

PLACE MATTERS FOR HEALTH IN ALAMEDA COUNTY:

Ensuring Opportunities for Good Health for All

A Report on Health Inequities in Alameda County, California



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A Report on Health Inequities in Alameda County, California

**Prepared by the
Joint Center for Political and Economic Studies
and the Alameda County Place Matters Team**

**In Conjunction With the
Center on Human Needs, Virginia Commonwealth University
and the Virginia Network for Geospatial Health Research**

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FOREWORD

Place matters for health in important ways, according to a growing body of research. Differences in neighborhood conditions powerfully predict who is healthy, who is sick, and who lives longer. And because of patterns of residential segregation, these differences are the fundamental causes of health inequities among different racial, ethnic, and socioeconomic groups.

The Joint Center for Political and Economic Studies and the Alameda County, CA, PLACE MATTERS Team are pleased to add to the existing knowledge base with this report, *PLACE MATTERS for Health in Alameda County: Ensuring Opportunities for Good Health for All, A Report on Health Inequities in Alameda County, CA*. The report, supported by a grant from the National Institute on Minority Health and Health Disparities (NIMHD) of the National Institutes of Health, provides a comprehensive analysis of the range of social, economic, and environmental conditions in Alameda County and documents their relationship to the health status of the county's residents.

The study finds that social, economic, and environmental conditions in low-income and non-white neighborhoods make it more difficult for people in these neighborhoods to live healthy lives.

The overall pattern in this report – and those of others that the Joint Center has conducted with other PLACE MATTERS communities – suggests that we need to tackle the structures and systems that create and perpetuate inequality to fully close racial and ethnic health gaps. Accordingly, because the Joint Center seeks not only to document these inequities, we are committed to helping remedy them.

Through our PLACE MATTERS initiative, which is generously supported by the W.K. Kellogg Foundation, we are working with leaders in 24 communities around the country to identify and address social, economic, and environmental conditions that shape health. We look forward to continuing to work with leaders in the South Delta and other communities to ensure that every child, regardless of their race, ethnicity, or place of residence, can enjoy the opportunity to live a healthy, safe, and productive life.

Ralph B. Everett
President and CEO
Joint Center for Political and Economic Studies



EXECUTIVE SUMMARY

Place matters for health in important ways. Differences in neighborhood conditions powerfully predict who is healthy, who is sick, and who lives longer. And because of patterns of residential segregation, these differences in neighborhood conditions are the fundamental causes of health inequities found among different racial, ethnic, and socioeconomic groups. This study examined the relationships between place, race/ethnicity, and health in Alameda County, CA, and found that:

- There is as much as a 24-year difference in life expectancy between census tracts in the county, and the tract with the lowest life expectancy (67 years) is in West Oakland; its life expectancy is similar to countries such as Turkmenistan, Kazakhstan, and North Korea.
- There is a difference of 7.7 years in life expectancy between census tracts with the highest economic opportunity and those with the lowest economic opportunity.
- In census tracts with higher levels of education opportunity, life expectancy tends to increase.
- Census tracts in Oakland with higher crime rates are more likely to have low housing ownership rates and low educational attainment, high liquor store density, and low life expectancy.
- Exposure to respiratory risk is five times higher in census tracts with the highest levels of economic risk, and in these areas—West Oakland, Elmhurst, Downtown, and Chinatown—almost half the population lives below 150% of the federal poverty level, and 95% of the residents are people of color.

This overall pattern suggests that the clustering of social, economic, and environmental health risks in low-income and nonwhite neighborhoods makes it more difficult for people in these communities to live healthy lives. Health disparities associated with economic opportunity, education, and the environment are complex, multifaceted relationships that cannot be reduced to a single explanation or addressed by a single policy solution. The literature and this analysis suggest, however, that interventions aimed at crime prevention, community and economic development, and improvement in educational opportunities may be important public health strategies in Oakland, particularly in West Oakland, Central East Oakland, and Elmhurst. Thus, the Alameda County PLACE MATTERS Team, through a process of internal visioning and outreach to a range of community groups, has adopted a policy platform consisting of the following principles:

- Policies should be developed and implemented that support incarceration alternatives and promote the successful social, economic, and overall healthy transition of formerly incarcerated people into our communities in order to reduce recidivism and promote justice.
- All residents, regardless of racial/ethnic status or place of residence, should be able to pay for basic needs (including housing, food, transportation, health care, and child care) and build wealth.
- Quality education is a human right, and all school-age youth in Oakland should have access to a quality, comprehensive education in an environment that is safe, healthy, socially supportive, academically stimulating, and competitive with other schools, and that prepares them to graduate, achieve their education/career dreams and goals, and be productive members of their communities.
- Housing is a human right, and an adequate supply of housing should be constructed and preserved in proportion to demand, and this housing should maintain the cultural, racial, and class diversity of the community. Further, there should be no uninhabitable conditions or overcrowding, no one should be homeless or displaced or spend more than 30% of his or her income on housing costs, no one should experience redlining or unfair lending practices, everyone should have equal opportunities to receive prime loans, and all people should have housing that is safe and habitable and supports good health.
- All residents should be able to easily access a world-class public transportation system that is clean, safe, affordable, and reliable. These services should be equitably distributed, with particular attention paid to transit-dependent communities, and be connected to a safe walking and biking infrastructure to reduce the dependence on automobiles. Communities and the environment should be protected from the negative impacts of the movement of goods.
- Neighborhoods should have clean air, soil, and water. All residents should have access to quality jobs, food, affordable housing and transit, open spaces, and other goods and services people need to be healthy. Communities should be violence-free and designed to promote social interaction and neighborhood identity. Communities should be free from a high concentration of businesses and industries that harm health, and risk factors must be reduced.

There is a strong moral imperative to enact policies designed to improve health for all. But there is also a powerful economic incentive. A study released by the Joint Center for Political and Economic Studies in 2009 (T.A. LaVeist, D.J. Gaskin, and P. Richard, *The Economic Burden of Health Inequalities in the United States*) found that the direct medical costs associated with health inequities among African Americans, Hispanics, and Asian Americans approached \$230 billion between 2003 and 2006. When the indirect costs of health inequities, such as lowered productivity and lost tax revenue resulting from illness and premature death, are added to the equation, the total cost of health inequities between 2003 and 2006 exceeded \$1.24 trillion. For both moral and economic reasons, now is the time for action to address neighborhood conditions that shape health outcomes.

INTRODUCTION

The health of Alameda County residents is related to many factors.¹ Across the region, disease rates vary dramatically by age, gender, race, and ethnicity as well as with the prevalence of risky, health-related behaviors.²⁻⁸ Place matters in health because characteristics of the areas in which people live affect health choices, behaviors, environmental risks, and access to medical care.⁹⁻¹⁴ Local conditions that may affect health include levels of stress and environmental toxins, the social and economic characteristics of individuals and families (e.g., education and income), and the characteristics of the communities in which people live.

Countywide statistics oversimplify important geographic differences that exist between different neighborhoods and communities within Alameda County and that contribute to large differences in the health of residents. Geographic disparities in health status within Alameda County reflect, in part, geographic patterns in the population and living conditions. The health challenges faced by individuals and households are influenced by the neighborhood.^{15, 16} Regardless of one's education, income, or motivation to make healthy choices, risks may be introduced by increased crime, air pollution, the absence of places to exercise or nutritious food, poor schools, a scarcity of good jobs, and stress related to these community challenges.^{14, 17-24} Historical patterns contribute to long-term trends of placing vulnerable populations in stressed areas. This in turn reinforces cycles of hardship that entrench patterns of socioeconomic disadvantage.²⁵⁻²⁸

This report will focus on the characteristics of Alameda County and its communities that may impact health outcomes for residents, including criminal justice, socioeconomic opportunity, the built environment, and educational conditions. Life expectancy will be explored as well as the interrelations between these various community characteristics. Particular attention will be paid to the characteristics and health outcomes of the City of Oakland, the largest city in Alameda County.

Part I of this report provides background information about Alameda County and the City of Oakland, including population data, health outcomes, socioeconomic conditions, and community characteristics. Part II examines the relationship between socioeconomic status, educational factors, criminal justice, the built environment, and health outcomes. Part III presents conclusions about community-level factors related to life expectancy in Alameda County. Appendix A describes the Alameda County PLACE MATTERS team, and Appendix B presents detail about the data and methods that were used in preparing this report, and is available online at www.jointcenter.org.

I. Background: Population, Community Characteristics, and Health in Alameda County

Population

Alameda County is located in the San Francisco Bay Area of California. It includes 14 cities; the four largest are Oakland, Fremont, Hayward, and Berkeley. Oakland's population of 409,151 made up over a quarter of the total Alameda County population (1,491,482) in 2009. The overall population density in Oakland was 7,134.9 persons per square mile in 2009, over three-and-a-half times the population density of Alameda County (see Map 1 and Table 1).

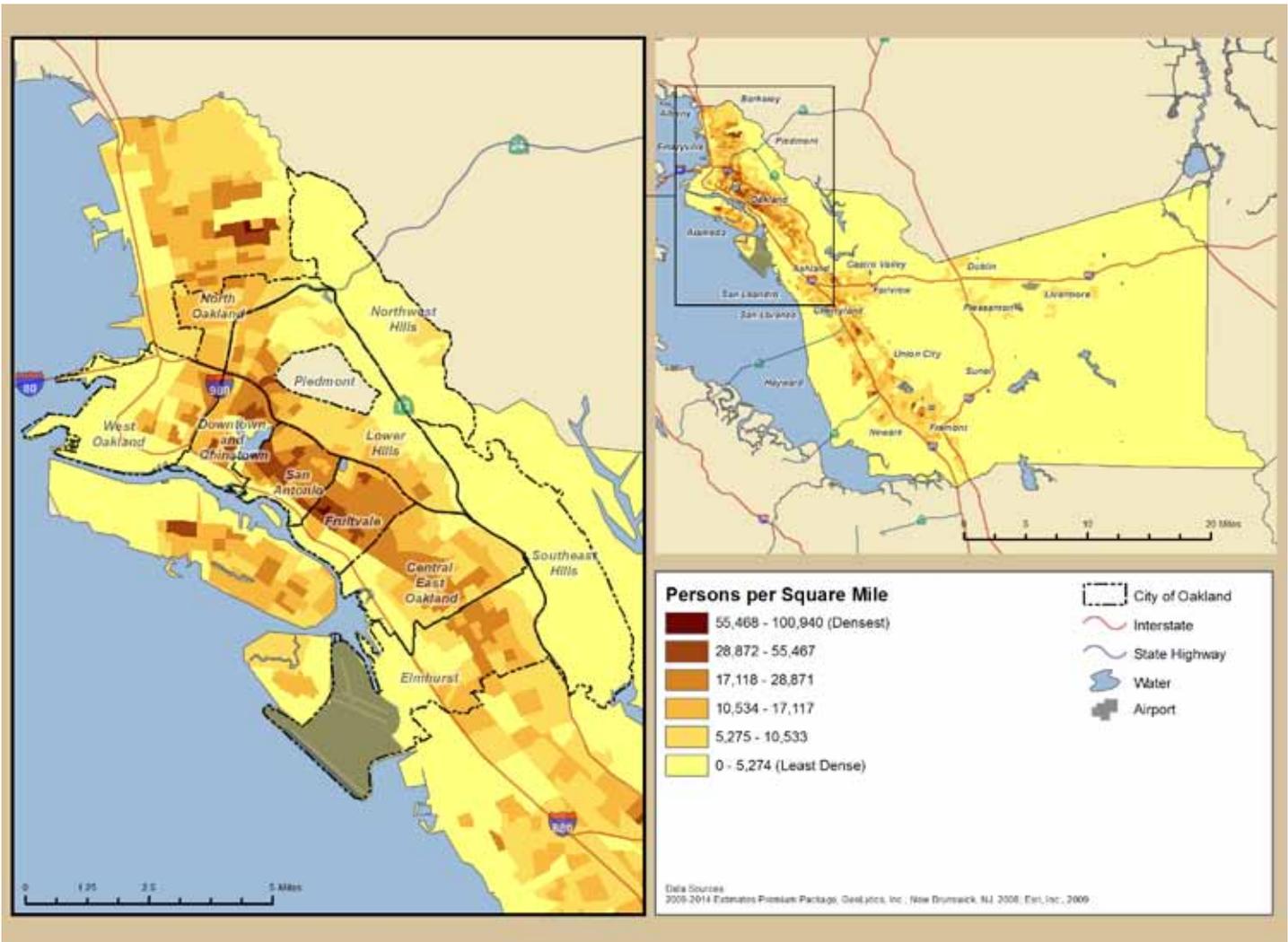
The City of Oakland and Alameda County are both very diverse racially and ethnically. In 2009, Oakland's population was almost equally divided between white (27.1%), African American (27.4%), and Latino (25.5%) residents, and it also had a large percentage of Asian residents (15.1%). Alameda County had a greater percentage of white (36.1%) and Asian (25.1%) residents, but a lower percentage of Latino (21.9%) and African American (12.3%) residents (see Table 1 and Figure 1).

In many cities and towns in the United States, people of color and disadvantaged populations have historically been relegated to isolated and segregated communities, and this segregation tends to perpetuate cycles of hardship as a result of limited housing and employment opportunities and lack of access to financial capital, among other factors. These factors can impact population health outcomes.

Due in part to racial segregation, racial and ethnic groups are concentrated differently across Alameda County. The Index of Dissimilarity²⁹ is a measure of residential segregation that identifies the percentage of the population that would have to relocate to completely integrate the community. The higher the value, the more segregated the area. Between 2005 and 2009, the Index of Dissimilarity for the Oakland metropolitan area between white and African American populations was 63.8%, compared to 62.3% in California.³⁰ The Oakland metropolitan area ranked 32nd in black-white segregation among the top 100 largest metropolitan areas based on 2005–2009 American Community Survey data. Milwaukee, Detroit, the New York metropolitan area, Chicago, and Cleveland held the top five spots.³⁰ The Index of Dissimilarity for the Oakland metropolitan area between white and Latino populations was 49.9%, compared to 54.9% in California.³⁰ The Oakland metropolitan area ranked 33rd in Latino-white segregation.

The Index of Dissimilarity is less useful for comparisons at smaller geographic levels. For this purpose, the Diversity Index is more useful. It is a measure of the likelihood that two people randomly chosen from an area will be of a different race or ethnicity. The higher the value, the less segregated the area.

Map 1: Population Density by Block Group, Alameda County (2009)



While the Diversity Index for Alameda as a whole is 77.0%, the value ranges from 15.3% in Berkeley (most segregated) to 89.1% (least segregated) in Hayward.

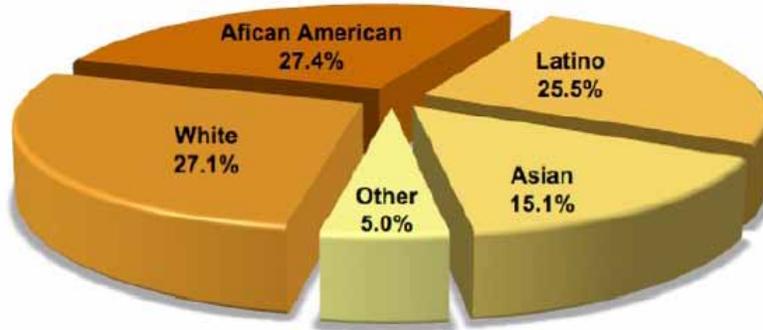
Within Oakland, some areas in Elmhurst are more than 70% Latino. In census tracts in Lower Hills and North Oakland, non-Latino whites constitute more than 80% of the population. The majority of the Asian population resides in southwestern Alameda County. The African American population is concentrated in West Oakland and areas in Central East Oakland and Elmhurst. Map 2 displays the racial and ethnic distribution of Alameda County residents.

Socioeconomic Characteristics

As is true of other communities, socioeconomic conditions in Alameda County exert an important and often unrecognized influence on health status. Nationally, families with incomes below the federal poverty level (less than \$22,000 for a family of four in 2009) are 3.6 times more likely to report fair or poor health than those with incomes of at least twice the poverty level.³⁴

In 2009, 17.2% of households in Oakland had incomes below the federal poverty level, well above the national average. The income-to-poverty ratio expresses household income as a percentage of the federal poverty level. Figure 2 shows that 8.3% of households in Oakland earned less than half the federal poverty level and almost 40% earned less than twice the poverty threshold. For a family of four, “twice poverty” was less than \$44,100 in 2009.

Figure 1: Race/Ethnicity in Oakland, CA



Source: U.S. Census Bureau, 2009 American Community Survey.
Note: "Other" includes American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, and those who identified themselves as some other race or two or more races. Racial groups include the non-Hispanic population only; Hispanic can include any racial group.

Table 1. Demographic Characteristics of the City of Oakland, Alameda County, the State of California, and the United States

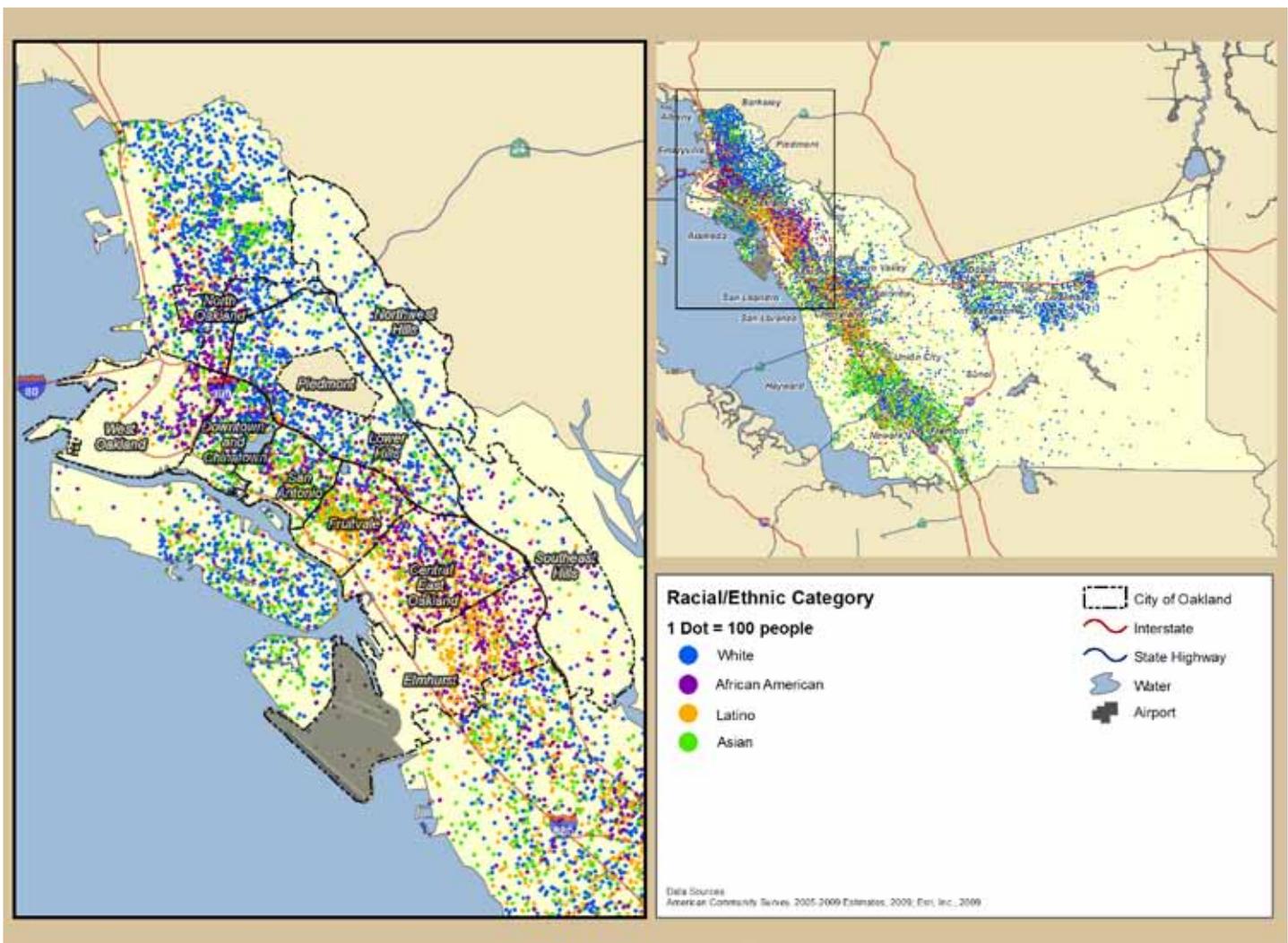
	City of Oakland	Alameda County	California	United States
Population (2009)_(a)	409,151	1,491,482	36,961,664	307,006,556
Population Density (2009)_(b)	7,134.9	2,029.1	239.5	86.7
Race/Ethnicity (2009)_(a)				
White	27.1%	36.1%	41.5%	64.9%
African American	27.4%	12.3%	5.8%	12.1%
Latino	25.5%	21.9%	37.0%	15.8%
Asian	15.1%	25.1%	12.3%	4.4%
Other	5.0%	4.5%	3.3%	2.8%

(a) U.S. Census Bureau, 2009 American Community Survey

(b) 2009 Geolytics Projection

Note: "Other" includes American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, and those who identified themselves as some other race or two or more races. Racial groups include the non-Latino population only; Latino can include any racial group.

Map 2: Racial/Ethnic Distribution, Alameda County (2005–2009)

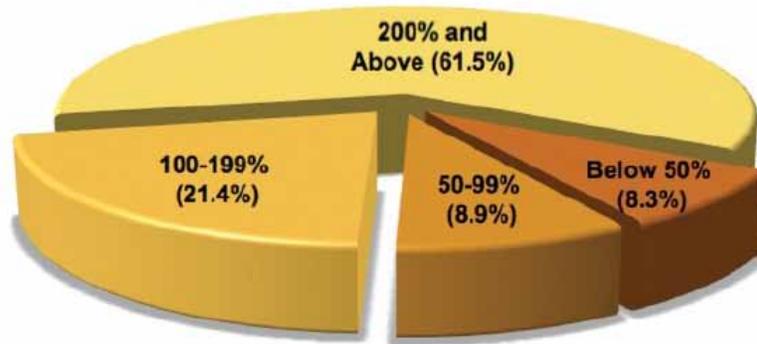


According to the U.S. Census Bureau, 22.0% of households in the U.S. reported an income below 150% of the federal poverty level in 2009.³³ In Alameda County, 18.0% of the population had incomes less than 150% of the federal poverty level, yet 35.7% of Alameda census tracts—representing 109 tracts—met or exceeded this level of poverty. In Oakland 67.9% of the census tracts and 70.9% of block groups met or exceeded the county’s average poverty rate. Poverty levels were highest in West Oakland, Downtown, and Chinatown (see Map 3).

Persistence of concentrated poverty across several decades may have additional health and social consequences, particularly for the children living in those areas. A persistent lack of economic resources during childhood, when combined with living in neighborhoods of concentrated poverty, has negative consequences on cognitive, emotional, behavioral, and physical development.^{35,36} In part because of the quality of schools in these neighborhoods, persistent poverty also diminishes

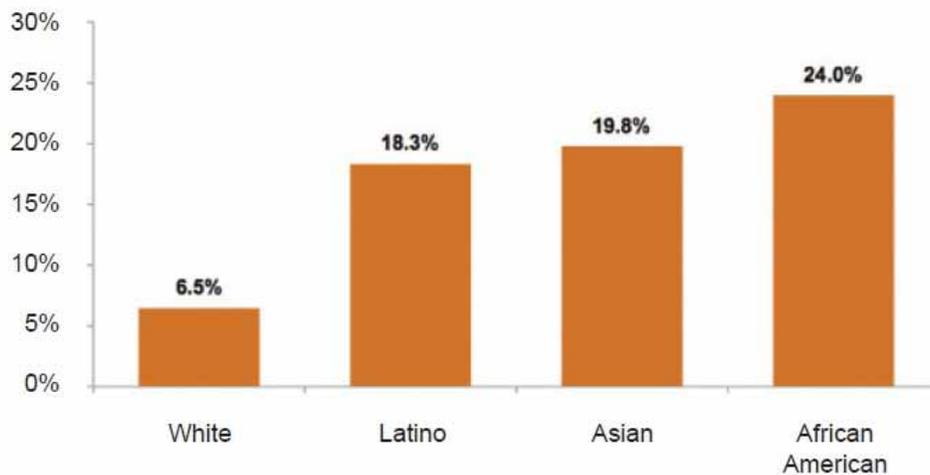
the likelihood of high school completion,^{35,36} perpetuating disadvantage and the multigenerational cycle of living in conditions that adversely affect health. Persistent poverty, defined as having at least 20% of the population with incomes under 100% of the federal poverty level for at least two census periods, has been a pervasive influence in Oakland. Out of 45 census tracts that meet the criteria for persistent poverty in Alameda, all but four (91.1%) are in Oakland. Within Oakland, West Oakland fares the worst, with 11 out of 14 (78.5%) census tracts in persistent poverty (Map 4). Poverty rates are generally higher among racial and ethnic minorities than among white populations. In Oakland as a whole, white residents are least likely to live below the poverty level (6.5%), while almost one out of every four African American residents lives in poverty (24.0%) (see Figure 3).

Figure 2: Ratio of Income to Poverty in Oakland, CA



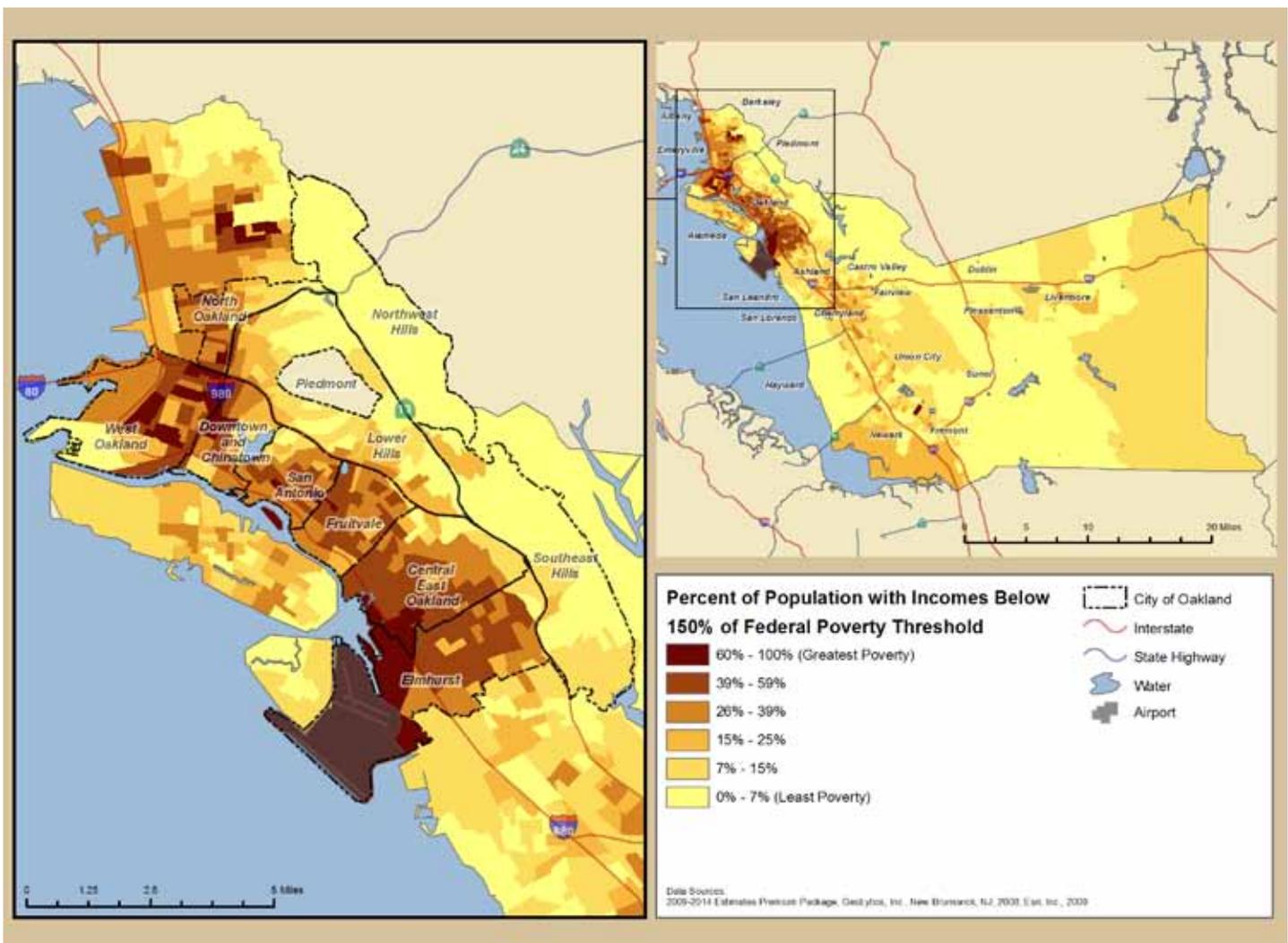
Source: U.S. Census Bureau, 2009 American Community Survey.

Figure 3: Poverty by Race-Ethnicity in Oakland, CA



Source: U.S. Census Bureau 2009 American Community Survey
Racial groups include non-Hispanic population only; Hispanic can include any racial group.

Map 3: Poverty by Block Group, Alameda County (2009)



Insufficient income to meet basic needs exposes individuals to further risks from the environment in which they live. Because of a lack of access to financial capital, impoverished families are more likely to rent rather than own property and to live in less-desirable areas. In 2009 only 41.5% of housing units in Oakland were owner occupied compared to 54.7% in Alameda County, 57.6% in California, and 60.7% nationally.⁴¹ Lower percentages of community level owner-occupied housing are associated with adverse outcomes in crime and education.

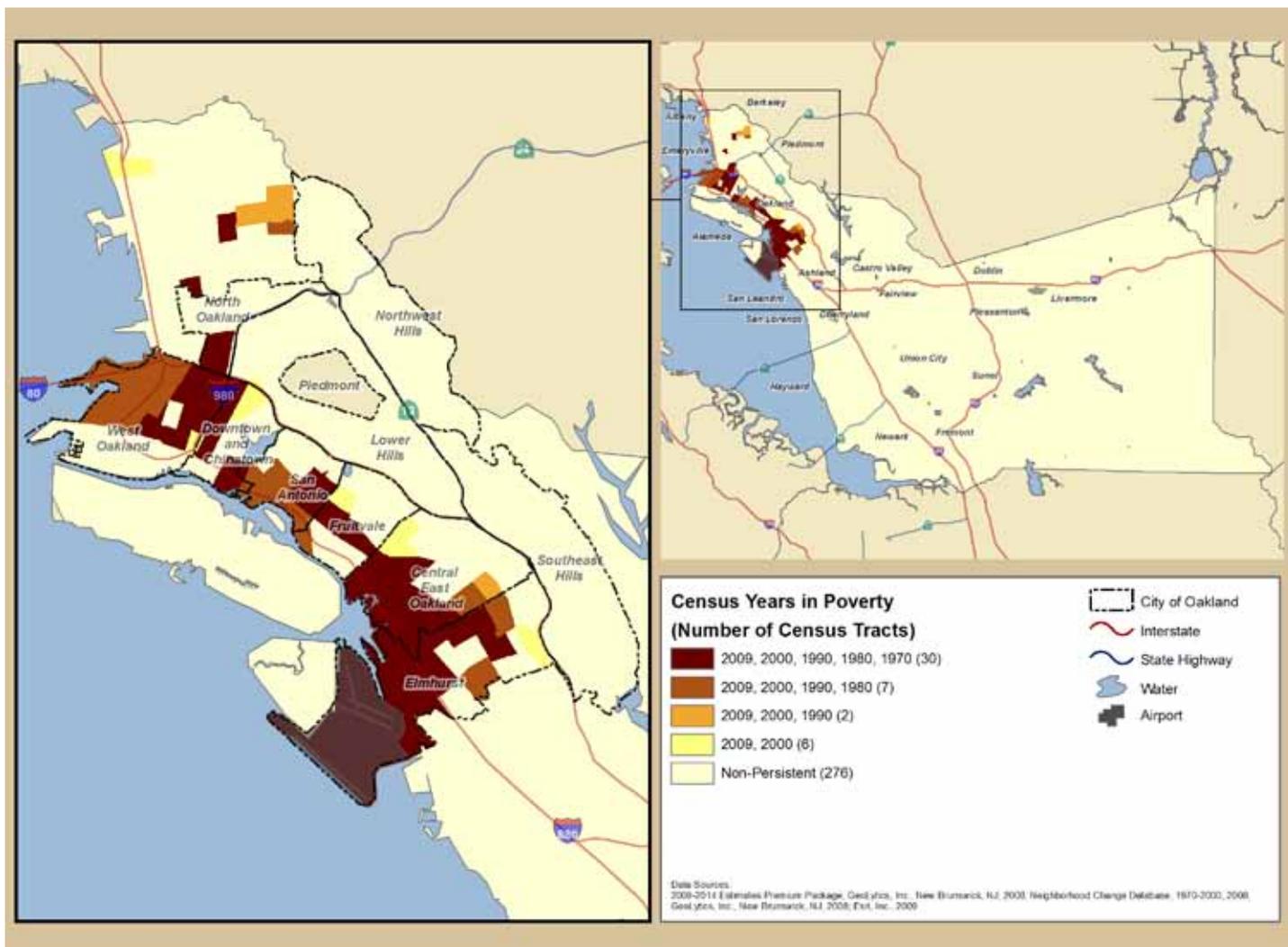
Education

Education is a pathway to higher income and net worth, both of which have strong influences on health status and access to health care. In 2009, American adults with less than a high school diploma had less than half the earnings (\$18,432 versus

\$47,510)³³ and were three times more likely to die before age 65 as those with at least a bachelor's degree.⁴² They are also more likely to engage in unhealthy behaviors such as cigarette smoking.⁴³

Residents of impoverished communities are more likely to have low educational attainment. In Oakland, more than two out of five adults living in poverty have less than a high school diploma. This is nearly double the percentage of all adults without a high school education. And African American adults in Oakland were nearly four times more likely than non-Latino whites (17.8% vs. 4.8%) in the same time period to lack a high school education (see Figure 4).³³ Latino residents fare much worse, with more than half of adults lacking a high school education.

Map 4: Persistent Poverty by Census Tract, Alameda County (1970–2009)



Note: The category of “Persistent Poverty” includes census tracts with a poverty rate of at least 20% for at least two consecutive census periods, looking retrospectively from 2009. This concept is based on the United States Department of Agriculture’s research on counties with persistent poverty.

Overall, the percentage of those with bachelor’s degrees in Oakland and Alameda County exceeds the percentages for California and the nation. However, in Oakland the percentage of the population without a high school diploma is higher than the average for the county, state, or nation. Within Oakland, more than one out of every five adults lacks a high school diploma (see Table 2).^{33, 44} The block groups in Oakland exhibiting the highest level of educational distress—with more than half of adults lacking a completed high school education—are in Central East Oakland, Elmhurst, and Fruitvale (see Map 5).

Health Outcomes

Alameda County has longer life expectancy at birth (80.5 years) than California (80.0 years) and the United States (78.0 years) (see Table 3). However, the all-cause mortality rate (number of deaths per 100,000 population) and the low-birth-weight rate for Alameda County were both somewhat higher than the rates in California.

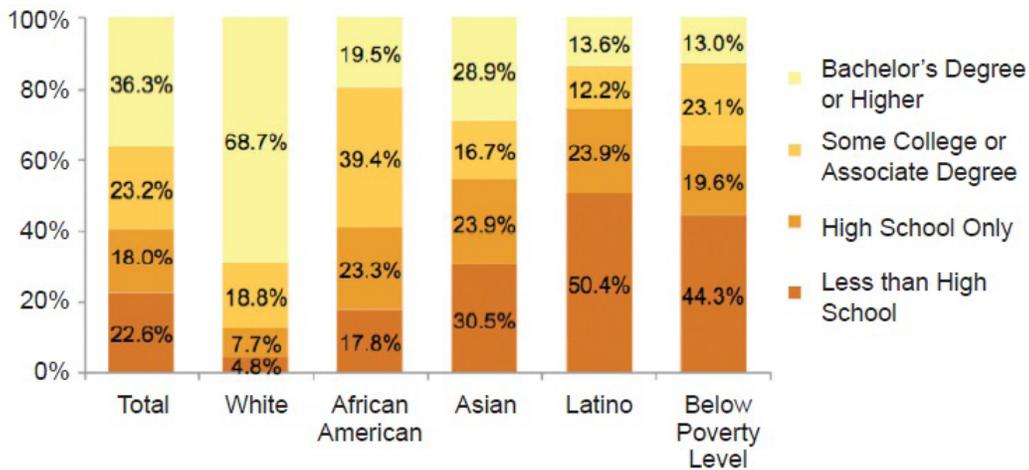
Rates for all-cause mortality and low-birth-weight babies in the region tend to be lower among Latinos than among non-Latinos. The highest rates for both all-cause mortality and low birth weight are observed among blacks, who also have elevated rates at the state and national levels.

Table 2. Socioeconomic Characteristics of the City of Oakland, Alameda County, the State of California and the United States

	City of Oakland	Alameda County	California	United States
Educational Attainment				
Less than High School	22.6%	14.8%	19.4%	14.7%
High School Only	18.0%	20.0%	20.9%	28.5%
Some College	23.2%	25.0%	29.8%	28.9%
Bachelor’s Degree or Higher	36.3%	40.2%	29.9%	27.9%
Poverty Rate				
Below 50% of Poverty Rate	8.3%	5.0%	6.0%	6.3%
50-99% of Poverty Rate	8.9%	5.7%	8.2%	8.1%
100-199% of Poverty Rate	21.4%	14.9%	19.5%	18.4%
200% and Above of Poverty Rate	61.5%	74.4%	66.3%	67.3%

Source: U.S. Census Bureau, 2009 American Community Survey

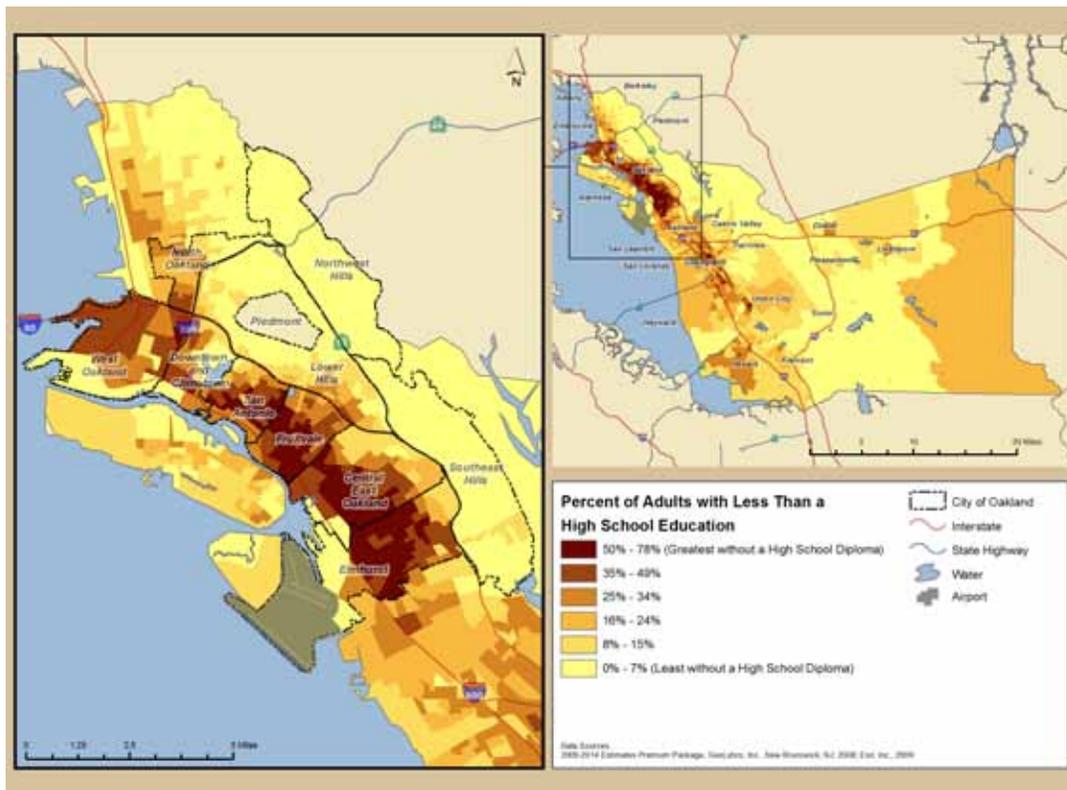
Figure 4: Education Attainment in Oakland, CA



Source: U.S. Census Bureau 2009 American Community Survey

Notes: Other includes Two or More Races, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, Some Other Race. Racial groups include non-Hispanic population only; Hispanic can include any racial group.

Map 5: Adults With Less Than a High School Education by Block Group, Alameda County (2009)



Map 6: Life Expectancy by Census Tract, Alameda County (2002-2008)

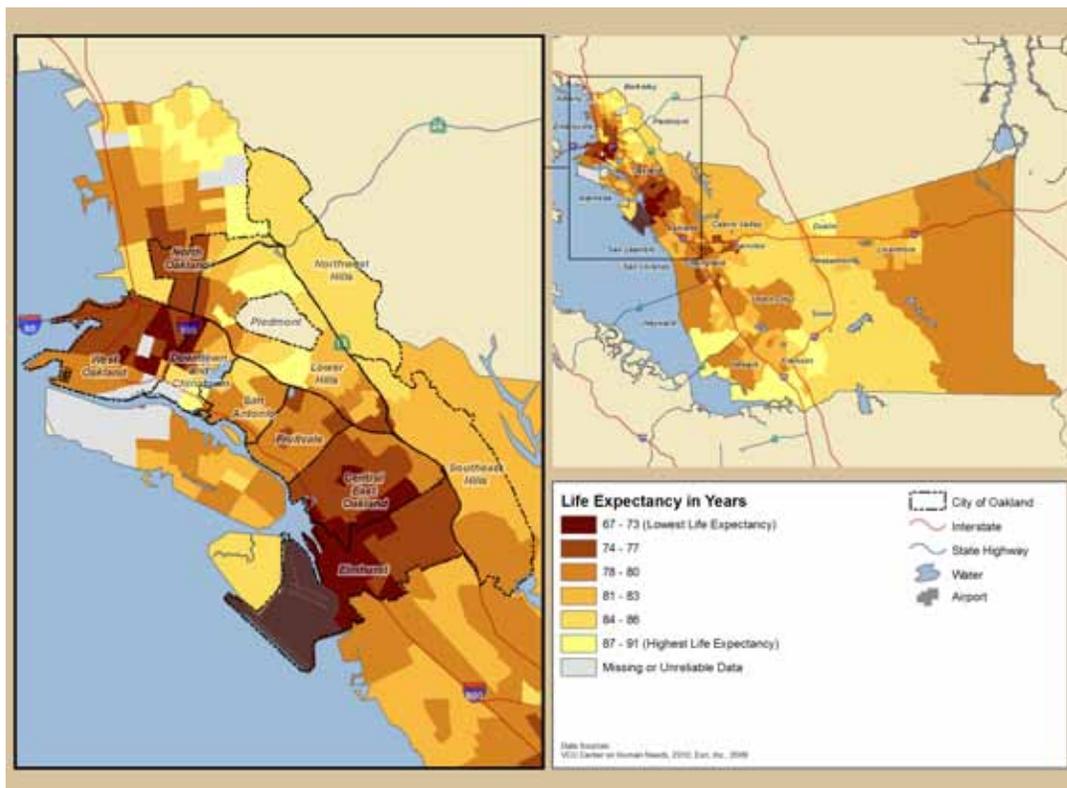


Table 3. Health Characteristics of Alameda County, the State of California, and the United States

	Alameda	California	United States
Life Expectancy	80.5 ^(a)	80.0 ^(b)	78.0 ^(b)
All-Cause Mortality Rate* (1999-2007)^(c)	732.3	675.0	759.5
Non-Latino	749.4	702.8	776.3
Latino	577.3	537.9	546.1
White	761.0	790.4	815.9
Black	1092.5	1061.1	1068.5
Asian	462.8	482.2	458.6
Low-Birth-Weight Rate (2008)^(e)	7.1%	6.8%	8.2%
Non-Latino	7.9%	7.5%	8.6%
Latino	5.3%	6.1%	7.0%
White	6.8%	6.4%	7.2%
Black	11.3%	12.1%	13.7%
Asian	7.3%	7.7%	8.2%

(a) Calculations performed by the Alameda County Health Department from data provided by California Death Masterfile 2002-2008.

(b) Calculations performed by American Human Development Index from data provided by the Centers for Disease Control and Prevention’s National Vital Statistics Survey and the U.S. Census Bureau.

(c) Data from the Centers for Disease Control and Prevention, CDC Wonder, adjusted to the 2000 Census Population.

(e) The Centers for Disease Control and Prevention National Vital Statistics System 2008.

*Mortality statistics are per 100,000 population.

Given the geographic variation in socioeconomic and environmental factors that affect health in Alameda County, it follows that health outcomes—including life expectancy—vary sharply by neighborhood as well (see Map 6). Life expectancy varies by as much as 24 years between census tracts in Alameda County. The tract with the highest life expectancy (91 years) is in the Lower Hills. The tract with the lowest life expectancy is in West Oakland, which at 67 years is similar to life expectancy in countries such as Turkmenistan, Kazakhstan, and North Korea.⁴⁵ This is consistent with the findings of the Alameda County Health Department, which documented disparities in health outcomes including life expectancy.⁴⁶

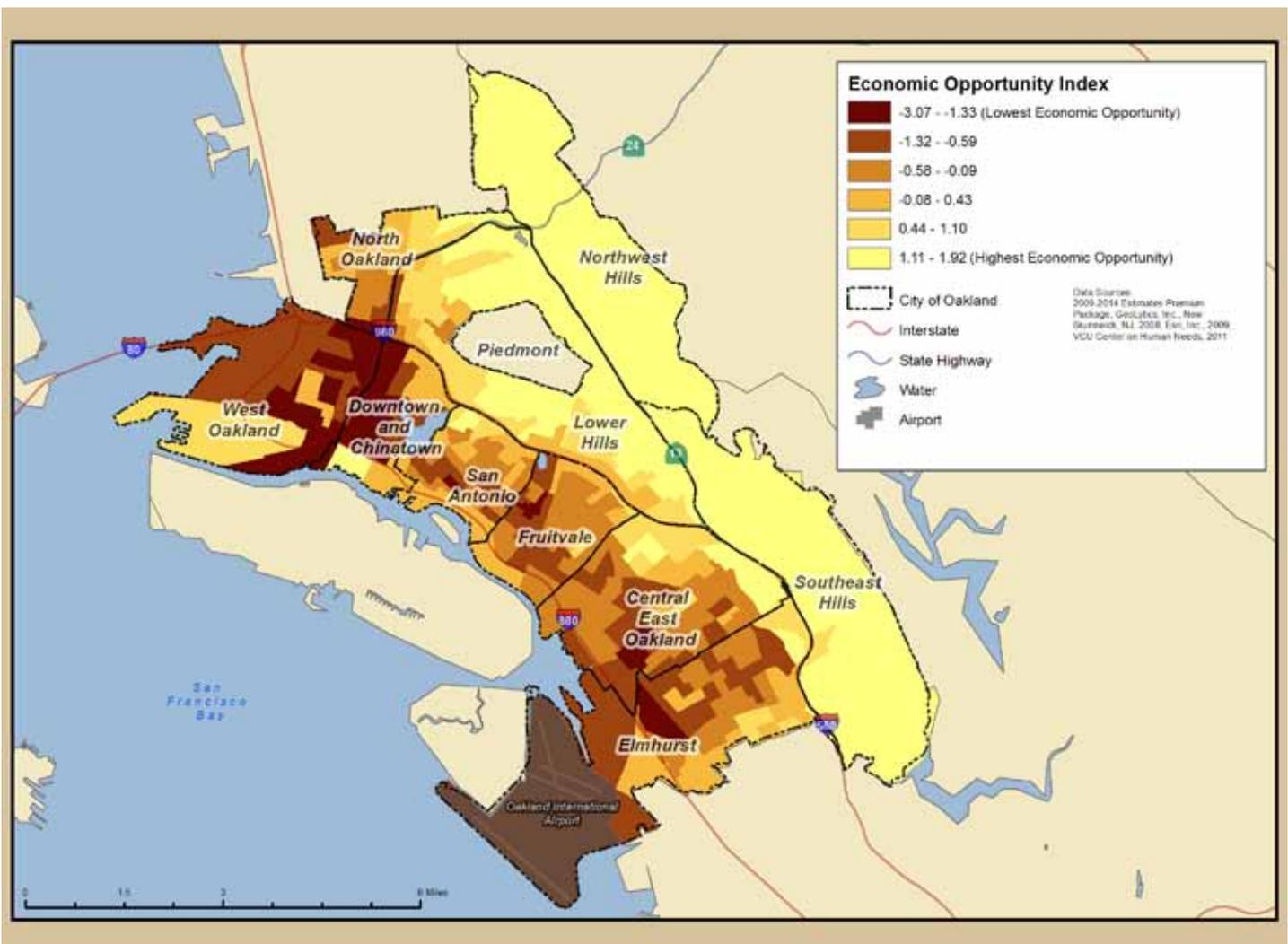
II. Neighborhood Characteristics and Health Outcomes

This section explores health opportunities associated with various neighborhood characteristics: economics, education, criminal justice, and the built environment. While we will explore each of these characteristics separately, it is important to note that they are deeply interrelated. To better understand how they interact to shape a community environment that affects how long a person can expect to live, we combined the indicators together to examine the relationship between multiple community-level risks and life expectancy simultaneously.

Life Expectancy and Economic Conditions

Individual and community-level economic resources are known to be important to health.^{13,47,48,49, 50} Income is among the strongest predictors of a long life,⁵¹ and this is true across

Map 7: Economic Opportunity Index by Block Group, Alameda County (2009)



Note: The Economic Opportunity Index is a composite index based upon the following indicators: percent employed, percent of owner-occupied houses, percent of households with an automobile, and percent of population with incomes above 150% of the federal poverty level. Higher scores represent higher levels of economic opportunity.

a variety of geographic levels including neighborhood (census tract), county, state, and nation. To examine the relationship between economic opportunity and health in Oakland, we created an index to represent economic opportunity based on rates of employment, home ownership, automobile ownership, and poverty (see Appendix B for more details on methods). The lowest scores on the Economic Opportunity Index, representing extreme economic disadvantage, can be found in West Oakland, Elmhurst, Downtown, and Chinatown (see Map 7). The higher rates of foreclosure can be found in West Oakland, Downtown, Chinatown, Central East Oakland, and Elmhurst (see Map 8).

Our research^{13, 49, 52, 53} indicates that economic opportunities in a given geographic area correlate with mortality indicators.

At the census tract level in Oakland, as economic opportunity increases life expectancy tends to increase.

In Figure 5, Alameda County census tracts are divided into quintiles (five groups), from the highest economic opportunity to the lowest. Life expectancy in census tracts in the highest economic opportunity quintile averaged 7.7 years longer than life expectancy in census tracts in the lowest economic opportunity quintile. West Oakland, Downtown, and Chinatown contain census tracts with the lowest economic opportunity and the lowest life expectancy (see Map 9).

Map 8: Foreclosure by Block Group, Alameda County (2009)

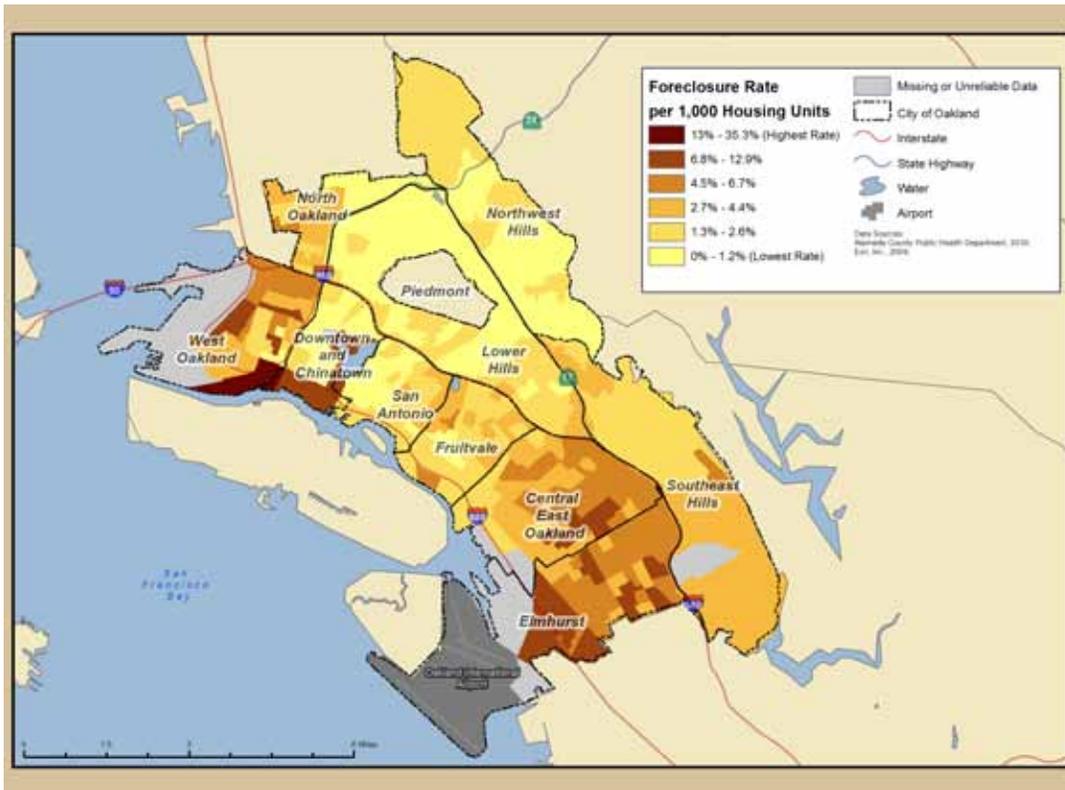
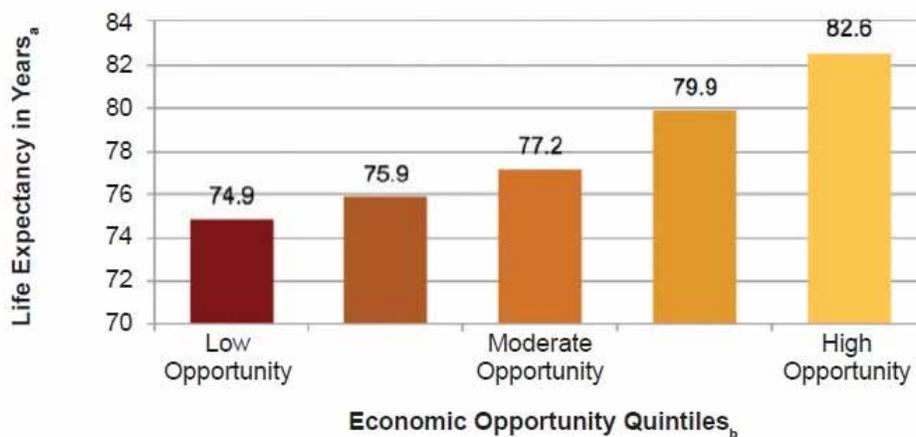


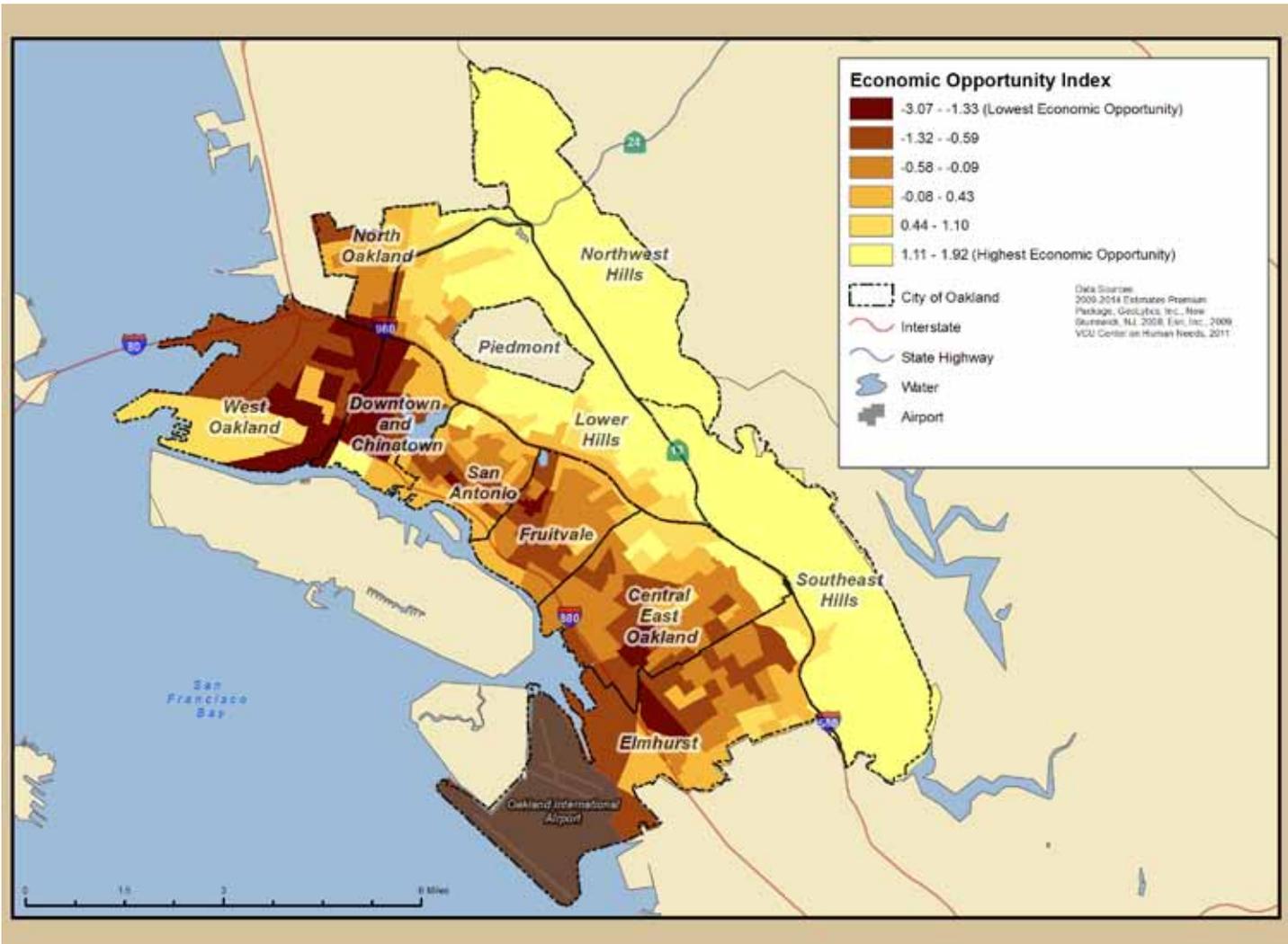
Figure 5: Life Expectancy by Economic Risk in Oakland, CA 2002-2009



Source (a): Alameda County Vital Statistics, 2002-2008

Source (b): Geolytic Projections, 2009

Map 9: Co-occurrence of Low Economic Opportunity and Low Life Expectancy by Census Tract, Oakland (2002–2009)



Note: Lowest Economic Opportunity = -3.07 to -1.65; Lower Economic Opportunity = -3.07 to -0.79; Low Economic Opportunity = -3.07 to -0.06.
 Lowest Life Expectancy = 67-72 yrs.; Lower Life Expectancy = 67-75 yrs.; Low Life Expectancy = 67-78 yrs.

Life Expectancy and Education

Like income, numerous studies have found educational attainment^{50, 54-57} to be significantly related to premature mortality. Better teacher quality, greater expenditures, and superior facilities are generally associated with educational success and higher educational attainment.⁵⁸

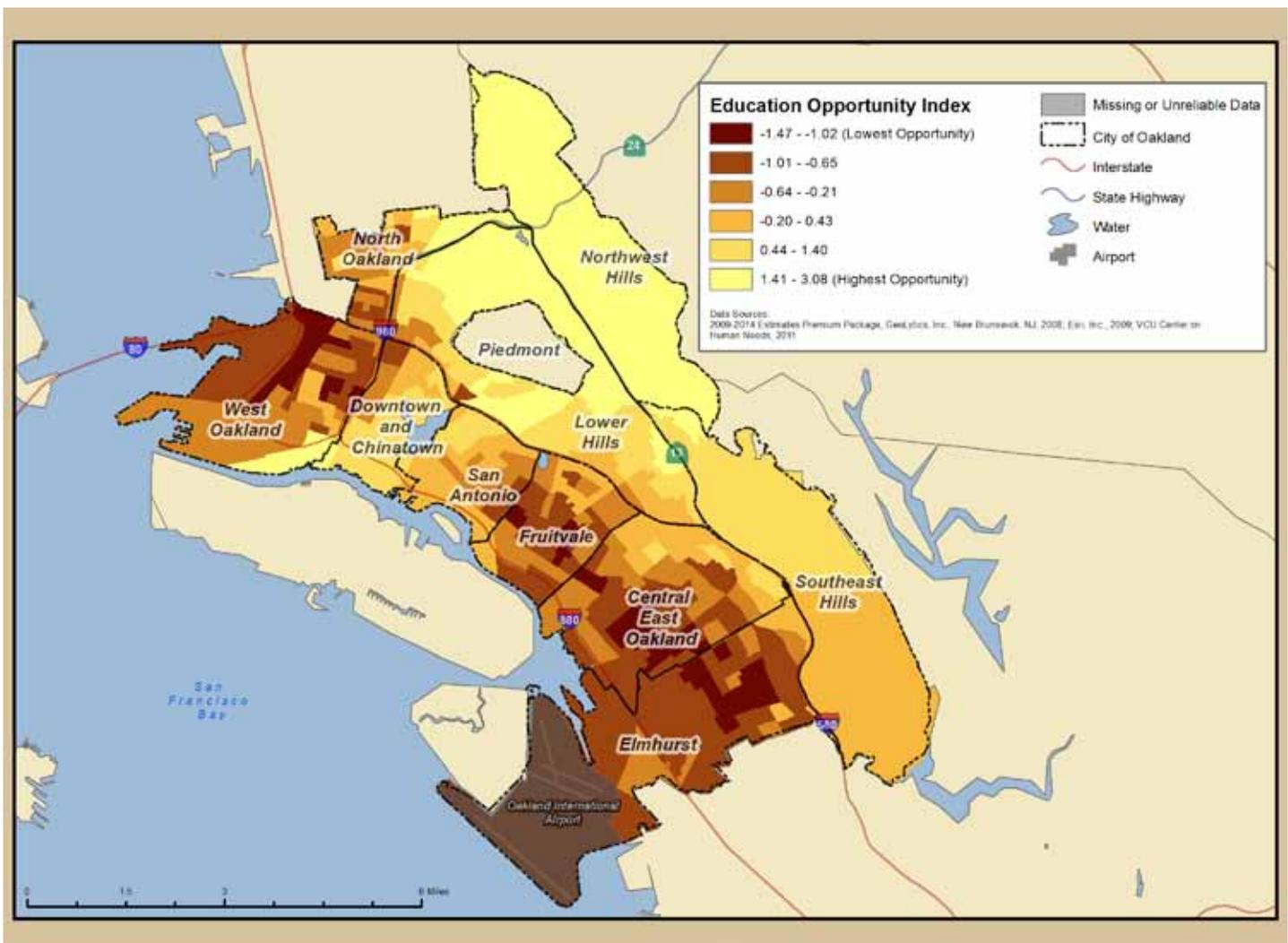
To examine the relationship between educational opportunity and health in Oakland, we created an index to represent educational opportunity based on average proficiency scores in math and language arts and the percent of the population with greater than a high school diploma (see Appendix B for

more details on methods). The lowest scores on the Education Opportunity Index can be found in West Oakland, Elmhurst, Downtown, and Chinatown (see Map 10).

In Oakland, our research indicates that as educational opportunity increases, life expectancy tends to increase.

Map 11 highlights those Oakland census tracts that have both low levels of educational opportunity and the lowest life expectancies: North Oakland, West Oakland, Central East Oakland, and Elmhurst.

Map 10: Education Opportunity Index by Block Group, Alameda County (2009)



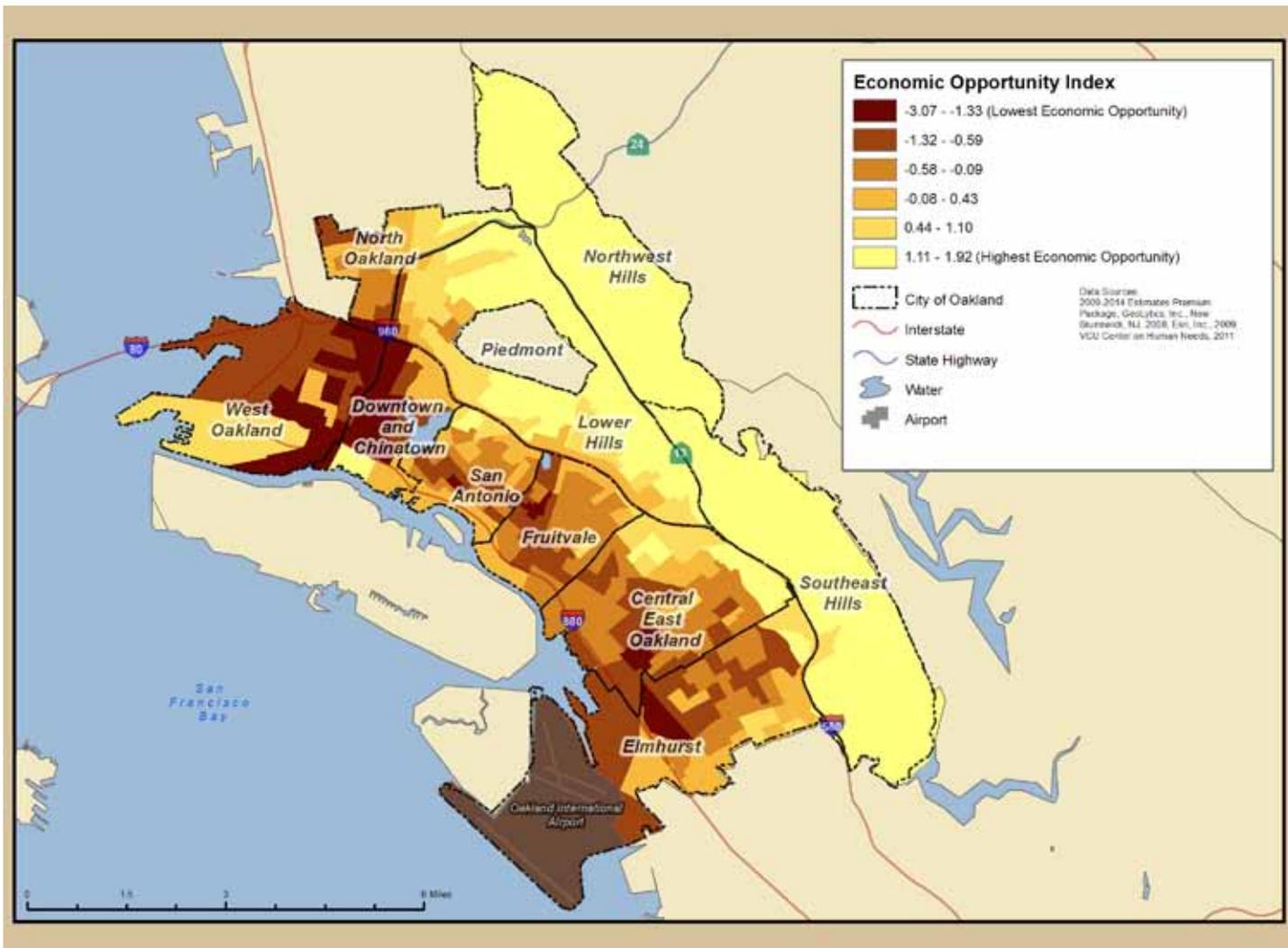
Life Expectancy and Criminal Justice

Living in a high-crime neighborhood can pose a number of direct risks, such as assault and homicide, as well as indirect health risks such as increased risk for disease due to high levels of chronic stress.⁵⁹ High crime rates are consistently observed in communities with lower educational attainment and less economic opportunity. We created a criminal justice index as a composite index for Oakland based upon the following indicators: the violent crime rate, the property crime rate, and the percent of the population currently on probation. Higher scores represent higher levels of risk. In Oakland, census tracts in the highest crime quintile based on the criminal justice index are more likely to have low housing ownership rates and low educational attainment, high liquor store density, and low life expectancy (see Table 4).

According to the Federal Bureau of Investigation, in 2009 Oakland had a violent crime rate of 1,679 per 100,000 residents, which is more than three times the rate for California and the U.S. (see Table 5).⁶² Oakland's violent crime rate included high rates of murder, rape, robbery, and aggravated assault that exceeded national and state averages.⁶² The property crime rate and all of its subcomponents were also significantly higher in Oakland than in California or the U.S.⁶² It is important to note, however, that crime rates are highly dependent on the type of setting (urban vs. rural) as well as the social and economic characteristics of an area.

Studies increasingly document indirect threats to health when there is inadequate community safety. Children and youth living in high-crime neighborhoods have higher levels of chronic psychological distress.⁶³ Youth living in high-crime areas may suffer from pressures to participate in criminal activity due to limited economic opportunity,⁶⁰ the need to protect

Map 11: Co-occurrence of Education Opportunity Index and Life Expectancy by Census Tract, Oakland (2002–2009)



Note: Lowest Economic Opportunity = -1.21 to -0.83; Lower Economic Opportunity = -0.40 to -1.21; Low Economic Opportunity = 0.04 to -1.21.

Lowest Life Expectancy = 67-72 yrs.; Lower Life Expectancy = 67-75 yrs.; Low Life Expectancy = 67-78 yrs.

themselves from threats of physical violence, or perceived social norms.⁶⁵ This perceived lack of safety has been associated with chronic stress and elevated risk for stress-related diseases.^{59, 63, 64} In 2009, arrests of youth under age 18 represented more than 14% of all arrests across the U.S.^{59, 63, 66} Arrests of individuals under age 25 accounted for 43.6% of all arrests.^{62, 66} Students in Oakland appear to be disproportionately impacted by neighborhood crime. According to the California Healthy Kids Survey, students of all racial and ethnic groups in Oakland, compared to Alameda County and California, were more likely to report feeling unsafe or very unsafe at school (see Figure 6). Likewise, gang membership in Oakland schools is higher among

all racial and ethnic groups compared to Alameda County and California (see Figure 7).

In Oakland, crime rates are strongly associated with life expectancy. Our research indicates that the Criminal Justice Index alone accounted for 48% of the variability in life expectancies across census tracts in Oakland. Even after controlling for educational attainment and economic factors, crime remained a significant predictor of life expectancy.

The population on probation is a particularly powerful predictor of life expectancy. Without controlling for potentially confounding factors, this factor accounted for 70% of the

Table 4. Characteristics of Low Crime Risk and High Crime Risk Census Tracts in Oakland, 2007-2009

	Low Crime*	High Crime*
Violent Crime Rate/100,000^(a)	441	5,001
Property Crime Rate/100,000^(a)	3,233	19,346
Owner-Occupied Households^(b)	66%	28%
Less Than a High School Diploma^(b)	6%	34%
Liquor Store Density/Square Mile^(c)	55.8	299.4
Life Expectioncy in Years^(d)	82.5	73.8

(a) Urban Strategies Council with data from the Oakland Police Department, 2007-2009.

(b) Geolytics Projections, 2009.

(c) California Department of Alcoholic Beverage Control, 2010.

(d) Calculations performed by the Alameda County Health Department from data provided by California Death Masterfile 2002-2008.

*Low Crime Risk values are based on the average values for block groups that fall into the lowest 20% of the Crime Risk Index. High Crime Risk values are based on the average values for the highest 20%.

Table 5. Crime Rates in Oakland, the State of California, and the United States 2009

	Oakland	California	United States
Violent Crime Rate per 100,000	1,679	472	429
Murder and Non-negligent Manslaughter	26	5	5
Forcible Rape	81	24	29
Robbery	716	173	133
Aggravated Assault	857	270	263
Property Crime per 100,000	4,986	2,732	3,036
Burglary	1,186	623	716
Larceny-Theft	2,183	1,665	2,061
Motor Vehicle Theft	1,617	444	259

Source: United States Justice Department, Federal Bureau of Investigation; 2009 Crime in the United States.

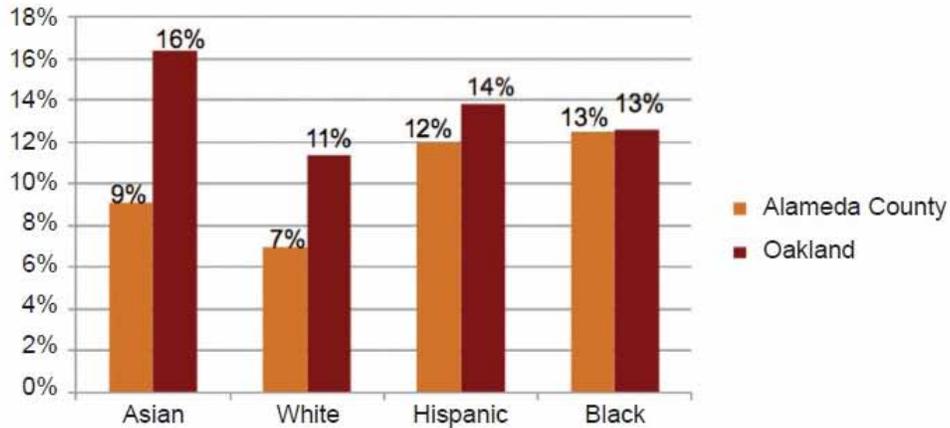
variability in life expectancies across census tracts in Oakland. While we do not believe the percent of the population on probation directly impacts life expectancy, the indicator appears to at least serve as a strong proxy for community-level and demographic risk factors associated with mortality.

Map 12 shows the distribution of crime risk in Oakland. The highest-risk block groups have high rates of property crime and violent crime and a high percentage of the population currently

on probation. Neighborhoods with the highest crime risk index scores include Fruitvale, Elmhurst, and Central and East Oakland.

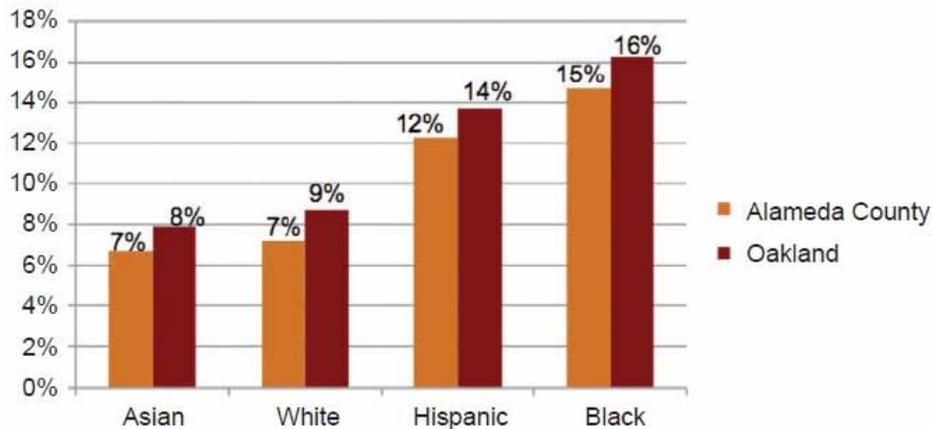
Map 13 shows census tracts in Oakland with the highest crime risk scores together with the lowest life expectancies. These are in Fruitvale, Elmhurst, and West Oakland.

Figure 7: Percent of Students who Reported Feeling Unsafe or Very Unsafe at School, 2010



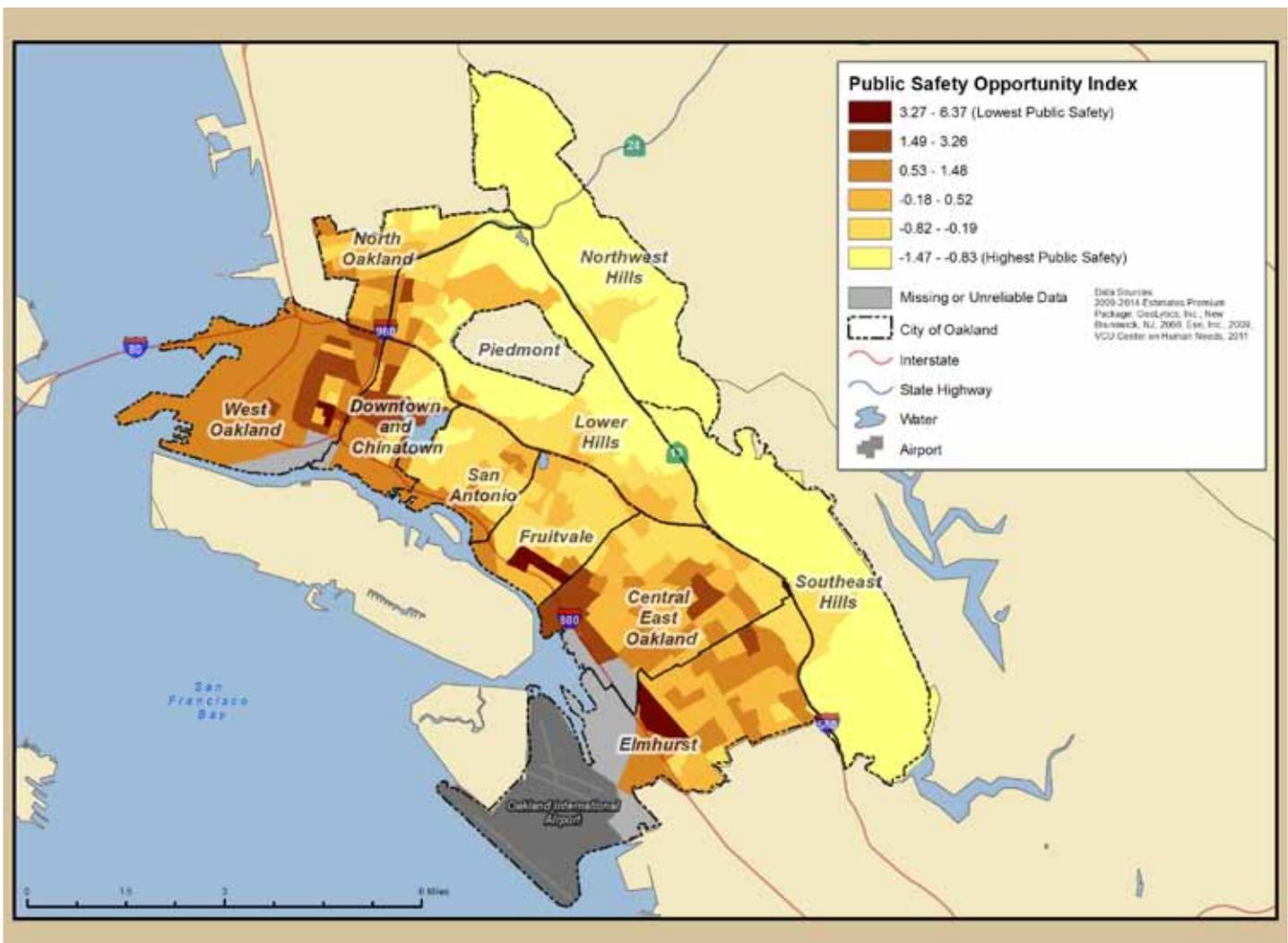
Source: California Healthy Kids Survey, 2010.

Figure 8: Gang Membership in Oakland and Alameda County Schools, 2010



Source: California Healthy Kids Survey, 2010.

Map 12: Criminal Justice Index by Block Group, Oakland (2007–2010)



Note: The Criminal Justice Index is a composite index based upon the following indicators: violent crime rate, property crime rate, and percent of population currently on probation. Higher scores represent the highest crime areas.

Life Expectancy and the Built Environment

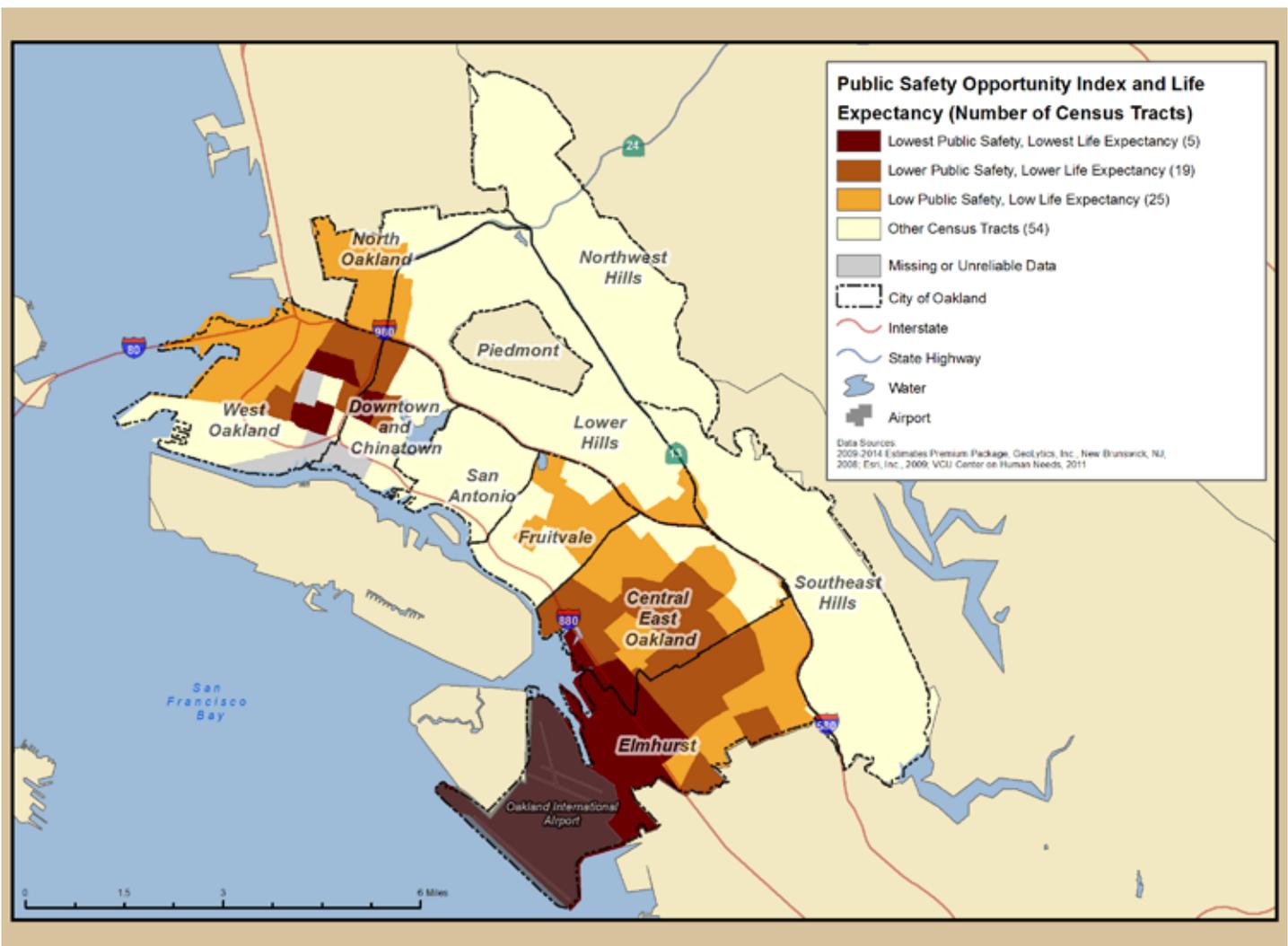
Socioeconomically disadvantaged communities and communities of color often face additional health risks due to characteristics of the physical environment, such as exposure to environmental hazards, lack of access to healthy food choices, and few opportunities for safe physical activity.

Previous research has documented that closer proximity to hazardous sites and heightened exposure to pollution are more common in neighborhoods populated by people of color and the economically disadvantaged.⁶⁷⁻⁷² Some studies suggest that toxic facilities are deliberately sited in minority communities,⁷³ possibly because such neighborhoods are socially isolated and hold limited political power to resist undesirable land use

decisions by governments and corporations.⁷⁴ These findings appear consistent with environmental hazard data for Oakland. Based on results from the 2002 National Air Toxic Assessment (NATA), exposure to respiratory risk based on select hazardous air pollutants is five times higher in census tracts with the highest levels of economic risk (based on the economic risk index). In these areas—West Oakland, Elmhurst, Downtown, and Chinatown—almost half of the population lives below 150% of the federal poverty level, and 95% of the residents are people of color.

The very same communities often lack nutritious food options and have an excess of unhealthy food options, including fast food outlets and liquor stores. Access to grocery stores and green space are considered important for promoting

Map 13: Co-occurrence of Crime and Life Expectancy by Census Tract, Oakland (2002–2009)



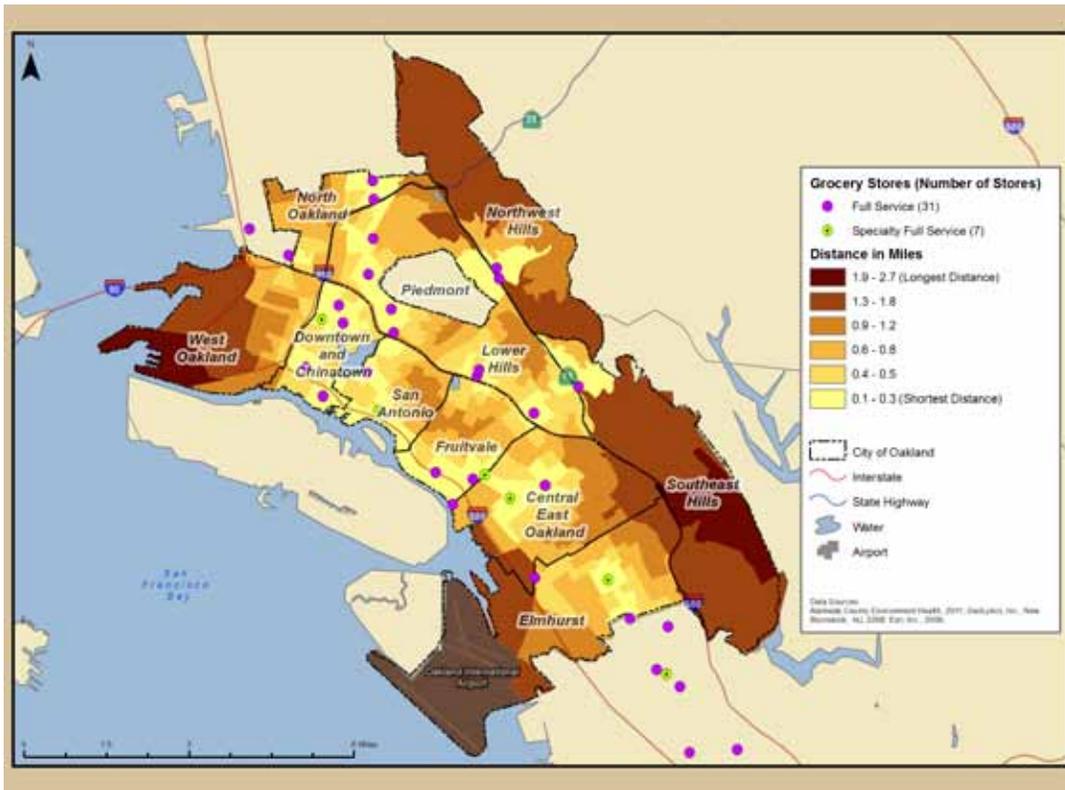
Note: Highest Criminal Justice Index = 1.49-2.79; Higher Criminal Justice Index = 0.56-2.79;
 High Criminal Justice Index = 0.08-2.79;
 Lowest Life Expectancy = 67-72 yrs; Lower Life Expectancy = 67-74 yrs; Low Life Expectancy = 67-77 yrs.

healthy diets⁷⁵⁻⁷⁷ and physical activity,⁷⁸⁻⁸¹ which in turn may affect health outcomes such as obesity and related health complications.⁸² Map 14 shows the average distance to a full-service grocery store. In Oakland, we did not observe a relationship between these measures and life expectancy. Map 15 shows the distribution of liquor stores in Oakland. Compared to Oakland as a whole, liquor store density is 1.5 times higher in the lowest life expectancy census tracts and at least 3.5 times higher in the highest crime census tracts. The literature does not suggest that liquor store density is directly associated with mortality; however, studies have found significant positive associations between liquor store density and both violent crime and economic disadvantage, which in

turn are associated with poor health outcomes.⁸³⁻⁸⁶

Exposure to environmental hazards, lack of access to healthy foods, and a high density of liquor stores often occur in the same Oakland communities that are home to the highest crime, lowest educational attainment, and fewest economic opportunities.

Map 14: Proximity to Grocery Stores and Store Locations by Block Group, Alameda County (2011)



Map 15: Density of Liquor Stores and Store Locations by Block Group, Alameda County (2011)

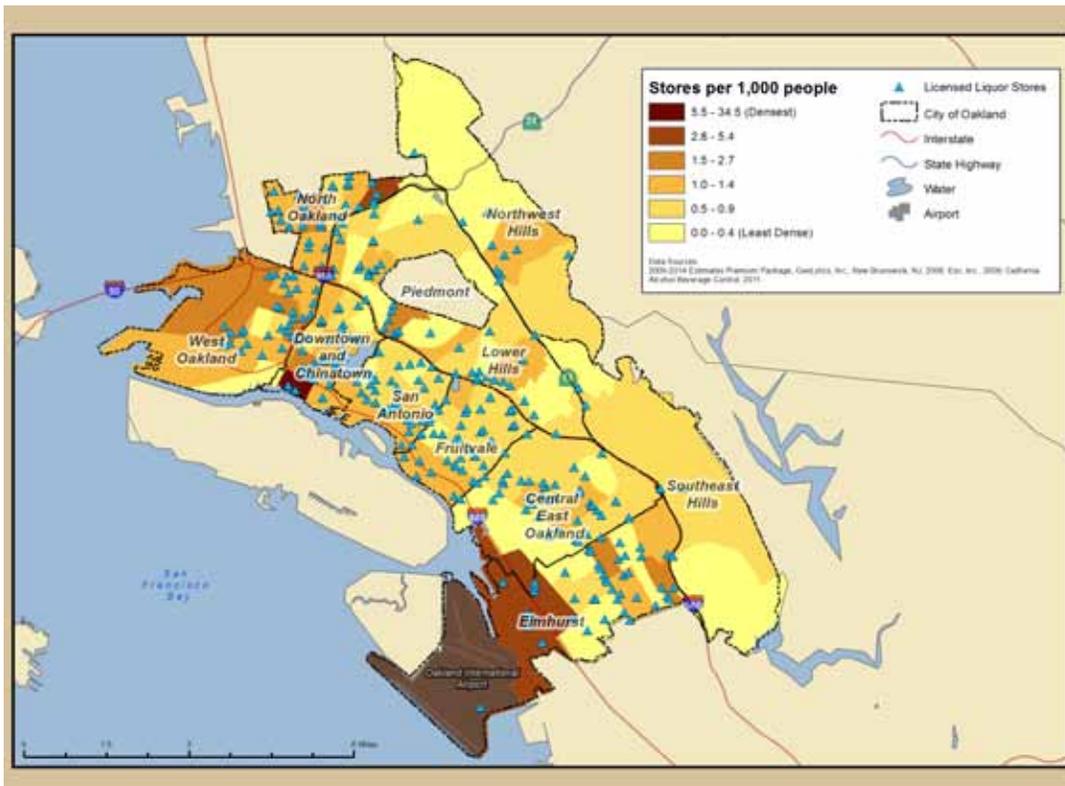


Table 6. Characteristics of Low and High Community Opportunity Census Tracts in Oakland, 2002-2009

	High Community Opportunity*	Low Community Opportunity*
Crime		
Violent Crime Rate/100,000 ^(a)	497.1	2,755.4
Property Crime Rate/100,000 ^(a)	3,578.4	7,874.4
Probationers/1,000 ^(b)	2.1	23.4
Economic Characteristics		
Below 150% of the Federal Poverty Level ^(c)	8.4%	46.7%
Percent of Household With No Automobile ^(c)	5.3%	27.7%
Employed ^(c)	68.5%	34.6%
Owner-Occupied Households ^(c)	68.5%	25.6%
Foreclosure Rate/1,000 ^(d)	11.6	39.7
Education		
Less Than a High School Diploma ^(c)	6%	43%
Bachelor's Degree or Higher ^(c)	43%	7%
Average Math Proficiency Score ^(e)	400.2	311.0
Average Language Arts Proficiency Score ^(e)	391.2	311.8
Life Expectancy in Years^(f)	83.1	73.2

(a) Urban Strategies Council with data from the Oakland Police Department, 2007-2009.

(b) Alameda County Public Health Department with data from the Alameda County Probation Department, 2005-2006.

(c) Geolytics Projections, 2009.

(d) Alameda County Public Health Department with data from HUD's Neighborhood Stabilization Program, ABAG's Projections 2007, and Urban Strategies Council, 2006-2009.

(e) Alameda County Public Health Department with data from Oakland Unified School District; school year 2008-2009.

(f) Calculations performed by the Alameda County Health Department from data provided by California Death Masterfile 2002-2008.

*Low Community Opportunity values are based on the average values for block groups that fall into the lowest 20% of the Community Opportunity Index. High Community Opportunity values are based on the average values for the highest 20%.

Life Expectancy and Community Opportunity

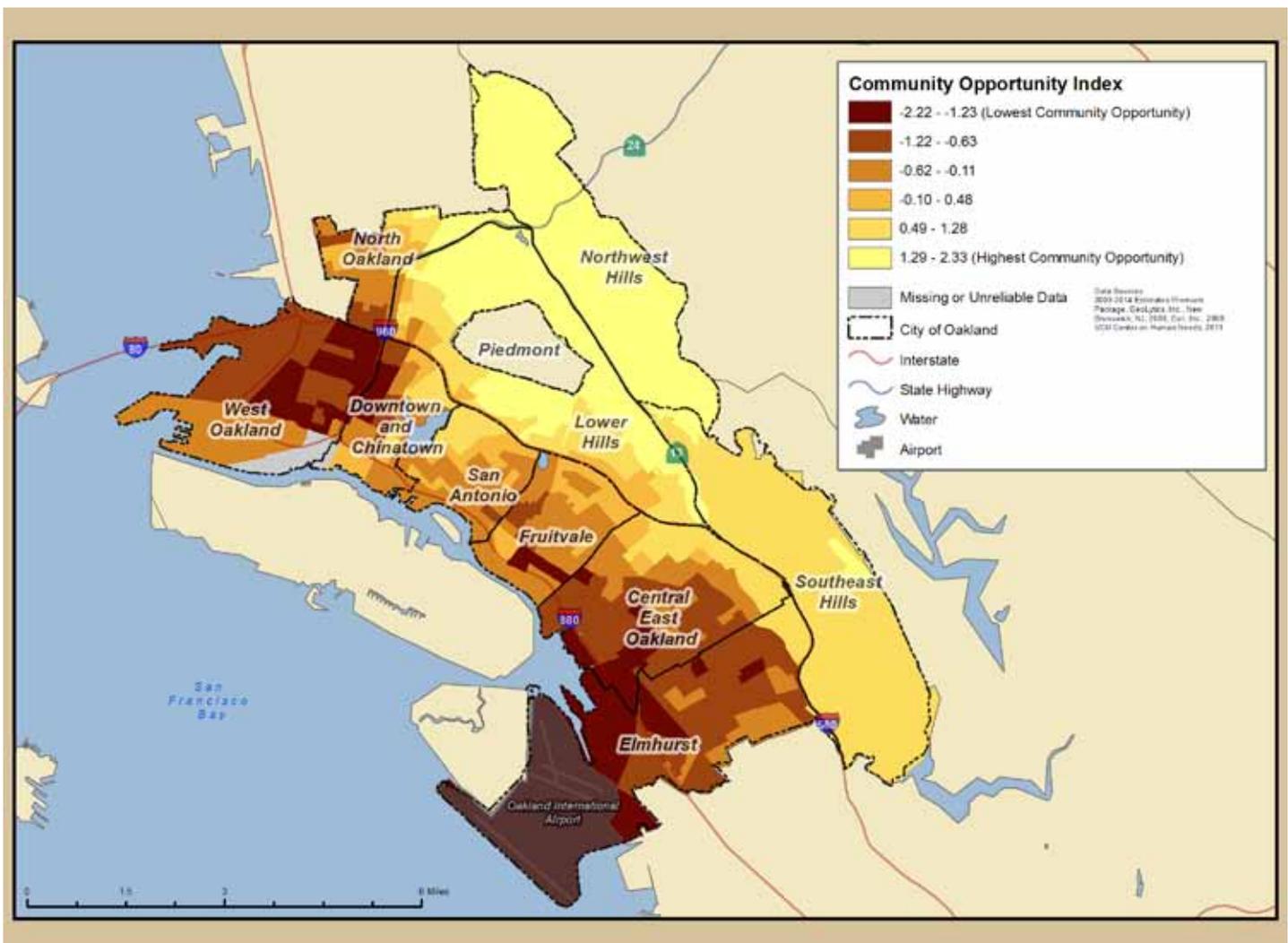
To sum up the association between neighborhood economic conditions, educational attainment, and crime, we developed a single "Community Opportunity Index" to estimate the comparative level of opportunity for health in Oakland neighborhoods. We statistically combined components of each of the risk measures described above to create the index for each block group (see Appendix B for details). The final index was calculated based on the following factors: percent of population above 150% of the federal poverty level, percent of population with at least a high school education, average language arts and mathematics proficiency scores, the violent crime rate, the property crime rate, percent of population currently on

probation, the foreclosure rate, the employment rate, percent of owner-occupied households, and the percent of households with an automobile. These factors are strongly interrelated and each has a significant association with life expectancy.

Table 6 compares neighborhood-level characteristics in high-versus low-risk communities, based on the highest and lowest quintiles of the Community Opportunity Index.

Map 16 illustrates the geographic distribution of community risk in Oakland. Areas with the highest levels of community risk include West Oakland, Downtown, Chinatown, Fruitvale, Central East Oakland, and Elmhurst.

Map 16: Community Opportunity Index by Block Group, Alameda County (2007–2010)



Note: The Community Opportunity Index is a composite index based upon the following indicators: percent employed, percent of owner-occupied houses, percent of households with an automobile, percent of population above 150% of the federal poverty level, foreclosure rate, percent of population with at least a high school education, average language arts and mathematics proficiency scores, violent crime rate, property crime rate, and percent of population on probation. Higher scores represent the highest levels of risk.

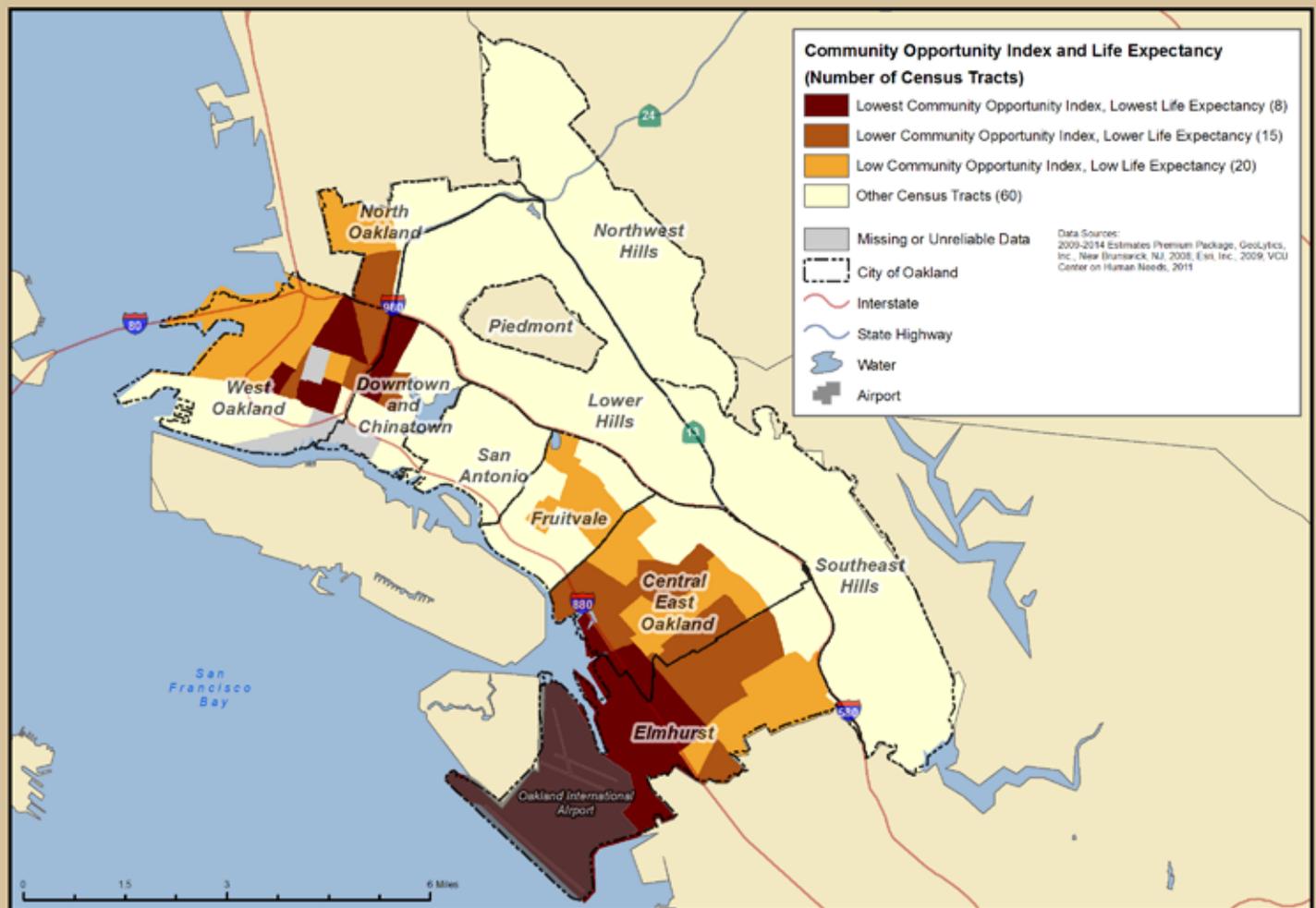
There is a strong geographic relationship in Oakland between community risk and life expectancy: census tracts with the highest level of community risk have lower average life expectancy. The Community Opportunity Index and life expectancy are geographically clustered in West Oakland, Elmhurst, and Central East Oakland (see Map 17).

The observed relationship between community opportunity and life expectancy does not provide evidence for a causal relationship. A variety of factors may affect life expectancy, including social, environmental, and behavioral factors—many of which are themselves associated with the indicators measured

by the Community Opportunity Index. To some degree, the observed association between our index and life expectancy may represent the influence of these confounding variables and not a causal role of the measured indicators themselves.

Furthermore, data on life expectancy were only available at the census tract level, and thus individual-level analyses of relationships between socioeconomic characteristics, crime, education, the built environment, and life expectancy were not possible. Nonetheless, our analyses showed that census tracts with higher community opportunity factors had significantly higher life expectancies.

Map 17: Co-occurrence of Community Risk and Low Life Expectancy by Census Tract, Oakland (2002–2010)



Note: Lowest Community Opportunity Index = -2.04 to -1.22; Lower Community Opportunity Index = -2.04 to -0.65; Low Community Opportunity Index = -2.04 to -0.13.

Lowest Life Expectancy = 67-72 yrs.; Lower Life Expectancy = 67-75 yrs.; Low Life Expectancy = 67-78 yrs.

III. Conclusions

The analyses presented here have shown that crime, economic conditions, education, and the built environment are strongly linked with life expectancy in Oakland at the neighborhood level. Together these factors explain more than half of the variability in life expectancy in Oakland.

Health disparities associated with economic opportunity, education, and the environment are complex, multifaceted relationships that cannot be reduced to a single explanation or addressed by a single policy solution. The literature and this analysis suggest, however, that interventions aimed at crime

prevention, community and economic development, and improvement in educational opportunities may be important public health strategies in Oakland, particularly in West Oakland, Central East Oakland, and Elmhurst. Thus, the Alameda County PLACE MATTERS Team, through a process of internal visioning and outreach to a range of community groups, has adopted a policy platform consisting of the following principles:

- Policies should be developed and implemented that support incarceration alternatives and promote the successful social, economic, and overall healthy transition of formerly incarcerated people into our

communities in order to reduce recidivism and promote justice.

- All residents, regardless of racial/ethnic status or place of residence, should be able to pay for basic needs (including housing, food, transportation, health care, and child care) and build wealth.
- Quality education is a human right, and all school-age youth in Oakland should have access to a quality, comprehensive education in an environment that is safe, healthy, socially supportive, academically stimulating, and competitive with other schools, and that prepares them to graduate, achieve their education/career dreams and goals, and be productive members of their communities.
- Housing is a human right, and an adequate supply of housing should be constructed and preserved in proportion to demand, and this housing should maintain the cultural, racial, and class diversity of the community. Further, there should be no uninhabitable conditions or overcrowding, no one should be homeless or displaced or spend more than 30% of his or her income on housing costs, no one should experience redlining or unfair lending practices, everyone should have equal opportunities to receive prime loans, and all people should have housing that is safe and habitable and supports good health.
- All residents should be able to easily access a world-class public transportation system that is clean, safe, affordable, and reliable. These services should be equitably distributed, with particular attention paid to transit-dependent communities, and they should be connected to a safe walking and biking infrastructure to reduce the dependence on automobiles. Communities and the environment should be protected from the negative impacts of the movement of goods.
- Neighborhoods should have clean air, soil, and water. All residents should have access to quality jobs, food, affordable housing and transit, open spaces, and other goods and services people need to be healthy. Communities should be violence-free and designed to promote social interaction and neighborhood identity. Communities should be free from a high concentration of businesses and industries that harm health, and risk factors must be reduced.

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