Life Expectancy in Orange County

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Average life expectancy at birth is one of the most fundamental measures of the overall health of a community. With advances in medical care and efforts to improve public health, life expectancy has increased by as much as 30 years over the past century in the United States.¹

In public health and demography, a life table (or mortality table) can be used to calculate life expectancy. Such a table shows, for each age, what the probability is that a person of that age will die before his or her next birthday. From this one can calculate the probability of surviving any particular year of age and thus the remaining life expectancy for people at different ages. Here we examine average life expectancy for Orange County as well as by city, race/ethnicity, and gender to identify where disparities might exist.

Nationally, the average life expectancy at birth in 2010 was 78.7 years.^{2, 3} As shown in **Figure 1**, average life expectancy at birth in Orange County has systematically improved over the past 20 years. In 1990, the average life expectancy in the county was 76.9 years and it has increased 5.0 years to 81.9 years in 2010.

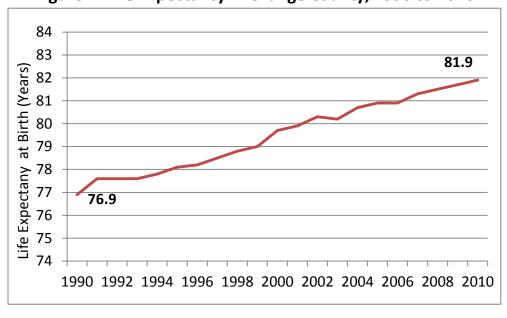


Figure 1: Life Expectancy in Orange County, 1990 to 2010

Thus, the average Orange County resident born in 2010 can expect to live about 82 years – three years and two months longer than the national average of 78.7 years. By comparison, life expectancy in California was 81.4 years in 2009.

While life expectancy has improved in Orange County, notable disparities persist for different racial and ethnic groups as shown in **Figure 2**. For example, Asian/Pacific Islanders had the

highest average life expectancy of 85.0 years in 2010, while African-Americans had the lowest (78.2 years). Hispanics and non-Hispanic whites averaged in between these groups at 83.1 and 80.9 years, respectively. Hispanics had the second highest average life expectancy in Orange County at 83.1 years.

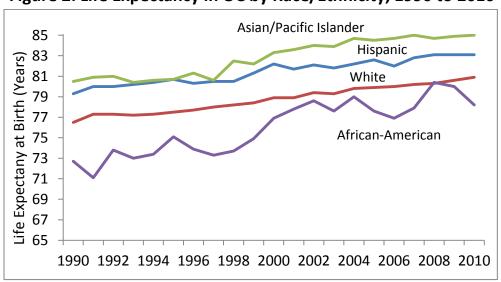


Figure 2: Life Expectancy in OC by Race/Ethnicity, 1990 to 2010

All groups have improved since 1990: Hispanics have improved 3.8 years, whites improved 4.4 years, and Asian/Pacific Islanders have improved 4.5 years. African-Americans in Orange County make up less than 2% of the county's population which may explain the variability in the curve depicting their life expectancy over time in **Figure 2**. This caveat notwithstanding, African-Americans in Orange County have average life expectancy (78.2 years) much higher than has been observed nationally (73.6 years) or in other counties such as Los Angeles (73.5 years). Indeed, average life expectancy for African-Americans in Orange County has improved 5.5 years compared to 1990, the most for any single demographic group.

A possible explanation for the improvement in life expectancy for African-Americans in Orange County may be found in the economic and educational gains made during the 1990s.⁵ The recent American Community Survey (2006-2008) show this group to be of equivalent socioeconomic status relative to other groups in the county.⁶ African-Americans in Orange County do not have the same disparities in income, educational achievement and premature deaths observed in other areas such as Los Angeles and across the state of California where African-Americans have lower average life expectancies.⁷ For example, a recent report from the LA County Department of Public Health reported that the second leading cause of premature death for African-Americans in Los Angeles is homicide (28 per 100,000 population),⁸ while in Orange County it is much less common (6.8 per 100,000 population).

Differences in life expectancy are also apparent between genders, with females consistently outliving males at the county, state and national levels on average by about four to five years (Figure 3).

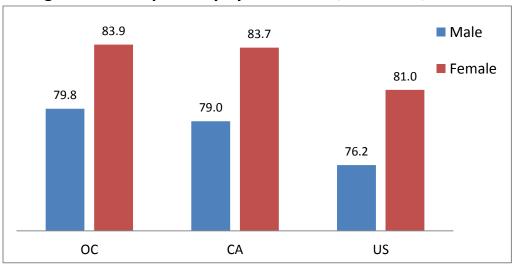


Figure 3: Life Expectancy by Gender: OC, California, and US

Marked disparities in life expectancy also exist between male and females of different race/ethnic groups in Orange County (**Figure 4**). The disparities between females and males averages about four years, from a 2.3 year difference between African American females and males – to a difference of almost five years between Hispanic females and males.

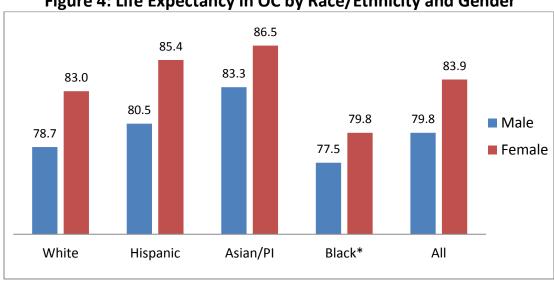


Figure 4: Life Expectancy in OC by Race/Ethnicity and Gender

^{*}Note that gender estimates for African-Americans (Blacks) in OC are unstable due to low numbers.

Life expectancy also varies widely depending on where you live in Orange County. As shown in the map **Figure 5** and in **Table 1** below, average life expectancy at birth ranged from a low of 78.8 years in Laguna Woods (see Appendix), to a high of 84.1 years in Aliso Viejo.

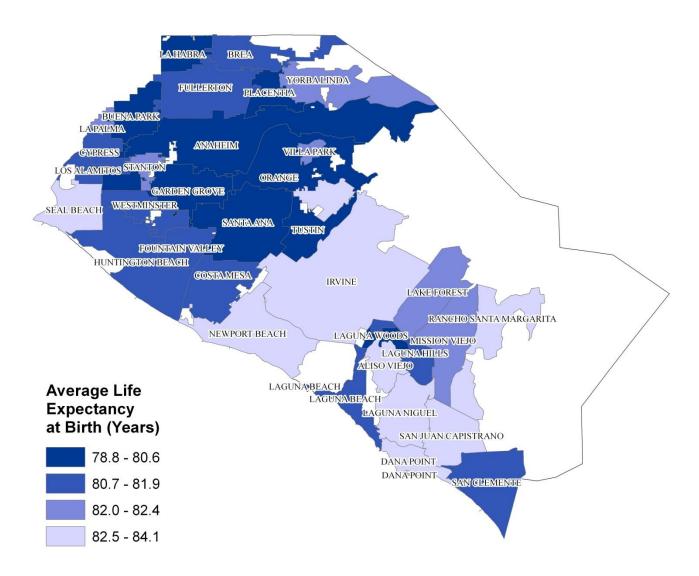


Figure 5: Life Expectancy at Birth by City in Orange County

Similar to a pattern observed previously, ⁽⁹⁾ cities with the highest average life expectancies of 82.5 or more years tend to be clustered in the southern region of the county. These cities include Aliso Viejo, Irvine, Newport Beach, Rancho Santa Margarita, Laguna Niguel, San Juan Capistrano, and Dana Point. Cities with the shortest life expectancies (i.e., <80.6 years) tend to be in the northern (e.g., Buena Park, La Habra, Placentia and Anaheim) and central (e.g., Tustin, Garden Grove, Santa Ana, and Orange) regions of the county.

Table 1: Life Expectancy at Birth and Mortality Rates by City

| CITY | Number of Deaths in 2010 | Population | Mortality Rate per 100k | Age-Adjusted Mortality Rate | Avg. Life Expectancy at Birth |
|------------------------|--------------------------------|------------|-------------------------------|-----------------------------------|-------------------------------------|
| ALISO VIEJO | 115 | 47,824 | 240.5 | 459.8 | 84.1 |
| IRVINE | 752 | 212,415 | 354.0 | 493.7 | 83.9 |
| NEWPORT BEACH | 653 | 85,213 | 766.3 | 494.1 | 83.5 |
| SEAL BEACH | 467 | 24,191 | 1,930.5 | 511.2 | 83.3 |
| RANCHO SANTA MARGARITA | 133 | 47,858 | 277.9 | 476.5 | 83.2 |
| LAGUNA NIGUEL | 333 | 62,997 | 528.6 | 508.1 | 83.1 |
| SAN JUAN CAPISTRANO | 236 | 34,605 | 682.0 | 527.3 | 82.7 |
| DANA POINT | 227 | 33,369 | 680.3 | 498.9 | 82.6 |
| LAKE FOREST | 354 | 77,294 | 458.0 | 568.7 | 82.3 |
| YORBA LINDA | 351 | 64,240 | 546.4 | 585.8 | 82.3 |
| MISSION VIEJO | 646 | 93,340 | 692.1 | 558.5 | 82.3 |
| STANTON | 190 | 38,202 | 497.4 | 568.2 | 82.2 |
| LA PALMA | 86 | 15,568 | 552.4 | 551.0 | 82.1 |
| VILLA PARK | 47 | 5,814 | 808.4 | 539.5 | 82.0 |
| ORANGE COUNTY | 17,182 | 3,010,967 | 570.6 | 580.7 | 81.9 |
| WESTMINSTER | 546 | 89,730 | 608.5 | 553.7 | 81.8 |
| LAGUNA HILLS | 265 | 30,364 | 872.7 | 711.4 | 81.4 |
| SAN CLEMENTE | 418 | 63,540 | 657.9 | 592.2 | 81.4 |
| BREA | 245 | 39,290 | 623.6 | 609.5 | 81.3 |
| CYPRESS | 282 | 47,808 | 589.9 | 619.6 | 81.3 |
| FOUNTAIN VALLEY | 443 | 55,328 | 800.7 | 624.1 | 81.1 |
| LOS ALAMITOS/ROSSMOOR | 181 | 21,697 | 834.2 | 610.7 | 80.9 |
| COSTA MESA | 570 | 109,981 | 518.3 | 623.8 | 80.9 |
| LAGUNA BEACH | 198 | 22,732 | 871.0 | 650.0 | 80.8 |
| HUNTINGTON BEACH | 1,292 | 190,030 | 679.9 | 618.0 | 80.8 |
| FULLERTON | 854 | 135,194 | 631.7 | 612.1 | 80.7 |
| GARDEN GROVE | 965 | 170,917 | 564.6 | 633.3 | 80.6 |
| PLACENTIA | 317 | 50,542 | 627.2 | 635.5 | 80.5 |
| ANAHEIM | 1,747 | 336,325 | 519.4 | 650.3 | 80.2 |
| LA HABRA | 395 | 60,247 | 655.6 | 687.1 | 80.2 |
| TUSTIN | 372 | 75,551 | 492.4 | 690.8 | 80.1 |
| BUENA PARK | 457 | 80,544 | 567.4 | 634.6 | 80.0 |
| SANTA ANA | 1,354 | 324,578 | 417.2 | 704.3 | 79.7 |
| ORANGE | 863 | 136,446 | 632.5 | 692.8 | 79.4 |
| LAGUNA WOODS* | 610 | 16,249 | 3,754.1 | 690.2 | 78.8 |

^{*}Please see note in Appendix regarding life expectancy calculation for Laguna Woods.

Table 1 also presents each city's crude and age-adjusted mortality rates for comparison. Crude rates are simply the number of deaths in a year divided by the population (and then multiplied by 100,000 to provide a number that is easier to read). Age-adjusted mortality rates are commonly used to make comparisons between different geographic areas that have very

different age distributions. Age-adjusting essentially controls for having an aged population. For example, the retirement community of the city of Laguna Woods consists almost entirely of persons over the age of 55 years. The crude death rate is very high (3,754 per 100,000 population), but when age adjusted is much lower (690.2 per 100,000 population).

A comparison of the average life expectancy at birth by each city's age-adjusted mortality rate in 2010 is shown in **Figure 6** as a means to verify the life expectancy calculations. The relationship was highly correlated (R=-0.92, p<0.001) in that cities with higher age-adjusted mortality rates have a lower average life expectancy at birth.

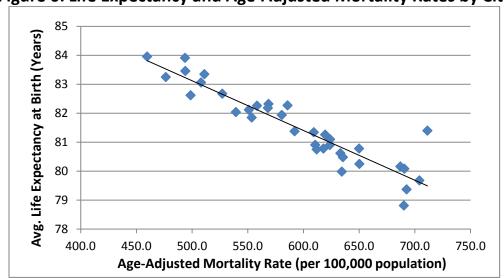


Figure 6: Life Expectancy and Age-Adjusted Mortality Rates by City



A possible explanation for the geographic variation in life expectancies is the influence of socioeconomic factors such as education, income, and city of residence. We found that life expectancy was correlated with several socio-economic factors. For example, a strong relationship was found between estimated life expectancy and the percentage of a city's adults who have a college degree (R=0.79; p<0.001; **Figure 7**). Specifically, life expectancy in cities with more college educated residents is much longer than those cities with fewer college graduates.

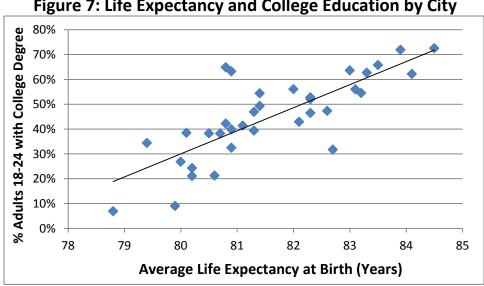


Figure 7: Life Expectancy and College Education by City

Similarly, a strong relationship was found between life expectancy and median income (R=0.78; p<0.001; Figure 8) – average life expectancy increases systematically with median income.

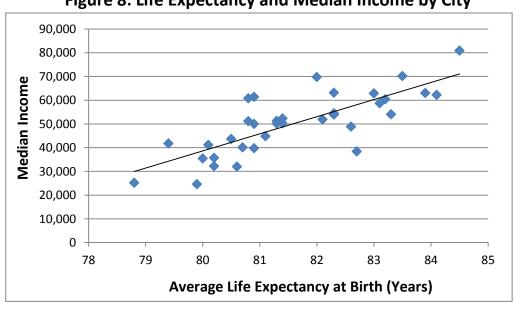


Figure 8: Life Expectancy and Median Income by City

An inverse relationship was found between average life expectancy and the percentage of a city's residents who live below 200% of Federal Poverty Level (R=-0.59; p<0.01; Figure 9). Specifically, residents from cities with lower rates of poverty tend to live longer than those cities with more poverty.

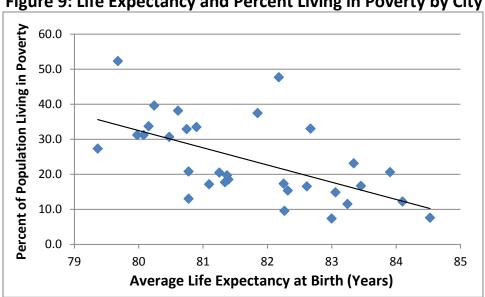


Figure 9: Life Expectancy and Percent Living in Poverty by City

Similarly, there is an inverse relationship between average life expectancy and the percentage of adults in a city who do not have health insurance (R=-0.65; p<0.001; Figure 10). Adults (18-64 years) from cities with lower rates of uninsured tend to live longer than those cities with more uninsured residents.

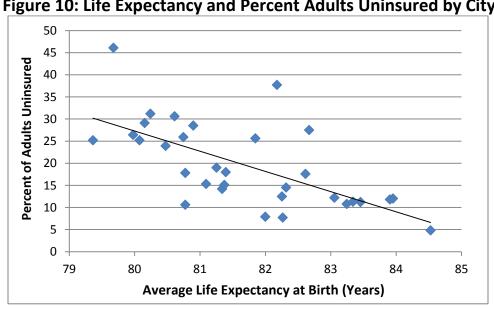


Figure 10: Life Expectancy and Percent Adults Uninsured by City

Summary

Marked disparities in life expectancy in Orange County persist between males and females, among racial/ethnic groups, and across cities in Orange County. The higher life expectancy for females over males observed in Orange County is consistent with findings across the U.S. and in most countries. Gender differences in health and risk behaviors are the primary cause of such disparities. For example, males have much higher mortality rates for homicide, suicide, motor vehicle crashes, and other injuries that are related to risk behaviors. ^{3, 7, 11}

Environmental and geographic factors such as pollution, crime, access to parks and bike trails can also influence residents' behavior, health, and ultimately life span. 12, 13, 14

The substantial geographic and racial/ethnic disparities in life expectancy are arguably related to the underlying environmental and social conditions in our cities which also influence the

health of county residents. We found strong correlations in our study between income, education, poverty, health insurance status and life expectancy.

The results presented here demonstrate that where you live is strongly related to life expectancy.

Cities whose residents have lower educational attainment,



earn less and have higher rates of poverty have notably lower life expectancies. Those living in less affluent cities tend to have limited access to health care, more uninsured, fewer opportunities to engage in healthy behaviors, and fewer resources. Increased access to health care and reduced premature mortality due to preventable causes would help reduce disparities and increase life expectancy in Orange County.

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Appendix

Note on life expectancy calculation for Laguna Woods. Because it is a retirement community, essentially all of Laguna Woods' residents, according to the 2010 U.S. Census, are over the age of 55 years (see figure below). A lack of younger people, specifically a lack of people dying at younger ages, might lead one to predict a higher average life expectancy at birth for the residents of this city than was observed (78.8 years). However, at least two factors might be influencing this relatively short lifespan. First, residents relocate to this city upon reaching retirement age – so they lived much of their life somewhere else which would influence their health. Second, the relatively high mortality rate for Laguna Woods suggests that many residents who move there may have chronic medical conditions that shorten their lifespan. The mortality rate for Laguna Woods residents 55 to 75 years of age is 1,125.6 per 100,000 population, 34% higher than the county-wide rate of 841.1. Moreover, if you live to be 75 years old in Laguna Woods, your average life expectancy improves substantially to 89.4 years. This is 1.6 years longer than the county-wide life expectancy at 75 years of 87.8 years.

