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COUNTY OF ORANGE HEALTH CARE AGENCY

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Dear Reader,

We are pleased to present the *Orange County Geographic Health Profile – 2011*. This report is produced every three to four years to highlight key health indicators such as morbidity, mortality, births, hospitalizations, and emergency department utilization. We use maps of various health indicators at the ZIP code level to better convey geographic distribution and to identify areas of possible concern.

Because demographic and socioeconomic factors often influence health and healthcare utilization, the first two sections of the report cover the **Demographic Profile** (*Section 1*) and **Socioeconomic Profile** (*Section 2*) of Orange County. For example, Section 2 includes information and maps presenting the geographic distribution of those residents who do not have any health insurance and those eligible for Medi-Cal health insurance.

Section 3, Hospitals and Hospitalization, provides an overview of the over 324,000 annual discharges from each of the 34 short stay hospitals in Orange County between 2006 and 2008. This section analyzes variables such as patient demographics, reason for hospitalization, charges, and length of stay. The mean length of stay during the 3-year study period was 5.3 days and charges averaged about \$13,000 per day for all diagnoses. Seniors, 65 years and older, had the highest rate of hospitalization – almost four times more often compared to adults aged 45-64, and 14 times more often than children. Total hospital charges from 2006 to 2008 averaged \$10.8 billion annually, a 90% increase compared to the year 2000.

Communicable Disease Indicators presented in *Section 4* covers several key communicable diseases such as HIV/AIDS, Tuberculosis and Chlamydia that are reportable and monitored at local, state and national levels to ensure the health and safety of the public. In Orange County, white and Hispanic males tend to have much higher rates of HIV/AIDS infection reported compared to other groups. Chlamydia reporting tends to be more common in females and Hispanics, while Tuberculosis is most prevalent in the Asian/Pacific Islander population. Specific geographic regions of the county tend to have higher rates of certain diseases which will help guide prevention and treatment efforts.

Mortality Indicators are covered in *Section 5* with a focus on the geographic distribution of the nearly 17,000 annual deaths between 2006 and 2008, as well as the leading causes of death in Orange County. Heart disease, cancer, and stroke remain the three leading causes of death. This report presents the most common causes of death, mapped by age group and gender.

Section 6, Hospital Discharges, is framed in terms of the leading causes of hospitalization and is mapped by the patient's ZIP code of residence. This is in contrast to Section 3 which is presented for *each* hospital's discharges. There was an average of 260,038 hospitalizations for OC residents each year during the 3-year study period of 2006 to 2008. Over half of all hospitalizations were to females (61%), a majority of which were related to pregnancy and childbirth. Males were most often hospitalized for diseases of the heart and the digestive system.

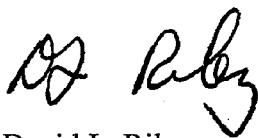
Emergency Department Visit information is presented in *Section 7* and includes the most common diagnoses patients presented with at local emergency departments. There were almost 700,000 annual visits to hospital emergency departments (ED) during the study period. Injury and poisoning accounted for nearly a quarter (23%) of all ED visits. Notably, for children 1 to 17 years of age, the top two reasons for visiting the ED were upper respiratory infections and ear infections, conditions that in many cases might be addressed in a primary care setting. In general, higher rates of emergency department utilization were noted for central and north regions of the county compared to the west and south.

Section 8 presents the demographic and geographic distribution of **Infant Mortality**. Infant mortality is defined as a death occurring within the first 365 days of life. While the number of infant deaths is relatively low (e.g., 3-year average of 204 infant deaths per year) with an average rate of 4.7 deaths per 1,000 live births during the study period it remains above the Healthy People 2010 objective of no more than 4.5 infant deaths per 1,000 live births.

Birth Indicators such as birth and fertility rates, teen births, prenatal care, and breastfeeding information are presented geographically in *Section 9*. With about 43,000 births each year in Orange County it is important to know which parts of the county have high birth rates, as well as adequate prenatal care and breastfeeding initiation. Relatively higher teen pregnancy rates are noted for Hispanic teens and for teens residing in central and northern regions of the county. Fully, one third (33.8%) of all babies born between 2006 and 2008 were delivered via Cesarean section, with women from some coastal and southern regions having notably higher rates than other parts of the county.

Thank you for your interest in this report. We sincerely hope that by presenting such health indicator data in a geographical format it proves useful in our shared goal of improving and protecting the health of Orange County residents.

Sincerely,



David L. Riley
Director

Acknowledgements

We would like to acknowledge the staff who prepared and/or contributed to this report:

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Orange County Geographic Health Profile

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Section 1

Demographic Profile

Any assessment of a community’s health status must begin with a description of its population, and this is usually accomplished by use of the common descriptors: age, gender, and race/ethnicity. Orange County population includes populations of the 34 incorporated cities, plus additional regions in the County of Orange measured by the State of California Department of Finance. In 2008, the estimated Orange County population was 3,124,207 people, making up a diverse mix of White, Hispanic, Asian, Pacific Islanders, African American, American Indian, and others. It ranks the third most populous county in the state of California, behind Los Angeles County and slightly behind San Diego County.

The table below shows the distribution of Orange County’s population. Non-Hispanic whites are the largest racial/ethnic group with 42.6%. Hispanic or Latino is the next largest group with 35.1%. The third largest racial/ethnic group is Asian/Pacific Islanders with 18.1%. These are followed by others (2.4%), African American (1.5%) and American Indian (0.3%).

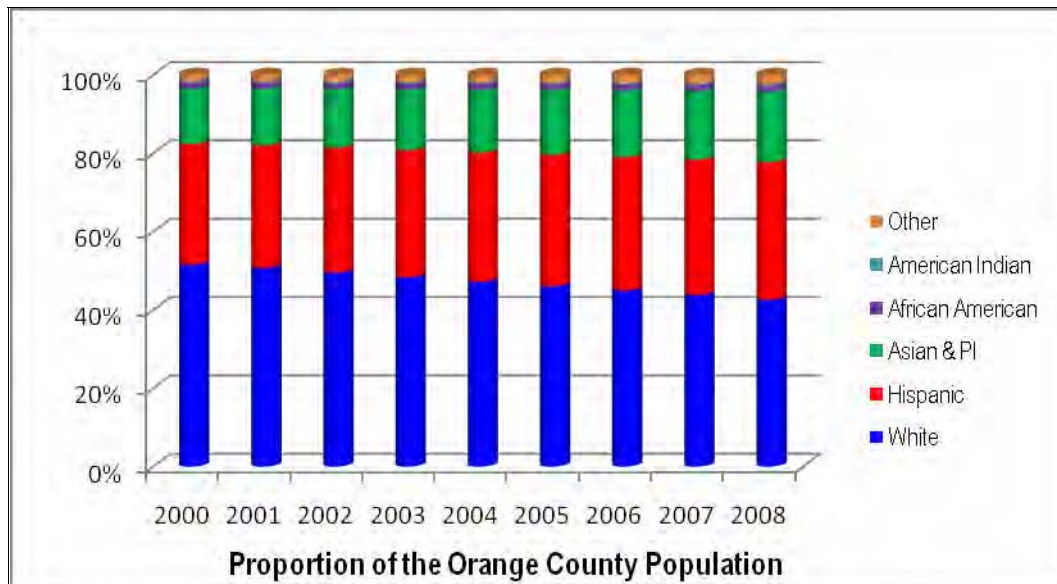
2008 Distribution of Orange County and California Population by Race/Ethnicity

| Race/Ethnicity | Orange County | | California |
|------------------------|---------------|------------|------------|
| | Number | Percentage | Percentage |
| Non-Hispanic White | 1,331,056 | 42.6% | 40.8% |
| Hispanic | 1,096,976 | 35.1% | 37.2% |
| Asian/Pacific Islander | 564,134 | 18.1% | 12.8% |
| African American | 45,366 | 1.5% | 5.8% |
| American Indian | 10,693 | .3% | .6% |
| Other | 75,982 | 2.4% | 2.8% |
| Total | 3,124,207 | 100.0% | 100.0% |

Source: California Department of Finance, 2008 population
<http://www.dof.ca.gov/research/demographic/data/e-3/>

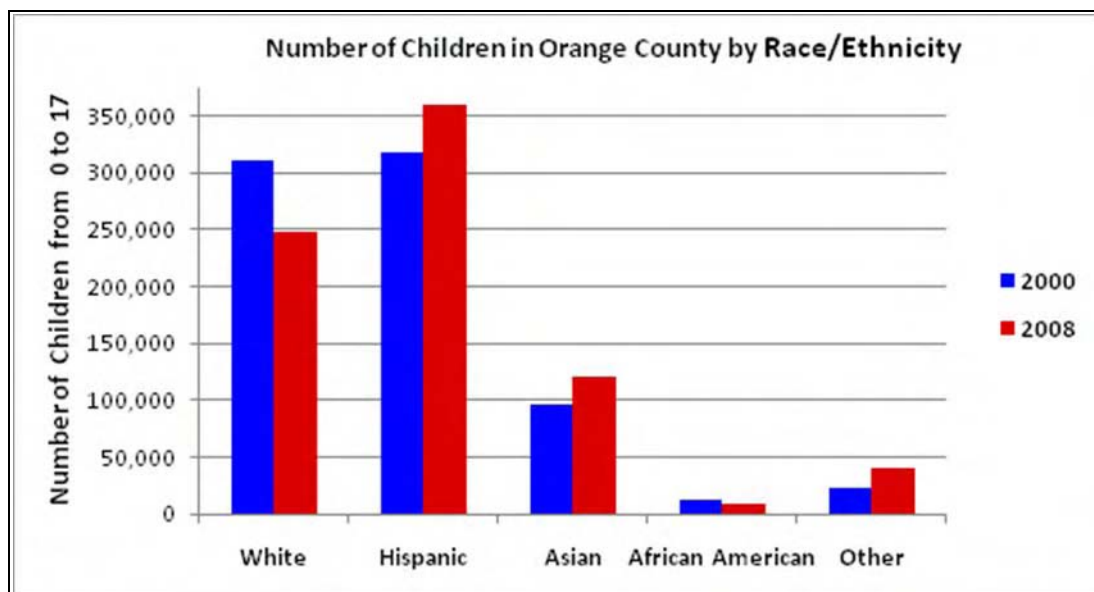
Compared to the statewide level, in 2008 Orange County had a higher proportion of Non-Hispanic whites (42.6% versus California’s 40.8%) and Asian/Pacific Islanders (18.1% versus California’s 12.8%). In contrast, Orange County had a slightly lower proportion of Hispanics (35.1% versus California’s 37.2%) and African Americans (1.5% versus California’s 5.8%) than statewide levels. Overall, Orange County had a 1.8% smaller minority population than California (57.4% versus 59.2%). In 2008, the total population of ethnic groups surpassed whites by 14.8%, as reflected in the proportion of all ethnic groups compared to whites.

Year to year comparisons of race/ethnicity population distribution in Orange County from 2000 to 2008 shows that the Non-Hispanic White population decreased in proportion by 8.9%, while the Hispanic (4.2%) and Asian/Pacific Islanders (3.9%) populations increased. The African American, American Indian and other demographic groups have remained relatively small and unchanged.



Source: State of California, Department of Finance

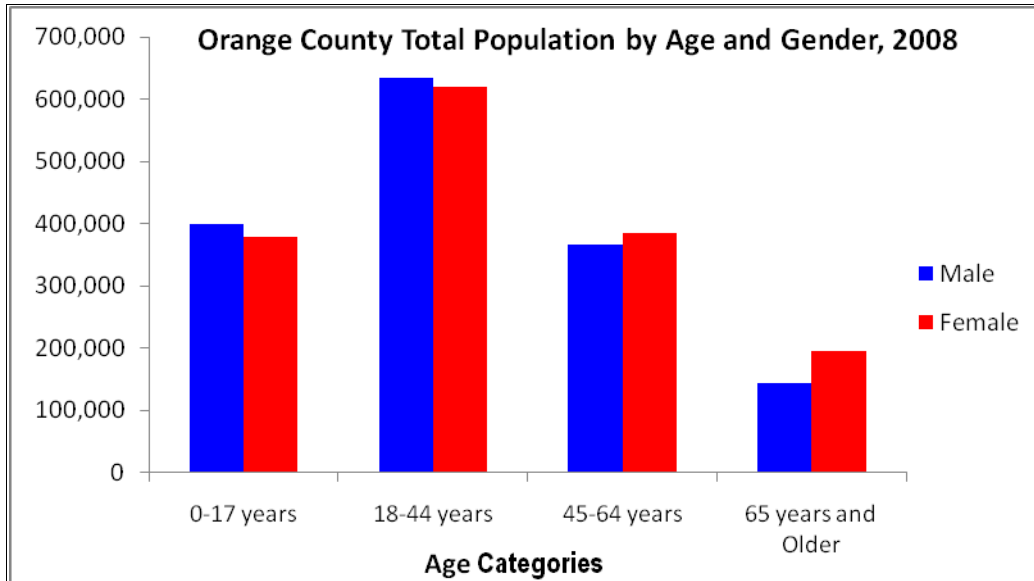
In 2000, the population of Non-Hispanic white children (0-17 years of age) was about equal the population of Hispanic children (311,170 versus 318,304). Following the growth of minority populations within the county, the population of Hispanic children surpassed Non-Hispanic white children by 112,291 in 2008. Between 2000 and 2008, the population of white children actually decreased by 63,567 or 20%. Asian/Pacific Islander children increased 25% or by 24,536. The number and proportion of African American children decreased 2,650 (22%).



Source: State of California, Department of Finance

Orange County Population by Age Group and Gender

The figure below depicts the age and gender distribution of Orange County's population for all races combined. Children (0-17 years) comprised 24.9% of the total county population in 2008. The vast majority of residents (64.2%) between the ages of 18 to 64 years comprised the workforce age group. The remaining 10.8% of the population were older adults age 65 years and up. Females (50.6%) slightly outnumbered males (49.4%) in the general population. When looking more closely at the age categories, males outnumber females from 0 to 44 years. From age 45 years on, females outnumber males.



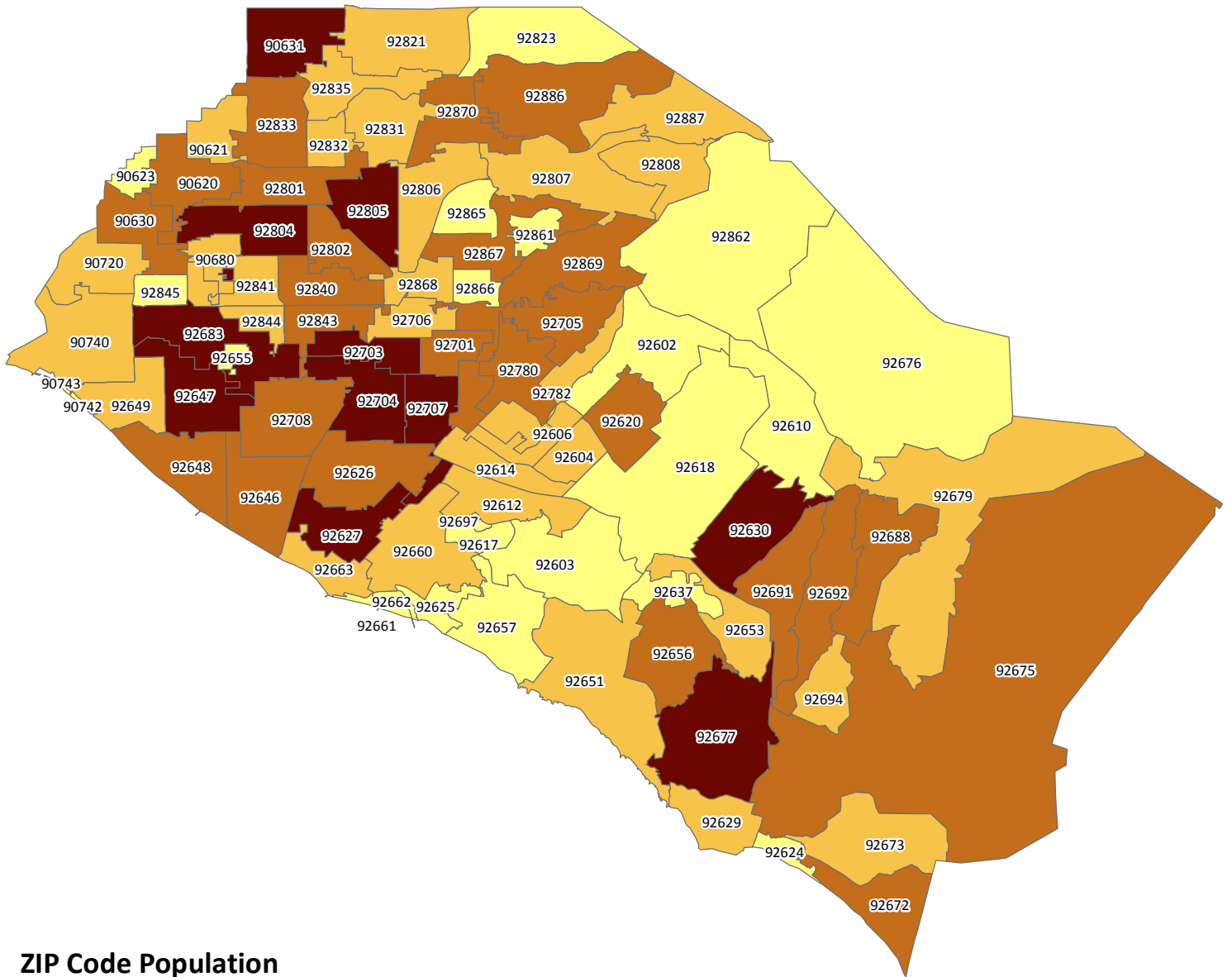
Source: State of California, Department of Finance

Maps by Zip Code of Residence, Orange County, 2007

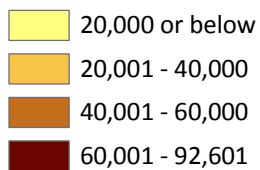
- All Ages
- Males
- Females
- Children 0-17 years of age
- Young Adults 18-44 years of age
- Adults 45-64 years of age
- Older Adults 65 years and older



Orange County Population by ZIP Code of Residence (2007)

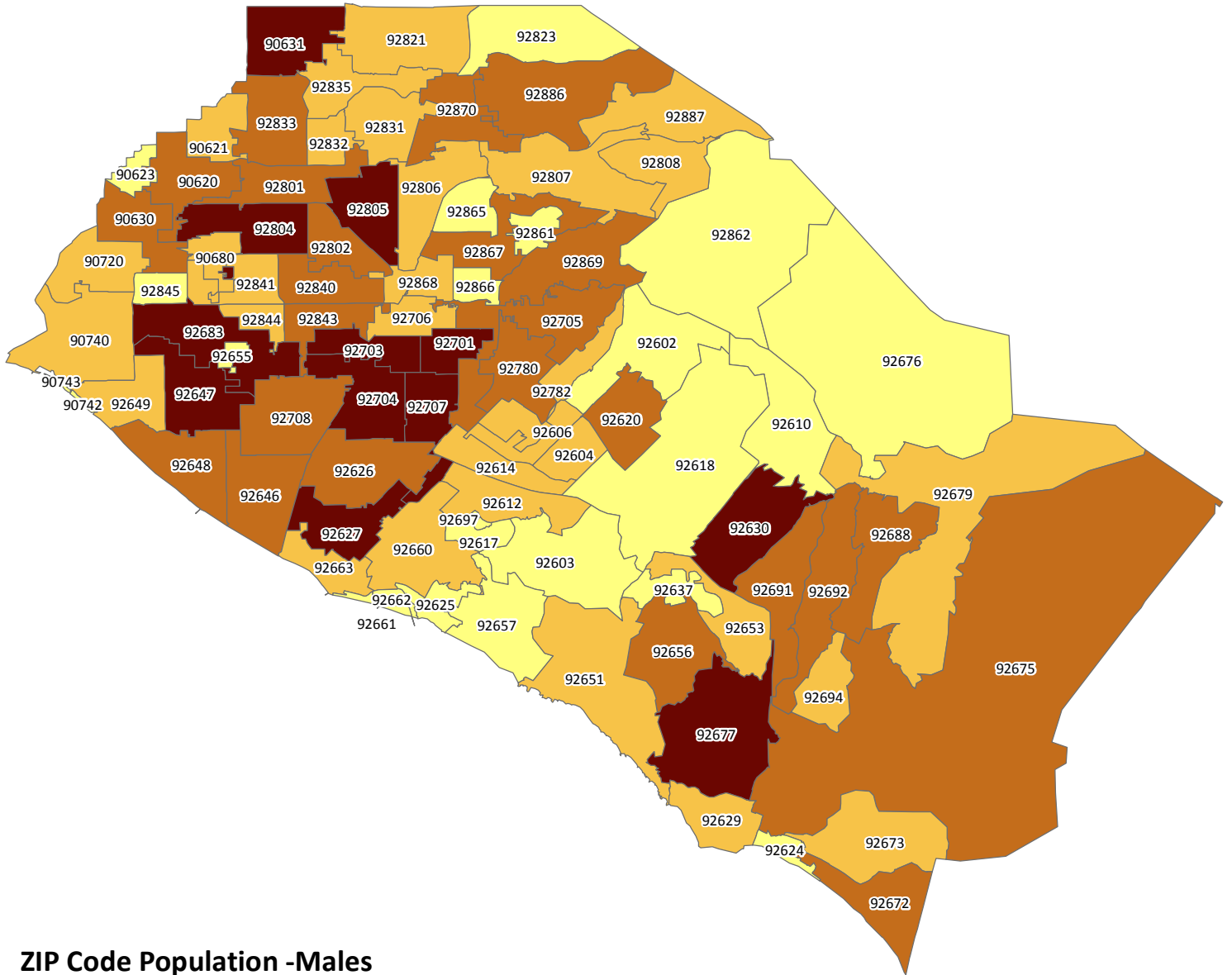


ZIP Code Population

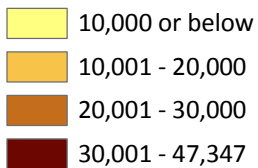


Quality Management, Orange County Health Care Agency, 2010
Data Source: Claritas 2007 Orange County Population by ZIP Code

Orange County Males by ZIP Code of Residence (2007)

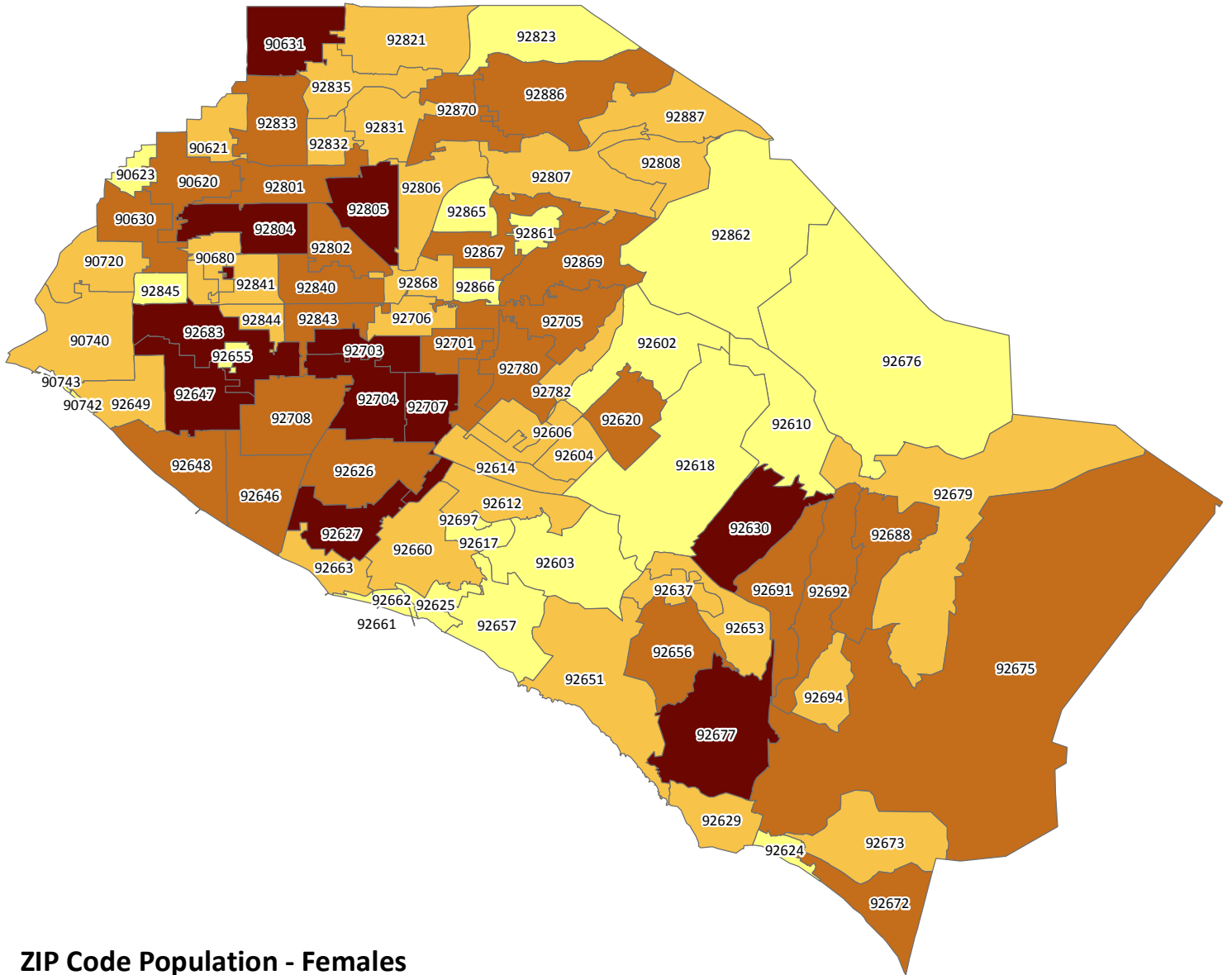


ZIP Code Population -Males

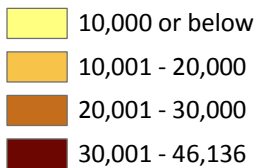


*Quality Management, Orange County Health Care Agency, 2010
Data Source: Claritas 2007 Orange County Population by ZIP Code*

Orange County Females by ZIP Code of Residence (2007)

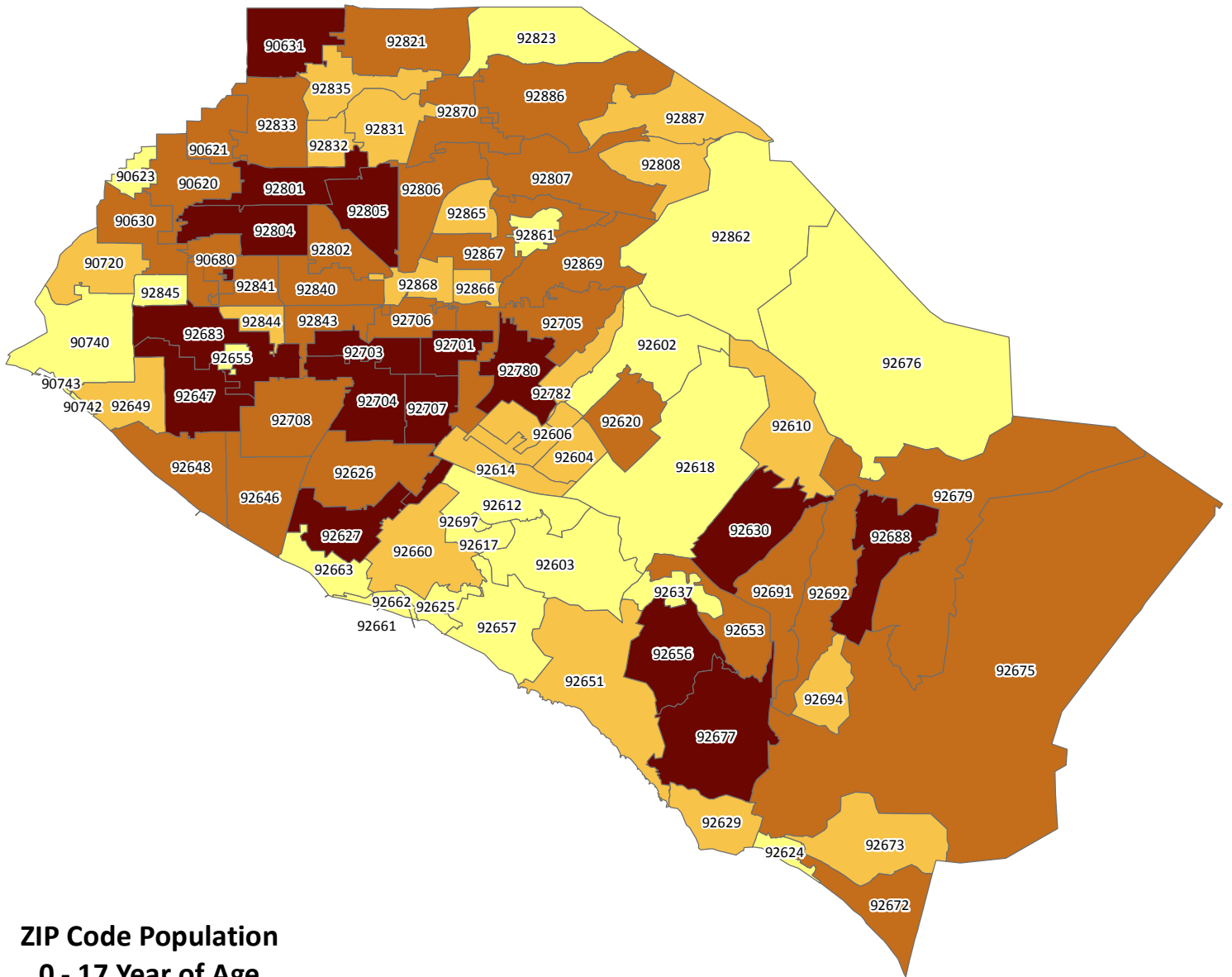


ZIP Code Population - Females



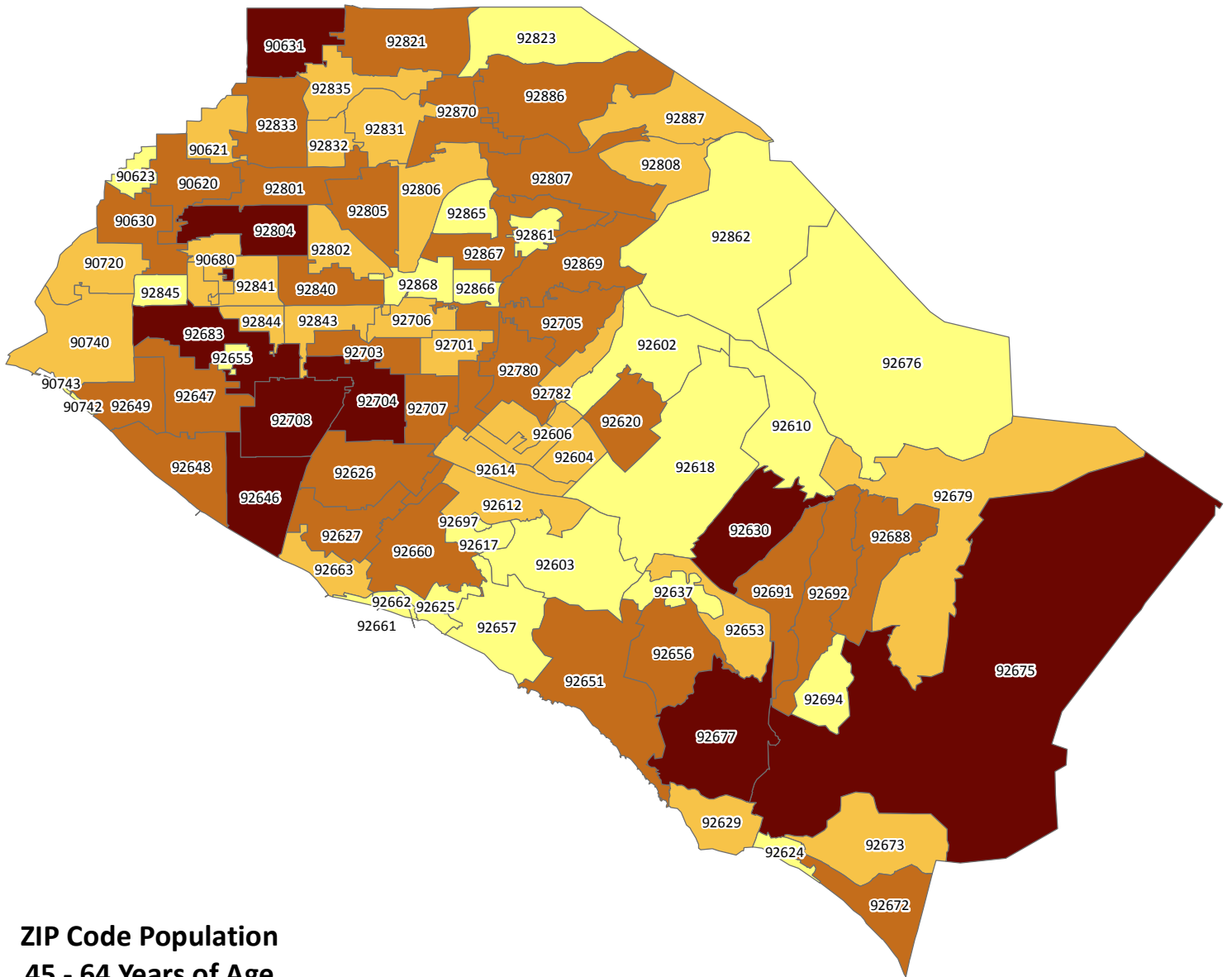
Quality Management, Orange County Health Care Agency, 2010
 Data Source: Claritas 2007 Orange County Population by ZIP Code

Orange County 0 to 17 Years of Age by ZIP Code of Residence (2007)



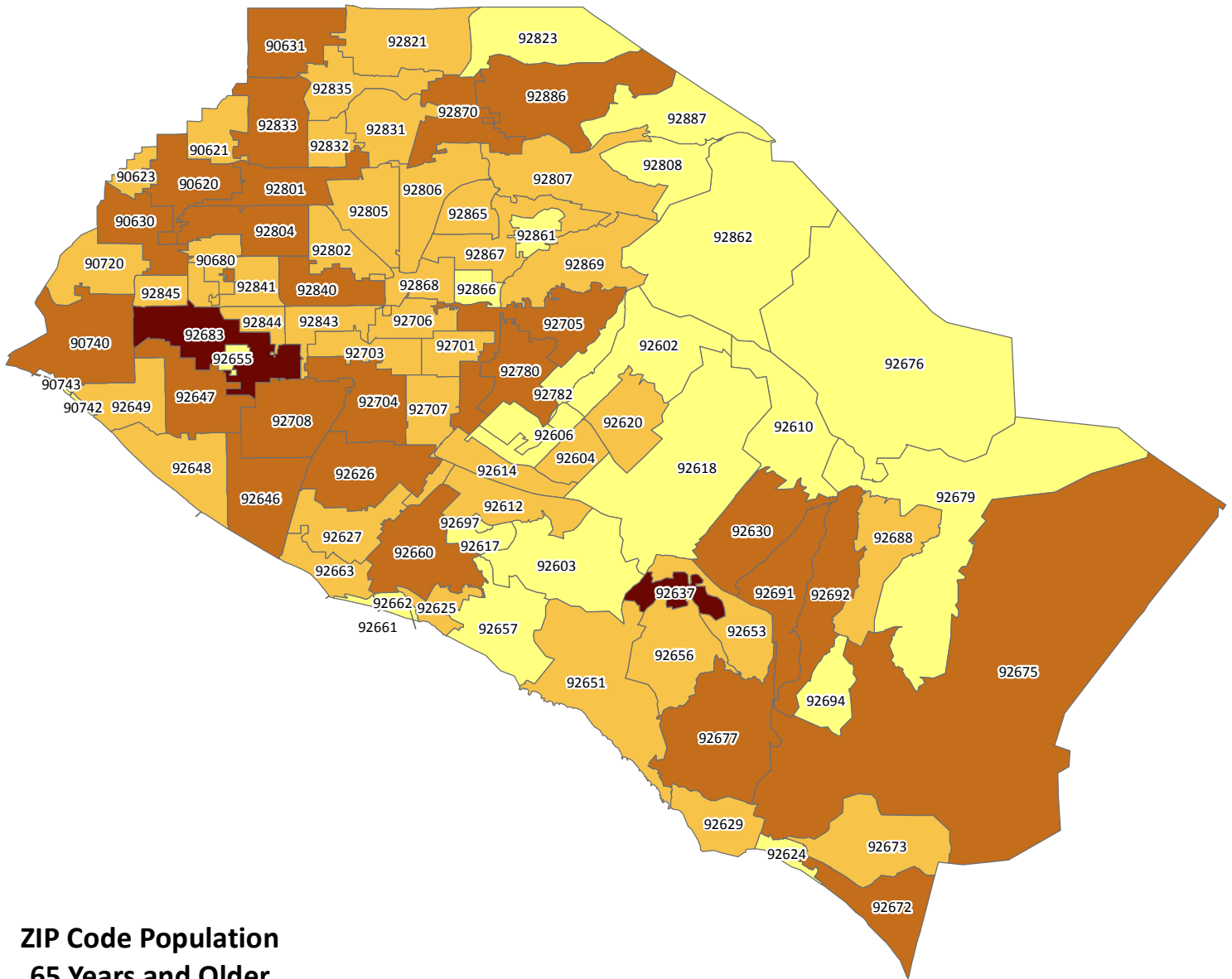
Quality Management, Orange County Health Care Agency, 2010
Data Source: Claritas 2007 Orange County Population by ZIP Code

Orange County 45 to 64 Years of Age by ZIP Code of Residence (2007)



Quality Management, Orange County Health Care Agency, 2010
Data Source: Claritas 2007 Orange County Population by ZIP Code

Orange County 65 Years and Older by ZIP Code of Residence (2007)



Quality Management, Orange County Health Care Agency, 2010
Data Source: Claritas 2007 Orange County Population by ZIP Code

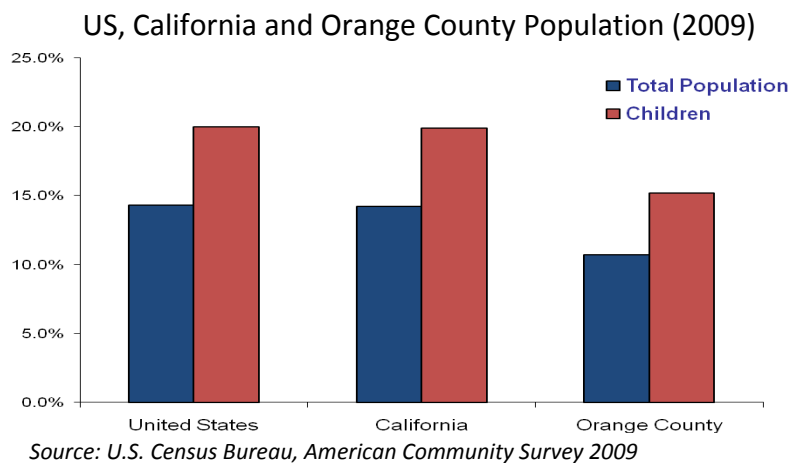
Section 2

Socioeconomic Profile

A socioeconomic profile can provide a picture of the special health service needs of the community. It is also a strong indicator of the status of the community in terms of access to health care and overall health.

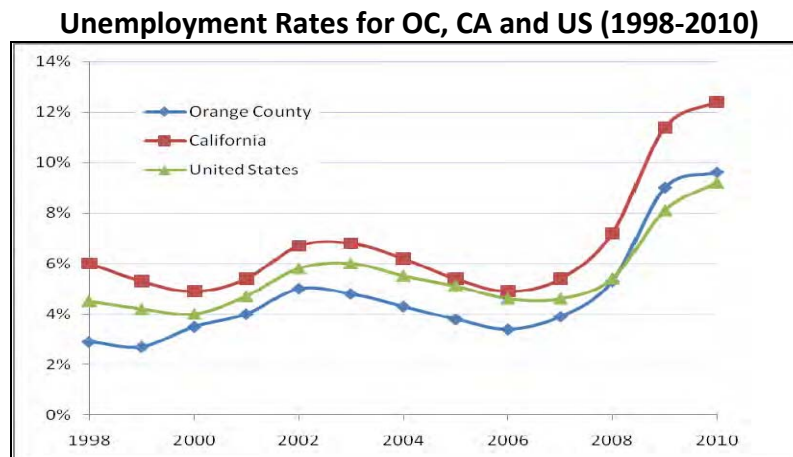
Percent of Population below Poverty Level

The U.S. Census Bureau's 2009 American Community Survey indicated that poverty continues to be the highest for children. Specifically, 15.2% of all Orange County children, 19.9% of California children, and 20% of all children in the U.S. were below the poverty level. This survey also indicated that 10.7% of Orange County population was living below the poverty level compared to 14.2% of Californians and 14.3% of the U.S. population.



Percent of Population Unemployed

According to the California Employment Development Department, Orange County's unemployment rate (not seasonally adjusted) was 9.6% in September 2010. While down from the peak of 10.2% at the beginning of the year, the current unemployment rate remains at the highest levels in the last 10 years. Recently, Orange County's unemployment rate has been lower than the state (12.4%) and comparable to the United States (9.2%), but the recovery from the great recession will likely take longer.



Medical Services Initiative Program (MSI) Population

The Medical Services Initiative (MSI) is a mandated, State, Federal, and County funded safety-net program, responsible for the provision of medical care to Orange County's medically indigent adults, previously covered by the Medi-Cal program.

The program covers medical care for Orange County residents 21 through 64 years of age who have a current, urgent or emergent medical need, and limited or no financial resources to pay for their healthcare. Financial eligibility is based on Medi-Cal criteria, with an income cap at 200% of the Federal Poverty level. Proof of Orange County, and U.S. citizenship or legal permanent residency is required.

The scope of covered benefits includes, primary care and disease prevention; early intervention to help stop the spread of disease; immediate treatment of acute exacerbation of chronic conditions that are potentially life threatening; and treatment of conditions that would otherwise result in significant and permanent impairment in health status and/or function.

The MSI division of the Health Care Agency is the payer and administrator of the MSI program. The MSI program contracts with a variety of private and public entities for the provision of medical and surgical care. These contracts include: hospitals, surgery centers, skilled nursing facilities, urgent care, imaging, laboratory, pharmacy, administrative services and case management. Payment provisions are included for physician/community clinics, durable medical goods, home health and emergency transportation.

There were 34,508 persons in Orange County's Medical Services Initiative program in August 2010 as reported by the Medically Indigent Care Reporting System (MICRS). Fourteen ZIP codes including those from Westminster (92683), Santa Ana (92703, 92704, 92707), Anaheim (92804, 92801, 92802, 92805), Garden Grove (92843, 92840, 92841, 92844), Costa Mesa (92627) and Fountain Valley (92708) accounted for more than 50% of the indigent population, as shown in the following map that display the MSI population by ZIP code.

Map by Zip Code of Residence, Orange County, 2010

- Medical Services Initiative Client Population



Medi-Cal Population

Medi-Cal is the California implementation program for the federal Medicaid program. Based on the June 2010 eligibility roles, there were almost half a million persons (414,915) eligible for Medi-Cal in Orange County. Fifteen ZIP codes from Santa Ana (92701, 92703, 92704, 92706, 92707), Anaheim (92801, 92802, 92804, 92805), Garden Grove (92840, 92843), La Habra (90631), Tustin (92780), Costa Mesa (92627), and Westminster (92683) accounted for over half (57%) of the county Medi-Cal eligible population in Orange County.

Medi-Cal Eligibles by Primary Language Spoken

| English | Spanish | Vietnamese | Other | Total |
|---------|---------|------------|--------|---------|
| 157,773 | 186,178 | 45,392 | 25,572 | 414,915 |
| 38% | 45% | 11% | 6% | 100.0% |

As shown in the table above, a large percentage of persons eligible for Medi-Cal spoke a language other than English. Specifically, 35.9% primarily spoke Spanish, 9.4% spoke Vietnamese, and 8.8% some other language. Given the cultural diversity of this population, the following maps are provided to display where the Medi-Cal eligible population resides in Orange County. Two additional maps are provided, one for Spanish and one for Vietnamese speaking beneficiaries. Each map depicts the distribution of Medi-Cal Eligibles speaking that particular language, by ZIP codes of the county. Two cities had ZIP codes which accounted for approximately half (48%) of the total Spanish speaking Medi-Cal Eligibles in Orange County: Santa Ana (92704, 92703, 92701, 92707) and Anaheim (92805).

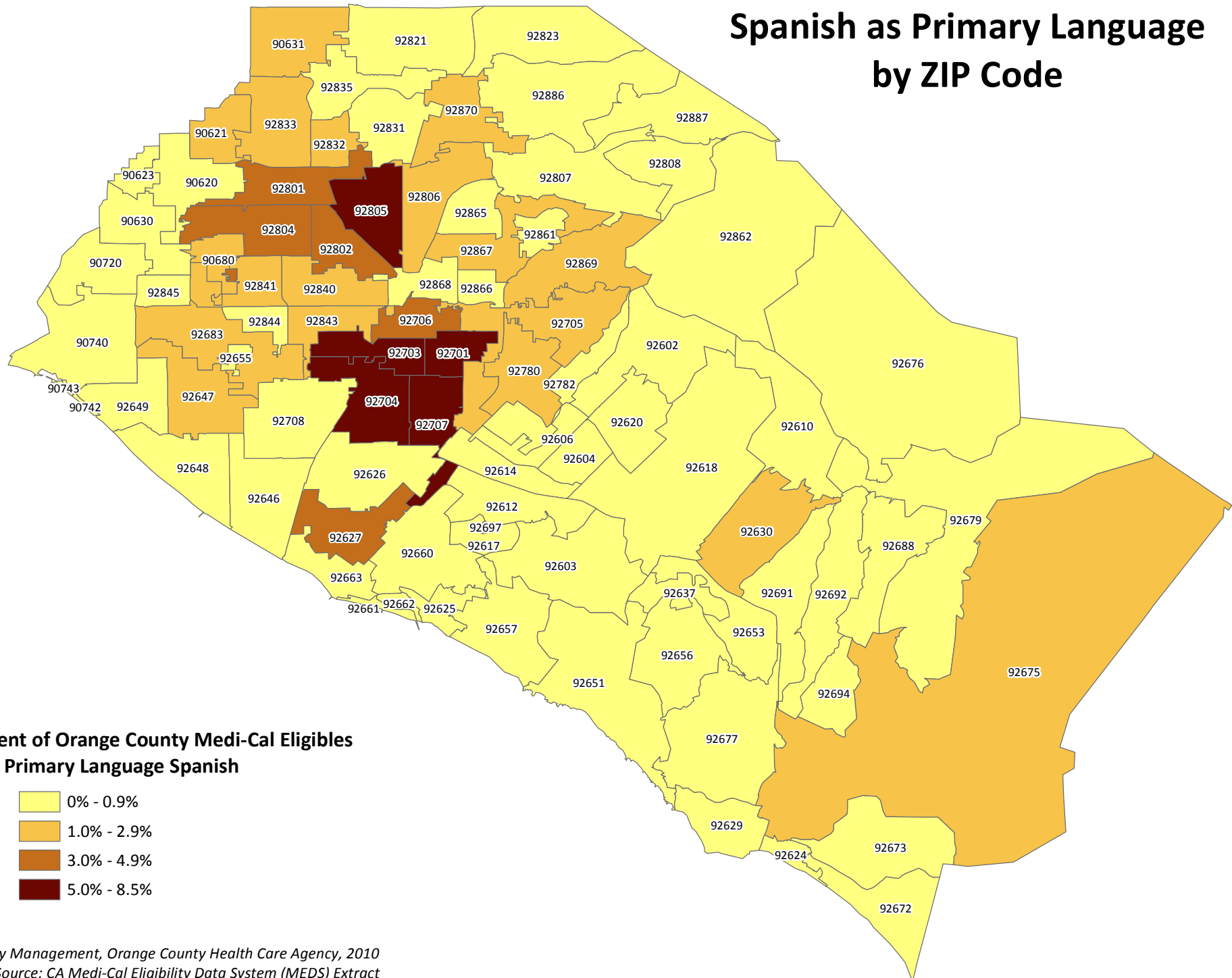
For Vietnamese speaking persons, nine ZIP codes in five cities had ZIP codes that accounted for 92% of the total Vietnamese speaking Medi-Cal Eligibles in Orange County: Westminster (92683), Garden Grove (92843, 92844, 92840, 92841), Santa Ana (92704, 92703), Anaheim (92804) and Fountain Valley (92708).

Maps by Zip Code of Residence, Orange County, 2010

- Medi-Cal Eligibles – All
- Medi-Cal Eligibles by Language Spoken – Spanish
- Medi-Cal Eligibles by Language Spoken – Vietnamese

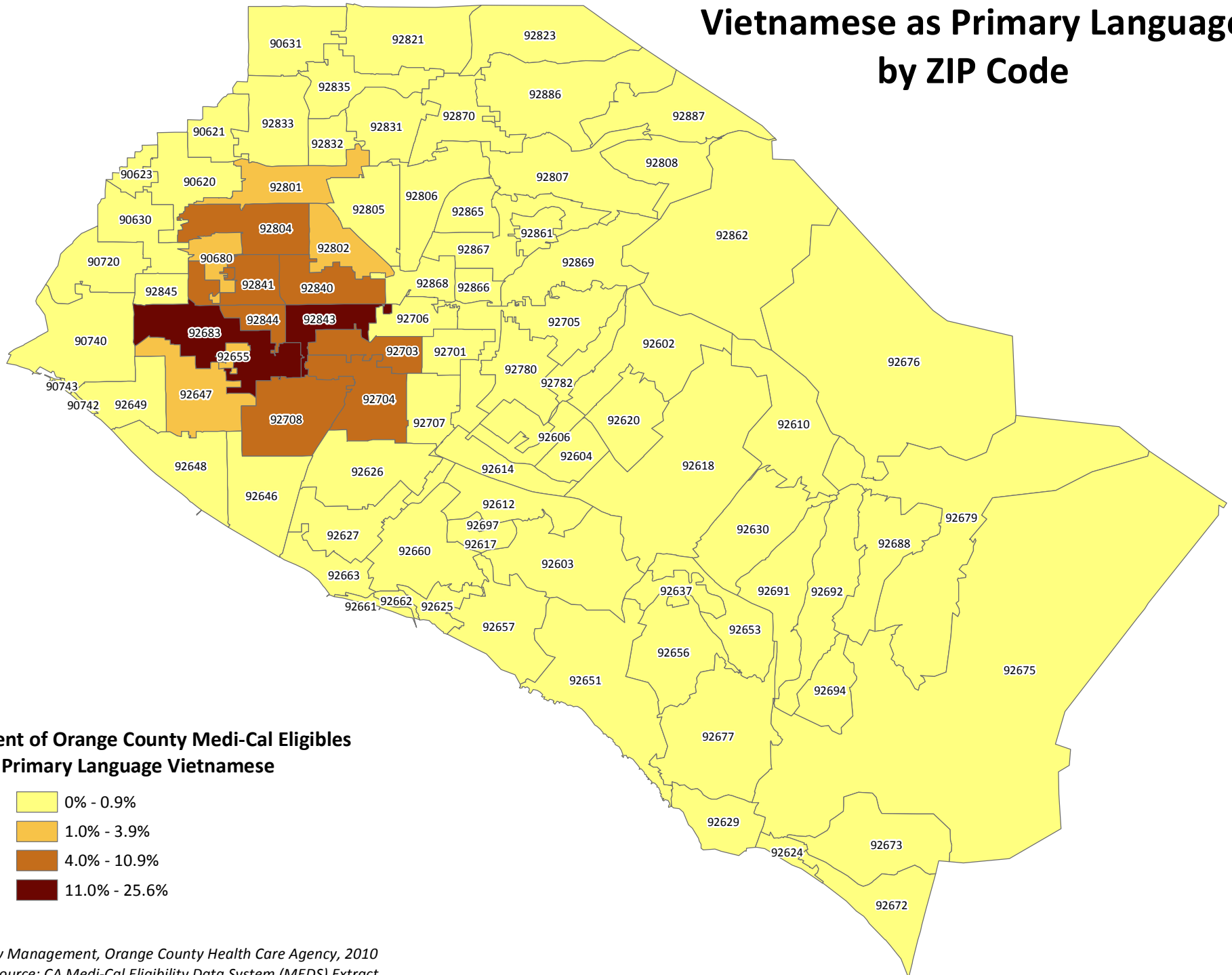


Orange County Medi-Cal Eligibles with Spanish as Primary Language by ZIP Code



Quality Management, Orange County Health Care Agency, 2010
 Data Source: CA Medi-Cal Eligibility Data System (MEDS) Extract

Orange County Medi-Cal Eligibles with Vietnamese as Primary Language by ZIP Code



Quality Management, Orange County Health Care Agency, 2010
 Data Source: CA Medi-Cal Eligibility Data System (MEDS) Extract

Uninsured in Orange County

Despite recent gains in enrolling OC residents in publicly funded health insurance programs, according to the 2009 American Community Survey (ACS), over half a million people in the county do not have health insurance (535,173 or 17.7% of the population). One in ten children does not have insurance (10.4%) which corresponds to 78,738 under 18 years of age. By far, adults 18 to 64 years of age have the highest number (448,175) and percentage of uninsured in the county at 23.4%. About 2% of seniors (8,260) do not have health insurance.

| Uninsured in Orange County | Number | Percent |
|----------------------------|---------|---------|
| Children (0-17) | 78,738 | 10.4% |
| Adults (18-64) | 448,175 | 23.4% |
| Seniors (65+) | 8,260 | 2.4% |
| ALL | 535,173 | 17.7% |

The following table and maps present the percent of uninsured by age group within each city with a population of at least 65,000 that were included in the 2009 American Community Survey.

Percent Uninsured by City of Residence and Age Group

| City (Population) | All Ages | Children (< 18 yrs) | Adults (18 to 64 yrs) | Seniors (65+ yrs) |
|-------------------------------|--------------|---------------------|-----------------------|-------------------|
| ANAHEIM (336,118) | 23.4% | 11.8% | 31.3% | 4.6% |
| BUENA PARK (79,132) | 17.5% | 9.4% | 23.3% | 3.9% |
| COSTA MESA (110,221) | 22.3% | 11.5% | 27.7% | 1.7% |
| FULLERTON (131,837) | 21.7% | 17.5% | 26.7% | 0.6% |
| GARDEN GROVE (165,164) | 25.8% | 13.0% | 34.6% | 5.9% |
| HUNTINGTON BEACH (192,234) | 11.7% | 4.9% | 16.0% | 2.0% |
| IRVINE (208,190) | 9.7% | 7.2% | 10.8% | 6.3% |
| LAKE FOREST (75,675) | 9.6% | 5.9% | 11.3% | 6.8% |
| MISSION VIEJO (93,340) | 7.7% | 2.5% | 11.6% | 0.0% |
| NEWPORT BEACH (80,870) | 6.6% | 0.8% | 9.8% | 0.8% |
| ORANGE (134,740) | 21.0% | 11.6% | 28.0% | 0.0% |
| SANTA ANA (336,276) | 36.1% | 20.1% | 47.4% | 4.4% |
| TUSTIN (72,536) | 17.8% | 8.0% | 23.7% | 4.5% |
| WESTMINSTER (89,032) | 15.3% | 8.8% | 21.1% | 0.8% |
| YORBA LINDA (66,111) | 5.5% | 2.5% | 7.7% | 0.0% |
| Countywide (3,016,541) | 17.7% | 10.4% | 23.4% | 2.4% |

Source: American Community Survey 2009

The cities with the highest percentages of uninsured children included Santa Ana (20.1%) and Fullerton (17.5%). Other cities with high rates of children who do not have health insurance include Garden Grove (13%), Anaheim (11.8%), and Orange (11.6%).

Nearly one in four adults in the county does not have health insurance. For example, nearly half of the adults (47.4%) in Santa Ana are uninsured. Other cities with very high rates of uninsured adults include Garden Grove (34.6%), and Anaheim (31.3%).

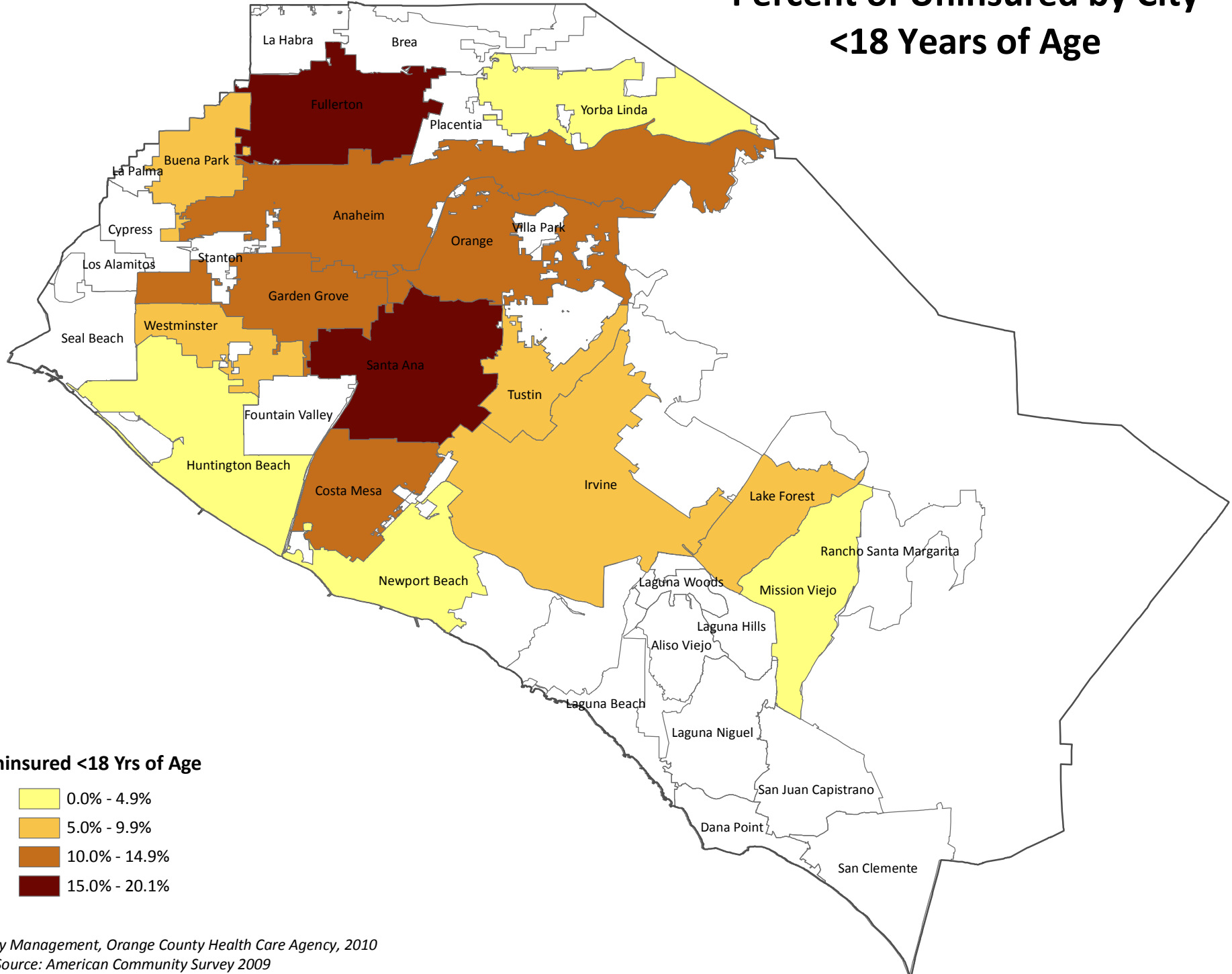
For seniors, the cities with the highest rates on uninsured include Lake Forest (6.8%), Irvine (6.3%), Garden Grove (5.9%), Anaheim (4.6%), Tustin (4.5%), and Santa Ana (4.5%).

Maps by Zip Code of Residence, Orange County, 2009

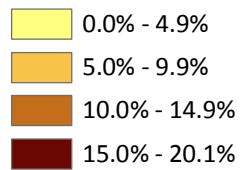
- Uninsured Children (<18 yrs)
- Uninsured Adults (18-64 yrs)
- Uninsured Seniors (65+ yrs)



Percent of Uninsured by City <18 Years of Age

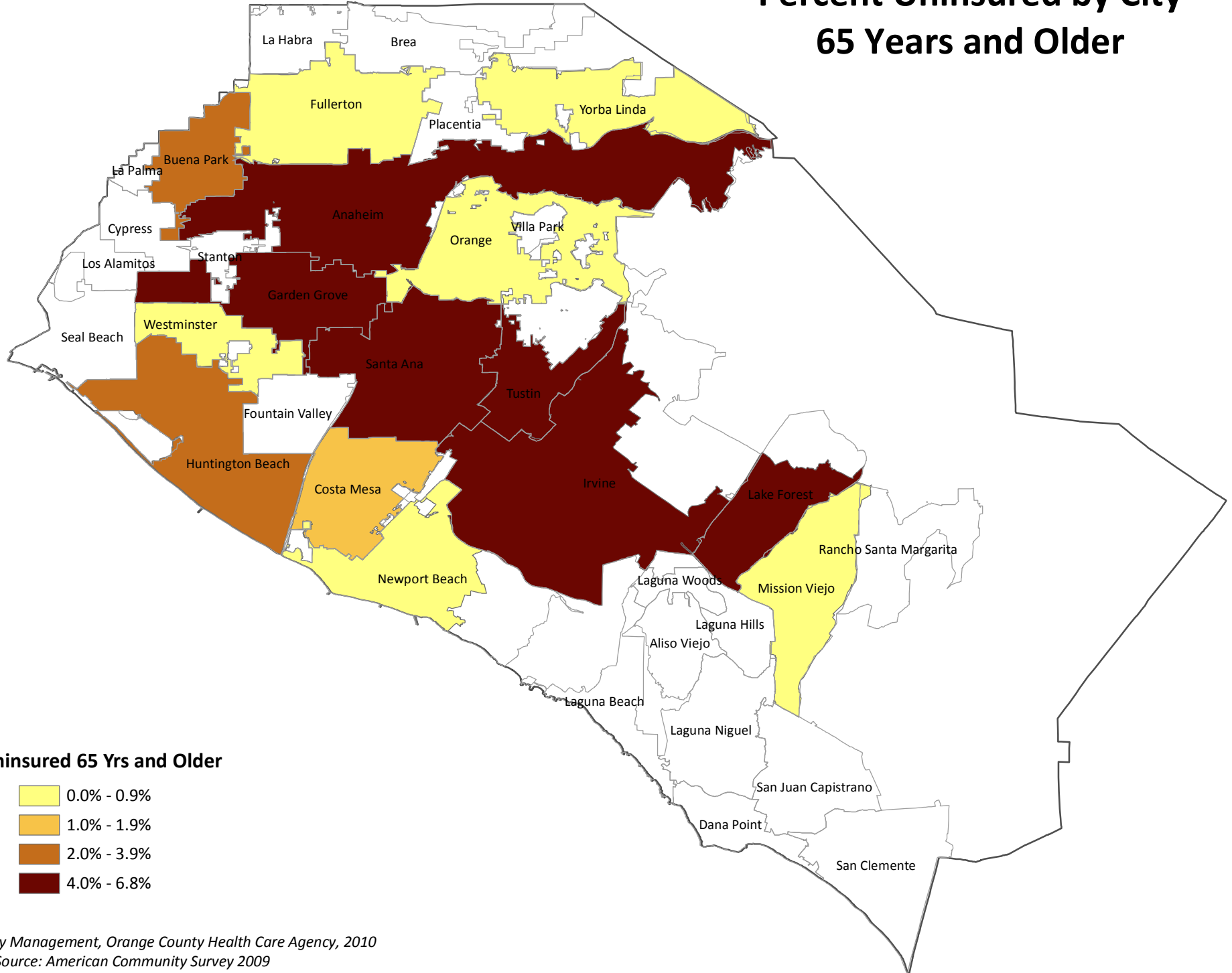


% Uninsured <18 Yrs of Age

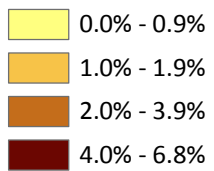


Quality Management, Orange County Health Care Agency, 2010
Data Source: American Community Survey 2009

Percent Uninsured by City 65 Years and Older



% Uninsured 65 Yrs and Older



Quality Management, Orange County Health Care Agency, 2010
Data Source: American Community Survey 2009

Section 3

Hospitals and Hospitalization Data

Orange County Short-Stay Hospitals and Hospitalization Data

The Office of Statewide Health Planning and Development (OSHPD) hospital discharge database is a record of discharges from short-stay hospitals across the state. A short-stay is defined as an average stay of less than 30 days.

Thirty-four Orange County short-stay hospitals reported discharges to the Office of Statewide Health Planning and Development (OSHPD) for the period of 2006 to 2008. The total 3-year average number of discharges reported by Orange County hospitals was **324,015**. This count may include more than one stay for a particular patient and is called a duplicate count.

The hospital discharge database includes 27 items. This analysis provides information on 11 items including: age, sex, race, hospital, major diagnostic category, principal diagnosis, length of stay, payer, charges, discharge status, and record linkage number. Medical characteristics of discharges were classified by Major Diagnostic Categories (MDC) and by selected categories of principal diagnoses. Major Diagnostic Categories are mutually exclusive categories containing all possible principal diagnosis areas. The diagnoses in each MDC correspond generally to a single major organ system or etiology.

Two sets of tables were prepared in support of data requirements for the county health needs assessment. The first summarizes data on all reporting Orange County hospitals resident and non-resident discharges, and is contained in this section. Please note that these figures represent a 3-year average for the time period of 2006-2008. The leading causes of hospitalization for County residents are covered in detail in **Section 6, Hospital Discharges**. Section 6 provides an analysis of the geographic distribution of hospitalizations and leading causes for hospitalization for different age groups and gender by the patient's ZIP code of residence.

A listing of hospitals that reported 2006-2008 discharge data to the state and a map of these hospitals are provided on the following pages. The listing includes the address and indicates whether the hospital is "for profit" or "not for profit." The first column indicates the number associated with the hospital in the map.

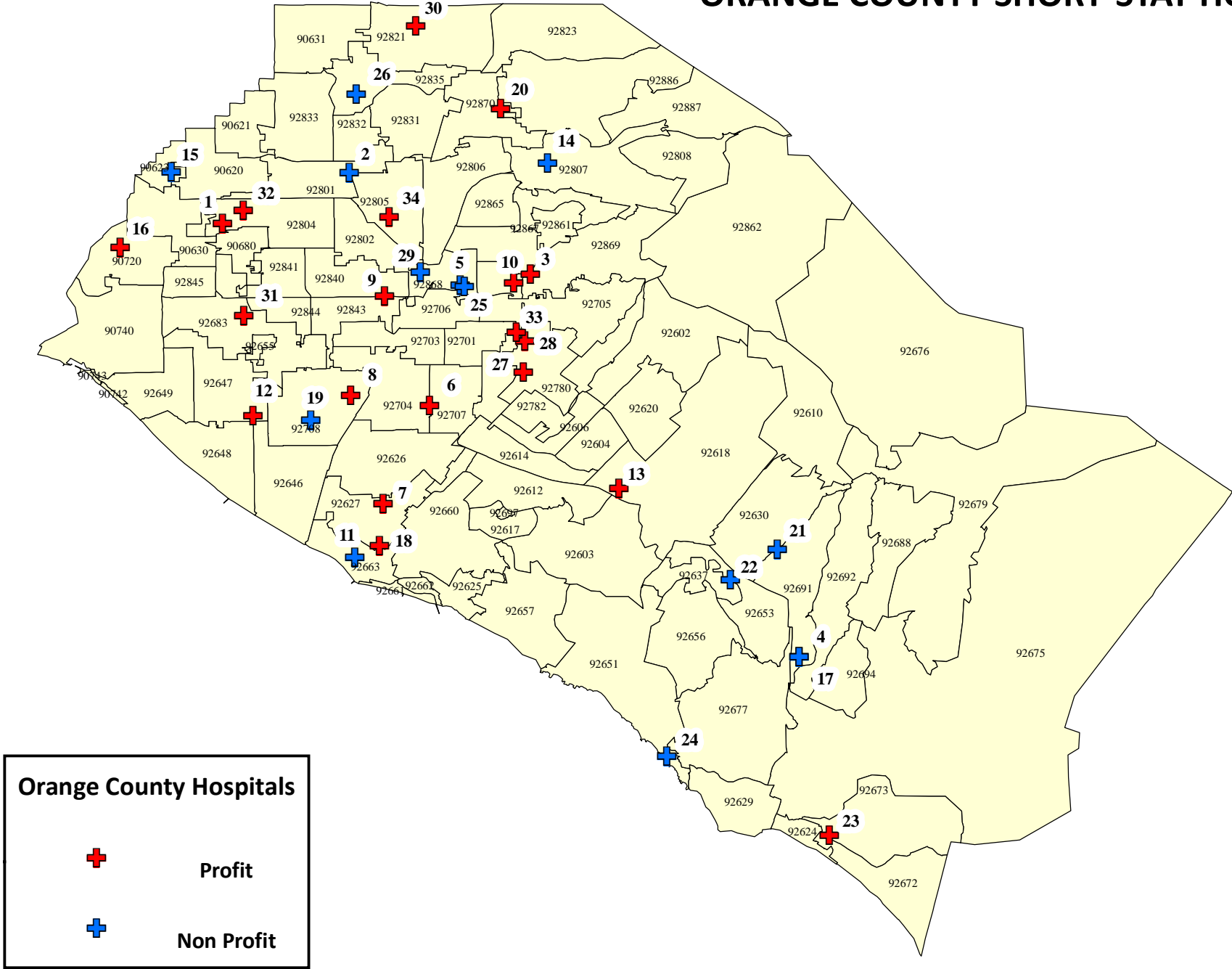
Map: 2006-2008 Orange County Short-Stay Hospitals

Orange County Hospitals

| No. | Hospital | Street | City | Zip | Profit |
|-----|--|--------------------------------|------------------|-------|--------|
| 1 | Anaheim General Hospital | 3350 W. Ball Road | Anaheim | 92804 | P |
| 2 | Anaheim Memorial Medical Center | 1111 W. La Palma Ave. | Anaheim | 92801 | N |
| 3 | Chapman Medical Center | 2601 E. Chapman Ave. | Orange | 92869 | P |
| 4 | Children's Hospital at Mission | 27700 Medical Center Rd. | Mission Viejo | 92691 | N |
| 5 | Children's Hospital of Orange County | 455 S. Main St | Orange | 92868 | N |
| 6 | Coastal Communities Hospital | 2701 S. Bristol St | Santa Ana | 92704 | P |
| 7 | College Hospital Costa Mesa | 301 Victoria St | Costa Mesa | 92627 | P |
| 8 | Fountain Valley Regional Hospital and Medical Center | 11250 Warner Ave. | Fountain Valley | 92708 | P |
| 9 | Garden Grove Hospital and Medical Center | 12601 Garden Grove Blvd | Garden Grove | 92843 | P |
| 10 | Healthbridge Children's Rehab Hospital | 393 S. Tustin St. | Orange | 92866 | P |
| 11 | Hoag Memorial Hospital Presbyterian | 1 Hoag Drive | Newport Beach | 92663 | N |
| 12 | Huntington Beach Hospital and Medical Center | 17772 Beach Blvd. | Huntington Beach | 92647 | P |
| 13 | Irvine Medical Center | 16200 Sand Canyon Ave. | Irvine | 92618 | P |
| 14 | Kaiser Foundation Hospital-Anaheim | 441 N. Lakeview Ave. | Anaheim | 92807 | N |
| 15 | La Palma Intercommunity Hospital | 7901 Walker St. | La Palma | 90623 | N |
| 16 | Los Alamitos Medical Center | 3751 Katella Ave. | Los Alamitos | 90720 | P |
| 17 | Mission Hospital Regional Medical Center | 27700 Medical Center Rd. | Mission Viejo | 92691 | N |
| 18 | Newport Bay Hospital | 1501 East 16 th St. | Newport Beach | 92663 | P |
| 19 | Orange Coast Memorial Medical Center | 9920 Talbert Ave. | Fountain Valley | 92708 | N |
| 20 | Placentia Linda Hospital | 1301 Rose Dr. | Placentia | 92870 | P |
| 21 | Royale Mission Viejo | 23228 Madero | Mission Viejo | 92691 | N |
| 22 | Saddleback Memorial Medical Center | 24451 Health Center Dr. | Laguna Hills | 92653 | N |
| 23 | San Clemente Hospital and Medical Center | 654 Camino de Los Mares | San Clemente | 92673 | N |
| 24 | South Coast Medical Center | 31872 Coast Hwy. | South Laguna | 92651 | N |
| 25 | St. Joseph Hospital | 1100 W. Steward Dr. | Orange | 92868 | N |
| 26 | St. Jude Medical Center | 101 E. Valencia Mesa Dr. | Fullerton | 92835 | N |
| 27 | Tustin Hospital Medical Center | 14662 Newport Ave | Tustin | 92780 | P |
| 28 | Tustin Rehabilitation Hospital | 14851 Yorba St. | Tustin | 92780 | P |
| 29 | University of California Irvine Medical Center | 101 The City Drive South | Orange | 92868 | N |
| 30 | Vencor Hospital- Brea | 875 N. Brea Blvd. | Brea | 92621 | P |
| 31 | Vencor Hospital-Orange County | 200 Hospital Cir. | Westminster | 92683 | P |
| 32 | West Anaheim Medical Center | 3033 W. Orange Ave. | Anaheim | 92804 | P |
| 33 | Western Medical Center, Santa Ana | 1001 N. Tustin Ave. | Santa Ana | 92705 | P |
| 34 | Western Medical Center-Anaheim | 1025 S. Anaheim Blvd. | Anaheim | 92805 | P |

Note: P= For Profit N= Not for Profit

ORANGE COUNTY SHORT-STAY HOSPITALS



Average Hospital Discharges by Orange County Short-Stay Hospitals (2006 to 2008)

Hospitalization discharges at all 34 short-stay hospitals for combined OC residents and non-residents were analyzed in this section (**Table 3.1**). From 2006 to 2008, there was an average of 324,015 hospital discharges per year. Twelve of the 34 reporting hospitals accounted for 71% percent of all discharges. Hoag Memorial Hospital Presbyterian had the highest percentage of hospital discharges at 9.9% (3-year average 32,065), followed by St. Joseph Hospital (8.3% or 3-year average 26,863), Mission Hospital Regional Medical Center (6.3% or 3-year average 20,502), Fountain Valley Regional Hospital and Medical Center (6.1% or 3-year average 19,758) and Kaiser Foundation Hospital – Anaheim (6.1% or 3-year average 19,712).

Hospital Discharges by Race/Ethnicity: While whites account for 45.6% of the total population, they accounted for 56.9% of all discharges – an overrepresentation of about 11%. Conversely, Hispanics and Asian/Pacific Islanders were underrepresented. For example, Hispanics accounted for 26.6% of discharges while making up 34.5% of the county population – an 8% underrepresentation. Asian/Pacific Islanders were underrepresented by about 6%. African Americans or blacks were slightly overrepresented in hospital discharges (2.1% of discharges vs. 1.8% of the population; see **Table 3.1**).

Based on hospital discharges utilization of hospitals varied by race/ethnicity. Just over 45% of all hospital discharges for whites (3-year average 184,242) occurred at five hospitals: Hoag Memorial Hospital Presbyterian (13.6%), St. Joseph Hospital (8.6%), Mission Hospital Regional Medical Center (8.3%), Saddleback Memorial Medical Center (8.1%) and St. Jude Medical Center (7.6%). The five hospitals with the highest percentage of hospital discharges for Hispanics were Western Medical Center Santa Ana (10.4%), St. Joseph Hospital (10.1%), Western Medical Center Anaheim (7.2%), Garden Grove Hospital and Medical Center (7.0%) and University of California Irvine Medical Center (6.6%). A quarter of all hospital discharges for Asian Pacific Islanders were from Fountain Valley Regional Hospital and Medical Center (25%), this was followed by Hoag Memorial Hospital (7.3%), Garden Grove Hospital and Medical Center (6.1%), University of California Irvine Medical Center (5.6%) and Kaiser Foundation Hospital-Anaheim (5.9%).

Hospital Discharges by Major Diagnostic Category: Hospital discharges related to pregnancy, childbirth and delivery accounted for 30.7% of all discharges (3-year average 99,532 of 324,015; See **Table 3.2**). Twenty-eight of the 34 hospitals reported discharges in these birth-related categories. The number of non-pregnancy or birth-related discharges was 224,482 or 69.3% of all discharges. Diseases of the circulatory (11.9%), digestive (8.7%), respiratory (7.3%) and musculoskeletal (7.2%) systems accounted for 35% of all discharges, and half (51%) of all non-birth related discharges (3-year average 113,529 of 224,482). Mental health-related disorders (3-year average 14,615) and alcohol/drug-related problems (3-year average 4,277) accounted for 5.8% of all discharges and 8.4% of non-pregnancy related discharges.

Hospital Discharges Related to Pregnancy and Childbirth

Hospitalization discharges related to pregnancy and childbirth was reported at 28 short-stay hospitals for OC residents and non-residents combined and are presented in this section (**Table 3.3**). From 2006 to 2008, there were on average nearly 100,000 pregnancy/childbirth-related discharges from all OC hospitals. Hoag Memorial Hospital Presbyterian reported both the most discharges (3-year average 32,065) and the most birth-related discharges (3-year average 10,690). The hospital with the second most birth-related discharges was St. Joseph Hospital (3-year average 10,532), followed by Kaiser Foundation Hospital-Anaheim (3-year average 7,845), Fountain Valley Regional Hospital and Medical Center (3-year average 7,590) and Western Medical Center Santa Ana (3-year average 7,218).

Hospital Discharges Related to Pregnancy and Childbirth by Race/Ethnicity: Of the nearly 100,000 pregnancy/childbirth-related discharges, almost half (45.8%) were to Hispanic women, an overrepresentation of about 11%. There were 11,235 more birth-related discharges for Hispanics (3-year average 45,617) than for whites (3-year average 34,382). Non-Hispanic white women had about a third of all birth-related discharges (34.5%), an underrepresentation of about 11%. Asian/Pacific Islanders had 14.4% of such birth-related discharges, a proportion comparable to their representation in the general population (16.5%). African American/black women accounted for 1.3% of birth related discharges, a proportion comparable to their representation in the general population (1.8%).

Expected Source of Payment for Discharges Related to Pregnancy and Childbirth: While Private insurance (54.8%) and Medi-Cal (41.1%) accounted 96% of payers for hospitalizations related to pregnancy and childbirth, the proportion varied among hospitals in the county. Self-pay (1.9%) and other (2.3%) type of insurance made up the remaining 4% of payers for hospitalizations related to pregnancy and childbirth (**Table 3.4**).

A more detailed analysis of births and related indicators are presented in **Section 10 – Births**.



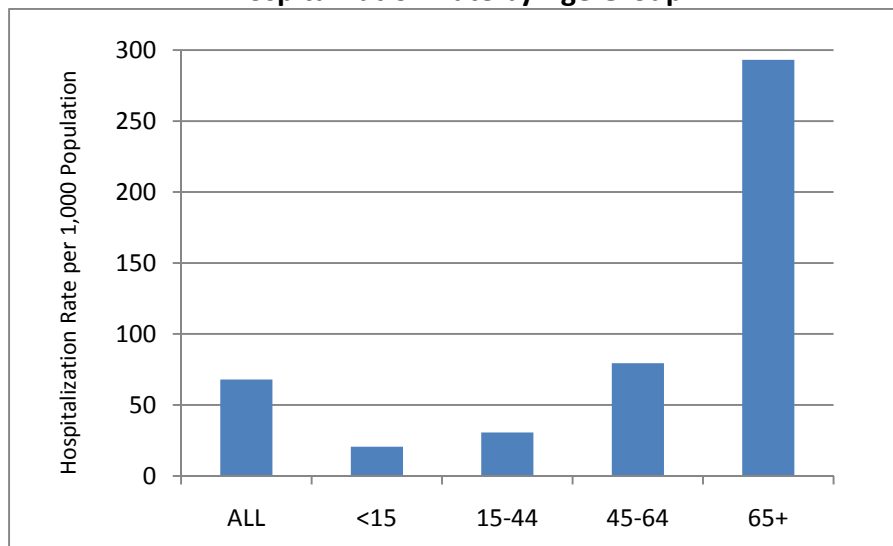
All Hospital Discharges (Excluding Pregnancy and Childbirth Related Discharges)

All hospitalization discharges, excluding pregnancy and childbirth related discharges, at all 34 short-stay hospitals for combined OC residents and non-residents were analyzed in this section. From 2006 to 2008, there were on average 224,483 hospital discharges from all OC hospitals. Approximately 90% of discharges had a record linkage number.

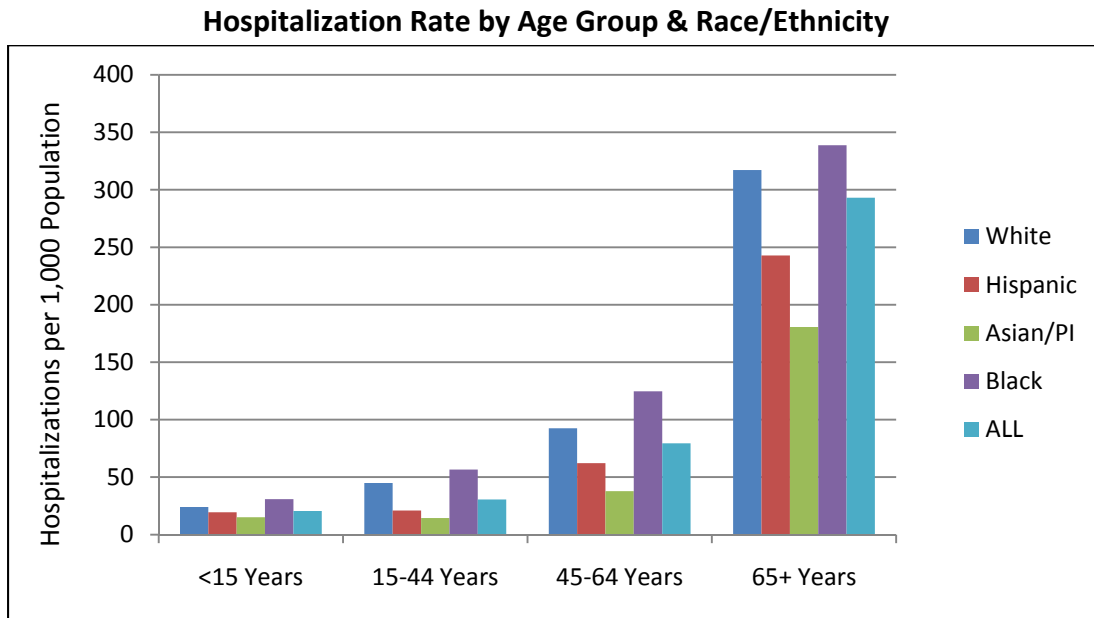
Hospitalization Rates by Gender: Females accounted for slightly more than half (52.8%) of all hospitalization discharges, males 47.2%. Accordingly, females also had a higher average rate of hospitalization (70.7 per 1,000 compared to 63.6 for males; **Table 3.5**).

Hospitalization Rates by Age: The 2006-2008 average rate of hospitalization increased systematically with age. The lowest number and rate per 1,000 population of hospitalization discharges were for children under 15 years: males 22.8 per 1,000 and females 18.4 per 1,000. Seniors (65+) had the highest number and rate per 1,000 population of hospitalization discharges and accounted for nearly half (45.4%) of all discharges. Males 65+ had a hospital discharge rate of 294.8 per 1,000 and females 65+, 292 per 1,000 (**Table 3.5**).

Hospitalization Rate by Age Group



Hospitalization Rates by Race/Ethnicity: In general, the rate of hospitalizations per 1,000 population increased systematically with age for all race/ethnicity groups; from a rate of 24 per 1,000 children less than 15 years to a high of 317 per 1,000 seniors 65 years and older (see below and **Table 3.5**). Within each age group blacks had the highest hospitalization rate albeit they are a small proportion of the county’s population. Conversely, Asian/Pacific Islanders tended to have the lowest rates of hospitalization across all age groups.



Major Diagnostic Categories for Hospitalization Matching CDC Definition: The following section covers all major hospital diagnostic categories (excluding discharges related to childbirth MDC 14 and 15) for short-stay hospitals in Orange County from 2006 to 2008 (**Table 3.6**). Where available, comparisons were made with selected major diagnostic categories; sixteen major diagnostic categories for hospitalizations as defined by the Centers for Disease Control and Prevention (CDC). These sixteen major diagnostic categories constituted almost half (47% or 3-year average 104,364) of all discharges. Diseases of the heart accounted for 11% or 3-year average of 24,585 hospitalizations. Mental health diagnosis related to psychosis was the second leading cause of hospitalization, accounting for a 3-year average of 15,024 discharges (7%). Malignant neoplasms were the third most common reason for hospitalization, accounting for 3-year average of 10,316 hospitalizations (5% of all discharges).

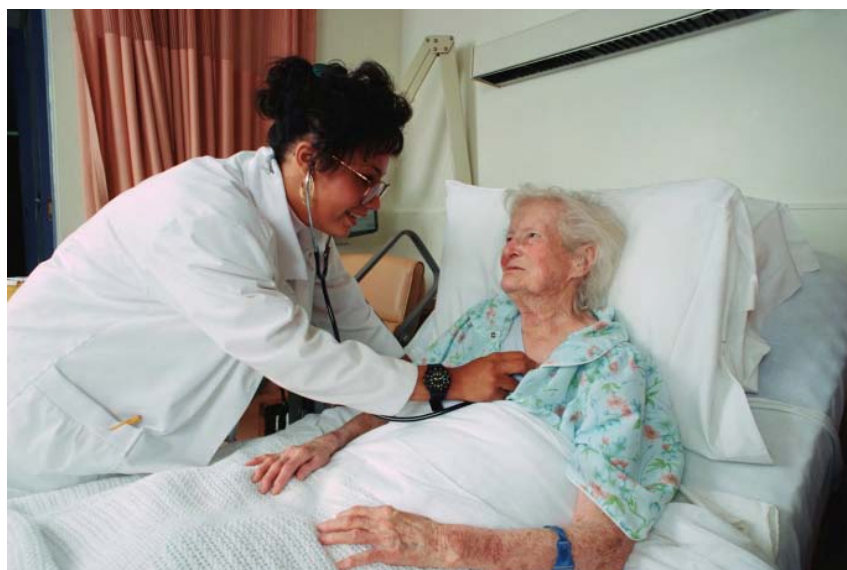
Length of Stay: For all discharges, the mean length of stay was 5.3 days, and the median length of stay was 3.0 days (**Table 3.7**). For selected major diagnostic categories, psychosis reported the highest mean (9.7 days) and median (6.0 days) length of stay. Major diagnostic category acute respiratory infections reported the lowest mean (3.1 days) and median (2.0 days) length of stay.

Charges per Day: The average charge per day in 2006-2008 for all diagnoses was \$13,039 (**Table 3.7**). The major diagnostic category of psychosis reported the lowest average charge per day (\$3,167) and major diagnostic category intervertebral disc disorders reported the highest average charge per day (\$29,556) of all selected major diagnosis categories

Total Charges: Total hospital charges for 2006-2008 averaged \$10.8 billion per year (**Table 3.7**), a 90% increase compared to the year 2000. For selected major diagnostic criteria, heart disease had the highest average total charges of \$1.5 billion, followed by malignant neoplasm with \$770 million, and fractures with \$465 million per year. Major diagnostic category acute respiratory infection had the lowest average total charges of \$44 million per year.

Expected Source of Payment: Taken together Medicare (43.5%) and Medi-Cal (12.0%) were the expected sources of payment for over half (55.5%) of all discharges (**Table 3.8**). Private insurers covered 35.2% of all hospitalizations. Self-pay (uninsured) accounted for only 2.7% of all expected sources of payment.

Deaths by Hospital and Age Group: Almost three percent (2.5%) of all hospitalizations in Orange County resulted in death from 2006 to 2008 (**Table 3.9**). Of the average 5,576 deaths that occurred each year, 73% (3-year average of 4,062) were patients 65 years or older. Less than 0.6% (3-year average of 32) of children under 1 year of age died while hospitalized. The percent of deaths is calculated by the proportion of total deaths to total discharges per hospital. Vencor Hospital – Orange County (24.7%) and Vencor Hospital – Brea (20.5%) had the highest percent deaths compared to all other hospitals (< 4.5%). It should be noted; the percent of deaths for these two hospitals reflected a higher proportion of terminally ill patients being admitted.



The general tables covering all Orange County Short-Stay Hospitals are:

Table 3.1: Total Number of Hospital Discharges by Race/Ethnicity

Table 3.2: Discharges by Major Diagnostic Categories (MDC)

Table 3.3: Discharges for Major Diagnostic Categories (MDC) Related to Childbirth by Race/Ethnicity

Table 3.4: Percent Distribution of Expected Source of Payment for Hospital Discharges Related to Childbirth

Table 3.5: Number and Rate (per 1,000 Population), Percent Distribution of Discharges by Sex, Age, Race/Ethnicity

Table 3.6: Number of Discharges of Selected Diagnoses by Race/Ethnicity

Table 3.7: Length of Stay (LOS), Charges per Day and Total Charges for Selected Diagnoses

Table 3.8: Percent Distribution of Expected Source of Payment

Table 3.9: Percent Deaths by Hospital Discharge and Hospital Deaths by Age Group

**Table 3.1: Total Number of Hospital Discharges by Race/Ethnicity
Orange County Short-Stay Hospitals, 2006-2008**

| Hospital | Discharges | | Race/Ethnicity | | | | |
|---|------------------------------|------------|----------------|---------------|---------------|--------------|---------------|
| | Annual Avg. Number 2006-2008 | % | White | Hispanic | Asian/PI | Black | Other/Unk |
| All Hospitals: | 324,015 | 100 | 184,242 | 86,153 | 33,821 | 6,931 | 12,868 |
| Proportion of Hospital Discharges by Race/Ethnicity: | | | 56.9% | 26.6% | 10.4% | 2.1% | 4.0% |
| Proportion of the OC Population by Race/Ethnicity: | | | 45.6% | 34.5% | 16.5% | 1.8% | 1.5% |
| <i>Hoag Memorial Hospital Presbyterian</i> | 32,065 | 9.9 | 24,994 | 2,928 | 2,460 | 275 | 1,408 |
| <i>St. Joseph Hospital</i> | 26,863 | 8.3 | 15,761 | 8,702 | 1,597 | 436 | 367 |
| <i>Mission Hospital Regional Medical Center</i> | 20,502 | 6.3 | 15,329 | 3,618 | 986 | 264 | 305 |
| <i>Fountain Valley Regional Hospital and Medical Center</i> | 19,758 | 6.1 | 5,350 | 4,745 | 8,617 | 252 | 794 |
| <i>Kaiser Foundation Hospital-Anaheim</i> | 19,712 | 6.1 | 10,354 | 5,638 | 1,984 | 623 | 1,112 |
| <i>Saddleback Memorial Medical Center</i> | 18,493 | 5.7 | 14,980 | 1,437 | 1,111 | 153 | 812 |
| <i>St. Jude Medical Center</i> | 18,374 | 5.7 | 14,048 | 2,327 | 1,514 | 233 | 253 |
| <i>University of California Irvine Medical Center</i> | 17,824 | 5.5 | 9,472 | 5,696 | 1,959 | 610 | 87 |
| <i>Anaheim Memorial Medical Center</i> | 16,149 | 5.0 | 7,776 | 5,507 | 1,697 | 411 | 757 |
| <i>Western Medical Center Santa Ana</i> | 15,118 | 4.7 | 4,779 | 8,979 | 540 | 229 | 592 |
| <i>Orange Coast Memorial Medical Center</i> | 13,872 | 4.3 | 8,533 | 2,586 | 1,958 | 278 | 517 |
| <i>Los Alamitos Medical Center</i> | 11,241 | 3.5 | 7,104 | 2,360 | 946 | 340 | 490 |
| <i>Western Medical Center Anaheim</i> | 10,653 | 3.3 | 3,382 | 6,195 | 288 | 181 | 606 |
| <i>Children Hospital of Orange County</i> | 10,606 | 3.3 | 3,783 | 5,455 | 721 | 219 | 427 |
| <i>Garden Grove Hospital and Medical Center</i> | 10,330 | 3.2 | 1,936 | 6,025 | 2,054 | 110 | 205 |
| <i>Irvine Medical Center</i> | 10,301 | 3.2 | 6,492 | 1,281 | 1,606 | 224 | 698 |
| <i>Coastal Communities Hospital</i> | 7,036 | 2.2 | 668 | 5,549 | 45 | 60 | 714 |
| <i>West Anaheim Medical Center</i> | 6,801 | 2.1 | 4,254 | 1,088 | 761 | 265 | 433 |
| <i>South Coast Medical Center</i> | 5,189 | 1.6 | 4,605 | 233 | 81 | 34 | 236 |
| <i>La Palma Intercommunity Hospital</i> | 4,546 | 1.4 | 1,757 | 910 | 1,177 | 218 | 484 |
| <i>Huntington Beach Hospital and Medical Center</i> | 4,533 | 1.4 | 3,209 | 431 | 392 | 93 | 408 |
| <i>Placentia Linda Hospital</i> | 4,154 | 1.3 | 3,301 | 524 | 133 | 63 | 133 |
| <i>College Hospital Costa Mesa</i> | 4,074 | 1.3 | 2,085 | 1,071 | 190 | 642 | 86 |
| <i>Anaheim General Hospital</i> | 3,564 | 1.1 | 1,451 | 1,191 | 424 | 117 | 380 |
| <i>San Clemente Hospital and Medical Center</i> | 2,674 | 0.8 | 2,418 | 134 | 35 | 19 | 67 |
| <i>Chapman Medical Center</i> | 2,623 | 0.8 | 1,860 | 441 | 52 | 90 | 179 |
| <i>Children Hospital at Mission</i> | 2,287 | 0.7 | 1,533 | 528 | 132 | 31 | 63 |
| <i>Tustin Hospital Medical Center</i> | 1,174 | 0.4 | 462 | 234 | 49 | 345 | 85 |
| <i>Vencor Hospital-Orange County</i> | 1,047 | 0.3 | 807 | 75 | 110 | 21 | 34 |
| <i>Tustin Rehabilitation Hospital</i> | 1,008 | 0.3 | 768 | 64 | 98 | 11 | 66 |
| <i>Newport Bay Hospital</i> | 799 | 0.2 | 607 | 90 | 34 | 60 | 8 |
| <i>Vencor Hospital-Brea</i> | 452 | 0.1 | 292 | 56 | 40 | 11 | 53 |
| <i>Royale Mission Viejo</i> | 105 | 0.0 | 49 | 27 | 17 | 7 | 5 |
| <i>Healthbridge Children's Rehab Hospital</i> | 90 | 0.0 | 41 | 28 | 12 | 5 | 3 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.2: Discharges by Major Diagnostic Categories (MDC)
Orange County Short-Stay Hospitals, 2006-2008**

| Categories | Annual Avg. | | Cumulative % |
|---|----------------|--------------|--------------|
| | 2006-2008 | % | |
| Pregnancy, Childbirth & the Puerperium | 50,583 | 15.6 | 15.6 |
| Newborns & Other Neonates with Conditions Originating in Prenatal Period | 48,949 | 15.1 | 30.7 |
| Diseases and Disorders of the Circulatory System | 38,576 | 11.9 | 42.6 |
| Diseases and Disorders of the Digestive System | 28,034 | 8.7 | 51.3 |
| Diseases and Disorders of the Respiratory System | 23,721 | 7.3 | 58.6 |
| Diseases and Disorders of the Musculoskeletal System & Connective Tissue | 23,198 | 7.2 | 65.8 |
| Diseases and Disorders of the Nervous System | 17,814 | 5.5 | 71.3 |
| Mental Diseases & Disorders | 14,615 | 4.5 | 75.8 |
| Diseases and Disorders of the Kidney and Urinary Tract | 11,298 | 3.5 | 79.3 |
| Endocrine, Nutritional & Metabolic Diseases & Disorders | 9,698 | 3.0 | 82.2 |
| Diseases and Disorders of the Hepatobiliary System & Pancreas | 9,350 | 2.9 | 85.1 |
| Infectious & Parasitic Disease, Systemic or Unspecified Sites | 8,905 | 2.7 | 87.9 |
| Diseases and Disorders of the Female Reproductive System | 7,601 | 2.3 | 90.2 |
| Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast | 6,940 | 2.1 | 92.4 |
| Alcohol, Drug Use & Alcohol/Drug Induced Organic Mental Disorders | 4,277 | 1.3 | 93.7 |
| Injuries, Poisonings & Toxic Effects of Drugs | 4,233 | 1.3 | 95.0 |
| Factors Influencing Health Status & Other Contacts with Health Services | 3,578 | 1.1 | 96.1 |
| Diseases and Disorders of the Ear, Nose, Mouth and Throat | 3,574 | 1.1 | 97.2 |
| Diseases and Disorders of Blood, Blood Forming Organs & Immunological Disorders | 3,159 | 1.0 | 98.2 |
| Myeloproliferative Disease & Disorders, and Poorly Differentiated Neoplasms | 2,545 | 0.8 | 99.0 |
| Diseases and Disorders of the Male Reproductive System | 1,653 | 0.5 | 99.5 |
| Multiple Significant Trauma | 614 | 0.2 | 99.7 |
| Diseases and Disorders of the Eye | 456 | 0.1 | 99.8 |
| Burns | 374 | 0.1 | 99.9 |
| Human Immunodeficiency Virus Infections | 269 | 0.1 | 100.0 |
| Total | 324,014 | 100.0 | 100.0 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.
Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.3: Discharges for Major Diagnostic Categories (MDC)
Related to Pregnancy, Childbirth, and Neonatal Period* by Race/Ethnicity
Orange County Short-Stay Hospitals, 2006-2008**

| Hospital | All | White | Hispanic | Asian/PI | Black | Other-Unknown |
|--|---------------|---------------|---------------|---------------|--------------|---------------|
| All Hospitals (Avg. 2006-2008) | 99,532 | 34,382 | 45,617 | 14,332 | 1,289 | 3,911 |
| <i>Proportion of Pregnancy & Birth-Related Discharges by Race/Ethnicity:</i> | | 34.5% | 45.8% | 14.4% | 1.3% | 3.9% |
| <i>Proportion of the OC Population by Race/Ethnicity:</i> | | 45.6% | 34.5% | 16.5% | 1.8% | 1.5% |
| Hoag Memorial Hospital Presbyterian | 10,690 | 6,797 | 1,645 | 1,534 | 84 | 629 |
| St. Joseph Hospital | 10,532 | 4,063 | 5,347 | 875 | 136 | 111 |
| Kaiser Foundation Hospital-Anaheim | 7,845 | 2,652 | 3,245 | 1,136 | 211 | 601 |
| Fountain Valley Regional Hospital and Medical Center | 7,590 | 905 | 2,283 | 4,146 | 49 | 206 |
| Western Medical Center Santa Ana | 7,218 | 637 | 6,112 | 206 | 43 | 221 |
| Mission Hospital Regional Medical Center | 6,592 | 3,587 | 2,361 | 457 | 64 | 122 |
| Garden Grove Hospital and Medical Center | 6,188 | 373 | 4,815 | 896 | 31 | 73 |
| Saddleback Memorial Medical Center | 5,846 | 4,032 | 815 | 688 | 50 | 262 |
| Western Medical Center Anaheim | 5,834 | 475 | 4,994 | 121 | 50 | 194 |
| Coastal Communities Hospital | 4,580 | 42 | 4,250 | 11 | 5 | 272 |
| St. Jude Medical Center | 4,496 | 3,146 | 725 | 459 | 41 | 124 |
| Anaheim Memorial Medical Center | 4,033 | 788 | 2,184 | 755 | 82 | 223 |
| Los Alamitos Medical Center | 3,752 | 1,277 | 1,661 | 556 | 149 | 108 |
| Irvine Medical Center | 3,373 | 1,507 | 667 | 895 | 61 | 243 |
| University of California Irvine Medical Center | 3,370 | 1,190 | 1,784 | 275 | 103 | 17 |
| Orange Coast Memorial Medical Center | 3,181 | 1,214 | 1,043 | 773 | 55 | 97 |
| South Coast Medical Center | 1,084 | 804 | 146 | 37 | 7 | 90 |
| Anaheim General Hospital | 997 | 143 | 638 | 74 | 12 | 130 |
| Children Hospital of Orange County | 961 | 373 | 454 | 70 | 15 | 48 |
| La Palma Intercommunity Hospital | 904 | 115 | 302 | 332 | 30 | 126 |
| Children Hospital at Mission | 354 | 213 | 102 | 30 | 4 | 5 |
| West Anaheim Medical Center | 49 | 18 | 20 | 2 | 3 | 4 |
| Huntington Beach Hospital and Medical Center | 19 | 7 | 7 | 2 | 1 | 2 |
| Placentia Linda Hospital | 17 | 11 | 5 | 0 | 0 | 0 |
| Chapman Medical Center | 12 | 5 | 6 | 0 | 0 | 0 |
| San Clemente Hospital and Medical Center | 8 | 7 | 0 | 0 | 0 | 0 |
| Tustin Hospital Medical Center | 4 | 1 | 2 | 0 | 0 | 0 |
| Healthbridge Children's Rehab Hospital | 2 | 1 | 1 | 0 | 0 | 0 |
| College Hospital Costa Mesa | 0 | 0 | 0 | 0 | 0 | 0 |
| Tustin Rehabilitation Hospital | 0 | 0 | 0 | 0 | 0 | 0 |

* The two MDC categories related to childbirth are "pregnancy, childbirth and the puerperium" (MDC 14) and "newborns and other neonates with conditions originating in the prenatal period" (MDC 15).

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.
Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

Table 3.4: Percent Distribution of Expected Source of Payment for Hospital Discharges Related to Pregnancy & Childbirth

Orange County Short-Stay Hospitals, 2006-2008

| Hospital | Annual Avg. 2006-2008 | Payer | | | |
|--|--------------------------|---------------|---------------|--------------|--------------|
| | | Medi-Cal | Private | Self-Pay | Other |
| All Hospitals: | 99,532 | 40,864 | 54,504 | 1,885 | 2,278 |
| Percent: | 100 | 41.1 | 54.8 | 1.9 | 2.3 |
| Hoag Memorial Hospital Presbyterian | 10,689 | 9.8 | 89.0 | 0.8 | 0.4 |
| St. Joseph Hospital | 10,532 | 39.3 | 59.3 | 0.6 | 0.9 |
| Kaiser Foundation Hospital-Anaheim | 7,845 | 3.2 | 95.8 | 0.8 | 0.2 |
| Fountain Valley Regional Hospital and Medical Center | 7,590 | 48.1 | 48.4 | 1.7 | 1.8 |
| Western Medical Center Santa Ana | 7,218 | 78.1 | 12.0 | 1.8 | 8.0 |
| Mission Hospital Regional Medical Center | 6,592 | 39.3 | 56.1 | 1.5 | 3.1 |
| Garden Grove Hospital and Medical Center | 6,188 | 80.4 | 11.0 | 6.5 | 2.1 |
| Saddleback Memorial Medical Center | 5,846 | 6.4 | 90.9 | 0.9 | 1.8 |
| Western Medical Center Anaheim | 5,834 | 89.8 | 3.2 | 1.4 | 5.6 |
| Coastal Communities Hospital | 4,580 | 89.5 | 6.0 | 3.8 | 0.7 |
| St. Jude Medical Center | 4,496 | 10.3 | 87.4 | 1.1 | 1.1 |
| Anaheim Memorial Medical Center | 4,032 | 36.3 | 56.1 | 4.5 | 3.1 |
| Los Alamitos Medical Center | 3,752 | 39.0 | 57.7 | 0.0 | 3.3 |
| Irvine Medical Center | 3,373 | 2.2 | 95.3 | 1.0 | 1.6 |
| University of California Irvine Medical Center | 3,369 | 72.5 | 21.8 | 2.8 | 2.9 |
| Orange Coast Memorial Medical Center | 3,181 | 17.2 | 79.6 | 1.4 | 1.8 |
| South Coast Medical Center | 1,082 | 29.1 | 67.6 | 2.2 | 1.1 |
| Anaheim General Hospital | 997 | 89.5 | 3.3 | 6.7 | 0.5 |
| Children Hospital of Orange County | 961 | 52.6 | 44.7 | 0.7 | 2.0 |
| La Palma Intercommunity Hospital | 904 | 59.7 | 28.8 | 11.2 | 0.3 |
| Children Hospital at Mission | 354 | 24.8 | 60.7 | 0.5 | 14.0 |
| West Anaheim Medical Center | 49 | 60.3 | 33.6 | 5.5 | 0.7 |
| Huntington Beach Hospital and Medical Center | 19 | 63.8 | 32.8 | 3.4 | 0.0 |
| Placentia Linda Hospital | 17 | 37.3 | 45.1 | 7.8 | 9.8 |
| Chapman Medical Center | 12 | 31.4 | 40.0 | 5.7 | 22.9 |
| San Clemente Hospital and Medical Center | 8 | 33.3 | 54.2 | 0.0 | 12.5 |
| Tustin Hospital Medical Center | 4 | 54.5 | 18.2 | 18.2 | 9.1 |
| Healthbridge Children's Rehab Hospital | 2 | 20.0 | 80.0 | 0.0 | 0.0 |
| College Hospital Costa Mesa | 1 | 100.0 | 0.0 | 0.0 | 0.0 |
| Tustin Rehabilitation Hospital | 1 | 0.0 | 100.0 | 0.0 | 0.0 |

* The two MDC categories related to childbirth are "pregnancy, childbirth and the puerperium" (MDC 14) and "newborns and other neonates with conditions originating in the puerperium" (MDC 15).

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.5: Orange County Number, Hospitalization Rate (per 1,000 population)
Percent Distribution of Discharges by Sex, Age, Race/Ethnicity*
Orange County Short-Stay Hospitals, 2006-2008**

| Sex and Age | Annual Avg. | Rate per 1,000 | Percent % | Race/Ethnicity | | | | |
|---------------------------|----------------|-------------------|--------------|---------------------------------|-----------------|-----------------|--------------|------------------|
| | | | | Annual Average Number 2006-2008 | | | | |
| Males | | | | <i>White</i> | <i>Hispanic</i> | <i>Asian/PI</i> | <i>Black</i> | <i>Other/Unk</i> |
| Males - All Ages | 99,839 | 63.6 | 47.2 | 66,390 | 18,644 | 8,895 | 1,854 | 4,056 |
| Under 15 Years | 7,660 | 22.8 | 3.6 | 3,009 | 3,435 | 774 | 129 | 314 |
| Under 1 Year | 2,113 | 92.9 | 1.0 | 706 | 1,096 | 209 | 26 | 76 |
| 1-4 Years | 2,690 | 24.2 | 1.3 | 1,014 | 1,167 | 336 | 52 | 121 |
| 5-14 Years | 2,857 | 14.1 | 1.4 | 1,289 | 1,172 | 228 | 51 | 117 |
| 15-44 Years | 20,428 | 28.6 | 9.7 | 11,560 | 5,940 | 1,496 | 573 | 858 |
| 15-19 Years | 2,910 | 24.1 | 1.4 | 1,611 | 912 | 197 | 73 | 117 |
| 20-24 Years | 2,774 | 24.6 | 1.3 | 1,513 | 876 | 180 | 71 | 134 |
| 25-34 Years | 5,566 | 24.7 | 2.6 | 2,911 | 1,828 | 430 | 162 | 235 |
| 35-44 Years | 9,177 | 35.8 | 4.3 | 5,525 | 2,325 | 688 | 267 | 373 |
| 45-64 Years | 30,165 | 80.0 | 14.3 | 20,721 | 4,977 | 2,415 | 761 | 1,291 |
| 45-54 Years | 14,484 | 64.5 | 6.8 | 9,717 | 2,692 | 1,031 | 437 | 607 |
| 55-64 Years | 15,681 | 102.9 | 7.4 | 11,004 | 2,285 | 1,384 | 324 | 684 |
| 65 Years and Over | 41,587 | 294.8 | 19.7 | 31,099 | 4,293 | 4,210 | 391 | 1,593 |
| 65-74 Years | 16,047 | 192.2 | 7.6 | 11,347 | 2,040 | 1,731 | 226 | 703 |
| 75-84 Years | 17,052 | 385.6 | 8.1 | 13,003 | 1,604 | 1,678 | 136 | 631 |
| Over 85 Years | 8,487 | 636.5 | 4.0 | 6,750 | 648 | 802 | 29 | 259 |
| Females | | | | | | | | |
| Females - All Ages | 111,669 | 70.7 | 52.8 | 77,020 | 18,784 | 9,654 | 2,074 | 4,137 |
| Under 15 Years | 5,927 | 18.4 | 2.8 | 2,389 | 2,618 | 568 | 105 | 246 |
| Under 1 Year | 1,492 | 68.2 | 0.7 | 512 | 763 | 136 | 23 | 58 |
| 1-4 Years | 2,106 | 19.7 | 1.0 | 831 | 915 | 243 | 35 | 83 |
| 5-14 Years | 2,329 | 12.0 | 1.1 | 1,047 | 940 | 190 | 47 | 105 |
| 15-44 Years | 21,545 | 31.7 | 10.2 | 12,543 | 5,758 | 1,743 | 632 | 869 |
| 15-19 Years | 2,558 | 22.3 | 1.2 | 1,426 | 797 | 177 | 64 | 94 |
| 20-24 Years | 2,383 | 23.0 | 1.1 | 1,389 | 673 | 167 | 60 | 94 |
| 25-34 Years | 5,819 | 27.5 | 2.8 | 3,167 | 1,778 | 460 | 172 | 242 |
| 35-44 Years | 10,785 | 43.2 | 5.1 | 6,561 | 2,510 | 939 | 336 | 439 |
| 45-64 Years | 29,941 | 76.3 | 14.2 | 20,769 | 4,812 | 2,412 | 781 | 1,167 |
| 45-54 Years | 14,993 | 66.0 | 7.1 | 10,124 | 2,702 | 1,174 | 414 | 580 |
| 55-64 Years | 14,947 | 90.5 | 7.1 | 10,645 | 2,109 | 1,238 | 367 | 588 |
| 65 Years and Over | 54,256 | 292.0 | 25.7 | 41,318 | 5,597 | 4,931 | 555 | 1,855 |
| 65-74 Years | 16,880 | 177.0 | 8.0 | 11,905 | 2,306 | 1,754 | 247 | 668 |
| 75-84 Years | 22,113 | 352.4 | 10.5 | 16,906 | 2,249 | 2,011 | 193 | 754 |
| Over 85 Years | 15,263 | 550.5 | 7.2 | 12,507 | 1,042 | 1,165 | 115 | 433 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.

*Discharges related to childbirth, as identified by Major Diagnostic Categories (MDC) 14 and 15 are not included in this table.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.6: Number of Discharges for Selected Diagnoses by Race/Ethnicity
Orange County Short-Stay Hospitals, 2006-2008**

| Diagnostic Category | Race/Ethnicity | | | | | |
|---|---------------------------------|----------------|---------------|---------------|--------------|--------------|
| | Annual Average Number 2006-2008 | | | | | |
| | All | White | Hispanic | Asian/PI | Black | Other/Unk |
| All Conditions* | 224,483 | 149,860 | 40,536 | 19,489 | 5,642 | 8,956 |
| Heart Disease | 24,585 | 17,766 | 3,028 | 2,205 | 476 | 1,109 |
| <i>Acute Myocardial Infarction</i> | 4,291 | 2,981 | 581 | 411 | 63 | 254 |
| <i>Coronary Atherosclerosis</i> | 5,003 | 3,572 | 547 | 524 | 75 | 285 |
| <i>Other Ischemic Heart Disease</i> | 606 | 418 | 91 | 46 | 14 | 37 |
| <i>Cardiac Dysrhythmias</i> | 5,236 | 4,019 | 511 | 438 | 72 | 196 |
| <i>Congestive Heart Failure</i> | 4,542 | 3,194 | 667 | 396 | 114 | 171 |
| Malignant Neoplasms | 10,316 | 7,063 | 1,452 | 1,281 | 179 | 340 |
| <i>Large Intestine and Rectum</i> | 1,227 | 858 | 134 | 166 | 24 | 45 |
| <i>Trachea, bronchus and lung</i> | 1,126 | 855 | 100 | 127 | 17 | 27 |
| <i>Breast</i> | 727 | 526 | 75 | 83 | 13 | 30 |
| <i>Prostate</i> | 703 | 536 | 82 | 50 | 14 | 21 |
| Psychosis | 15,024 | 10,161 | 2,375 | 690 | 944 | 854 |
| Pneumonia | 6,849 | 4,522 | 1,258 | 697 | 123 | 251 |
| Fractures | 7,780 | 5,576 | 1,328 | 517 | 87 | 272 |
| <i>Neck of Femur</i> | 2,362 | 1,950 | 168 | 160 | 10 | 75 |
| Cerebrovascular Disease | 7,043 | 4,856 | 995 | 791 | 147 | 254 |
| Arthropathies and Related Disorders | 6,397 | 5,072 | 700 | 258 | 116 | 252 |
| Diabetes Mellitus | 3,456 | 1,857 | 1,078 | 258 | 132 | 132 |
| Asthma | 2,031 | 1,145 | 486 | 211 | 97 | 92 |
| Cholelithiasis | 3,479 | 1,771 | 1,217 | 312 | 44 | 135 |
| Benign Neoplasms and Other Neoplasm | 4,115 | 2,354 | 854 | 573 | 158 | 177 |
| Intervertebral Disc. Disorders | 2,511 | 1,989 | 275 | 120 | 48 | 79 |
| Acute Respiratory Infections | 1,923 | 821 | 836 | 152 | 39 | 75 |
| Noninfectious Enteritis and Colitis | 2,347 | 1,583 | 401 | 222 | 58 | 82 |
| Urinary Tract Infections, Unspecified Site | 2,846 | 2,071 | 366 | 271 | 41 | 97 |
| Cellulitis and Abscess | 3,862 | 2,629 | 818 | 192 | 87 | 136 |
| All Other Diagnoses | 119,919 | 78,625 | 23,070 | 10,739 | 2,864 | 4,621 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.

*Discharges related to childbirth, as identified by Major Diagnostic Categories (MDC) 14 and 15 are not included in this table.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.7: Length of Stay, Charges per Day, and Total Charges for Selected Diagnoses
Orange County Short-Stay Hospitals, Orange County, 2006-2008**

| Diagnostic Category | All Discharges Annual Avg. 2006-2008 | Discharges with Length of Stay of More than one Day | | | | |
|---|--|---|-----------------------|------------|------------------|--------------------------|
| | | Number | Length of Stay (days) | | Charges per Day | Total Charges |
| | | | Mean | Median | | |
| All Conditions* | 224,483 | 206,822 | 5.3 | 3.0 | \$ 13,039 | \$ 10,805,603,497 |
| Heart Disease | 24,585 | 23,118 | 4.1 | 3.0 | \$ 20,425 | \$ 1,464,566,800 |
| <i>Acute Myocardial Infarction</i> | 4,291 | 4,012 | 4.8 | 3.0 | \$ 22,610 | \$ 1,077,423,384 |
| <i>Coronary Atherosclerosis</i> | 5,003 | 4,801 | 3.2 | 2.0 | \$ 33,645 | \$ 1,145,902,019 |
| <i>Other Ischemic Heart Disease</i> | 606 | 537 | 2.0 | 1.0 | \$ 22,707 | \$ 57,087,557 |
| <i>Cardiac Dysrhythmias</i> | 5,236 | 4,849 | 3.0 | 2.0 | \$ 17,698 | \$ 588,795,081 |
| <i>Congestive Heart Failure</i> | 4,542 | 4,375 | 4.6 | 3.0 | \$ 12,783 | \$ 596,145,650 |
| Malignant Neoplasms | 10,316 | 9,368 | 6.5 | 4.0 | \$ 15,678 | \$ 770,443,514 |
| <i>Large Intestine and Rectum</i> | 1,227 | 1,125 | 7.8 | 6.0 | \$ 11,538 | \$ 292,383,382 |
| <i>Trachea, bronchus and lung</i> | 1,126 | 1,026 | 6.7 | 5.0 | \$ 12,516 | \$ 233,778,339 |
| <i>Breast</i> | 727 | 664 | 2.4 | 2.0 | \$ 23,547 | \$ 91,894,025 |
| <i>Prostate</i> | 703 | 652 | 2.6 | 2.0 | \$ 29,264 | \$ 101,008,331 |
| Psychosis | 15,024 | 14,656 | 9.7 | 6.0 | \$ 3,167 | \$ 370,401,050 |
| Pneumonia | 6,849 | 6,463 | 5.7 | 4.0 | \$ 8,913 | \$ 319,670,110 |
| Fractures | 7,780 | 6,949 | 4.6 | 3.0 | \$ 15,988 | \$ 464,712,564 |
| <i>Neck of Femur</i> | 2,362 | 2,172 | 5.5 | 5.0 | \$ 12,117 | \$ 404,083,182 |
| Cerebrovascular Disease | 7,043 | 6,433 | 4.9 | 3.0 | \$ 14,262 | \$ 370,589,840 |
| Arthropathies and Related Disorders | 6,397 | 6,133 | 3.6 | 3.0 | \$ 17,516 | \$ 346,872,394 |
| Diabetes Mellitus | 3,456 | 3,112 | 4.7 | 3.0 | \$ 9,438 | \$ 132,268,426 |
| Asthma | 2,031 | 1,877 | 3.6 | 3.0 | \$ 8,446 | \$ 53,536,428 |
| Cholelithiasis | 3,479 | 3,175 | 3.6 | 3.0 | \$ 15,555 | \$ 144,153,433 |
| Benign Neoplasms and Other Neoplasms | 4,115 | 3,744 | 3.2 | 2.0 | \$ 16,065 | \$ 161,440,016 |
| Intervertebral Disc. Disorders | 2,511 | 2,348 | 3.3 | 3.0 | \$ 29,886 | \$ 191,543,487 |
| Acute Respiratory Infections | 1,923 | 1,773 | 3.1 | 2.0 | \$ 7,933 | \$ 44,403,541 |
| Noninfectious Enteritis and Colitis | 2,347 | 2,127 | 4.3 | 3.0 | \$ 9,254 | \$ 83,398,302 |
| Urinary Tract Infections, Unspecified Site | 2,846 | 2,699 | 4.2 | 3.0 | \$ 7,819 | \$ 76,018,949 |
| Cellulitis and Abscess | 3,862 | 3,509 | 4.7 | 3.0 | \$ 7,305 | \$ 111,085,222 |
| All Other Diagnoses | 119,919 | 109,339 | 5.3 | 3.0 | \$ 12,420 | \$ 5,700,499,419 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHDP) database.

*Discharges related to childbirth, as identified by Major Diagnostic Categories (MDC) 14 and 15 are not included in this table.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.8: Percent Distribution of Expected Source of Payment for Hospital Discharges
Orange County Short-Stay Hospitals, 2006-2008**

| Hospitals | Discharges* Annual Avg. 2006-2008 | Payer | | | | |
|--|---|-------------|-------------|-------------|------------|------------|
| | | Medicare | Medical | Private | Self-Pay | Other |
| All Hospitals | 224,461 | 43.5 | 12.0 | 35.2 | 2.7 | 6.6 |
| Hoag Memorial Hospital Presbyterian | 21,368 | 50.8 | 2.1 | 40.8 | 2.4 | 3.9 |
| St. Joseph Hospital | 16,331 | 33.6 | 7.4 | 53.3 | 0.3 | 5.4 |
| University of California Irvine Medical Center | 14,453 | 29.2 | 23.2 | 27.2 | 7.8 | 12.5 |
| Mission Hospital Regional Medical Center | 13,911 | 46.0 | 5.5 | 39.4 | 2.9 | 6.2 |
| St. Jude Medical Center | 13,879 | 57.0 | 4.2 | 33.1 | 2.2 | 3.5 |
| Saddleback Memorial Medical Center | 12,642 | 67.6 | 1.6 | 26.7 | 2.2 | 2.0 |
| Fountain Valley Regional Hospital and Medical Center | 12,168 | 44.3 | 20.6 | 25.4 | 1.8 | 7.9 |
| Anaheim Memorial Medical Center | 12,113 | 41.2 | 7.7 | 40.8 | 5.3 | 5.0 |
| Kaiser Foundation Hospital-Anaheim | 11,867 | 39.9 | 2.8 | 55.6 | 1.5 | 0.2 |
| Orange Coast Memorial Medical Center | 10,690 | 45.7 | 3.5 | 46.5 | 1.8 | 2.5 |
| Children Hospital of Orange County | 9,645 | 0.3 | 53.6 | 42.1 | 1.4 | 2.7 |
| Western Medical Center | 7,900 | 33.9 | 14.4 | 23.6 | 2.7 | 25.4 |
| Los Alamitos Medical Center | 7,488 | 64.8 | 4.2 | 27.3 | 0.1 | 3.7 |
| Irvine Medical Center | 6,927 | 44.9 | 2.7 | 47.5 | 1.1 | 3.8 |
| West Anaheim Medical Center | 6,752 | 57.2 | 13.7 | 20.3 | 3.0 | 5.8 |
| Western Medical Center Anaheim | 4,819 | 29.9 | 21.3 | 10.1 | 1.1 | 37.5 |
| Huntington Beach Hospital and Medical Center | 4,513 | 46.6 | 15.9 | 25.9 | 4.5 | 7.1 |
| Garden Grove Hospital and Medical Center | 4,141 | 41.9 | 23.9 | 20.6 | 2.1 | 11.5 |
| Placentia Linda Hospital | 4,137 | 58.2 | 4.3 | 28.0 | 1.7 | 7.8 |
| South Coast Medical Center | 4,101 | 35.0 | 1.5 | 53.0 | 7.7 | 2.7 |
| College Hospital Costa Mesa | 4,073 | 13.2 | 58.7 | 23.9 | 1.7 | 2.6 |
| La Palma Intercommunity Hospital | 3,642 | 47.7 | 18.1 | 28.1 | 2.9 | 3.2 |
| San Clemente Hospital and Medical Center | 2,666 | | 2.6 | 24.3 | 4.9 | 6.3 |
| Chapman Medical Center | 2,611 | 37.3 | 4.6 | 39.9 | 3.8 | 14.5 |
| Anaheim General Hospital | 2,567 | 53.6 | 28.1 | 6.7 | 6.7 | 4.9 |
| Coastal Communities Hospital | 2,456 | 49.2 | 23.4 | 10.7 | 5.1 | 11.6 |
| Children Hospital at Mission | 1,932 | 0.0 | 19.3 | 73.0 | 2.4 | 5.3 |
| Tustin Hospital Medical Center | 1,171 | 28.6 | 40.5 | 8.3 | 5.7 | 16.9 |
| Vencor Hospital-Orange County | 1,047 | 82.6 | 1.9 | 15.0 | 0.3 | 0.2 |
| Tustin Rehabilitation Hospital | 1,008 | 63.0 | 3.7 | 29.4 | 0.2 | 3.6 |
| Newport Bay Hospital | 799 | 96.6 | - | 1.4 | 0.2 | 1.9 |
| Vencor Hospital-Brea | 449 | 86.3 | 5.2 | 8.5 | - | 0.1 |
| Royale Mission Viejo | 105 | 0.3 | 90.8 | - | 0.3 | 8.6 |
| Healthbridge Children's Rehab Hospital | 88 | - | 15.8 | 82.3 | - | 1.9 |

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.

*Discharges related to childbirth, as identified by Major Diagnostic Categories (MDC) 14 and 15 are not included in this table.

Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

**Table 3.9: Percent Deaths by Hospital Discharge and Age Group
Orange County Short-Stay Hospitals, 2006-2008**

| Hospital | Percent Deaths | Total Discharges | Total Deaths | Age at Death | | | |
|--|-------------------|---------------------|-----------------|-------------------------|--------------------------|---------------------------|----------------------|
| | | | | <i>Under 1 Year</i> | <i>1 to 29 Years</i> | <i>30 to 64 Years</i> | <i>65+ Years</i> |
| Three-Year Totals - All Hospitals | | 673,449 | 16,728 | 97 | 452 | 3,992 | 12,187 |
| Annual Average - All Hospitals | 2.5 | 224,483 | 5,576 | 32 | 151 | 1,331 | 4,062 |
| Vencor Hospital-Orange County | 24.7 * | 3,141 | 775 | - | 1 | 94 | 680 |
| Vencor Hospital-Brea | 20.5 * | 1,355 | 278 | - | - | 54 | 224 |
| Coastal Communities Hospital | 4.2 | 7,367 | 309 | - | 3 | 118 | 188 |
| West Anaheim Medical Center | 3.5 | 20,256 | 714 | - | 5 | 171 | 538 |
| Garden Grove Hospital and Medical Center | 3.5 | 12,425 | 434 | - | 11 | 124 | 299 |
| Anaheim General Hospital | 3.3 | 7,701 | 253 | - | 2 | 87 | 164 |
| Western Medical Center | 3.3 | 23,701 | 775 | - | 54 | 247 | 474 |
| Los Alamitos Medical Center | 3.2 | 22,465 | 721 | - | 1 | 121 | 599 |
| Saddleback Memorial Medical Center | 2.8 | 37,939 | 1,073 | - | 5 | 137 | 931 |
| St. Jude Medical Center | 2.7 | 41,636 | 1,138 | - | 3 | 246 | 889 |
| Hoag Memorial Hospital Presbyterian | 2.6 | 64,125 | 1,644 | - | 11 | 325 | 1,308 |
| University of California Irvine Medical Center | 2.4 | 43,363 | 1,062 | 4 | 102 | 427 | 529 |
| Huntington Beach Hospital and Medical Center | 2.4 | 13,540 | 328 | - | 4 | 69 | 255 |
| Fountain Valley Regional Hospital and Medical Center | 2.4 | 36,505 | 870 | 4 | 12 | 227 | 627 |
| Anaheim Memorial Medical Center | 2.4 | 36,348 | 865 | - | 8 | 201 | 656 |
| St. Joseph Hospital | 2.4 | 48,992 | 1,165 | - | 20 | 340 | 805 |
| San Clemente Hospital and Medical Center | 2.3 | 7,997 | 185 | - | 7 | 27 | 151 |
| Chapman Medical Center | 2.3 | 7,833 | 181 | - | - | 56 | 125 |
| Placentia Linda Hospital | 2.3 | 12,410 | 283 | - | 1 | 54 | 228 |
| Orange Coast Memorial Medical Center | 2.2 | 32,074 | 719 | - | 2 | 152 | 565 |
| Mission Hospital Regional Medical Center | 2.2 | 41,732 | 931 | - | 20 | 222 | 689 |
| Kaiser Foundation Hospital-Anaheim | 2.2 | 35,601 | 782 | 1 | 11 | 250 | 520 |
| Healthbridge Children's Rehab Hospital | 1.9 | 265 | 5 | - | 5 | - | - |
| Irvine Medical Center | 1.9 | 20,782 | 385 | - | 5 | 76 | 304 |
| La Palma Intercommunity Hospital | 1.8 | 10,926 | 195 | - | 2 | 53 | 140 |
| Western Medical Center Anaheim | 1.4 | 14,456 | 202 | - | 2 | 67 | 133 |
| South Coast Medical Center | 1.4 | 12,314 | 172 | - | 1 | 35 | 136 |
| Tustin Hospital Medical Center | 1.1 | 3,512 | 37 | - | 4 | 11 | 22 |
| Children Hospital of Orange County | 0.8 | 28,935 | 223 | 84 | 139 | - | - |
| Newport Bay Hospital | 0.3 | 2,398 | 7 | - | - | 1 | 6 |
| Children Hospital at Mission | 0.3 | 5,797 | 15 | 4 | 11 | - | - |
| Tustin Rehabilitation Hospital | 0.1 | 3,023 | 2 | - | - | - | 2 |
| College Hospital Costa Mesa | 0.0 | 12,220 | - | - | - | - | - |
| Royale Mission Viejo | 0.0 | 315 | - | - | - | - | - |

* The percent of deaths for this facility reflects a higher proportion of terminally ill patients being admitted.

Information on hospital discharges is from the Office of Statewide Health Planning and Development (OSHPD) database.
Discharges related to childbirth, as identified by Major Diagnostic Categories (MDC) 14 and 15 are not included in this table.
Analysis is provided by the Quality Management Research & Planning, Orange County Health Care Agency

Section 4

Communicable Disease Indicators

The Orange County morbidity files contain data on communicable diseases. These data, by law, are reportable to the local health officer and the California Department of Public Health on a weekly basis. The information is then channeled to the Centers for Disease Control and Prevention (CDC) in Atlanta. Information on diseases of international concern is then shared with organizations such as Health Canada, the Pan American Health Organization (PAHO) and the World Health Organization (WHO). Effective control of communicable disease requires that health officials know the nature and extent of these diseases in their jurisdiction so that they can take appropriate actions. The reporting of disease that originates with physicians, healthcare facilities, and laboratories forms the basis for action by public health officials.

The five communicable disease indicators used in this report to determine the health status of the community, as far as communicable diseases were concerned, are HIV/AIDS, tuberculosis, chlamydial infection, gonorrhea and salmonellosis. The following pages contain maps for each of these communicable disease indicators. These maps display the crude communicable disease rates for each geographic ZIP code area in Orange County for the indicated date range. Rates and occurrences from post office box zip codes and community areas wholly contained within a geographic ZIP code are attributed to the larger geographic ZIP code. Insufficient data indicates areas where the total number of cases was low (e.g., 3-yr avg. < 5) or the ZIP code population was small resulting in unstable rates.

HIV/AIDS

Human immunodeficiency virus (HIV) principally targets the immune system in the body by either killing or damaging the cells of the immune system and thus the body's ability to protect itself from infection and disease. When HIV infection becomes advanced, the disease is referred to as acquired immune deficiency syndrome or AIDS. An AIDS diagnosis is given to an HIV-positive person who has a CD4 count of less than 200mm³ (or fewer than 14%) or the appearance of opportunistic infections that typically attack weak immune systems referred to as "AIDS-defining illness." HIV lives in the blood and body fluids that contains blood or white blood cells. HIV is principally transmitted sexually, parenterally or perinatally.

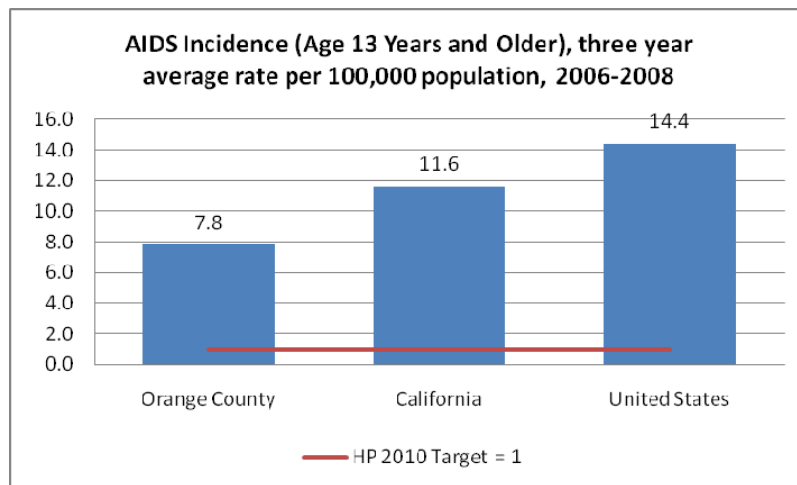
It is estimated that there are more than one million people who are living with HIV in the United States. One in five (21%) of those people living with HIV is unaware of their infection.¹ For individuals infected with HIV, medications are available to limit or slow down the destruction of the immune system, improve the health of people living with HIV, and may reduce their ability to transmit HIV. Treatment can also slow the progression of HIV to AIDS. Currently, there is no cure for HIV infection. Treatment must be taken daily and for the rest of the person's life.

Since 1981, AIDS first became reportable and surveillance was used by national, state, and local efforts to monitor the scope and impact of HIV epidemic. However, because of the introduction of therapies that effectively slow the progression of HIV infection, AIDS data alone no longer adequately represent the populations affected by the epidemic. Combined HIV and AIDS data better represent the overall

¹ CDC. *HIV in the United States*. Accessed at <http://www.cdc.gov/hiv/resources/factsheets/us.htm>

impact of HIV. On April 17, 2006, California law required the reporting of HIV cases by name. As of April 2008, all 50 states, the District of Columbia, and five U.S. territories had implemented confidential name-based HIV surveillance into their AIDS surveillance systems; names or other personal identifying information are not reported to CDC.²

The Healthy People 2010 does not have a national objective for combined HIV/AIDS incidence rate. However, Healthy People 2010 does have Objective 13-1 of no more than (1) AIDS case per 100,000 population aged 13 years and older. Based on 2006 to 2008 three-year average, the crude case rate of reported AIDS cases for Orange County residents 13 years or older was 7.8 cases per 100,000. This rate was much lower than California's rate of 11.6 and the National rate of 14.4 AIDS cases per 100,000 population.³ Orange County did not meet the Healthy People 2010 objective 13-3 of no more than 1 AIDS cases per 100,000 population aged 13 years and older.



ZIP Code of Residence

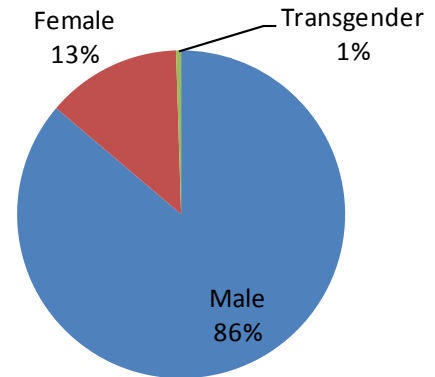
In Orange County, three-year summary crude rate of combined reported incidence of HIV/AIDS from 2006 through 2008 was 18.35 per 100,000 population. Geographic distribution of HIV/AIDS case rates among ZIP codes with reliable rates in Orange County ranged from 9.49 to 98.71 per 100,000 population. ZIP codes in the cities of Laguna Beach (92651) and Santa Ana (92706) had the highest rates of HIV/AIDS reported at 257.12 and 121.83 per 100,000 population, respectively (see map on following page).



² CDC. *Morbidity and Mortality Weekly Report*. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5754a1.htm> Accessed September 22, 2010

³ Source: California Department of Health Services, *County Health Status Profile, 2010*. Accessed at <http://www.cdph.ca.gov/pubsforms/Pubs/OHIRProfiles2010.pdf>.

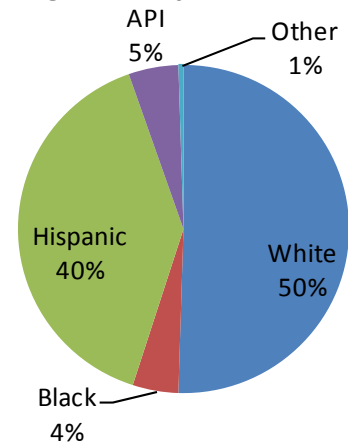
HIV/AIDS Cases by Gender Orange County, CA 2006-2008



Gender

HIV/AIDS cases in Orange County by gender for 2006-2008 showed males disproportionately represent the majority (86%) of HIV/AIDS cases in Orange County. Females accounted for 13% of HIV/AIDS cases and the remaining 1% was male-to-female transgender. Orange County's HIV/AIDS case distribution by gender is similar to the national 2007 statistics. In 2007, CDC found males were more affected by HIV (72%) and AIDS (64%) in the United States than females.⁴

HIV/AIDS Cases by Race/Ethnicity Orange County, CA 2006-2008



Race/Ethnicity

Distribution of HIV/AIDS cases in Orange County by race/ethnicity showed whites (50%) and Hispanics (40%) accounted for 90% of Orange County's total HIV/AIDS cases for 2006-2008. Orange County's HIV/AIDS case distribution by race/ethnicity differs from the 2007 national statistics in which the majority of HIV/AIDS cases were blacks (51%), followed by whites (29%) and Hispanics (18%).⁵

Additional HIV/AIDS statistics for Orange County, California can be found at the Orange County Health Care Agency's website at <http://www.ochealthinfo.com/public/hiv/local.htm> or by contacting County of Orange, Health Care Agency, HIV/AIDS Surveillance and Monitoring Program.

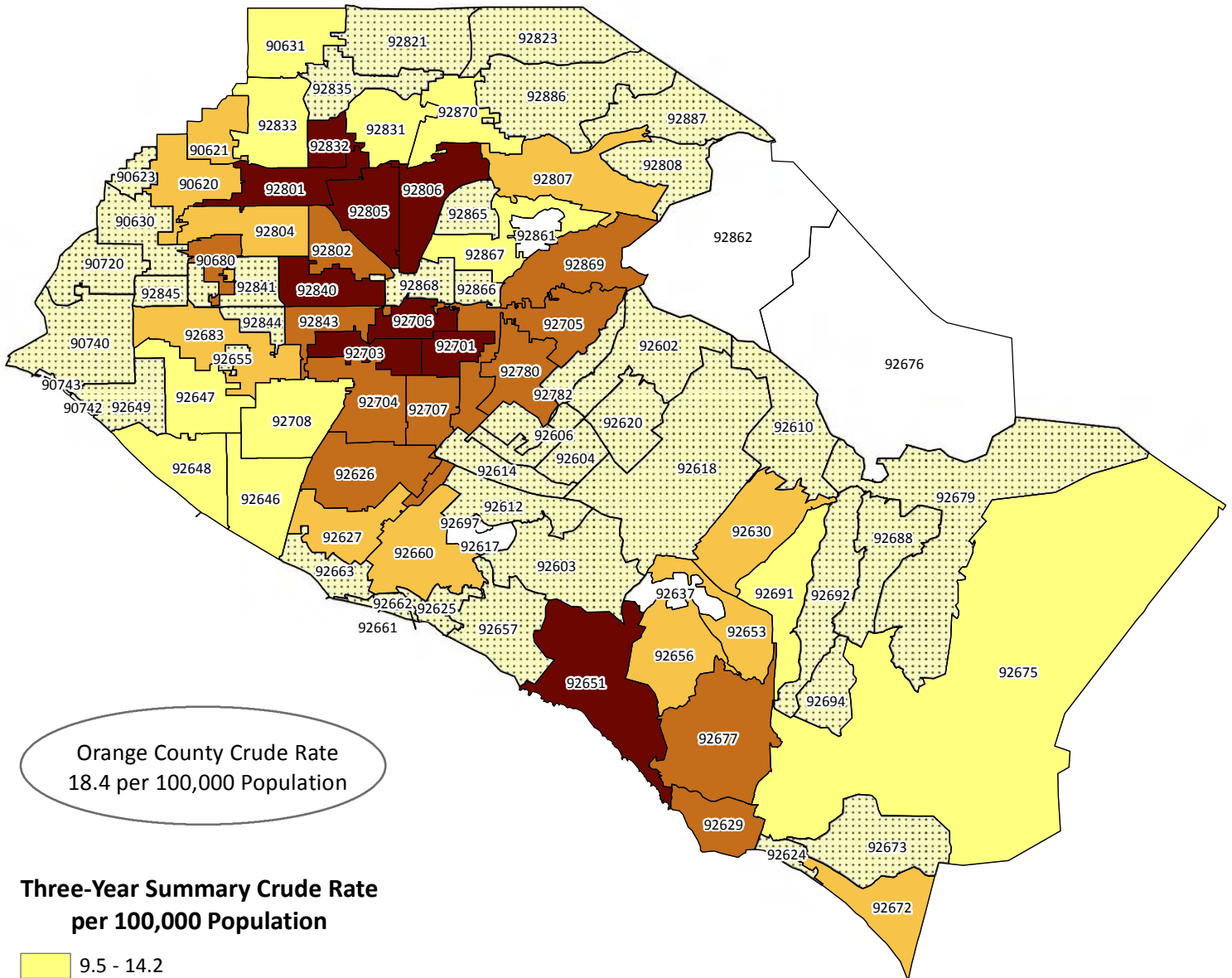
Map: 2006-2008 Average Crude Rate by Zip Code for Orange County, CA

- Incidence of HIV/AIDS

⁴ CDC. *Diagnoses of HIV infection and AIDS in the United States and Dependent Areas*, 2008, Volume 20. Accessed at <http://www.cdc.gov/hiv/surveillance/resources/reports/2008report/index.htm>

⁵ CDC. *CDC Fact Sheets*. Accessed at <http://www.cdc.gov/hiv/resources/factsheets>

Orange County Reported Incidence of HIV/AIDS Rates by ZIP Code of Residence (2006-2008)



2.4% of total HIV/AIDS cases (14/578) with inaccurate ZIP codes or post office box addresses are not displayed on the map

Data Source: HIV/AIDS Case Registry, Data as of December 31, 2009.
County of Orange, Health Care Agency, HIV/AIDS Surveillance.

Tuberculosis

Tuberculosis (TB) is a highly infectious disease caused by a specific bacterium called *Mycobacterium tuberculosis*. Although the lung is the major seat of the disease, any organ may be affected. The disease is spread through the air from one person to another. The bacteria are put into the air when a person with active TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in the bacteria and, after extended contact, become infected. TB is treatable if TB medications are taken as prescribed. Drug resistant strains of TB can occur when a person with TB does not take their medications as prescribed and the bacteria changes, becoming resistant to the drug(s).

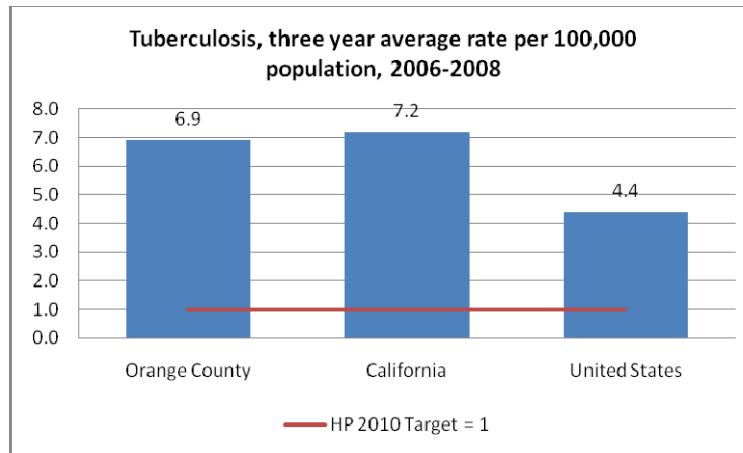
Two TB-related conditions exist: latent TB infection and active TB disease. Most people infected with TB have latent TB infection (LTBI). LTBI means the person has been infected with the TB bacteria but their body is able to fight the bacteria making them inactive. People with LTBI do not feel sick, do not have symptoms, are not infectious and cannot spread TB bacteria to others. Latent TB infection is characterized by a positive TB skin or blood test but a normal chest x-ray. People with LTBI will still need treatment to prevent development of TB disease.

TB disease occurs when a person has been infected with the TB bacteria and the bacteria overcome the defenses of the immune system and begin to multiply, resulting in the progression from LTBI to active TB disease. Many people who have LTBI never develop TB disease. Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria. Other people may get sick years later, when their immune system becomes weak for another reason. For persons whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is much higher than for persons with normal immune systems. Individuals with TB disease usually feel sick and may have one or more of the following symptoms: a cough lasting three weeks or longer, pain in the chest, coughing up blood, weakness/fatigue, weight loss, lack of appetite, chills, fever, and/or night sweats. Those with TB disease may be infectious to others. TB disease is usually characterized by a positive TB skin or blood test result indicating TB infection and an abnormal chest x-ray, or positive sputum smear or culture. People with active TB disease will need to be treated to be cured.

Orange County reported an average crude rate of 6.9 TB cases per 100,000 population for 2006 through 2008. This compares to a rate of 7.2 and 4.4 TB cases per 100,000 population for California⁶ and the United States⁷, respectively. No county in California met the Healthy People 2010 National Objective 14-11 of no more than one (1) TB case per 100,000 population.

⁶ California Department of Public Health. *County Health Status Profiles, 2010*. Accessed at <http://www.cdph.ca.gov/pubsforms/Pubs/OHIRProfiles2010.pdf>.

⁷ CDC. *Reported tuberculosis in the United States, 2008*. Atlanta, GA: US Department of Health and Human Services, CDC; 2009. Available at <http://www.cdc.gov/tb/statistics/reports/2008/default.htm>.



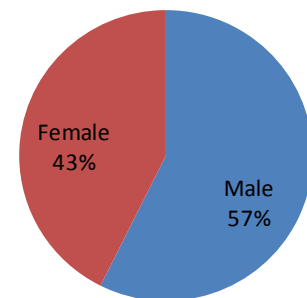
Zip Code of Residence

Among ZIP codes with reliable rates, rates ranged from 8.4 to 34.4 per 100,000 population. ZIP codes in the cities of Garden Grove (92844) and Westminster (92683) had the highest rate of TB cases in Orange County at 34.4 and 22.0 TB cases per 100,000 population, respectively (see map on next page).

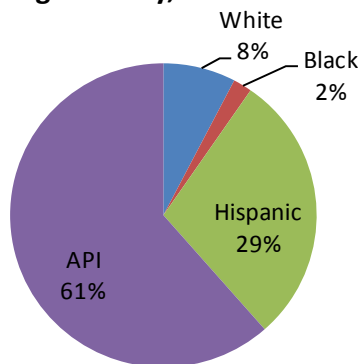
Gender

The three-year case average shows that there are slightly more males (57%) with TB cases than females (43%) in Orange County from 2006-2008. Nationally, the distribution of TB cases by gender in 2008 was 62% in males and 38% in females.⁸

**TB Cases by Gender
Orange County, CA 2006-2008**



**TB Cases by Race/Ethnicity
Orange County, CA 2006-2008**



Race/Ethnicity

Racial and ethnic minorities disproportionately represent the majority of TB cases in Orange County. Asian and Pacific Islanders (61%) and Hispanics (29%) accounted for 90% of Orange County's average total TB cases from 2006 to 2008. National trends in 2008 showed more than three-fourths (80%) of US cases were Hispanics (29%), Asian and Pacific Islanders (26%), or blacks (25%).⁹

Additional TB statistics for Orange County, California can be found at the Orange County Health Care Agency's website at <http://ochealthinfo.com/public/tb/> or by contacting County of Orange, Health Care Agency, Pulmonary Disease Services.

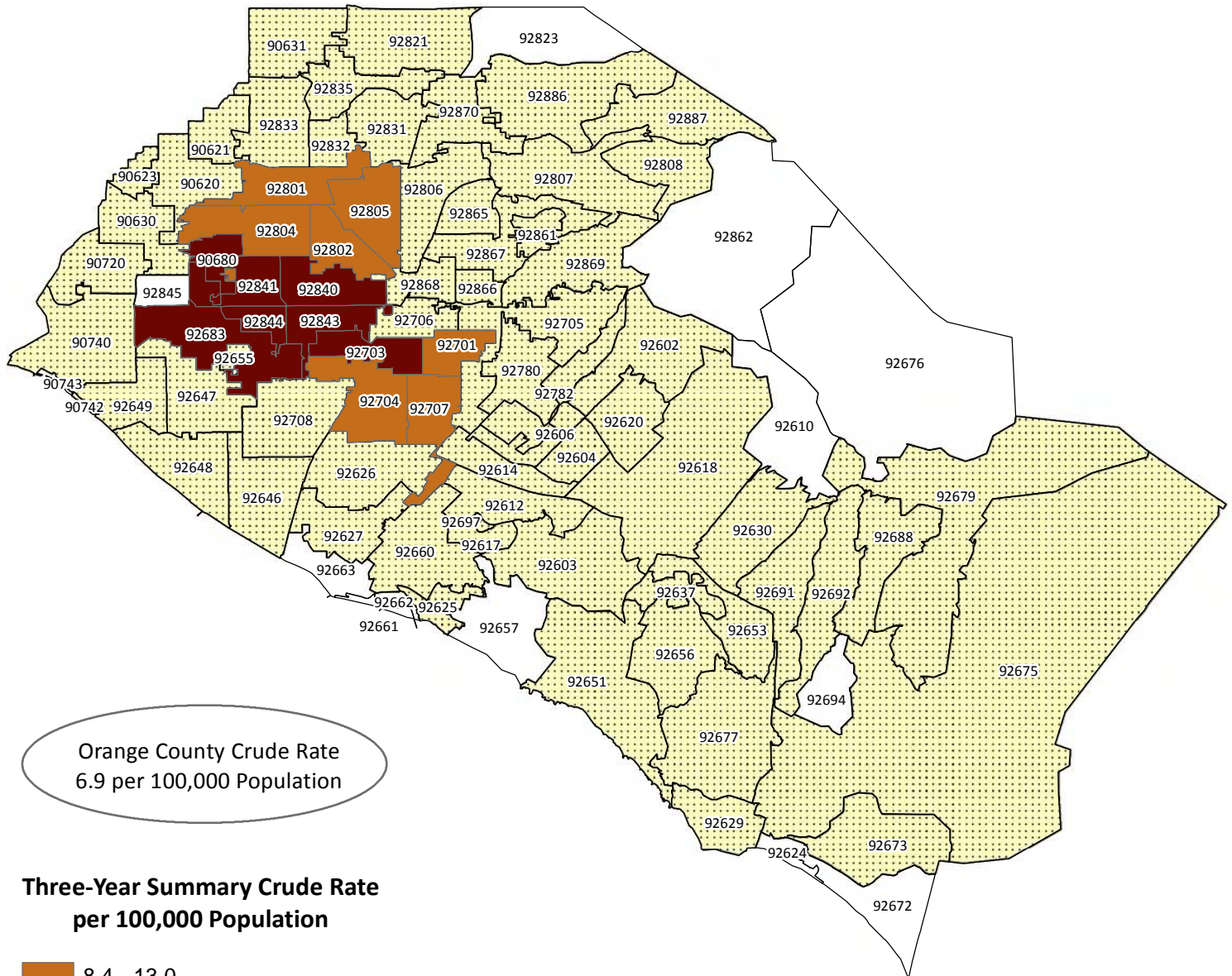
Map: 2006-2008 Average Crude Rate by Zip Code for Orange County, CA

- Incidence of Tuberculosis

⁸ CDC. *Reported Tuberculosis in the United States, 2008*. Atlanta, GA: US Department of Health and Human Services, CDC; 2009. Accessed at <http://www.cdc.gov/tb/statistics/reports/2008/default.htm>.

⁹ CDC. *Trends in Tuberculosis – United States, 2008*. MMWR Weekly. March 20, 2009/58(10); 249-253. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5810a2.htm#tab>

Orange County Reported Incidence of Tuberculosis Rates by ZIP Code of Residence (2006-2008)



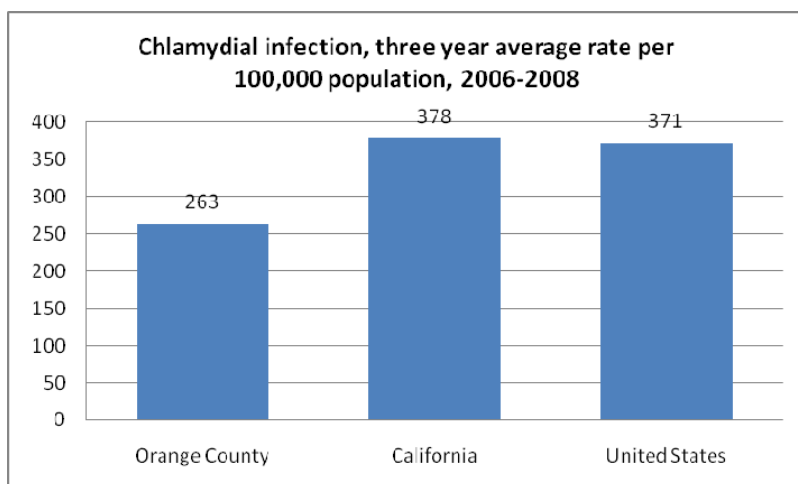
.31% of total Tuberculosis cases (1/218) with inaccurate ZIP codes or post office box addresses are not displayed on the map

Data Source: County of Orange Health Care Agency, Pulmonary Disease Services, Unpublished Data August 2010

Chlamydia

Reporting of chlamydial infections began in 1984. Chlamydia is a sexually transmitted infection (STI) caused by the bacterium *Chlamydia trachomatis*. Chlamydial infection remains the most commonly reported infectious disease in the United States. This infection is very common among young adults and teenagers. However, many infected people do not know they have chlamydial infection, because they have no symptoms. About 75% of infected women and half of infected men do not have any symptoms. When left untreated, chlamydial infection can increase an individual's risk of acquiring or transmitting HIV, the virus that causes AIDS. In women, an untreated infection can spread into the pelvic area and infect the uterus, fallopian tubes, and ovaries, leading to pelvic inflammatory disease (PID). PID can cause permanent damage to the woman's reproductive organs and can lead to infertility, chronic pelvic pain, and an increased risk of ectopic pregnancy. In men, if chlamydial infection is left untreated, related complications can lead to infertility.

Reported cases of chlamydial infection in the United States have been climbing. In 1997, there were 537,904 reported diagnoses or 205.5 cases per 100,000 population in the US. By 2008, the annual total reported cases had more than doubled to 1,210,523 or 401.3 chlamydial infection cases per 100,000 population.¹⁰ Much of this rise can be attributed to the expansion of screening activities, use of a more sensitive screening test, and improvements in the reporting system. In Orange County, the three-year summary crude rate of reported cases of chlamydial infection was 263 per 100,000 population. Orange County's rate was lower than the three-year average rates for both California and US of 378 and 371 cases per 100,000 population (respectively) for 2006 through 2008.^{11,12} Healthy People 2010 does not have a national objective for incidence (new cases) rate of chlamydial infection.



Zip Code of Residence

Among ZIP codes with reliable rates, rates ranged from 67.3 to 776.2 chlamydial infections per 100,000 population. ZIP codes in the cities of Orange (92868) and Santa Ana (92706 and 92701) and had the

¹⁰ AVERT. *STD Statistics for the USA*. Accessed at <http://www.avert.org/std-statistics-america.htm>

¹¹ California Department of Health Services, *County Health Status Profile, 2010*. Accessed at <http://www.cdph.ca.gov/pubsforms/Pubs/OHIRProfiles2010.pdf>

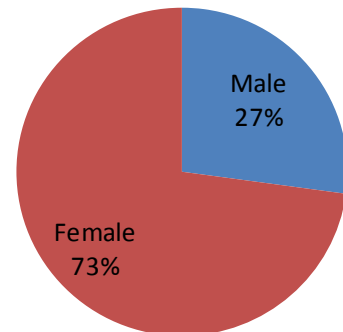
¹² AVERT. *STD Statistics for the USA*. Accessed at <http://www.avert.org/std-statistics-america.htm> Rate calculated by averaging Chlamydia rate for 2006 to 2008.

highest rates in Orange County at 776.20, 748.8 and 565.1 per 100,000 population, respectively (See map on next page).

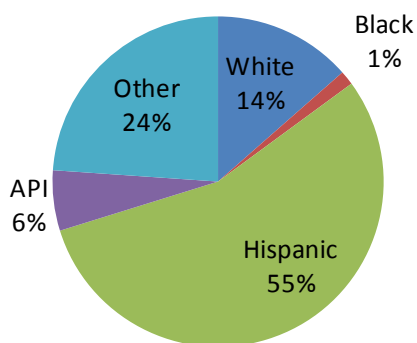
Chlamydial Infections by Gender Orange County, CA 2006-2008

Gender

Females account for almost three-quarters (73%) of all reported chlamydial infections from 2006 to 2008 in Orange County. Similar to Orange County distribution of cases by gender, 2008 national rates showed 26% of all reported cases were males and 74% were females.¹³



Chlamydial Infections by Race/Ethnicity Orange County, CA 2006-2008



Race/Ethnicity

Hispanics in Orange County disproportionately represented more than half (55%) of reported chlamydial infections from 2006 to 2008. This differs from national statistics in which blacks made up almost half (49%) of all cases, followed by whites with 29% and Hispanics with 19%.¹⁴

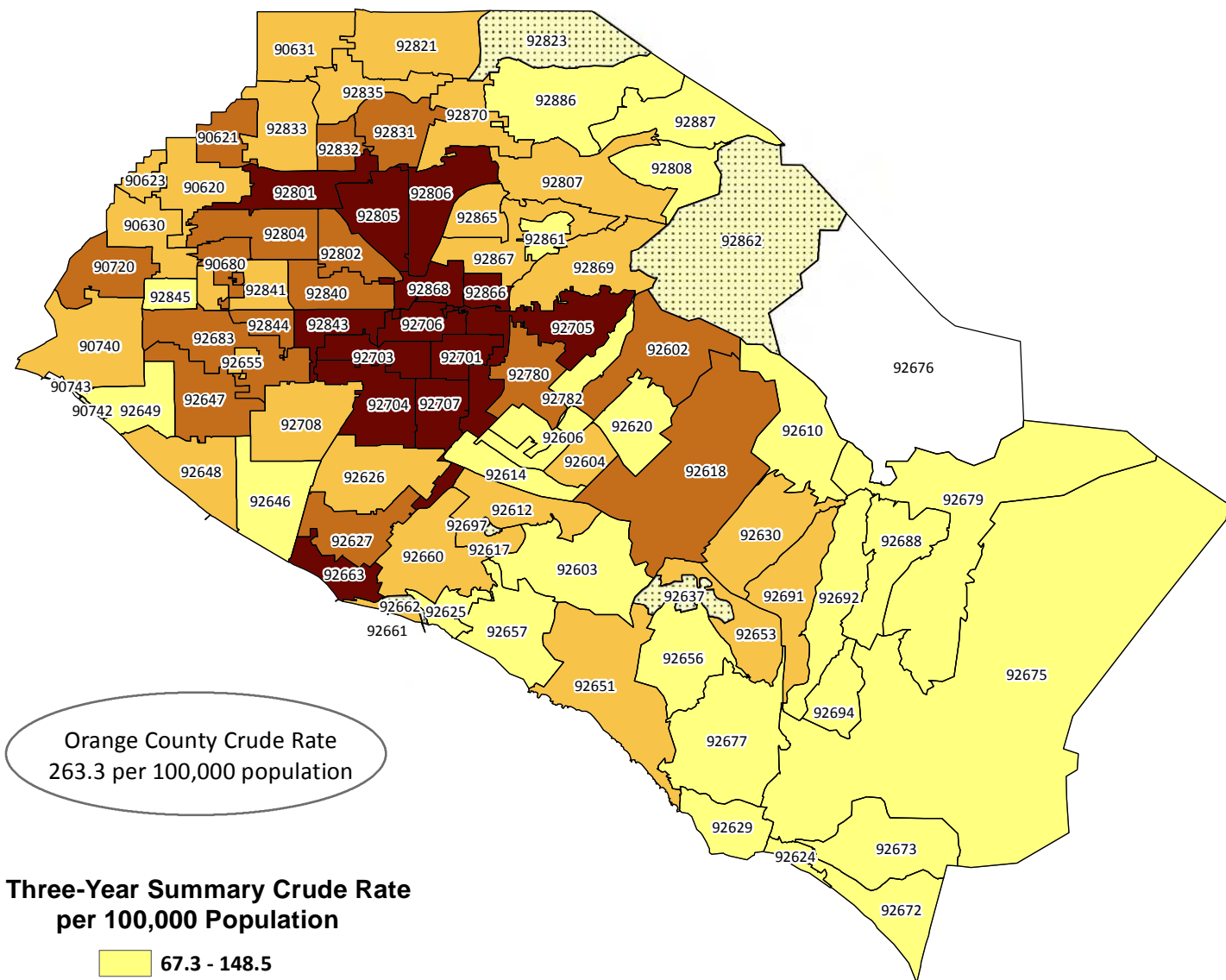
Additional chlamydial infection statistics for Orange County, California, can be found at the Orange County Health Care Agency's website at <http://ochealthinfo.com/epi/stats> or by contacting County of Orange, Health Care Agency, Epidemiology and Assessment.

Map: 2006-2008 Average Crude Rate by Zip Code for Orange County, CA

- Incidence of Chlamydial Infection

¹³ CDC. 2008 Sexually Transmitted Disease Surveillance. Accessed at <http://www.cdc.gov/std/stats08/surv2008-Complete.pdf>
¹⁴ CDC. 2008 Sexually Transmitted Disease Surveillance. Accessed at <http://www.cdc.gov/std/stats08/surv2008-Complete.pdf>

Orange County Reported Incidence of Chlamydia Rates by ZIP Code of Residence (2006-2008)



1% of total Chlamydia cases (83/8289) with inaccurate ZIP codes or post office box addresses are not displayed on the map

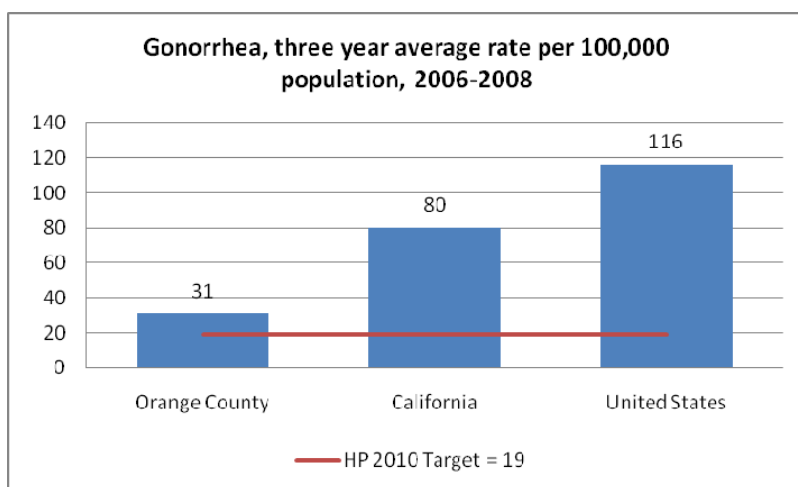
Data Source: County of Orange, Health Care Agency, Epidemiology and Assessment, August 27, 2010

Gonorrhea

Reporting for gonorrhea began in 1941. Gonorrhea, or gonococcal infection, is a sexually transmitted infection (STI) caused by the bacterium *Neisseria gonorrhoeae*. Gonorrhea is the second most commonly reported infectious disease in the United States, with 336,742 cases reported in 2008.¹⁵ Like chlamydial infection, gonorrhea is substantially under-diagnosed and underreported, is a major cause of PID, and increases one's risk of acquiring HIV.

Gonorrhea can be cured easily in most cases, and early detection and treatment with antibiotics can prevent long-term consequences. Drug resistance is an increasingly important concern in the treatment and prevention of gonorrhea. CDC monitors trends in gonorrhea drug resistance through a national sentinel surveillance system called the Gonococcal Isolate Surveillance Project (GISP). Overall, in 2008, 24.4% of isolates collected from GISP sites were resistant to penicillin, tetracycline, ciprofloxacin, or some combination of those antibiotics.¹⁶

Reported cases of gonorrhea in the United States have remained relatively unchanged from 1997 to 2008.¹⁷ The national three-year average rate of gonorrhea from 2006 to 2008 was 116 per 100,000 population.¹⁸ The average rate of reported gonorrhea cases for California was 80 cases per 100,000 population for 2006 to through 2008.¹⁹ Orange County's three year average rate was lower at 30.89 per 100,000 population for 2006 through 2008. Both California and Orange County did not meet the Healthy People 2010 National Objective 25-2a of no more than 19.0 gonorrhea cases per 100,000 population.



Zip Code of Residence

Among ZIP codes with reliable rates, rates ranged from 5.7 to 137.8 gonorrhea cases per 100,000 population. ZIP codes in the cities of Orange (92868) and Santa Ana (92706 and 92705) had the highest rates of gonorrhea in Orange County at 106.0, 137.8 and 130.4 per 100,000 population, respectively (See map on following page).

¹⁵ AVERT. *STD Statistics for the USA*. Accessed at <http://www.avert.org/std-statistics-america.htm>

¹⁶ CDC. *2008 Sexually Transmitted Diseases Surveillance, Gonorrhea*. Accessed at <http://www.cdc.gov/std/stats08/gonorrhea.htm>

¹⁷ AVERT. *STD Statistics for the USA*. Accessed at <http://www.avert.org/std-statistics-america.htm>

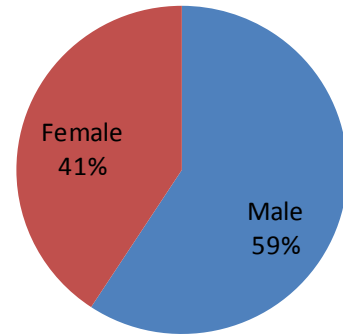
¹⁸ AVERT. *STD Statistics for the USA*. Accessed at <http://www.avert.org/std-statistics-america.htm> Rate calculated by averaging Gonorrhea rate for 2006 to 2008.

¹⁹ California Department of Health Services, *County Health Status Profile, 2010*. Accessed at <http://www.cdph.ca.gov/pubsforms/Pubs/OHIRProfiles2010.pdf>

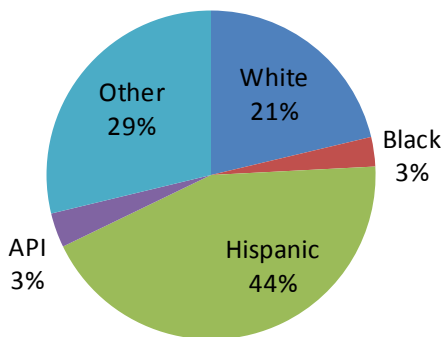
Gonorrhea by Gender Orange County, CA 2006-2008

Gender

Males accounted for more of the gonorrhea cases in Orange County from 2006-2008 than females. Orange County gonorrhea distribution by gender differed from the national distribution, in 2008, where females accounted for more than half (55%) of the gonorrhea cases.²⁰



Gonorrhea by Race/Ethnicity Orange County, CA 2006-2008



Race/Ethnicity

Hispanics accounted for most of the gonorrhea cases (44%) in Orange County, followed by unknown/other racial ethnic group (29%) and whites (21%). Orange County's gonorrhea demographics differ from national statistics in which blacks made up more than 70% of gonorrhea cases in 2008.²¹

Additional gonorrhea statistics for Orange County, California, can be found at the Orange County Health Care Agency's website at <http://ochealthinfo.com/epi/stats> or by contacting County of Orange, Health Care Agency, Epidemiology and Assessment.

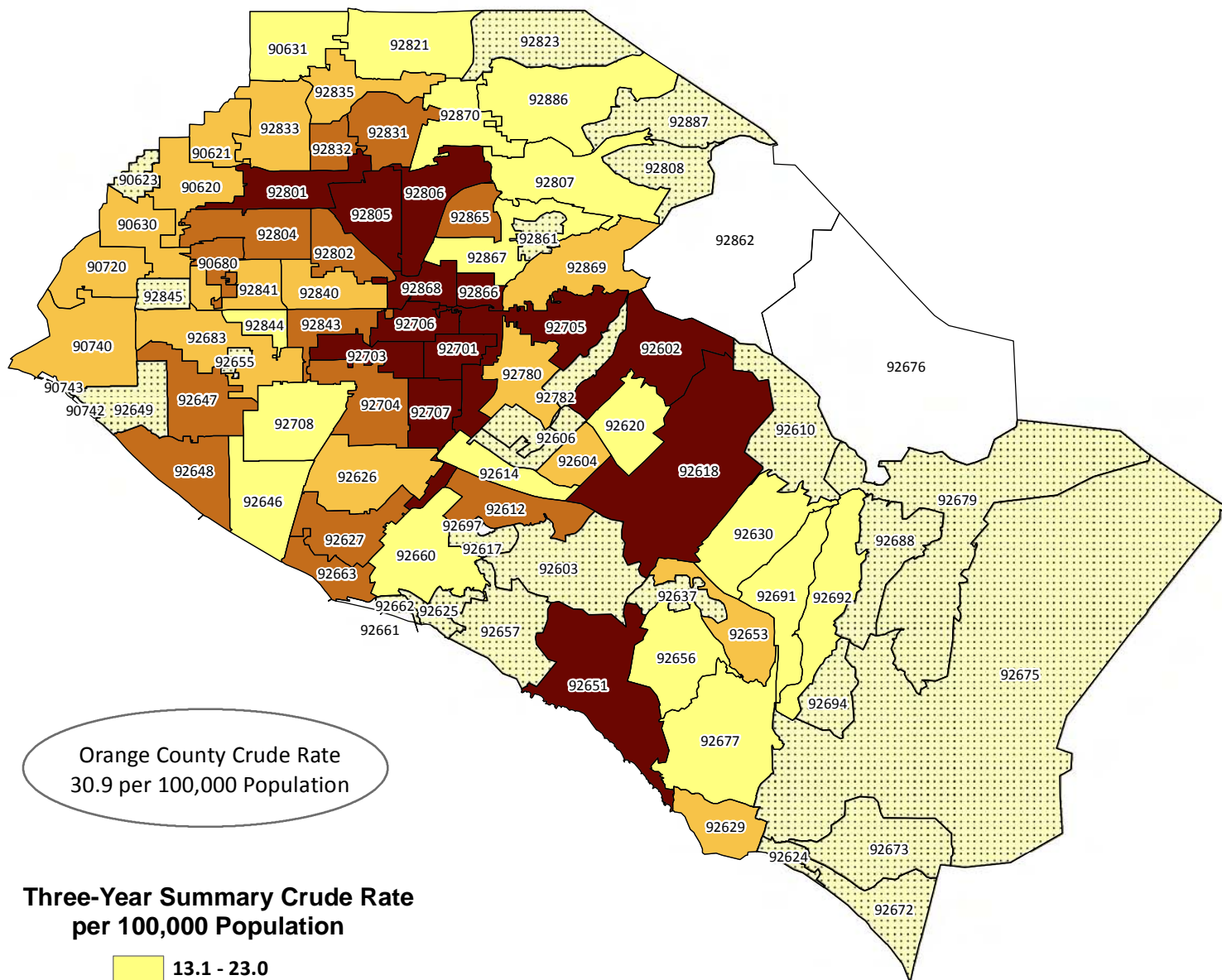
Map: 2006-2008 Average Crude Rate by Zip Code for Orange County, CA

- Incidence of Gonorrhea

²⁰ CDC. 2008 Sexually Transmitted Disease Surveillance. Accessed at <http://www.cdc.gov/std/stats08/surv2008-Complete.pdf>

²¹ CDC. Sexually Transmitted Diseases in the United States, 2008. Accessed at <http://www.cdc.gov/std/stats08/trends.htm>

Orange County Reported Incidence of Gonococcal Infection Rates by ZIP Code of Residence (2006-2008)



1.5% of total Gonococcal cases (15/972) with inaccurate ZIP codes or post office box addresses are not displayed on the map

Data Source: County of Orange, Health Care Agency, Epidemiology and Assessment, August 27, 2010

Salmonellosis

Salmonellosis is an infection with bacteria called *Salmonella*. Salmonellosis is the most common cause of food-borne illness in the United States. It is spread to people primarily from ingestion of food contaminated with *Salmonella*, but it can also be spread from person to person. Contamination can come from animal or human feces that contact the food during its processing or harvesting. Most persons infected with *Salmonella* develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts 4 to 7 days, and most persons recover without treatment. However, in some persons, the diarrhea may be so severe that the patient needs to be hospitalized. In these patients, the *Salmonella* infection may spread from the intestines to the blood stream, and then to other body sites and can cause death unless the person is treated promptly with antibiotics. The elderly, infants, and those with impaired immune systems are more likely to have a severe illness. It is important to note that many other organisms (for example, viruses, *E. coli*, *Shigella*) and toxins (for example, botulism, mushroom toxin, and pesticides) can produce food poisoning symptoms. Determining that *Salmonella* is the cause of the illness depends on laboratory tests that identify *Salmonella* in the stool of an infected person. Once *Salmonella* has been identified, further testing can determine its specific type. Many cases of *Salmonella* go unreported because of their mildness.

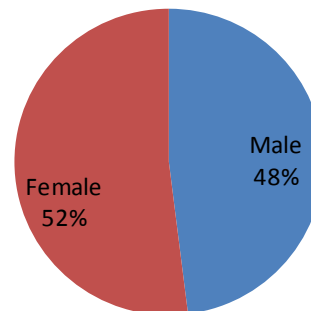
Zip Code of Residence

The three-year average crude rate of reported *Salmonella* cases in Orange County was 9.75 per 100,000 population for 2006 through 2008. Among ZIP codes with reliable rates, rates ranged from 6.1 to 17.3 salmonellosis cases per 100,000 population. ZIP codes in the cities of Mission Viejo (92691), Dana Point (92629), and Anaheim (92801 and 92806) had the highest rates of *Salmonella* infection in Orange County at 17.3, 17.1, 15.2, and 14.2 per 100,000 population, respectively (See map on next page).

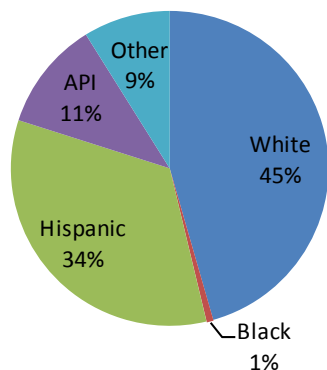
Salmonellosis by Gender Orange County, CA 2006-2008

Gender

Salmonellosis occurred almost equally among males (48%) and females (52%) in Orange County during 2006-2008.



Salmonellosis by Race/Ethnicity Orange County, CA 2006-2008



Race/Ethnicity

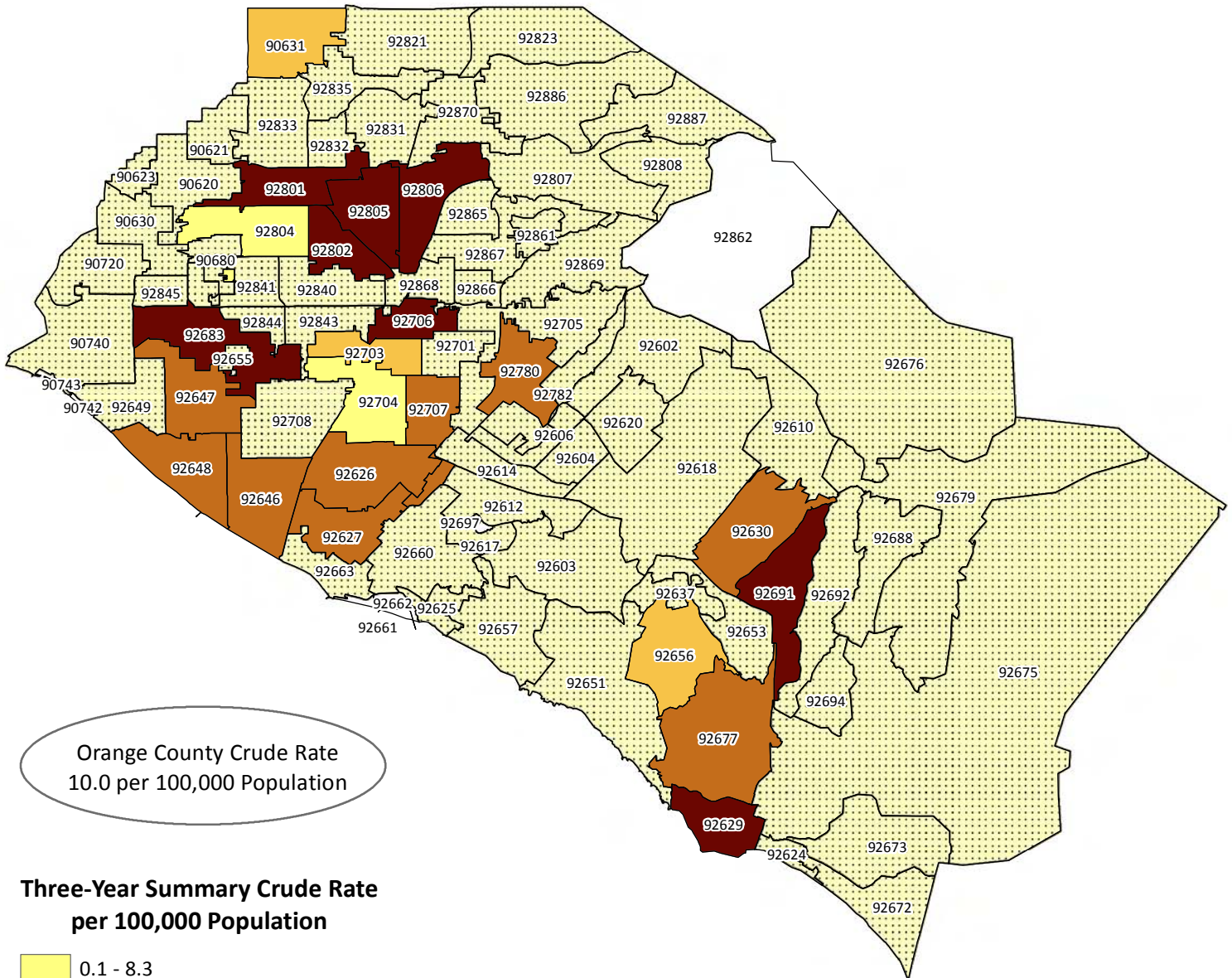
Whites (45%) accounted for almost half of all salmonellosis cases in Orange County from 2006 to 2008, followed by Hispanics (34%).

Additional salmonellosis statistics for Orange County, California, can be found at the Orange County Health Care Agency's website at <http://ochealthinfo.com/epi/stats> or by contacting County of Orange, Health Care Agency, Epidemiology and Assessment.

Map: 2006-2008 Average Crude Rate by Zip Code for Orange County, CA

- Incidence of Salmonella

Orange County Reported Incidence of Salmonella Rates by ZIP Code of Residence (2006-2008)



.7% of total Salmonella cases (2/307) with inaccurate ZIP codes or post office box addresses are not displayed on the map

Data Source: County of Orange, Health Care Agency, Epidemiology & Assessment, August 27, 2010

Section 5

Mortality Indicators

Mortality

Mortality or death is an event of significant loss to an individual, their family, and the community. A major role of the health services is to reduce the risks of untimely deaths through prevention and treatment, in order to assure a healthy and productive life for all the members of society. A profile of mortality for the residents of Orange County by sex, age, and race/ethnicity by geographic area provides us with a picture of the burden of disease and injury, which can serve as a guide for prevention effort.

Many of these mortality indicators are related to the behavior of the individual, and therefore are considered to be highly preventable. For example, deaths related to chronic disease conditions such as lung or colon cancer are known to be preventable by early detection and perhaps by changes in health behavior. Healthy diet and regular exercise are also known to improve a person's health and help reduce one's risk of certain forms of cancer, heart disease, stroke and diabetes which are all leading causes of death in Orange County, the state and nation. Additionally, cigarette smoke accounts for over 80% of all cases of chronic obstructive pulmonary lung disease. Besides causing tragic loss of life, these diseases are also responsible for causing considerable amount of acute and chronic morbidity, and are of concern to the public, healthcare community and policy makers.

This section of the report is divided into two parts. The first presents tables showing the leading causes of death in the County by gender, age group and race/ethnicity. The second part contains tables and maps for each of the mortality indicators discussed below. These tables and maps display the crude death rate for each geographic ZIP code area in Orange County by gender, age group and race/ethnicity. Rates and death occurrences from post office box ZIP codes and community areas wholly contained within a geographic ZIP code are attributed to the larger geographic ZIP code. "All causes of death" was used as the thirteenth category in this report. Infant mortality is analyzed separately and the results can be found in **Section 8**. Insufficient data indicates areas where the total number of cases was low (e.g., 3-yr avg. < 5) or the ZIP code population was small resulting in unstable rates.

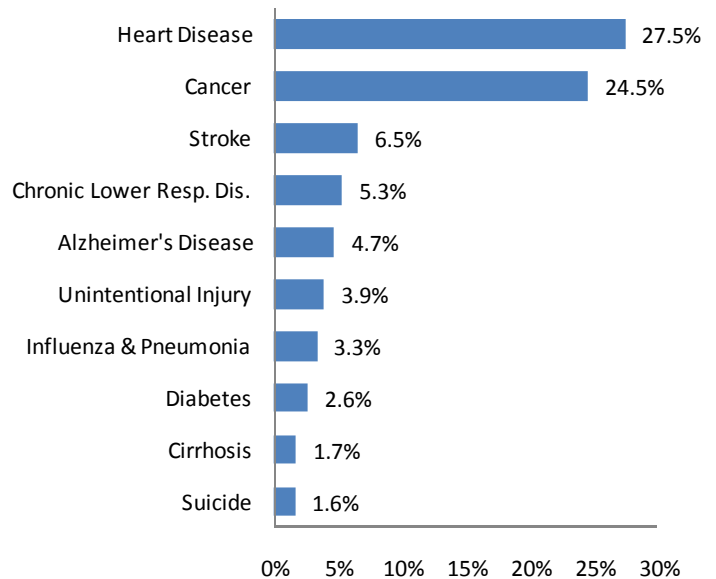
All Cause Mortality

Deaths due to all causes combined are analyzed in this category. From 2006 to 2008, there was an average of 16,895 deaths per year among Orange County residents. The average death rate was 536.7 per 100,000 population. Orange County death rate from all causes was highest for the following five ZIP codes (all figures are crude rates per 100,000): 92637 (Laguna Woods: 3,654), 90740 (Seal Beach: 2,016), 92662 (Newport Beach: 1,140), 92835 (Fullerton: 1,021), and 92653 (Laguna Hills: 965). It is important to note that crude death rates are reported here as opposed to age-adjusted death rates that adjust for having a relatively older population. Thus,

ZIP codes with a large senior population, such as those found in Laguna Woods and Seal Beach will tend to have higher crude death rates.

The ten leading causes of death accounted for 82% of all deaths. Heart disease and cancer, the two leading causes of death, accounted for approximately half (52%) of all deaths. Stroke was the third leading cause of death followed by chronic lower respiratory disease, Alzheimer’s disease, unintentional injury, influenza and pneumonia, diabetes, cirrhosis and suicide.

Leading Causes of Death, Orange County, 2006-2008 (Average=16,895)



Heart Disease – Heart disease is not only the leading cause of mortality, but also among the leading causes of disability. The major modifiable risk factors for cardiovascular disease are high blood pressure, high cholesterol, and cigarette smoking. Other important risk factors are obesity, physical inactivity, and diabetes mellitus. Heart disease was the leading cause of death in 2006-2008 for Orange County residents with an average of 4,638 cases or 27.5% of all deaths. In Orange County, the 2006 to 2008 average rate for heart disease death was 147.3 per 100,000 population. The highest rates of heart disease deaths per 100,000 population were found at the following ZIP codes: 92637 (Laguna Woods: 1,192), 90740 (Seal Beach: 629), 92662 (Newport Beach: 356) and 92653 (Laguna Hills: 333).

All Cancer Deaths – Cancer is the second leading cause of death in Orange County, California and the United States. It is not one single disease but a group of more than 100 different diseases, each characterized by the uncontrolled growth of abnormal cells. Cancer is most common in older people; however, it is not a disease limited strictly to the elderly. There was an average of 4,144 deaths per year from 2006-2008 accounting for 24.5% of all deaths. The average cancer death rate from 2006 to 2008 was 131.6 per 100,000 population. The highest rate of cancer deaths in Orange County per 100,000 population were found at the following ZIP codes: 92637 (Laguna Woods: 864), 90740 (Seal Beach: 487), 92662 (Newport Beach: 285) and 92845 (Garden Grove: 249).

Lung Cancer – Of all types of cancer deaths, lung cancer caused the most number of deaths. Smoking is known to be one of the causes of lung cancer. In 2006 to 2008, lung cancer claimed an average of 985 lives each year or 5.8% of all deaths in Orange County. The average lung cancer death rate per 100,000 population was 31.3. The highest rate of lung cancer deaths in Orange County per 100,000 population were found at the following ZIP codes: 92637 (Laguna Woods: 221), 90740 (Seal Beach: 101), 92835

(Fullerton: 57), 92845 (Garden Grove: 50), 92646 (Huntington Beach: 49), and 92625 (Corona Del Mar: 49).

Breast Cancer – After lung cancer, breast cancer is the second leading cause of cancer deaths among women. Early detection through mammogram and periodic self-breast exam is one of the keys to prevention and cure. In 2006 to 2008, breast cancer claimed an average of 319 lives per year or 1.9% of all deaths in Orange County. The average breast cancer death rate was 20.2 per 100,000 females per year. The ZIP codes with the highest death rates for breast cancer were: 92637 (Laguna Woods: 100), 90740 (Seal Beach: 66), 90720 (Los Alamitos: 42), and 92835 (Fullerton: 42).

Colon Cancer – Cancers of the colon, also called colorectal cancer, includes cancerous growths in the colon, rectum and appendix. It is the third most common form of cancer and the second leading cause of cancer-related death in the country. Many colorectal cancers are thought to arise from adenomatous polyps in the colon. These mushroom-like growths are usually benign, but some may develop into cancer over time. The majority of the time, the diagnosis of localized colon cancer is through colonoscopy. Colon cancer caused an average of 314 deaths or 1.9% of all deaths in 2006 to 2008. The average death rate for colon cancer was 10.0 per 100,000 population in 2006 to 2008. The ZIP codes with the highest colon cancer death rate were: 92637 (Laguna Woods: 72), 90740 (Seal Beach: 41), 90720 (Los Alamitos: 26), and 92835 (Fullerton: 22).

Prostate Cancer – Prostate cancer is a disease in which cancer develops in the prostate, a gland in the male reproductive system. These cells may metastasize from the prostate to other parts of the body, such as the bones and lymph nodes. Prostate cancer may cause pain, difficulty in urinating and erectile dysfunction. Prostate cancer develops most frequently in men over fifty. This cancer can occur only in men, as the prostate is exclusively of the male reproductive tract. It is the most common type of cancer in men in the United States, where it is responsible for more male deaths than any other cancer, except lung cancer. In 2006-2008, an average of 213 deaths annually or 1.3% of all deaths occurred in Orange County. The average death rate for prostate cancer was 13.6 per 100,000 males per year. The ZIP codes with the highest rate of prostate cancer deaths were: 92637 (Laguna Woods: 205), 90740 (Seal Beach: 91), 92705 (Santa Ana: 27), and 92869 (Orange: 25).

Cerebrovascular Disease (Stroke) – Cerebrovascular disease, the third leading cause of death in Orange County, is associated with the disease of blood vessels. According to the medical literature, it is also a major cause of morbidity with approximately 400,000 to 500,000 Americans suffering from nonfatal strokes each year. In 2006 to 2008, stroke claimed an average of 1,101 individuals' lives in Orange County per year. The average death rate for stroke was 35.0 per 100,000 population. The ZIP codes with the highest rate of stroke deaths were: 92637 (Laguna Woods: 256), 90740 (Seal Beach: 134), 92835 (Fullerton: 87), 92653 (Laguna Hills: 83).

Chronic Lower Respiratory Diseases – Chronic lower respiratory diseases (CLRD) refers to chronic diseases that affect the lower respiratory tract (including the lungs). The most prevalent are chronic obstructive pulmonary disease (COPD), emphysema, chronic bronchitis, and other smoking-related disorders. COPD is also known as chronic obstructive lung disease, disorders that persistently obstruct bronchial airflow. These disease processes cause chronic obstruction of air flowing through the airways and in and out of the lungs. The obstruction is generally permanent and progresses (becomes worse) over time. In asthma there is also obstruction of airflow out of the lungs, but the obstruction is usually reversible and between attacks of asthma the flow of air through the airway is usually good.

Cigarette smoke accounts for over 80% of all cases of chronic obstructive lung disease. It contains irritants that inflame the air passages, setting off a cascade of biochemical events that damage cells in the lung, increasing the risk for both COPD and lung cancer. Different effects of smoking can lead to emphysema or chronic bronchitis, but smokers generally have signs of both conditions. The diagnosis of a specific type of CLRD depends on which disease process predominates. There were on average 888 CLRD deaths per year for 2006-2008 period. The average death rate for CLRD was 28.2 per 100,000 population. The ZIP codes with the highest death rate of CLRD were: 92637 (Laguna Woods: 209), 90740 (Seal Beach: 118), 90720 (Los Alamitos: 61), 92845 (Garden Grove: 56), 92653 (Laguna Hills: 52)

Alzheimer's Disease – Alzheimer's disease (AD), an incurable and degenerative disease, is the most common form of dementia. It is typically diagnosed in people over 65 years of age, although less-prevalent early-onset Alzheimer's can occur much earlier. On average 802 county residents died per year from Alzheimer's during 2006-2008. This number is expected to increase as the population ages. The most commonly recognized early symptom is memory loss, and as the disease advances increased confusion, irritability, aggression and profound memory loss are common. Death is a result of gradual loss of neurological control of bodily function. The average rate of Alzheimer's disease death was 25.5 per 100,000 population from 2006 to 2008. The ZIP codes with the highest rate of Alzheimer's disease death were: 92637 (Laguna Woods: 221), 90740 (Seal Beach: 101), 92835 (Fullerton: 74) and 92691 (Mission Viejo: 71).

Unintentional Injury Deaths – Unintentional injury deaths are caused by accidents, and are therefore considered preventable. Accidental poisoning was the leading cause of unintentional injury deaths; motor vehicle accidents ranked second, followed by falls, and drowning. In 2006-2008, there were on average 658 unintentional injury deaths in Orange County per year. The average death rate for unintentional injury deaths was 20.9 per 100,000 population. The ZIP codes with the highest rate of unintentional injury deaths were: 92637 (Laguna Woods: 54), 92651 (Laguna Beach: 40), 92629 (Dana Point: 34) and 92841 (Garden Grove: 34).

Influenza and Pneumonia – Influenza or flu is an infectious disease of birds and mammals caused by RNA virus (the *influenza* viruses). In humans, common symptoms of the disease are chills, fever, sore throat, muscle pains, severe headache, coughing and general malaise. In more serious cases, influenza causes pneumonia, which can be fatal, particularly in young children

and the elderly. Flu spreads around the world in seasonal epidemics, killing millions of people in pandemic years and hundreds of thousands in non-pandemic years. In 2006-2008, there was an average of 559 influenza and/or pneumonia deaths per year in Orange County. The average death rate was 17.8 per 100,000 population for influenza and/or pneumonia deaths. The ZIP codes with the highest death rate for influenza and/or pneumonia were: 92637 (Laguna Woods: 143), 90740 (Seal Beach: 53), 92663 (Newport Beach: 45) and 92625 (Corona Del Mar: 41).

Diabetes – Diabetes is the body’s failure to metabolize blood sugar properly, and it is an increasing problem affecting the United States and the rest of the world. **Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body’s immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin that regulates blood glucose. To survive, people with type 1 diabetes must have insulin delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes (CDC, National Diabetes Factsheet, 2007).

Type 2 diabetes was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders (CDC, National Diabetes Factsheet, 2007).

In 2006-2008, there was an average of 431 diabetes deaths per year in Orange County. The average diabetes death rate was 13.7 per 100,000. The ZIP codes with the highest death rate for diabetes were: 92637 (Laguna Woods: 59.6), 90680 (Stanton: 34.2), 90740 (Seal Beach: 32.5) and 90620 (Buena Park: 25.8).

Table: Leading Causes of Deaths – Orange County, 2006-2008

- **Table 5.1:** Leading Causes of Death, All Residents

Maps: Average Crude Death Rates by ZIP for Orange County, CA (2006-2008)

- All Resident Deaths
- Heart Disease Deaths – All Residents
- All Cancer Deaths – All Residents
- Lung Cancer Deaths – All Residents

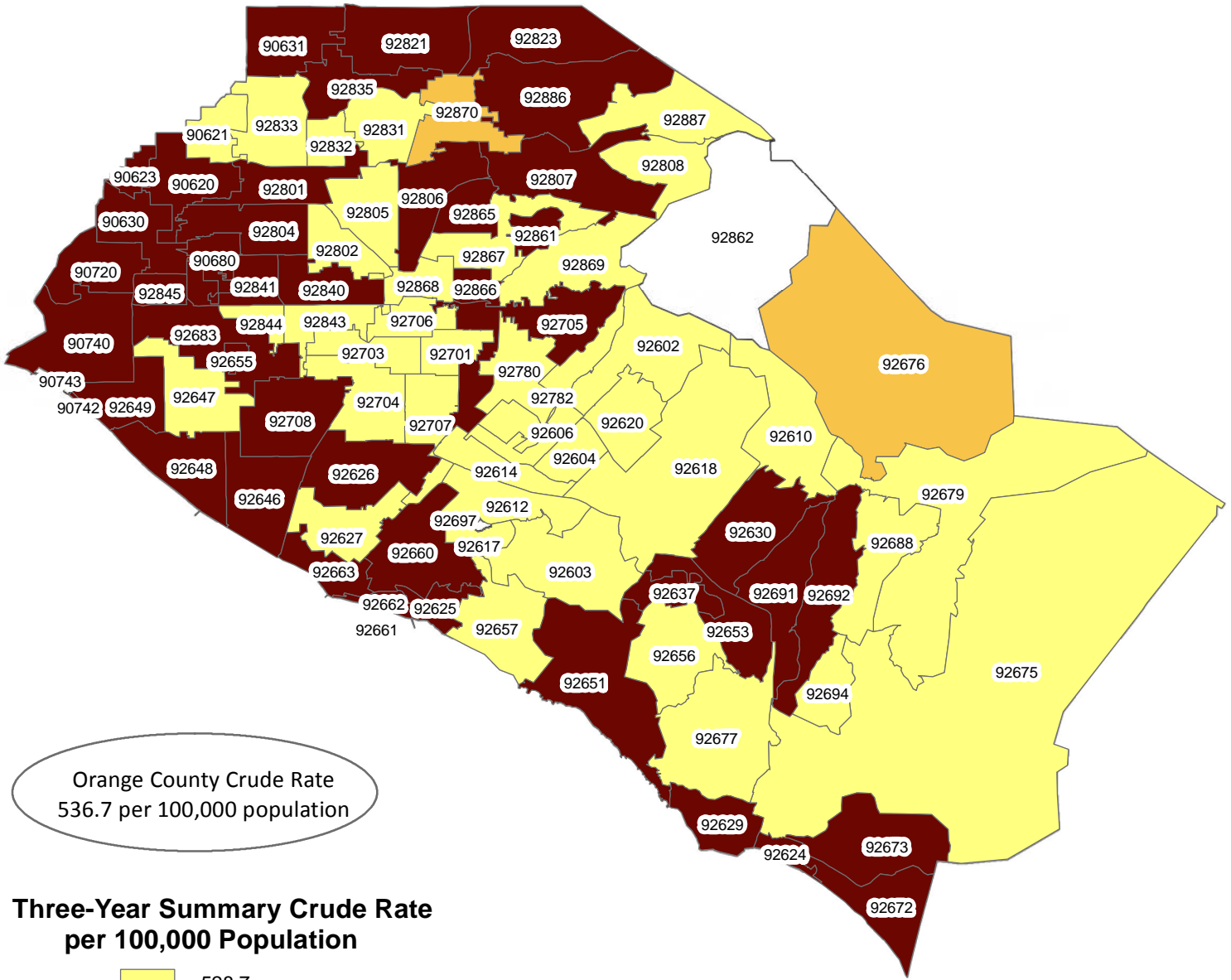
- Breast Cancer Deaths – Females
- Colon Cancer Deaths – All Residents
- Prostate Cancer Deaths – Males
- Cerebrovascular Disease (Stroke) Deaths– All Residents
- Chronic Lower Respiratory Diseases (CLRD) Deaths – All Residents
- Alzheimer’s Disease Deaths – All Residents
- Unintentional Injury Deaths – All Residents
- Influenza & Pneumonia Deaths – All Residents
- Diabetes Deaths – All Residents



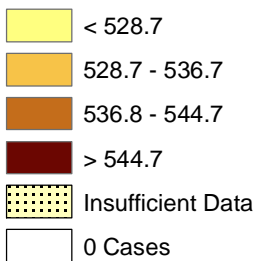
**Table 5.1: Leading Causes of Death
All Residents, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Heart Disease | 4,638 | 27.5 |
| | <i>Ischemic Heart Disease</i> | 3,332 | 19.7 |
| | <i>Cardiomyopathy</i> | 222 | 1.3 |
| 2 | Cancer | 4,144 | 24.5 |
| | <i>Lung Cancer</i> | 985 | 5.8 |
| | <i>Breast Cancer</i> | 319 | 1.9 |
| | <i>Colon Cancer</i> | 314 | 1.9 |
| | <i>Prostate Cancer</i> | 213 | 1.3 |
| | <i>Leukemia</i> | 175 | 1.0 |
| 3 | Cerebrovascular Disease | 1,101 | 6.5 |
| 4 | Lung Disease (CLRD) | 888 | 5.3 |
| 5 | Alzheimer's Disease | 802 | 4.7 |
| 6 | Unintentional Injury | 658 | 3.9 |
| | <i>Accidental Poisoning</i> | 222 | 1.3 |
| | <i>Motor Vehicle Traffic</i> | 204 | 1.2 |
| | <i>Accidental Falls</i> | 114 | 0.7 |
| | <i>Drowning and Submersion</i> | 27 | 0.2 |
| 7 | Influenza & Pneumonia | 559 | 3.3 |
| 8 | Diabetes | 431 | 2.6 |
| 9 | Cirrhosis | 280 | 1.7 |
| 10 | Suicide | 272 | 1.6 |
| 11 | Hypertension | 229 | 1.4 |
| 12 | Nephritis, Nephrotic Syndrome | 181 | 1.1 |
| 13 | Parkinson's Disease | 174 | 1.0 |
| 14 | Atherosclerosis | 121 | 0.7 |
| 15 | Perinatal Conditions | 106 | 0.6 |
| 16 | Congenital Malformations | 97 | 0.6 |
| 17 | Aortic Aneurysm | 94 | 0.6 |
| 18 | Homicide | 81 | 0.5 |
| 19 | AIDS | 46 | 0.3 |
| | All Other Causes | 1,993 | 11.8 |
| | TOTAL | 16,895 | 100.0 |

Orange County All Death Rates by ZIP Code of Residence (2006-2008)

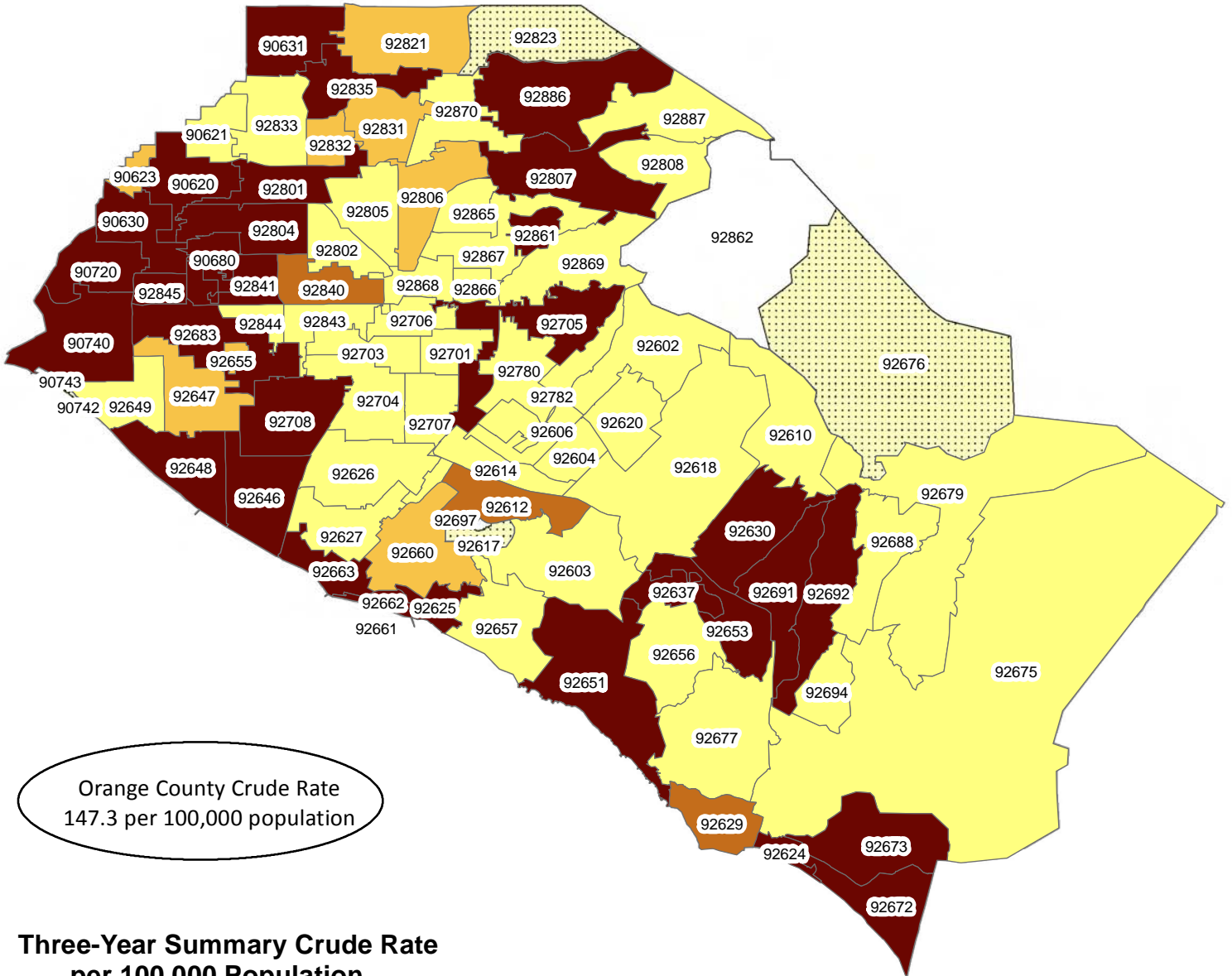


Three-Year Summary Crude Rate per 100,000 Population

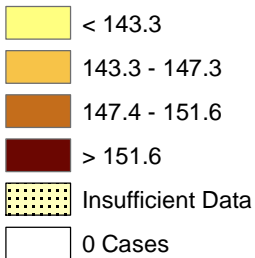


Data Source: State of California Death Master File

Orange County Heart Disease Death Rates by ZIP Code of Residence (2006-2008)

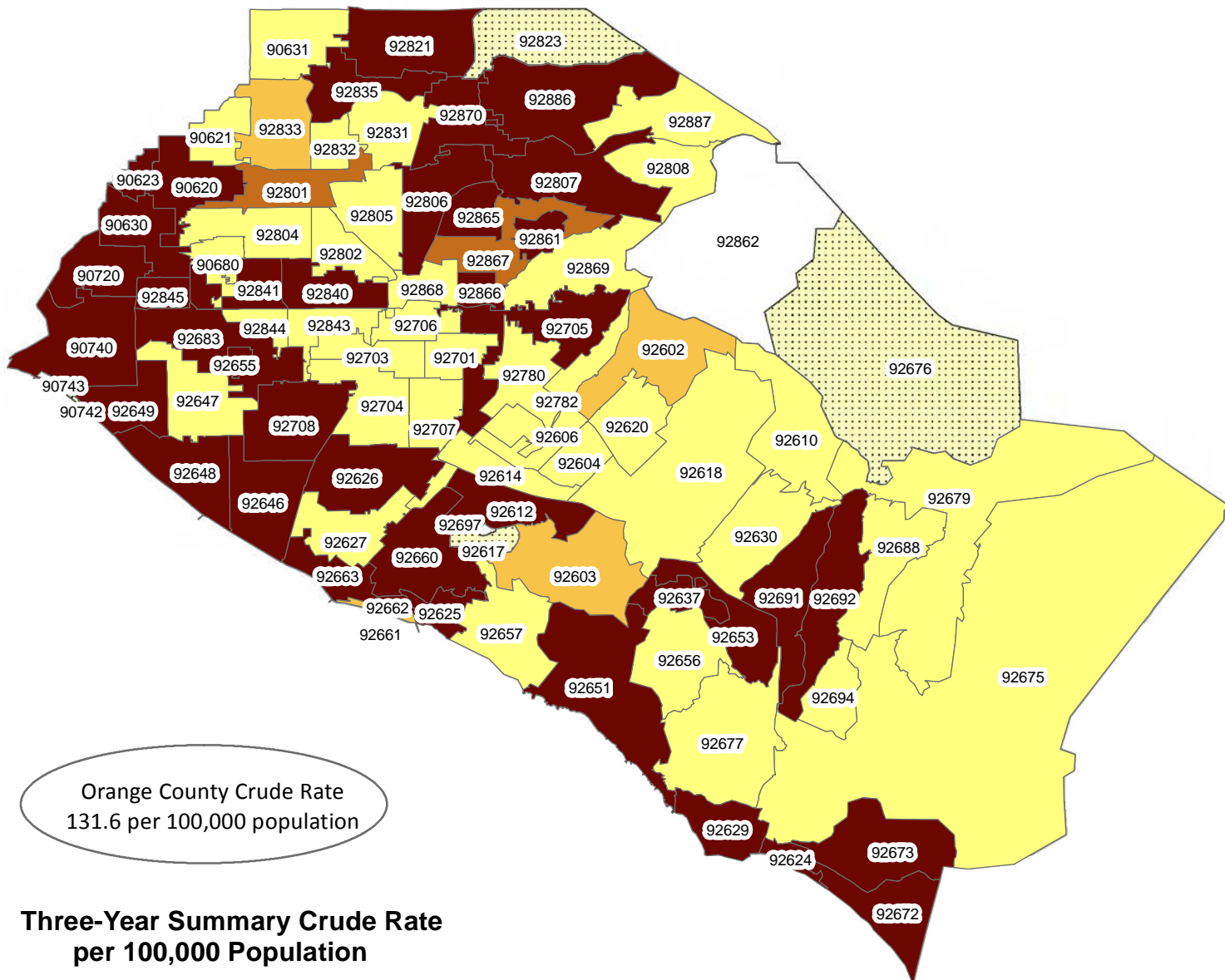


Three-Year Summary Crude Rate per 100,000 Population



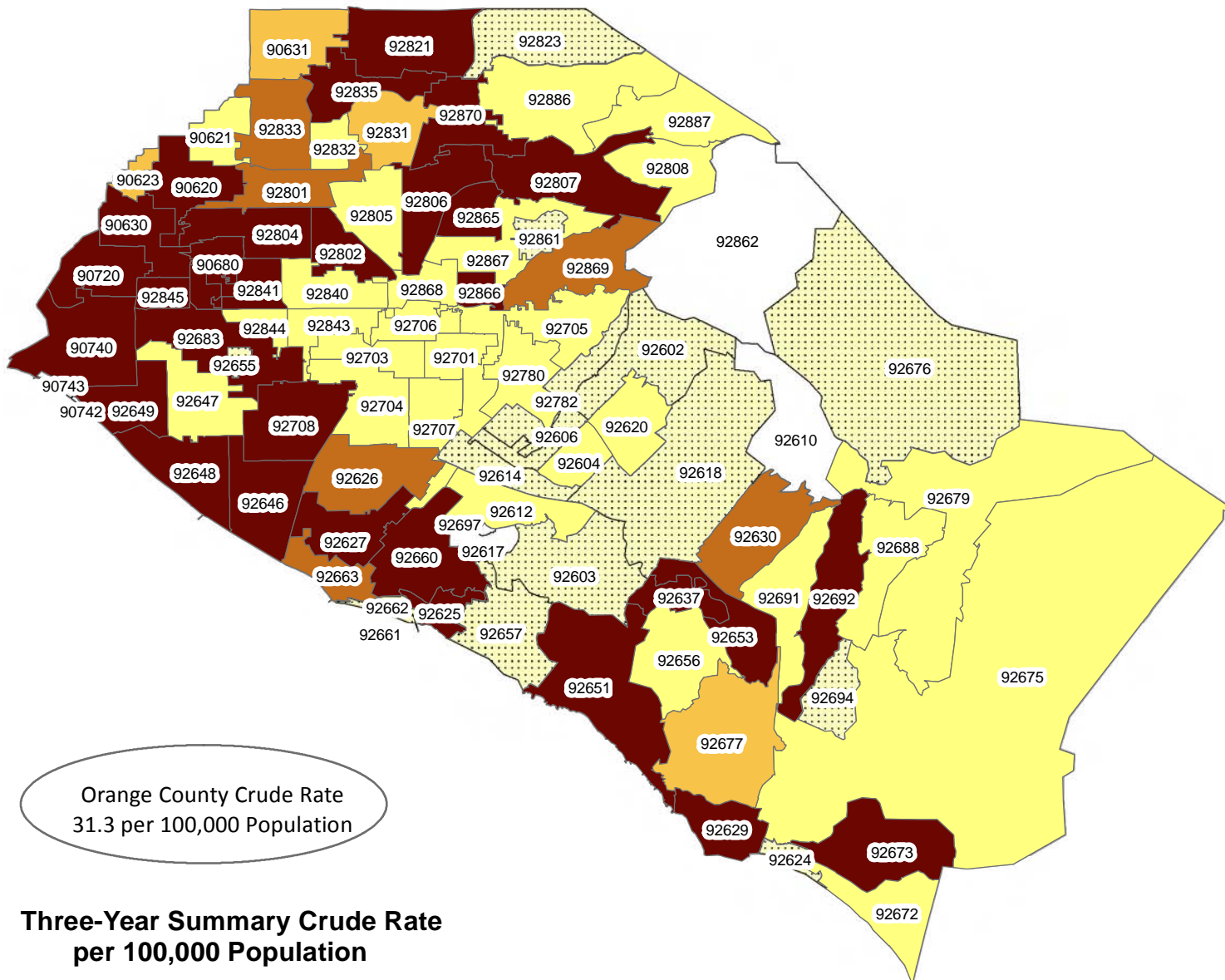
Data Source: State of California Death Master File

Orange County All Cancer Death Rates by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

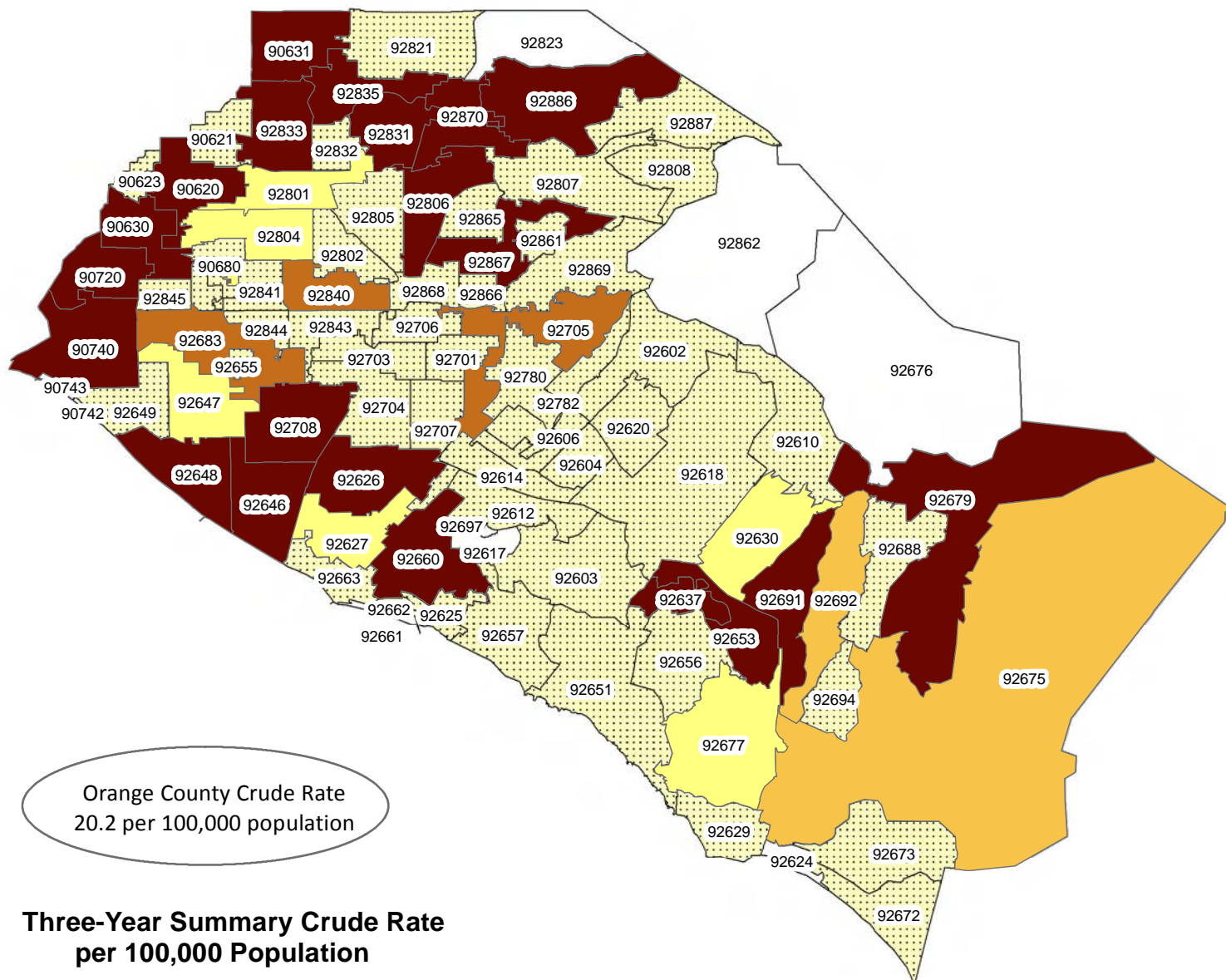
Orange County Lung Cancer Death Rates by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

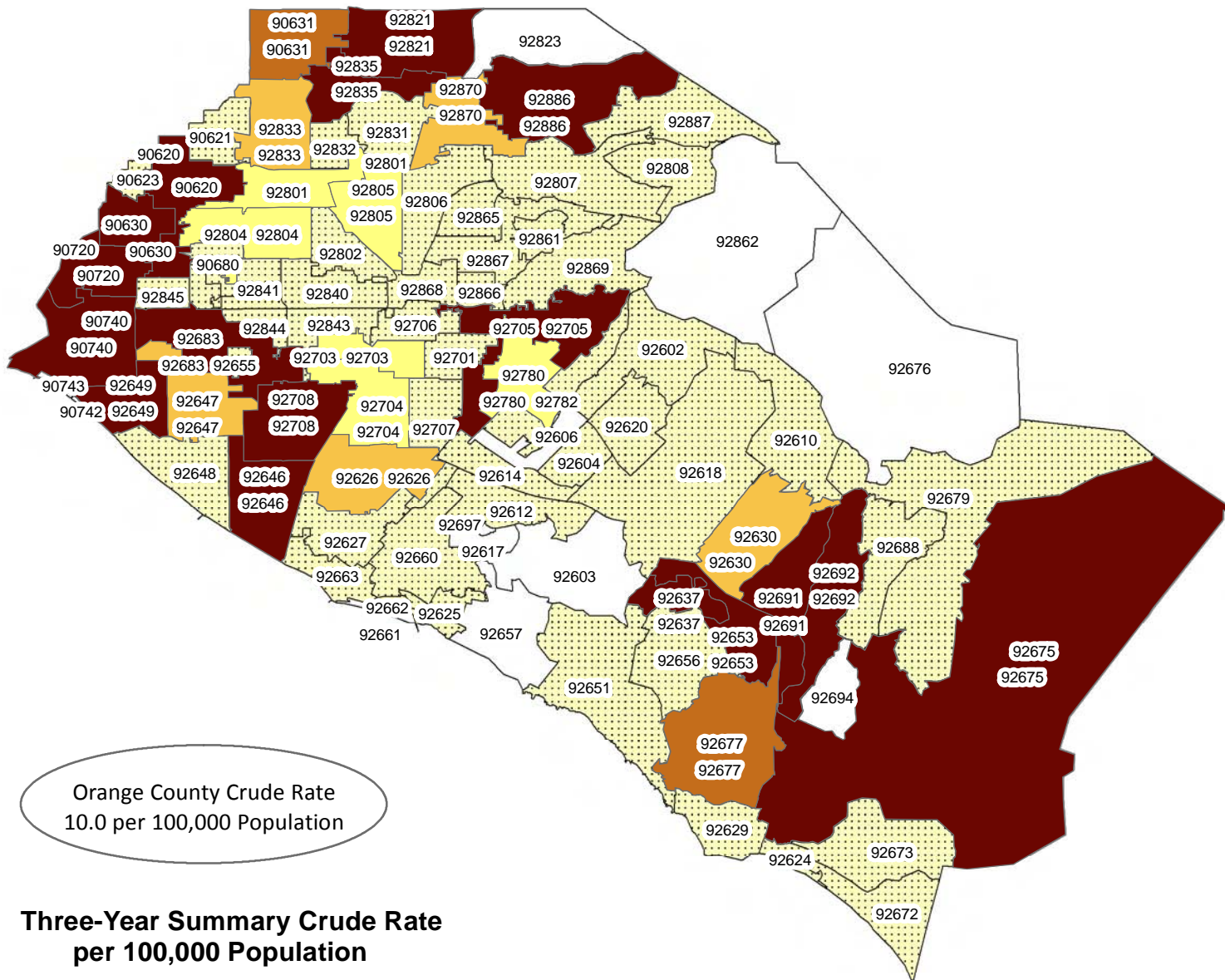
Orange County

Female Breast Cancer Death Rates by ZIP Code of Residence (2006-2008)



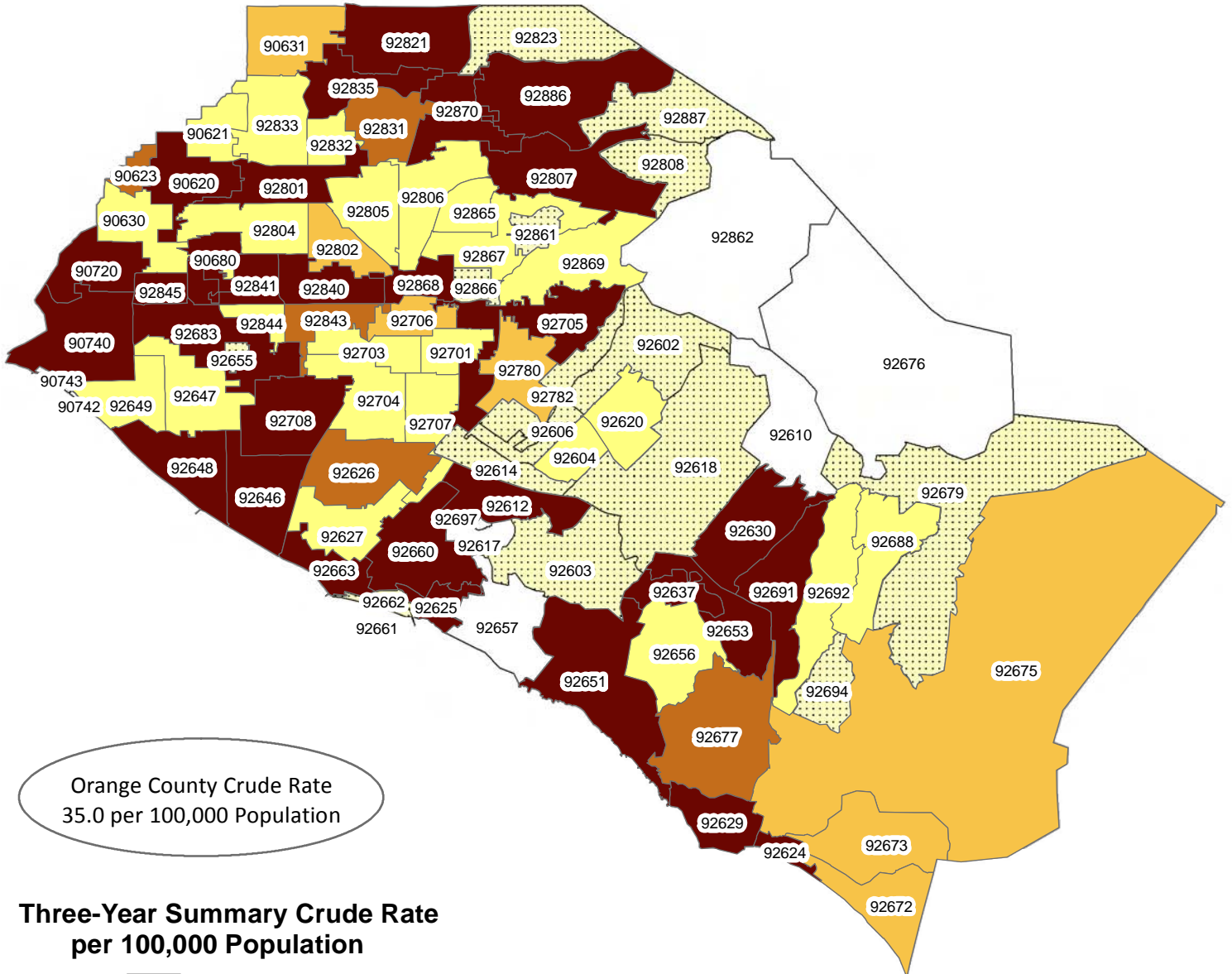
Data Source: State of California Death Master File

Orange County Colon Cancer Death Rates by ZIP Code of Residence (2006-2008)



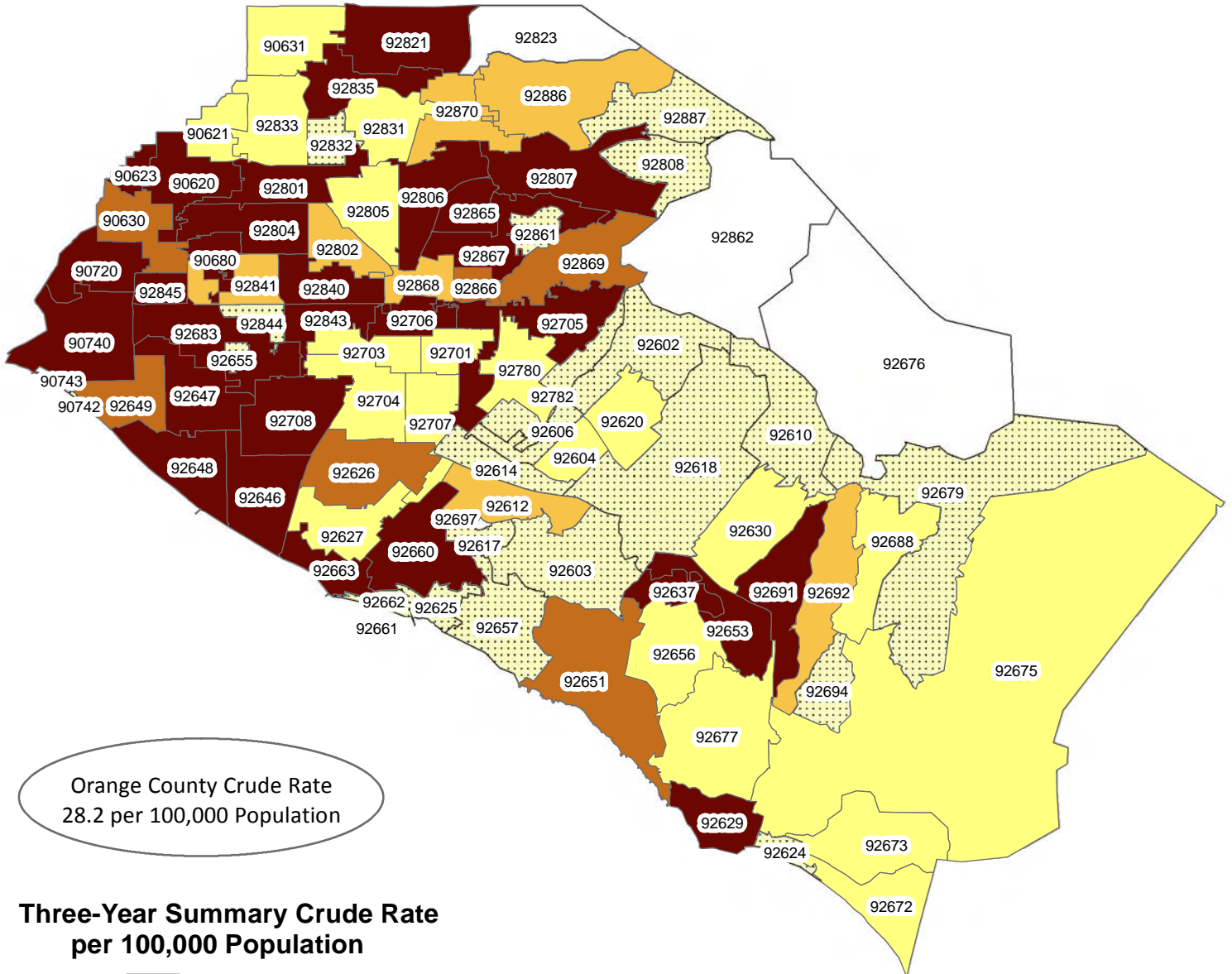
Data Source: State of California Death Master File

Orange County Cerebrovascular Disease (Stroke) Death Rates by ZIP Code of Residence (2006-2008)



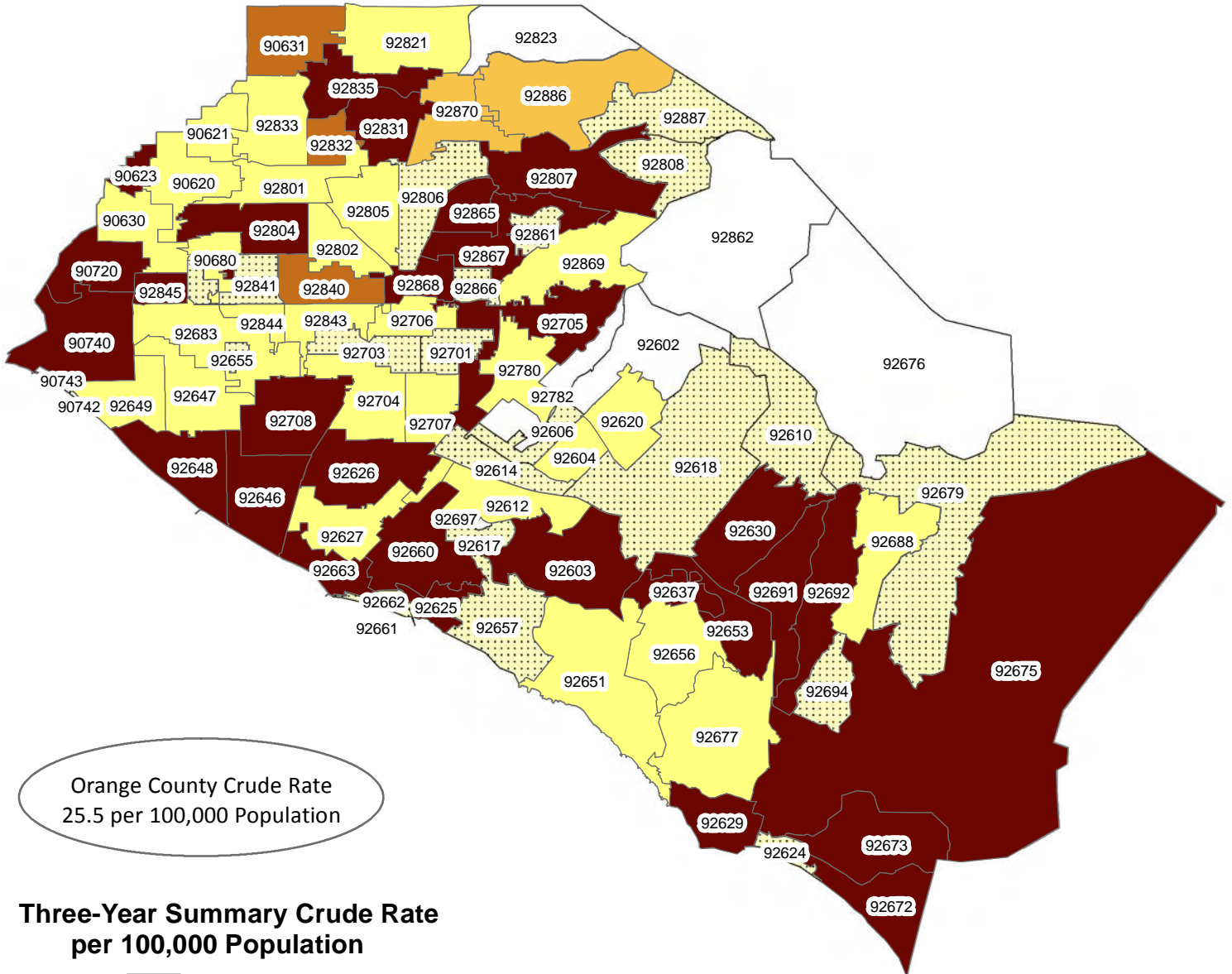
Data Source: State of California Death Master File

Orange County Chronic Lower Respiratory Disease Death Rates by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

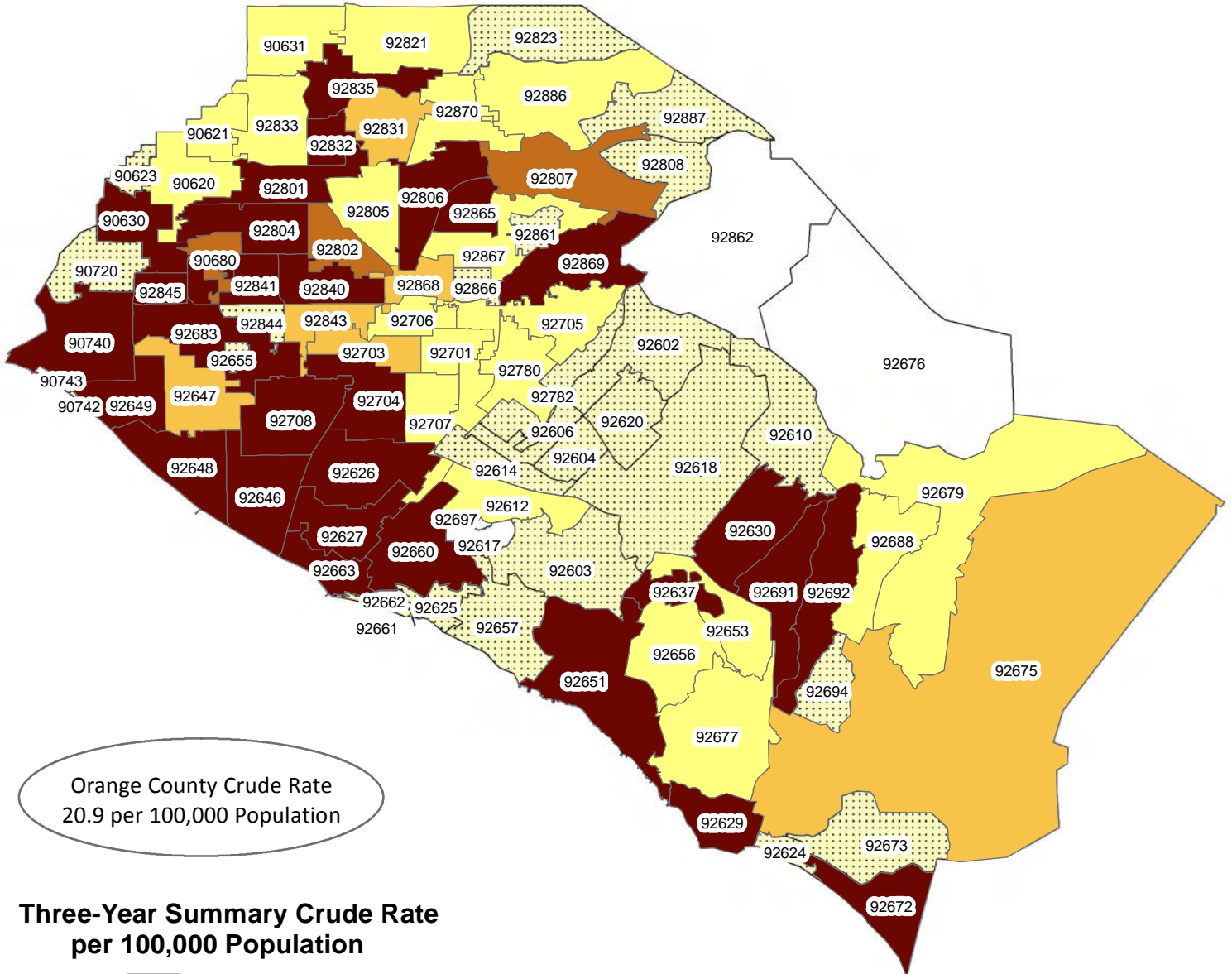
Orange County Alzheimer's Disease Death Rates by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

Orange County

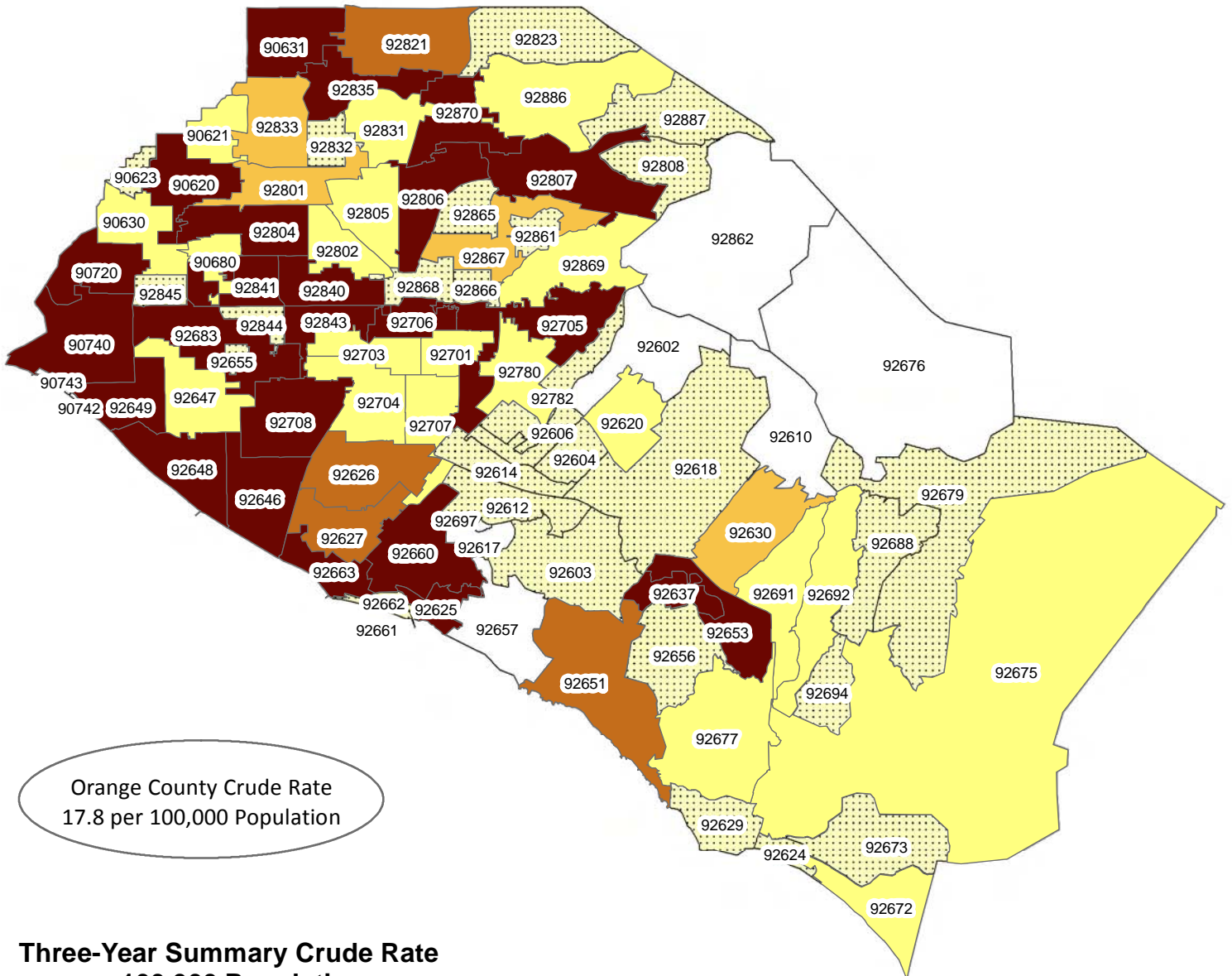
Unintentional Injury Death Rates by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

Orange County

Influenza and Pneumonia Death Rates by ZIP Code of Residence (2006-2008)

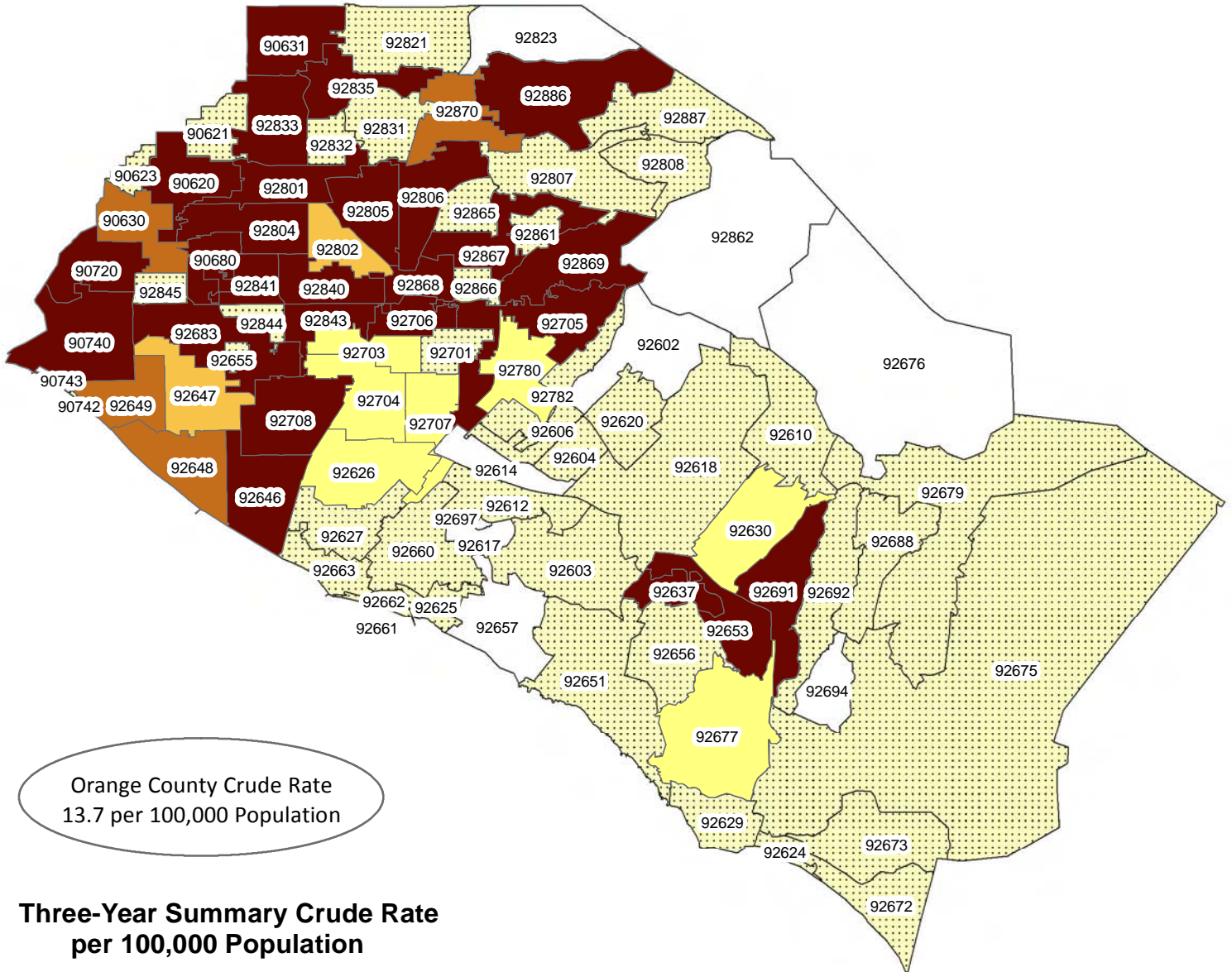


**Three-Year Summary Crude Rate
per 100,000 Population**

- < 16.4
- 16.4 - 17.8
- 17.9 - 19.2
- > 19.2
- Insufficient Data
- 0 Cases

Data Source: State of California Death Master File

Orange County Diabetes Death Rates by ZIP Code of Residence (2006-2008)

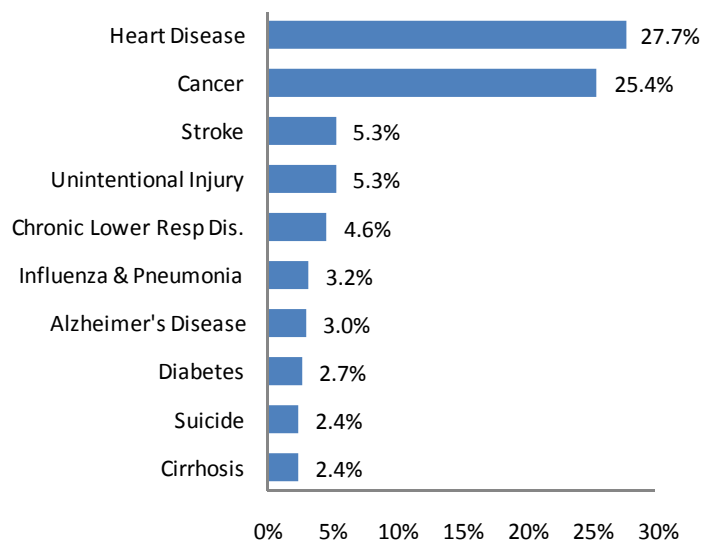


Data Source: State of California Death Master File

Leading Causes of Death by Gender Group

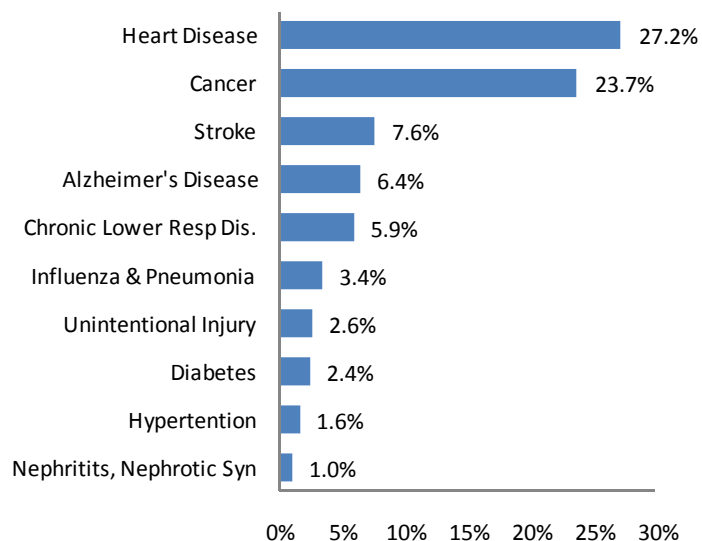
Males – Both males and females have the same three leading causes of death – heart disease, cancer, and stroke. Among males, they accounted for 58% of deaths. The fourth leading cause of death among males was unintentional injury, followed by chronic lower respiratory disease, influenza and pneumonia, Alzheimer’s disease, diabetes, suicide and cirrhosis. Suicide ranked in the top ten for the total population and males, while it did not for females alone. On average, the death rate for males from 2006 to 2008 in Orange County was 521.7 per 100,000 population. The ZIP codes with the highest male crude death rates were: 92637 (Laguna Woods: 4,470), 90740 (Seal Beach: 1,974), 92662 (Newport Beach: 1,190), and 92835 (Fullerton: 872).

Leading Causes of Death Among Males, Orange County, 2006-2008 (Average=8,199)



Females – The three leading causes of death among females – heart disease, cancer and stroke accounted for 59% of all deaths. The fourth leading cause of death was Alzheimer’s disease, followed by chronic lower respiratory disease, influenza & pneumonia, unintentional injury, diabetes, hypertension, nephritis, nephritic syndrome or kidney disease. Nephritis, nephritic syndrome ranked in the top ten for females, while it did not for the total population or males alone. On average, the annual crude death rate for females from 2006 to 2008 in Orange County was 551.8 per 100,000 population. The ZIP codes with the highest female death rates were: 92637 (Laguna Woods: 3,216), 90740 (Seal Beach: 2,057), 92835 (Fullerton: 1,157), 92653 (Laguna Hills: 1,137) and 92662 (Newport Beach: 1,099).

Leading Causes of Death Among Females, Orange County, 2006-2008 (Average=8,699)



Tables: Leading Causes of Deaths – Orange County Residents by Gender, 2006-2008

- **Table 5.2:** Leading Causes of Death, Males
- **Table 5.3:** Leading Causes of Death, Females

Maps: Average Crude Death Rates by ZIP for Orange County, CA by Gender (2006-2008)

- Deaths to OC Males
- Deaths to OC Females



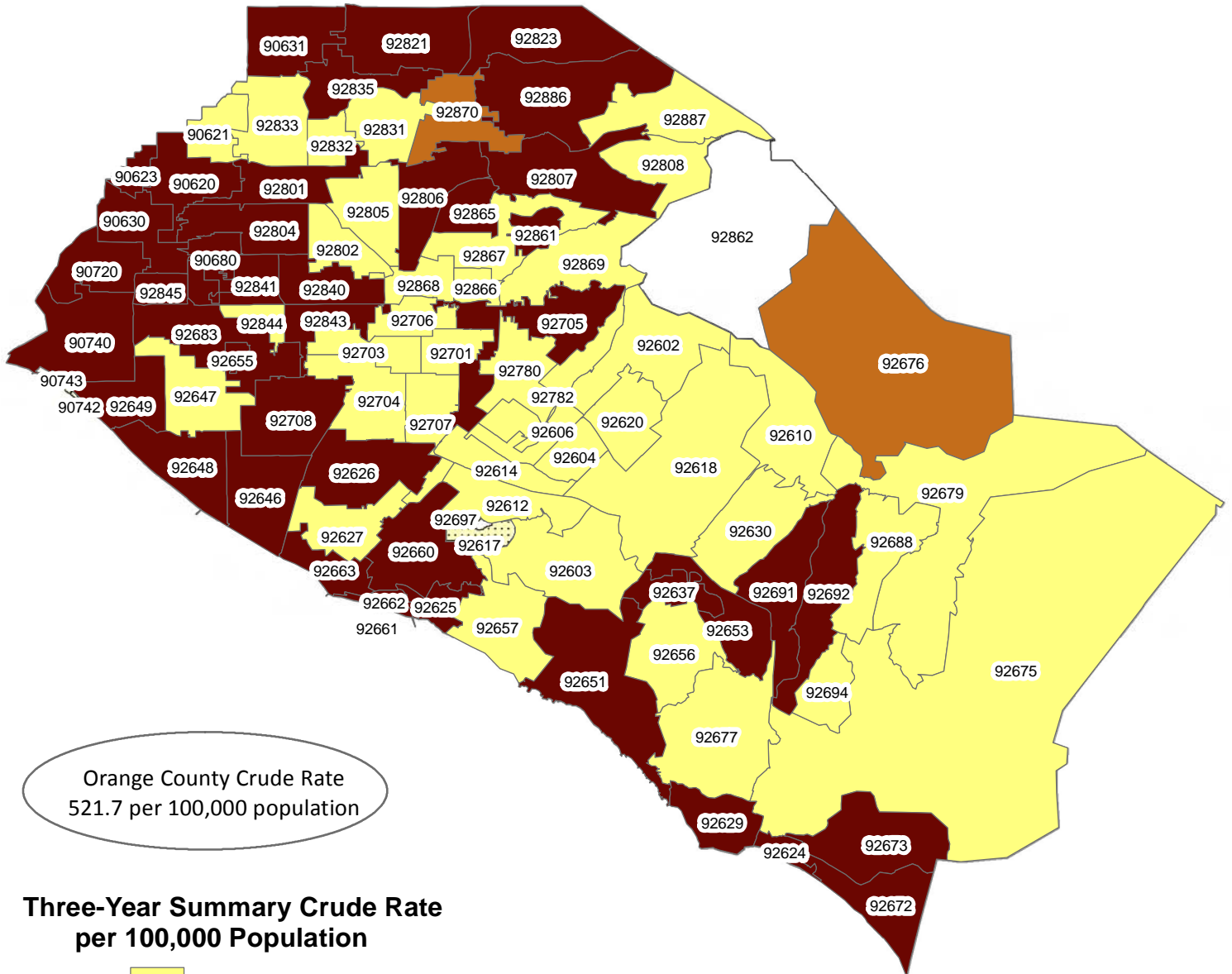
**Table 5.2: Leading Causes of Death
Males, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Heart Disease | 2,269 | 27.7 |
| | <i>Ischemic Heart Disease</i> | 1,691 | 20.6 |
| | <i>Cardiomyopathy</i> | 138 | 1.7 |
| 2 | Cancer | 2,086 | 25.4 |
| | <i>Lung Cancer</i> | 501 | 6.1 |
| | <i>Prostate Cancer</i> | 213 | 2.6 |
| | <i>Colon Cancer</i> | 154 | 1.9 |
| | <i>Leukemia</i> | 95 | 1.2 |
| | <i>Breast Cancer</i> | 2 | 0.0 |
| 3 | Cerebrovascular Disease | 436 | 5.3 |
| 4 | Unintentional Injury | 436 | 5.3 |
| | <i>Motor Vehicle Traffic</i> | 150 | 1.8 |
| | <i>Accidental Poisoning</i> | 147 | 1.8 |
| | <i>Accidental Falls</i> | 65 | 0.8 |
| | <i>Drowning and Submersion</i> | 17 | 0.2 |
| 5 | Lung Disease (CLRD) | 374 | 4.6 |
| 6 | Influenza & Pneumonia | 259 | 3.2 |
| 7 | Alzheimer's Disease | 249 | 3.0 |
| 8 | Diabetes | 219 | 2.7 |
| 9 | Suicide | 196 | 2.4 |
| 10 | Cirrhosis | 193 | 2.4 |
| 11 | Parkinson's Disease | 97 | 1.2 |
| 12 | Nephritis, Nephrotic Syndrome | 92 | 1.1 |
| 13 | Hypertension | 86 | 1.0 |
| 14 | Homicide | 67 | 0.8 |
| 15 | Aortic Aneurysm | 60 | 0.7 |
| 16 | Perinatal Conditions | 59 | 0.7 |
| 17 | Congenital Malformations | 51 | 0.6 |
| 18 | Atherosclerosis | 46 | 0.6 |
| 19 | AIDS | 39 | 0.5 |
| | All Other Causes | 885 | 10.8 |
| | TOTAL | 8,199 | 100.0 |

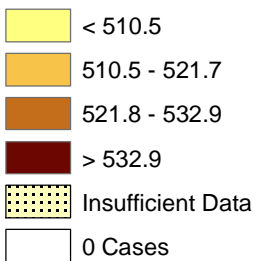
**Table 5.3: Leading Causes of Death
Females, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Heart Disease | 2,369 | 27.2 |
| | <i>Ischemic Heart Disease</i> | 1,642 | 18.9 |
| | <i>Cardiomyopathy</i> | 85 | 1.0 |
| 2 | Cancer | 2,058 | 23.7 |
| | <i>Lung Cancer</i> | 483 | 5.6 |
| | <i>Breast Cancer</i> | 317 | 3.6 |
| | <i>Colon Cancer</i> | 160 | 1.8 |
| | <i>Leukemia</i> | 80 | 0.9 |
| 3 | Cerebrovascular Disease | 665 | 7.6 |
| 4 | Alzheimer's Disease | 554 | 6.4 |
| 5 | Lung Disease (CLRD) | 514 | 5.9 |
| 6 | Influenza & Pneumonia | 300 | 3.4 |
| 7 | Unintentional Injury | 222 | 2.6 |
| | <i>Accidental Poisoning</i> | 72 | 0.8 |
| | <i>Motor Vehicle Traffic</i> | 57 | 0.7 |
| | <i>Accidental Falls</i> | 49 | 0.6 |
| | <i>Drowning and Submersion</i> | 10 | 0.1 |
| 8 | Hypertension | 213 | 2.4 |
| 9 | Hypertension | 143 | 1.6 |
| 10 | Nephritis, Nephrotic Syndrome | 89 | 1.0 |
| 11 | Cirrhosis | 87 | 1.0 |
| 12 | Parkinson's Disease | 77 | 0.9 |
| 13 | Suicide | 76 | 0.9 |
| 14 | Atherosclerosis | 75 | 0.9 |
| 15 | Perinatal Conditions | 47 | 0.5 |
| 16 | Congenital Malformations | 47 | 0.5 |
| 17 | Aortic Aneurysm | 34 | 0.4 |
| 18 | Homicide | 15 | 0.2 |
| 19 | AIDS | 6 | 0.1 |
| | All Other Causes | 1,108 | 12.7 |
| | TOTAL | 8,699 | 100.0 |

Orange County Death Rates, Males by ZIP Code of Residence (2006-2008)

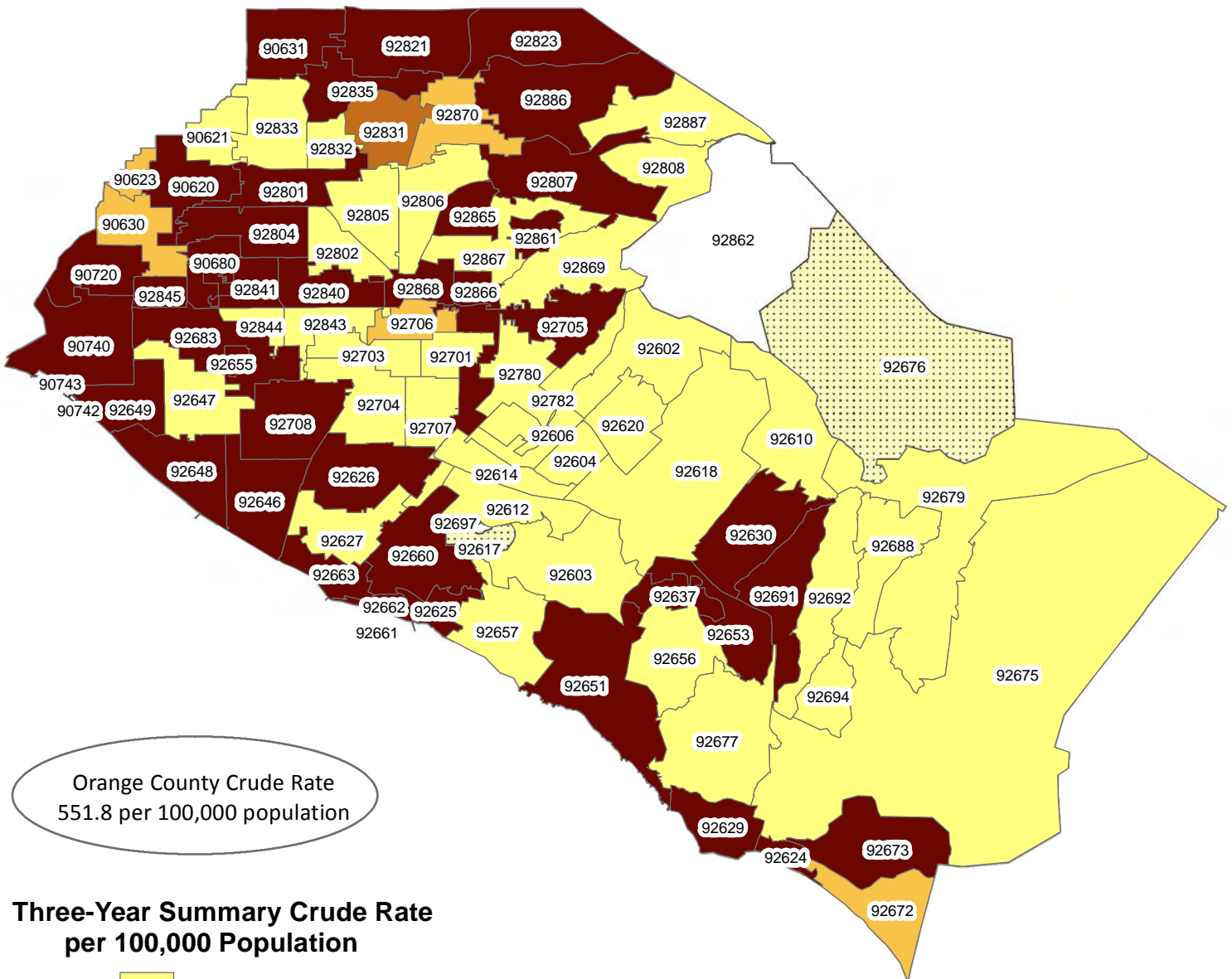


Three-Year Summary Crude Rate per 100,000 Population



Data Source: State of California Death Master File

Orange County Death Rates, Females by ZIP Code of Residence (2006-2008)



Data Source: State of California Death Master File

Leading Causes of Death by Race/Ethnicity Group

Mortality rate data for race/ethnicity was not broken down by ZIP code level in this section. The small number of cases in some race/ethnicity groups by ZIP code would result in unstable data, which would not be reportable. Thus, only data by race/ethnicity for the entire county is reported here.

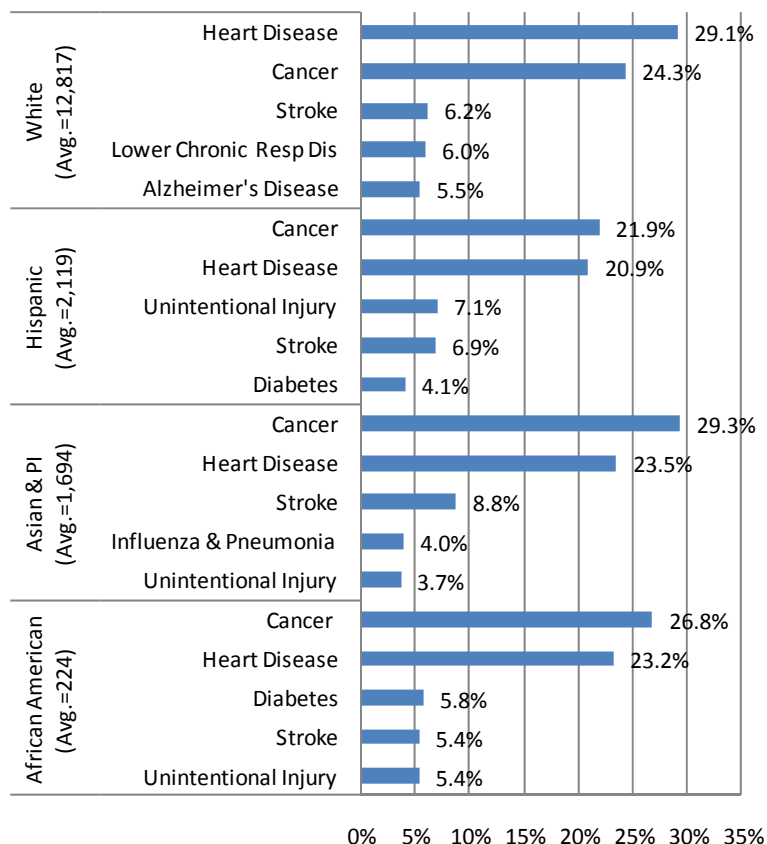
Non-Hispanic Whites – Unlike other racial/ethnic groups in Orange County, the leading cause of death was heart disease, which accounted for 29% of all deaths among whites in Orange County from 2006 to 2008. Cancer was the second leading cause of death for Orange County white residents (24.3%). Among cancer deaths for whites, the leading cause was lung cancer, followed by breast cancer, colon cancer, and prostate cancer. Stroke, chronic lower lung disease, Alzheimer’s disease, unintentional injury and influenza & pneumonia accounted for 24% of deaths for Orange County white residents.

Hispanics – Cancer (22%) and heart disease (21%) were the two leading causes of death for Orange County Hispanics from 2006 to 2008. Notably, unintentional injury (7%) was the third leading cause of death for Hispanics. The most common underlying causes of unintentional injury deaths were due to motor vehicle crashes and accidental poisoning. Stroke (7%) was the fourth leading cause of death for Hispanics followed by diabetes (4%).

Asians and Pacific Islanders (PI) – Cancer (29%) was the leading cause of death, followed by heart disease (24%) for Asians/PI in Orange County from 2006 to 2008. The leading causes of cancer deaths were due to lung cancer, followed colon cancer and breast cancer. The third leading cause of death was stroke (9%), followed by influenza & pneumonia (4%) and unintentional injury (4%). The leading underlying causes of unintentional injury deaths among Asians/PI were due to motor vehicle crashes, falls, drowning, and accidental poisoning.

Non-Hispanic Blacks – Cancer (27%) and heart disease (23%) were the leading causes of death for Orange County’s blacks from 2006 to 2008. These two leading causes of death accounted for half of all deaths in Orange County blacks. The third leading cause of death was diabetes

Leading Causes of Death by Race/Ethnicity, Orange County, 2006-2008 (Average=16,854)



(5.8%), followed by stroke (5.4%) and unintentional injury (5.4%). The leading causes of unintentional injury deaths among blacks were due to motor vehicle traffic and accidental poisoning.

Tables: Leading Causes of Deaths – Orange County Residents by Race/Ethnicity, 2006 - 2008

- **Table 5.4:** Leading Causes of Death, Non-Hispanic Whites
- **Table 5.5:** Leading Causes of Death, Hispanics
- **Table 5.6:** Leading Causes of Death, Asians and Pacific Islanders
- **Table 5.7:** Leading Causes of Death, Non-Hispanic Blacks



**Table 5.4: Leading Causes of Death
Non-Hispanic Whites, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Heart Disease | 3,730 | 29.1 |
| | <i>Ischemic Heart Disease</i> | 2,664 | 20.8 |
| | <i>Cardiomyopathy</i> | 166 | 1.3 |
| 2 | Cancer | 3,112 | 24.3 |
| | <i>Lung Cancer</i> | 803 | 6.3 |
| | <i>Breast Cancer</i> | 246 | 1.9 |
| | <i>Colon Cancer</i> | 230 | 1.8 |
| | <i>Prostate Cancer</i> | 171 | 1.3 |
| | <i>Leukemia</i> | 127 | 1.0 |
| 3 | Cerebrovascular Disease | 793 | 6.2 |
| 4 | Lung Disease (CLRD) | 769 | 6.0 |
| 5 | Alzheimer's Disease | 700 | 5.5 |
| 6 | Unintentional Injury | 431 | 3.4 |
| | <i>Accidental Poisoning</i> | 166 | 1.3 |
| | <i>Motor Vehicle Traffic</i> | 102 | 0.8 |
| | <i>Accidental Falls</i> | 85 | 0.7 |
| | <i>Drowning and Submersion</i> | 14 | 0.1 |
| 7 | Influenza & Pneumonia | 425 | 3.3 |
| 8 | Diabetes | 273 | 2.1 |
| 9 | Suicide | 203 | 1.6 |
| 10 | Cirrhosis | 173 | 1.3 |
| 11 | Hypertension | 170 | 1.3 |
| 12 | Parkinson's Disease | 144 | 1.1 |
| 13 | Nephritis, Nephrotic Syndrome | 121 | 0.9 |
| 14 | Atherosclerosis | 102 | 0.8 |
| 15 | Aortic Aneurysm | 71 | 0.6 |
| 16 | Congenital Malformations | 38 | 0.3 |
| 17 | Perinatal Conditions | 34 | 0.3 |
| 18 | AIDS | 19 | 0.1 |
| 19 | Homicide | 17 | 0.1 |
| | All Other Causes | 1,492 | 11.6 |
| | TOTAL | 12,817 | 100.0 |

**Table 5.5: Leading Causes of Death
Hispanics, Orange County 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Cancer | 465 | 21.9 |
| | <i>Lung Cancer</i> | 66 | 3.1 |
| | <i>Colon Cancer</i> | 38 | 1.8 |
| | <i>Breast Cancer</i> | 36 | 1.7 |
| | <i>Leukemia</i> | 29 | 1.4 |
| | <i>Prostate Cancer</i> | 24 | 1.1 |
| 2 | Heart Disease | 443 | 20.9 |
| | <i>Ischemic Heart Disease</i> | 313 | 14.8 |
| | <i>Cardiomyopathy</i> | 32 | 1.5 |
| 3 | Unintentional Injury | 151 | 7.1 |
| | <i>Motor Vehicle Traffic</i> | 70 | 3.3 |
| | <i>Accidental Poisoning</i> | 45 | 2.1 |
| | <i>Accidental Falls</i> | 14 | 0.7 |
| | <i>Drowning and Submersion</i> | 5 | 0.2 |
| 4 | Cerebrovascular Disease | 146 | 6.9 |
| 5 | Diabetes | 86 | 4.1 |
| 6 | Cirrhosis | 85 | 4.0 |
| 7 | Influenza & Pneumonia | 59 | 2.8 |
| 8 | Perinatal Conditions | 56 | 2.6 |
| 9 | Alzheimer's Disease | 55 | 2.6 |
| 10 | Homicide | 52 | 2.5 |
| 11 | Lung Disease (CLRD) | 51 | 2.4 |
| 12 | Congenital Malformations | 41 | 1.9 |
| 13 | Suicide | 34 | 1.6 |
| 14 | Nephritis, Nephrotic Syndrome | 31 | 1.5 |
| 15 | Hypertension | 24 | 1.1 |
| 16 | AIDS | 21 | 1.0 |
| 17 | Parkinson's Disease | 12 | 0.6 |
| 18 | Atherosclerosis | 12 | 0.6 |
| 19 | Aortic Aneurysm | 7 | 0.3 |
| | All Other Causes | 288 | 13.6 |
| | TOTAL | 2,119 | 100.0 |

**Table 5.6: Leading Causes of Death
Asians & Pacific Islanders, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|---------------|
| 1 | Cancer | 497 | 29.3% |
| | <i>Lung Cancer</i> | 101 | 6.0% |
| | <i>Colon Cancer</i> | 39 | 2.3% |
| | <i>Breast Cancer</i> | 31 | 1.8% |
| | <i>Prostate Cancer</i> | 15 | 0.9% |
| | <i>Leukemia</i> | 14 | 0.8% |
| 2 | Heart Disease | 399 | 23.5% |
| | <i>Ischemic Heart Disease</i> | 309 | 18.2% |
| | <i>Cardiomyopathy</i> | 23 | 1.4% |
| 3 | Cerebrovascular Disease | 149 | 8.8% |
| 4 | Influenza & Pneumonia | 68 | 4.0% |
| 5 | Unintentional Injury | 62 | 3.7% |
| | <i>Motor Vehicle Traffic</i> | 27 | 1.6% |
| | <i>Accidental Falls</i> | 14 | 0.8% |
| | <i>Drowning and Submersion</i> | 7 | 0.4% |
| | <i>Accidental Poisoning</i> | 7 | 0.4% |
| 6 | Diabetes | 59 | 3.5% |
| 7 | Lung Disease (CLRD) | 56 | 3.3% |
| 8 | Alzheimer's Disease | 41 | 2.4% |
| 9 | Suicide | 32 | 1.9% |
| 10 | Hypertension | 30 | 1.8% |
| 11 | Nephritis, Nephrotic Syndrome | 26 | 1.5% |
| 12 | Cirrhosis | 19 | 1.1% |
| 13 | Parkinson's Disease | 18 | 1.1% |
| 14 | Congenital Malformations | 15 | 0.9% |
| 15 | Aortic Aneurysm | 14 | 0.8% |
| 16 | Perinatal Conditions | 11 | 0.6% |
| 17 | Homicide | 8 | 0.5% |
| 18 | Atherosclerosis | 6 | 0.4% |
| 19 | AIDS | 3 | 0.2% |
| | All Other Causes | 182 | 10.7% |
| | TOTAL | 1,695 | 100.0% |

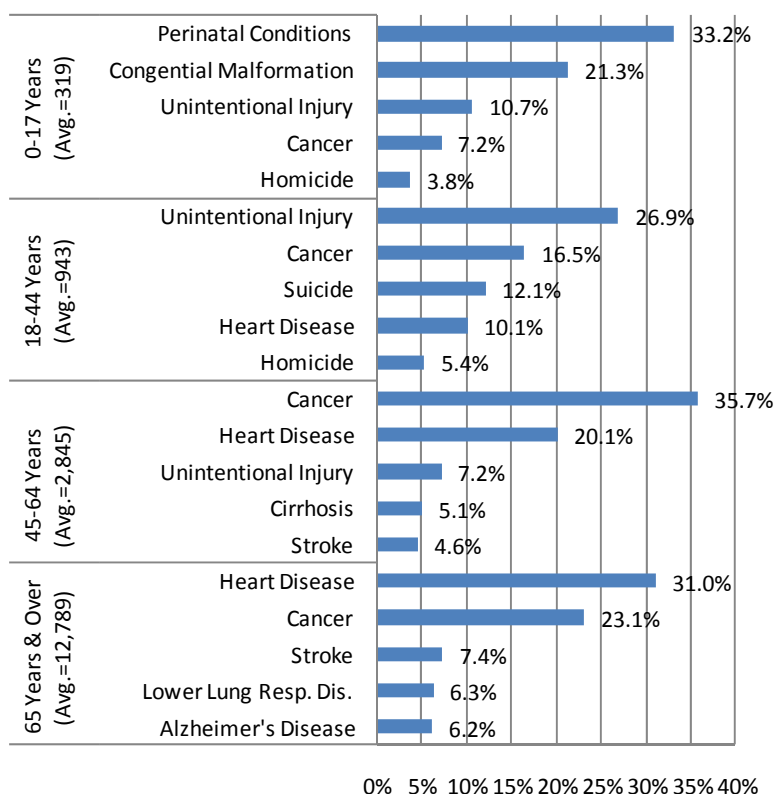
**Table 5.7: Leading Causes of Death
Non-Hispanic Blacks, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Cancer | 60 | 26.8 |
| | <i>Lung Cancer</i> | <i>14</i> | <i>6.3</i> |
| | <i>Colon Cancer</i> | <i>7</i> | <i>3.1</i> |
| | <i>Breast Cancer</i> | <i>7</i> | 3.1 |
| | <i>Prostate Cancer</i> | <i>4</i> | <i>1.8</i> |
| | <i>Leukemia</i> | <i>4</i> | <i>1.8</i> |
| 2 | Heart Disease | 52 | 23.2 |
| | <i>Ischemic Heart Disease</i> | <i>36</i> | <i>16.1</i> |
| | <i>Cardiomyopathy</i> | <i>2</i> | <i>0.9</i> |
| 3 | Diabetes | 13 | 5.8 |
| 4 | Cerebrovascular Disease | 12 | 5.4 |
| 5 | Unintentional Injury | 12 | 5.4 |
| | <i>Motor Vehicle Traffic</i> | <i>4</i> | <i>1.8</i> |
| | <i>Accidental Poisoning</i> | <i>3</i> | <i>1.3</i> |
| | <i>Accidental Falls</i> | <i>1</i> | <i>0.4</i> |
| | <i>Drowning and Submersion</i> | <i>1</i> | <i>0.4</i> |
| 6 | Lung Disease (CLRD) | 9 | 4.0 |
| 7 | Influenza & Pneumonia | 6 | 2.7 |
| 8 | Hypertension | 5 | 2.2 |
| 9 | Perinatal Conditions | 5 | 2.2 |
| 10 | Alzheimer's Disease | 4 | 1.8 |
| 11 | Homicide | 4 | 1.8 |
| 12 | Nephritis, Nephrotic Syndrome | 3 | 1.3 |
| 13 | Congenital Malformations | 3 | 1.3 |
| 14 | Suicide | 3 | 1.3 |
| 15 | AIDS | 2 | 0.9 |
| 16 | Cirrhosis | 2 | 0.9 |
| 17 | Parkinson's Disease | 1 | 0.4 |
| 18 | Atherosclerosis | 1 | 0.4 |
| 19 | Aortic Aneurysm | 1 | 0.4 |
| | All Other Causes | 26 | 11.6 |
| | TOTAL | 224 | 100.0 |

Leading Causes of Death by Age Group

Children 0-17 years – From 2006-2008, there was an average of 319 deaths per year for this age group in Orange County. The leading causes of death for children 0 to 17 years included conditions that arise early in life, during the perinatal period (33%) and congenital malformations (21%), such as heart defects. Later in childhood and adolescence, deaths due to injury become more prevalent (11%). For example, motor vehicle traffic, drowning, accidental poisoning and falls are more common. The 2006 to 2008 average death rate for this age group was 38 per 100,000 population. The ZIP codes with the highest death rate for this age group were: 92806 (Anaheim: 72), 92867 (Orange: 63), 92805 (Anaheim: 57), 92626 (Costa Mesa: 57), and 90620 (Buena Park: 57).

Leading Causes of Death by Age Group, Orange County, 2006-2008 (Average=16,896)



Young Adults 18-44 years – Unintentional Injuries were the leading cause of death among adults 18 to 44 years of age, accounting for 27% of all deaths. Accidental poisoning and motor vehicle traffic-related deaths were the main causes of unintentional injury deaths among this age group. Cancer was the second leading cause of death at 17%. The most common cancer deaths for this age group were due to breast cancer, followed by leukemia, lung cancer and colon cancer. Suicide (12%) was the third leading cause of death for this age group, followed by heart disease (10%) and homicide (5%). The average death rate from 2006 to 2008 for 18 to 44 year olds in Orange County was 78 per 100,000. The ZIP codes with the highest death rate for this age group were: 92602 (Irvine: 209), 92832 (Fullerton: 144), 92843 (Garden Grove: 124), 92841 (Garden Grove: 123), and 92801 (Anaheim: 120).

Middle Aged Adults 45-64 years – Cancer was the leading cause of death among adults 45 to 64 years of age, accounting for over a third (35.7%) of all deaths. Heart disease was the second leading cause of death (20.1%), followed by unintentional injury (7%), cirrhosis (5%) and stroke (5%). The average annual death rate from 2006 to 2008 for adults 45 to 64 in Orange County was 374 per 100,000. The ZIP codes with the highest death rate for this age group were: 92637 (Laguna Woods: 1,509), 92801 (Anaheim: 676), 90680 (Stanton: 595), 90620 (Buena Park: 593), and 92602 (Whittier: 584).

Older Adults 65 years and older – By far, the greatest number of deaths occurred in the oldest age group, reflecting, for the most part, the pattern observed for leading causes overall. Among the seniors, chronic diseases are the predominant cause of death with heart disease (31%) and cancer (23%) accounting for over half of all deaths in this age group. Stroke, CLRD, Alzheimer’s, influenza & pneumonia, and diabetes accounted for another 26.6% of deaths. The average death rate per year from 2006 to 2008 for adults 65 years and older in OC was 3,786 per 100,000. The ZIP codes with the highest death rate for this age group were: 92694 (Ladera Ranch: 6,707), 92653 (Laguna Hills: 5,903), 92676 (Silverado: 5,691), 92691 (Mission Viejo: 4,929), 92648 (Huntington Beach: 4,782), and 92602 (Irvine: 4,747).

Tables: Leading Causes of Deaths – Orange County Residents by Age Group, 2006 - 2008

- **Table 5.8:** Leading Causes of Death, 0 to 17 years old
- **Table 5.9:** Leading Causes of Death, 18 to 44 years old
- **Table 5.10:** Leading Causes of Death, 45 to 64 years old
- **Table 5.11:** Leading Causes of Death, 65 and older

Maps: 2006-2008 Average Crude Death Rates by ZIP for Orange County, CA by Age Group

- Deaths to OC Residents 0 to 17 years
- Deaths to OC Residents 18 to 44 years
- Deaths to OC Residents 45 to 64 years
- Deaths to OC Residents 65 years and older



**Table 5.8: Leading Causes of Death
0-17 Yrs, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Perinatal Conditions | 106 | 33.2 |
| 2 | Congenital Malformations | 68 | 21.3 |
| 3 | Unintentional Injury | 34 | 10.7 |
| | <i>Motor Vehicle Traffic</i> | 17 | 5.3 |
| | <i>Drowning and Submersion</i> | 7 | 2.2 |
| | <i>Accidental Poisoning</i> | 3 | 0.9 |
| | <i>Accidental Falls</i> | 1 | 0.3 |
| 4 | Cancer | 23 | 7.2 |
| | <i>Leukemia</i> | 9 | 2.8 |
| | <i>Lung Cancer</i> | 0 | 0.0 |
| 5 | Homicide | 12 | 3.8 |
| 6 | Heart Disease | 9 | 2.8 |
| | <i>Cardiomyopathy</i> | 3 | 0.9 |
| | <i>Ischemic Heart Disease</i> | 0 | 0.0 |
| 7 | Suicide | 5 | 1.6 |
| 8 | Influenza & Pneumonia | 4 | 1.3 |
| 9 | Lung Disease (CLRD) | 2 | 0.6 |
| 10 | Diabetes | 1 | 0.3 |
| 11 | Cerebrovascular Disease | 1 | 0.3 |
| 12 | Nephritis, Nephrotic Syndrome | 1 | 0.3 |
| 13 | Cirrhosis | 0 | 0.0 |
| | All Other Causes | 53 | 16.6 |
| | TOTAL | 319 | 100.0 |

**Table 5.9: Leading Causes of Death
18-44 Yrs, Orange County 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Unintentional Injury | 254 | 26.9 |
| | <i>Accidental Poisoning</i> | 107 | 11.3 |
| | <i>Motor Vehicle Traffic</i> | 106 | 11.2 |
| | <i>Accidental Falls</i> | 9 | 1.0 |
| | <i>Drowning and Submersion</i> | 7 | 0.7 |
| 2 | Cancer | 156 | 16.5 |
| | <i>Breast Cancer</i> | 18 | 1.9 |
| | <i>Leukemia</i> | 15 | 1.6 |
| | <i>Lung Cancer</i> | 11 | 1.2 |
| | <i>Colon Cancer</i> | 10 | 1.1 |
| 3 | Suicide | 114 | 12.1 |
| 4 | Heart Disease | 95 | 10.1 |
| | <i>Ischemic Heart Disease</i> | 37 | 3.9 |
| | <i>Cardiomyopathy</i> | 25 | 2.7 |
| 5 | Homicide | 51 | 5.4 |
| 6 | Cirrhosis | 41 | 4.3 |
| 7 | Cerebrovascular Disease | 26 | 2.8 |
| 8 | AIDS | 20 | 2.1 |
| 9 | Diabetes | 16 | 1.7 |
| 10 | Congenital Malformations | 7 | 0.7 |
| 11 | Influenza & Pneumonia | 6 | 0.6 |
| 12 | Hypertension | 5 | 0.5 |
| 13 | Lung Disease (CLRD) | 4 | 0.4 |
| 14 | Aortic Aneurysm | 3 | 0.3 |
| 15 | Nephritis, Nephrotic Syndrome | 3 | 0.3 |
| 16 | Atherosclerosis | 1 | 0.1 |
| | All Other Causes | 141 | 15.0 |
| | TOTAL | 943 | 100.0 |

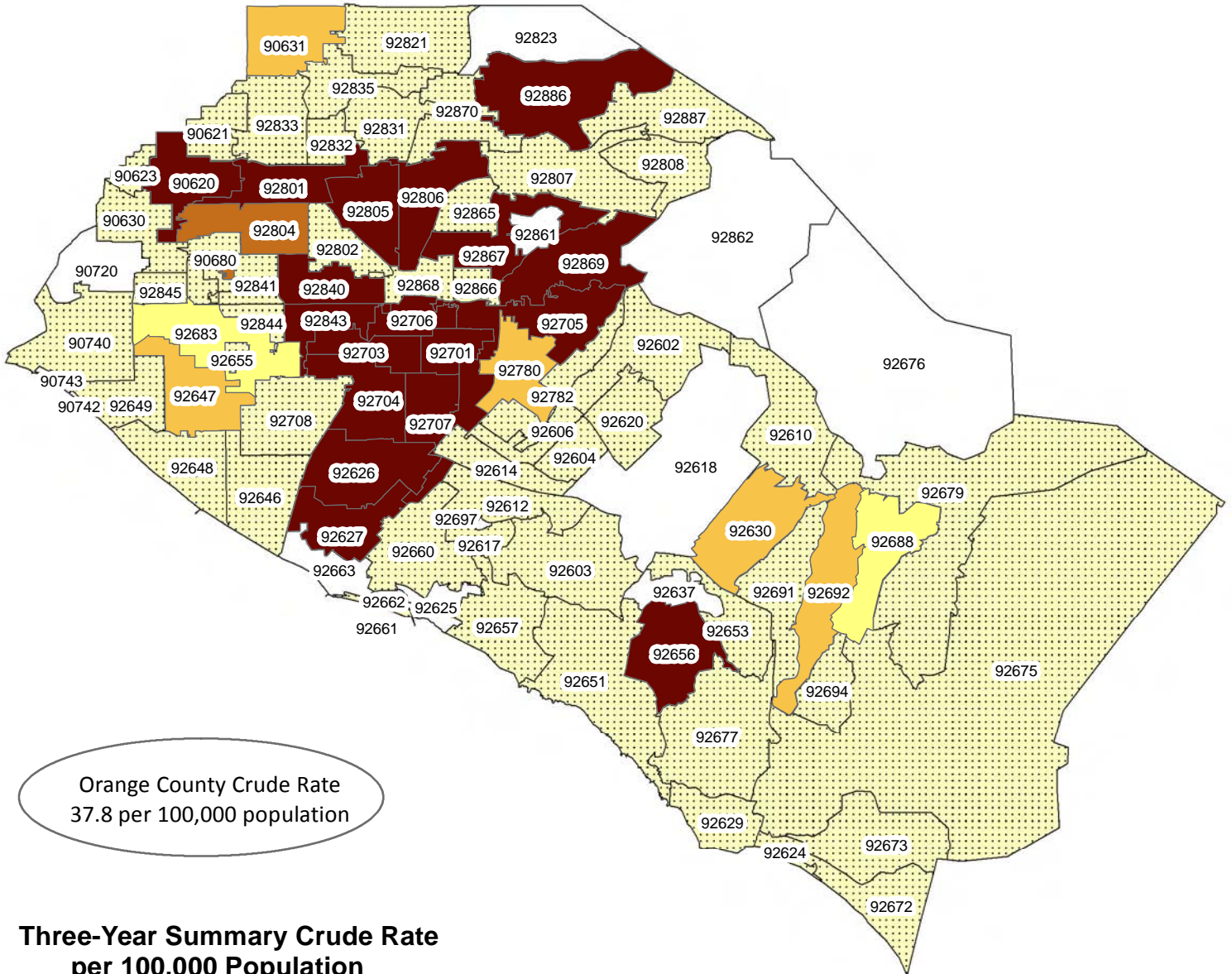
**Table 5.10: Leading Causes of Death
45-64 Yrs, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Cancer | 1,016 | 35.7 |
| | <i>Lung Cancer</i> | 203 | 7.1 |
| | <i>Breast Cancer</i> | 107 | 3.8 |
| | <i>Colon Cancer</i> | 72 | 2.5 |
| | <i>Leukemia</i> | 34 | 1.2 |
| | <i>Prostate Cancer</i> | 16 | 0.6 |
| 2 | Heart Disease | 571 | 20.1 |
| | <i>Ischemic Heart Disease</i> | 416 | 14.6 |
| | <i>Cardiomyopathy</i> | 46 | 1.6 |
| 3 | Unintentional Injury | 204 | 7.2 |
| | <i>Accidental Poisoning</i> | 105 | 3.7 |
| | <i>Motor Vehicle Traffic</i> | 48 | 1.7 |
| | <i>Accidental Falls</i> | 18 | 0.6 |
| | <i>Drowning and Submersion</i> | 6 | 0.2 |
| 4 | Cirrhosis | 146 | 5.1 |
| 5 | Cerebrovascular Disease | 131 | 4.6 |
| 6 | Suicide | 108 | 3.8 |
| 7 | Diabetes | 89 | 3.1 |
| 8 | Lung Disease (CLRD) | 73 | 2.6 |
| 9 | Influenza & Pneumonia | 26 | 0.9 |
| 10 | Nephritis, Nephrotic Syndrome | 25 | 0.9 |
| 11 | AIDS | 24 | 0.8 |
| 12 | Hypertension | 20 | 0.7 |
| 13 | Aortic Aneurysm | 15 | 0.5 |
| 14 | Congenital Malformations | 14 | 0.5 |
| 15 | Homicide | 14 | 0.5 |
| 16 | Alzheimer's Disease | 7 | 0.2 |
| 17 | Parkinson's Disease | 5 | 0.2 |
| 18 | Atherosclerosis | 5 | 0.2 |
| | All Other Causes | 352 | 12.4 |
| | TOTAL | 2,845 | 100.0 |

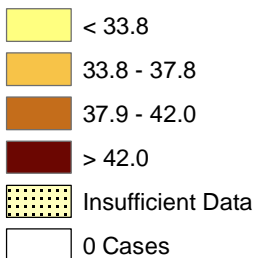
**Table 5.11: Leading Causes of Death
65 and Over, Orange County, 2006-2008**

| Rank | Disease | Number of Deaths (3-Year Average) | % |
|-------------|--------------------------------------|--|--------------|
| 1 | Heart Disease | 3,962 | 31.0 |
| | <i>Ischemic Heart Disease</i> | 2,879 | 22.5 |
| | <i>Cardiomyopathy</i> | 148 | 1.2 |
| 2 | Cancer | 2,948 | 23.1 |
| | <i>Lung Cancer</i> | 771 | 6.0 |
| | <i>Colon Cancer</i> | 233 | 1.8 |
| | <i>Prostate Cancer</i> | 197 | 1.5 |
| | <i>Breast Cancer</i> | 194 | 1.5 |
| | <i>Leukemia</i> | 118 | 0.9 |
| 3 | Cerebrovascular Disease | 943 | 7.4 |
| 4 | Lung Disease (CLRD) | 809 | 6.3 |
| 5 | Alzheimer's Disease | 796 | 6.2 |
| 6 | Influenza & Pneumonia | 522 | 4.1 |
| 7 | Diabetes | 326 | 2.5 |
| 8 | Hypertension | 205 | 1.6 |
| 9 | Parkinson's Disease | 170 | 1.3 |
| 10 | Unintentional Injury | 166 | 1.3 |
| | <i>Accidental Falls</i> | 86 | 0.7 |
| | <i>Motor Vehicle Traffic</i> | 33 | 0.3 |
| | <i>Drowning and Submersion</i> | 7 | 0.1 |
| | <i>Accidental Poisoning</i> | 7 | 0.1 |
| 11 | Nephritis, Nephrotic Syndrome | 153 | 1.2 |
| 12 | Atherosclerosis | 115 | 0.9 |
| 13 | Cirrhosis | 94 | 0.7 |
| 14 | Aortic Aneurysm | 76 | 0.6 |
| 15 | Suicide | 44 | 0.3 |
| 16 | Congenital Malformations | 8 | 0.1 |
| 17 | Homicide | 4 | 0.0 |
| 18 | AIDS | 1 | 0.0 |
| | All Other Causes | 1,447 | 11.3 |
| | TOTAL | 12,789 | 100.0 |

Orange County Death Rates, 0 to 17 Years Old by ZIP Code of Residence (2006-2008)

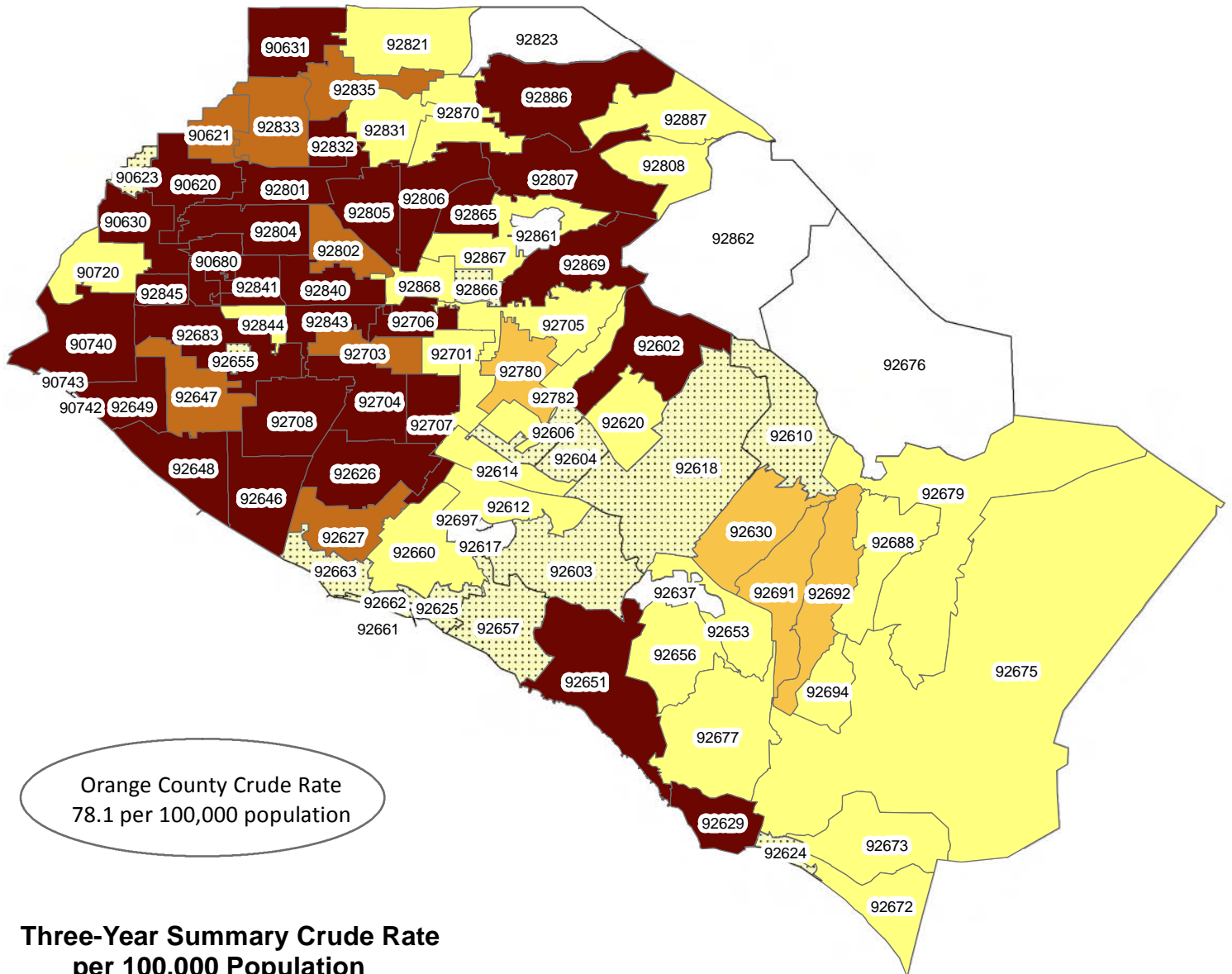


**Three-Year Summary Crude Rate
per 100,000 Population**

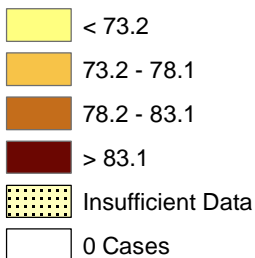


Data Source: State of California Death Master File

Orange County Death Rates, 18 to 44 Years Old by ZIP Code of Residence (2006-2008)

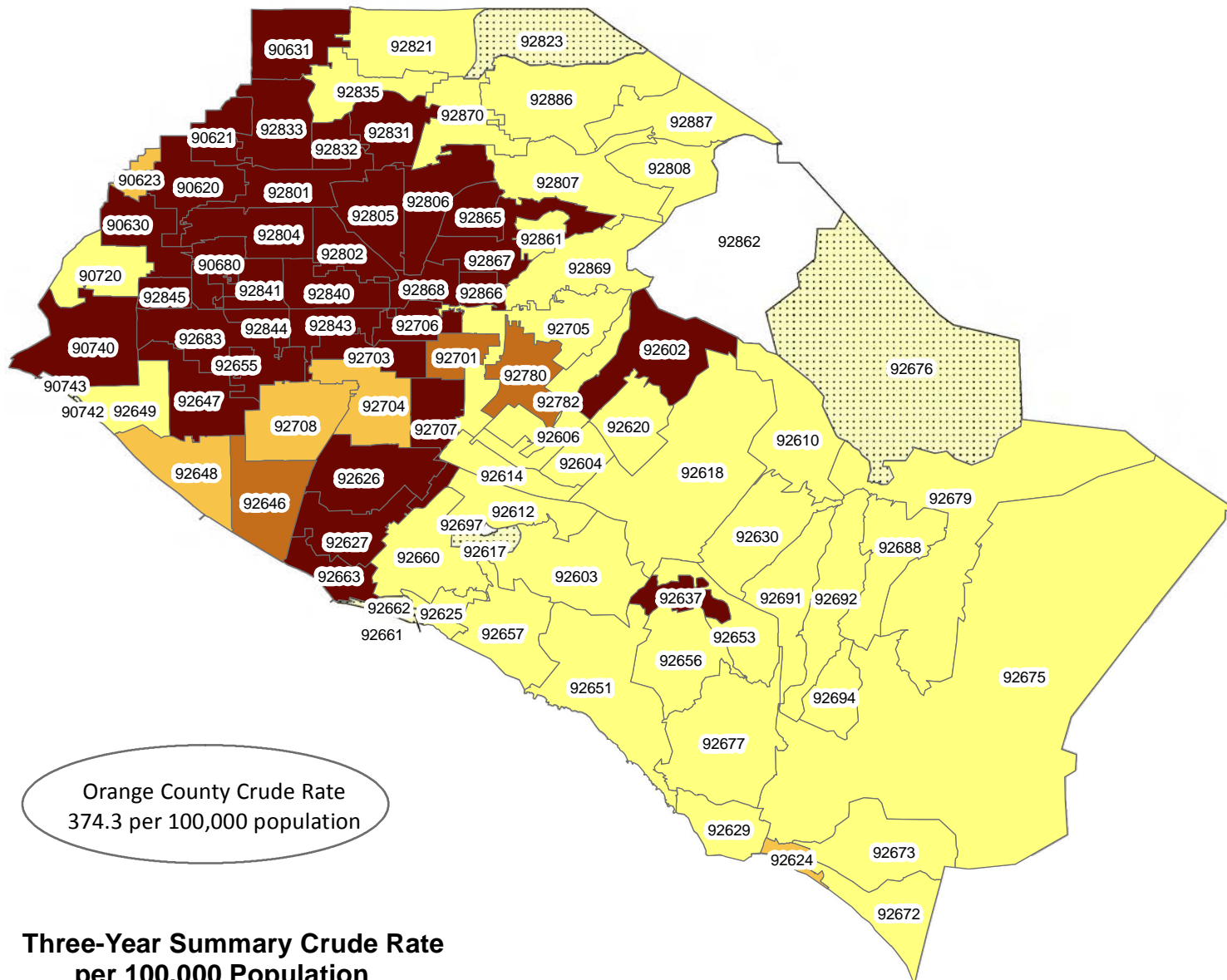


**Three-Year Summary Crude Rate
per 100,000 Population**



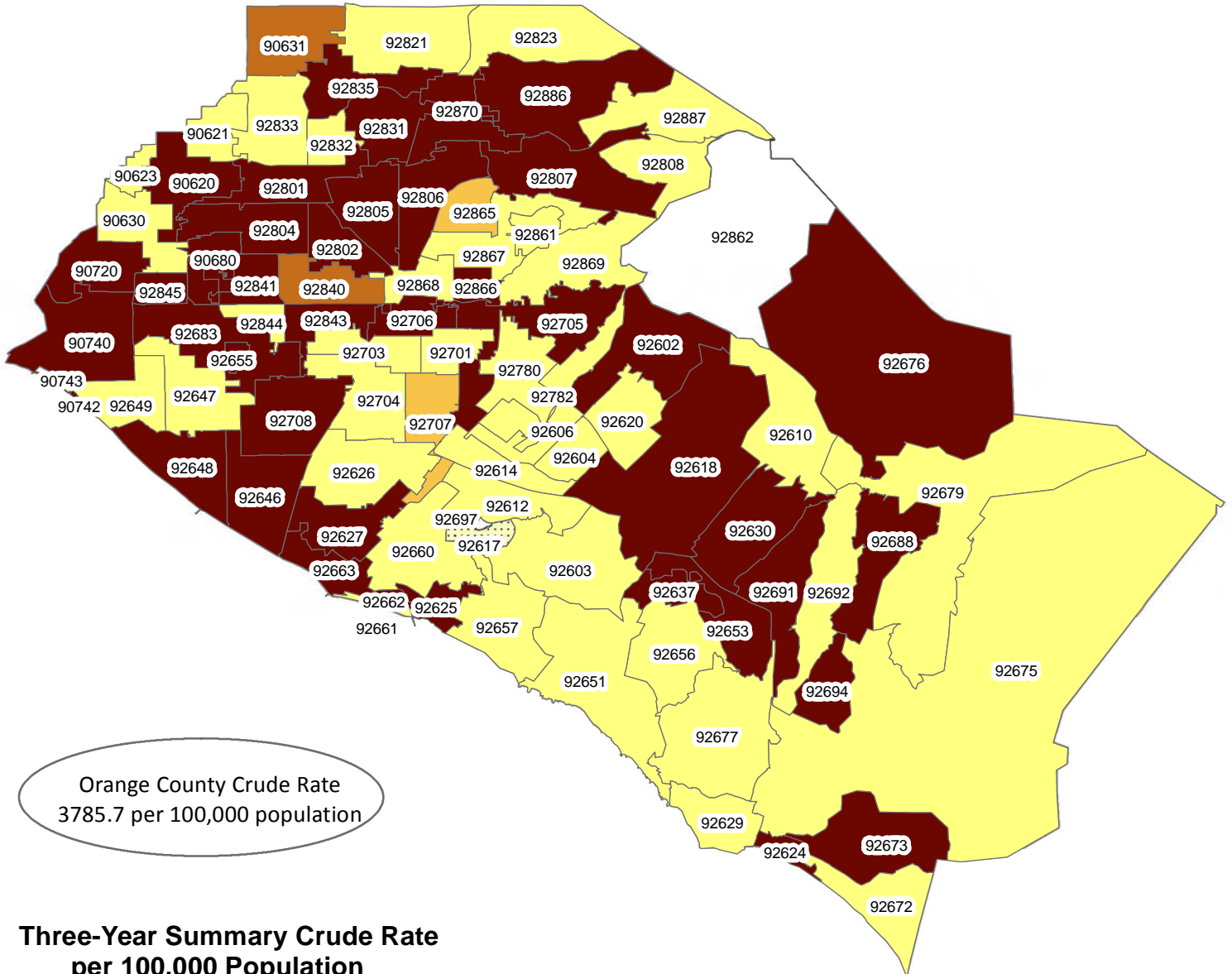
Data Source: State of California Death Master File

Orange County Death Rates, 45 to 64 Years Old by ZIP Code of Residence (2006 - 2008)

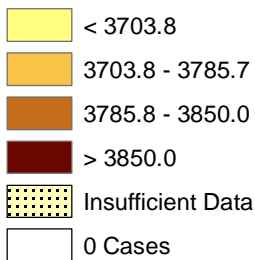


Data Source: State of California Death Master File

OC Death Rates, 65 Years and Older by ZIP Code of Residence (2006-2008)



**Three-Year Summary Crude Rate
per 100,000 Population**



Data Source: State of California Death Master File

Section 6

Hospital Discharges

Analysis of the leading causes of hospitalization in Orange County provides an overview of the healthcare utilization in the county as well as a proxy for morbidity. Hospitalization data are also useful in monitoring preventable admissions. Preventable hospitalizations may cause unnecessary expense to patients and insurers, businesses and the county's health care system. Hence, there is much to be gained by reducing their occurrence. More importantly, preventive measures to avoid or reduce such hospitalizations may result in reduced morbidity and mortality.

In **Section 3**, "*Hospitals and Hospitalizations*," a detailed analysis of hospitalization trends by each of the 34 short stays hospitals in Orange County was presented (e.g., patient demographics, length of stay, charges, etc.) for all patients – OC residents and non-residents. Thus, this section focuses on the geographic distribution of hospitalization and leading causes for hospitalization for different age groups and gender by OC patient's ZIP code of residence. All rates reported in this section are average crude hospitalization rates for 2006 to 2008 per 10,000 population, thus rates are not adjusted for age differences within ZIP codes. Insufficient data indicates areas where the total number of cases was low (e.g., 3-yr avg. < 5) or the ZIP code population was small resulting in unstable rates.

About the Data

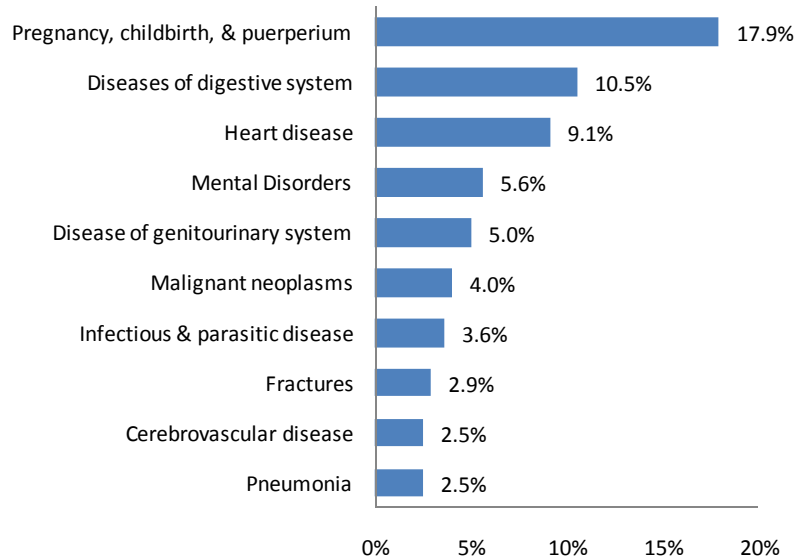
The data for this section comes from the California Office of Statewide Health Planning and Development (OSHPD) Patient Discharge Data for the 2006-2008 epoch. The non-public dataset includes de-identified records of visits to all Orange County hospitals, in addition to all hospitalizations of Orange County residents to either OC or non-OC facilities. In the dataset, the principal diagnosis for a visit was identified using the International Classifications of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). ICD-9-CM is the official system of assigning codes to diagnosis and procedures associated with hospital utilization in the United States. This classification system uses codes up to 5 digits. The fifth digit level detail is used to provide greater specificity and is intended for recording the information substantiated in the clinical record. Hospitalizations related to live-born infants according to the type of birth (ICD-9-CM codes V30 – V39) were excluded from these analyses. See **Section 9**, *Birth Indicators*, for more detailed analysis of births.

Hospitalizations to OC Residents

Hospitalizations due to all causes combined for OC residents were analyzed in this category. From 2006 to 2008, there was an average of 260,038 hospitalizations of Orange County residents per year. The three-year average hospitalization crude rate was 669.8 per 10,000 population. Orange County hospitalization rate per 10,000 was highest for residents living at the following ZIP codes: 92637 (Laguna Woods: 2,726), 90742 (Sunset Beach: 1,416) and 90740 (Seal Beach: 1,394).

The top ten categories for hospitalizations accounted for 64% of all hospitalizations. The leading cause of hospitalization was related to pregnancy, childbirth, and puerperium (18%). Because these data are presented in more detail in **Section 9 Birth Indicators**, they will not be discussed further in this section. The second leading cause of hospitalization was related to diseases of the digestive system (11%), followed by heart disease (9%), mental disorders (6%) and diseases of the genitourinary system (5%).

Leading Causes of Hospitalization, Orange County, 2006-2008 (Average=260,038)



Diseases of the Digestive System –Diseases of the digestive system were the second leading cause of hospitalization for Orange County residents from 2006 to 2008. It is not one single disease but a group of diseases including, but not limited to diseases of the oral cavity, salivary glands and jaws, diseases of the esophagus, stomach and duodenum, appendicitis, hernia of abdominal cavity, noninfective enteritis and colitis, and other diseases of intestines and peritoneum. In Orange County, the 2006 to 2008 average crude hospitalization rate for diseases of the digestive system was 85.7 per 10,000 population. The highest rates of hospitalization due to diseases of the digestive system were found in the following ZIP codes: 92637 (Laguna Woods: 302), 90740 (Seal Beach: 147), 92602 (Irvine: 130), 92662 (Newport Beach: 128) and 90742 (Sunset Beach: 124)

Heart Disease – Heart disease is the third leading cause of hospitalization for Orange County residents from 2006 to 2008, accounting for an average of 23,577 hospitalizations per year or 9% of all hospitalizations. The major modifiable risk factors for cardiovascular disease are high blood pressure, high cholesterol, and cigarette smoking. Other important risk factors are obesity, physical inactivity, and diabetes mellitus. In Orange County, the 2006 to 2008 average crude hospitalization rate for heart disease was 74.0 per 10,000 population. The highest rates of hospitalization due to heart disease were found in the following ZIP codes: 92637 (Laguna Woods: 497), 90740 (Seal Beach: 214), 92835 (Fullerton: 131), 92662 (Newport Beach: 128), 90742 (Sunset Beach: 124).

Table: Leading Causes of Hospitalizations – Orange County, 2006-2008

- **Table 6.1:** Leading Causes of Hospitalization, All Residents

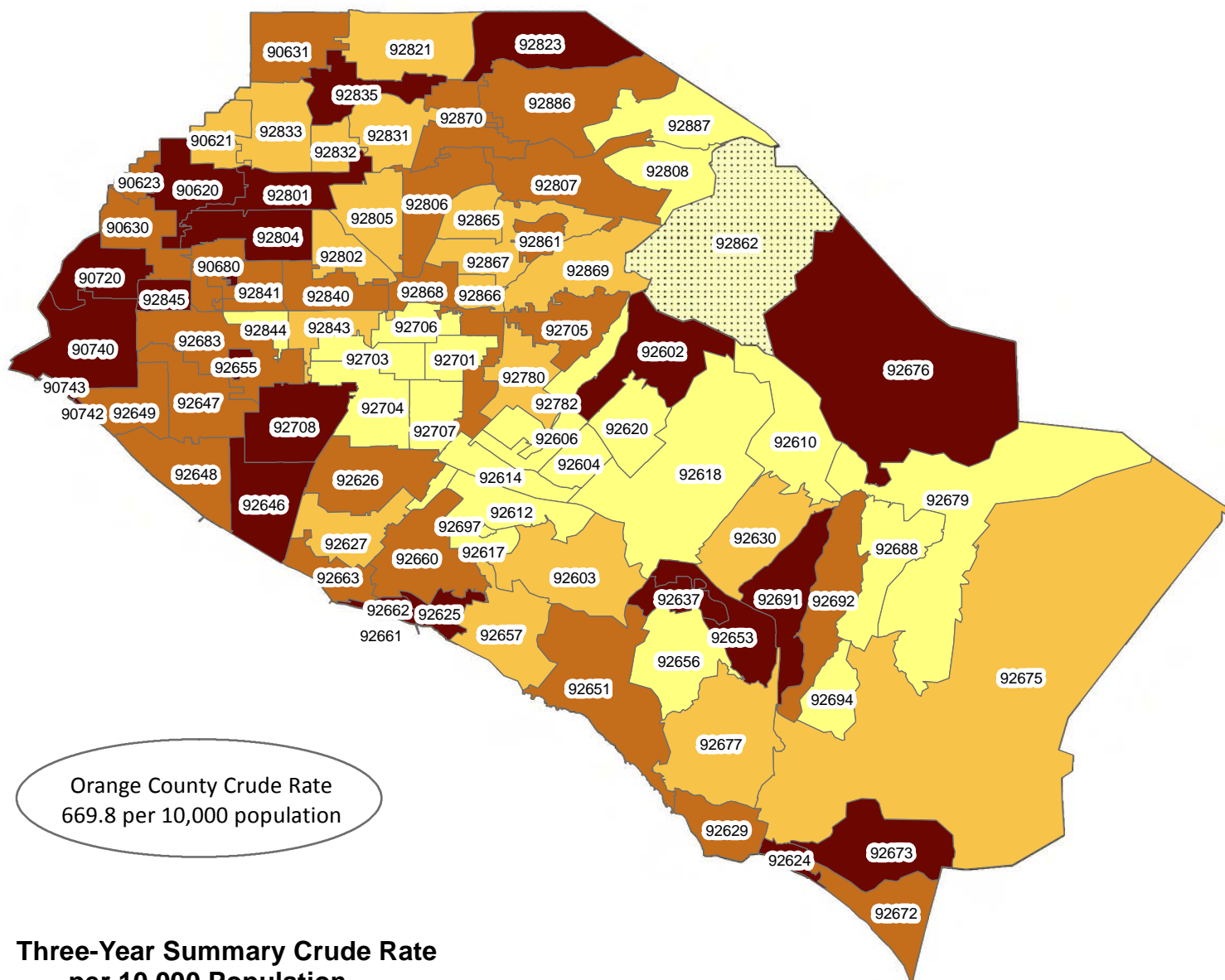
Maps: 2006-2008 Average Crude Hospitalization Rates by ZIP for Orange County, CA

- All Residents Hospitalizations
- Hospitalizations, Diseases of the Digestive Track
- Hospitalizations, Heart Disease

Table 6.1: Leading Causes of Hospitalization
Number of Visits and Percent
All Residents - Orange County, 2006-2008

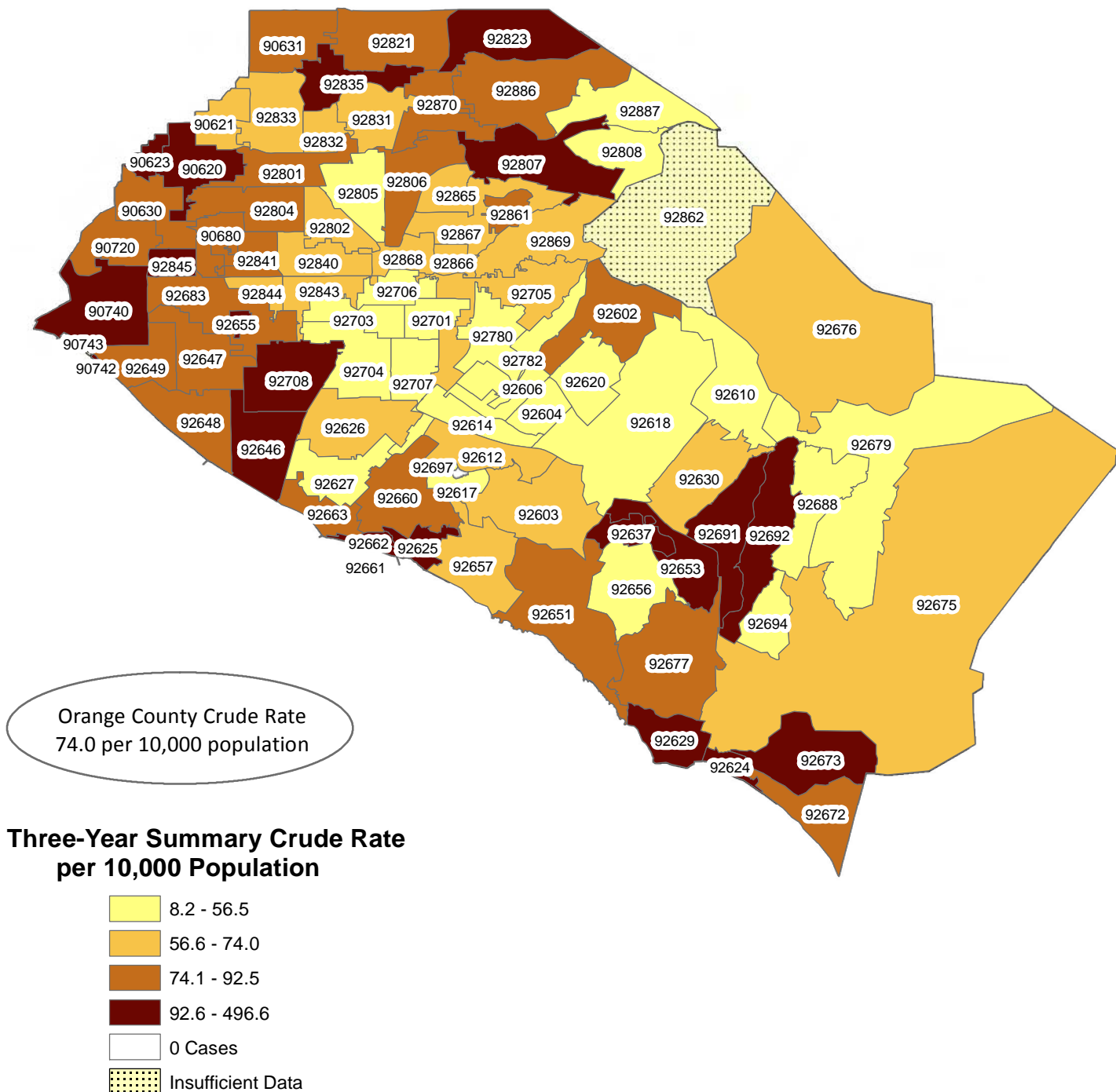
| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Pregnancy, childbirth, and the puerperium (630-677) | 46,618 | 17.9% |
| 2 | Diseases of the digestive system (520-579) | 27,259 | 10.5% |
| 3 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 23,577 | 9.1% |
| 4 | Mental Disorders (290-319) | 14,681 | 5.6% |
| 5 | Diseases of the genitourinary system (580-629) | 13,022 | 5.0% |
| 6 | Malignant neoplasms (140-208,230-234) | 10,376 | 4.0% |
| 7 | Infectious and parasitic diseases (001-139) | 9,483 | 3.6% |
| 8 | Fractures (800-829) | 7,417 | 2.9% |
| 9 | Cerebrovascular disease (430-438) | 6,554 | 2.5% |
| 10 | Pneumonia (480-486) | 6,451 | 2.5% |
| 11 | Diseases of the musculoskeletal system and connective tissue (710-739) | 5,750 | 2.2% |
| 12 | Osteoarthritis and allied disorders (715) | 5,205 | 2.0% |
| 13 | Diseases of the nervous system and sense organs (320-389) | 4,770 | 1.8% |
| 14 | Diseases of the skin and subcutaneous tissue (680-709) | 4,450 | 1.7% |
| 15 | Benign neoplasms (210-229) | 3,532 | 1.4% |
| 16 | Diabetes mellitus (250) | 3,231 | 1.2% |
| 17 | Diseases of the blood and blood-forming organs | 2,788 | 1.1% |
| 18 | Intervertebral disc disorders (722) | 2,641 | 1.0% |
| 19 | Chronic bronchitis (491) | 2,466 | 0.9% |
| 20 | Volume depletion (276.5) | 2,067 | 0.8% |
| 21 | Certain conditions originating in the perinatal period (760-779) | 1,886 | 0.7% |
| 22 | Asthma (493) | 1,867 | 0.7% |
| 23 | Poisonings (960-989) | 1,743 | 0.7% |
| 24 | Congenital anomalies (740-759) | 1,318 | 0.5% |
| 25 | Alcohol dependence syndrome (303) | 1,234 | 0.5% |
| 26 | Acute bronchitis and bronchiolitis (466) | 1,222 | 0.5% |
| | Other | 48,430 | 18.6% |
| | Total = | 260,038 | 100.0% |

All Orange County Hospitalization Rates by ZIP Code of Residence (2006-2008)



Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (1.2% or 2,566 out of 213,420 Hospitalizations).

Orange County Heart Disease Hospitalization Rates by ZIP Code of Residence (2006-2008)

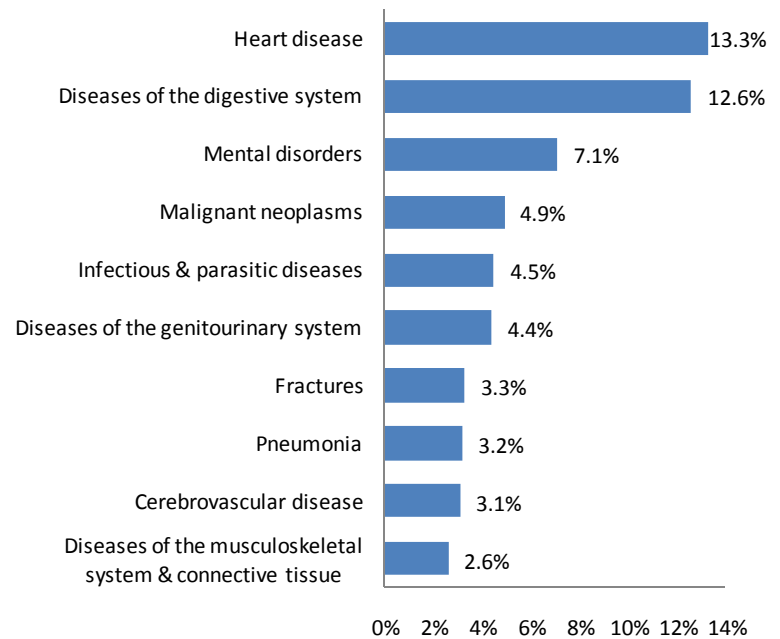


Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (1.2% or 277 out of 23,577 Hospitalizations).

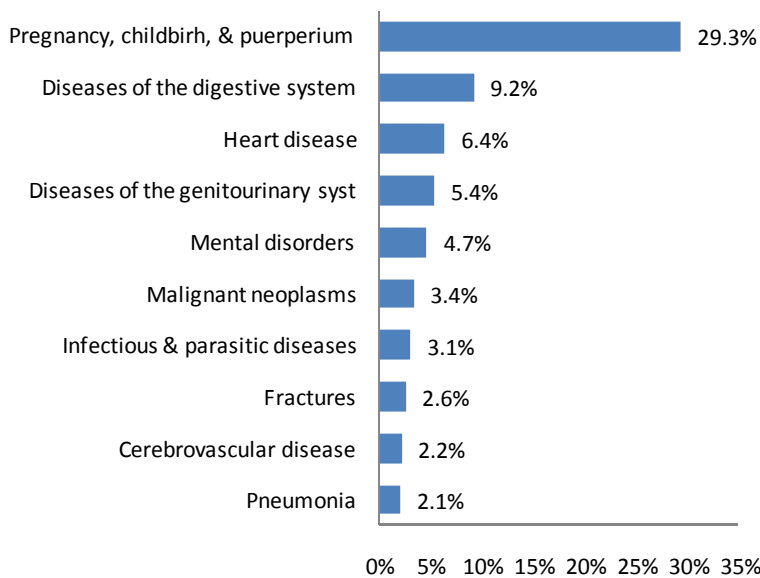
Leading Causes of Hospitalization by Gender

Males – Heart disease (13%) and diseases of the digestive system (13%) were the two leading causes of hospitalizations for OC males, accounting for one-fourth of all male hospitalizations. The third leading cause of hospitalization for males was mental disorders (7%), followed by malignant neoplasms (5%), infectious and parasitic diseases (5%) and diseases of the genitourinary system (4%). On average, the hospitalization rate for males from 2006 to 2008 in Orange County was 633.4 per 10,000 population. The ZIP codes with the highest male crude hospitalization rates were: 92637 (Laguna Woods: 3,071), 90742 (Sunset Beach: 1,629), 90740 (Seal Beach: 1,297) and 92662 (Newport Beach: 1,102)

Leading Causes of Hospitalization Among Males, Orange County, 2006-2008 (Average=100,936)



Leading Causes of Hospitalization Among Females, Orange County, 2006-2008 (Average=159,097)



Females – More than half (61%) of all hospitalizations were to females. The majority of hospitalizations for females were related to pregnancy, childbirth & puerperium which accounted for 29% of all hospitalizations to females. Diseases of the digestive system (9%) was the second leading cause of hospitalization for females, followed by heart disease (6%), diseases of the genitourinary system (5%) and mental disorders (5%). On average, the crude hospitalization rate for females in Orange County from 2006 to 2008 was 706.0 per 10,000 population. The ZIP codes with the highest rate of hospitalizations for females were: 92637 (Laguna Woods: 2,540), 90740 (Seal Beach: 1,470) 90742 (Sunset Beach: 1,157) and 92655 (Midway City: 1,015).

Tables: Leading Causes of Hospitalizations – Orange County Residents by Gender, 2006-2008

- **Table 6.2:** Leading Causes of Hospitalization, Males
- **Table 6.3:** Leading Causes of Hospitalization, Females

Maps: 2006-2008 Average Hospitalization Rates by ZIP for Orange County, CA by Gender

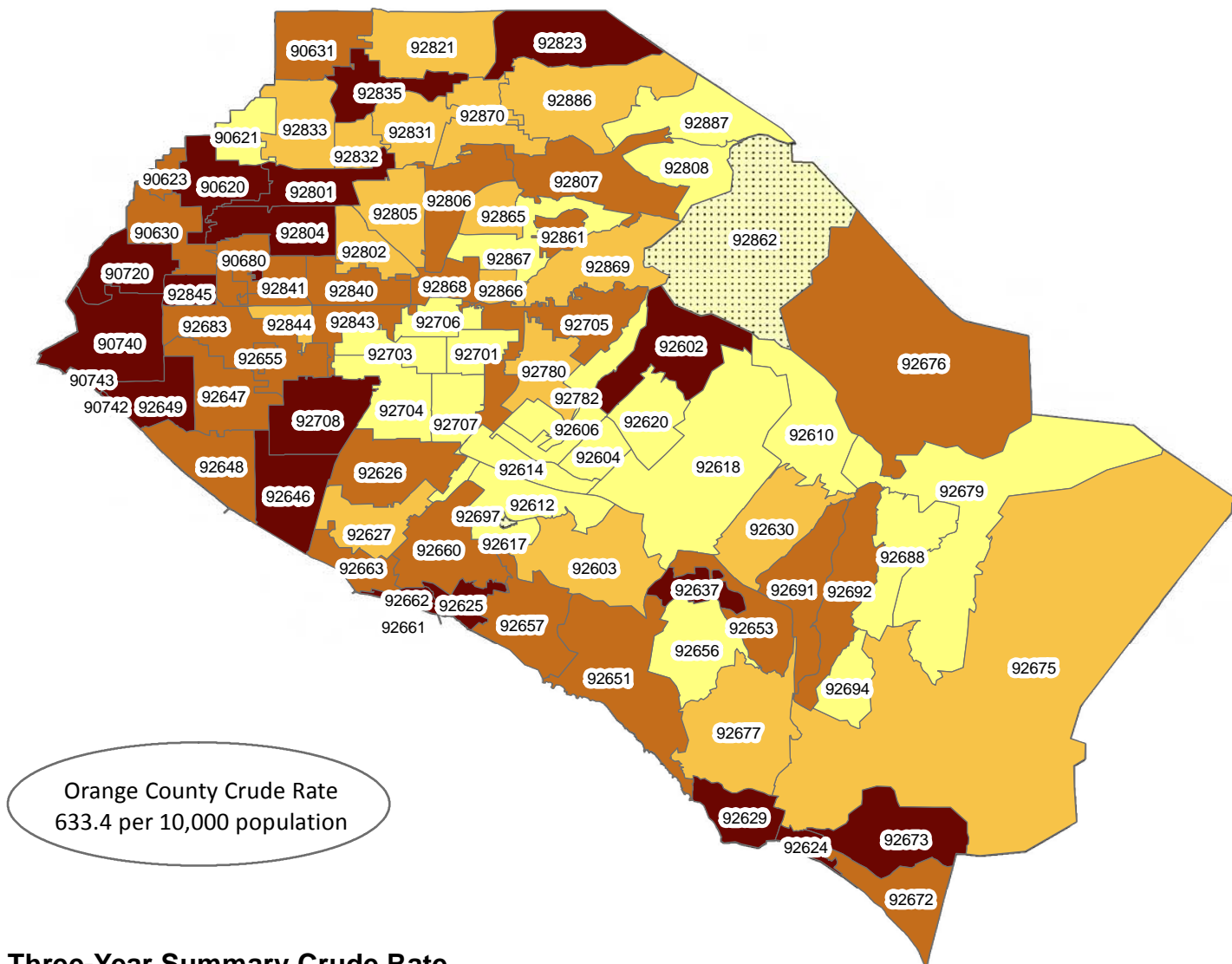
- Hospitalizations, Males
- Hospitalizations, Females



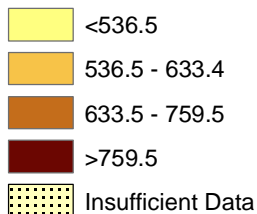
**Table 6.2: Leading Causes of Hospitalization
Number of Visits and Percent
Males - Orange County, 2006-2008**

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 13,393 | 13.3% |
| 2 | Diseases of the digestive system (520-579) | 12,678 | 12.6% |
| 3 | Mental Disorders (290-319) | 7,175 | 7.1% |
| 4 | Malignant neoplasms (140-208,230-234) | 4,910 | 4.9% |
| 5 | Infectious and parasitic diseases (001-139) | 4,524 | 4.5% |
| 6 | Diseases of the genitourinary system (580-629) | 4,396 | 4.4% |
| 7 | Fractures (800-829) | 3,357 | 3.3% |
| 8 | Pneumonia (480-486) | 3,184 | 3.2% |
| 9 | Cerebrovascular disease (430-438) | 3,083 | 3.1% |
| 10 | Diseases of the musculoskeletal system and connective tissue (710-739) | 2,587 | 2.6% |
| 11 | Diseases of the skin and subcutaneous tissue (680-709) | 2,400 | 2.4% |
| 12 | Diseases of the nervous system and sense organs (320-389) | 2,136 | 2.1% |
| 13 | Osteoarthritis and allied disorders (715) | 2,114 | 2.1% |
| 14 | Diabetes mellitus (250) | 1,790 | 1.8% |
| 15 | Intervertebral disc disorders (722) | 1,353 | 1.3% |
| 16 | Diseases of the blood and blood-forming organs | 1,171 | 1.2% |
| 17 | Certain conditions originating in the perinatal period (760-779) | 1,099 | 1.1% |
| 18 | Chronic bronchitis (491) | 1,056 | 1.0% |
| 19 | Volume depletion (276.5) | 895 | 0.9% |
| 20 | Poisonings (960-989) | 762 | 0.8% |
| 21 | Asthma (493) | 743 | 0.7% |
| 22 | Alcohol dependence syndrome (303) | 719 | 0.7% |
| 23 | Congenital anomalies (740-759) | 718 | 0.7% |
| 24 | Acute bronchitis and bronchiolitis (466) | 678 | 0.7% |
| 25 | Benign neoplasms (210-229) | 452 | 0.4% |
| 26 | Pregnancy, childbirth, and the puerperium (630-677) | 0 | 0.0% |
| | Other | 23,563 | 23.3% |
| | Total = | 100,936 | 100.0% |

Orange County Males Hospitalization Rates by ZIP Code of Residence (2006-2008)



Three-Year Summary Crude Rate per 10,000 Population



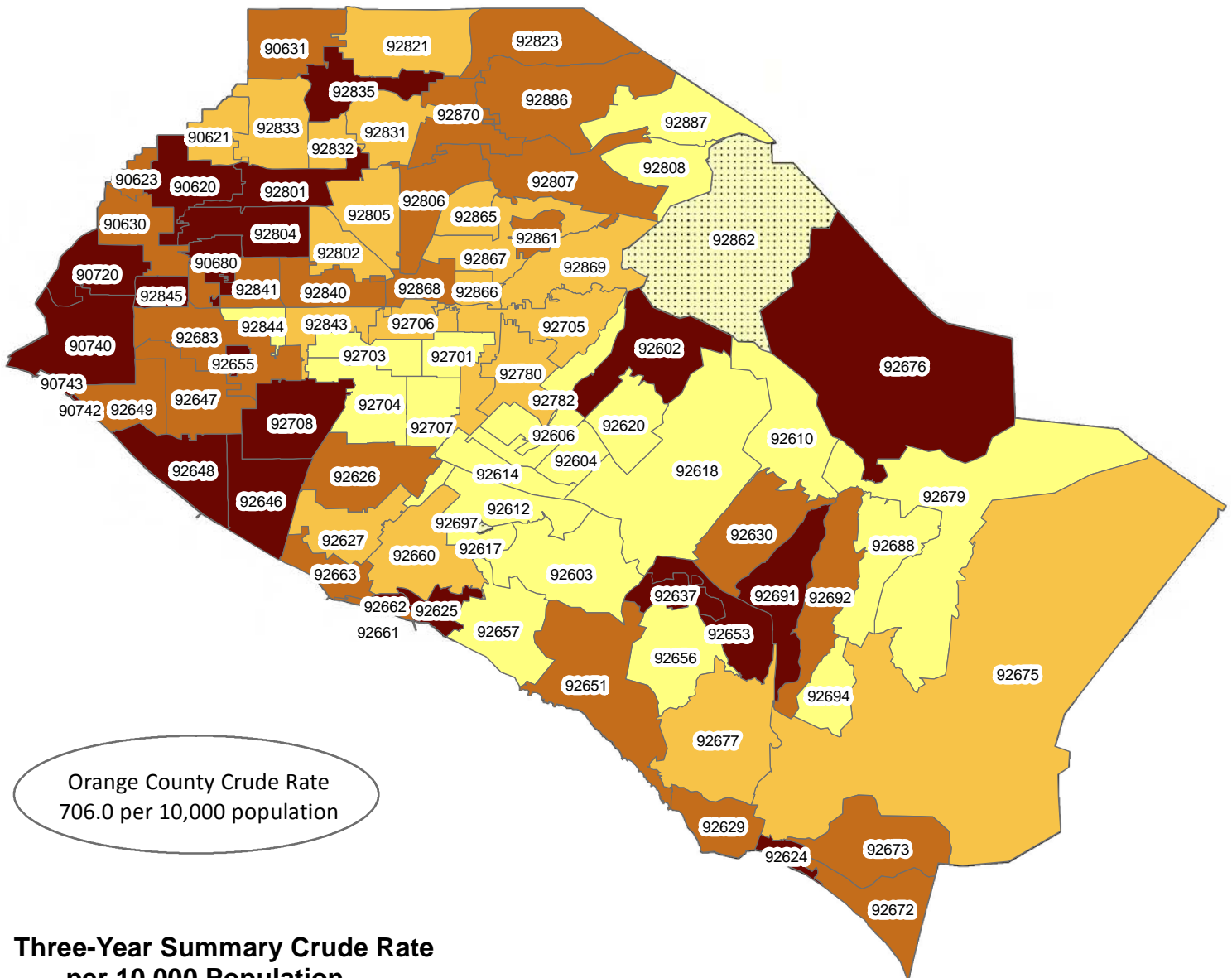
Source: Office of Statewide Health Planning and Development, State of California

The map does not display cases with a PO Box or unknown ZIP Code (1.4% or 1,388 out of 100,936 Hospitalizations).

Table 6.3: Leading Causes of Hospitalization
Number of Visits and Percent
Females - Orange County, 2006-2008

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Pregnancy, childbirth, and the puerperium (630-677) | 46,618 | 29.3% |
| 2 | Diseases of the digestive system (520-579) | 14,581 | 9.2% |
| 3 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 10,184 | 6.4% |
| 4 | Diseases of the genitourinary system (580-629) | 8,626 | 5.4% |
| 5 | Mental Disorders (290-319) | 7,506 | 4.7% |
| 6 | Malignant neoplasms (140-208,230-234) | 5,465 | 3.4% |
| 7 | Infectious and parasitic diseases (001-139) | 4,959 | 3.1% |
| 8 | Fractures (800-829) | 4,060 | 2.6% |
| 9 | Cerebrovascular disease (430-438) | 3,470 | 2.2% |
| 10 | Pneumonia (480-486) | 3,267 | 2.1% |
| 11 | Diseases of the musculoskeletal system and connective tissue (710-739) | 3,163 | 2.0% |
| 12 | Osteoarthritis and allied disorders (715) | 3,092 | 1.9% |
| 13 | Benign neoplasms (210-229) | 3,080 | 1.9% |
| 14 | Diseases of the nervous system and sense organs (320-389) | 2,633 | 1.7% |
| 15 | Diseases of the skin and subcutaneous tissue (680-709) | 2,050 | 1.3% |
| 16 | Diseases of the blood and blood-forming organs | 1,617 | 1.0% |
| 17 | Diabetes mellitus (250) | 1,441 | 0.9% |
| 18 | Chronic bronchitis (491) | 1,410 | 0.9% |
| 19 | Intervertebral disc disorders (722) | 1,287 | 0.8% |
| 20 | Volume depletion (276.5) | 1,172 | 0.7% |
| 21 | Asthma (493) | 1,124 | 0.7% |
| 22 | Poisonings (960-989) | 981 | 0.6% |
| 23 | Certain conditions originating in the perinatal period (760-779) | 786 | 0.5% |
| 24 | Congenital anomalies (740-759) | 599 | 0.4% |
| 25 | Acute bronchitis and bronchiolitis (466) | 544 | 0.3% |
| 26 | Alcohol dependence syndrome (303) | 515 | 0.3% |
| | Other | 24,867 | 15.6% |
| | Total = | 159,097 | 100.0% |

Orange County Females Hospitalization Rates by ZIP Code of Residence (2006-2008)



Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (1.1% or 1,183 out of 112,479 Hospitalizations).

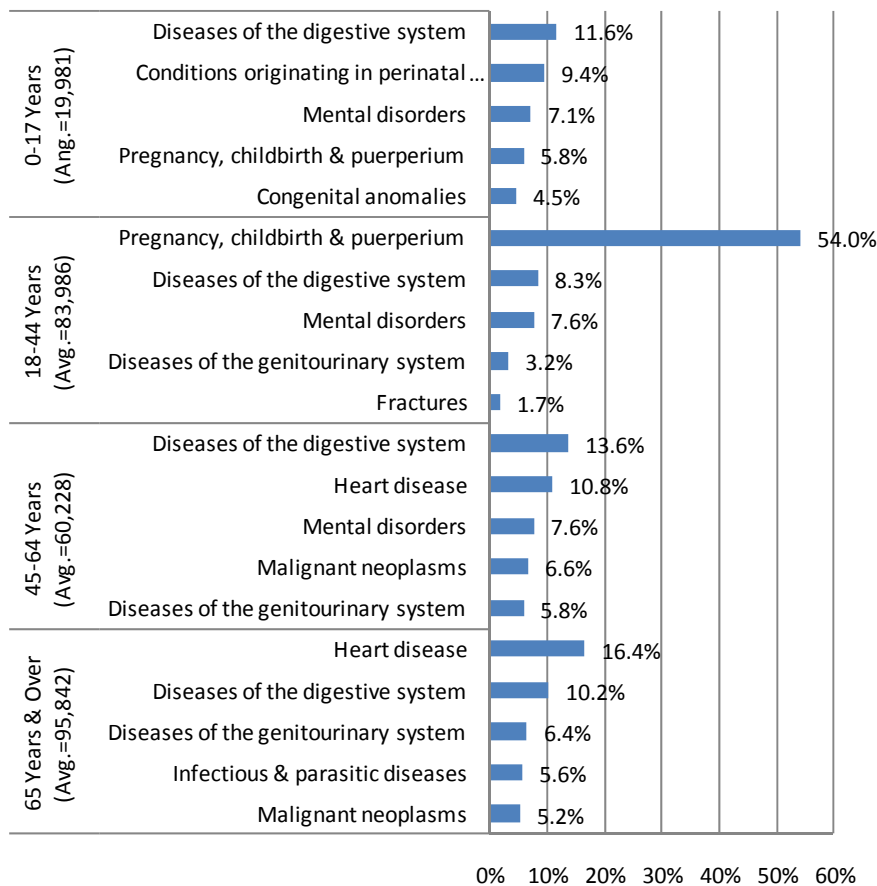
Leading Causes of Hospitalization by Age Group

Children 0 to 17 years – From 2006 to 2008, children 0 to 17 years accounted for the lowest proportion of those hospitalized at 8%. The leading cause of hospitalization for this age group was diseases of the digestive system (12%), followed by conditions originating in perinatal period (9%) and mental disorders (7%). The 2006 to 2008 average crude hospitalization rate for this age group was 221.5 per 10,000 population. The ZIP codes with the highest hospitalization for children 0 to 17 years were: 92602 (Irvine: 404), 92676 (Silverado: 374), 92823 (Brea: 352), 92868 (Orange: 350), and 92603 (Irvine: 319).

Young Adults 18-44 years – Almost a third (32%) of all hospitalizations were residents between 18 and 44 years. The leading cause of hospitalization for this age group was related to pregnancy, childbirth, and puerperium, accounting for more than half of all hospitalizations (54%). Diseases of the digestive system (8%) was the second leading cause of hospitalization for this age group, followed by mental disorders (8%). The 2006 to 2008 average crude hospitalization rate for this age group was 315.7 per 10,000 population. The ZIP codes with the highest hospitalization for adults 18 to 44 years were: 92637 (Laguna Woods: 1,246), 92602 (Irvine: 626), 92823 (Brea: 618), and 92624 (Capistrano Beach: 503).

Adults 45-64 years – From 2006 to 2008, there was an average of 60,228 hospitalizations per year for adults 45 to 64 years, accounting for 23% of all hospitalizations in Orange County. The leading cause of hospitalization for this age group was diseases of the digestive system (14%), followed by heart disease (11%) and mental disorders (8%). The 2006 to 2008 average crude hospitalization rate for this age group was 778.0 per 10,000 population. The ZIP codes with the highest hospitalization rates for adults 45 to 64 years were: 92637 (Laguna Woods: 2,613), 90742 (Sunset Beach: 1,567), 92801 (Anaheim: 1,366) and 92602 (Irvine: 1,285).

Leading Causes of Hospitalization by Age Group, Orange County, 2006-2008 (Average=260,037)



Older Adults 65 years and older – Seniors 65 years and older made up the highest percentage of hospitalizations at 37%. The leading cause of hospitalization for this age group was heart disease (16%), followed by diseases of the digestive system (10%), diseases of the genitourinary system (6%) and infectious and parasitic diseases (6%). The 2006 to 2008 average crude hospitalization rate for this age group was 2810.3 per 10,000 population. The ZIP codes with the highest hospitalization for older adults 65 years and older were: 92694 (Ladera Ranch: 6,646), 92602 (Irvine: 6,298), 90742 (Sunset Beach: 5,189) and 92655 (Midway City: 3,977).

Tables: Leading Causes of Hospitalizations – Orange County Residents by Age Group, 2006-2008

- **Table 6.4:** Leading Causes of Hospitalization, 0 to 17 years old
- **Table 6.5:** Leading Causes of Hospitalization, 18 to 44 years old
- **Table 6.6:** Leading Causes of Hospitalization, 45 to 64 years old
- **Table 6.7:** Leading Causes of Hospitalization, 65 years and older

Maps: 2006-2008 Average Hospitalization Rates by ZIP for Orange County, CA by Age Group

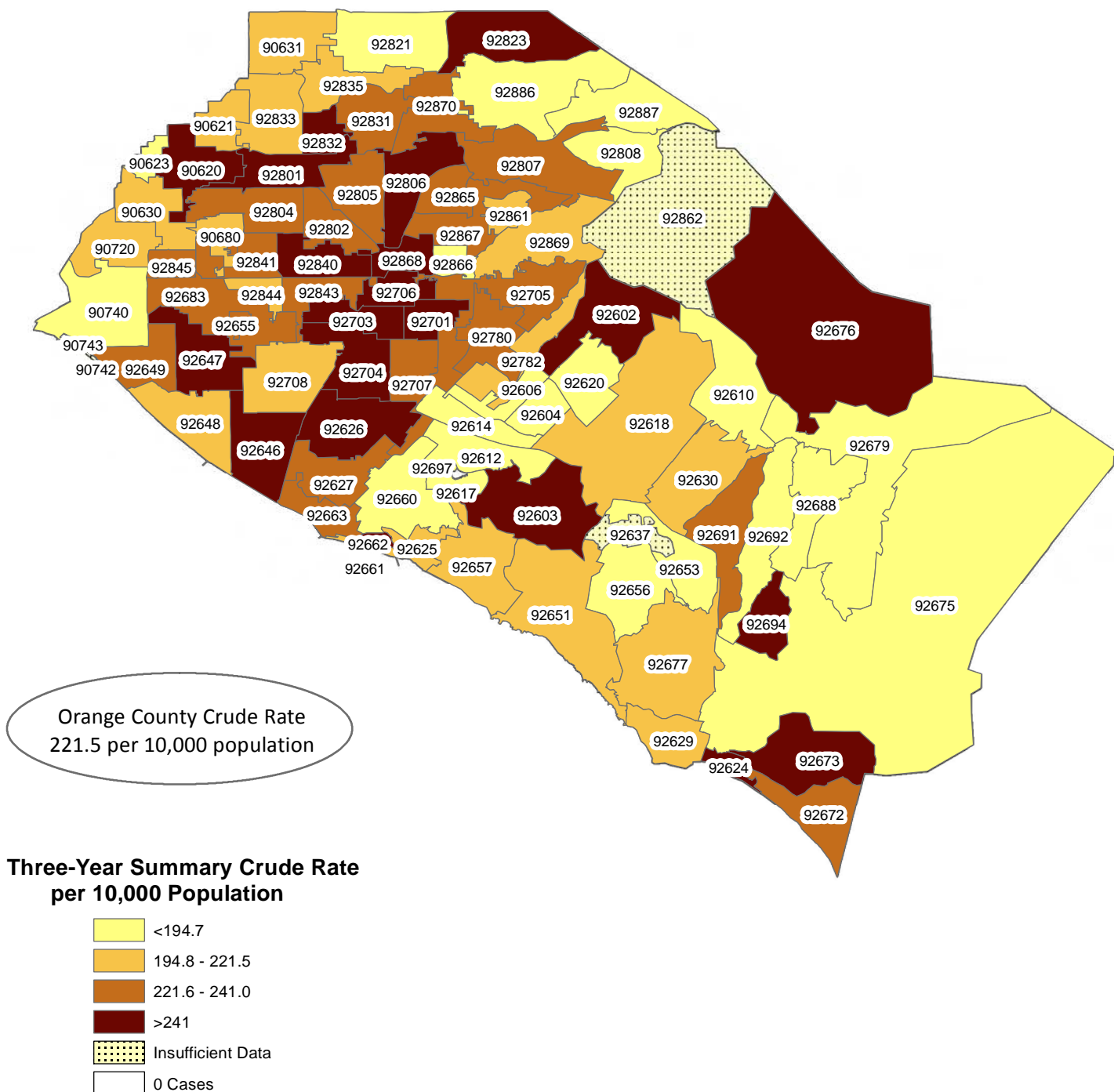
- Hospitalizations, 0 to 17 years old
- Hospitalizations, 18 to 44 years old
- Hospitalizations, 45 to 64 years old
- Hospitalizations, 65 years and older



Table 6.4: Leading Causes of Hospitalization
Number of Visits and Percent
0-17 Years - Orange County, 2006-2008

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Diseases of the digestive system (520-579) | 2,314 | 11.6% |
| 2 | Certain conditions originating in the perinatal period (760-779) | 1,886 | 9.4% |
| 3 | Mental Disorders (290-319) | 1,415 | 7.1% |
| 4 | Pregnancy, childbirth, and the puerperium (630-677) | 1,168 | 5.8% |
| 5 | Congenital anomalies (740-759) | 907 | 4.5% |
| 6 | Acute bronchitis and bronchiolitis (466) | 892 | 4.5% |
| 7 | Infectious and parasitic diseases (001-139) | 862 | 4.3% |
| 8 | Pneumonia (480-486) | 795 | 4.0% |
| 9 | Fractures (800-829) | 745 | 3.7% |
| 10 | Diseases of the nervous system and sense organs (320-389) | 717 | 3.6% |
| 11 | Diseases of the genitourinary system (580-629) | 669 | 3.3% |
| 12 | Asthma (493) | 569 | 2.8% |
| 13 | Diseases of the skin and subcutaneous tissue (680-709) | 470 | 2.4% |
| 14 | Volume depletion (276.5) | 405 | 2.0% |
| 15 | Diseases of the blood and blood-forming organs | 371 | 1.9% |
| 16 | Diseases of the musculoskeletal system and connective tissue (710-739) | 357 | 1.8% |
| 17 | Malignant neoplasms (140-208,230-234) | 269 | 1.3% |
| 18 | Poisonings (960-989) | 201 | 1.0% |
| 19 | Diabetes mellitus (250) | 173 | 0.9% |
| 20 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 121 | 0.6% |
| 21 | Benign neoplasms (210-229) | 74 | 0.4% |
| 22 | Cerebrovascular disease (430-438) | 40 | 0.2% |
| 23 | Alcohol dependence syndrome (303) | 28 | 0.1% |
| 24 | Chronic bronchitis (491) | 10 | 0.1% |
| 25 | Intervertebral disc disorders (722) | 10 | 0.1% |
| 26 | Osteoarthritis and allied disorders (715) | 1 | 0.0% |
| | Other | 4,512 | 22.6% |
| | Total = | 19,981 | 100.0% |

Orange County 0 to 17 Years Hospitalization Rates by ZIP Code of Residence (2006-2008)

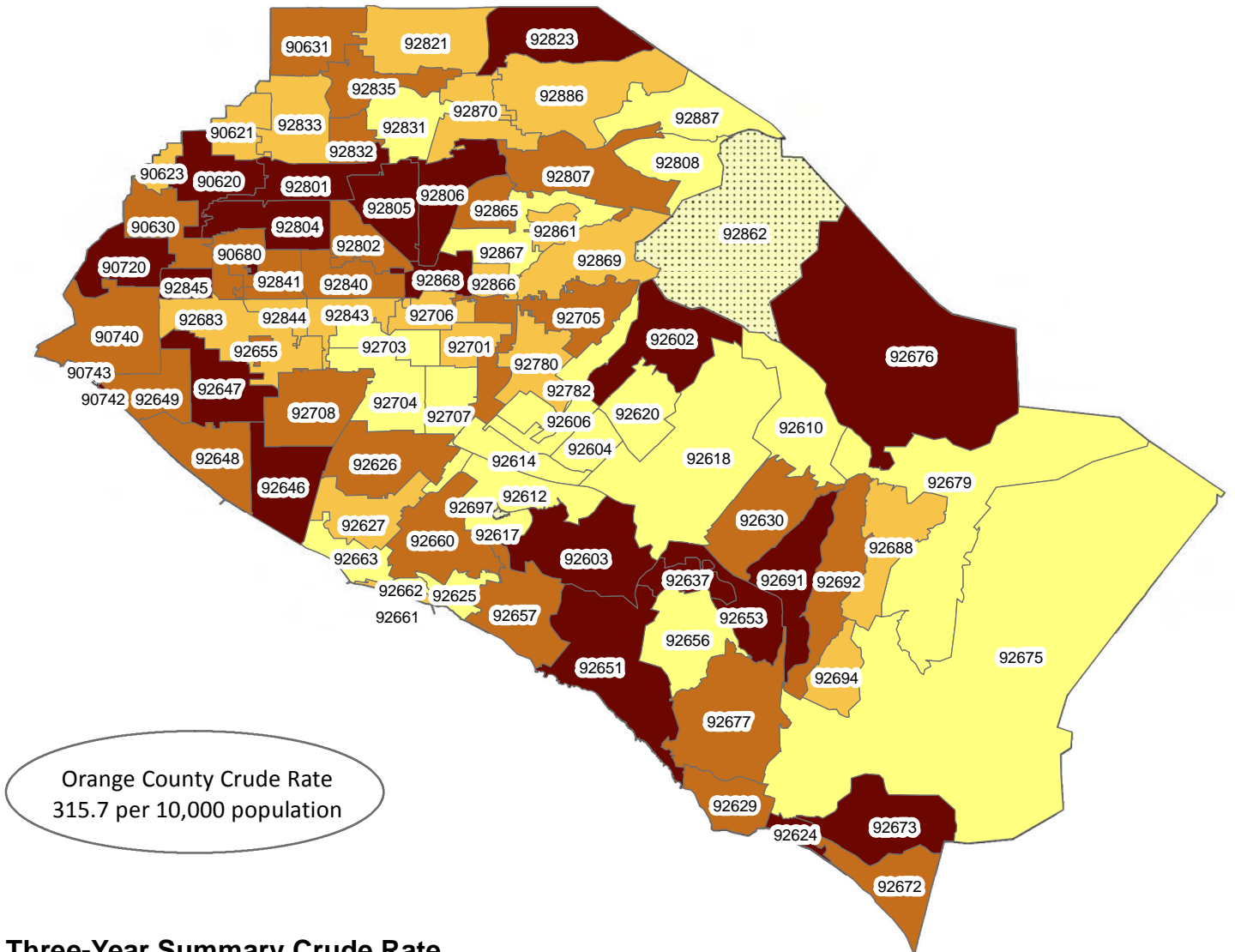


Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (0.7% or 137 out of 18,813 Hospitalizations).

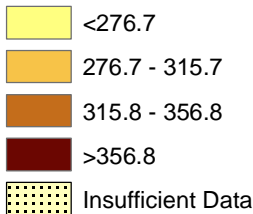
Table 6.5: Leading Causes of Hospitalization
Number of Visits and Percent
18-44 Years - Orange County, 2006-2008

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Pregnancy, childbirth, and the puerperium (630-677) | 45,327 | 54.0% |
| 2 | Diseases of the digestive system (520-579) | 6,956 | 8.3% |
| 3 | Mental Disorders (290-319) | 6,407 | 7.6% |
| 4 | Diseases of the genitourinary system (580-629) | 2,694 | 3.2% |
| 5 | Fractures (800-829) | 1,463 | 1.7% |
| 6 | Benign neoplasms (210-229) | 1,289 | 1.5% |
| 7 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 1,250 | 1.5% |
| 8 | Infectious and parasitic diseases (001-139) | 1,154 | 1.4% |
| 9 | Malignant neoplasms (140-208,230-234) | 1,152 | 1.4% |
| 10 | Diseases of the skin and subcutaneous tissue (680-709) | 1,074 | 1.3% |
| 11 | Diseases of the nervous system and sense organs (320-389) | 975 | 1.2% |
| 12 | Diseases of the musculoskeletal system and connective tissue (710-739) | 941 | 1.1% |
| 13 | Diabetes mellitus (250) | 794 | 0.9% |
| 14 | Poisonings (960-989) | 776 | 0.9% |
| 15 | Intervertebral disc disorders (722) | 775 | 0.9% |
| 16 | Alcohol dependence syndrome (303) | 533 | 0.6% |
| 17 | Diseases of the blood and blood-forming organs | 505 | 0.6% |
| 18 | Pneumonia (480-486) | 442 | 0.5% |
| 19 | Cerebrovascular disease (430-438) | 296 | 0.4% |
| 20 | Asthma (493) | 272 | 0.3% |
| 21 | Volume depletion (276.5) | 183 | 0.2% |
| 22 | Congenital anomalies (740-759) | 167 | 0.2% |
| 23 | Osteoarthritis and allied disorders (715) | 103 | 0.1% |
| 24 | Acute bronchitis and bronchiolitis (466) | 40 | 0.0% |
| 25 | Chronic bronchitis (491) | 26 | 0.0% |
| | Other | 8,392 | 10.0% |
| | Total = | 83,986 | 100.0% |

Orange County 18 to 44 Years Hospitalization Rates by ZIP Code of Residence (2006-2008)



Three-Year Summary Crude Rate per 10,000 Population



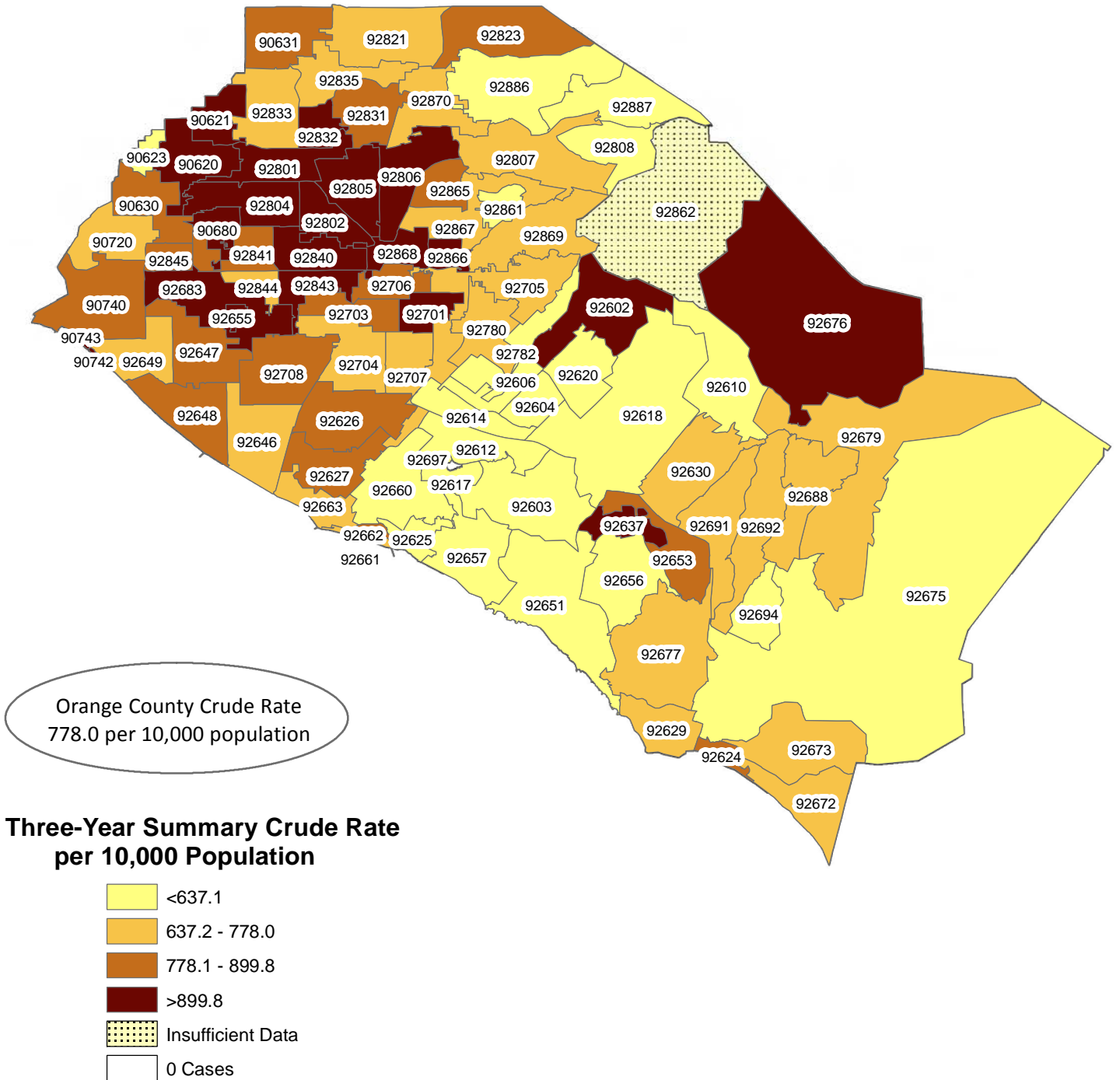
Source: Office of Statewide Health Planning and Development, State of California

The map does not display cases with a PO Box or unknown ZIP Code (1.4% or 550 out of 38,659 Hospitalizations).

**Table 6.6: Leading Causes of Hospitalization
Number of Visits and Percent
45-64 Years - Orange County, 2006-2008**

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Diseases of the digestive system (520-579) | 8,196 | 13.6% |
| 2 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 6,514 | 10.8% |
| 3 | Mental Disorders (290-319) | 4,567 | 7.6% |
| 4 | Malignant neoplasms (140-208,230-234) | 3,959 | 6.6% |
| 5 | Diseases of the genitourinary system (580-629) | 3,480 | 5.8% |
| 6 | Infectious and parasitic diseases (001-139) | 2,060 | 3.4% |
| 7 | Diseases of the musculoskeletal system and connective tissue (710-739) | 1,901 | 3.2% |
| 8 | Osteoarthritis and allied disorders (715) | 1,810 | 3.0% |
| 9 | Benign neoplasms (210-229) | 1,696 | 2.8% |
| 10 | Cerebrovascular disease (430-438) | 1,523 | 2.5% |
| 11 | Diseases of the skin and subcutaneous tissue (680-709) | 1,381 | 2.3% |
| 12 | Fractures (800-829) | 1,287 | 2.1% |
| 13 | Diseases of the nervous system and sense organs (320-389) | 1,240 | 2.1% |
| 14 | Intervertebral disc disorders (722) | 1,208 | 2.0% |
| 15 | Diabetes mellitus (250) | 1,132 | 1.9% |
| 16 | Pneumonia (480-486) | 1,118 | 1.9% |
| 17 | Diseases of the blood and blood-forming organs | 682 | 1.1% |
| 18 | Alcohol dependence syndrome (303) | 590 | 1.0% |
| 19 | Chronic bronchitis (491) | 542 | 0.9% |
| 20 | Poisonings (960-989) | 524 | 0.9% |
| 21 | Asthma (493) | 449 | 0.7% |
| 22 | Volume depletion (276.5) | 347 | 0.6% |
| 23 | Congenital anomalies (740-759) | 142 | 0.2% |
| 24 | Pregnancy, childbirth, and the puerperium (630-677) | 123 | 0.2% |
| 25 | Acute bronchitis and bronchiolitis (466) | 73 | 0.1% |
| | Other | 13,684 | 22.7% |
| | Total = | 60,228 | 100.0% |

Orange County 45 to 64 Years Hospitalization Rates by ZIP Code of Residence (2006-2008)

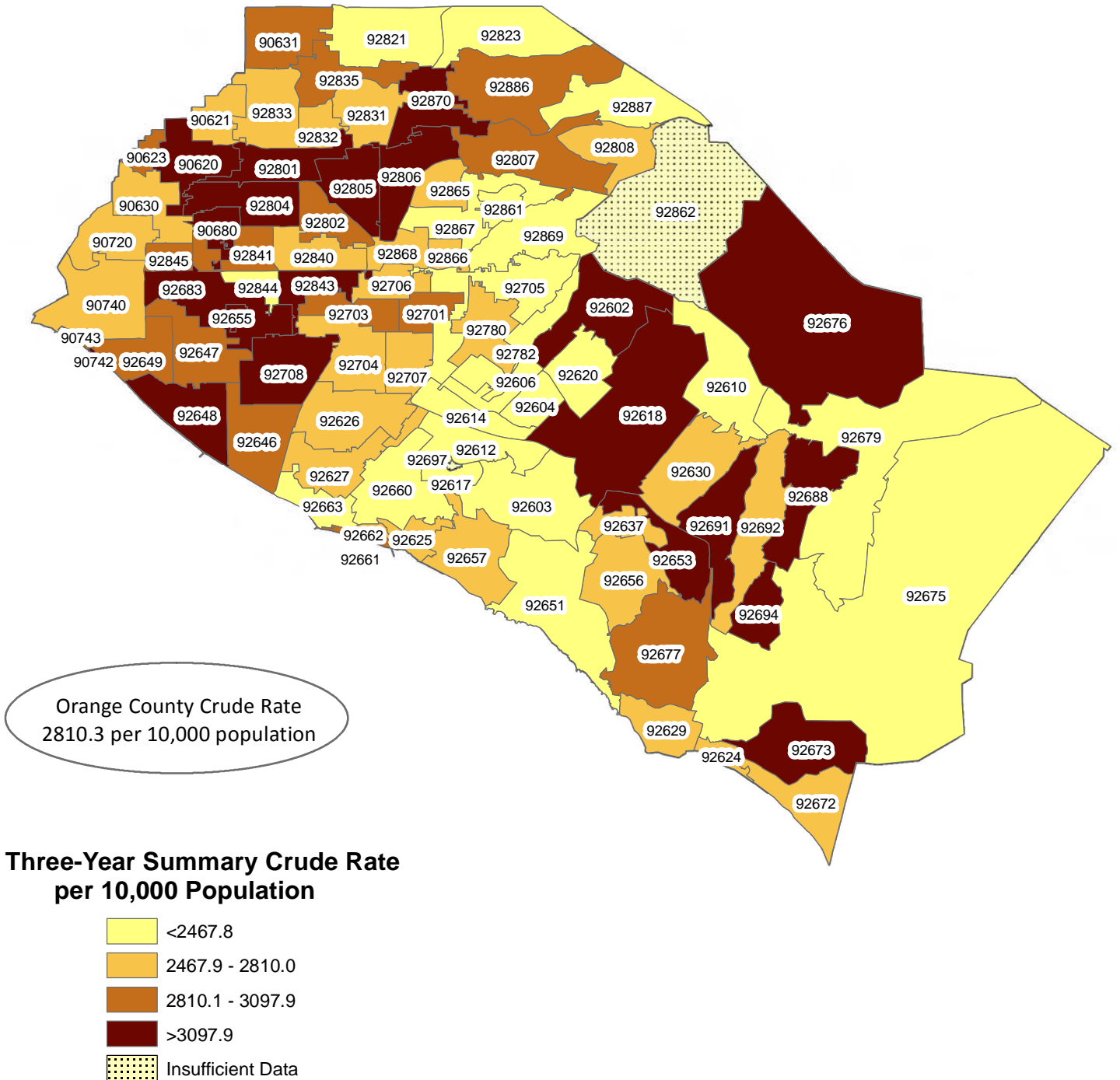


Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (1.6% or 973 out of 60,105 Hospitalizations).

**Table 6.7: Leading Causes of Hospitalization
Number of Visits and Percent
65 Years and Older - Orange County, 2006-2008**

| Rank | Cause | Number of Visits (3-Year Average) | Percent |
|------|--|--------------------------------------|---------|
| 1 | Heart disease (391-392.0,393-398,402,404,410-416,420-429) | 15,692 | 16.4% |
| 2 | Diseases of the digestive system (520-579) | 9,793 | 10.2% |
| 3 | Diseases of the genitourinary system (580-629) | 6,180 | 6.4% |
| 4 | Infectious and parasitic diseases (001-139) | 5,407 | 5.6% |
| 5 | Malignant neoplasms (140-208,230-234) | 4,995 | 5.2% |
| 6 | Cerebrovascular disease (430-438) | 4,695 | 4.9% |
| 7 | Pneumonia (480-486) | 4,095 | 4.3% |
| 8 | Fractures (800-829) | 3,922 | 4.1% |
| 9 | Osteoarthritis and allied disorders (715) | 3,291 | 3.4% |
| 10 | Diseases of the musculoskeletal system and connective tissue (710-739) | 2,551 | 2.7% |
| 11 | Mental Disorders (290-319) | 2,293 | 2.4% |
| 12 | Chronic bronchitis (491) | 1,888 | 2.0% |
| 13 | Diseases of the nervous system and sense organs (320-389) | 1,838 | 1.9% |
| 14 | Diseases of the skin and subcutaneous tissue (680-709) | 1,525 | 1.6% |
| 15 | Diseases of the blood and blood-forming organs | 1,229 | 1.3% |
| 16 | Diabetes mellitus (250) | 1,132 | 1.2% |
| 17 | Volume depletion (276.5) | 1,132 | 1.2% |
| 18 | Intervertebral disc disorders (722) | 648 | 0.7% |
| 19 | Asthma (493) | 577 | 0.6% |
| 20 | Benign neoplasms (210-229) | 473 | 0.5% |
| 21 | Poisonings (960-989) | 243 | 0.3% |
| 22 | Acute bronchitis and bronchiolitis (466) | 216 | 0.2% |
| 23 | Congenital anomalies (740-759) | 102 | 0.1% |
| 24 | Alcohol dependence syndrome (303) | 83 | 0.1% |
| | Other | 21,842 | 22.8% |
| | Total = | 95,842 | 100.0% |

Orange County 65 Years and Older Hospitalization Rates by ZIP Code of Residence (2006-2008)



Source: Office of Statewide Health Planning and Development, State of California
The map does not display cases with a PO Box or unknown ZIP Code (0.9% or 904 out of 95,842 Hospitalizations).

Section 7

Emergency Department Visits

Emergency Departments (ED) in Orange County (OC) face significant overcrowding and uncompensated care issues. EDs receive patients from every background, socio-economic group and health status. By law, EDs are required to provide a medical screening examination to all patients presenting, regardless of the severity of the illness (i.e. whether life-threatening or not) or patient's ability to pay. EDs therefore can become the means to access primary care. Providers are allowed to seek payment only after the patient has been stabilized. The Orange County Health Care Agency typically contributes over \$6,000,000 annually through its Emergency Medical Services Fund (EMSF) towards the compensation of ED providers for services to nonpaying patients. Understanding the utilization of EDs is important for establishing prevention strategies and policies for better healthcare access. Analysis of ED visits provides an overview of the ED utilization, including demographic and geographic profile of the users, and the most common reasons for visits.

About the Data

The data for this section comes from the California Office of Statewide Health Planning and Development (OSHPD) Emergency Department Visits Data for the period 2006-2008. The non-public dataset includes de-identified records of visits to all Orange County hospital emergency departments in addition to all ED visits by Orange County residents to either OC or non-OC facilities. In the dataset the principal diagnosis for a visit is identified using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). ICD-9-CM is the official system of assigning codes to diagnoses and procedures associated with hospital utilization in the United States. We utilized 4 of the 5 possible digits in the ICD-9 code to group principal diagnoses.

When a visit to an emergency department results in the patient being admitted to the same hospital, this visit is not included in the OSHPD ED visits dataset. Instead, it is included in the OSHPD Patient Discharge (PD) data. Thus, to get the complete picture of visits to emergency departments, all such visits that resulted in an admission were merged in the present analysis with the ED visits dataset. Insufficient data indicates areas where the total number of cases was low (e.g., 3-year average < 5) or the ZIP code population was small resulting in unstable rates.

On average OC residents made 699,828 ED visits during the study period. Some residents may have visited an ED more than once and so these data are not unduplicated counts. Additionally, about 12% (n = 97,123) of the visits to emergency departments in Orange County were by patients who did not reside in OC. Note, ED visits made by non-OC residents are not included in the following analysis.

Emergency Departments Visits by OC Residents

Most of the ED visits made by OC residents (94% or 3-year average 657,675) were to Orange County facilities. Five OC hospital EDs accounted for 32% all resident ED visits including: Hoag hospital (8.2% or 3-year average 57,125 visits), St Joseph's hospital (6.7% or 3-year average 47,098 visits), Children's Hospital of Orange County (5.9% or 3-year average 41,494 visits), Anaheim Memorial Medical Center (5.6% or 3-year average 39,234 visits) and Kaiser Foundation hospital-Anaheim (5.4% or 3-year average 38,070 visits). Predictably, of all visits made by OC residents to emergency departments located outside the county (6% of all ED visits, 3-year average 42,153 visits), nearly 62% of such visits (3-year average 26,064) were to facilities in Los Angeles County.

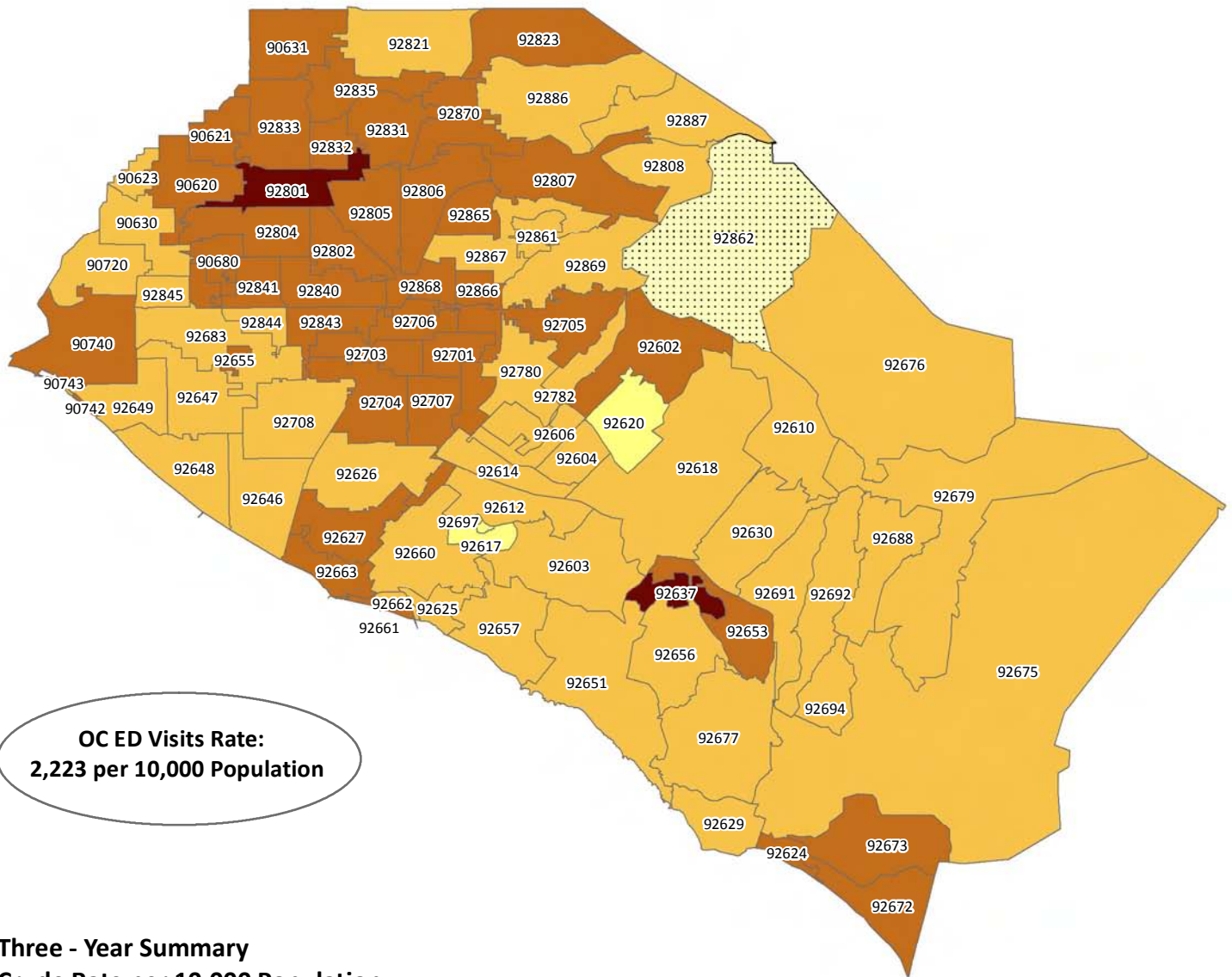
On average, OC residents made 699,828 ED visits each year between 2006 to 2008. The following map presents the 3-year average crude rate for ED visits by the patient's ZIP Code of residence. Countywide, the average ED visit rate was 2,223 per 10,000 population. The ZIP codes with the lowest crude rate of ED visit per 10,000 were found for residents living in the city of Irvine (92697, 92617, and 92620). The ZIP codes with the highest rate of ED visits per 10,000 were 92637 (Laguna Woods) with a rate of 4,551 ED visits and 92801 (Anaheim) with a rate of 3,549 ED visits.

Map: 2006 – 2008 Average Crude Rate Emergency Department Visits by ZIP Code for Orange County, CA






- All Residents Emergency Department Visits



Orange County Emergency Department Visit Rates by ZIP Code of Residence (2006-2008)



**Three - Year Summary
Crude Rate per 10,000 Population**

-  Insufficient Data
-  <1,110
-  1,111 - 2,223
-  2,224 - 3,387
-  >3,387

Emergency Department Utilization by Gender

Just over a half of the visits to emergency departments were among female residents (53.7%, 3-year average 375,325). Male residents represented 46.3% of all visits (3-year average 324,187; Table 1).

| Gender | ED Visits 3-Year Total | ED Visits 3-Year Average | Percent |
|--------------|---------------------------|-----------------------------|-------------|
| Male | 972,561 | 324,187 | 46.3% |
| Female | 1,126,874 | 375,625 | 53.7% |
| Unknown | 48 | 16 | - |
| Total | 2,099,483 | 699,828 | 100% |

The following maps present the average rate of ED visits for males and females by ZIP code of residence for 2006-2008. The ED visit rate for males was 2,063 per 10,000 population. The ZIP codes with the lowest rate of ED visits for males, similar to all residents, were found in the city of Irvine (92697, 92617, and 92620). The one ZIP code that stood out as having the highest rate of ED visits for males was 92637 (Laguna Woods) with a rate of 4,795 per 10,000 population.

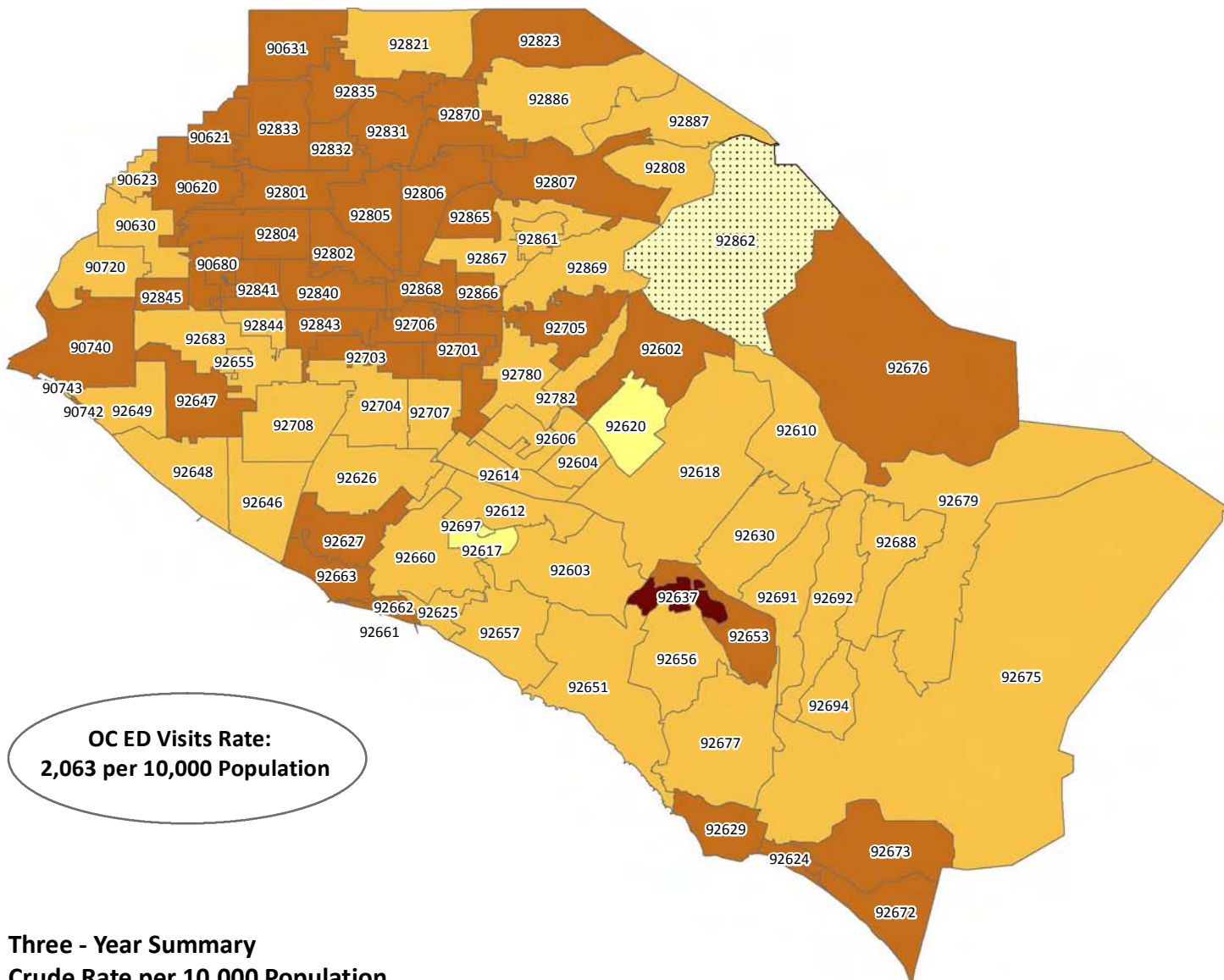
The countywide ED visit rate for females was 2,383 per 10,000 population. The ZIP codes with the lowest rate of ED visits for females were found in the city of Irvine (92697, 92617, and 92620) and additionally in the city of Foothill Ranch (92610). The three ZIP codes with the highest rate of ED visits per 10,000 for females were 92637 (Laguna Hills) with a rate of 4,420, 92801 (Anaheim) with a rate of 3,914, and 92602 (Irvine) with a rate of 3,495.

Maps: 2006 – 2008 Average Crude Rate Emergency Department Visits by ZIP Code for Orange County, CA

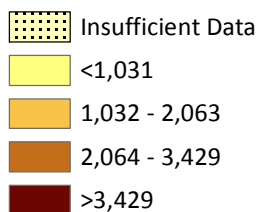
- Emergency Department Visits, Males
- Emergency Department Visits, Females



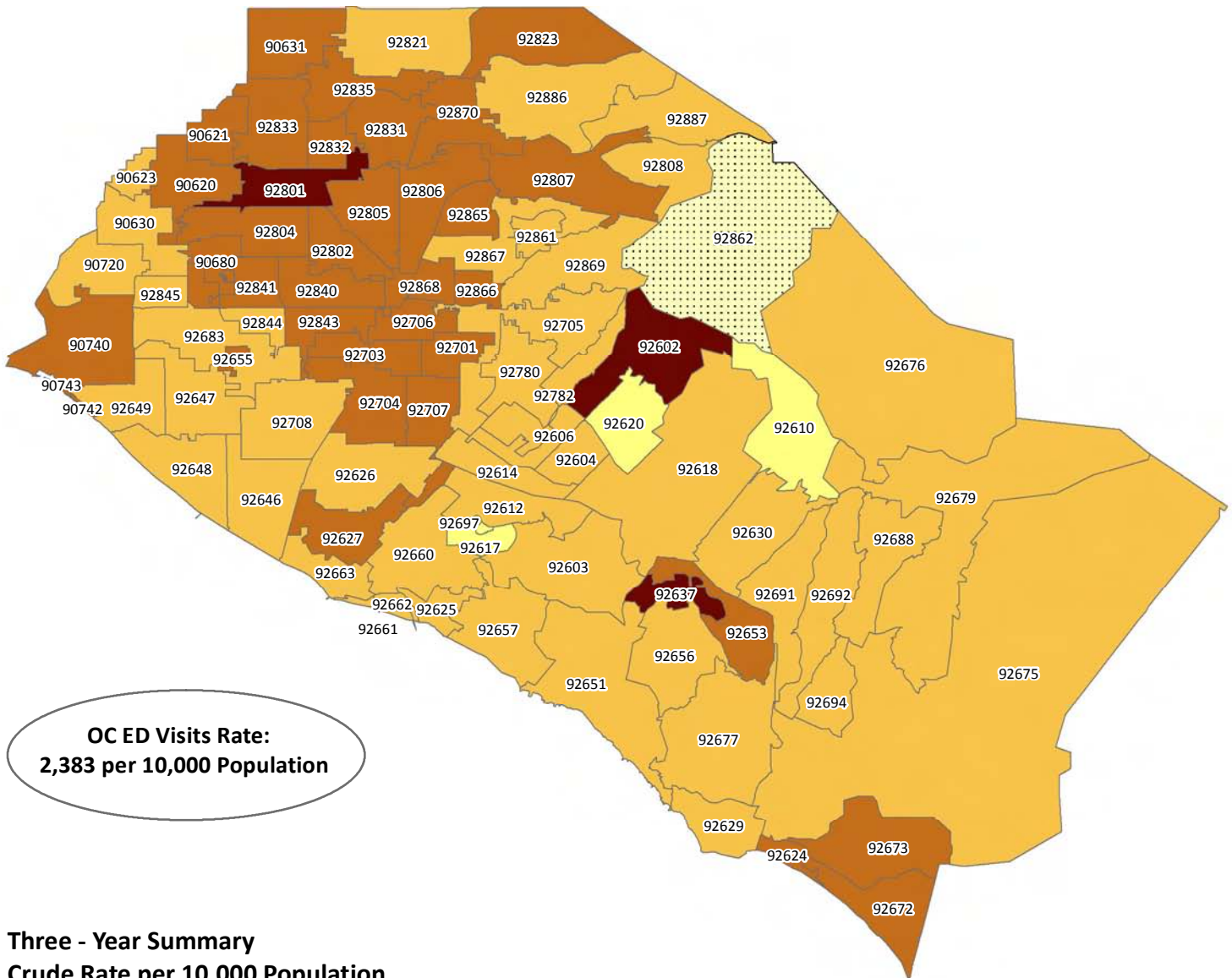
Orange County Emergency Department Visit Rates (All Males) by ZIP Code of Residence (2006-2008)



Three - Year Summary Crude Rate per 10,000 Population



Orange County Emergency Department Visit Rates (All Females) by ZIP Code of Residence (2006-2008)

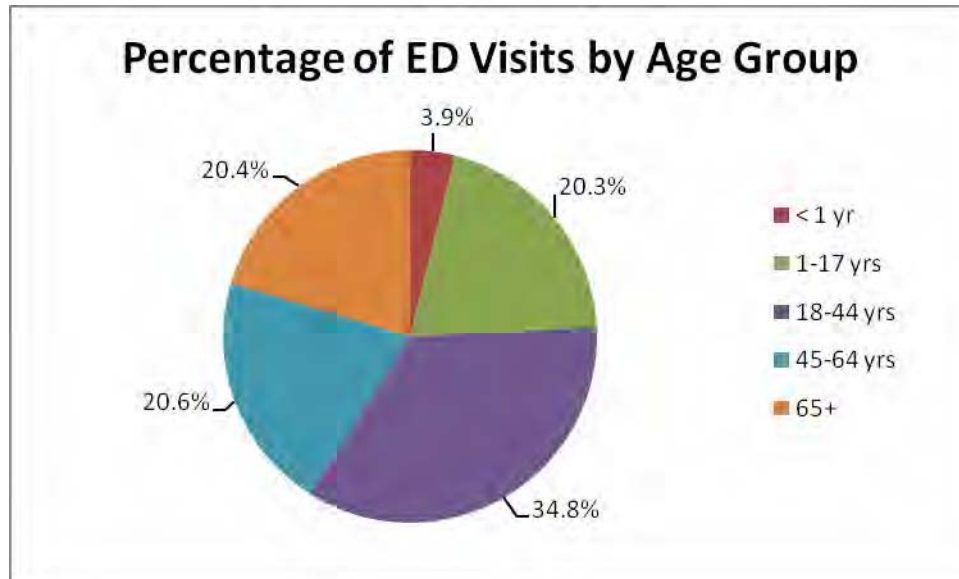


**Three - Year Summary
Crude Rate per 10,000 Population**

- Insufficient Data
- <1,191
- 1,192 - 2,383
- 2,384 - 3,401
- >3,401

Emergency Department Utilization by Age Group

Nearly 4% of visits occurred among infants as shown below in the figure; while one in five visits (20%) were by children and adolescents (1 - 17 years of age). More than half (55%) of the visits were made by adults, with 34.8% by 18-44 year olds and 20.6% by 45-64 year olds, while seniors age 65 years or older made about 20.4% of all visits.



Infants Under 1 Year – Infants made up the smallest percentage of those who visited the Emergency Department (3.9%). However, they had the highest rate of Emergency Room visits (5,807 per 10,000 population) compared to all other age groups. The areas with highest rates of ED visits for this age group were in the north central part of the county. Specifically, the ZIP codes with the highest rates of ED visits per 10,000 for infants were 92703 (Santa Ana: 9,979), 92704 (Santa Ana: 9,706), 92805 (Anaheim: 9,477), 92801 (Anaheim: 9,477), and 92840 (Garden Grove: 9,109).

Notably, 61% of all infants (16,414 out of 27,019) visiting EDs during the study period were Hispanic. The next highest group was non-Hispanic white infants at 24%.

Children 1-17 Years – Children (1-17 years) accounted for one-fifth of all ED visits. The countywide emergency department rate for this age group was 1,785 per 10,000 population. The ZIP codes with the lowest rate of ED visits was from the city of Irvine (92620). The ZIP codes with the highest rate of ED visits per 10,000 were found at 92823 (Brea, 3,182), 92801 (Anaheim, 2,732) and 92602 (Irvine, 2,628).

Young Adults 18-44 Years – Adults in this age group made up the highest percentage of those who visited the Emergency Department (34.8%). However, this age group had the second highest Emergency Department visit rate (2,015 per 10,000 population) compared to all other age groups.

Adults 45-64 Years – Countywide, the average rate of Emergency Department visits for this age group was 1,899 per 10,000 population.

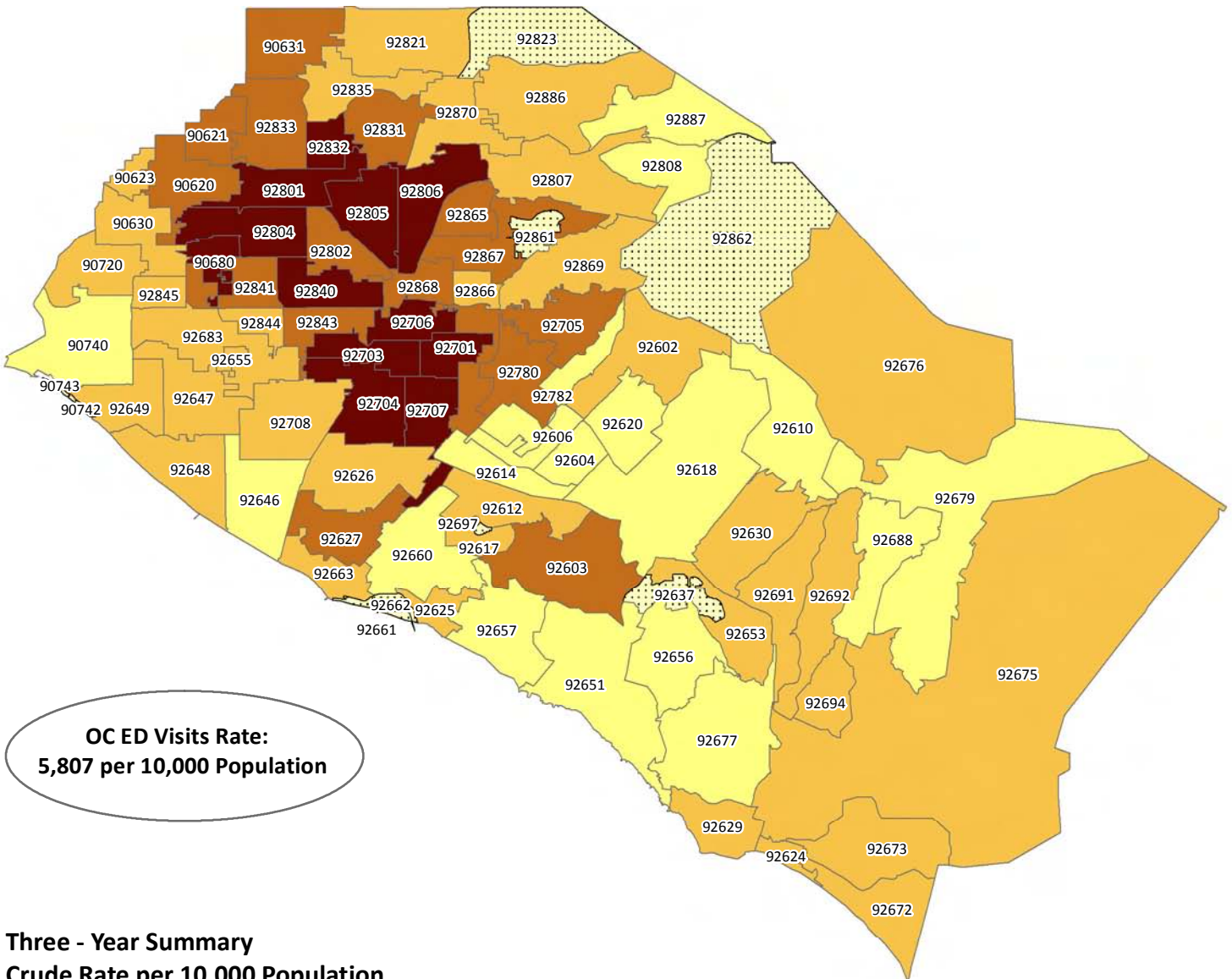
Seniors 65 Years and Older – Seniors 65 years and older had an average ED visit rate of 4,236 per 10,000 population. Notably, whites accounted for nearly 3 in 4 (74.3% or 106,266) of the 143,107 visits by seniors 65 years of age or older. The highest ED visit rates were for ZIP codes 92694 (Ladera Ranch: 9,014) and 92602 (Irvine: 8,692).

Maps: Emergency Department Visits by Age Group

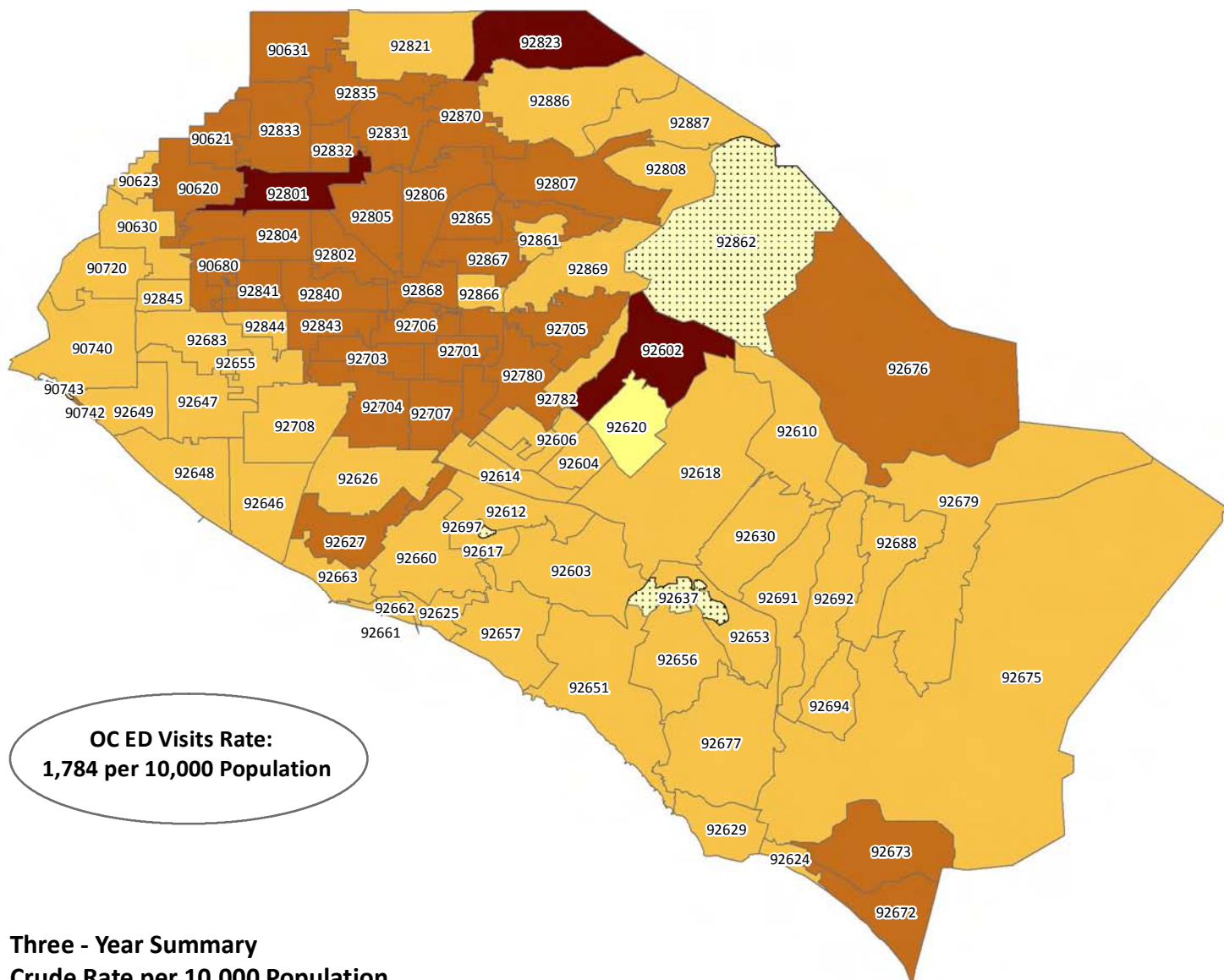
- Emergency Department Visits, Infants (< 1 Year)
- Emergency Department Visits, 1-17 Years
- Emergency Department Visits, 18-44 Years
- Emergency Department Visits, 45-64 Years
- Emergency Department Visits, 65 Years and Older



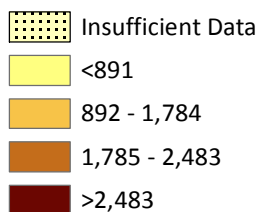
Orange County Emergency Department Visit Rates (Infants <1 Yrs) by ZIP Code of Residence (2006-2008)



Orange County Emergency Department Visit Rates (1-17 Yrs) by ZIP Code of Residence (2006-2008)

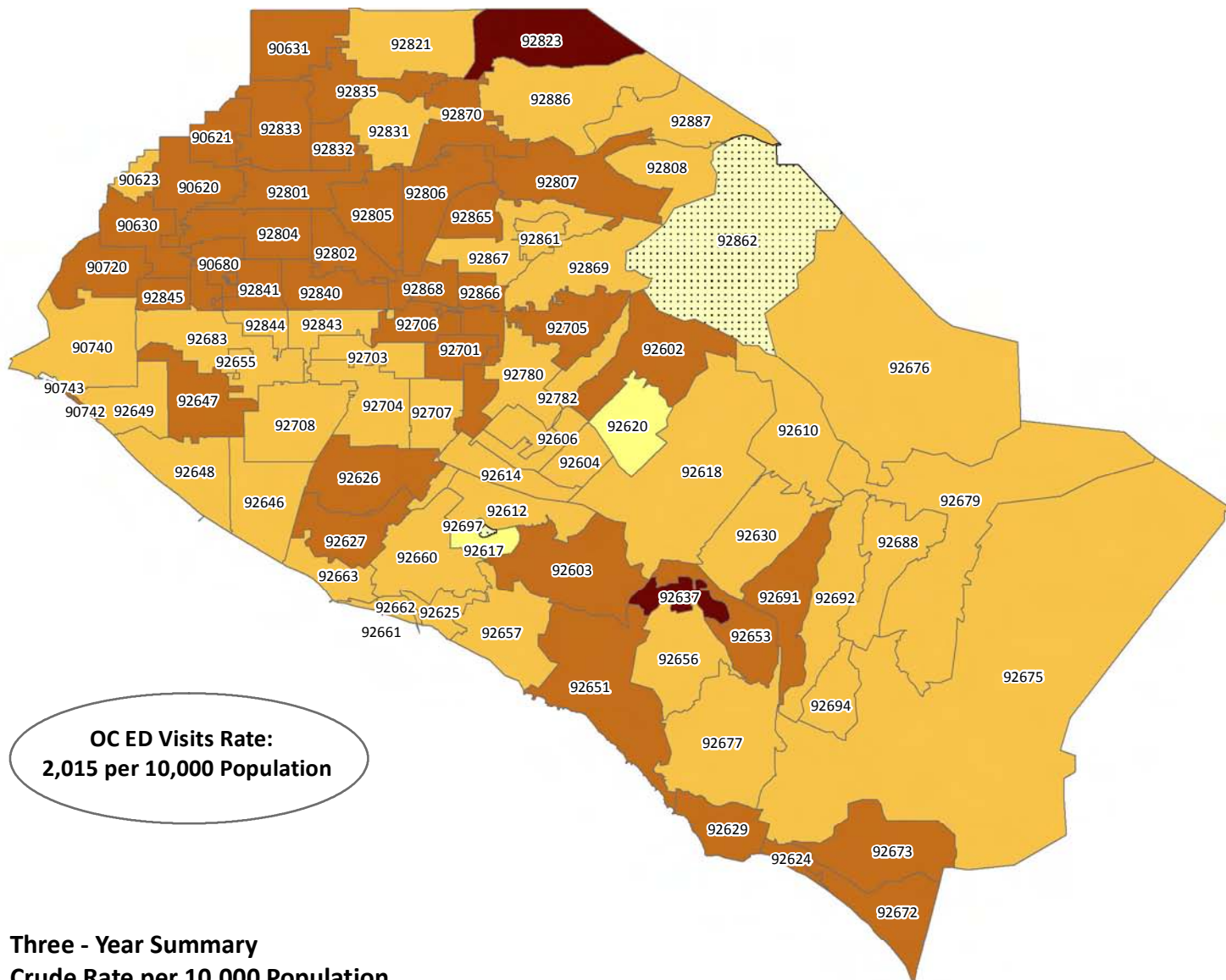


Three - Year Summary Crude Rate per 10,000 Population



Orange County

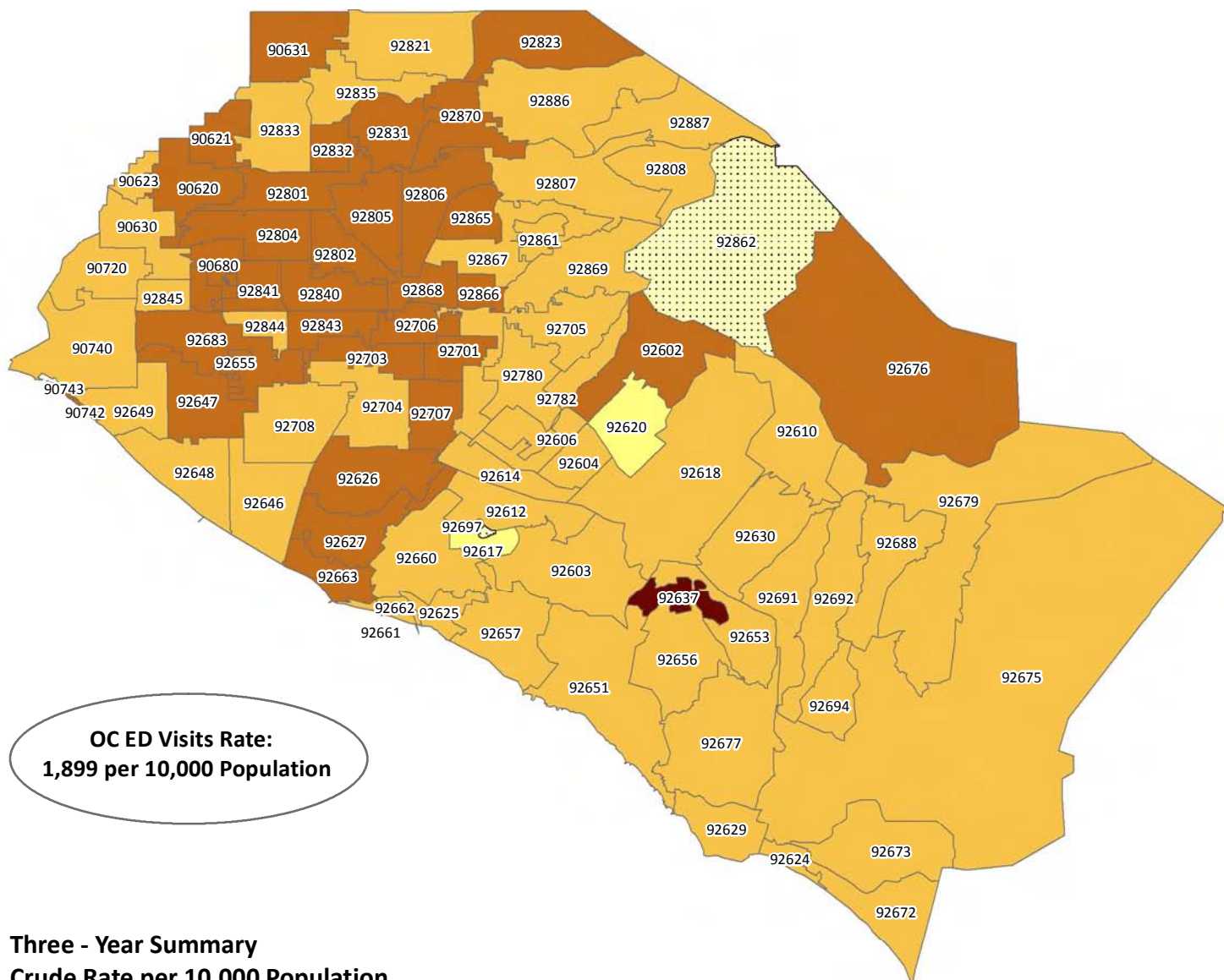
Emergency Department Visit Rates (18-44 Yrs) by ZIP Code of Residence (2006-2008)



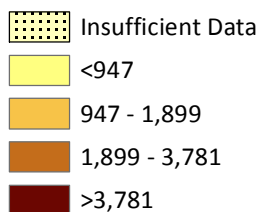
**Three - Year Summary
Crude Rate per 10,000 Population**

- Insufficient Data
- <1,006
- 1,007 - 2,015
- 2,016 - 3,380
- >3,380

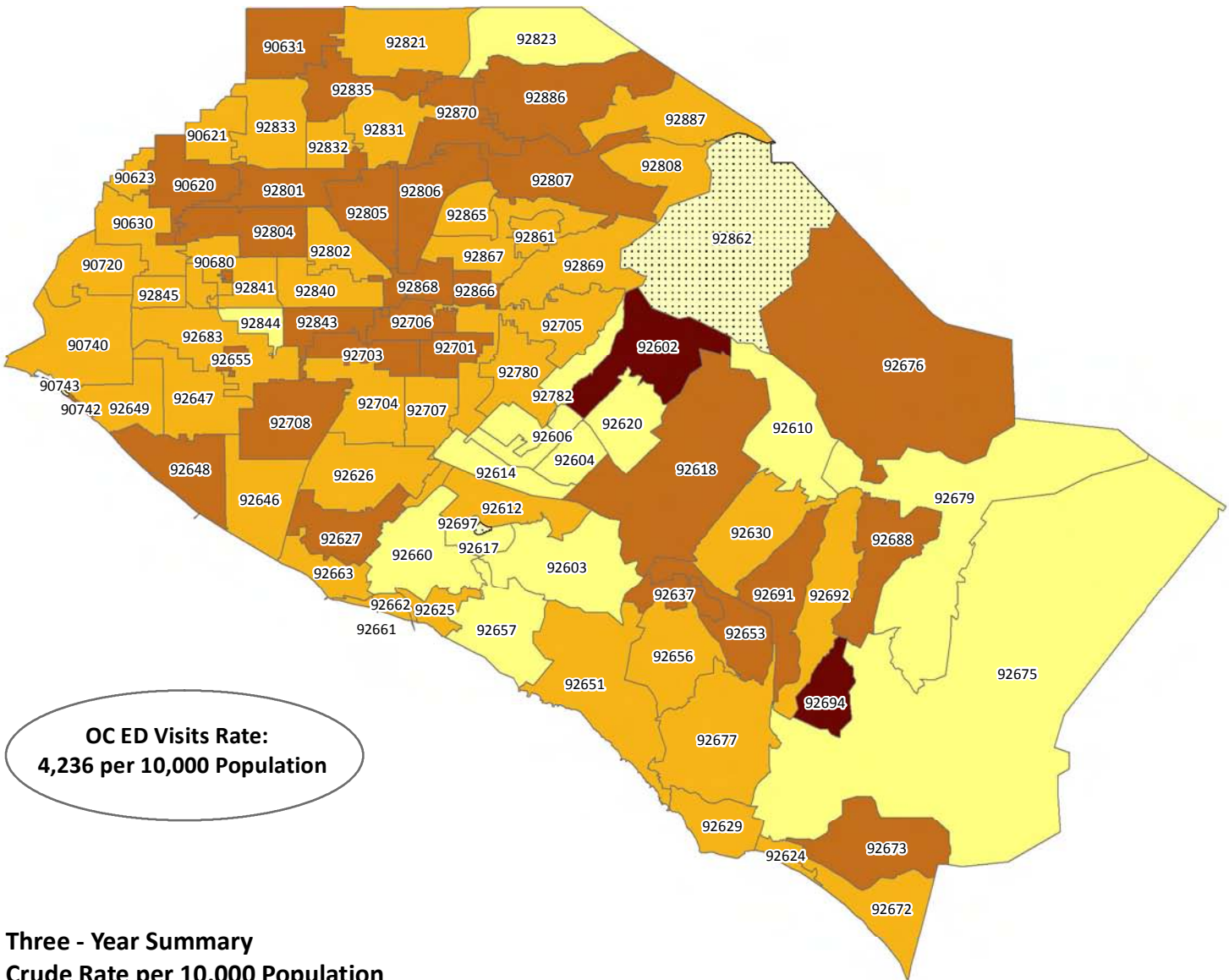
Orange County Emergency Department Visit Rates (45-64 Yrs) by ZIP Code of Residence (2006-2008)



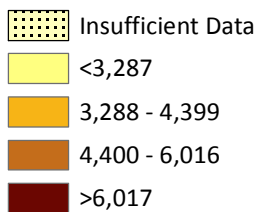
Three - Year Summary Crude Rate per 10,000 Population



Orange County Emergency Department Visit Rates (65 Yrs and Older) by ZIP Code of Residence (2006-2008)



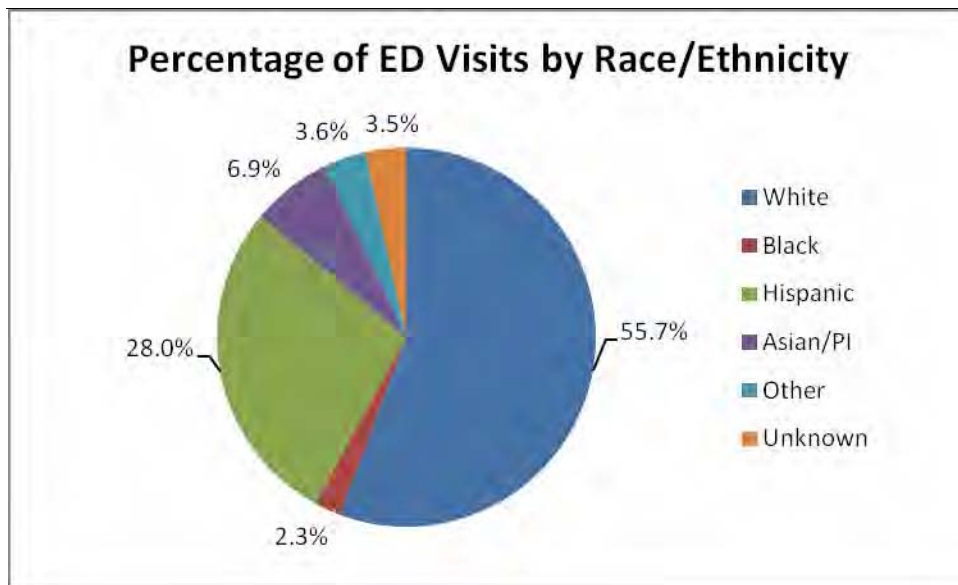
**Three - Year Summary
Crude Rate per 10,000 Population**



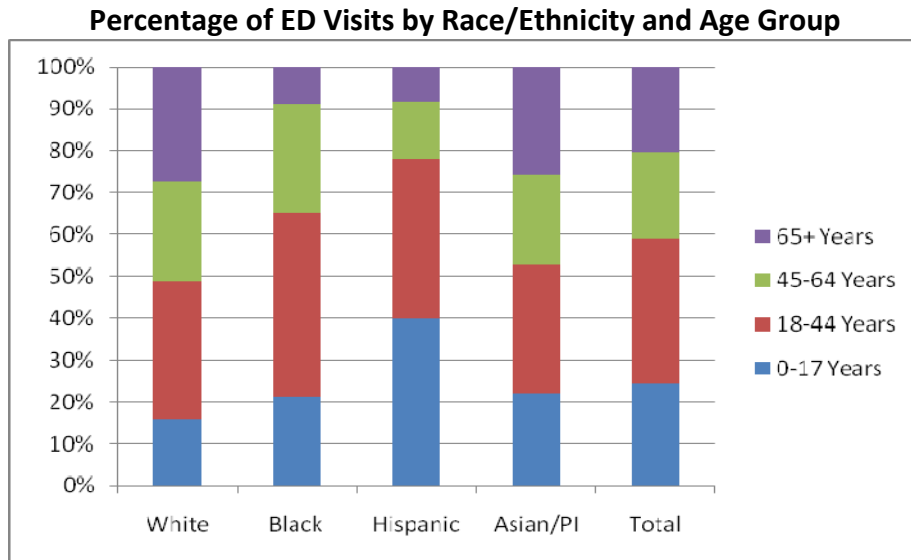
Emergency Department Utilization by Race/Ethnicity

More than half (55.7%) of all ED visits were made by non-Hispanic whites (3-year average 389,822 visits). Representing 28% of all visits, Hispanics (3-year average 195,670) made up the second largest group. Asian/Pacific Islanders made nearly 7% (3-year average 48,307) of all visits, while blacks accounted for 2% of all visits. In 3.5% of ED visits the patient's race ethnicity was unknown or not provided.

| Race/Ethnicity | ED Visits 3-Year Total | ED Visits 3-Year Average | Percent |
|----------------|---------------------------|-----------------------------|---------|
| White | 1,169,465 | 389,822 | 55.7% |
| Black | 49,019 | 16,340 | 2.3% |
| Hispanic | 587,009 | 195,670 | 28.0% |
| Asian/PI | 144,922 | 48,307 | 6.9% |
| Other | 74,584 | 24,861 | 3.6% |
| Unknown | 74,484 | 24,828 | 3.5% |
| Total | 2,099,483 | 699,828 | 100.0% |

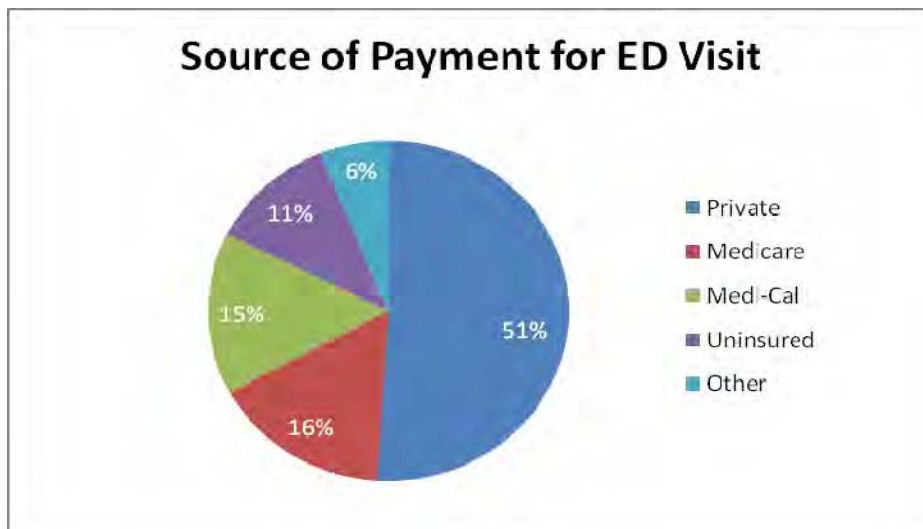


The age distribution of patients visiting the ED are presented in the figure below for each race/ethnic group. For every group except Hispanics, the largest proportion of ED visits in each group was made by 18-44 year olds. For Hispanics, the largest proportion of ED visits (40%) were made by children less than 18 years of age. By comparison, children from the other racial/ethnic groups accounted for only 16% to 22% of ED visits within their respective groups.

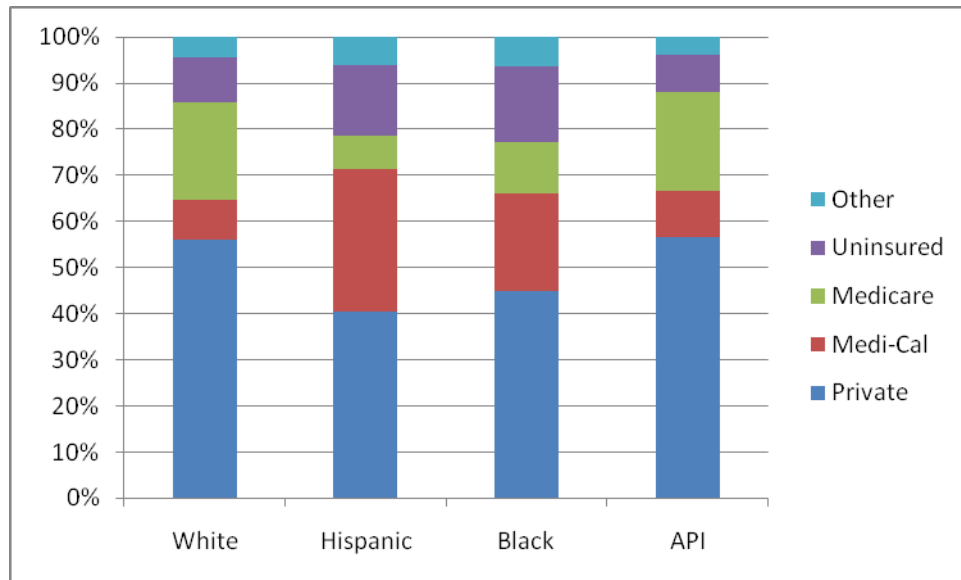


Source of Payment for Emergency Department Visits

One half of the ED visits (51%) were paid for through private insurance. Medicare was the source of payment for 16% of all visits, while Medi-Cal was the source of payment for 15% of all ED visits. About one in ten (11%) of all visits were made by individuals who did not have any insurance, and about 3% of the visits were reimbursed through some other government program.



Private insurance was the source of payment for majority of ED visits among each race/ethnic group. For ED visits made by whites and Asian/Pacific Islanders (API) the second most common payment source was Medicare (approximately 21% of visits). The second most common payer for ED visits for Hispanics (31% of visits) and blacks (21% of visits) was Medi-Cal as shown in the figure below.



Reason for Emergency Department Visit

During the three-year study period (2006-2008) over two million ED visits were made by OC residents for an average of 699,828 per year. The most common reasons for visiting the ED were due to injury/poisoning (ICD-9-CM codes 800-999), which accounted for 23% of all visits. Ill-defined conditions were the cause for 1 in 5 visits (20.1%) – symptoms that could not be assigned to a single disease or a system of the body (ICD-9-CM codes 780-799). Among visits related to a specific disease or systems of the body (ICD-9-CM codes 001-779), the largest volume was for diseases of Respiratory System (10% of all visits). The table below presents the number and percentage of visits during the study period related to the major groups of diseases defined by ICD-9 codes.

Reason for Emergency Department Visit (2006-2008)

| Major Disease Category | Total | 3-Year Average | Percent |
|---|------------------|----------------|-------------|
| Injury and Poisoning (800-999) | 483,458 | 161,153 | 23.0% |
| Symptoms, Signs, and Ill-Defined Conditions (780-799) | 422,779 | 140,926 | 20.1% |
| Diseases of the Respiratory System (460-519) | 202,579 | 67,526 | 9.6% |
| Diseases of the Digestive System (520-579) | 153,532 | 51,177 | 7.3% |
| Diseases of the Genitourinary System (580-629) | 112,535 | 37,512 | 5.4% |
| Diseases of the Circulatory System (390-459) | 111,463 | 37,154 | 5.3% |
| Diseases of the Nervous System And Sense Organs (320-389) | 106,136 | 35,379 | 5.1% |
| Diseases of the Musculoskeletal System and Connective Tissue (710-739) | 101,318 | 33,773 | 4.8% |
| Mental Disorders (290-319) | 76,875 | 25,625 | 3.7% |
| Diseases of the Skin and Subcutaneous Tissue (680-709) | 76,663 | 25,554 | 3.7% |
| Complications of Pregnancy, Childbirth, and the Puerperium (630-677) | 64,327 | 21,442 | 3.1% |
| Factors Influencing Health Status and Contact With Health Services (V01-V88) | 60,765 | 20,255 | 2.9% |
| Infectious and Parasitic Diseases (001-139) | 56,865 | 18,955 | 2.7% |
| Endocrine, Nutritional and Metabolic Diseases, and Immunity Disorders (240-279) | 39,729 | 13,243 | 1.9% |
| Neoplasms (140-239) | 14,156 | 4,719 | 0.7% |
| Diseases of Blood and Blood-Forming Organs (280-289) | 9,815 | 3,272 | 0.5% |
| Certain Conditions Originating In the Perinatal Period (760-779) | 5,362 | 1,787 | 0.3% |
| Congenital Anomalies (740-759) | 1,126 | 375 | 0.1% |
| Total | 2,099,483 | 699,828 | 100% |

V-code related visits accounted for 2.9% of the total visits. ICD-9-CM uses V-codes to classify factors influencing health status and contact with health services, typically for some follow-up care. The most common V-code diagnosis accounting for one in five V-code related visits was “Encounter for attention to surgical dressings and sutures” (code V58.3).

Health issues and concerns of individuals generally vary with age, as reflected in the presenting conditions for ED visits for different age groups. The five most common Diagnoses for ED visits in each age group are given in the table below.

Top Five Reasons for Emergency Department Visit by Age Group

| <i>Age Group and ICD-9 Code (Percent of All ED Visits)</i> | 3-Year Total # of ED Visits | 3-Year Average of ED Visits | % of All ED Visits | % of ED Visits Resulting in Hospital Admission |
|---|-----------------------------|-----------------------------|--------------------|--|
| Children Ages < 1 Year (4%) | | | | |
| Acute Upper Respiratory infection (465.9) | 11,290 | 3,763 | 13.9 | 1.7% |
| Fever (780.6) | 8,331 | 2,777 | 10.3 | 5.3% |
| Otitis media (inflammation of the middle ear) (382.9) | 5,030 | 1,677 | 6.2 | 0.3% |
| Acute bronchiolitis (466.1) | 4,346 | 1,449 | 5.4 | 27.0% |
| Nausea and vomiting (787.0) | 3,566 | 1,189 | 4.4 | 5.4% |
| All other diagnoses | 48,495 | 16,165 | 59.8 | 13.1% |
| Total | 81,058 | 27,019 | 100.0 | 10.3% |
| Children Ages 1-17 Years (20%) | | | | |
| Otitis media (inflammation of the middle ear) (382.9) | 20,721 | 6,907 | 4.9 | 0.2% |
| Acute Upper Respiratory infection (465.9) | 18,434 | 6,145 | 4.3 | 0.5% |
| Abdominal Pain (789.0) | 18,139 | 6,046 | 4.3 | 4.6% |
| Open wound of face w/out mention of complication (873.4) | 18,081 | 6,027 | 4.2 | 0.2% |
| Fever (780.6) | 17,756 | 5,919 | 4.2 | 3.3% |
| All other diagnoses | 333,328 | 111,109 | 78.2 | 7.2% |
| Total | 426,459 | 142,153 | 100.0 | 6.0% |
| Adults Ages 18-44 Years (34.8%) | | | | |
| Abdominal Pain (789.0) | 44,426 | 14,809 | 6.1 | 3.7% |
| Chest Pain (786.5) | 25,130 | 8,377 | 3.4 | 9.2% |
| Headache (784.0) | 15,500 | 5,167 | 2.1 | 1.5% |
| Conditions complicating pregnancy, childbirth or puerperium (648.9) | 13,616 | 4,539 | 1.9 | 6.5% |
| Threatened (Spontaneous) abortion (640.0) | 11,456 | 3,819 | 1.6 | 0.5% |
| All other diagnoses | 619,522 | 206,507 | 84.9 | 13.3% |
| Total | 729,650 | 243,217 | 100.0 | 12.0% |
| Adults Ages 45-64 Years (20.6%) | | | | |
| Chest Pain (786.5) | 27,496 | 9,165 | 6.4 | 29.7% |
| Abdominal Pain (789.0) | 20,284 | 6,761 | 4.7 | 6.3% |
| Headache (784.0) | 7,577 | 2,526 | 1.8 | 2.2% |
| Lumbago (724.2) | 6,283 | 2,094 | 1.5 | 2.0% |
| Urinary Tract Infection, site not specified (599.0) | 5,607 | 1,869 | 1.3 | 15.8% |
| All other diagnoses | 365,704 | 121,901 | 84.5 | 27.3% |
| Total | 432,951 | 144,317 | 100.0 | 25.5% |
| Older Adults Ages 65+ Years (20.4%) | | | | |
| Chest Pain (786.5) | 18,887 | 6,296 | 4.4 | 39.8% |
| Urinary Tract Infection, site not specified (599.0) | 12,469 | 4,156 | 2.9 | 45.4% |
| Pneumonia organism (486) | 11,397 | 3,799 | 2.7 | 81.7% |
| Abdominal Pain (789.0) | 10,504 | 3,501 | 2.4 | 10.4% |
| Congestive heart failure (428.0) | 10,355 | 3,452 | 2.4 | 82.5% |
| All other diagnoses | 365,709 | 121,903 | 85.2 | 45.6% |
| Total | 429,321 | 143,107 | 100.0 | 46.3% |

Infants (Ages <1 Year): The most common diagnosis for infant visits, among both boys (3-year average 14,805 or 55%) and girls (3-year average 12,214 or 45%) was acute upper respiratory infection (14%), followed by fever (10%) and ear infections (6%). Ninety percent of the infant ED visits did not result in a hospital admission.

Children (Ages 1-17 Years): In addition to common childhood illnesses such as ear infection, acute upper respiratory infection and fever, one of the top five reasons children and adolescents visited the ED was for open wound of face (4%) – two of three visits related to open wound of face (67%) were for boys. As with infant visits, males accounted for 55% of visits among children and adolescents compared to females (45%). Only 6% of the visits in this age group resulted in a hospital admission.

Adults (Ages 18-44 Years): In this age category, females accounted for 57% of all ED visits compared to 43% males. Abdominal pain, chest pain and headache were the common diagnoses among both genders. Complications related to pregnancy and threatened (spontaneous) abortion were also common reasons for female visits. For males, open wound of finger, open wound of face and lumbago were some of the other common reasons (not shown in the table) for visits. Overall, 12% of the ED visits in this age group resulted in a hospital admission.

Adults (Ages 45-64 Years): Chest pain (6.4%) and abdominal pain (4.7%) related visits made up more than 1 in 10 visits in this age group. A little more than half of the visits in this age category were among females (52%). Other common reasons for female visits were urinary tract infections and migraines. For males representing 48% of visits in this age category, other common reasons were calculus of ureter (ureteric stone) and open wound of finger (not shown). One in four (25.5%) ED visits for adults in this age group resulted in a hospital admission.

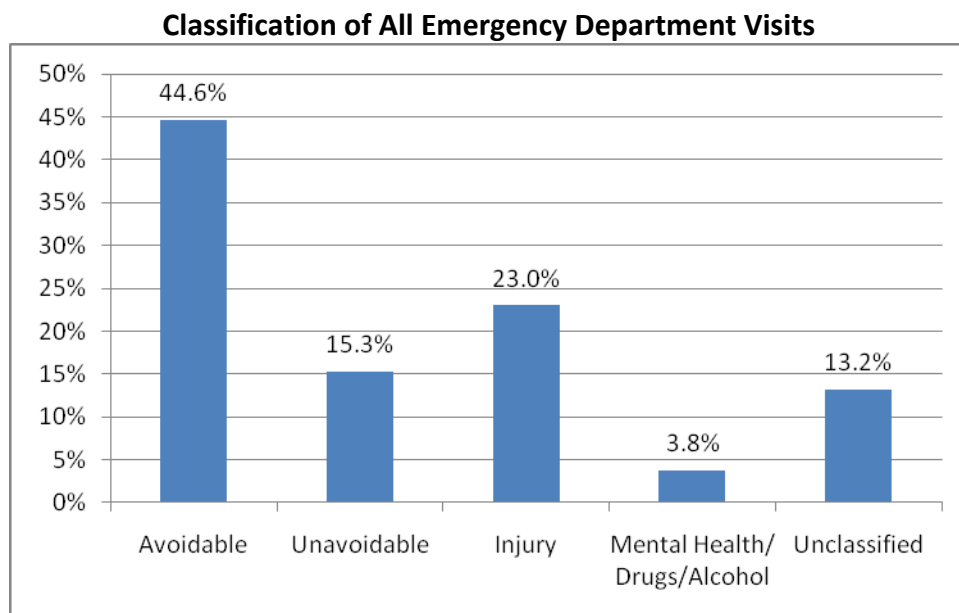
Older Adults (Ages 65+ Years): Chest pain was the leading condition for more than 4% of ED visits among seniors. Females accounted for 60% of all visits in this age group compared to males (40%). Other than the top five diagnoses included in the table above, syncope and collapse was another common reason accounting for 2% of visits among both males and females. Nearly half of all visits (46%) among this group resulted in a hospital admission.

Classification of Urgent versus Non-Urgent Emergency Department Visits

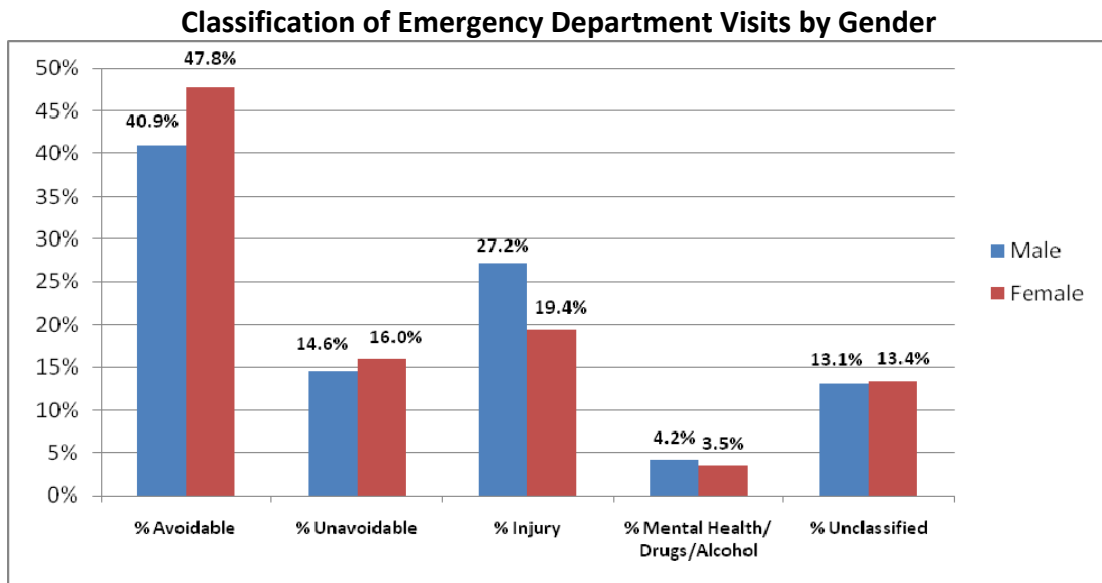
Treatment of non-urgent conditions or visits that are urgent, but could have been avoided with the proper preventative care can be a heavy burden on emergency departments. Therefore, it is important to assess the magnitude of primary care-treatable or avoidable cases presenting at EDs. To accomplish this, a classification algorithm developed by researchers and physicians at New York University was utilized.⁴ Based on the algorithm; all visits could be grouped into one of five categories:

- (1) **Avoidable** – Includes cases that did not require immediate care, required immediate care but could have been treated in a primary care setting (e.g. certain lab tests), and those cases that required the services of an ED, but could have been prevented with regular primary care treatment (e.g. chronic conditions such as diabetes).
- (2) **Unavoidable** – Those cases that were emergent and could not have been prevented (e.g. appendicitis).
- (3) **Injury** – Cases where the primary diagnosis was coded as an injury.
- (4) **Psychiatric & Drug/Alcohol** – Cases where the primary diagnosis was related to mental health, drugs or alcohol.
- (5) **Unclassified** – Those residual cases where the diagnosis could not be otherwise classified in one of the above categories.

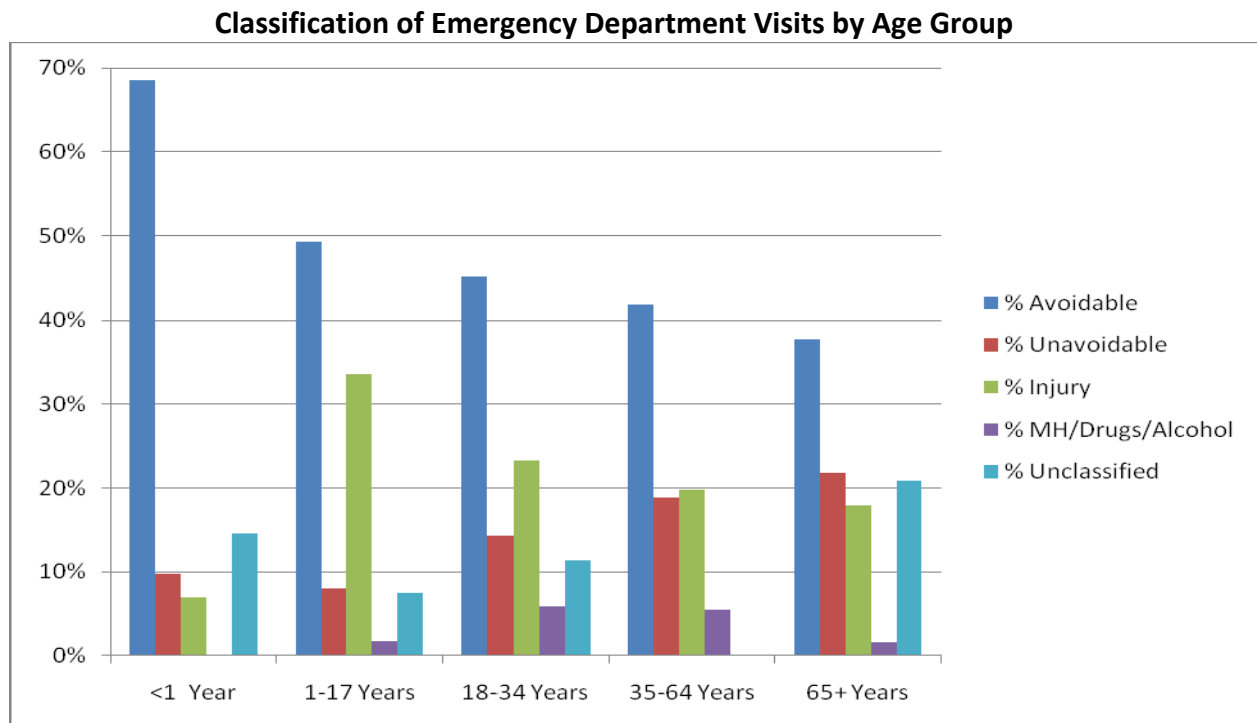
As shown in the figure below, 44.6% the nearly 700,000 annual visits to EDs by OC residents could have been avoided or otherwise treated in a primary care setting. In contrast, 15.3% of all ED visits were classified as unavoidable. Nearly one-in-four 23%: were injury-related and 3.8% were classified as Psychiatric, Drug, or Alcohol-related. The remaining 13.2% were unclassified, meaning they could not be assigned to a particular group.



Classification of ED Visits by Gender: Females had slightly more ED visits that could be classified as Avoidable (47.8% vs. 40.9%), as well as Unavoidable (16% vs. 14.6%). Males had markedly more ED visits for Injury-related conditions (27.2% vs. 19.4%) compared to females.



Classification of ED Visits by Age Group: Infants (<1 year) had the highest percentage of Avoidable ED visits, specifically 68.6% of all visits for this age group. The percentage of Avoidable visits decreased with age from 49.2% for children 1 to 17 years, down to 37.7% of ED visits by older adults (65+ yrs). Conversely, the percentage of Unavoidable



ED visits increased with age, from 9.7% of infants up to 21.8% of seniors. Injury-related visits were highest for children 1-17 years of age.

Geographic Distribution of Avoidable ED Visits (OC Residents only)

The geographic distribution of the nearly 700,000 avoidable ED visits made by county residents is presented in the following map by the patient's ZIP code of residence. The range of avoidable ED visits was divided into four levels, with the county-wide average (44.6%) dividing the two highest ranges from the two lowest. The highest percentages (48.2% to 51.7%) of avoidable ED visits were made by patients residing in generally less affluent central and northern parts of the county, specifically Santa Ana, west Anaheim, and parts of Buena Park and Stanton. This finding is consistent with the recent American Community Survey results showing that the highest percentages of uninsured are in the central and northern regions of the county.¹

ZIP codes with the second highest range (44.7% - 48.1%) were generally contiguous with the highest ZIP codes, and included much of the areas surrounding Santa Ana such as Orange and parts of Tustin, Placentia, Fullerton, Garden Grove, Westminster and La Habra. There were additional pockets in Irvine and San Juan Capistrano.

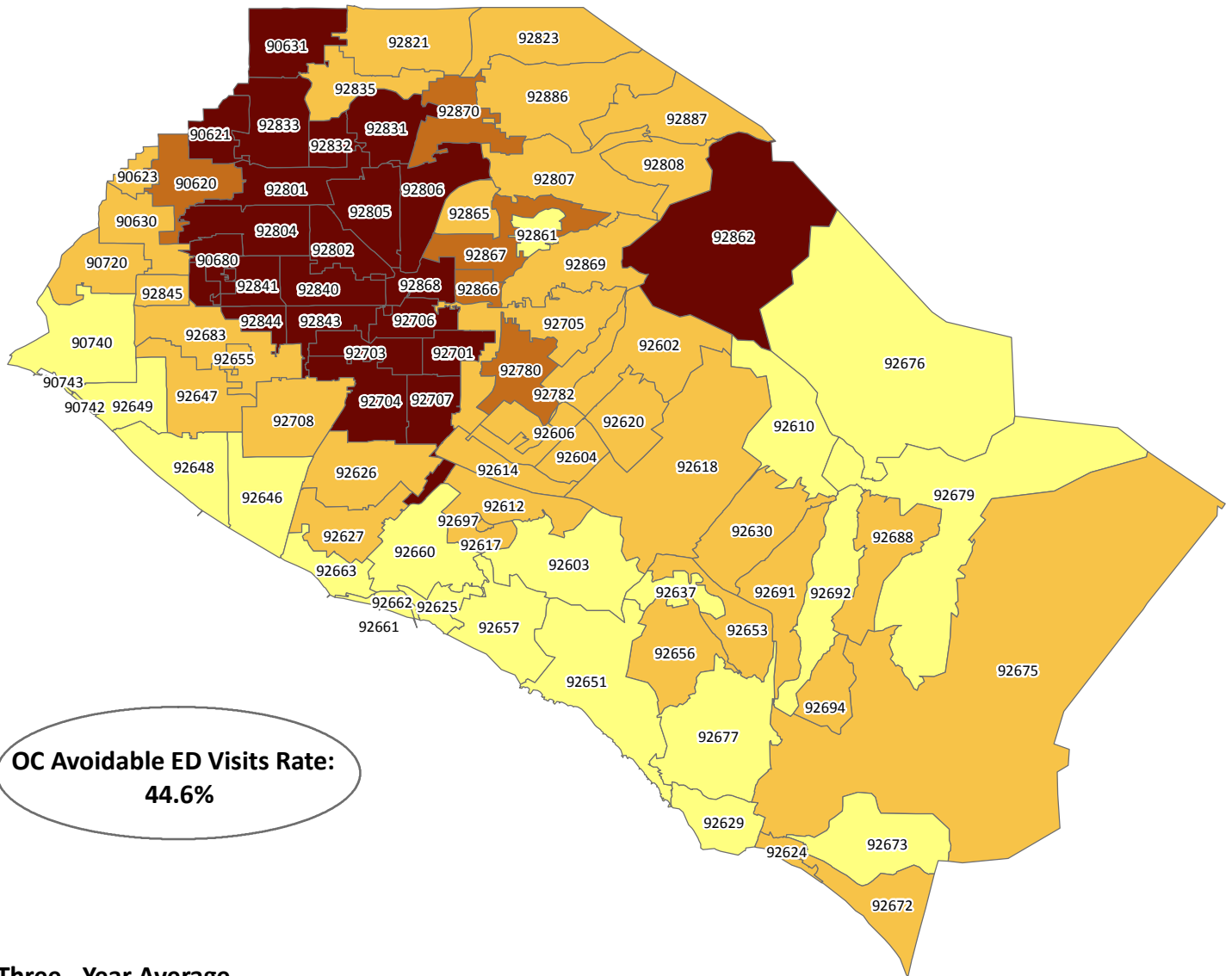
The areas of the county with the lowest percentages (32.9% – 42.7%) of avoidable ED visits included ZIP codes in much of the coastal parts of the county from Huntington Beach to Newport Beach, Corona Del Mar, Coto De Caza, and Trabuco/Silverado Canyon – some of the more affluent communities in the county. The remaining ZIP codes were in the middle level (42.8 - 44.6%, orange) and were seen mainly in the south (e.g., Irvine, Laguna Beach, Mission Viejo, and San Clemente), west (e.g., Seal Beach, parts of Huntington Beach) and north-east (e.g., Yorba Linda, Anaheim Hills) regions of the county.

Maps 2006 – 2008 Average Percent Avoidable Emergency Department Visits by ZIP Code for Orange County, CA

- Avoidable ED Visits, All Residents

¹ American Community Survey (2008). US Census. Bureau. Last Accessed on 11/3/09:
<http://www.census.gov/acs/www/>

Orange County Percent of Avoidable ED Visits by ZIP Code of Residence (2006-2008)



**OC Avoidable ED Visits Rate:
44.6%**

**Three - Year Average
Percent of Avoidable ED Visits**

- 32.9% - 39.5%
- 39.6% - 44.6%
- 44.7% - 45.9%
- 46.0% - 51.7%

Section 8

Infant Mortality Indicators

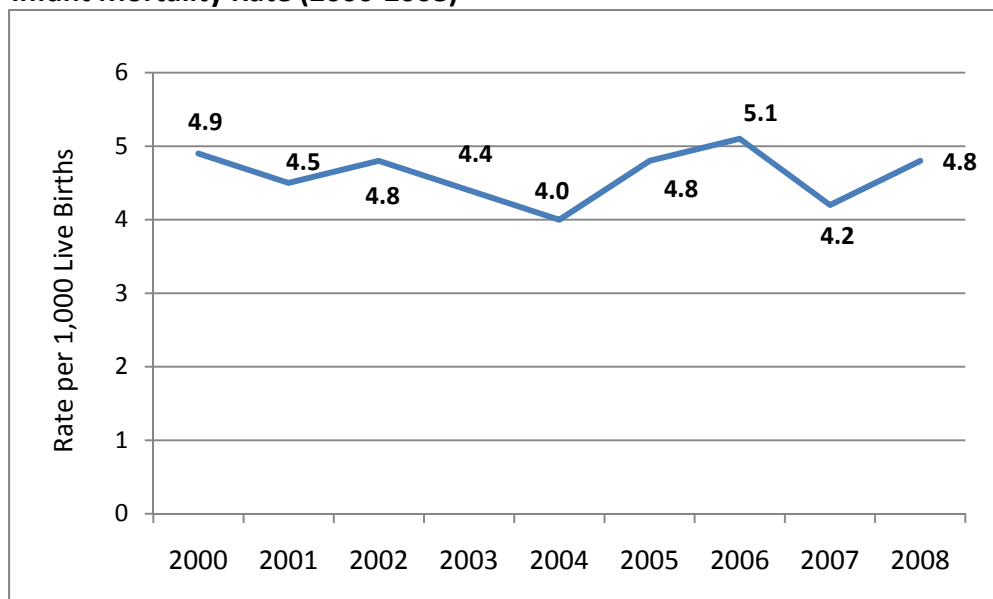
Infant Mortality Rate

An infant death is defined as death occurring under 365 days of age. The infant mortality rate traditionally has been considered of great significance in public health. A high rate has been taken to indicate unmet health needs and unfavorable environmental factors, such as, income, nutrition, education, sanitation and medical care. The infant death rate is based on number of deaths per 1,000 live births.

The leading causes of infant mortality are perinatal conditions, short gestation, and low birth weight, congenital anomalies, sudden infant death syndrome (SIDS), and respiratory distress syndrome (RDS).

Over the past several years, the infant mortality rate had remained relatively constant. The rate varied from a low of 4.0 in 2004 to a high of 5.1 in 2006, a nearly 22% change (**Figure 1**).

Infant Mortality Rate (2000-2008)



Because of the relatively small number of deaths, 3-year moving averages are employed for increased stability. For the 1999-2001 time period the average infant mortality rate was 4.6 deaths. During the current study period (2006-2008), the 3-year average infant mortality rate was 4.7 per 1,000 live births, with an average of 279 deaths per year. This 3-year average rate is comparable to the previous report where the infant mortality rate for the county was 4.8 deaths per 1,000 live births, or about 211 deaths per year.

Race/Ethnicity:

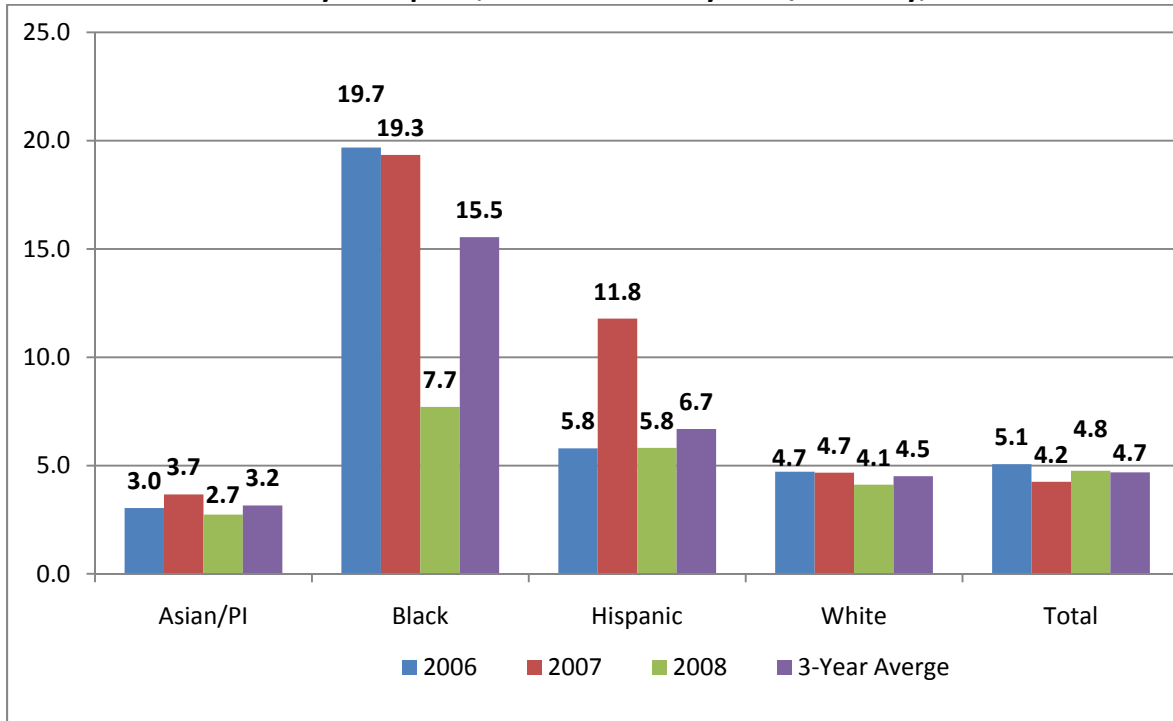
Infant mortality rates by race/ethnicity were analyzed for the 3-year study period of 2006-2008, which varied substantially by different racial/ethnic groups. For example, infant mortality rate was highest for African-American (15.5 per 1,000 live births) compared to the second highest group, Hispanics at 6.7 per 1,000 live births. Whites were the next highest at 4.5 per 1,000. Asian/Pacific Islanders had the lowest average infant death rate at 3.2 per 1,000 live births. Importantly, only Asian/Pacific Islanders and Whites achieved the Healthy People 2010 objective of 4.5 or less deaths per 1,000 live births.

Because of the relatively small number of African American births in Orange County each year (1% of all OC births or approximately 450), the infant mortality rates shows greater variation than other races/ethnicities and should be interpreted with caution. In 2006, there were 10 African American infant deaths and an average rate of 19.7 per 1,000 live births; whereas, in 2008 there were only 4 infant deaths and so a much lower rate of 7.7 per 1,000 live births. Nonetheless, African Americans had higher infant mortality rates, compared to any other race and the rest of Orange County.

Table 8.1: Infant Mortality Rate per 1,000 Live Births by Race/Ethnicity, 2006-2008

| | 2006 | | | 2007 | | | 2008 | | | 3-Year Average (2006-2008) | | |
|-----------------|------------|---------------|----------------|------------|---------------|----------------|------------|---------------|----------------|-------------------------------|-----------------|----------------|
| | Death | Birth | Rate /1,000 | Death | Birth | Rate /1,000 | Death | Birth | Rate /1,000 | Death | Birth | Rate /1,000 |
| <i>Asian/PI</i> | 22 | 7,231 | 3.0 | 28 | 7,637 | 3.7 | 20 | 7,308 | 2.7 | 23.3 | 7,392.0 | 3.2 |
| <i>Black</i> | 10 | 508 | 19.7 | 10 | 517 | 19.3 | 4 | 519 | 7.7 | 8.0 | 514.7 | 15.5 |
| <i>Hispanic</i> | 128 | 22,088 | 5.8 | 90 | 7,637 | 11.8 | 128 | 22,003 | 5.8 | 115.3 | 17,242.7 | 6.7 |
| <i>White</i> | 64 | 13,571 | 4.7 | 59 | 12,626 | 4.7 | 50 | 12,142 | 4.1 | 57.7 | 12,779.7 | 4.5 |
| Total | 224 | 44,231 | 5.1 | 187 | 44,026 | 4.2 | 202 | 42,456 | 4.8 | 204.3 | 43,571.0 | 4.7 |

Infant Mortality Rate per 1,000 Live Births by Race/Ethnicity, 2006-2008

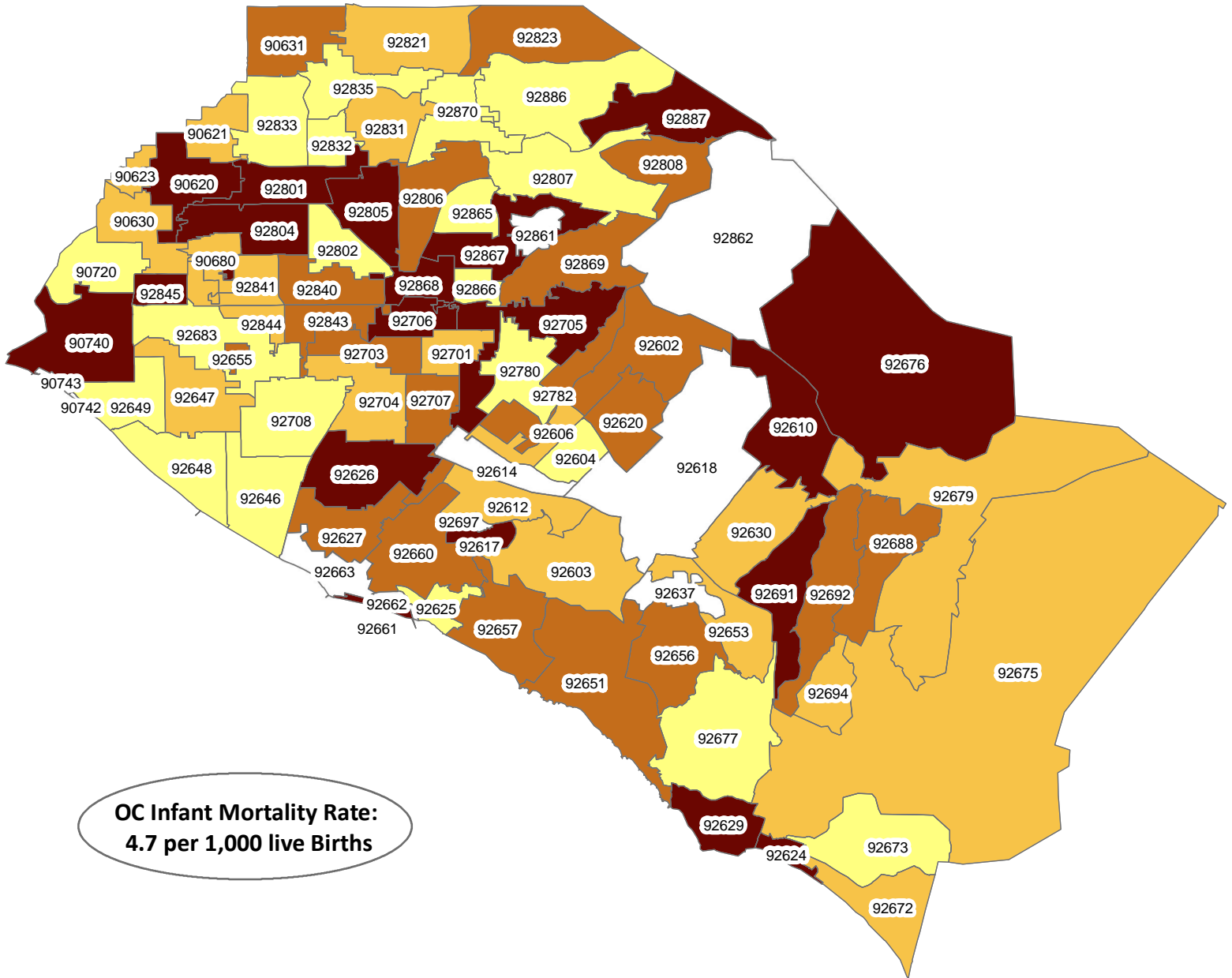


Because the total number of infant deaths in Orange County is low, analyzing such information by race/ethnicity at the ZIP code level would not yield statistically reliable rates. Thus, the maps on the following page present the infant mortality rate by ZIP code from all cases combined. More than one-third of all ZIP codes (46%) had infant death rates higher than the countywide rate of 4.7 per 1,000 live births. Higher rates were clustered in the Anaheim, Santa Ana, and Silverado and Foothill Ranch areas. Among the areas with the lowest 3-year average infant mortality rates were for ZIP codes in Huntington Beach and Yorba Linda areas.

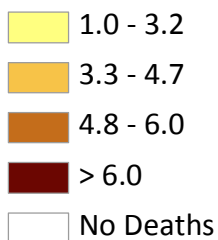
Maps: Infant Deaths (2006-2008) – Infant Mortality Rate by ZIP Code of Residence

- 8.1 Orange County Infant Deaths

Orange County Infant Deaths Rate (<1 year) by ZIP Code of Residence (2006-2008)



Infant Deaths per 1,000 Live Births (3-Year Average)



Section 9

Birth Indicators

Live Birth: A live birth is defined as the complete expulsion or extraction from its mother of a product of conception (irrespective of the duration of pregnancy) which, after such separation, breathes, or shows any other evidence of life such as the beating of the heart, pulsating of the umbilical cord, or definite movement of voluntary muscles. This definition was formulated by the World Health Organization (WHO) in 1950, and is set forth in the California Administrative Code, Title 17, Chapter 1, Article 3. Birth plays a major role in the formulation, implementation, and dispersion of health care, as well as social and economic services. One of the major goals of the health services is to ensure a risk free and positive birth outcome, and to minimize the cost resulting from complications of pregnancy and birth. For stability, all indicators are based on three year averages (2006-2008). Insufficient data indicates areas where the total number of cases was low (e.g., 3-year average < 5) or the ZIP code population was small resulting in unstable rates. Wherever possible, a comparison was made to the *2008 Orange County Geographic Health Profile*, which used three-year averages for the years of 2004 to 2006. Additional comparisons were made using statewide data, which were also based on three-year averages for the same time period.

Natality Rate

This indicator, also referred to as the crude birth rate, is based on the number of live births as a proportion of the total population (Orange County residents). Between 2006 and 2008, there were 130,713 births to Orange County residents for an average of 43,571 per year. The average countywide natality rate was 13.8 per 1,000 population over the three-year period (2006-2008). This was a slight decrease from the previous rate of 14.62 per 1,000 in the 2008 report. Statewide, the rate was 15.6 per 1,000 population during the same three year period (**Table 1**). The following map presents the average natality rate by ZIP code of residence. When compared across OC ZIP codes, the rate ranged from a low of 0.3 per 1,000 for ZIP code 92637 (Laguna Woods) to as high as 51.2 per 1,000 population for ZIP code 92602 (Irvine).

Table 1: Natality by Mother’s Race/Ethnicity (2006-2008)

| | Avg. # Births | % of Births | Population (2007) | Rate/1,000 population |
|-------------------------------|--------------------------|--------------------|------------------------------|------------------------------|
| Hispanic | 22,312 | 51.2% | 1,096,976 | 20.3 |
| Asian/Pacific Islander | 7,392 | 17.0% | 564,134 | 13.1 |
| Black | 515 | 1.9% | 45,366 | 11.3 |
| White | 12,840 | 29.5% | 1,331,056 | 9.6 |
| Other/Unknown | 512 | 1.2% | 75,982 | N/A |
| Countywide (3-yr Avg.) | 43,571 | 100% | 3,148,225 | 13.8 |
| Statewide (3-yr Avg.) | 566,137 | 100% | 37,810,582 | 15.6 |

Race/Ethnicity: Hispanics, who averaged 51.2% of all births over the three-year period, had the highest natality rate at 20.3 per 1,000 population. This was the only racial/ethnic group to have higher natality rate than the countywide average of 13.8 per 1,000. The second highest group was Asian/Pacific Islanders with a rate of 13.1 per 1,000. The natality rate among blacks was 11.3 per 1,000. Whites, while averaging nearly one-third of all births over the three-year period (29.5%), had the lowest natality rate at 9.6 per 1,000 population (**Table 1**).

Age Groups: The natality rate for females under the age of 18 was 1.2 per 1,000 (**Table 2**). Among this group, 5.7% of births (n=147) occurred among females between the ages of 11 and 14. The vast majority of births occurred among women ages 18-44 years old (97.3%; n=42,401), with a birth rate of 35.1 per 1,000 population. Within this age group, women aged 28 to 33 years of age represented, on average, more than one-third of all births over the three-year period. The natality rate for females 45 to 64 years of age was 0.2 per 1,000.

Table 2: Natality Rate by Age Group (2006-2008)

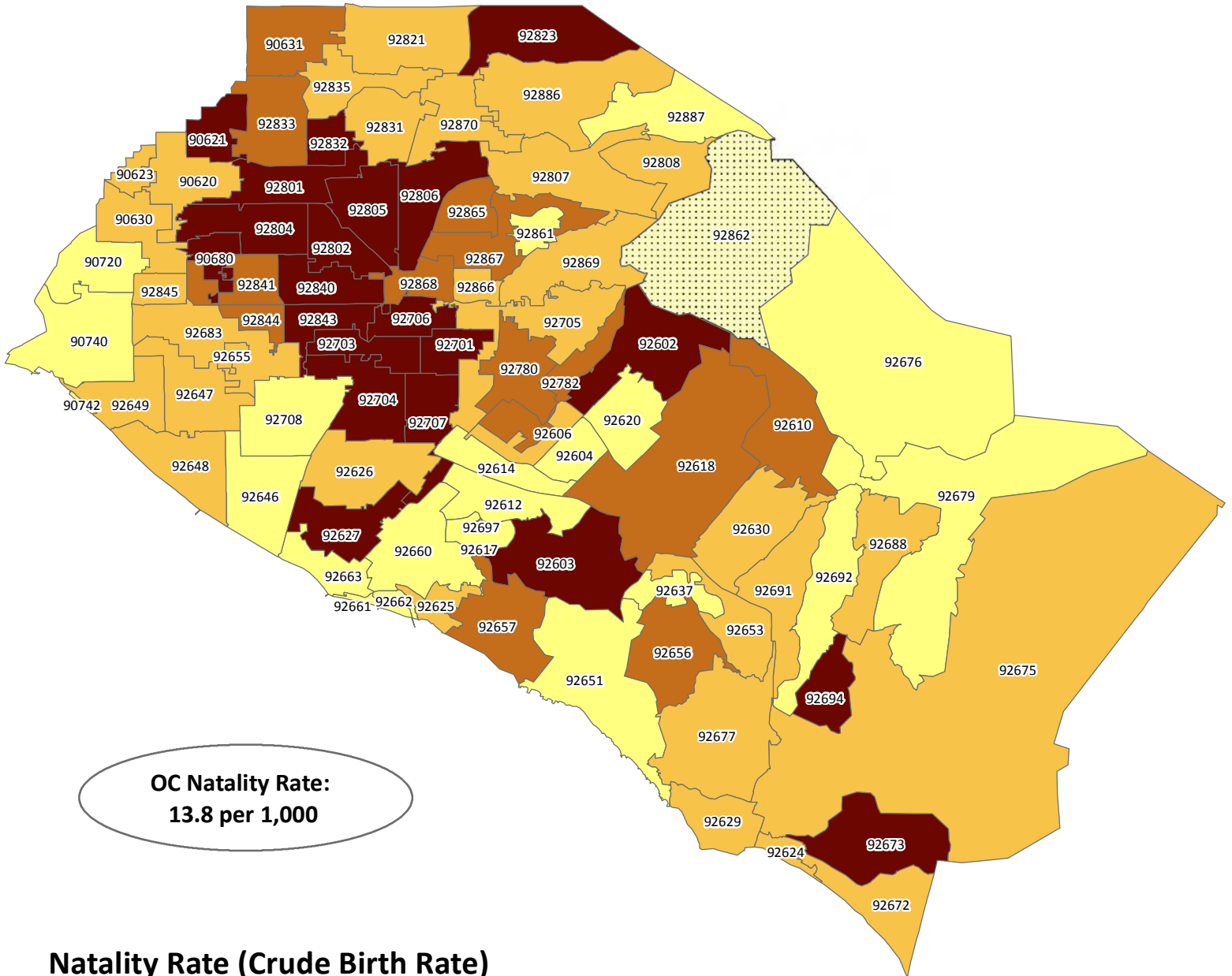
| | <i>Avg. # Births</i> | <i>% of Births</i> | <i>Population (2007)</i> | <i>Rate/1,000 population</i> |
|-------------------------------|----------------------|--------------------|--------------------------|------------------------------|
| Under 18 yrs | 1,039 | 2.4% | 843,142 | 1.2 |
| 18-44 yrs | 42,401 | 97.3% | 1,207,231 | 35.1 |
| 45-64 yrs | 125 | 0.3% | 760,027 | 0.2 |
| Unknown | 5 | 0.0% | 337,825 | N/A |
| Countywide (3-yr Avg.) | 43,571 | 100% | 3,148,225 | 13.8 |

Map: Orange County Births, Incidents by ZIP Code of Residence (2006-2008)

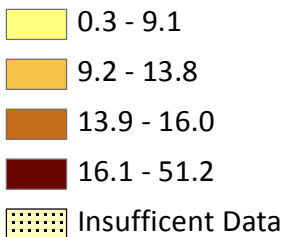
- Natality Rate (Crude Birth Rate)



Orange County Nativity Rate (Crude Rate) by ZIP Code of Residence (2006-2008)



Nativity Rate (Crude Birth Rate) (3-Year Average)



Fertility Rate (Females Ages: 15-44 Years)

This indicator is the proportion of live births among females 15-44 years of age to the total number of females of the same age range. Between the years 2006 to 2008, the average countywide fertility rate was 66.5 per 1,000 females, ages 15-44 years. In the 2004 to 2006 period, the rate was slightly higher with a fertility rate of 68.06 per 1,000. Statewide, the fertility rate was 71.0 per 1,000 females, age 15-44 years (**Table 3**). The following map presents the average fertility rate by ZIP code of residence for females 15-44 years of age. When compared across ZIP codes, the fertility rate ranged from a low of 18.7 per 1,000 females aged 15-44 for ZIP code 92617 (Irvine-UCI faculty housing) to as high as 214.5 per 1,000 for ZIP code 92602 (Irvine).

Race/Ethnicity: The fertility rate within race/ethnicity had a similar pattern to that of the natality rates in Table 1. Hispanic women had the highest average fertility rate of 195.3 per 1,000 live births among women 15-44 years of age, followed by Asian/Pacific Islanders at 72.9 per 1,000. Blacks had a rate of 58.1 per 1,000 births, while whites had the lowest rate of 49.5 per 1,000 live births among women 15-44 years of age.

Table 3: Fertility Rate for Females 15 to 44 Years of Age by Race/Ethnicity (2006-2008)

| | <i>Avg. # Births</i> | <i>% of Births</i> | <i>Female Population (15-44 yrs)</i> | <i>Rate/1,000 Females 15-44 yrs</i> |
|-------------------------------|--------------------------|--------------------|--|---|
| Hispanic | 22,230 | 51.23% | 113,813 | 195.3 |
| Asian/PI | 7,367 | 16.98% | 100,983 | 72.9 |
| Black | 512 | 1.18% | 8,819 | 58.1 |
| White | 12,782 | 29.46% | 258,288 | 49.5 |
| Other/Unknown | 500 | 1.15% | 16,792 | N/A |
| Countywide (3-yr Avg.) | 43,391 | 100% | 652,303 | 66.5 |
| Statewide (2007) | 563,966 | 100% | 7,940,346 | 71.0* |
| HP 2010 | | | | N/A |

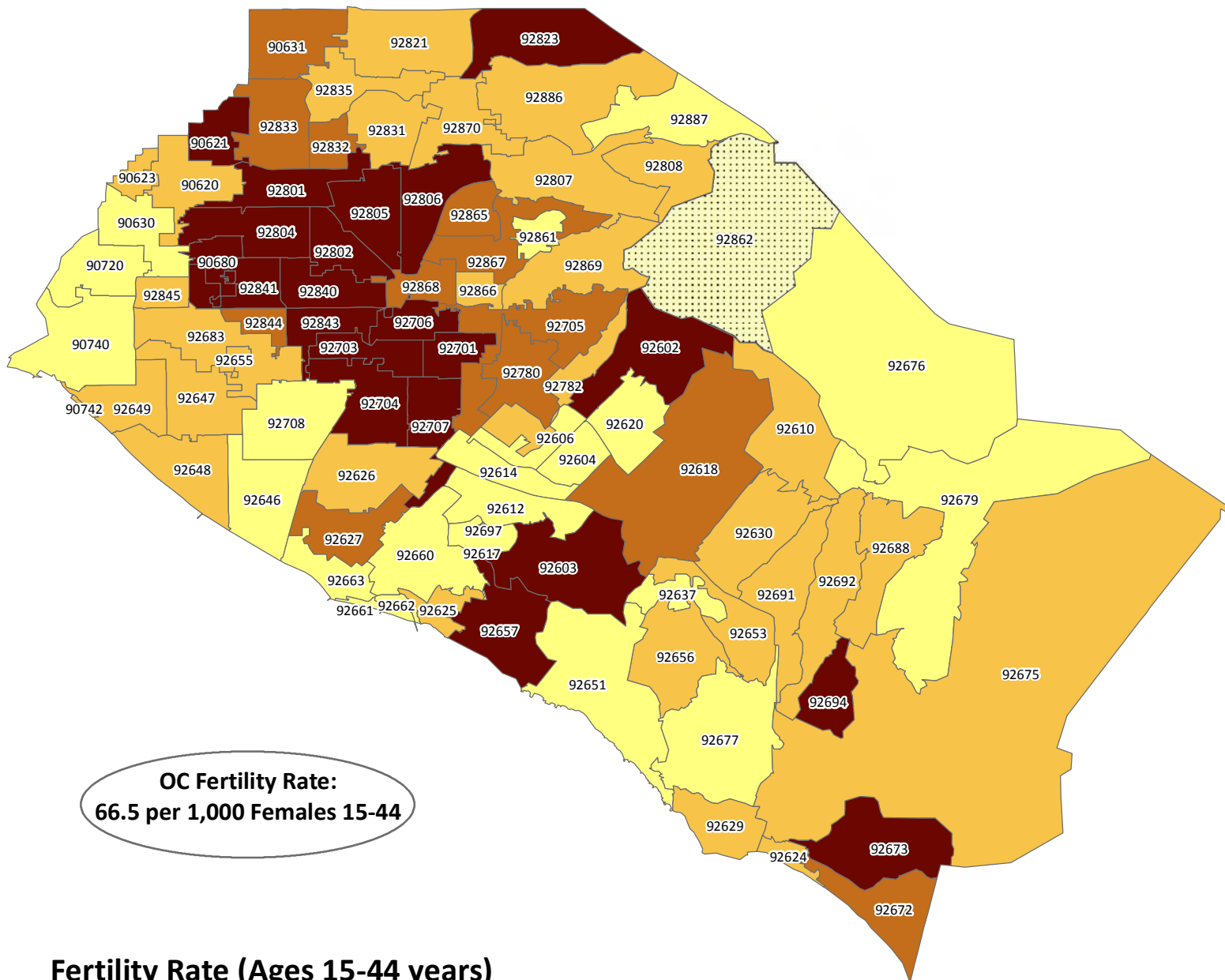
*Source: 2007 California Department of Public Health-Center for Health Care Statistics.

Map: Orange County Births by Mother's ZIP Code of Residence (2006-2008)

- Fertility Rate (Females Ages 15-44 Years)



Orange County Fertility Rate (Females Age 15-44 years) by ZIP Code of Residence (2006-2008)



**OC Fertility Rate:
66.5 per 1,000 Females 15-44**

Fertility Rate (Ages 15-44 years) (3-Year Average)

- 18.7 - 46.6
- 46.7 - 66.5
- 66.6 - 74.5
- 74.6 - 214.5
- Insufficient Data

Low Birth Weight

A low birthweight infant is defined as an infant weighing less than 2,500 grams at birth. The low birth weight rate is the proportion of babies weighing less than 2,500 grams to the total number of births. This indicator is based on the number of live births, and is shown in percentage of live births. The risk of low birthweight is known to be associated with late and inadequate prenatal care which can put these infants at risk for developmental delays, disabilities, and other illness. In addition, there often are additional economic and social costs associated with low birthweight babies.

In Orange County, the percentage of low birthweight babies was 6.4% for 2006 to 2008. This is a slight increase from the 6.3% found in the 2004 to 2006 time period. This number is also higher than the Healthy People 2010 objective of having no more than 5% of babies born with a low birthweight. Statewide, the rate was slightly higher at 6.9% for the same period (**Table 4**). The following map presents the percent of babies with low birth weight by ZIP code of residence for 2006 to 2008. The majority ZIP codes with the highest percentage of low birth weight babies (7.4% of greater) were in the southern and coastal areas of the county.

Race/Ethnicity: Blacks had the highest percentage of low birth weight babies (10.4%). Asian/Pacific Islanders had the second highest percentage at 7.3%. Whites (6.3%) along with Hispanics (6.0%) had the lowest percentage of low birth weight babies.

Table 4: Low Birth Weight Babies by Race/Ethnicity (2006-2008)

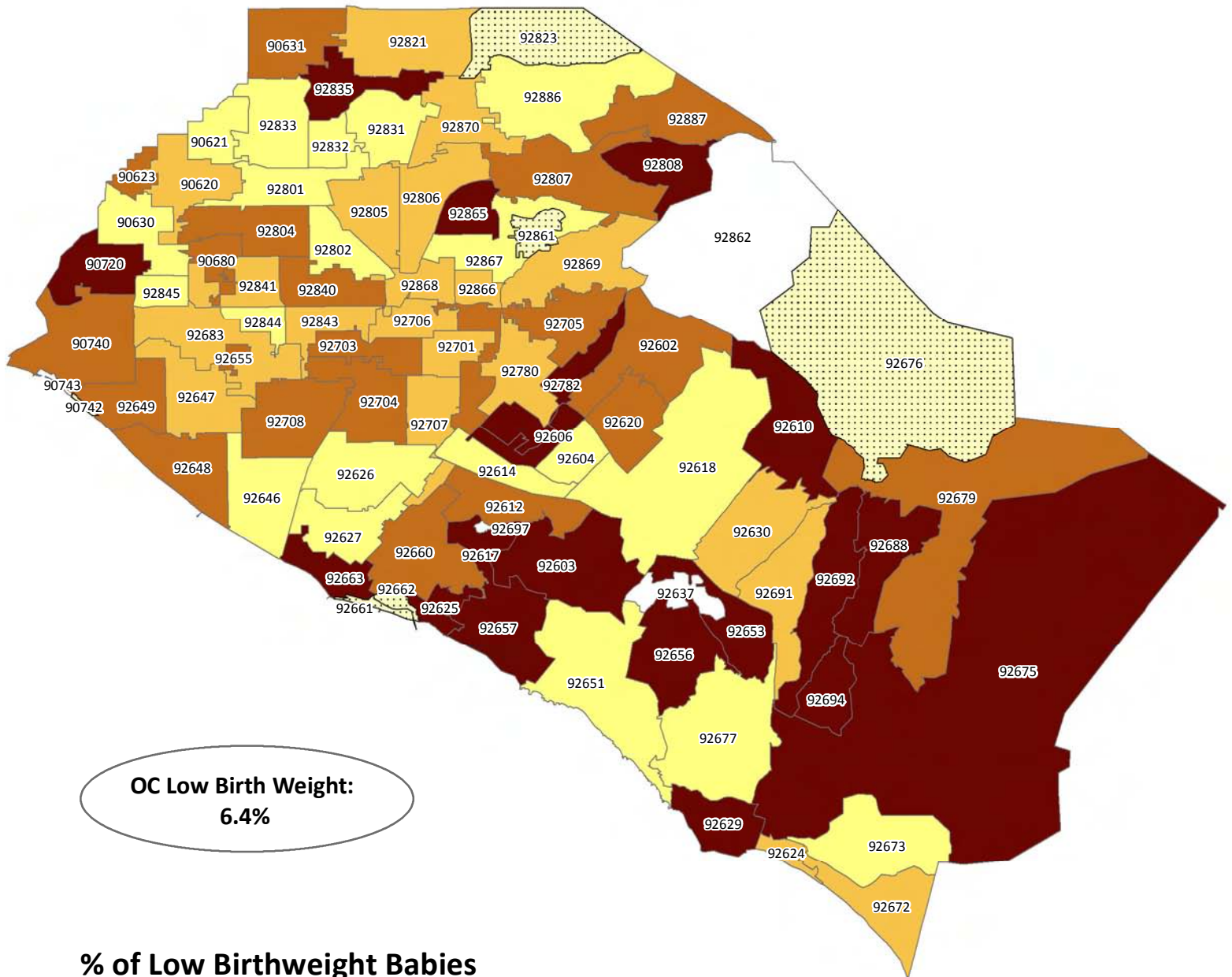
| | <i>Avg. # Low BW</i> | <i>% of Total Births</i> | <i>Avg. # of Births</i> | <i>% of Births</i> |
|-------------------------------|--------------------------|------------------------------|-----------------------------|------------------------|
| Black | 54 | 1.92% | 515 | 10.4% |
| Asian/Pacific Islander | 538 | 19.20% | 7,392 | 7.3% |
| White | 812 | 29.00% | 12,840 | 6.3% |
| Hispanic | 1,349 | 48.19% | 22,312 | 6.0% |
| Other/Unknown | 47 | 1.69% | 513 | N/A |
| Countywide (3-yr Avg.) | 2,800 | 100% | 43,571 | 6.4% |
| Statewide (3-yr Avg.) | | | | 6.9%* |
| HP 2010 | | | | 5.0%* |

*Source: California Department of Public Health-County Health Status Profile Report (2010).

Map: Orange County Births by Mother's ZIP Code of Residence (2006-2008)

- Percent Low Birth Weight Live Births

Orange County Low Birthweight Babies by ZIP Code of Residence (2006-2008)



% of Low Birthweight Babies (3-Year Average)

- 4.2% - 5.9%
- 6.0% - 6.5%
- 6.6% - 7.3%
- 7.4% - 10.2%
- No Events
- Insufficient Data

Births to Adolescent Mothers (Ages: 15-19 Years)

Births to adolescent mothers are considered not only medically risky, but also a social burden. It poses medical and social problems for the mother, as well as her infant and the community. According to a 2003 report by the Public Health Institute, the direct costs to California taxpayers for teen births is around \$1.5 billion every year, with indirect costs reaching \$3.3 billion.¹ This indicator is based on the total number of live births among 15-19 year old females per 1,000 population in the same age group over a given period of time, and is presented as rates.

Between the years 2004 and 2006, the age-specific teen birth rate was 31.1 per 1,000 females, ages 15-19 years. During the current study period (2006-2008), the number of babies born to adolescent mothers decreased about 9% to 28.4 per 1,000 females 15-19 years of age (**Table 5**). In comparison, the teen birth rate in California, for the same period, was 36.6 per 1,000 females 15-19 years of age. The following map presents the birth rate to adolescent mothers by ZIP code of residence. When examined across ZIP codes, the rate ranged from 1.7 per 1,000 females, age 15-19 for ZIP code 92620 (Irvine) to a high of 80.8 per 1,000 females 15-19 years of age for ZIP code 92701 (Santa Ana).

Race/Ethnicity: Hispanics had the highest rate of births to teen moms (64.5 per 1,000 females age 15-19), when compared within race/ethnicity groups. Black teens had the second highest rate at 30.0 per 1,000 births to black females age 15-19. Whites had a rate of 8.6 per 1,000. Asian/Pacific Islanders had the lowest rate of births to teen mothers at 4.1 per 1,000 females age 15-19.

Table 5: Teen Births by Race/Ethnicity (2006-2008)

| | <i>Avg. # Teen Births</i> | <i>% of Teen Births</i> | <i>Female Population (15-19 yrs)</i> | <i>Rate/1,000 Females 15-19 yrs</i> |
|-------------------------------|---------------------------|-------------------------|--------------------------------------|-------------------------------------|
| Hispanic | 2,591 | 83.97% | 40,186 | 64.5 |
| Black | 49 | 1.58% | 1,623 | 30.0 |
| White | 352 | 11.42% | 41096 | 8.6 |
| Asian/PI | 76 | 2.45% | 18,424 | 4.1 |
| Other/Unknown | 18 | 0.58% | 7,256 | N/A |
| Countywide (3-yr Avg.) | 3,086 | 100% | 108,585 | 28.4 |
| Statewide (3-yr Avg.) | | | | 36.6* |
| HP 2010 | | | | N/A |

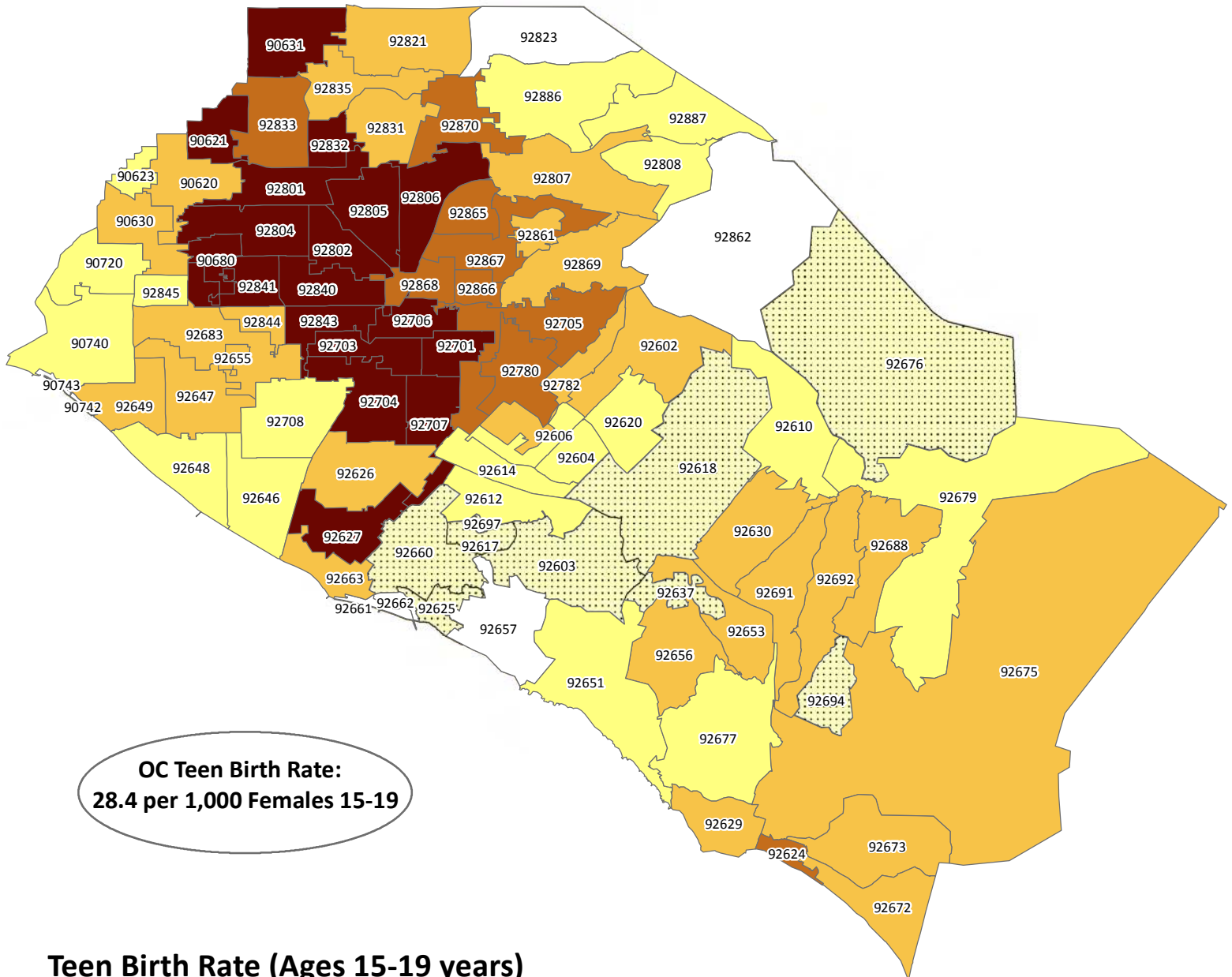
*Source: California Department of Public Health-County Health Status Profile Report (2010).

Map: Orange County Births by Mother's ZIP Code of Residence (2006-2008)

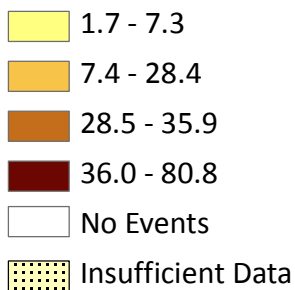
- Birth Rate to Teen Mothers (Ages 15-19 Years)

¹ Constantine, N. A. & Nevarez, C. R. (2003). No Time for Complacency: Teen Births in California. Berkeley, CA: Public Health Institute

Orange County Births to Adolescent Mothers (Teen Births) by ZIP Code of Residence (2006-2008)



Teen Birth Rate (Ages 15-19 years) (3-Year Average)



Prenatal Care Not Received in the First Trimester

Prenatal care received after 12 weeks of gestation is defined as late prenatal care or prenatal care not received in the first trimester. It is considered to be a high risk factor, for it can lead to an unhealthy birth outcome. Early prenatal care provides an excellent opportunity to detect and treat maternal and fetal medical problems, as well as to offer counseling on healthy life-style and behaviors, thus ensuring a positive birth outcome. This indicator is based on the total number of live births and is presented in percentages.

In a previous report covering 1999 to 2001, 11.6% of mothers did not receive prenatal care within the first three months of pregnancy. Whereas in the 2004 to 2006 time period, 8.3% of women received late or no prenatal care, an improvement of 29%. However, in the current report there was a 28% increase in the number of females receiving late or no prenatal care (10.6%) countywide (**Table 6**).

There was also a similar increase in the statewide percentage, with 16.3% having received either late or no prenatal care during the same period compared to the previous 13.5%. Further, Orange County has not met the Healthy People 2010 goal of having no more than 10% of pregnant women who receive late or no prenatal care. The following map presents the percent of births with late or no prenatal care by ZIP code of residence for 2006 to 2008. The rate across ZIP codes ranged from a low of 2.2% for ZIP code 92657 (Newport Coast), to a high of 15.8% for ZIP code 92802 (Anaheim).

Race/Ethnicity: Within each race/ethnicity, blacks had the highest percentage of women who received late or no prenatal care (13.9%). Hispanic women followed closely with the second highest percentage at 13.3% of all births with late or no pre-natal care; compared to 8.9% of Asian/Pacific Islanders women. Whites had the lowest percentage of women at 6.8% having late or no prenatal care during the first trimester.

Table 6: Late/No Prenatal Care by Race/Ethnicity (2006-2008)

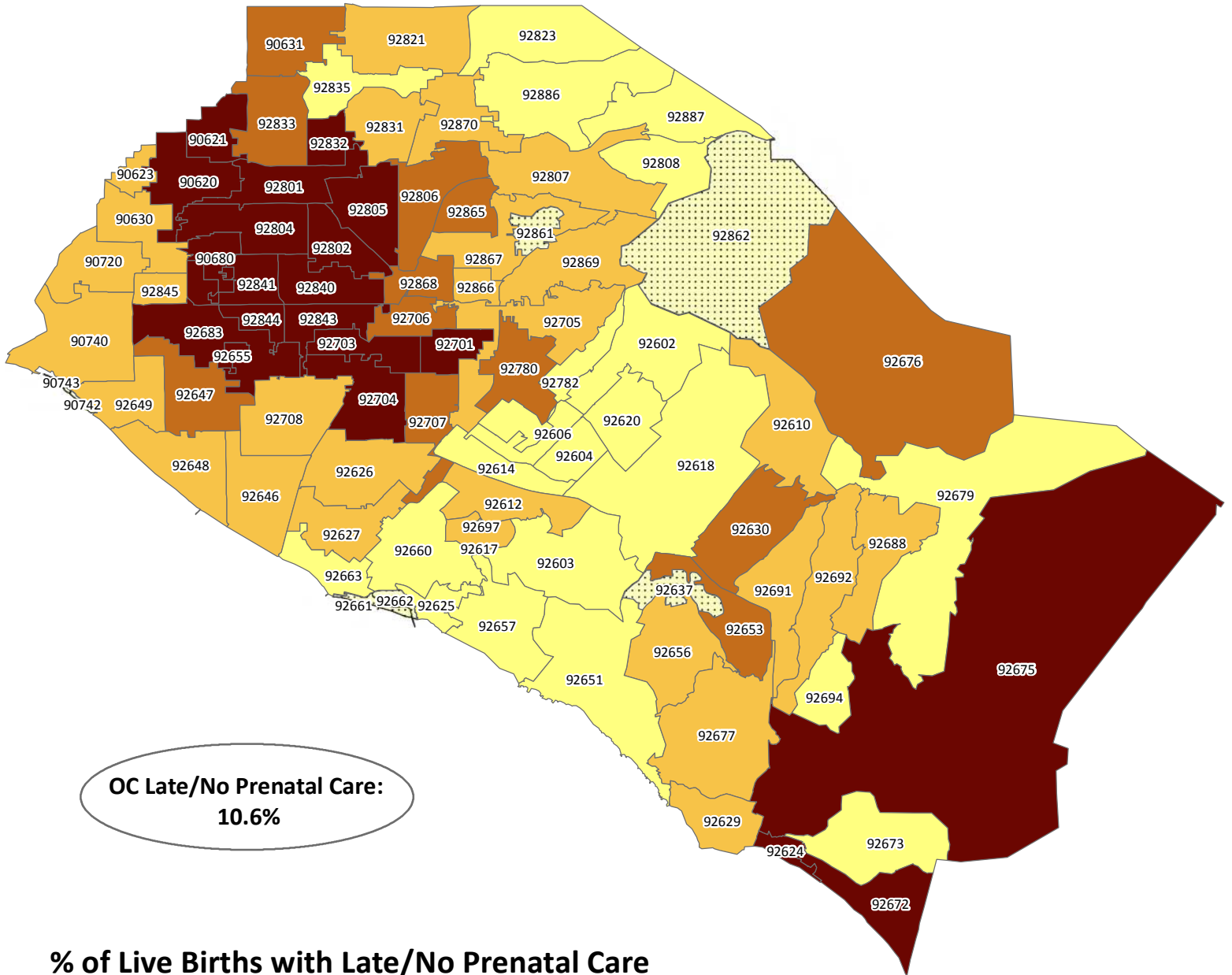
| | <i>Avg. # Births</i> | | <i>% of Births</i> | |
|-------------------------------|------------------------------|--------------------|-------------------------|------------------------------|
| | <i>Late/No Prenatal Care</i> | <i>% of Births</i> | <i>Avg. # of Births</i> | <i>Late/No Prenatal Care</i> |
| Black | 72 | 1.6% | 515 | 13.9% |
| Hispanic | 2,975 | 64.3% | 22,312 | 13.3% |
| Asian/PI | 657 | 14.2% | 7,392 | 8.9% |
| White | 869 | 18.8% | 12,840 | 6.8% |
| Other/Unknown | 57 | 1.2% | 513 | N/A |
| Countywide (3-yr Avg.) | 4,629 | 100% | 43,571 | 10.6% |
| Statewide (3-yr Avg.) | | | | 16.3%* |
| HP 2010 | | | | 10.0% |

*Source: California Department of Public Health-County Health Status Profile Report (2010).

Map: Orange County Births by Mother’s ZIP Code of Residence (2006-2008)

- Percent of Live Births with Late or No Prenatal Care

Orange County Percent of Births w/Late or No Prenatal Care by ZIP Code of Residence (2006-2008)



% of Live Births with Late/No Prenatal Care (3-Year Average)

- 2.2% - 5.9%
- 6.0% - 10.6%
- 10.7% - 12.4%
- 12.5% - 15.8%
- Insufficient Data

Adequacy of Prenatal Care Utilization Index

The Kotelchuck Adequacy of Prenatal Care Utilization (APNCU) index uses two dimensions of prenatal care to characterize prenatal care utilization. This index examines a mother’s adequacy in the initiation of prenatal care (month prenatal care began) and the adequacy of prenatal care visits (number of visits). This prenatal care index utilizes these two measures in a matrix to determine a final adequacy of prenatal care utilization index. The index categories are *inadequate*, *intermediate*, *adequate*, *adequate plus*, and *missing*. Mothers with adequate/adequate plus scores were considered “adequate” for this analysis.

In the 2006-2008 period, the percentage of mothers with adequate prenatal care countywide was 82.4% (**Table 7**). The statewide percentage of mothers receiving adequate care was lower at 78.7% during the same period. Further, Orange County has not achieved the Healthy People 2010 goal of having at least 90% of pregnant women receiving adequate prenatal care. The following map presents the percentage of live births with adequate prenatal care by ZIP code of residence. The rate across ZIP codes ranged from a low of 60% for ZIP code 92694 (Laguna Woods) to a high of 100% for ZIP code 92862 (Orange) and 92697 (Irvine).

Race/Ethnicity: Within each race/ethnicity, whites had the highest percentage of births with adequate prenatal care (88.5%). Asian/Pacific Islanders had the second highest percentage of births receiving adequate prenatal care at 82.4%. Hispanics (78.6%) fell below the countywide rate, as did blacks who had the lowest percentage of births with adequate prenatal care (78.5%). All race/ethnicities fell below the Health People goal of 90%.

Table 7: Adequate Prenatal Care Index by Race/Ethnicity (2006-2008)

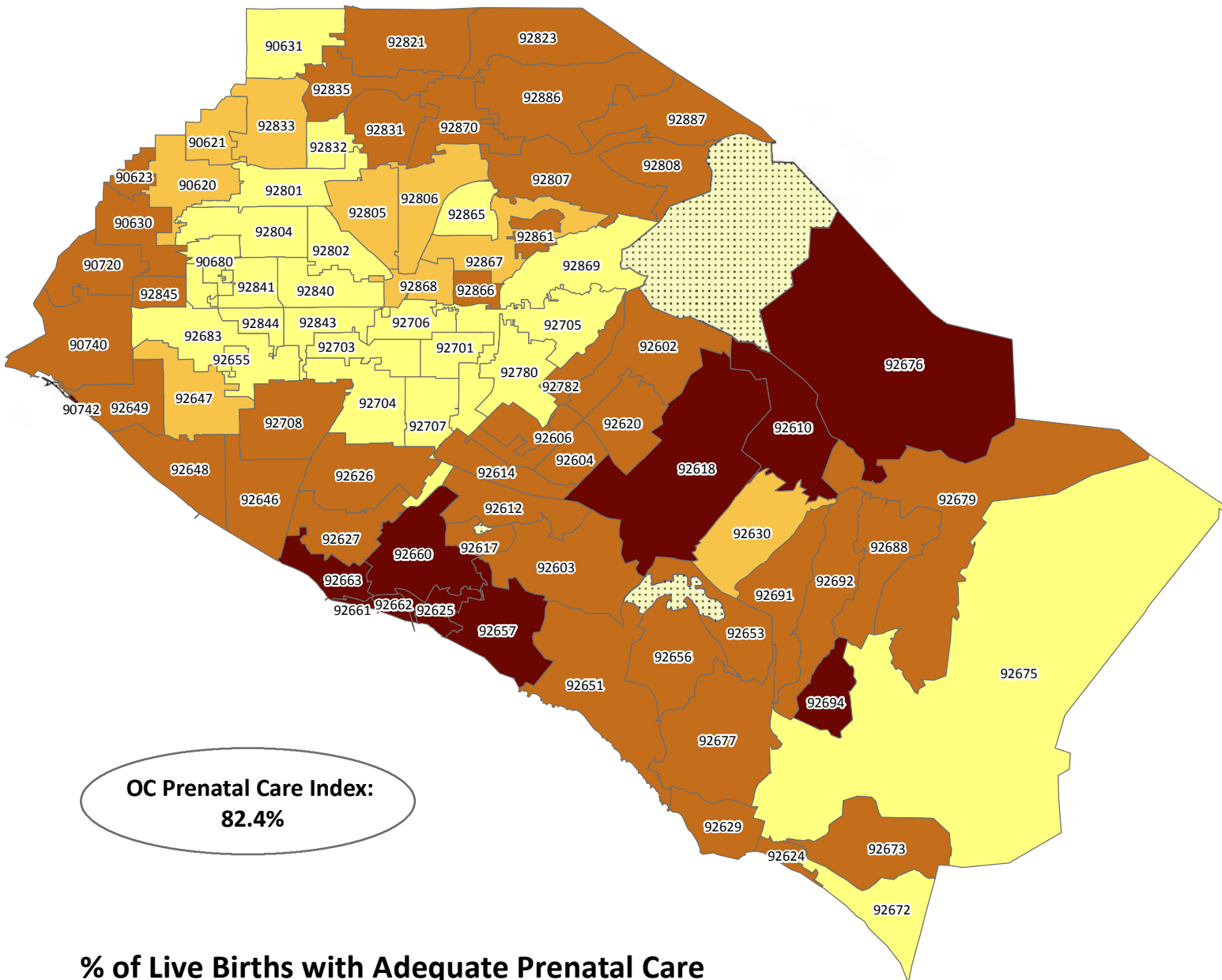
| | <i>Avg. # Births w/ Adequate Prenatal Care</i> | <i>% of Births Receiving Adequate Care</i> | <i>Avg. # of Births</i> | <i>% of Births w/ Adequate Prenatal Care</i> |
|-------------------------------|--|--|-----------------------------|--|
| White | 11,362 | 31.73% | 12,840 | 88.5% |
| Asian/Pacific Islander | 6,091 | 17.01% | 7,392 | 82.4% |
| Hispanics | 17,537 | 48.98% | 22,312 | 78.6% |
| Blacks | 404 | 1.13% | 515 | 78.5% |
| Other/Unknown | 410 | 1.15% | 513 | N/A |
| Countywide (3-yr Avg.) | 35,804 | 100% | 43,571 | 82.4% |
| Statewide (3-yr Avg.) | | | | 78.7%* |
| HP 2010 | | | | 90% |

*Source: California Department of Public Health-County Health Status Profile Report (2010).

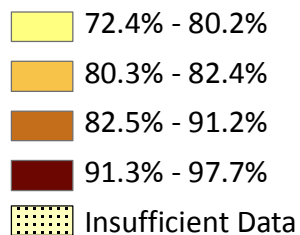
Map: Orange County Births by Mother’s ZIP Code of Residence (2006-2008)

- Percentage of Live Births with Adequate Prenatal Care

Orange County Adequate Prenatal Care Index by ZIP Code of Residence (2006-2008)



% of Live Births with Adequate Prenatal Care (3-Year Average)



*Adequacy of Prenatal Care Utilization (APNCU) Index is a composite indicator for Adequate prenatal care.

Deliveries by Cesarean Section

Research has shown that the number of cesarean deliveries (C-sections) has been increasing in the last few years.² This increase also includes mothers who undergo elective cesarean deliveries.³ A cesarean delivery is considered to be elective when there is no medical indication and the mother is considered to be at low-risk: >37 weeks gestation, singleton (not a multiple pregnancy), and fetus presents in a vertex position (downward facing head in the birth canal). This concern is warranted, as research suggests that mothers who undergo C-sections experience greater morbidity and mortality rates including being at greater risk for developing blood clots and infections.⁴

Between the years 2004 and 2006, 32% of babies were delivered by C-section in Orange County. This rate increased (5.6%) in the current report to 33.8% (**Table 8**). The following map presents the percentage of live births delivered by cesarean by ZIP code of residence. When compared across ZIP codes, the rates ranged from a low of 27.4% for ZIP code 92617 (Irvine), to a high of 56.8% for ZIP code 92662 (Newport Beach).

Race/Ethnicity: Within each race/ethnicity, blacks had the highest percentage of women who underwent a cesarean delivery (36.3%); albeit, this was the smallest group accounting for only 1.3% of all cesarean deliveries. Whites had the second highest percentage (34.8%) of cesarean deliveries, while 33.5% of Hispanic women underwent a cesarean delivery. Asian/Pacific Islanders had the lowest percentage of women delivering by C-section at 32.9%.

Table 8: Cesarean Deliveries by Race/Ethnicity (2006-2008)

| | <i>Number of Cesarean Births</i> | <i>% of Cesarean Births</i> | <i>Avg. # of Births</i> | <i>% of Births by Cesarean</i> |
|-------------------------------|--------------------------------------|---------------------------------|-----------------------------|------------------------------------|
| Black | 187 | 1.3% | 515 | 36.3% |
| White | 4,472 | 30.3% | 12,840 | 34.8% |
| Hispanic | 7,472 | 50.7% | 22,312 | 33.5% |
| Asian/PI | 2,432 | 16.5% | 7,392 | 32.9% |
| Other/Unknown | 184 | 1.4% | 513 | N/A |
| Countywide (3-yr Avg.) | 14,747 | 100% | 43,572 | 33.8%* |
| Statewide (3-yr Avg.) | | | | N/A |
| HP 2010 | | | | N/A |

*Source: 2006-2008 California Department of Public Health-Center for Health Care Statistics.

Map: Orange County Births, incidents by ZIP Code of Residence (2006-2008)

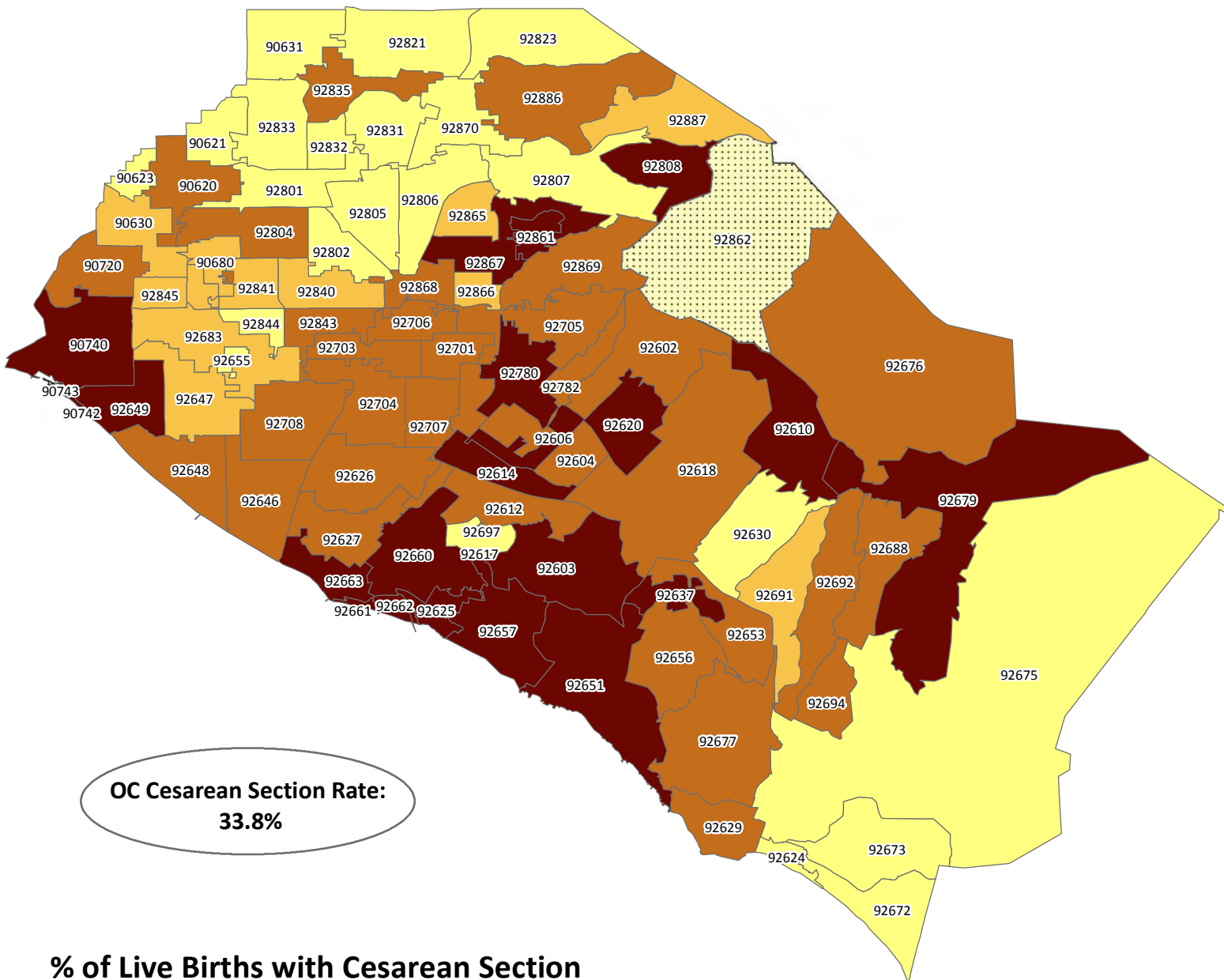
- Percent of Live Births with Cesarean Section

² McCourt, C., Weaver, J., Statham, H., Beake, S., Gamble, J., & Creedy, D.K. (2007). Elective Cesarean Section and Decision Making: A Critical Review of the Literature. *Birth*. 34(1): 65-79.

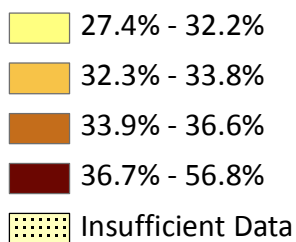
³ Tita, A., Landon, M.B., Spong, C.Y., Lai, Y., Leveno, K.J., Varner, M.W., Maowad, A.F., Caritis, S.N., Meis, P.J., Wapner, R.J., Sorokin, Y., Miodovnik, M., Carpenter, M., Peaceman, A.M., O'Sullivan, M.J., Sibai, B.M., Langer, O., Thorp, J.M., Ramin, S.M., & Mercer, B.M. (2009). Timing of Elective Repeat Cesarean Delivery at Term and Neonatal Outcomes. *The New England Journal of Medicine*. 360(2): 111-120.

⁴ Lui, S., Liston, R.M., Joseph, K.S., Heaman, M., Sauve, R., & Kramer, M.S. (2007). Maternal Mortality and Severe Morbidity Associated with Low-Risk Planned Cesarean Delivery Verses Planned Vaginal Delivery at Term. *Canadian Medical Association Journal*. 176 (4): 455-460.

Orange County Cesarean Section Rates by ZIP Code of Residence (2006-2008)



% of Live Births with Cesarean Section (3-Year Average)



Breastfeeding Initiation: Breastfeeding is promoted by the American Academy of Pediatrics, Women, Infants and Children (WIC), and other national and international authorities. Besides being cost effective for families, breastfeeding has been associated with fewer episodes of infectious illness among infants. The Healthy People 2010 goal is to increase breastfeeding to 75% of all mothers. The tables and maps provide the percentage of mothers with a known feeding method, either “exclusive” breastfeeding or “any” breastfeeding, which is a combination of breast feeding and formula, as indicated at time of discharge from the hospital.

“Any” Breastfeeding Initiation: In the current report, 84.9% of OC mothers reported they would do a combination of breastfeeding and bottle feeding (**Table 9**). While the number of women who indicated that they will initiate some form of breastfeeding has consistently been above the 75% objective established by Healthy People 2010, the rate is below the statewide average of 86.2% for the years 2006-2008. Whites had the highest rates of “any” breastfeeding at 90.0%, while blacks had the lowest rates at 79.4%. The following map presents the percentage of mothers reporting “any” breastfeeding by ZIP code of residence for 2008. Based on geography, ZIP code 92655 (Midway City) had a low of 66.7% of women who reported they used “any” breastfeeding method, to a high of 100.0% for ZIP code 92861 (Villa Park).

“Exclusive” Breastfeeding: Exclusive breastfeeding indicates that the mother relied solely on breast milk and not formula, as measured at hospital discharge. A total of only 38.2% of OC mothers in 2008 indicated they would breastfeed exclusively, compared to almost half (49.7%) of all mothers statewide. The method for obtaining this estimate has changed from previous years and therefore cannot accurately be compared with previous data. Whites in OC had the highest rate of “exclusive” breastfeeding (59.6%), while Hispanics had the lowest rate at 28.7%. The following map presents the percentage of mothers reporting “exclusive” breastfeeding by ZIP code of residence for 2008. ZIP code 92655 (Midway City) had the lowest percentage of reported “exclusive” breastfeeding at 20.7%. The highest percentage of “exclusive” breastfeeding was for ZIP Code 92646 (Huntington Beach) at 62.5%.

Table 9: Any and Exclusive Breastfeeding by Race/Ethnicity (2008)

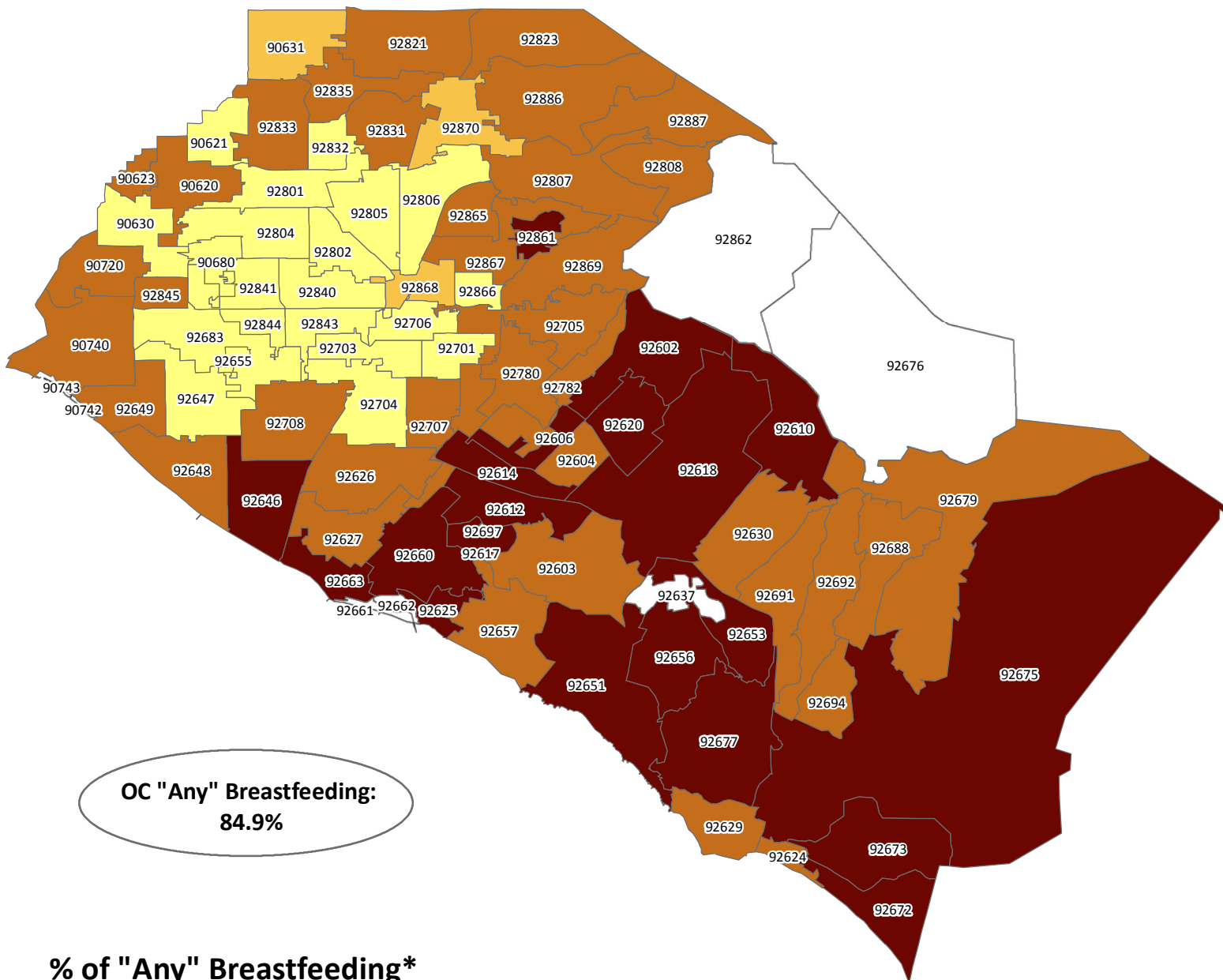
| Race/Ethnicity | Total | # Any Breastfeeding | % Any Breastfeeding | # Exclusive Breastfeeding | % Exclusive Breastfeeding |
|--------------------------------|----------------|---------------------|---------------------|---------------------------|---------------------------|
| White | 9,000 | 8,100 | 90.0% | 5,363 | 59.6% |
| Hispanic | 18,878 | 15,795 | 83.7% | 5,424 | 28.7% |
| Asian/Pacific Islander | 5,039 | 4,004 | 79.5% | 1,607 | 31.9% |
| Blacks | 320 | 254 | 79.4% | 134 | 41.9% |
| Other/Unknown | 2,309 | 2,021 | N/A | 1,066 | N/A |
| Total (Countywide 2008) | 35,546 | 30,008 | 84.9% | 13,501 | 38.2% |
| Statewide (2008) | 434,793 | 374,895 | 86.2% | 216,171 | 49.7%* |

*Source: Epidemiology, Assessment and Program Development Maternal, Child and Adolescent Health Program California Department of Public Health. Note: 2008 cannot be compared and/or combined with prior years data, significant changes to methodology will affect BF rates. Further details on these changes can be found at: <http://www.cdph.ca.gov/data/statistics/Pages/BreastfeedingPriorYearData.aspx>

Maps: Orange County Births, incidents by ZIP Code of Residence (2006-2008)

- Percent of Reported “Any” Breastfeeding
- Percent of Reported “Exclusive” Breastfeeding

Orange County "Any" Breastfeeding by ZIP Code of Residence (2008)



% of "Any" Breastfeeding* (2008)

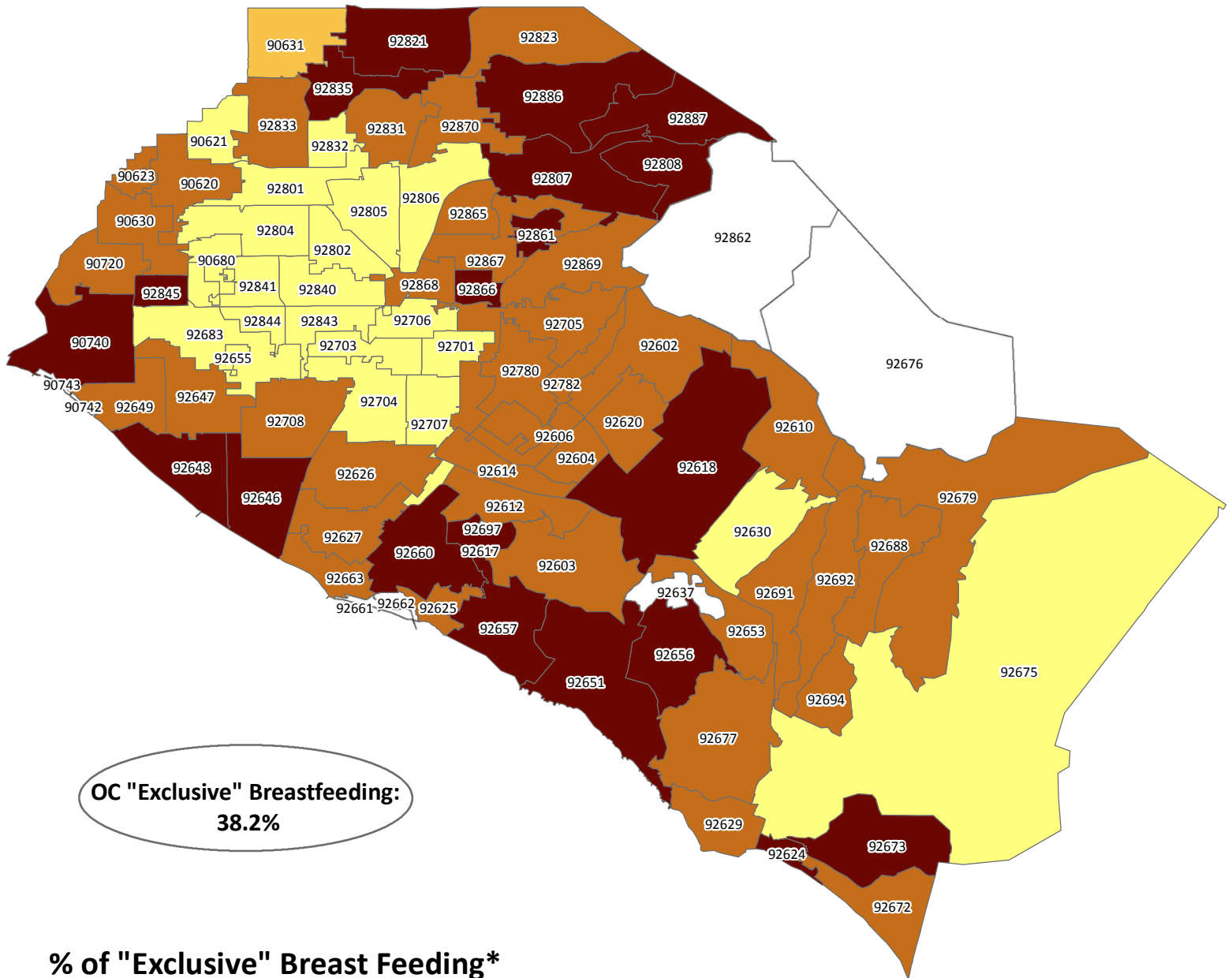
- 66.7% - 84.1%
- 84.2% - 84.9%
- 85.0% - 91.4%
- 91.5% - 100.0%
- No Events

*Percent of all cases with known feeding methods.

Includes those exclusively breastfeeding and those supplementing breastmilk w/formula, as measured in hospital at discharge.

Data Source: Maternal, Child and Adolescent Health Program California Department of Public Health
OC Geographic Health Profile 2011

Orange County "Exclusive" Breastfeeding by ZIP Code of Residence (2008)



% of "Exclusive" Breast Feeding* (2008)

- 20.7% - 37.9%
- 38.0% - 38.2%
- 38.3% - 52.4%
- 52.5% - 62.5%
- No Events

*Percent of all cases with known feeding methods.

Includes only those mothers who fed exclusively with breastmilk since birth, as measured in hospital at discharge.