13-MC Population, 2007, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	133,134	151,414	14,712	6,310	9,352	8,939	323,861
5-9	129,505	129,287	14,216	5,352	8,100	7,949	294,409
10-14	131,286	115,090	13,762	5,225	7,304	6,979	279,646
15-19	134,089	95,991	13,338	5,684	6,044	5,321	260,467
20-24	131,584	89,365	11,954	5,329	6,021	4,165	248,418
25-29	150,746	122,531	12,595	6,400	9,893	3,996	306,161
30-34	141,215	115,483	11,684	5,587	12,548	2,901	289,418
35-39	163,131	95,446	12,248	4,784	12,091	2,675	290,375
40-44	170,559	75,747	11,910	4,374	9,497	2,296	274,383
45-49	184,165	59,087	11,265	3,659	8,237	2,102	268,515
50-54	169,743	42,643	8,954	2,713	6,945	1,717	232,715
55-59	161,787	31,104	6,954	2,193	5,637	1,302	208,977
60-64	137,642	21,361	4,931	1,411	4,060	1,056	170,461
65-69	103,962	13,997	3,539	955	3,046	778	126,277
70-74	80,592	9,623	2,639	625	2,237	485	96,201
75-79	72,468	6,638	1,741	426	1,556	351	83,180
80-84	58,124	4,233	1,211	298	914	237	65,017
85+	55,815	3,616	1,035	280	764	190	61,700
TOTAL	2,309,547	1,182,656	158,688	61,605	114,246	53,439	3,880,181

F. Table 14-MC Population, 2000-2007, by Age and Race Per U.S. Census Bureau

	White	Hispanic	Black	Native American	Asian/Pacific Islander	Other	Total
0-4	1,015,072	996,300	96,099	44,161	57,364	60,834	2,269,830
5-9	1,009,489	857,707	94,554	39,534	49,920	53,960	2,105,164
10-14	1,049,133	750,371	96,763	40,303	45,668	43,714	2,025,952
15-19	1,022,216	637,109	88,645	39,455	40,760	33,606	1,861,791
20-24	1,038,905	718,711	80,848	43,513	46,316	28,236	1,956,529
25-29	1,125,151	831,701	82,226	46,177	73,112	24,496	2,182,863
30-34	1,203,073	733,459	83,709	40,087	82,502	20,042	2,162,872
35-39	1,291,188	597,517	85,151	34,357	70,786	17,394	2,096,393
40-44	1,389,520	471,529	84,460	31,223	60,415	15,814	2,052,961
45-49	1,338,111	354,372	71,758	23,242	51,237	13,314	1,852,034
50-54	1,228,669	257,644	56,276	18,225	42,473	10,441	1,613,728
55-59	1,106,820	183,545	40,627	13,358	32,243	8,003	1,384,596
60-64	893,536	124,604	30,172	8,589	23,436	6,339	1,086,676
65-69	723,121	86,023	21,218	5,976	18,366	5,923	860,627
70-74	642,069	61,614	16,359	3,709	13,069	3,081	739,901
75-79	578,032	42,687	11,422	2,792	8,749	2,268	645,950
80-84	435,036	25,493	7,591	1,782	4,956	1,443	476,301
85+	367,657	20,437	6,464	1,553	3,902	1,244	401,257
TOTAL	17,456,798	7,750,823	1,054,342	438,036	725,274	350,152	27,775,425

G. U.S. population Estimates for 2000-2007

G. Table 1-U.S. Population for Years 2000-2007 Per U.S. Census Bureau

YEAR	U.S. Population
2000	282,158,336
2001	284,915,024
2002	287,501,476
2003	289,985,771
2004	292,805,643
2005	295,583,436
2006	298,442,420
2007	301,279,593
Total	2,332,671,699

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