

Infectious and Communicable Diseases

Infectious and communicable diseases are the 4th leading cause of death among Kansas City residents. There is no good estimate of the number of individuals who contract such diseases through the year or the number of days of disability (eg, missed days of work or school). And, the economic impact of communicable and infectious diseases also is unknown in most cases.

Since exposure to various communicable and infectious diseases is universal, it was not surprising that Kansas City residents recognize the importance of protecting the community against such diseases. The data in Table 161 shows the responses of residents to a 2004 survey commissioned by the Kansas City Health Department.⁶⁰⁸

Table 161 Responses of 1,215 residents regarding the importance of various public health services, Kansas City, Mo, 2003

| Public health service | Very important | Somewhat important |
|---|----------------|--------------------|
| Preventing the spread of infectious diseases | 90.1% | 8.6% |
| Protecting the public from new health threats | 84.9% | 11.9% |
| Protecting against food poisoning | 82.5% | 13.7% |
| Assessing and monitoring diseases | 77.0% | 17.7% |

In 2006, the Kansas City Health Department again commissioned a survey of City residents and inquired about satisfaction with its services.⁶⁰⁹ From that survey 67.1% of 1,234 respondents were satisfied with how the Health Department prevents the spread of infectious diseases in the community and only 6.2% were dissatisfied. And, 65% were satisfied with how the Health Department protects the public from new health threats; 9% were dissatisfied. When asked which services should receive the most emphasis, 80.6% ranked the prevention of infectious diseases as the service the most important and 78.4% ranked the protection of the public as the second most important service.

There is a list of reportable diseases and conditions that legally mandates the reporting of selected diseases to the Division of Communicable Disease Prevention and Public Health Preparedness of the Kansas City Health Department. That list can be accessed on the Health Department's web site, <http://www.kcmo.org/health>. Although physicians and laboratories are required to file these reports, the completeness of reporting is highly variable for each disease. In Kansas City, laboratory reporting is more complete and timely than physician reporting.

Table 162 lists by year the number of cases and the case rates per 100,000 population for a select number of reportable infectious and communicable diseases in Kansas City for the time period 2003-2007; a more comprehensive listing can be found in the Health Department's annual report located

⁶⁰⁸ Kansas City Health Department. 2004 Health Assessment Survey. www.kcmo.org/health.

⁶⁰⁹ Kansas City Health Department. 2006 Health Planning and Assessment Survey. www.kcmo.org/health.

on the web site. The annual case counts for most diseases listed in Table 162 represent what is termed 'endemic' or normal levels for the community. While some diseases have exhibited a downward trend, eg hepatitis A, others have remained relatively stable, eg, gonorrhea, and others have increases, eg P&S syphilis. Many factors contribute to increases or decreases in the number of cases in the community.

The *Healthy People 2010* national objectives address some infectious and communicable diseases; these rates have more relevance at the state level than at the level of cities. For some diseases, Kansas City is already below the national target level while for others, such as gonorrhea, it is doubtful that the City can ever reach the 2010 objective (Table 163).

Table 162 Cases and rates per 100,000 population* for selected infectious and communicable diseases, Kansas City, Mo

| Disease | 2007 | | 2006 | | 2005 | |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| | Cases | Rate | Cases | Rate | Cases | Rate |
| Campylobacter | 40 | 9.1 | 36 | 8.1 | 36 | 8.2 |
| Chlamydia | 4,279 | 968.5 | 4,057 | 918.8 | 4,215 | 954.6 |
| Cryptosporidium | 21 | 4.8 | 38 | 8.6 | 6 | 1.4 |
| <i>Escherichia coli</i> O157:H7 | 5 | 1.1 | 0 | 0.0 | 2 | 0.4 |
| Gonorrhea | 2,264 | 512.4 | 2,366 | 535.8 | 2,420 | 548.1 |
| Hepatitis A | 1 | 0.2 | 6 | 1.4 | 3 | 0.7 |
| Hepatitis B | 41 | 9.2 | 33 | 5.4 | 39 | 8.8 |
| Hepatitis C | 311 | 69.5 | 348 | 78.3 | 279 | 63.2 |
| HIV | 139 | 31.5 | 148 | 33.5 | 117 | 26.5 |
| Influenza | 1,009 | 228.4 | 1,227 | 277.9 | 820 | 185.7 |
| Meningitis, meningococcal | 2 | 0.5 | 2 | 0.5 | 5 | 1.1 |
| Pertussis | 6 | 1.4 | 24 | 5.4 | 29 | 6.6 |
| Salmonellosis | 47 | 10.6 | 51 | 11.6 | 46 | 10.4 |
| Shigellosis | 1 | 0.2 | 28 | 6.3 | 349 | 79.0 |
| Syphilis, P&S | 102 | 23.1 | 81 | 18.3 | 61 | 13.8 |
| Tuberculosis | 20 | 4.5 | 24 | 5.4 | 24 | 5.4 |
| West Nile | 9 | 2.0 | 5 | 1.1 | 1 | 0.2 |

| Disease | 2004 | | 2003 | |
|---------------------------------|-------|-------|-------|-------|
| | Cases | Rate | Cases | Rate |
| Campylobacter | 32 | 7.2 | 25 | 5.7 |
| Chlamydia | 4,385 | 993.1 | 3,695 | 836.8 |
| Cryptosporidium | 7 | 1.6 | 10 | 2.3 |
| <i>Escherichia coli</i> O157:H7 | 2 | 0.4 | 7 | 1.6 |
| Gonorrhea | 2,567 | 581.4 | 2,356 | 533.6 |
| Hepatitis A | 1 | 0.2 | 14 | 3.2 |
| Hepatitis B | 15 | 3.4 | 167 | 37.8 |
| Hepatitis C | 223 | 50.5 | 631 | 142.9 |
| HIV | 122 | 27.6 | 112 | 25.4 |
| Influenza | 141 | 31.9 | 1,129 | 255.7 |
| Meningitis, meningococcal | 1 | 0.2 | 2 | 0.4 |
| Pertussis | 40 | 9.0 | 9 | 2.0 |
| Salmonellosis | 34 | 7.7 | 35 | 7.9 |
| Shigellosis | 11 | 2.5 | 9 | 2.0 |
| Syphilis, P&S | 23 | 5.2 | 16 | 3.6 |
| Tuberculosis | 21 | 4.7 | 26 | 5.9 |
| West Nile | 8 | 1.8 | 8 | 1.8 |

Table 163 Infection rates in Kansas City and *Healthy People 2010* national objectives

| Disease | Ave Rate for 2002-2006 | Yr 2010 Objective |
|---------------------------------|------------------------|-------------------|
| Campylobacter | 7.7 | 12.3 |
| <i>Escherichia coli</i> O157:H7 | 0.7 | 1.0 |
| Gonorrhea | 542.3 | 19.0 |
| Hepatitis A | 1.1 | 4.5 |
| Listeria | 0.09 | 0.25 |
| Meningitis, meningococcal | 0.5 | 1.0 |
| Salmonellosis | 9.6 | 6.8 |
| Syphilis, primary & secondary | 12.8 | 0.2 |
| Tuberculosis | 5.2 | 1.0 |

Sexually transmitted diseases

Among sexually transmitted diseases, reported gonorrhea cases have averaged 2,395 between 2004 and 2007 which is less than half the 5,000-7,000 cases per year reported through the 1980s. There were 2,264 cases among residents in 2007. In 2006, the last year for which national statistics are available, Kansas City accounted for 61.9% of the gonorrhea reported in the Kansas City MO-KS metropolitan statistical area. Also, in 2006, Missouri ranked 8th in the incidence of gonorrhea. The federal government no longer provides a ranking by cities; instead it lists gonorrhea by counties and independent cities. Thus, in 2006, Jackson County was the 19th worst out of 68 jurisdictions for gonorrhea while St Louis City was ranked 17th worst. Fifty point nine percent of the reported gonorrhea cases in Missouri came from St Louis City and Kansas City.

Meanwhile, the increasing trend in reported cases of chlamydia infections appears to have leveled off between 2004 and 2007, averaging 4,234 cases annually. As with gonorrhea, Missouri ranked high among the states (12th). Among counties and independent cities, Jackson County ranked 37th out of 54 jurisdictions and St Louis City ranked 41st. In 2006, Kansas City accounted for 51.8% of the chlamydia reported in the Kansas City MO-KS metropolitan statistical area.

In 2006, Missouri ranked 16th among states for reported cases of P&S syphilis with 168 cases of which 81 (48.2%) were among Kansas City residents. The two cities, Kansas City and St Louis City, accounted for 69.6% of the P&S syphilis in the state during 2006. Nationally among counties and independent cities Jackson County ranked 26th out of 54 jurisdictions and St Louis City ranked 47th. While P&S syphilis cases do not include all reported cases of syphilis in a community, they represent the best indicator of recent transmission patterns.

Another important indicator related to syphilis is the occurrence of cases of congenital syphilis. Between 2004 and 2007, Kansas City recorded no congenital cases of syphilis.

HIV infections

The effectiveness of current therapies in controlling the progression of HIV infection towards death and in reducing hospitalizations from the disease is reflected in Figures 141 through 143. The



distribution, by sex and race/ethnicity, of cases reported in Kansas City since 1981 is shown in Figure 144. HIV remains largely a disease of men-who-have-sex-with-men. The incidence of HIV infections for males and females in 2005 can be compared to other cities using the *2007 Big Cities Health Inventory* report (Table 164).

Figure 141 Age-adjusted death rates per 100,000 population due to HIV in Kansas City, Mo

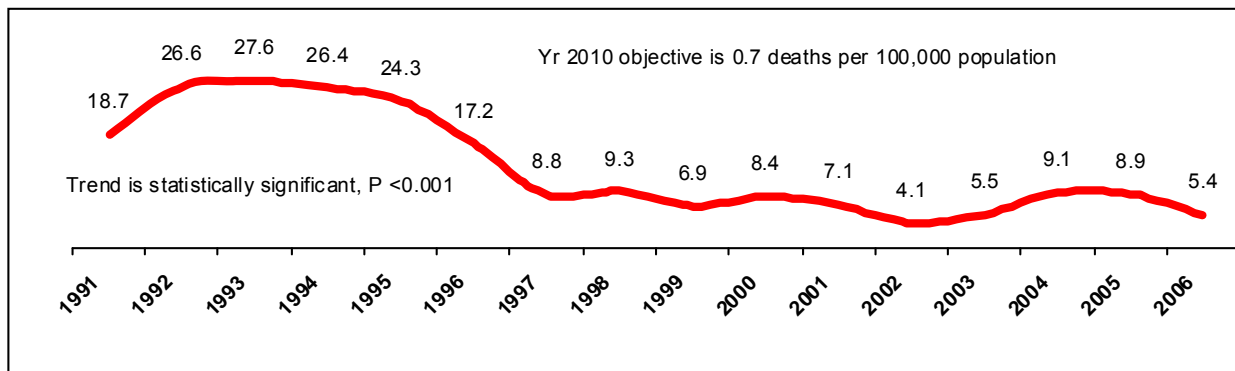


Figure 142 Distribution by age of 23 HIV related deaths, Kansas City, Mo, 2006

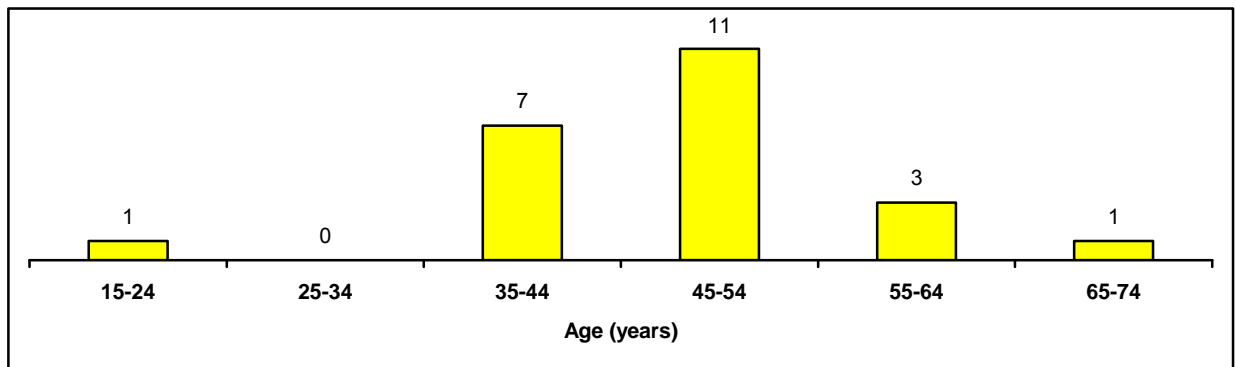


Figure 143 Age-adjusted per 100,000 population hospitalization rates for HIV infections, Kansas City, Mo

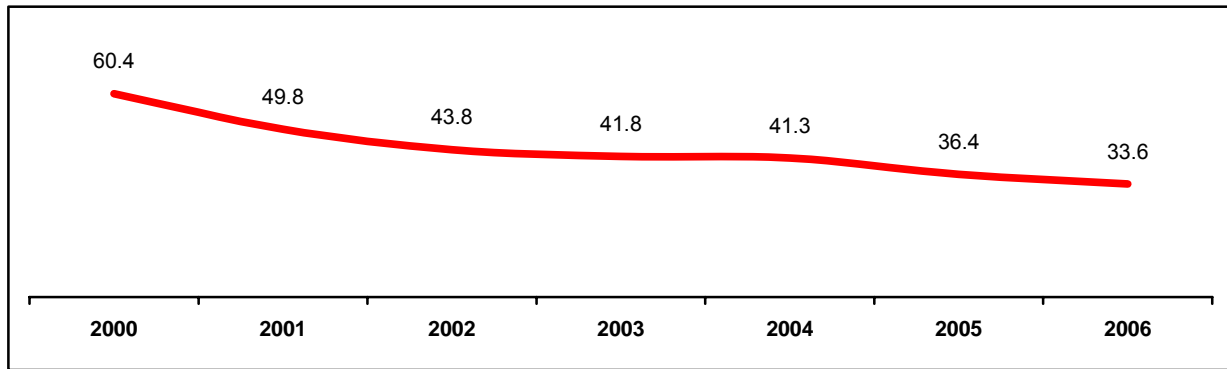
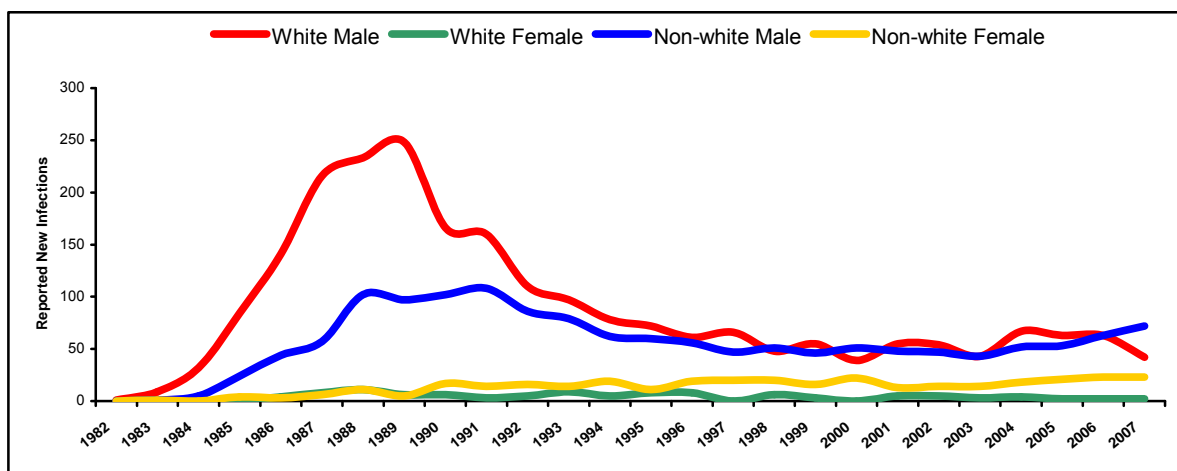


Table 164 Comparison of HIV incidence rates by sex for selected cities, 2005 (based on 2007 Big Cities Health Inventory report)

| | 2005 Rates per 100,000 population | |
|--------------|-----------------------------------|---------|
| | Males | Females |
| Kansas City | 51.1 | 9.6 |
| Charlotte | 56.6 | 20.3 |
| Denver | 73.5 | 9.8 |
| Indianapolis | 221.0 | 6.5 |
| Jacksonville | 47.2 | 27.7 |
| Nashville | 35.9 | 9.2 |
| St Louis | NA | NA |

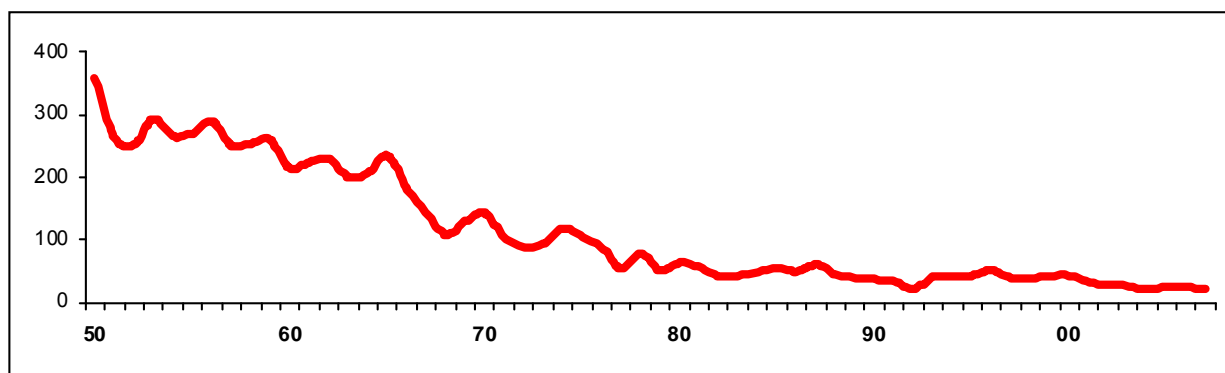
Figure 144 HIV diagnosis by race and sex in Kansas City, Mo



Tuberculosis

Tuberculosis (TB) control in the United States is a public health success story (Figure 145 and Table 165). The Kansas City Tuberculosis Sanitarium, a 250 bed facility which opened on Christmas Day 1915, was shut down in mid-1964. That year there were 199 cases of TB among City residents and by 2007 there were only 20 cases.

Figure 145 Tuberculosis cases among Kansas City, Mo, residents



Of the infectious and communicable diseases, TB is the one most affected by the changing demography of the community. Forty-five percent of TB cases in Kansas City residents since 2004 were among the foreign-born (Figure 146). Nationally, the percentage of cases of TB among the foreign-born has been steadily increasing over the past decade.⁶¹⁰ In 2007, the case-rate of TB among the foreign-born in the United States was 9.7 times higher than that of persons born in this country.⁶¹¹

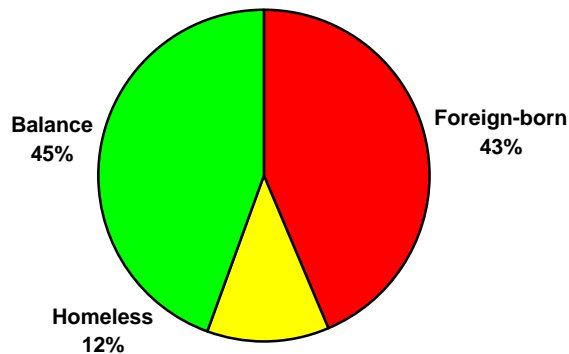
Table 165 Tuberculosis cases among Kansas City, Mo, residents, 1950 to present

| Year | Decade | | | | | |
|------|--------|------|------|------|------|------|
| | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
| 00 | 357 | 214 | 142 | 63 | 37 | 43 |
| 01 | 262 | 224 | 104 | 56 | 34 | 32 |
| 02 | 252 | 229 | 89 | 42 | 21 | 28 |
| 03 | 293 | 199 | 93 | 43 | 40 | 26 |
| 04 | 265 | 207 | 118 | 48 | 40 | 21 |
| 05 | 270 | 234 | 105 | 54 | 43 | 24 |
| 06 | 288 | 181 | 89 | 49 | 51 | 24 |
| 07 | 250 | 143 | 54 | 61 | 39 | 20 |
| 08 | 254 | 108 | 77 | 44 | 39 | |
| 09 | 259 | 129 | 51 | 39 | 42 | |

⁶¹⁰ Centers for Disease Control and Prevention. Reported tuberculosis in the United States, 2004. www.cdc.gov/tb

⁶¹¹ Pratt R et al. Trends in tuberculosis incidence – United States, 2007. *MMWR Morb Mortal Wkly Rep* 2008;57:281-285.

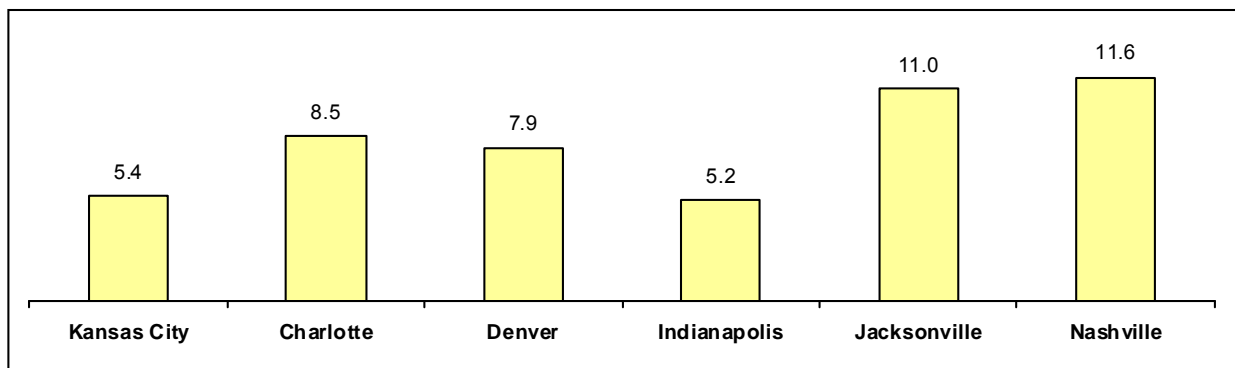
Figure 146 Tuberculosis in Kansas City, Mo, 2004-2007



The fact that 12% of tuberculosis cases occur among the homeless is not unexpected. The communal nature of shelters, the limited use of medical care, and other behaviors all contribute to the transmission of the bacteria that cause tuberculosis, as well as the activation of latent tuberculosis infections into clinical disease.

A comparison of tuberculosis incidence rates for 2005 among select cities, based on *2007 Big Cities Health Inventory* report, is shown in Figure 147.

Figure 147 Comparison of tuberculosis incidence rates for select cities, 2005 (based on 2007 Big Cities Health Inventory report)



Rabies and animal bites

Animal rabies cases in Kansas City occur sporadically and, since 1980, almost exclusively involve bats (Table 166). The last known human case of rabies in the City occurred in 1933.

Table 166 Rabies in Kansas City, Mo

| Year | Bat | Cat | Other | Year | Bat | Cat | Other | Year | Bat | Cat | Other |
|--------------|----------|----------|-------|------|-----------|-----|-------|------|-----------|-----|-------|
| 1980 | | 1 | | 1990 | 1 | | | 2000 | 1 | | |
| 1981 | | | | 1991 | 1 | | | 2001 | | | |
| 1982 | 1 | | | 1992 | | | | 2002 | | | |
| 1983 | | | | 1993 | 1 | | | 2003 | 1 | | |
| 1984 | 2 | | | 1994 | | | | 2004 | | | |
| 1985 | 1 | | | 1995 | | | | 2005 | 1 | | |
| 1986 | | | | 1996 | | | | 2006 | 10 | | |
| 1987 | | | | 1997 | 3 | | | 2007 | 3 | | |
| 1988 | | | | 1998 | 4 | | | 2008 | | | |
| 1989 | 1 | | | 1999 | | | | 2009 | | | |
| Total | 5 | 1 | | | 10 | | | | 16 | | |

Despite the relative rarity of true human exposures to rabid animals in Kansas City, the possibility of rabies needs to be considered every time a person is bitten by a carnivorous animal, eg dog, cat, and raccoon, or a bat. Table 167 shows the rates per 100,000 population of animal bites reported to the Kansas City Animal Health and Public Safety Division each year over the past decade. These rates represent minimal estimates of the actual number of bites that residents incur.

Table 167 Animal bites per 100,000 Kansas City, Mo, residents

| Year | Dog | Cat | Other |
|------|-------|------|-------|
| 2000 | 112.3 | 13.8 | 4.3 |
| 2001 | 72.9 | 13.8 | 0.2 |
| 2002 | 95.6 | 15.2 | 5.2 |
| 2003 | 84.2 | 12.4 | 2.5 |
| 2004 | 94.7 | 15.4 | 7.9 |
| 2005 | 84.2 | 12.0 | 10.9 |
| 2006 | 72.2 | 11.6 | 37.6 |
| 2007 | 76.1 | 11.6 | 27.6 |

In 2005, the Health Department and the Animal Health and Public Safety Division collaboratively reviewed emergency department visits and hospitalizations of City residents resulting from dog bites.⁶¹² For 1998-2002, there were 3,467 emergency department visits and 96 hospitalizations due to dog bite, for an annual average rate of 157.0 emergency department visits per 100,000 population and 4.3

⁶¹² Hoff GL et al. Emergency department visits and hospitalizations resulting from dog bites, Kansas City, MO, 1998-2002. *Missouri Med* 2005;102 565-568.

hospitalizations per 100,000 population. For the entire population of Kansas City, these rates represent 693 dog bites seen in emergency departments and 19 hospitalizations each year. Based on the results of the study, it was estimated that only 10-36% of dog bites requiring medical attention were actually reported to the Animal Health and Public Safety Division.

The highest rates for emergency department visits were for persons less than 15 years of age, while for hospitalizations the highest rates for those less than 10 years of age. The emergency department visit rate for males (183.9) was 39% higher than for females (131.9), although hospitalization rates were similar (4.4 and 4.3, respectively). The rates of emergency department visits for whites and blacks were similar, 151.5 and 147.5, respectively, but whites were 25% more likely to be hospitalized. Hispanics had much lower rates for both emergency department visits (80.9), and hospitalizations (0.7).

For emergency department visits, open wounds to the head or extremities accounted for 82.2% of the visits, with superficial injuries and contusions to head accounting for another 12.3%. For hospitalized dog bite victims, open wounds of the head and cellulitis and abscesses of sites other than the fingers or toes accounted for 69.7% of the hospitalizations.

Reported charges for 3,644 emergency department visits totaled \$1,452,845, with a median charge of \$300 per visit. For 92 hospitalizations, the reported charges totaled \$550,044, with a median charge of \$4,698 per hospitalization. These costs include only the original hospital charges and not physician charges or the cost of follow-up visits.

In 2006, there were 6 hospitalizations and 531 emergency department visits for dog bite injuries among Kansas City residents. As noted above, males experienced more injuries (52.3%) than females. In addition, non-Hispanic whites accounted for 64.4% of the persons bitten, non-Hispanic blacks 25.7%, and Hispanics 5.8%. The age distribution of bite victims is shown in Figure 148.

Figure 148 Age distribution of dog bite injuries, Kansas City, Mo, 2006

