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Transportation

Low-income and minority populations have somewhat similar travel behaviors compared to the broader population. But there are still some notable differences. In addition, the needs of transportation-disadvantaged populations, such as youth, seniors and people with disabilities, vary substantially from the rest of the population, irrespective of income and race/ethnicity. This section describes the travel patterns of low-income and minority populations, with an emphasis on commute to work and neighborhood walkability. For additional details on travel behaviors and needs of seniors and people with disabilities, see the San Francisco Bay Area Coordinated Public Transit-Human Services Transportation Plan.¹

Walkability

There are three primary benefits to living in a walkable neighborhood. The first is safety. Research confirms that a built environment that is conducive to safe walking increases the likelihood that residents will walk or bicycle more often, at all times of the day.² As residents spend more time outside their homes, on streets or in neighborhood parks, they provide more “eyes on the street,” which has been shown to reduce criminal activity.³ Traffic collisions are also lower in walkable communities, as vehicles move slower and drivers are more mindful of pedestrians and bicyclists.⁴

The second benefit is improved health. For example, the average resident of a walkable neighborhood weighs 6 to 10 pounds less than someone who lives in a sprawling neighborhood.⁵ Multiple national and international studies confirm that increased physical activity through moderate exercise such as walking can reduce the risk of cardiovascular disease, type 2 diabetes and metabolic syndrome, as well as some cancers in children and adults. Regular physical activity also improves mental health and reduces morbidity and mortality due to chronic diseases.⁶ Lastly, a lower reliance on the automobile for mobility reduces emissions from cars and light trucks, which improves air quality.

The third benefit of living in a walkable neighborhood is better access to amenities and services. According to WalkScore,⁷ walkable neighborhoods generally have a main street with local businesses; high-quality public transit; parks and public places to gather and play; schools and workplaces; and streets that accommodate pedestrians, bicyclists and transit. The physical proximity to a diverse range of amenities and a built environment that promotes walking and bicycling together contribute to the residents’ greater access to these daily goods and services.⁸

¹ The full report can be downloaded here: http://mtc.ca.gov/sites/default/files/Coord_Plan_Update.pdf.

² Centers for Disease Control and Prevention. "Step It Up! The Surgeon General’s Call to Action to Promote Walking and Walkable Communities." <https://www.cdc.gov/physicalactivity/walking/call-to-action/pdf/partnerguid.pdf>.

³ In her 1961 book *The Death and Life of Great American Cities*, Jacobs proposed the “eyes on the street” theory. Jacobs argues that increased street traffic, day and night, not only help communities flourish socially and economically, but also acts as self-policing, which deters criminal and anti-social behavior. Jacob’s theory holds that populated areas are less likely to have criminal activity if the criminal believes there is a greater likelihood of him/her being seen or caught by others.

⁴ US Department of Transportation, Federal Highway Administration. January 2015. "A Resident’s Guide for Creating Safer Communities for Walking and Biking." FHWA-SA-14-099.

http://safety.fhwa.dot.gov/ped_bike/ped_cmnty/ped_walkguide/residents_guide2014_final.pdf.

⁵ "Communities." Natural Resources Defense Council. <https://www.nrdc.org/issues/communities>.

⁶ "Physical Activity and Health." Centers for Disease Control and Prevention. <https://www.cdc.gov/physicalactivity/basics/health/>.

⁷ WalkScore is a private company that provides walkability services and apartment search tools through a website and mobile applications. Its flagship product is a large-scale, public access walkability index that assigns a numerical walkability score to any address in the United States, Canada, and Australia. <https://www.walkscore.com/>.

⁸ Accessibility is often expressed as a measure of people’s ability to reach destinations within a certain period of time by a certain travel mode. It measures both whether the means to access destinations exists (such as a road, highway, or transit route) as well as the number of destinations reachable within a certain travel time from trip’s origin. Thus, good accessibility results from having both a large number of destinations within a reasonable distance as well as the means available to get to them.

Secondary benefits of walkable neighborhoods include reduced isolation and higher social capital,⁹ which are critical for disadvantaged communities such as seniors, people with disabilities and low-income residents.¹⁰

In the Bay Area, pre-1950 neighborhoods, which have connected street grids and small blocks, are generally more walkable than newer, suburban developments (see Map 41). The six decades following 1950 were dominated by conventional suburban development. Cities and suburbs built in this era are largely characterized by subdivisions, shopping centers, office parks and automobile-oriented thoroughfares. The average WalkScore of traditional cities in the US is 78—nearly double that of more sprawling cities.¹¹

MTC uses a similar methodology to calculate a walk score for each traffic analysis zone (TAZ),¹² which is then ranked and grouped into eight categories, from less walkable (a score below 2) to more walkable (a score of 15 or higher). Not surprisingly, the older neighborhoods in San Francisco, Berkeley, North Oakland, Santa Rosa, Redwood City, Palo Alto and San Jose have a high walk score, of 15 or higher. In comparison, the average walk score for the entire region is 3.5.

Within communities of concern (CoCs), the average walk score is higher than the regional average, at 4.9. Within Transit-Priority Areas (TPAs), the average walk score is 5.6, and within Priority Development Areas (PDAs), it is 6.4. The average score for CoCs is likely skewed by the relatively high scores in central San Francisco, Berkeley and Oakland, where there is a high concentration of transportation amenities, businesses and social services. A visual analysis of Map 41 shows that most CoCs lack walkable destinations, especially in suburban locations.

The implications of these trends must be viewed in the context of significant public investments in pedestrian and bicycle facilities, transit capital and operations, and infrastructure to support infill development. As public investments help improve these neighborhoods, local jurisdictions and regional agencies must ensure that the benefits accrue equitably to transportation-disadvantaged populations such as seniors, people with disabilities and low-income populations.

Environment

As described in Chapter 1, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, was enacted in February, 1994 to ensure that minority and low-income populations, including tribal populations, do not suffer disproportionately high and adverse human health or environmental effects due to any federal program, policy or activity.

In the United States, low-income people of color experience higher cancer rates,¹³ asthma rates¹⁴

⁹ “Social capital is a measure of an individual’s or group’s networks, personal connections, and involvement. Like economic and human capital, social capital is considered to have important values to both individuals and communities” -Rogers, Shannon H. et al. “Examining Walkability and Social Capital as Indicators of Quality of Life at the Municipal and Neighborhood Scales.” *Applied Research in Quality of Life* 6, No. 2 (2011): 201–213.

¹⁰ Ibid.

¹¹ Steuteville, Robert. “Traditional cities are having a big decade.” *Public Square: A CNU Journal*, December 5, 2016. <https://www.cnu.org/publicsquare/2016/12/05/traditional-cities-are-having-big-decade>.

¹² The methodology uses the following five categories of businesses: one, religious and educational institutions and libraries; two, medical facilities; three, parks and recreation facilities; four, retail, dining and entertainment uses; and five, other services. Each intersection in the region is assigned a number that reflects the number of businesses that are within one-mile, along the road network. Businesses within a half-mile are weighted higher. The average of score of all the intersections within each traffic analysis zone is used to categorize the area as less walkable or more walkable (see Map 41 for categories)

¹³ Ward, Elizabeth et al. “Cancer Disparities by Race/Ethnicity and Socioeconomic Status.” *CA: A Cancer Journal for Clinicians* 54, no. 2 (2004): 78-93. (“For all cancer sites combined, residents of poorer counties [those with greater than or equal to 20 percent of the population below the poverty line] have 13 percent higher death rates from cancer in men and 3 percent higher rates in women compared with more affluent counties [less than 10 percent below the poverty line]. Even when census tract

and mortality rates¹⁵ and overall poorer health outcomes compared to affluent and White populations.¹⁶ The presence of higher concentrations of environmental pollution sources in these communities are the primary causes of these health disparities.¹⁷ Exposure to contaminants and pollutants can occur in the home due to the presence of lead and asbestos, as well as in the neighborhood due to proximity to major roadways, contaminated sites and toxic releases from industry.

This section looks at three types of contaminants and pollutants that affect human health: toxic sites, fine particulate matter and diesel particulate matter. Data used in this section is reported by the California Environmental Protection Agency (EPA), through the statewide CalEnviroScreen tool. See feature on the statewide tool on the next page.

Contaminated Sites

Land that has suffered environmental degradation due to the presence of hazardous substances poses significant health risks.¹⁸ Exposure to contaminants is the primary concern for such “brownfields,” which are often located in active or former industrial and military zones. Hazardous substances from these sites can also migrate off-site and impact surrounding communities through volatilization, groundwater plume migration or windblown dust. Studies have found levels of organochlorine pesticides in blood¹⁹ and toxic metals in house dust²⁰ that were correlated with residents’ proximity to contaminated sites.

Proximity to Superfund sites²¹ in New York State is known to have increased risk of low birth weight in male children.²² Another study in New York City found an association between prevalence of liver disease and the number of Superfund sites per 100 square miles.²³ Research also indicates that the relationship between pollutant exposure, stress and health outcomes can vary based on the race and ethnicity of a population. Multiple studies provide evidence that social stressors play a role in determining vulnerability to the health impacts of environmental exposures.

A demographic study of socioeconomic factors in communities in Florida found that census tracts with Superfund sites had significantly higher proportions of African Americans, Latinos and people employed

poverty rate is accounted for, however, African American, American Indian/Alaskan Native, and Asian/ Pacific Islander men and African American and American Indian/Alaskan Native women have lower five-year survival than non-Hispanic Whites.”)

¹⁴ Gray, Lolita D. and Glenn S. Johnson. “A Study of Asthma as a Socio-Economic Health Disparity Among Minority Communities.” *Race, Gender & Class* 22, no. 1-2 (2015): 337-357.

¹⁵ McLaughlin, Diane K. and C. Shannon Stokes. “Income Inequality and Mortality in US Counties: Does Minority Racial Concentration Matter?” *American Journal of Public Health* 92, no. 1 (2002): 99-104. (“Higher income inequality at the county level was significantly associated with higher total mortality. Higher minority racial concentration also was significantly related to higher mortality and interacted with income inequality.”)

¹⁶ See, e.g., Centers for Disease Control and Prevention. “CDC Health Disparities and Inequalities Report — United States, 2013.” *Morbidity and Mortality Weekly Report* 62, suppl no. 3 (2013): 1-187. https://www.cdc.gov/mmwr/preview/ind2013_su.html#HealthDisparities2013.

¹⁷ Taylor, Dorceta E. *Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility*. New York: NYU Press, 2014.

¹⁸ These sites also have the potential to degrade nearby wildlife habitats, resulting in potential ecological impacts as well as threats to human health.

¹⁹ Gaffney, S.H. et al. “Influence of geographic location in modeling blood pesticide levels in a community surrounding a U.S. Environmental protection agency superfund site.” *Environmental Health Perspectives* 113, no. 12 (2005): 1712-6.

²⁰ Zota, A.R. et al. “Metal sources and exposures in the homes of young children living near a mining-impacted Superfund site.” *Journal of Exposure Science and Environmental Epidemiology* 21, no. 5 (2011): 495-505.

²¹ US EPA’s Superfund Program supports cleanup of sites that are heavily contaminated and pose a serious risk to human and environmental health.

²² Baibergenova, Akerke et al. “Low birth weight and residential proximity to PCB-contaminated waste sites.” *Environmental Health Perspectives* 111, no. 10 (2003): 1352-7.

²³ Ala, Aftab et al. “Increased prevalence of primary biliary cirrhosis near Superfund toxic waste sites.” *Hepatology* 43, no. 3 (2006): 525-31.

in “blue collar” occupations.²⁴ Other studies have shown that maternal exposure to particulate pollution results in a greater reduction in infant birth weight among African American mothers than White mothers.²⁵ A study of the effect of blood lead level on blood pressure found that there are significant racial and ethnic disparities, with the strongest association occurring in African Americans with symptoms of depression.²⁶

A study of traffic exposure and spontaneous abortion also found a greater effect for African American women than other racial and ethnic groups.²⁷ Differences have also been observed in the effect of PM 2.5 exposure on emergency room visits for asthma among patients of different races. The effect was found to be significant and greater in African American populations compared to Whites.²⁸ Among children, a study on the effects of nitrogen dioxide (NO₂) on children without health insurance in Phoenix found that Hispanic/Latino children had twice the risk of hospitalization for asthma from NO₂ exposure as White children. African American children showed about twice the risk of asthma hospitalization from NO₂ exposure as Hispanic/Latino children, regardless of insurance status.²⁹

CalEnviroScreen – California Communities Environmental Health Screening Tool

CalEnviroScreen is a screening tool that quantifies the adverse impact of pollution on communities, while also accounting for potential vulnerabilities such as poverty. It ranks census tracts in California based on a composite index that includes indicators for potential exposure to pollutants, adverse environmental conditions, socioeconomic factors and prevalence of certain health conditions. Data used in the tool comes from national and state sources.

The Office of Environmental Health Hazard Assessment (OEHHA) developed CalEnviroScreen as part of CalEPA’s environmental justice program. The tool is being used to identify communities that face the highest risks from pollution and socioeconomic disadvantage. CalEPA uses the information to prioritize its work in the most impacted communities.

CalEPA uses the tool to aid in administering environmental justice grants, promote compliance with environmental laws, prioritize site-cleanup activities and identify opportunities for sustainable economic development. The agency also uses the tool to identify disadvantaged communities pursuant to Health and Safety Code Section 39711[R W1] (SB 535 of 2012), the Greenhouse Gas Reduction Fund Investment Plan and Communities Revitalization Act. Other organizations, including community groups, regional planning agencies and local governments, may also use the tool. For more information, see: <http://oehha.ca.gov/calenviroscreen>.

²⁴ Kearney Greg and Gebre-Egziabher Kiro. “A spatial evaluation of socio demographics surrounding National Priorities List sites in Florida using a distance-based approach.” *International Journal of Health Geographics* 8, no. 33 (2009): <https://ij-healthgeographics.biomedcentral.com/articles/10.1186/1476-072X-8-33>.

²⁵ Bell, Michelle L., Keita Ebusu, and Kathleen Belanger. “Ambient air pollution and low birth weight in Connecticut and Massachusetts.” *Environmental Health Perspectives* 115, no. 7 (2007): 1118-24.

²⁶ Hicken, Margaret T. “Black-white blood pressure disparities: depressive symptoms and differential vulnerability to blood lead.” *Environmental Health Perspectives* 121, no. 2 (2013): 205-9.

²⁷ Green, Rochelle S. et al. “Residential exposure to traffic and spontaneous abortion.” *Environmental Health Perspectives* 117, no. 12 (2009): 1939-1944.

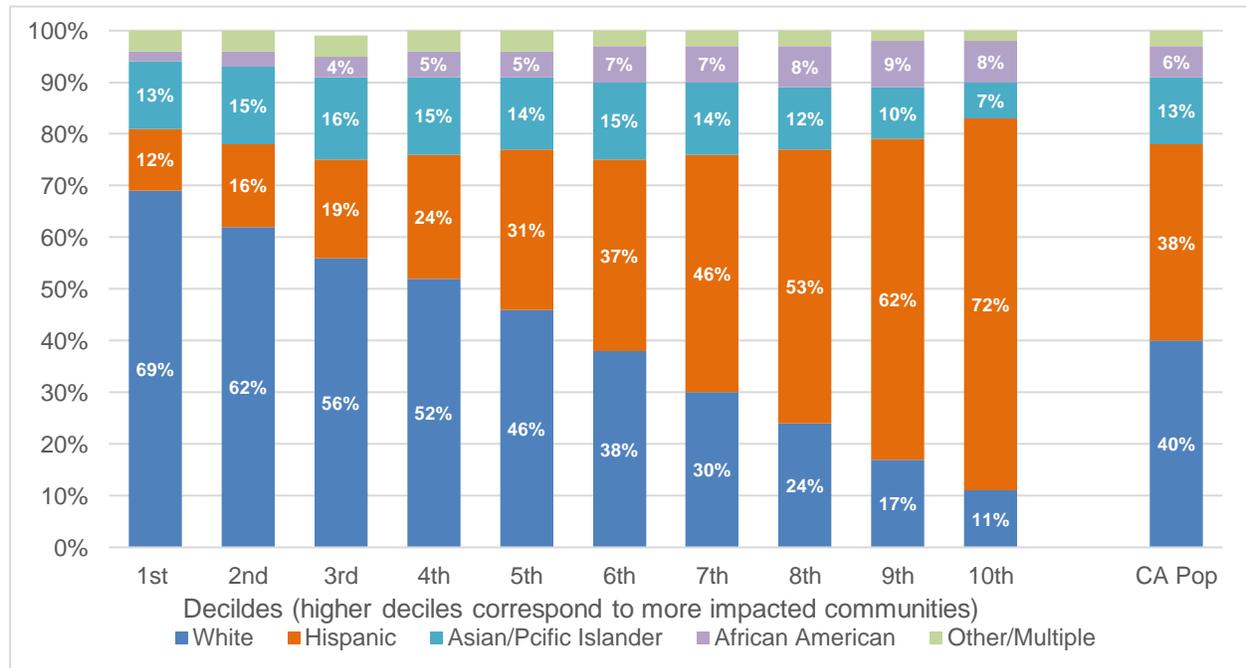
²⁸ Glad, Jo Ann et al. “The relationship of ambient ozone and PM_{2.5} levels and asthma emergency department visits: Possible influence of gender and ethnicity.” *Archives of Environmental & Occupational Health* 67, no. 2 (2012): 103-108.

²⁹ Grineski, Sara E. et al. “Children’s asthma hospitalizations and relative risk due to nitrogen dioxide (NO₂): Effect modification by race, ethnicity, and insurance status.” *Environmental Research* 110, no. 2 (2010): 178-88.

In Native American children, rates of being overweight and obese are higher than among nonnative populations, potentially due in part to psychosocial stressors, lack of access to healthful food and exposure to environmental obesogens.³⁰

Chart 3-Y below shows the breakdown of the share of population by race/ethnicity for the Bay Area as well as the state. The data for the region is further divided into ten categories, with the tenth decile representing populations that are the most burdened from environmental pollution and risk factors. Similarly, the first decile represents the population that is the least burdened by pollution and risk factors.

Chart 3-Y: Racial/Ethnic Makeup and CalEnviroScreen Deciles, Bay Area, 2015



Source: Analysis of CalEnviroScreen 3.0 Scores and Race/Ethnicity, California EPA

EPA’s data for the Bay Area confirms the findings of national studies – that minority populations have higher exposure to pollutants and contaminants compared to the White population, exacerbating the income inequality and multi-generational disadvantage that these subgroups face. The findings are most concerning for African American/Black and Hispanic populations.

African Americans/Blacks make up a little more than 6 percent of the regional population, but represent a higher share in areas that are more disadvantaged (from the sixth to tenth decile). Hispanics are a little less than 24 percent of the regional population, but represent a majority in areas that are most disadvantaged (from the eighth to tenth decile). In the tenth decile, Hispanics represent almost three-quarters of the population.

The reverse is also true for both population subgroups. Both African Americans/Blacks and Hispanics are under-represented in areas that are the least disadvantaged. Both Whites and Asians fare much better in comparison. Whites are the majority in the least disadvantaged areas (the first to fourth decile) and a small minority in the most disadvantaged areas, highlighting the environmental justice challenges baked into Bay Area communities.

³⁰ Schell Lawrence M. and Mia V. Gallo. “Overweight and obesity among North American Indian infants, children, and youth.” *American Journal of Human Biology* 24, no. 3 (2012): 302-13.

EPA estimates that in the Bay Area more than a fifth (22 percent) of the residents of a low-income census tract are exposed to contaminated sites (i.e., the census tracts are above the 80th percentile of the most impacted areas statewide). Residents in very low-income census tracts are a little more impacted, with almost a quarter (24 percent) exposed to contaminated sites.

Particulates

Exposure to particular matter and toxic contaminants can result in long-term negative health outcomes as well as environmental degradation, which compounds the effects on human health. People who experience higher exposures due to physical proximity or extended exposure face higher risks. Children, the elderly, pregnant women and those who are already sick are especially vulnerable.

PM 2.5, or fine particulate matter, refers to particles that have a diameter of 2.5 micrometers or less. Particles of this size can have adverse effects on the heart and lungs, including lung irritation, exacerbation of existing respiratory disease, and cardiovascular effects. These particles are emitted from many sources, including cars and trucks, industrial processes, wood burning, and other activities involving combustion. The smaller the particle size, the more deeply the particles can penetrate into the lungs. Some fine particles have also been shown to enter the bloodstream. Children, the elderly, and persons suffering from cardiopulmonary disease, asthma, and chronic illness are most susceptible to the effects of PM exposure.³¹

EPA data confirms that no census tract in the Bay Area suffers from high exposure to PM 2.5.³²

Diesel particulate matter (diesel PM) is emitted from both on-road and off-road sources. Major sources of diesel PM include trucks, buses, cars, ships and locomotive engines. Diesel PM is therefore concentrated near ports, rail yards and freeways, where many such sources exist. Exposure to diesel PM has been shown to have numerous adverse health effects, including irritation to eyes, throat and nose; cardiovascular and pulmonary disease; and lung cancer.³³

EPA estimates that in the Bay Area almost half (47 percent) of the residents of a low-income census tract (i.e., where 30 percent or more of the residents are low-income) are exposed to high levels of diesel PM (i.e., the census tracts are above the 80th percentile of the most impacted areas statewide). Residents in very low-income census tracts (i.e., where the poverty rate is 50 percent or more) are even more

Community Air Risk Evaluation (CARE) Program

In 2004, the Bay Area Air Quality Management District (Air District) initiated the CARE program to intensify efforts to reduce air pollution in areas with the greatest air pollution burdens and most vulnerable populations. The goals of the CARE program parallel recent California and federal legislation that require their respective environmental agencies to address the disproportionate adverse health effects pollution can have on minority and low-income populations.

Through the CARE program, the Air District has worked to identify communities most adversely impacted by air pollution. Once a community is identified as impacted, the Air District focuses grants, enforcement programs, local scale studies and other activities to help reduce pollution exposures within the community. In 2009, the CARE program identified areas as impacted by air pollution if they had relatively high emissions of toxic air contaminants, relatively high exposures of youth and seniors to toxic air contaminants, and relatively high levels of poverty.

For more information, see:
<http://baaqmd.gov/>.

³¹ US EPA. December 2012. "The National Ambient Air Quality Standards for Particle Pollution: Particle Pollution and Health." <http://www.epa.gov/pm/2012/decfshealth.pdf>.

³² CalEnviroScreen, California EPA; see next page for more information on the state program.

³³ Ibid.

impacted, with almost two thirds (64 percent) exposed to high levels of diesel PM.

Map 4g shows the spatial distribution of major truck routes in the region and the location of CoCs. A visual analysis of the map shows that almost all CoCs in the region are exposed to some truck traffic, and thereby to emissions such as diesel PM. The region's ongoing efforts to collaborate with state and regional air quality regulators, the goods movement industry and community organizations to address these issues resulted in the development of the Bay Area Freight Emission Reduction Action Plan. Funding to implement this plan may be available from federal, state, regional, and local sources to support a wide range of initiatives including technology development and demonstration, purchase incentives and market development programs and infrastructure deployment.

Economy

This section summarizes two regional trends that impact not only low-income communities but also the economic competitiveness of the entire region. One of these trends is the growing gulf between residents who have access to opportunities such as jobs, transit, parks, schools and grocery stores and those that have little, if any, access to these amenities near their neighborhoods. The other trend is the slow but consistent decline in the number of middle-wage jobs in the Bay Area, even as wages have been stagnant or declining for low-wage workers. High cost of living and a lack of job opportunities have pushed many families looking for affordable housing into adjacent regions such as the Central Valley, or even across state lines. This section briefly describes both trends for Bay Area residents and families.

Access to Opportunity

A recent study conducted at Harvard University³⁴ found that social and economic mobility for low-income residents depends largely on the quality of their neighborhoods. Residents of a neighborhood that provides good schools, safe streets, healthy food options, quality parks and community facilities, safe housing and multiple transportation options are more likely to do well on a broad range of social, economic and health indicators. Conversely, the lack of access to these amenities is likely to hinder mobility and opportunity, especially among children.

According to the Harvard University study, a low-income child (at age eight on average) who grew up in public housing and in a high-poverty neighborhood would earn up to \$302,000 less over his or her lifetime³⁵ compared to a low-income child who lives in a low-poverty neighborhood. The study based its findings on data from 741 "community zones"³⁶ across the country. The authors of the study conclude that any effort to integrate low-income families with children into mixed-income communities is likely to reduce the persistence of inter-generational poverty.

Another study conducted at Stanford University³⁷ found that differences in life expectancy among the poor are less associated with a lack of access to health care or levels of income inequality, and more dependent on whether the poor lived in affluent cities with highly educated populations and high levels of local government expenditures such as New York and San Francisco. Both studies use "big data" to test the hypothesis that place matters – i.e., where you grow up affects your health outcomes as well as the persistence of inter-generational poverty.

³⁴ The Health Inequality Project (<https://healthinequality.org/>); Chetty, R., Stanford, Principal Investigator, Corresponding Author; Cutler, D., Harvard, Principal Investigator; Stepner, M., MIT, Senior Researcher.

³⁵ This is equivalent to a gain of \$99,000 per child in present value at age 8, discounting future earnings at a 3 percent interest rate.

³⁶ The study defines community zones as geographical aggregations of counties that are similar to metro areas but which also cover rural areas.

³⁷ The Health Inequality Project (<https://healthinequality.org/>); Chetty, R., Stanford, Principal Investigator, Corresponding Author; Cutler, D., Harvard, Principal Investigator; Stepner, M., MIT, Senior Researcher.

According to the Harvard University study, neighborhood characteristics that are strongly correlated with low inter-generational mobility include: a high share of minority population (the study cites the share of African Americans³⁸), which is also a measure of segregation;³⁹ a high rate of poverty and income inequality⁴⁰ (measured as the Gini coefficient); a low-performing K-12 school system⁴¹ (measured as lower test scores, higher dropout rates and large class sizes); low social capital indices (measured as the strength of social networks and community involvement⁴²); and a high share of single-parent families (measures of family structure are the strongest predictors of upward mobility).⁴³

Another study conducted by the Association of Bay Area Governments⁴⁴ (ABAG) found that access to High-Opportunity Areas (HOAs) in the Bay Area is mostly a function of housing cost, which may be unaffordable for all residents by national standards, but is especially unaffordable to lower-income households. According to the study, Whites and Asians are more likely to live in census tracts with higher access to opportunity than the population overall, whereas Hispanic and Black residents are more likely to live in census tracts with lower access to opportunity. Further, poor Hispanic and Black residents are more likely to live in areas of low or very low access to opportunity compared to poor White and Asian residents. See feature on HOAs on page 12.

In 2014, for example, of the 1.84 million low-income residents in the Bay Area, just 8 percent lived in an HOA⁴⁵ (which has high-performing schools, low crime rates and better access to jobs). Similarly, just 12 percent of the 4.3 million people with a minority status lived in an HOA. The share for the African American/Black population was even lower, at 5 percent. In comparison, of the 3 million Whites in the region, 21 percent lived in an HOA.⁴⁶

Fair housing versus affordable housing

While interrelated, “fair housing” and “affordable housing” are distinct concepts in law and policy. Fair housing law bars discrimination against “protected classes” in housing transactions or the provision of subsidized housing.

Fair housing issues in high-income or high-opportunity areas often result from a lack of affordable housing, and in low-income or low-opportunity areas due to an over-concentration of affordable housing.

In areas where there is low access to opportunity or where the housing quality is poor, targeted public investments may improve the built environment and the value of the existing housing stock. In areas where there is high access to opportunity or where housing is expensive, affordable housing units add diversity to the community and allow access to opportunities to low income families.

³⁸ Areas with larger black populations tended to be more segregated by income and race, which could have an adverse effect on both white and black low-income individuals.

³⁹ The study clarifies that racial shares matter at a community rather than individual level.

⁴⁰ The study confirms that factors that erode the middle class hamper inter-generational mobility more than the factors that lead to income growth for the wealthy.

⁴¹ Areas with high taxes, which are predominantly used to finance public schools, have higher rates of mobility.

⁴² Areas with high upward mobility tend to have greater participation in local civic organizations.

⁴³ As with race, parents' marital status does not matter purely through its effects at the individual level. Children of married parents also have higher rates of upward mobility if they live in communities with fewer single parents.

⁴⁴ The Fair Housing and Equity Assessment (FHEA) of the San Francisco Bay Area – Enhancing Regional Economic Opportunity, 2014: http://www.abag.ca.gov/files/1_FHEAFinalReport_3.13.15.pdf.

⁴⁵ Over 1.13 million people in the Bay Area lived in HOAs in 2014, of which 54 percent were White, 2 percent Black, and 12 percent low-income. While the share of minority populations in HOAs has risen significantly between 2000 and 2014, from 30 percent to 46 percent, 88 percent of people of color still live outside HOAs. (2010-2014 American Community Survey 5-year average.)

⁴⁶ In 2014, low-income people were 25 percent of the total population, minorities 59 percent, African Americans or Blacks 6 percent and Whites 41 percent. The total number of African American or Black population in the Bay Area was 474,069. (2010-2014 American Community Survey 5-year average.)

The ABAG study also concludes that segregation persists in the region, particularly for Black and Hispanic residents. Historically, this segregation was most prominent in city centers, where many low-income people of color were concentrated. As more low-income households continue to disperse geographically in the region, the pattern of segregation is being replicated in the suburbs, where these communities face lower access to opportunity. As an example, Black residents continue to leave historically Black neighborhoods in San Francisco, Oakland and Richmond, where they had relatively good access to transit and social services, to suburban communities such as East Contra Costa County, where transit as well as social services are relatively scarce.⁴⁷

While the Fair Housing Act, part of Title VIII of the Civil Rights Act of 1968, was adopted by Congress to address school and neighborhood segregation, and increase access to opportunity for low-income people of color, the lack of funding and enforcement of violations at the federal level has undermined the underlying goal of equal protection.⁴⁸

Lastly, 51 percent of low-income residents lived in a PDA in 2014, which will receive a majority of the region's future growth and investments, and 60 percent lived in a TPA, which has high-quality transit. Similarly, 46 percent of the minority population lived in a PDA and 59 percent lived in a TPA. By ensuring affordable and inclusive housing opportunities for low-income and minority populations in PDAs and TPAs, the region can mitigate many of the adverse effects of segregation that have historically disproportionately impacted these population groups.

Poverty in the Suburbs

In 1999, large U.S. cities and their suburbs had roughly equal numbers of poor residents. But by 2008, the number of suburban poor exceeded the poor in central cities by 1.5 million.⁴⁹ Although poverty rates remained higher in central cities than in suburbs (18.2 percent versus 9.5 percent in 2008), they continue to rise at a quicker pace in the suburbs.⁵⁰ In part, this is due to sustained population growth outside cities, such that a majority of all Americans now reside in the suburbs. The two economic recessions that bracketed the past decade, however, have also contributed to the changing mix of opportunity in urban and suburban areas.

More than in previous recessions, suburban communities have experienced rates of unemployment comparable to those in cities,⁵¹ and urban and suburban poor share many similarities in terms of their household structure and educational attainment.⁵² Among both groups, a large majority are in working families and have a high school diploma or less, and nearly half live in deep poverty, with incomes less than half the federal poverty line (around \$24,250 for a family of four in 2015).

⁴⁷ Contra Costa Health Services. May 2013. "Health Indicators and Environmental Factors Related to Obesity for Antioch, Bay Point and Pittsburg." <http://cchealth.org/prevention/pdf/Health-Indicators-and-Environmental-Factors-Related-to-Obesity-2013.pdf>.

⁴⁸ For more details, see: <https://www.justice.gov/crt/fair-housing-act-2>.

⁴⁹ Kneebone, Elizabeth, and Alan Berube. *Confronting Suburban Poverty in America*. Washington: Brookings Institution Press, 2013.

⁵⁰ Kneebone, Elizabeth and Emily Garr. January 2010. "The Suburbanization of Poverty: Trends in Metropolitan America, 2000 to 2008" Metropolitan Opportunity Series. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/06/0120_poverty_paper.pdf.

⁵¹ Roth, Benjamin and Scott W. Allard. October 2010. "Strained Suburbs: The Social Service Challenges of Rising Suburban Poverty." Metropolitan Opportunity Series. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/06/1007_suburban_poverty_allard_roth.pdf.

⁵² Berube, Alan et al. 2010. "The State of Metropolitan America: On the Front Lines of Demographic Transformation" Metropolitan Policy Program, Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/07/metro_america_report1.pdf.

A study conducted by the Federal Reserve Bank of San Francisco⁵³ in 2012 mapped the extent of this transformation in the Bay Area. The study concluded that several push and pull factors contributed to the trend of rising suburban poverty in the region. The housing boom of the mid-2000s offered affordable homeownership in outer suburbs, while rising home prices in the urban core encouraged homeowners to sell their houses for larger homes farther from the central city. When the housing bubble burst in 2007, these suburban areas saw home values plummet furthest. The frenzy of housing construction had largely supported many of these local economies, which collapsed when demand dried up, leading to further job losses and increased poverty.

Table 3-15: Population in Households Earning Below 100 percent FPL, Bay Area, 2000-2012

Bay Area	2000		2012		Change ⁵⁴ 2000-2012	
	Poor Tracts ⁵⁵	Poor ⁵⁶ Population	Poor Tracts	Poor Population	Poor Tracts	Poor Population
Metropolitan Areas ⁵⁷	108	122,534	182	212,234	69%	73%
Cities	86	94,500	123	136,193	43%	44%
Suburbs	22	28,034	59	76,041	168%	171%

Source: Brookings Institution, using tabulation of 2000 Decennial Census and 2012 American Community Survey 1-year data

In the Bay Area, the number of census tracts with 20 percent or more people living in poverty (earning below 100 percent federal poverty level) jumped by 168 percent between 2000 and 2012, and the number of poor who live in these tracts by 171 percent. This shift was driven in large part by rapid population growth, rapid increase in housing costs in urban centers, new immigration patterns, the continued outward shift of employment, and the growing prevalence of low-wage jobs. The recession led to millions of lost jobs in manufacturing and construction, which affected suburbs more than other places.⁵⁸

Even after accounting for the high cost of living in the Bay Area, by using the “below 200 percent of the federal poverty level” definition for identifying those living in poverty, the share of poor who now live in Inland Coastal and Delta cities increased dramatically between 2000 and 2015.

The Federal Reserve study found that, between 2000 to 2009: household poverty rates rose across the region, in both urban and suburban areas; the population in poverty rose faster in suburban census tracts (16 percent in the suburbs, compared to 7 percent in urban areas); and the share of the poor living in suburban tracts increased across all racial groups, but the change was the highest among African Americans/Blacks (with a 7 percent increase). On the other hand, poverty rates did not increase among Asians and foreign-born immigrants living in the suburbs.

⁵³ Soursourian, Matthew. January 2012. "Community Development Research Brief: Suburbanization of Poverty in the Bay Area." Federal Reserve Bank of San Francisco. <http://www.frbsf.org/community-development/files/Suburbanization-of-Poverty-in-the-Bay-Area2.pdf>.

⁵⁴ Significant at the 90 percent confidence level per: Kneebone, Elizabeth. July 2014. "The Growth and Spread of Concentrated Poverty, 2000 to 2008-2012." Metropolitan Opportunity Series. Brookings Institution. <https://www.brookings.edu/interactives/the-growth-and-spread-of-concentrated-poverty-2000-to-2008-2012/>.

⁵⁵ Tracts with 20 percent of more concentration of poor; excludes both tracts with small populations and those with more than 50 percent of residents enrolled in college or graduate school.

⁵⁶ Population in households earning less than 100 percent of federal poverty level in 2012.

⁵⁷ Defined as the San Francisco-Oakland-Hayward and San Jose-Sunnyvale-Santa Clara metropolitan areas.

⁵⁸ Kneebone, Elizabeth, and Alan Berube. *Confronting Suburban Poverty in America*. Washington: Brookings Institution Press, 2013.

What are high-opportunity areas?

For an individual or household, opportunity can be broadly defined as having access to quality education, well-paying jobs, community amenities, a safe home and a healthy living environment. High Opportunity Areas (HOAs) therefore offer their residents access to services and amenities such as good schools, safe and walkable neighborhoods, multiple transportation options, quality parks and open space, grocery stores and fresh food markets, and better public services such as police, fire and street cleaning, among others.

As a result, high-opportunity areas – or “desirable neighborhoods” – typically have high housing costs, both for renters and homeowners. There are not enough high-opportunity areas in any community or region to meet high demand, and housing supply in these neighborhoods is often restricted through local regulations. Housing options in HOAs are therefore severely limited for low-income households. Various studies have attempted to measure the level of opportunity in a neighborhood to understand whether different populations have equal access to opportunity or not. For the purpose of this report, high opportunity areas are defined using the Kirwan Institute’s* composite index of opportunity, which includes the following indicators:

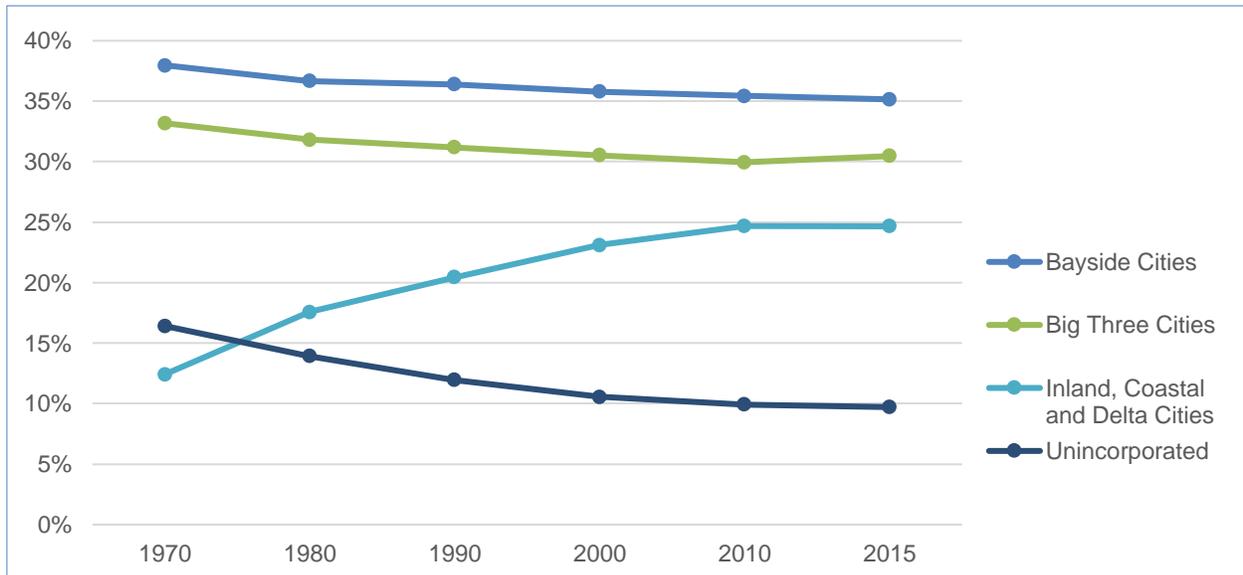
- **Education** – reading and Math proficiency; class size; share of students on free or reduced lunch; and adult education attainment.
- **Economics and Mobility** – proximity to jobs (within 5 miles); share of residents on public assistance; unemployment rate; commute time; and transit access.
- **Neighborhood and Housing Quality** – median home value, residential vacancy rate, neighborhood poverty rate; median gross rent; crime risk index; proximity to waste sites and toxic releases; and proximity to parks and open space.

Based on this definition, MTC and ABAG have identified 339 census tracts as low- and very-low-opportunity and 430 tracts as high- and very-high-opportunity areas in the region (see Map 4m). In the Bay Area, large parts of San Francisco, San Mateo and west Santa Clara counties, along with inland Contra Costa and Alameda counties, can be classified as high-opportunity areas. Portions of Marin and Sonoma counties also rank among high opportunity areas. The inner East Bay (including the cities of Richmond, Oakland and Unincorporated Alameda County), East Contra Costa County and East San Jose can be classified as low-opportunity areas.

* The Kirwan Institute for the Study of Race and Ethnicity, Columbus, OH (see: <http://kirwaninstitute.osu.edu/>)

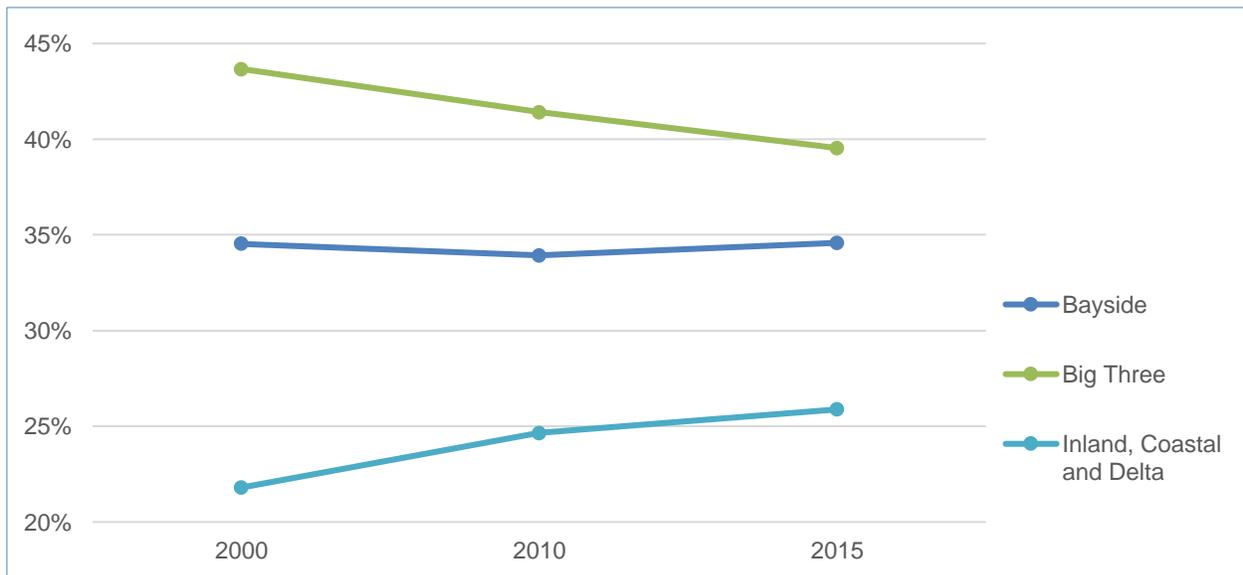


Chart 3-AA: Share of Population by Jurisdiction Type, Bay Area, 1970-2015



Source: MTC Vital Signs; US Census Data, 1970, 1980, 1990, 2000, 2010, Decennial; 2011-2015 American Community Survey 5-Year Average; California Department of Finance, Population and Housing Estimates 1961-2016

Chart 3-BB: Share of Low-Income Population by Jurisdiction Type, Bay Area, 2000-2015



Source: MTC Vital Signs; US Census Data, 2000, 2010 Decennial; 2011-2015 American Community Survey 5-Year Average; California Department of Finance, Population and Housing Estimates 1961-2016

Previous studies conducted by the University of California Berkeley⁵⁹ and ABAG⁶⁰ have found that the growing poverty in suburbs is a consequence of indirect displacement, as landlords converted rental units to condominiums and tenancy in common, or raised rents to the highest level allowed by local

⁵⁹ Chapple, Karen. August 2009. "Mapping Susceptibility to Gentrification: The Early Warning Toolkit." The Center for Community Innovation at UC-Berkeley. <http://communityinnovation.berkeley.edu/reports/Gentrification-Report.pdf>.

⁶⁰ Cravens, Marisa et al. December 2009. "Development Without Displacement: Development With Diversity." Association of Bay Area Governments. <http://abag.ca.gov/files/DevelopmentwithoutDisplacement.pdf>.

regulations. Residents displaced by such changes would have moved from central cities to more affordable suburban areas.

The San Francisco Federal Reserve study presents another explanation for rising poverty in the suburbs. Low-income residents in the urban core may have moved to the suburbs seeking safer neighborhoods with less crime and more opportunities. And since employment had become more decentralized, with job growth occurring fastest outside central cities,⁶¹ some workers followed job opportunities to the suburbs to shorten their commutes. In the late 2000s, as the economy began to contract, many of the same people who moved outside the central city to seek employment may have found themselves without jobs, in jurisdictions that had no capacity to deal with high poverty and unemployment.

All three studies conclude that suburban communities with growing poverty face a distinct set of challenges: They are often more geographically isolated from job centers; they lack reliable and affordable transit options to better employment opportunities; they have limited and widely dispersed social services (partly due to a lack of local public, nonprofit and philanthropic capacity); they lack reserves to prevent layoffs in the public sector (disrupting public services such as police, fire, trash collection and code enforcement); and, finally, they have many failing schools.

In the 1980s and 1990s, scholar William Julius Wilson posited that structural factors—including the decline of manufacturing jobs for lower-skilled city workers—led to a rise in joblessness that increased poverty and ultimately affected cultural norms and behaviors in declining urban neighborhoods. He also argued that growing concentrations of poverty in predominantly minority, inner-city areas undermined community institutions and networks formerly maintained by middle-class and working-class families, and removed positive role models for children, helping to perpetuate the cycle of poverty.

Growing poverty in the suburbs, if unaddressed, risks recreating the cycles of entrenched, concentrated poverty (still affecting America’s cities) in suburban communities. Lack of investment, failing schools, limited job opportunities and inadequate access to support services dramatically limit the quality of life for communities caught in the cycles of poverty. While some low-income residents in the suburbs enjoy better housing, safer neighborhoods and higher-achieving schools than those in cities, others face lengthy, costly commutes to work, a lack of reliable transportation, and an absence of basic health and social services that are often more fully available and established in cities.

The Brookings Institute study concludes that place intersects with poverty in ways that can ease or exacerbate its challenges. Access to good schools, good jobs, good housing and good services can determine whether poor families have access to the tools, resources and opportunities that can set them on a path to greater economic stability. Unless communities address the lack of investment in infrastructure, failing schools, limited job opportunities and rising crime in low-income communities, in both urban and suburban neighborhoods alike, the long-term opportunities and quality of life for millions of poor residents is likely to continue its gradual decline.

Poverty Outside PDAs and TPAs

Another way to look at poverty in the suburbs is to track the share of low-income populations within and outside the region’s Priority Development Areas (PDAs) and Transit Priority Areas (TPAs). The results from this assessment reinforce the growing trend highlighted in the previous section.

Between 2000 and 2014, the low-income population in PDAs dropped from 54 to 51 percent. In TPAs, that share dropped from 64 to 60 percent. Similarly, between 2000 and 2014, the minority population in PDAs dropped from 49 to 46 percent, and in TPAs from 64 to 59 percent. At the same time, the White

⁶¹ Locally, San Francisco saw moderate employment decentralization from 1998 to 2006, as the number of jobs within three miles of downtown decreased by 2.6 percent.

population in PDAs grew from 30 to 31 percent and in TPAs from 45 to 46 percent.⁶²

These trends are significant, since between 2000 and 2014, the low-income population in the Bay Area increased from 20 to 24 percent, the minority population increased from 42 to 58 percent, and the White population decreased from 50 to 41 percent. Even as the share of low-income and minority populations in the Bay Area is rising, their share of the population within PDAs and TPAs is declining. As the region increases its investments in PDAs and transit (and therefore TPAs), local jurisdictions and regional agencies must ensure that a growing number of low-income and minority populations benefit from these investments in the future.

Additionally, in very low-income census tracts⁶³ outside PDAs and TPAs, the share of disadvantaged populations increased at an even faster rate. The low-income population grew by 333 percent outside PDAs and 351 percent outside TPAs. This share was 126 percent and 134 percent, respectively, for minority populations.⁶⁴ Poverty is not just growing in the suburbs in the Bay Area, it is also concentrating in a few neighborhoods.

Concentrated Poverty

As mentioned in previous sections, low-income families face many challenges while living in poor neighborhoods, including higher crime rates, low-performing schools, worse health outcomes and fewer job opportunities. But as poverty concentrates in neighborhoods, the negative impacts magnify exponentially.⁶⁵ Low-income residents in areas of highly concentrated poverty face the “double burden” of not only their own poverty, but also the disadvantages of those around them. The heightened disadvantage affects not just low-income residents but entire communities, curtailing long-term economic growth potential, limiting the impact of public investments and undermining efforts to sustain inclusive growth.

Children and teens are especially vulnerable to the impacts of concentrated poverty. Research conducted by the American Psychological Association found that children and teens living in poorer communities are at an elevated risk for low birth weight, risky behaviors such as smoking or engaging in early sexual activity, exposure to environmental contaminants (e.g., lead paint and toxic waste dumps), exposure to violence in their communities (leading to higher rates of trauma, injury, disability and mortality), poor nutrition (food insecurity/hunger and childhood obesity), and chronic conditions such as asthma, anemia and pneumonia.⁶⁶

A study published by the Brookings Institution⁶⁷ concludes that across the US, poverty became more concentrated in disadvantaged neighborhoods between 2000 and 2012.⁶⁸ The study notes that after two

⁶² US Decennial Census, 2000, and American Community Survey, 2010-2014, 5-year average.

⁶³ Census tracts with 50 percent or more low-income population.

⁶⁴ More than 78,000 low-income and more than 16,500 minority people lived in high-poverty census tracts outside PDAs in 2014. Similarly, more than 86,500 low-income and 14,000 minority people lived in high-poverty census tracts outside TPAs in 2014.

⁶⁵ For a review of the literature on the effects of concentrated poverty, see: Berube, Alan et al. 2008. “The Enduring Challenge of Concentrated Poverty in America: Case Studies from Communities Across the U.S.” Federal Reserve System and the Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/06/1024_concentrated_poverty.pdf. See also: Sharkey, Patrick. *Stuck in Place: Urban Neighborhoods and the End of Progress Toward Racial Equality*. Chicago: University of Chicago Press, 2013.

⁶⁶ “Effects of Poverty, Hunger and Homelessness on Children and Youth.” American Psychology Association. See: <http://www.apa.org/pi/families/poverty.aspx>.

⁶⁷ Kneebone, Elizabeth. July 2014. “The Growth and Spread of Concentrated Poverty, 2000 to 2008-2012.” Metropolitan Opportunity Series. Brookings Institution. <https://www.brookings.edu/interactives/the-growth-and-spread-of-concentrated-poverty-2000-to-2008-2012/>.

⁶⁸ As poverty has spread, it has also become more concentrated in distressed and high-poverty neighborhoods, eroding the brief progress made against concentrated poverty during the late 1990s (Kneebone, Elizabeth, “The Growth and Spread of Concentrated Poverty, 2000 to 2008-2012”).

economic downturns and the subsequent periods of trepid recovery, which failed to improve conditions for all residents, the number of people living below the federal poverty line (\$23,492 for a family of four in 2012)⁶⁹ reached record highs. And more of these low-income communities were now in the suburbs, marking a significant shift from 2000, when the number of poor was higher in urban areas.⁷⁰ This shift only adds to the growing number of challenges faced by suburban jurisdictions that are already ill-equipped to deal with a growing low-income population.⁷¹

There are many definitions of concentrated poverty, but research at Harvard University⁷² suggests that social and economic mobility declines precipitously once the share of low-income residents in a neighborhood reaches 40 percent. In the Bay Area, there were 296 census tracts (or 18.6 percent of total) with 40 percent or more low-income residents in 2014. About 38 percent of all low-income residents in the Bay Area (or 689,866 people) lived in these census tracts. This share increased from 25 percent in 2000 (also see Map 3e: Low-Income Population in 2014).

As the share of low-income residents living in concentrated poverty rises, the racial and ethnic makeup of low- and high-poverty neighborhoods is also changing. Lower-poverty neighborhoods have become somewhat more diverse since 2000, although residents of these neighborhoods remain largely White. In contrast, minority residents, who experience heightened disadvantage at higher rates than White residents, continue to make up a disproportionate share of residents in high-poverty neighborhoods.

A study conducted by Harvard University⁷³ finds substantial evidence that young children (ages four to 12) whose families move to lower-poverty neighborhoods are more likely to attend college, are less likely to become single parents, and have substantially higher incomes. The study analyzed data collected by the US Department of Housing and Urban Development (HUD) starting in 1990s on 4,600 families who at the time lived in public housing. These families entered a lottery in which, as an experiment, the winners were offered a voucher that enabled them to move to better neighborhoods. HUD supposed that future outcomes for children who moved to low-poverty neighborhoods would be proportional to the number of years they lived in that neighborhood. In other words, toddlers would enjoy the most benefits, as they spent the most time in better neighborhoods, while those who moved as teens would receive few if any benefits.

The Harvard study confirmed that children who moved when they were young enjoyed much greater economic success than similarly aged children who had not won the lottery. And the children who moved when they were older experienced no gains or perhaps worse outcomes, probably the result of a disruptive move, paired with few benefits from spending only a short time in a better neighborhood.

The findings according to the study are clear: The earlier a family moved to a good neighborhood, the better their children's long-term outcomes. The opposite effects are symmetric as well: Each extra year in a worse neighborhood led to worse long-term outcomes, and beyond age 23, further exposure to good neighborhoods had no effect. What matters is not just the quality of the neighborhood, but also the number of childhood years spent growing up in it.

⁶⁹ For more information on the federal poverty level, see: <https://www.federalregister.gov/documents/2016/01/25/2016-01450/annual-update-of-the-hhs-poverty-guidelines>.

⁷⁰ Kneebone, Elizabeth, and Alan Berube. *Confronting Suburban Poverty in America*. Washington: Brookings Institution Press, 2013.

⁷¹ Kneebone, Elizabeth. July 2014. "The Growth and Spread of Concentrated Poverty, 2000 to 2008-2012." Metropolitan Opportunity Series. Brookings Institution. <https://www.brookings.edu/interactives/the-growth-and-spread-of-concentrated-poverty-2000-to-2008-2012/>.

⁷² Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. May 2015. "Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment." NBER Working Paper Series. National Bureau of Economic Research. <http://www.nber.org/papers/w21156>.

⁷³ Ibid.

For example, the study cites that a poor family in the San Francisco Bay Area in the mid-nineties would be better off in Contra Costa County than in San Francisco or Alameda counties. In fact, children who moved to Contra Costa were less likely to become single parents, more likely to go to college and more likely to earn more over their lifetimes. Every year a poor child spent in Contra Costa County added about \$160 to the child's annual household income at age 26, compared with a childhood spent in an average American neighborhood anywhere in the country. Over the course of an entire childhood, which was up to age 20 for the study, the difference added up to about \$3,200 annually, or 12 percent more in average income as a young adult.

The implications of these findings for the Bay Area are unclear but investing in low-performing schools in poor neighborhoods, providing more housing opportunities for low-income families with children in high opportunity areas, and reducing patterns of segregation are some of the strategies to address growing concentration of poverty in the region.