PREMATURE MORTALITY IN ORANGE COUNTY

Orange County Health Care Agency
Health Policy – Research & Planning

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LEADING CAUSES OF PREMATURE MORTALITY IN ORANGE COUNTY

INTRODUCTION

A major role of the healthcare community is to reduce the risk of untimely death through prevention and treatment, in order to assure a healthy and productive life for all the members of society. These efforts are in line with the national Healthy People 2020 goal of attaining "high-quality, longer lives free of preventable disease, disability, injury, and premature death." The relative impact of various causes of diseases in the community has been traditionally measured using mortality (death) statistics. The approach was to analyze crude and age-adjusted death rates and rank leading causes of death based on the frequency of death; each death was counted equally, independent of the age of the decedent. Although these data are important measures of health status, they don't show a complete picture because most deaths occur among older individuals. Mortality data are typically dominated by the underlying disease processes of the elderly.

In order to get a clearer picture of the burden of preventable diseases and reduce the risks of untimely deaths, we must look at premature mortality (premature deaths). Premature mortality refers to deaths occurring younger than expected and is defined, in this report, as deaths occurring between the ages of 1 and 74 years. Years of potential life lost (YPLL) is an estimate of the years a person would have lived if they had not died prematurely. YPLL is a measure of premature mortality because it highlights causes of deaths occurring at younger ages more heavily than those occurring in older populations. YPLL is also useful for examining the contribution of specific conditions to the total years of potential life lost.

Many of the leading causes of premature mortality are related to the behavior of the individual, and therefore are considered to be highly preventable. According to the Centers for Disease Control and Prevention, "a recent study revealed that six precursors of premature death (use of tobacco, use of alcohol, injury risks, high blood pressure, overweight, and gaps in primary prevention) accounted for 75% of all YPLL nationally."[1, 2] For example, deaths related to 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 – all leading causes of premature death in Orange County, the state of California, and the nation. Additionally, the CDC reported that cigarette smoke accounts for over 80% of all cases of chronic obstructive pulmonary lung disease. These preventable diseases cause tragic loss of life to younger individuals during early, productive years and are of concern to the public, policy makers, and the healthcare community.

A profile of leading causes of premature mortality for the residents of Orange County by gender, race/ethnicity, age group, and geographic area provides us with a picture of the burden of disease and injury, which can serve as a guide for prevention efforts that will extend years of life in the community. Leading causes of mortality is also provided in this report for comparison purposes. This report is divided into two parts. The first presents tables showing the leading causes of death and premature deaths in Orange County by gender, race/ethnicity and age group. The second part contains leading causes of death and premature death geographically, across the cities of Orange County.

METHODS

Data: Data in this report are based on information from death certificates for deaths occurring among residents of Orange County, CA in 2010, regardless of the place of death. Death certificate data constitute an available, comprehensive, relatively uniform and generally reliable source of information to describe mortality trends in the population. When a death occurs in California, state law requires that every death be registered. The original records are filed in the state; California uses an Electronic Death Registration System (CA-EDRS) to file death data and generate death certificates. Information reported on death certificates, which is completed by funeral directors, attending physicians, medical examiners, and coroners, include the decedent's name, address, date and place of birth, date and place of death, race, and underlying cause of death, among other items. Data collected from CA-EDRS is under the strict control of the California Office of Vital Records.[3]

Infant mortality, defined as deaths occurring less than 365 days of age, were excluded from this report. In most cases, causes of infant mortality (e.g., congenital anomalies, maternal complication during pregnancy) are not avoidable deaths; attributed to preventive health care or timely and effective medical care. Including infant deaths here would highly influence premature death data because causes of death affecting this age group would be weighed heavily and would therefore contribute a disproportionately large share of YPLL. Orange County infant mortality data can be found in a separate report titled *Orange County Geographic Health Profile: Birth Indicators (2000-2010)* report.[4]

In the geographic section of the report, data tables display leading causes of death and premature deaths by cities and the map display the age-adjusted death and YPLL-75 rate for each city in Orange County. Insufficient data indicates areas where the total number of cases was low (e.g. less than 20 deaths) or the population was small resulting in unstable rates. Unincorporated areas of Orange County are not considered here with the exception of North Tustin and Rossmoor. North Tustin is an unincorporated area or Census Designated Place (CDP) with a large population. Rossmoor is a CDP that was combined with the neighboring city of Los Alamitos in this report because deaths were frequently attributed to this city in the master death file.

Coding Causes of Death and Premature Death: Central to the process of calculating mortality rates and determining leading causes of death and premature death is the correct coding of the underlying cause of death. The underlying cause of death is defined as the disease, abnormality, or injury that led to death. Beginning on January 1, 2000, the County of Orange Health Care Agency, Birth and Death Registration Unit began coding the underlying cause of death on Death Certificates using the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10).[5]

Mortality Data: Mortality data presented in this report consist of number of deaths and death rates per 100,000 population. When calculating rates, if the numerator is less than 20, the rate is unstable, meaning that a small change in the numerator can lead to a large change in the rate from one year to the next. Unstable rates do not lend themselves to being used to make decisions.

Age-adjusted mortality rate: Age has a strong effect on the risk of death – the risk of dying is inherently higher for persons in older age groups. Because the age structure of populations often differ death rates are typically age-adjusted. Age-adjustment is a statistical technique used to control for the effect of age when comparing this risk of death across populations or areas with different age distributions. For this report, age-adjusted death rates were calculated using the 2000 US standard population published by the National Centers for Health Statistics.

Premature Mortality Data: In 1982, the Centers for Disease Control and Prevention (CDC) introduced a new measure of public health, years of potential life lost (YPLL) as a measure of premature deaths. YPLL-75 represents "years of potential life lost before age 75" due to premature death and is estimated for persons between 1 and 74 years old at the time of death. For each decedent younger than 75 years, the age at death is subtracted from 75. With this method, deaths occurring at younger ages accrue more years of life lost than deaths occurring at later ages. Therefore, YPLL weigh death such that the death of a young person counts more than the death of a very old person. The results are summed to get the YPLL and ranked. This measure is referred to as YPLL-75 in this report.

YPLL-75 Age-adjusted rate calculation: When comparing two subgroups with different age-structures we use age-adjusted YPLL rate (CDC MMWR Dec. 19, 1986 recommendation). Years of potential life lost before age 75 were first separated into their respective age groups based on the age at death (between the ages of 1 to 74 years). Then age-specific rates were calculated based on the age group populations. These age-specific rates were then weighted according to the 2000 U.S. standard population between the ages 1 year and 74 years to calculate a single rate. YPLL-75 rates based on fewer than 20 deaths are considered unreliable and will not be shown.

Ranking Leading Causes of Death and Premature Death: Leading causes of death and leading causes of premature death do not use specific cause-of-death categories, rather the more general categories (e.g., heart disease, malignant neoplasm, chronic lower respiratory disease) based on the list of 50 rankable causes recommended by the CDC are used for consistency in the reporting of national, state, and local levels. The leading causes of death, using CDC's cause of death groups, were ranked based on the numbers of deaths in each group. If two groups had the same number of deaths, then the cause of death that resulted in the higher years of potential life lost was ranked first. Leading causes of premature deaths were ranked by highest years of potential life lost (YPLL-75). If two causes of premature deaths resulted in the same YPLL-75, then the group that resulted in the greatest number of deaths was ranked first.

It is important to note that ranking does not necessarily denote the causes of death of greatest public health importance. Some causes of death of public health import were excluded (or grouped into larger categories) from the ranking procedure because they did not fall under CDC's leading causes of death rankable categories. For example, ischemic heart disease, malignant neoplasm of the trachea, bronchus, and lung, organic, including symptomatic, mental disorders, and chronic obstructive pulmonary disease (COPD) were not individually rankable causes of death. Were they included in the current ranking, all would be placed among the 10 leading causes of death. However, each of these, with the exception of organic mental disorder, was subsumed in broader ranking categories. Although not suitable for all circumstances, the current framework provides a method for comparisons with national results.

Procedures used by CDC's division of Vital Statistics, National Center for Health Statistics (NCHS) to rank causes of death, along with tables showing 113 selected causes of death from which the 50 rankable causes are selected, are available from: http://www.cdc.gov/nchs/nvss/mortality_tables.htm and http://www.cdc.gov/nchs/data/nvsr/nvsr58_08.pdf

User's Guide to Color-Coded Causes of Death: To make the figures easier to understand and interpret, color codes have been used throughout the report. To make it easier to see the impact of underlying causes of death, the same color is assigned to each cause throughout the report. The specific categories are shown below along with their specific International Classification of Disease 10th Revision (ICD-10) codes used in this report.

Causes of Death and Assigned Color	ICD-10 Codes
All Causes of Death	
Diseases of the Heart (Heart Disease)	I00-I09, I11, I13, I20-I51
Malignant Neoplasms (Cancer)	C00-C97
Cerebrovascular Diseases (Stroke)	I60-I69
Accidents (Unintentional Injuries)	V01-X59, Y85-Y86
Chronic Lower Respiratory Diseases (CLRD)	J40-J47
Alzheimer's Disease (Alzheimer's)	G30
Diabetes Mellitus (Diabetes)	E10-E14
Influenza & Pneumonia	J09–J18
Intentional Self-Harm (Suicide)	U03,X60–X84,Y87.0
Chronic Liver Disease & Cirrhosis (Liver Disease)	K70, K73-K74
Congenital Malformations, Deformations & Chromosomal Abnormalities (Congenital Disorders)	Q00-Q99
Assault (Homicide)	U01-U02, X85-Y09, Y87.1
Essential Hypertension & Hypertensive Renal Disease (Hypertension)	I10,I12,I15
Nephritis, Nephrotic Syndrome & Nephrosis (Nephritis)	N00–N07,N17–N19,N25–N27
Viral Hepatitis	B15-B19
Aortic Aneurysm & Dissection (Aortic Aneurysm)	I71
Human Immunodeficiency Virus (HIV) Disease	B20-B24

LEADING CAUSES OF DEATH AND PREMATURE DEATH IN OC (2010)

In 2010, there were 17,035 deaths among Orange County residents (excluding 147 infant deaths, less than 1 year; **Table 1A**). The age-adjusted death rate was 583.3 deaths per 100,000 residents. Slightly more than one-third of all deaths (37%) were premature deaths to decedents under 75 years of age. These 6,296 premature deaths accounted for a total of 107,398 years of potential life lost before age 75 (**Table 1B**).

Comparisons between leading causes of death and premature death show the differences between the two and highlight where the health care professionals and the community can make a greater impact in preventing premature deaths.

The top 10 leading causes of death (**1A**) with the leading causes of premature death based on YPLL-75 (**1B**) among Orange County residents in 2010 are ranked in descending order. The 10 leading causes totaled 13,803 deaths and the leading causes of premature deaths accounted for a YPLL-75 of 86,858 person-years.

Table 1: Leading Causes of Death and Premature Death for Orange County Residents (2010)

A. Death Rank	Leading Causes of Death	Number of Deaths‡	Premature Death Rank‡ (YPLL-75)
	All Causes of Death (age ≥ 1 year)	**17,035**	
1	**Heart Disease**	**4,352**	2
2	**Cancer**	**4,340**	1
3	**Stroke**	**1,057**	6
4	**Alzheimer's**	**1,000**	19
5	**CLRD**	**918**	9
6	**Unintentional Injuries**	**605**	3
7	**Influenza and Pneumonia**	**516**	12
8	**Diabetes**	**443**	7
9	**Liver Disease**	**293**	5
10	**Suicide**	**279**	4

B. Pre-mature Death Rank	Leading Causes of Premature Death (before age 75 years), 2010	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	All Causes (age 1-74 years at time of death)	**107,398**	
1	**Cancer**	**31,867**	2
2	**Heart Disease**	**16,211**	1
3	**Unintentional Injuries**	**14,475**	6
4	**Suicide**	**7,221**	10
5	**Liver Disease**	**4,792**	9
6	**Stroke**	**3,636**	3
7	**Diabetes**	**2,949**	8
8	**Homicide**	**2,369**	18
9	**CLRD**	**1,918**	5
10	**Congenital Disorders**	**1,420**	20

‡ Excludes infants less than 1 year of age (n= 147)

The ten leading causes of death accounted for 81% of all deaths in the County and 81% of all YPLL-75. Heart disease and cancer, the two leading causes of death and premature deaths, accounted for approximately half (51%) of all deaths and 47% of total YPLL-75.

Eight of the 10 leading causes of death for Orange County residents in 2010 were also leading causes of premature death. The two exceptions were Alzheimer's disease and influenza/pneumonia. These diseases tend to affect older residents (≥75 years; **Table 1A**) and were replaced by homicide and congenital disorders as leading causes of premature death (**Table 1B)**.

Importantly, the top three causes of premature death among Orange County residents (i.e., cancer, heart disease and unintentional injuries) accounted for 58% of the total YPLL-75. Specifically, 30% of premature deaths were due to cancer (YPLL-75: 31,897/107,398), 15% due to heart disease (YPLL-75: 16,211/107,398), and 13% due to unintentional injury (YPLL-75: 14,475/107,398). The remaining top 10 causes of premature death for Orange County residents accounted for 25% of premature deaths (YPLL-75: 26,737/107,398) and included: suicide, liver disease, stroke, diabetes, homicide, CLRD, and congenital disorders.

Among specific cancers, *lung cancer* contributed the largest portion of YPLL-75 due to all cancer for Orange County residents. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease for residents. *Accidental poisoning* was the largest contributor to YPLL-75 due to unintentional injuries, while *alcoholic liver disease* contributed the majority of YPLL-75 for liver disease.

GENDER

Table 2 presents the number, percent and rate of deaths, and premature deaths for OC residents by gender. A little over half (51%, n=8,605) of the total 17,035 deaths in 2010 were to female residents, while 48% were to males (n=8,430). Despite having slightly fewer deaths, males had a much higher age-adjusted death rate (691.5 deaths per 100,000 male residents) compared to females (500.0 deaths per 100,000 female residents). Consistent with this finding, males also had a higher proportion of premature deaths in 2010. Specifically, 45% of male deaths occurred before age 75, compared to only 29% of female deaths less than 75 years of age.

Table 2: Deaths and Premature Deaths by Gender, 2010

Gender	Number of Deaths	Percent of Deaths	Age-Adjusted Death Rate (per 100,000)	Number of Premature Deaths	Total YPLL-75[ǂ]	Age-Adjusted YPLL-75 Rate per 100,000[ǂ]
Males	8,430	49%	691.5	3,765	67,942	4,706
Females	8,605	51%	500.0	2,531	39,456	2,649
Total	**17,035**	**100%**	**583.3**	**6,296**	**107,398**	**3,665**

[ǂ] Excludes infants less than 1 year of age (n=147)

Orange County males lost almost twice as many years of potential life as female residents, total YPLL-75 of 67,942 for males compared to 39,456 for females. Similarly, males also had a higher rate of YPLL-75 – 4,706 per 100,000 population compared to 2,649 (YPLL-75 per 100,000 population) for female residents (**Table 2**).

For both genders in Orange County, the top three causes of death contributing to YPLL-75 were cancer, heart disease, and unintentional injuries. These three causes, combined, represented about 60% of the total YPLL-75 for both genders. Rankings for both leading causes of death and premature death among residents in 2010 are presented by gender, males in **Table 3** and females in **Table 4**.

Males: The top 10 leading causes of death for males listed in **Table 3A** are ranked by the number of deaths due to the underlying cause. The leading causes of premature death are ranked to the right in **Table 3B** according to years of potential life lost (YPLL-75). Because cancer deaths tend to occur at younger ages compared to heart disease, cancer moved into the number one cause of premature death for males. Similarly, unintentional injuries (accidents) became the third leading cause in terms of premature mortality for males (unintentional injuries ranked #4 in terms of number of deaths for males; **Table 3A**).

Importantly, eight of the ten leading causes of death for males were also leading causes of premature death. The two exceptions were diseases that tend to affect older residents (≥75 years) – specifically Alzheimer's and influenza/pneumonia and are thus not leading causes of premature death. Conversely, homicide and viral hepatitis are two mechanisms of dying that disproportionately affect young people, and thus moved into the top 10 causes of premature death for males (**Table 3B**).

Table 3: Leading Causes of Death and Premature Death for Orange County – Males

A. Rank	Leading Cause of Death - Males	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – Male (age ≥ 1 year)	**8,430**	
1	**Heart Disease**	**2,236**	2
2	**Cancer**	**2,228**	1
3	**Stroke**	**423**	6
4	**Unintentional Injuries**	**402**	3
5	**CLRD**	**379**	10
6	**Alzheimer's**	**308**	19
7	**Diabetes**	**243**	7
8	**Influenza and Pneumonia**	**229**	15
9	**Suicide**	**210**	4
10	**Liver Disease**	**187**	5

B. Pre-mature Death Rank	Leading Causes of Premature Death -Males	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	Males - All causes, (age 1-74 years at time of death)	**67,942**	
1	**Cancer**	**16,578**	2
2	**Heart Disease**	**12,542**	1
3	**Unintentional Injuries**	**10,522**	4
4	**Suicide**	**5,491**	9
5	**Liver Disease**	**3,216**	10
6	**Stroke**	**1,930**	3
7	**Diabetes**	**1,914**	7
8	**Homicide**	**1,877**	17
9	**Viral Hepatitis**	**898**	14
10	**CLRD**	**890**	5

‡ Excludes infants less than 1 year of age

The top three causes of premature death among males (i.e., cancer, heart disease, unintentional injury) accounted for 58.4% of the total YPLL-75. Specifically, 24.4% of premature male deaths were due to cancer (YPLL-75: 16,578/67,942), 18.5% due to heart disease (YPLL-75: 12,542/67,942), and 15.5% due to unintentional injuries (YPLL-75: 10,522 / 67,942). The remaining top 10 causes of premature death for males, which account for 24% of total YPLL-75, included: suicide, chronic liver disease/cirrhosis, stroke, diabetes, homicide, viral hepatitis, and CLRD (**Table 3B**).

Among specific cancers, *lung cancer* contributed the largest portion of YPLL-75 due to all cancers for male residents. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease in males. *Accidental poisoning* was the largest contributor to YPLL-75 due to unintentional injuries, while *alcoholic liver disease* contributed the majority of YPLL-75 for chronic liver disease/cirrhosis.

Females: The top 10 leading causes of death for females listed are ranked by the number of deaths by the underlying cause in **Table 4A**. The leading causes of premature death are ranked to the right in **Table 4B**. Cancer also moved into the number one position as the leading cause of premature death for females.

Unlike males, however, unintentional injuries (accidents) moved into the second highest ranked cause of premature death for females. Heart disease ranked #3 for premature mortality for females compared to #2 for males.

Unlike male residents, only six of the ten leading causes of death were also leading causes of premature death for female residents. The exceptions to the leading causes of premature death were diseases that tend to affect older residents (75+ years) – specifically Alzheimer's and influenza/pneumonia. Additionally, while hypertension and nephritis were leading causes in terms of number of deaths for females, they were not leading causes of premature death.

Diseases that joined the top 10 ranking of *premature* deaths for OC females (that were not in the top 10 in terms of total number of deaths) included suicide, chronic liver disease/cirrhosis, congenital disorders, and homicide (**Table 4B**).

Table 4: Leading Causes of Death and Premature Death for Orange County, 2010 – Females

Rank	Cause of Death - Females	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – Female (age ≥ 1 year)	**8,605**	
1	**Heart Disease**	**2,116**	3
2	**Cancer**	**2,112**	1
3	**Alzheimer's**	**692**	15
4	**Stroke**	**634**	5
5	**CLRD**	**539**	8
6	**Influenza and Pneumonia**	**287**	11
7	**Unintentional Injuries**	**203**	2
8	**Diabetes**	**200**	7
9	**Hypertension**	**124**	17
10	**Nephritis**	**122**	13

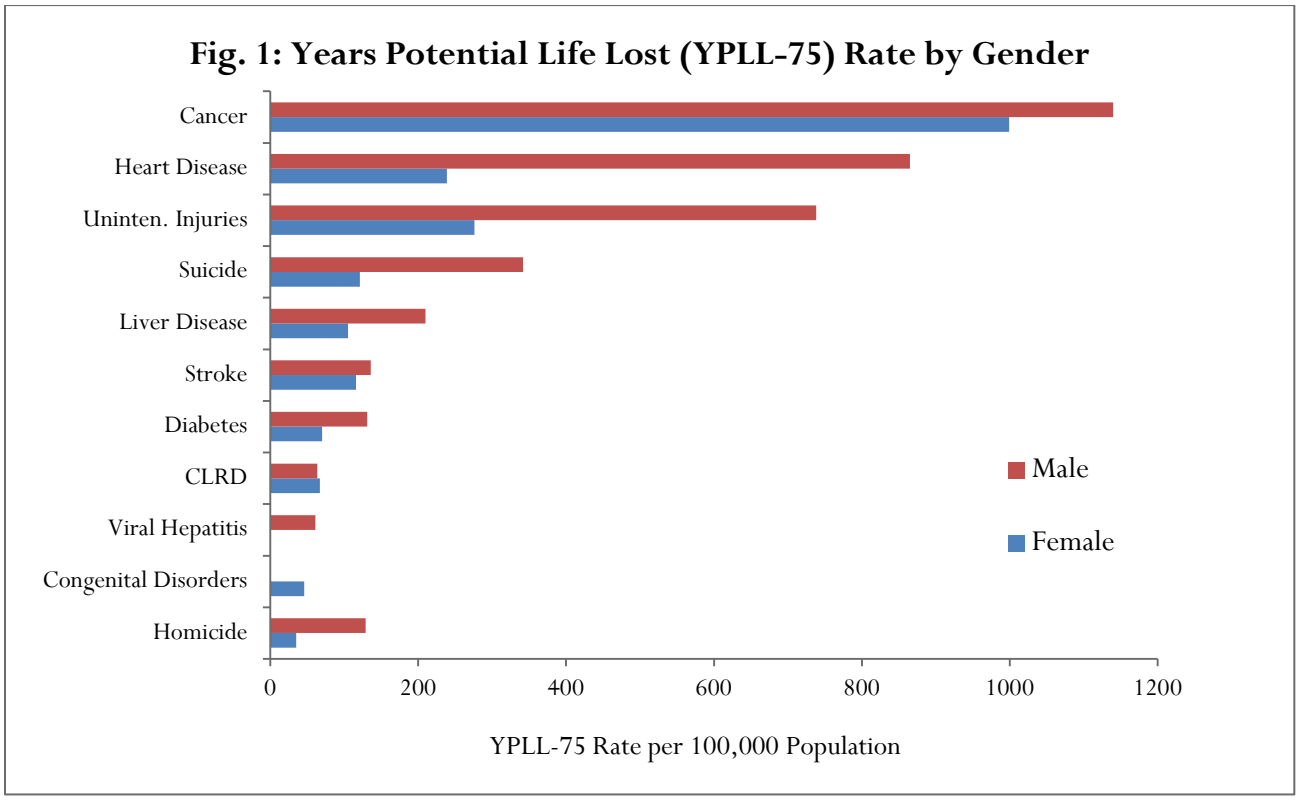
Pre-mature Death Rank	Leading Causes of Premature Death (before age 75 years), 2010 - Females	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	Females - All causes, (age 1-74 years at time of death)	**39,456**	
1	**Cancer**	**15,289**	2
2	**Unintentional Injuries**	**3,953**	7
3	**Heart Disease**	**3,669**	1
4	**Suicide**	**1,730**	13
5	**Stroke**	**1,706**	4
6	**Liver Disease**	**1,576**	11
7	**Diabetes**	**1,035**	8
8	**CLRD**	**1,028**	5
9	**Congenital Disorders**	**624**	21
10	**Homicide**	**492**	20

‡ Excludes infants less than 1 year of age

Notably, the top three causes of premature death among females (i.e., cancer, unintentional injury, heart disease) accounted for 58% of the total YPLL-75. Specifically, 39% of premature female deaths were due to cancer (YPLL-75: 15,289/39,456), 10% due to unintentional injury (YPLL-75: 3,953/39,456), and 9% due to heart disease (YPLL-75: 3,669 / 39,456). The remaining leading causes of premature death for females, which accounted for 21% of total YPLL-75 (8,191/39,456), included: suicide, stroke, liver disease/cirrhosis, diabetes, CLRD, congenital disorders, and homicide.

Among specific cancers, *breast cancer* contributed the largest portion of YPLL-75 due to all cancers for female residents. *Accidental poisoning* contributed the largest portion of YPLL-75 due to unintentional injuries. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease, while *alcoholic liver disease* contributed the majority of YPLL-75 for chronic liver disease/cirrhosis.

Gender Differences in YPLL-75 Rate: Males had higher rates of YPLL-75 for most of the leading causes of premature death - with the exception of CLRD (**Figure 1**). The disparity gap in rates between males and females were notable for several specific causes of premature death. For example, males had three times higher YPLL-75 rates for unintentional injury and suicides and nearly four times higher rates of premature heart disease deaths compared to females.



Similarly, males had three times higher YPLL-75 rates due to suicide and unintentional injury (accidental) deaths compared to females in the county in 2010. Males also had twice the YPLL-75 rate for chronic liver disease/cirrhosis and diabetes compared to females. Smaller gender disparities in YPLL-75 rates were observed for cancer and stroke.

The remaining leading causes of premature death based on gender included CLRD – the only leading cause of premature death where females had a slightly higher rate of YPLL-75 than males. Viral hepatitis was among the leading causes of premature deaths for males, but not for females and congenital disorders were among the leading cause of premature death for females, but not for males.

RACE/ETHNICITY

The following section examines the leading causes of mortality and premature mortality by race/ethnicity and compares disparities in premature death between racial/ethnic groups. **Table 5** presents the number, percent and rate of deaths and premature deaths for OC residents by race/ethnicity. Whites accounted for the majority of deaths in the county with almost three-fourths (74%) of all deaths. The remaining 26% of all deaths were from Hispanics (13%), Asian/Pacific Islanders (API; 11%), and Blacks (1%). Despite contributing the lowest percentage of deaths to total deaths in the county, Blacks had the highest age-adjusted death rate (689.4 deaths per 100,000) compared to Whites (644.9), Hispanics (499.4) and Asian & Pacific Islanders (424.6).

Table 5: Deaths and Premature Deaths by Race/Ethnicity, 2010

Race/Ethnicity	Number of Deaths[‡]	Percent of Deaths	Age-Adjusted Death Rate (per 100,000 population)	Number of Premature Deaths	Total YPLL-75	Age-Adjusted YPLL-75 Rate (per 100,000 population)
Whites	12,646	74%	644.9	4,097	63,070	4,367
Hispanics	2,144	13%	499.4	1,187	26,312	3,256
Asians & Pacific Islanders	1,886	11%	424.6	781	13,067	2,371
Blacks	220	1%	689.4	154	3,228	7,288
Other/Unknown	139	1%	-	77	1,721	-
Total Residents	**17,035**	**100%**	**583.3**	**6,296**	**107,398**	**3,665**

[‡] Excludes infants less than 1 year of age (n= 147)

Orange County Black residents had the highest rates of premature death as measured by their YPLL-75 rate of 7,288 per 100,000, 3.1 times the rate of YPLL-75 for Asian/PI (2,371 per 100,000), 2.2 times the rate of YPLL-75 for Hispanics (3,256 per 100,000), and 1.7 times the rate of YPLL-75 for Whites (4,367 per 100,000). While OC's Black population is very small and the rates may be unstable, this racial disparity is consistent with YPLL-75 rates for Blacks at the national and state level.

For all racial/ethnic groups in Orange County, the top three causes of death contributing to YPLL-75 were cancer, heart disease, and unintentional injuries. Combined, these three causes represented 62% of the total YPLL-75 for Whites, 60% for API, 54% for Blacks, and 50% for Hispanics.

Whites: The top 10 leading causes of death for White residents listed in **Table 6A** are ranked by the number of deaths due to the underlying cause. The leading causes of premature death are ranked to the right in **Table 6B**. Cancer was ranked #1 and heart disease was the #2 leading cause of premature death. Unintentional injuries became the third and suicide the fourth leading causes in terms of *premature* mortality for Whites (unintentional injuries ranked #6 and suicide #9 in terms of the *number* of deaths for Whites).

Importantly, nine of the ten leading causes of death for Whites were also leading causes of premature death. The exception was Alzheimer's that tend to affect older residents (≥75 years) and was thus not a

leading cause of *premature* death. Conversely, congenital disorders disproportionately affect young people and thus moved into the top 10 causes of premature death for White residents (**Table 6B**).

Table 6: Leading Causes of Death and Premature Death for Orange County, 2010 – Whites

A. Rank	Cause of Death - White	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – White (age ≥ 1 year)	**12,646**	
1	**Heart Disease**	**3,384**	2
2	**Cancer**	**3,143**	1
3	**Alzheimer's**	**832**	17
4	**CLRD**	**802**	7
5	**Stroke**	**765**	6
6	**Unintentional Injuries**	**409**	3
7	**Influenza and pneumonia**	**383**	9
8	**Diabetes**	**256**	8
9	**Suicide**	**203**	4
10	**Liver Disease**	**178**	5

B. Pre-mature Death Rank	Leading Causes of Premature Death (before age 75 years), 2010 - White	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	White - All causes, (age 1-74 years at time of death)	**63,070**	
1	**Cancer**	**19,177**	2
2	**Heart Disease**	**10,964**	1
3	**Unintentional Injuries**	**9,064**	6
4	**Suicide**	**4,614**	9
5	**Liver Disease**	**2,637**	10
6	**Stroke**	**1,497**	5
7	**CLRD**	**1,493**	4
8	**Diabetes**	**1,435**	8
9	**Influenza and Pneumonia**	**657**	7
10	**Congenital Disorders**	**643**	22

‡ Excludes infants less than 1 year of age

Notably, the top three causes of premature death among Whites (i.e., cancer, heart disease, and unintentional injuries) accounted for 62% of the total YPLL-75. Specifically, 30% of total YPLL-75 were due to cancer (YPLL-75: 19,177/63,070), 17% due to heart disease (YPLL-75: 10,964/63,070), and 14% due to unintentional injuries (YPLL-75: 9,064/63,070). The remaining top 10 causes of premature death for Whites, accounting for 21% of total YPLL-75 (12,976/63,070), included: suicide, chronic liver disease/cirrhosis, stroke, CLRD, diabetes, influenza/pneumonia, and congenital disorders (**Table 6B**).

Among specific cancers, *lung cancer* contributed the largest portion of YPLL-75 due to all cancers for White residents. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease. *Accidental poisoning* was the largest contributor to YPLL-75 due to unintentional injuries, *alcoholic liver disease* contributed the majority of YPLL-75 for liver disease/cirrhosis, *COPD* contributed the majority of YPLL-75 for chronic lower respiratory diseases, and *pneumonia* contributed the majority of YPLL-75 for influenza/pneumonia.

Hispanics: The top 10 leading causes of death for Hispanic residents listed in **Table 7A** are ranked by the number of deaths due to the underlying cause. The leading causes of premature death are ranked to the right in **Table 7B**. Cancer was the first and unintentional injuries the second highest ranking causes of premature death. Heart disease became the third and chronic liver disease/cirrhosis became the fourth leading causes in terms of *premature* mortality for Hispanics (liver disease ranked #6 in terms of *number* of deaths for Hispanics).

Six of the ten leading causes of death for Hispanics were also leading causes of premature death. The exceptions were Alzheimer's, nephritis, influenza/pneumonia, and CLRD. Conversely, homicide, suicide,

congenital disorders, and viral hepatitis disproportionately affected young people and thus moved into the top 10 causes of premature death for Hispanic residents (**Table 7B**).

Table 7: Leading Causes of Death and Premature Death for Orange, 2010 – Hispanics

A. Rank	Cause of Death - Hispanic	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – Hispanic (age ≥ 1 year)	**2,144**	
1	**Cancer**	**540**	1
2	**Heart Disease**	**458**	3
3	**Stroke**	**124**	8
4	**Unintentional Injuries**	**119**	2
5	**Diabetes**	**113**	7
6	**Liver Disease**	**92**	4
7	**Alzheimer's**	**85**	22
8	**Nephritis**	**52**	11
9	**Influenza and Pneumonia**	**48**	14
10	**CLRD**	**39**	13

B. Pre-mature Death Rank	Leading Causes of Premature Deaths (before age 75 years), 2010 - Hispanic	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	Hispanic - All causes, (age 1-74 years at time of death)	**26,312**	
1	**Cancer**	**6,455**	1
2	**Unintentional Injuries**	**3,602**	4
3	**Heart Disease**	**2,808**	2
4	**Liver Disease**	**1,754**	6
5	**Homicide**	**1,641**	11
6	**Suicide**	**1,432**	12
7	**Diabetes**	**1,062**	5
8	**Stroke**	**1,057**	3
9	**Congenital Disorders**	**648**	15
10	**Viral Hepatitis**	**333**	14

‡ Excludes infants less than 1 year of age

Importantly, the top three causes of premature death among Hispanics (i.e., cancer, unintentional injuries, and heart disease) accounted for 50% of the total YPLL-75. Specifically, 25% of premature Hispanic deaths were due to cancer (YPLL-75: 6,455/26,312), 14% due to unintentional injuries (YPLL-75: 3,602/26,312), and 11% due to heart disease (YPLL-75: 2,808/26,312). The remaining top 10 causes of premature death for Hispanics, which accounted for 30% of total YPLL-75 (7,927/26,312), included: chronic liver disease/cirrhosis, homicide, suicide, diabetes, stroke, congenital disorders, and viral hepatitis (**Table 7B**).

Among specific cancers, *lung cancer* contributed the largest portion of YPLL-75 due to all cancer for Hispanic residents. *Accidental poisoning* was the largest contributor to YPLL-75 due to unintentional injuries, *ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease, *alcoholic liver disease* contributed the majority of YPLL-75 for chronic liver disease/cirrhosis, *COPD* contributed the majority of YPLL-75 for CLRD, and *pneumonia* contributed the majority of YPLL-75 for influenza/ pneumonia in Hispanics.

Asian & Pacific Islanders: The top 10 leading causes of death for Asian/PI residents listed in **Table 8A** are ranked by the number of deaths due to the underlying cause. The leading causes of premature death are ranked to the right in **Table 8B** in terms of YPLL-75. Cancer was the number one and heart disease moved to the second highest ranking leading causes of premature death. Unintentional injuries became the third and suicide became the fourth leading causes in terms of *premature* mortality for Asian/PIs (unintentional injuries ranked #7 and suicide raked #10 in terms of *number* of deaths for Asian/PIs).

Six of the ten leading causes of death for Asian/PIs were also leading causes of premature death. The exceptions were influenza/pneumonia, Alzheimer's, CLRD, and nephritis. Conversely, viral hepatitis, homicide, liver disease, and aortic aneurysm disproportionately affected younger people and thus moved into the top 10 causes of premature death for Asian/PI residents (**Table 8B**).

Table 8: Leading Causes of Death and Premature Death for Orange County, 2010 – Asian/PI

A. Rank	Cause of Death - Asian/PI	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – Asian/PI (age ≥ 1 year)	**1,886**	
1	**Cancer**	**563**	1
2	**Heart Disease**	**427**	2
3	**Stroke**	**145**	5
4	**Influenza and Pneumonia**	**78**	12
5	**Alzheimer's**	**75**	23
6	**Diabetes**	**67**	6
7	**Unintentional Injuries**	**59**	3
8	**CLRD**	**59**	13
9	**Nephritis**	**38**	14
10	**Suicide**	**33**	4

B. Pre-mature Death Rank	Leading Causes of Premature Deaths (before age 75 years), 2010 – Asian/PI	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	Asian/PI - All causes, (age 1-74 years at time of death)	**13,067**	
1	**Cancer**	**5,192**	1
2	**Heart Disease**	**1,546**	2
3	**Unintentional Injuries**	**1,104**	7
4	**Suicide**	**896**	10
5	**Stroke**	**892**	3
6	**Diabetes**	**336**	6
7	**Viral Hepatitis**	**275**	12
8	**Homicide**	**250**	19
9	**Liver Disease**	**237**	14
10	**Aortic Aneurysm**	**102**	15

‡ Excludes infants less than 1 year of age

The top three causes of premature death among Asian/PI (i.e., cancer, heart disease and unintentional injuries) accounted for 60% of the total YPLL-75. Specifically, 40% of premature Asian/PI deaths were due to cancer (YPLL-75: 5,192/13,067), 12% due to heart disease (YPLL-75: 1,546/13,067), and 8% due to accidents (YPLL-75: 1,104/13,067). The remaining top 10 causes of premature death for Asian/PI, which accounted for 23% of total YPLL-75 (2,988/13,067), included: suicide, stroke, diabetes, viral hepatitis, homicide, chronic liver disease/cirrhosis, and aortic aneurysm (**Table 8B**).

Lung cancer contributed the largest portion to total cancer YPLL-75 for Asian/PI residents in 2010. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease. Unlike other racial/ethnic groups, *motor vehicle accidents* and *falls* contributed the largest portions to total unintentional injuries YPLL-75 and *other chronic liver disease and cirrhosis* contributed the majority of YPLL-75 for liver disease in Asian/PI residents.

Blacks: The top 10 leading causes of death for Black residents listed in **Table 9A** are ranked by the number of deaths due to the underlying cause. The leading causes of premature death are ranked to the right in **Table 9B** according to YPLL-75. Because cancer deaths tend to occur at younger ages compared to heart disease, cancer moved into the number one and heart disease moved to the number two causes of premature death. Unintentional injuries became the third leading cause in terms of premature mortality and stroke became the fourth leading causes in terms of premature mortality for Blacks (unintentional injuries ranked #5 and stroke ranked #3 in terms of *number* of deaths for Blacks).

The five leading causes of premature deaths are also among the leading causes of death for Blacks (**Table 9B**). Due to the low number of deaths for Black residents, the YPLL-75 could only be calculated for the top five leading causes of premature death.

Table 9: Leading Causes of Death and Premature Death for Orange County, 2010 – Blacks

A. Rank	Cause of Death - Black	Number of Deaths‡	Premature Rank‡ (YPLL-75)
	All Causes of Death – Black (age ≥ 1 year)	**220**	
1	**Cancer**	**60**	1
2	**Heart Disease**	**51**	2
3	**Stroke**	**16**	4
4	**CLRD**	**12**	5
5	**Unintentional Injuries**	**9**	3
6	**Nephritis**	**9**	14
7	**HIV**	**< 5**	6
8	**Suicide**	**< 5**	8
9	**Diabetes**	**< 5**	11
10	**Homicide**	**< 5**	7

B. Pre-mature Death Rank	Leading Causes of Premature Deaths (before age 75 years), 2010 – Black	Years of potential life lost‡ (YPLL-75)	Death Rank‡
	Black- All causes, (age 1-74 years at time of death)	**3,228**	
1	**Cancer**	**761**	1
2	**Heart Disease**	**619**	2
3	**Unintentional Injuries**	**339**	5
4	**Stroke**	**169**	3
5	**CLRD**	**105**	4

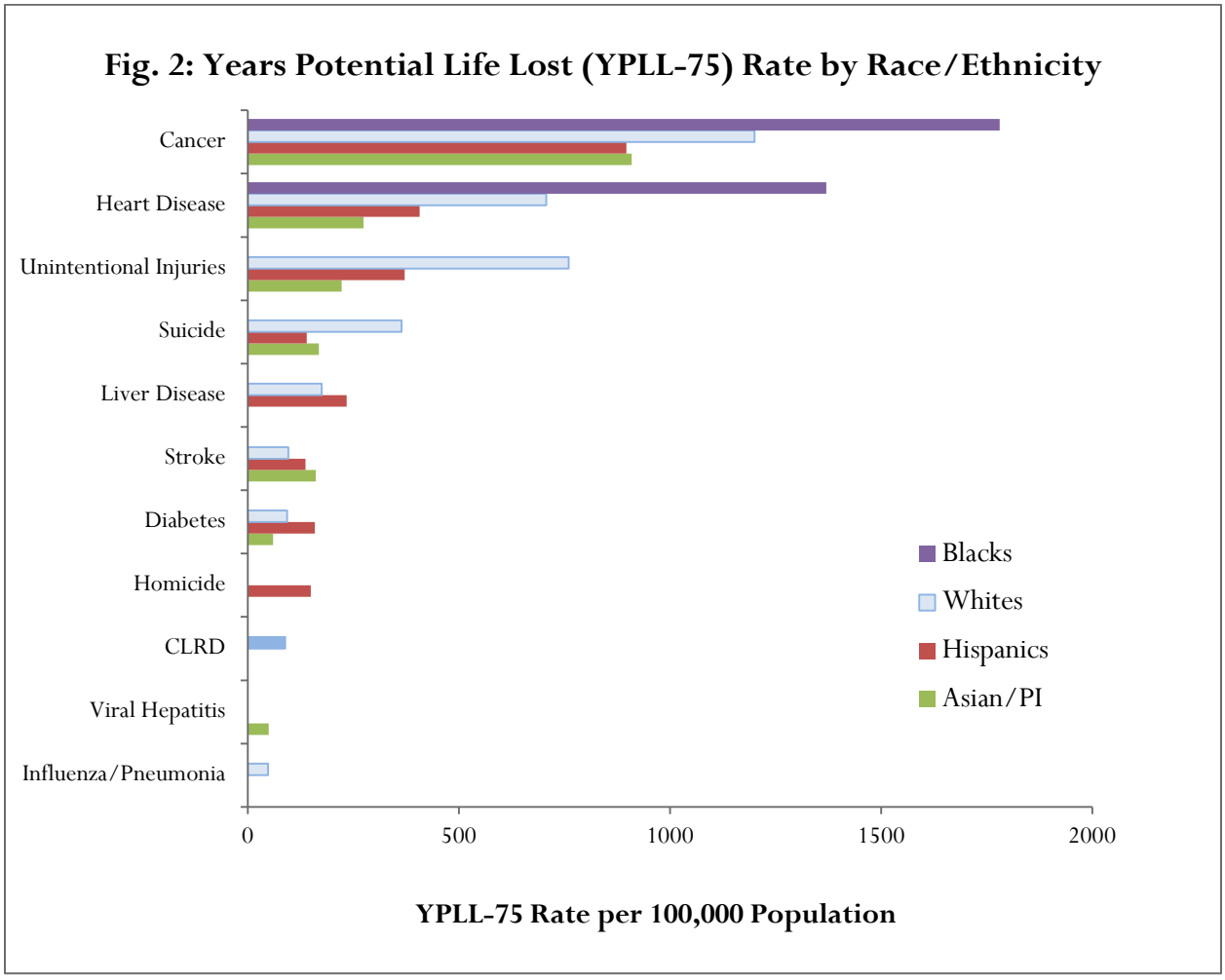
‡ Excludes infants less than 1 year of age.

Importantly, the top three causes of premature death among Blacks (i.e., cancer, heart disease and accidents) accounted for 53% of the total YPLL-75. Specifically, 24% of premature Black deaths were due to cancer (YPLL-75: 761/3,228), 19% due to heart disease (YPLL-75: 619/3,228), and 11% due to accidents (YPLL-75: 339/3,228). The remaining top causes of premature death for Blacks, accounting for 8% of total YPLL-75 (274/3,228), included stroke and CLRD (**Table 9B**).

Unlike other racial/ethnic groups, *breast cancer* contributed the largest portion of total cancer YPLL-75 for Black residents in 2010. *Ischemic heart disease* contributed the largest portion of YPLL-75 due to heart disease to Blacks. *Accidental poisoning* was the largest contributor to YPLL-75 due to unintentional injuries, and *COPD* contributed the majority of YPLL-75 for CLRD in Blacks.

Race/Ethnicity Differences in YPLL-75 Rate: YPLL-75 rates are presented here in **Figure 2** by cause group for each racial/ethnic group. Please note that groups with less than 20 cases would yield unreliable rates and are therefore not reported. The disparity gap rates between racial/ethnic groups were notable for several specific causes of premature deaths as described below.

Blacks had reliable YPLL-75 rates for only cancer and heart disease; both rates were higher than for any other race/ethnicity. For example, Blacks had a YPLL-75 rate for heart disease that was five times higher than compared to Asian/PI, 3.4 times higher than for Hispanics and twice the rate compared to Whites. Similarly, Blacks had cancer YPLL-75 rate that was two times higher than Hispanics and Asian/PIs, and 1.5 times higher than Whites.



Whites had reliable YPLL-75 rates for nine of the leading causes of premature deaths. Of these, Whites had the highest rates of YPLL-75 for two of the leading causes of premature deaths. Specifically, Whites' YPLL-75 rate for unintentional injuries was 3.4 times higher than Asian/PI, and 2.0 times higher than Hispanics. Whites also had a suicide YPLL-75 rate that was 2.6 times higher than Hispanics, and 2.2 times higher than Asian/PIs. Additionally, Whites were the only racial/ethnic group to have reliable YPLL-75 rates for premature death caused by CLRD (88.9 per 100,000), and the only group to have influenza/pneumonia among the leading causes of premature death (47.6 per 100,000).

Hispanics had reliable YPLL-75 rates for eight leading causes of premature death. Of these, Hispanics had the highest rate of YPLL-75 for diabetes; 2.7 times higher than Asian/PI and 1.7 times higher than Whites. Hispanics also had a higher YPLL-75 rate for chronic liver disease compared to Whites (1.3 times higher for Hispanics). Hispanics were the only racial/ethnic group to have a reliable YPLL-75 rate for leading causes of premature death caused by homicide (149.5 per 100,000).

Asian/Pacific Islanders had reliable YPLL-75 rates for seven leading causes of premature death. Asian/PI had the highest rate of YPLL-75 for stroke; 1.7 times higher than Whites and 1.2 times higher than Hispanics. Asian/PIs were the only racial/ethnic group to have a reliable YPLL-75 rate for leading causes of premature death caused by viral hepatitis (49.1 per 100,000).

AGE GROUPS

The following section examines the leading causes of death and premature death by age group and compares disparities in premature death between age groups. **Table 10** presents the number, percent and rate of deaths for OC residents by age groups. Seniors, 75 years and older accounted for the majority (63%) of all deaths in the county in 2010. The remaining 37% of all deaths were premature deaths, specifically, less than 1% were to age groups 1-14 years, 1% were 15-24 years, 4% were 25-44 years, 17% were 45-64 years, and 14% were 65-74 years. As expected, residents 75 years and older had the highest age-specific death rate of 6,621.2 deaths per 100,000. They were followed by 65-74 year olds with 1,313.7 deaths per 100,000, 45-64 year olds with 382.3 deaths per 100,000, 25-44 year olds with 77.8 deaths per 100,000, 15-24 year olds with 39.6 deaths per 100,000 and 1-14 year olds with 12.1 deaths per 100,000.

Table 10: Deaths by Age Groups, 2010

Race/Ethnicity	Number of Deaths	Percent of Deaths	Age-Specific Death Rate (per 100,000 population)
1-14 years	68	<1%	12.1
15-24 years	175	1%	39.6
25-44 years	663	4%	77.8
45-64 years	2,928	17%	382.3
65-74 years	2,462	14%	1,313.7
75+ years	10,739	63%	6,621.2
Total Residents	**17,035**	**100%**	**583.3**

Rankings of the leading causes of premature death within an age group are presented in **Table 11** in terms of the YPLL-75 (also shown in parenthesis are the number of deaths). The leading causes of death varied by age group with Unintentional injury (accidents) being the leading cause of death for the three youngest age groups (i.e., 1-14, 15-24, and 25-44 year olds). Cancer was leading cause of death among the next two age groups (45-64 and 65-74 year olds). Heart disease was the leading cause of death among residents 75 years and older.

Table 11: Top 5 Leading Causes of Premature Death (YPLL-75) by Age Group, 2010

Age group Years of potential life lost (n= # of deaths)	**#1 Cause**	**#2 Cause**	**#3 Cause**	**#4 Cause**	**#5 Cause**
1 - 14 years old 4,677 (n=68)	Unintentional Injuries 992 (n=14)	Cancer 683 (n=10)	Congenital Disorders 651 (n=9)	Heart Disease 264* (n<5)	Septicemia 142* (n=<5)
15-24 years old 9,590 (n=175)	Unintentional Injuries 2,997 (n=55)	Suicide 1,978 (n=36)	Cancer 1,193 (n=22)	Homicide 1,054 (n=19)	Congenital Disorders 275 (n=5)
25-44 years old 25,364 (n=663)	Unintentional Injuries 6,055 (n=151)	Cancer 4,680 (n=129)	Heart Disease 2,921 (n=80)	Suicide 2,387 (n=59)	Liver Disease 1,405 (n=40)
45-64 years old 55,241 (n=2,928)	Cancer 20,121 (n=1,111)	Heart Disease 10,378 (n=553)	Unintentional Injuries 4,155 (n=199)	Liver Disease 3,062 (n=157)	Suicide 2,622 (n=122)
65-74 years old 9,420 (n=10,739)	Cancer 5,190 (n=976)	Heart Disease 2,481 (n=493)	CLRD 703 (n=147)	Stroke 523 (n=113)	Diabetes 523 (n=101)

*YPLL-75 might be unstable due to small number of premature deaths.

In the **1-14 age group**, unintentional injuries accounted for 21% of total YPLL-75, followed by cancer (15% of total YPLL-75), congenital disorders (14% of total YPLL-75), and heart disease (6% of total YPLL-75). Among specific unintentional injury deaths, *motor vehicle accidents* contributed the largest portion of deaths due to all unintentional injury deaths for 1-14 year olds. *Leukemia* contributed the largest portion of premature deaths due to cancer for this age group.

For the **15-24 age group**, unintentional injuries accounted for 31% of total YPLL-75, suicide moved up as the second leading cause of premature death (21% of total YPLL-75), followed by cancer (12% of total YPLL-75), homicide (11% of total YPLL-75) and congenital disorders (3% of YPLL-75). Among specific unintentional injury deaths, *accidental poisoning/overdose* contributed the largest portion of YPLL-75 due to all unintentional injuries death for 15-24 year olds. *Hanging, strangulation, and suffocation* contributed the largest portion to premature deaths from suicide. *Leukemia* contributed the largest portion premature deaths due to cancer for this age group.

The **25-44 age group** also had unintentional injuries as the leading cause of premature death (24% of total YPLL-75). Cancer came in second with 18%, followed by heart disease with 12%, suicide with 9% and liver disease with 6% of total YPLL-75. Among specific unintentional injury deaths, *accidental poisoning* contributed the largest portion of premature deaths due to all unintentional injuries death for 25-44 year olds. *Colorectal cancers* contributed the largest portion of premature deaths due to cancer for this age group. Other *diseases of the heart* (mainly *cardiomegaly, cardiomyopathy,* and *pulmonary embolism)* contributed the largest portion to premature deaths due to heart disease.

In the **45-64 age group**, a shift in the leading cause of premature death was evident with cancer and heart disease both surpassing unintentional injuries in YPLL-75. Cancer and heart disease were the predominant causes of premature death with 55% of the total YPLL-75, followed by unintentional injuries (8% of total YPLL-75), liver disease (6% of total YPLL-75), and suicide (5% of total YPLL-75). Among specific cancers, *lung cancer* contributed the largest portion of premature deaths due to cancer for 45-64 year olds. *Ischemic heart disease* was the largest contributor to premature deaths caused by heart disease. *Accidental poisoning* contributed the largest portion of deaths due to all unintentional injuries death and *alcoholic liver disease* was the largest contributor to premature deaths from liver diseases 45-64 year olds.

In the **65-74 age group**, cancer and heart disease were even more prominent contributors of premature death, accounting for 81% of total YPLL-75. The other leading causes of death in this age group followed at a distance with CLRD (7% of total YPLL-75), stroke (6% of total YPLL-75) and diabetes (6% of total YPLL-75). Among specific cancers, *lung cancer* contributed the largest portion of premature

deaths due to cancer for 65-74 year olds. *Ischemic heart disease* was the largest contributor to premature deaths caused by heart disease for this age group and *Chronic Obstructive Pulmonary Disease (COPD)* was the largest contributor to premature CLRD deaths.

GEOGRAPHIC LOCATION

Leading Causes of Death: The leading causes of death were analyzed by the decedent's *city* of residence. Note that we included Orange County's 34 cities and the large census designated place, namely North Tustin area in this section.

The age-adjusted rate for all deaths (except infants) in 2010 for Orange County was 583 deaths per 100,000 (**Table 12**). Twenty cities had an age-adjusted death rate higher than the county-wide rate and fifteen cities had age-adjusted death rates lower than the county's.

Laguna Hills had the highest age-adjusted death rate of 721 deaths per 100,000 population; 1.2 times that of the county's rate. Aliso Viejo had the lowest age-adjusted death rate at 463 deaths per 100,000 which was 1.3 times below the countywide rate.

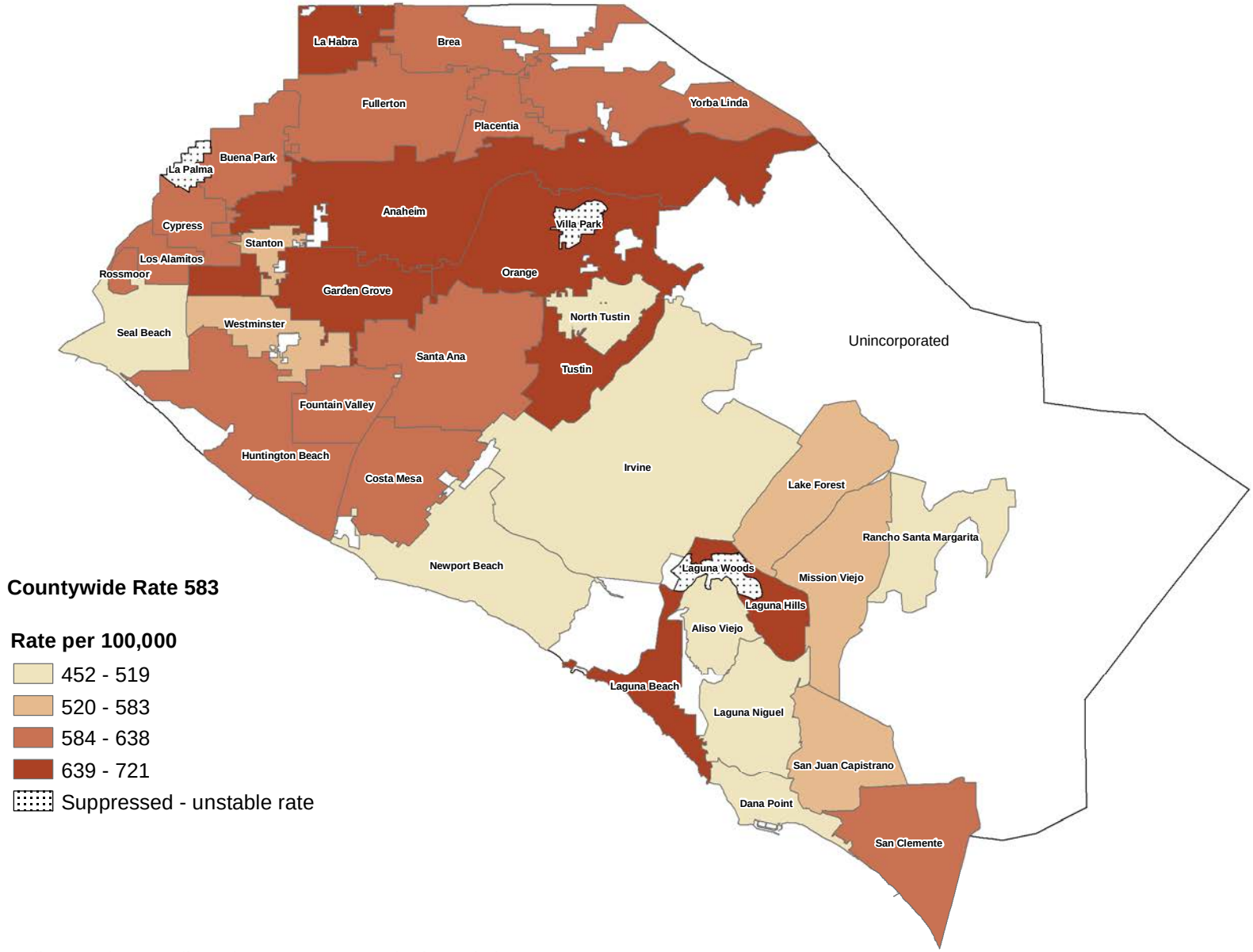
The map on the following page presents age-adjusted mortality rates by city. The higher mortality rates were concentrated in the northern central cities of the county. Lower mortality rates were seen in the central and southern parts of the county with the exception of Laguna Beach, Laguna Woods, Laguna Hills, and San Clemente.

Table 12: Age-Adjusted Death Rate by City

City of Residence	Age-adjusted Death Rate per 100,000 [2]
LAGUNA HILLS	721
LAGUNA WOODS	700*
LA HABRA	695
ORANGE	691
TUSTIN	663
LAGUNA BEACH	659
ANAHEIM	654
GARDEN GROVE	639
PLACENTIA	638
BUENA PARK	636
FOUNTAIN VALLEY	630
COSTA MESA	629
CYPRESS	622
LOS ALAMITOS/ ROSSMOOR	619
HUNTINGTON BEACH	619
BREA	615
FULLERTON	609
SANTA ANA	607
SAN CLEMENTE	593
YORBA LINDA	587
ORANGE COUNTY**	**583**
STANTON	574
LAKE FOREST	569
MISSION VIEJO	563
WESTMINSTER	559
LA PALMA	548*
VILLA PARK	547*
SAN JUAN CAPISTRANO	532
SEAL BEACH	518
LAGUNA NIGUEL	513
DANA POINT	506
IRVINE	496
NORTH TUSTIN	496
NEWPORT BEACH	494
RANCHO SANTA MARGARITA	473
ALISO VIEJO	463

*Rates are unstable/unreliable due to small cell sizes.
**Orange County Totals include data for unincorporated areas and unknown cities.
[2] Age-adjusted to 2000 US standard population and rounded to the nearest whole number.

AGE-ADJUSTED MORTALITY RATE* BY CITY
ORANGE COUNTY, 2010



* Mortality Rate is age-adjusted to 2000 U.S. standard population.
Infant Deaths (age at death < 1 year) are excluded from all calculations.

Orange County Health Care Agency, Planning & Research

Leading Causes of Death by City of Residence: The geographic distribution of mortality in Orange County by city in 2010 provides an important view of where the highest number of deaths were occurring. Heart disease and cancer were the top two leading causes of death for all of Orange County's cities (**Table 13**) alternating in the #1 rank. The third through fifth leading causes of death varied by city with the most common including: stroke, Alzheimer's and chronic lower respiratory diseases (CLRD).

Table 13: Top 5 Leading Causes of Death by City Based on the Number of Deaths, 2010

Geographic Area (Number of Deaths Age > 1)	#1 Cause	#2 Cause	#3 Cause	#4 Cause	#5 Cause
ORANGE COUNTY (n=17,035)	Heart Disease (4,352)	Cancer (4,340)	Stroke (1,057)	Alzheimer's (1,000)	CLRD (918)
ALISO VIEJO (113)	Cancer (35)	Heart Disease (27)	Stroke (8)	Suicide (6)	Nephritis (5)
ANAHEIM (1,728)	Heart Disease (469)	Cancer (444)	Stroke (103)	CLRD (92)	Alzheimer's (87)
BREA (244)	Cancer (59)	Heart Disease (48)	Stroke (19)	CLRD (18)	Alzheimer's (17)
BUENA PARK (452)	Cancer (118)	Heart disease (104)	CLRD (25)	Diabetes (24)	Stroke (22)
COSTA MESA (566)	Heart Disease (149)	Cancer (139)	CLRD (37)	Stroke (29)	Alzheimer's (26)
CYPRESS (280)	Heart Disease (65)	Cancer (64)	CLRD (23)	Alzheimer's (16)	Diabetes (13)
DANA POINT (227)	Heart Disease (60)	Cancer (55)	Unintentional Injuries (15)	Alzheimer's (15)	Stroke (12)
FOUNTAIN VALLEY (442)	Cancer (118)	Heart Disease (95)	CLRD (33)	Alzheimer's (32)	Stroke (27)
FULLERTON (841)	Cancer (219)	Heart Disease (216)	Stroke (53)	Alzheimer's (53)	CLRD (44)
GARDEN GROVE (960)	Heart Disease (240)	Cancer (230)	Stroke (83)	CLRD (61)	Alzheimer's (53)
HUNTINGTON BEACH (1,281)	Cancer (349)	Heart Disease (342)	CLRD (83)	Alzheimer's (83)	Stroke (74)
IRVINE (744)	Cancer (201)	Heart Disease (199)	Stroke (44)	Alzheimer's (35)	Unintentional Injuries (28)
LA HABRA (394)	Cancer (112)	Heart Disease (103)	Stroke (31)	Alzheimer's (25)	CLRD (24)
LA PALMA (85)	Heart Disease (21)	Cancer (17)	Stroke (8)	Influenza and Pneumonia (6)	Alzheimer's (5)
LAGUNA BEACH (198)	Cancer (60)	Heart Disease (43)	Stroke (13)	CLRD (12)	Unintentional Injuries (10)
LAGUNA HILLS (265)	Heart Disease (79)	Cancer (58)	Alzheimer's (20)	Stroke (19)	CLRD (14)
LAGUNA NIGUEL (332)	Heart Disease (93)	Cancer (83)	Stroke (19)	Alzheimer's (14)	Unintentional Injuries (13)
LAGUNA WOODS (610)	Heart Disease (214)	Cancer (132)	Alzheimer's (37)	CLRD (34)	Stroke (33)
LAKE FOREST (349)	Cancer (94)	Heart Disease (91)	Stroke (25)	Alzheimer's (21)	CLRD (17)
LOS ALAMITOS/ ROSSMOOR (181)	Cancer (41)	Heart Disease (37)	CLRD (20)	Alzheimer's (13)	Stroke (9)
MISSION VIEJO (644)	Heart Disease (165)	Cancer (156)	Alzheimer's (59)	Stroke (45)	Unintentional Injuries (27)
NEWPORT BEACH (650)	Heart Disease (174)	Cancer (173)	Alzheimer's (47)	CLRD (33)	Stroke (32)
NORTH TUSTIN (193)	Heart Disease (54)	Cancer (48)	CLRD (17)	Alzheimer's (13)	Stroke (12)

Geographic Area (Number of Deaths Age > 1)	#1 Cause	#2 Cause	#3 Cause	#4 Cause	#5 Cause
ORANGE (849)	Heart Disease (208)	Cancer (207)	Stroke (50)	Alzheimer's (47)	CLRD (41)
PLACENTIA (314)	Cancer (80)	Heart Disease (69)	Stroke (29)	Alzheimer's (21)	CLRD (14)
RANCHO SANTA MARGARITA (129)	Cancer (36)	Heart Disease (27)	Stroke (11)	Unintentional Injuries (9)	Suicide (5)
SAN CLEMENTE (414)	Cancer (105)	Heart Disease (98)	Alzheimer's (29)	CLRD (28)	Unintentional Injuries (20)
SAN JUAN CAPISTRANO (235)	Heart Disease (58)	Cancer (47)	Alzheimer's (20)	Stroke (17)	CLRD (14)
SANTA ANA (1,160)	Heart Disease (290)	Cancer (288)	Stroke (64)	Unintentional Injuries (54)	Alzheimer's (54)
SEAL BEACH (467)	Heart Disease (146)	Cancer (93)	Alzheimer's (41)	Stroke (35)	CLRD (23)
STANTON (189)	Heart Disease (61)	Cancer (43)	Stroke (14)	Alzheimer's (10)	CLRD (9)
TUSTIN (350)	Cancer (108)	Heart Disease (65)	Stroke (24)	Alzheimer's (20)	Influenza and Pneumonia (15)
VILLA PARK (47)	Cancer (13)	Heart Disease (11)	Stroke (4)	Nephritis (3)	CLRD (3)
WESTMINSTER (544)	Cancer (151)	Heart Disease (121)	CLRD (34)	Alzheimer's (34)	Stroke (32)
YORBA LINDA (348)	Cancer (105)	Heart Disease (78)	Stroke (23)	Alzheimer's (18)	CLRD (17)

‡ Excludes infants less than 1 year of age (n= 147)

Leading Causes of Premature Death: By examining deaths to persons younger than 75, it may be possible to identify geographic areas where certain deaths may be more prevalent among younger residents than other areas. Once recognized, steps may be taken to help reduce the number of premature deaths occurring in those areas.

Orange County's age-adjusted YPLL-75 rate for 2010 was 3,665 years lost per 100,000 population (**Table 14**). Eighteen cities had YPLL-75 rates higher than the county-wide rate and sixteen cities had YPLL-75 rates below that of the county. Because Laguna Woods is a retirement community whose residents are 55+ years, YPLL-75 rates are not reliable and not reported here. Buena Park had the highest burden of YPLL-75 with 4,739 years lost per 100,000 (1.3 times that of the countywide YPLL-75 rate). Dana Point had the second highest YPLL-75 rate of 4,728 years per 100,000 population. Irvine had the lowest YPLL-75 rate of 2,255 years per 100,000 which was 1.6 times less than the countywide rate. Aliso Viejo had the second lowest YPLL-75 rate – 1.4 times lower than the county at 2,572.

Four cities that had a higher death rate than the county rate actually had a lower YPLL-75 rate than the county (Laguna Hills, Tustin, Brea and Yorba Linda); indicating that death occurred more in the 75+ year old population in these cities. Two cities with lower mortality rates than the county had higher YPLL-75 rates than the county (Dana Point, Westminster); indicating that more of their deaths were attributable to premature deaths.

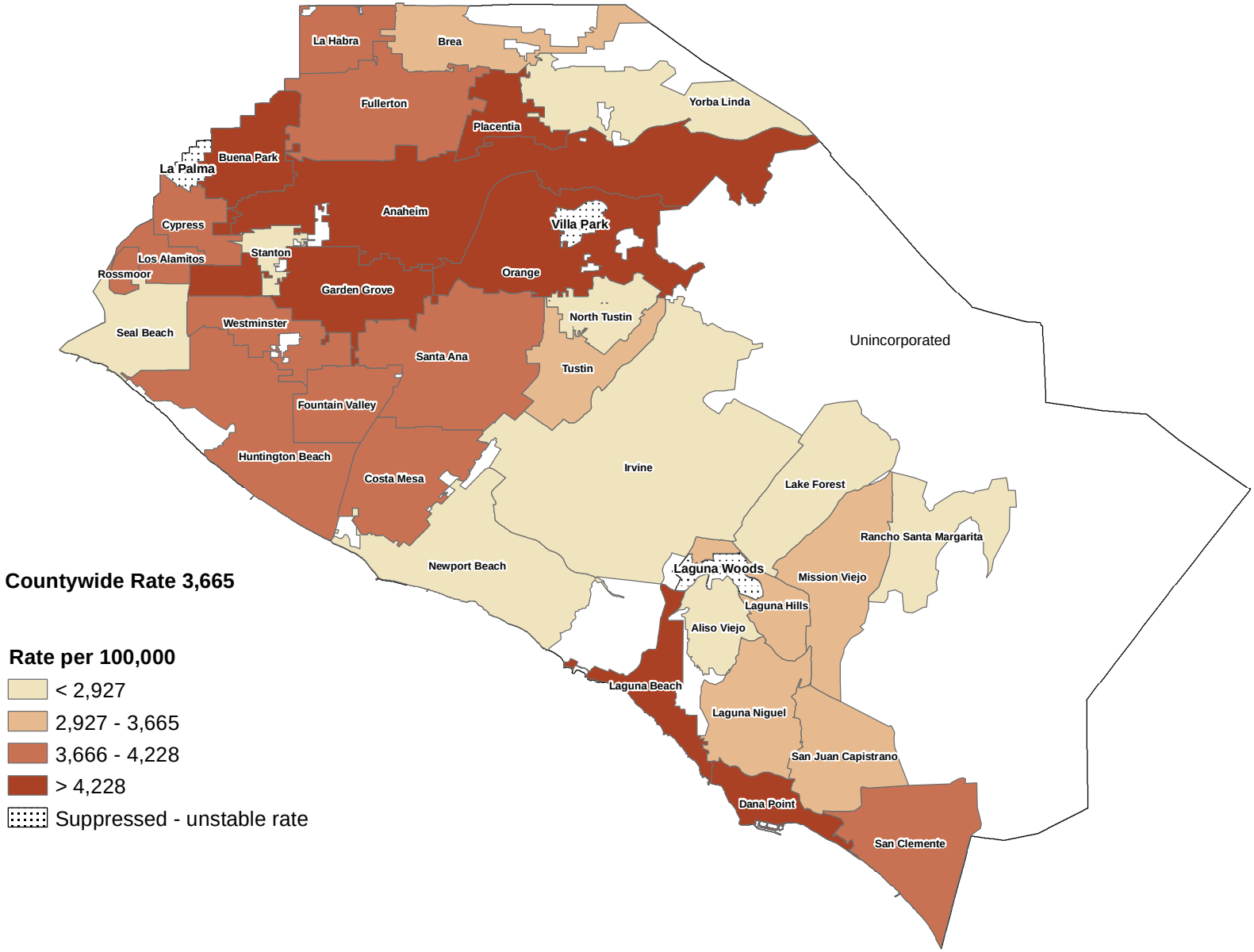
The following map shows that the age-adjusted YPLL-75 rate varied by city with northern and central cities having the highest YPLL-75 rates and cities in the southern part of the county tending to have lower YPLL-75 rates (with the exception of Dana Point).

Table 14: Age-Adjusted YPLL-75 Rate by City

City of Residence	Age-adjusted YPLL-75 Rate per 100,000 [2]
BUENA PARK	4,739
DANA POINT	4,728
ORANGE	4,479
GARDEN GROVE	4,390
ANAHEIM	4,388
PLACENTIA	4,367
LAGUNA BEACH	4,228
HUNTINGTON BEACH	4,148
SANTA ANA	4,144
LOS ALAMITOS/ ROSSMOOR	4,138
SAN CLEMENTE	4,123
COSTA MESA	4,115
WESTMINSTER	4,072
VILLA PARK	4,031*
FOUNTAIN VALLEY	3,987
FULLERTON	3,908
CYPRESS	3,764
LA HABRA	3,667
ORANGE COUNTY**	3,665
SAN JUAN CAPISTRANO	3,558
LAGUNA NIGUEL	3,480
TUSTIN	3,407
LA PALMA	3,282*
MISSION VIEJO	3,199
LAGUNA HILLS	3,195
BREA	3,162
NEWPORT BEACH	2,925
STANTON	2,861
NORTH TUSTIN	2,835
RANCHO SANTA MARGARITA	2,830
LAKE FOREST	2,707
YORBA LINDA	2,591
SEAL BEACH	2,583
ALISO VIEJO	2,572
IRVINE	2,255

*Rates are unstable/unreliable due to small cell sizes.
**Orange County Totals include data for unincorporated areas and unknown cities.
[2] Age-adjusted to 2000 US standard population and rounded to the nearest whole number.

YEARS OF POTENTIAL LIFE LOST BEFORE AGE 75 (YPLL-75)
AGE-ADJUSTED RATE* BY CITY, ORANGE COUNTY, 2010



* YPLL-75 Rate is age-adjusted to 2000 U.S. standard population.
Infant Deaths (age at death < 1 year) are excluded from all calculations.

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Leading Causes of Premature Death by City of Residence: Geographic variations in premature death are presented in **Table 15** by city. This relative ranking of YPLL-75 within a city can provide an invaluable description of the causes of premature death within each jurisdiction (34 cities and North Tustin – a large census designated place).

Cancer was the leading cause of premature death for most Orange County cities (**Table 15**); with the exception of Dana Point and San Juan Capistrano – where unintentional injury deaths were the leading cause of premature death (*Importantly, accidental poisoning/overdose was the primary cause of premature death due to unintentional injuries in these two cities*). Heart disease was the second leading cause of premature deaths for the majority of the cities; except for ten cities where unintentional injury was the second leading cause of premature deaths (Buena Park, Costa Mesa, Laguna Hills, Laguna Niguel, Lake Forest, Los Alamitos, Mission Viejo, North Tustin, Placentia, and San Clemente). Unlike leading causes of death based on the number of cases, the third through fifth leading causes of premature mortality were unintentional injuries, suicide and liver disease.

Table 15: Top 5 Leading Causes of Years of Potential Life Lost before 75 Years of Age

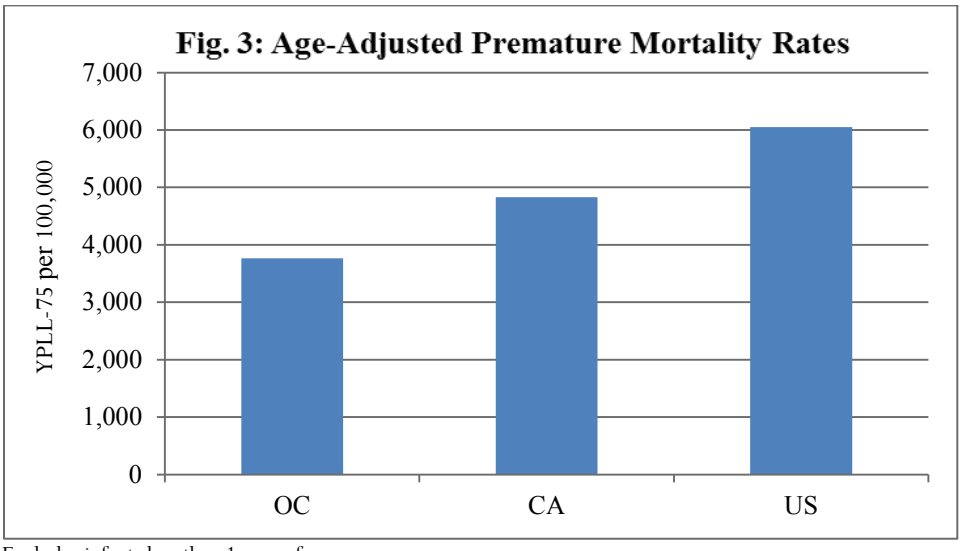
Geographic Area	#1 Cause	#2 Cause	#3 Cause	#4 Cause	#5 Cause
ORANGE COUNTY	Cancer	Heart Disease	Unintentional Injuries	Suicide	Liver Disease
ALISO VIEJO	Cancer	Unintentional Injuries*	Heart Disease	Suicide	Diabetes *
ANAHEIM	Cancer	Heart Disease	Unintentional Injuries	Suicide	Stroke
BREA	Cancer	Heart Disease	Suicide*	Liver Disease	Unintentional Injuries
BUENA PARK	Cancer	Unintentional Injuries	Heart Disease	Diabetes	Suicide
COSTA MESA	Cancer	Unintentional Injuries	Heart Disease	Suicide	Liver Disease
CYPRESS	Cancer	Heart Disease	Unintentional Injuries	Suicide*	Liver Disease
DANA POINT	Unintentional Injuries	Cancer	Heart Disease	Suicide*	Congenital Disorders*
FOUNTAIN VALLEY	Cancer	Heart Disease	Unintentional Injuries	Liver Disease	Homicide*
FULLERTON	Cancer	Heart Disease	Suicide	Unintentional Injuries	Liver Disease
GARDEN GROVE	Cancer	Heart Disease	Unintentional Injuries	Stroke	Suicide
HUNTINGTON BEACH	Cancer	Heart Disease	Unintentional Injuries	Suicide	Liver Disease
IRVINE	Cancer	Heart Disease	Unintentional Injuries	Suicide	Homicide*
LA HABRA	Cancer	Heart Disease	Unintentional Injuries	Stroke*	Homicide*
LA PALMA	Cancer	Unintentional Injuries*	Stroke*	Heart Disease *	Liver Disease*
LAGUNA BEACH	Cancer	Heart Disease	Unintentional Injuries	Liver Disease	Suicide*
LAGUNA HILLS	Cancer	Unintentional Injuries	Heart Disease	Suicide*	Stroke*
LAGUNA NIGUEL	Cancer	Unintentional Injuries	Heart Disease	Suicide	Liver Disease*
LAGUNA WOODS	Cancer	Heart Disease	Liver Disease*	Influenza and Pneumonia*	Nephritis*
LAKE FOREST	Cancer	Unintentional Injuries	Suicide	Heart Disease	Stroke*
LOS ALAMITOS/ ROSSMOOR	Cancer	Unintentional Injuries	Diabetes	Heart Disease	CLRD
MISSION VIEJO	Cancer	Unintentional Injuries	Heart Disease	Suicide	Congenital Disorders*
NEWPORT BEACH	Cancer	Heart Disease	Unintentional Injuries	Suicide	Liver Disease

Geographic Area	#1 Cause	#2 Cause	#3 Cause	#4 Cause	#5 Cause
NORTH TUSTIN	Cancer	Unintentional Injuries	Heart Disease	Suicide	Liver Disease
ORANGE	Cancer	Heart Disease	Unintentional Injuries	Suicide*	Liver Disease*
PLACENTIA	Cancer	Unintentional Injuries	Suicide*	Heart Disease	Liver Disease*
RANCHO SANTA MARGARITA	Cancer	Heart Disease	Unintentional Injuries	Suicide	Homicide*
SAN CLEMENTE	Cancer	Unintentional Injuries	Suicide	Heart Disease	Liver Disease
SAN JUAN CAPISTRANO	Unintentional Injuries	Heart Disease	Cancer	Stroke*	Liver Disease
SANTA ANA	Cancer	Heart Disease	Unintentional Injuries	Homicide	Liver Disease
SEAL BEACH	Cancer	Heart Disease	Diabetes*	Homicide*	Aortic aneurysm*
STANTON	Cancer	Heart Disease	Suicide*	Liver Disease*	Influenza and Pneumonia
TUSTIN	Cancer	Heart Disease	Suicide	Unintentional Injuries	Liver Disease
VILLA PARK	Cancer	Heart Disease*	Diabetes*	Unintentional Injuries*	Nephritis*
WESTMINSTER	Cancer	Heart Disease	Unintentional Injuries	Suicide	Stroke
YORBA LINDA	Cancer	Heart Disease	Suicide	Unintentional Injuries	Legal intervention*

*Causes of premature death where there were fewer than 5 reported deaths were considered unstable/unreliable (no color shading) and should be interpreted with caution.

Both cancer and heart disease were one of the top five leading causes of premature death for all 35 jurisdictions listed above in **Table 15**. Unintentional injury deaths were in the top five for 32 of 35 cities, followed by suicide, which was in the top five for 26 jurisdictions. Liver disease was in the top 5 leading causes of premature death for 19 cities, followed by stroke (8 cities), homicide (6 cities), and diabetes (5 cities). Premature deaths due to nephritis made the top five list for two cities, influenza/pneumonia (2 cities), and congenital disorders (2 cities). The balance of top five leading causes of premature deaths included legal interventions, CLRD, and aortic aneurysm with one city each.

Premature Mortality Rate Comparisons: Comparatively, Orange County's age-adjusted premature mortality rate of 3,665 per 100,000 as measured by YPLL-75 was markedly low – 22% lower than the state of California (4,830) and 38% lower than the U.S. (6,051) in 2010 (**Figure 3**). Moreover, according



Excludes infants less than 1 year of age.

to the recently released *County Health Rankings*, Orange County ranked 6th among all 57 California counties in terms of length of life (as measured by premature mortality rates).[6]

SUMMARY

Of the 17,035 deaths that occurred in Orange County in 2010, over a third (37%) were considered premature – that is to people less than 75 years of age. To better describe the magnitude of this lost potential, we examined premature death in terms of YPLL-75. These 6,296 premature deaths accounted for a total of 107,398 years of potential life lost before the age of 75 (YPLL-75). Overall, the top five categories of premature mortality were cancer, heart disease, unintentional injuries, suicide, and liver disease. These five categories accounted for almost 70% of the YPLL-75.

Looking more specifically at the leading causes within each of these premature death categories, lung cancer was the leading type of cancer, ischemic heart disease (e.g., heart attack) was the leading cause of heart disease, accidental poisoning (mainly drug overdose) was the main cause of unintentional injury death, and alcoholic liver disease was the main cause of liver disease death. Common risk factors can be identified that lead to these causes. Smoking contributes to lung cancer and ischemic heart disease. Poor diet and/or lack of physical activity contribute to heart disease and some types of cancer. Alcohol use can lead to alcoholic liver disease and can be a factor in overdose deaths, and mental health issues can lead to suicide or to drug or alcohol abuse.

While Orange County has lower premature mortality rates compared to the nation and state of California, notable disparities were identified for some of our residents. Analyzing the data by gender, race/ethnicity, and age reveals some disparities that are not apparent in the overall analysis. In regards to gender, males had higher rates of YPLL-75 than females for most of the leading causes of premature death. For example, there were nearly four times higher YPLL-75 rates in males for heart disease compared to females. Cancer was the leading cause of premature death in both genders, but lung cancer contributed the largest portion of YPLL-75 due to all cancers for males, while breast cancer contributed the largest portion of YPLL-75 due to all cancer for female residents, pointing out the importance of breast health awareness and access to diagnostic and treatment services.

Among racial ethnic groups, blacks had the highest overall YPLL-75 rate, about two thirds higher than the rate of whites, over two times higher than the rate for Hispanics and over three times higher than the rate for Asian/Pacific Islanders. Cancer was the leading cause of premature death in all racial/ethnic groups, with lung cancer being the most common type, except in blacks, in whom breast cancer caused the most premature cancer deaths. Each racial/ethnic group, however, had the unenviable distinction of having the highest YPLL-75 rates for at least two of the leading causes of premature death. For instance, for premature deaths due to both cancer and heart disease, blacks had the highest premature mortality rate. In terms of deaths due to unintentional injury, suicide, and respiratory disease, whites had the highest premature mortality rates of any group. For premature deaths due to liver disease and diabetes, Hispanics had the highest premature mortality rates. Finally, for premature deaths due to stroke or viral hepatitis, Asian/Pacific Islanders had the highest rate of deaths occurring before the age 75 years compared to the other racial/ethnic groups.

In the analysis of differences by age group, unintentional injuries were the leading cause of premature death for the three youngest age groups (1-14, 15-24, & 45-44) as measured by YPLL-75. For children (1-14), motor vehicle crashes were the primary contributor to unintentional injury deaths, while accidental poisoning/overdose were the main causes of unintentional injury deaths for both 15-24 and 25-44 year old age groups. For the two older age groups (45-64 & 65-74) the leading cause of premature death was cancer, specifically lung cancer for both groups.

In terms of geography, cancer was the leading cause of premature death in all except two cities, Dana Point and San Juan Capistrano, where unintentional injuries was the #1 cause. Unintentional injury and heart disease were the other two causes in the top three for the rest, except for five cities in which suicide and one city in which diabetes was the third leading cause of premature death.

This premature loss of life described in this report is a critical public health concern, as it is often due to preventable unhealthy behaviors such as tobacco use, poor diet, lack of physical activity, and alcohol or drug abuse. The *Orange County Health Improvement Partnership* has formed to coordinate efforts of public and private organizations to address key public health issues such as obesity, depression and drug and alcohol use. The Partnership's Orange County Health Improvement Plan describes the community's priorities, goals and selected strategies to improve health in the county. In support of this, The Health Care Agency recently launched the campaign *Eat.Play.Breathe*. to promote the website myHealthOC.org that offers resources and practical tips on quitting smoking, increasing physical activity and improving diet. Working together, health care providers, local government, community and faith-based organizations, individuals and families, can support healthy behaviors that lead to longer and more healthy lives.

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