San Francisco
Sugary Drinks Distributor Tax
Advisory Committee

2023 DATA REPORT

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EXECUTIVE SUMMARY

Sugar-Sweetened Beverages Contribute to Diet-Sensitive Chronic Diseases in San Francisco and the Sugary Drinks Distributor Tax (SDDT) Seeks to Mitigate the Effects

A large body of evidence exists indicating that sugar-sweetened beverage (SSB) consumption increases risk for diet-sensitive chronic diseases, particularly cavities, type 2 diabetes, hypertension, and heart disease.[1-7] SSB consumption in San Francisco is greatest among the very populations most impacted by diet-sensitive chronic diseases. The percentage of Pacific Islander, Black/African American, Latinx and Filipinx students reporting daily consumption of SSBs is 1.4 to 2.1 times higher than White or Asian students. This is by design. The beverage industry targets youth, their parents, and especially low-income communities of color to drink their products, despite the scientific evidence that links overconsumption of SSB to diet-sensitive chronic diseases. The industry spends billions of dollars advertising SSB, undermining public health efforts that lead to long-term negative impacts on health.

Excise taxes on SSB are an effective public health intervention meant to decrease SSB consumption and the downstream health consequences of SSB consumption. In this vein, it is one of the few financial policy tools community and public health advocates have to level the playing field with an industry that receives financial subsidies to make their products cheaper and to advertise to youth.[8] Currently we know the following on the state of SSB prices, sales and consumption in San Francisco:

- **Sugar-Sweetened Beverage Prices:** Between April-June 2017 (before tax collection began) and April-June 2018 (after tax collection began), the prices of SSB, as compared to prices in comparison cities without SSB taxes-- San Jose and Richmond—increased by 0.61 - 1.25 cents per ounce (variable on container size) – essentially what was expected as the excise tax was a 1 cent per ounce tax on distributors bringing SSBs into San Francisco. The greatest increases were seen for sports drinks and coffee drinks. The price of non-SSBs did not

A note regarding use of obesity as a measure of health. Evolving research indicates that focusing on overweight/obesity furthers stigma and can exacerbate or contribute to poor health. Whereas the Healthy Eating Active Living Team in San Francisco Department of Public Health (SFDPH)'s Community Health Equity and Promotion Branch have focused on preventing chronic disease and promoting nutrition and physical activity as opposed to obesity prevention; their recommendation is to shift from using obesity as a measure in this work and focus instead on other health conditions impacted by SSB consumption. The Canadian Medical Association Journal provides additional context to this recommendation: "Although obesity has been shown to contribute to certain types of health problems, anti-fat stigma is also a threat to health. Anti-fat stigma adds both psychological and physiologic stress to people who are considered excessively fat, which some experts argue partially accounts for health disparities by weight.[9,10] Anti-fat stigma is underpinned by common assumptions that fatness is highly malleable and under individual control, implying that people who are visibly fat have poor self-control, are unknowledgeable or are not invested in their health. Puhl and Heuer's 2009 review of over 200 studies (with experimental, survey, population-based and qualitative designs) highlighted how common such stigmatizing assumptions are and the discrimination that follows in multiple sectors.[11] In a 2016 systematic review and meta-analysis, Spahlholz and colleagues confirmed high rates of perceived weight-based discrimination in many life domains.[12] Stigmatization can be a daily occurrence; an analysis involving 50 overweight or obese women in the United States who filled out the Stigmatizing Situations Inventory over 298 days reported more than 1000 weight-stigmatizing events. Body mass index (BMI) was the strongest predictor.[13]

increase except for diet soda which increased by 0.48-0.71 cents per ounce.

- **Sugar-Sweetened Beverage Sales:** Regular sodas are the most purchased SSB in San Francisco. Data from 2015 to 2017, before tax collection began, show a small but statistically significant decreasing trend in sales for regular soda.

- **Sugar-Sweetened Beverage Consumption:** The Youth Risk Behavior Survey (YRBS) which is conducted among middle and high school students, found that the percent of students who drank SSBs daily declined among students from 2015 through 2019 and then increased in 2021. In 2017 the percent of high school students who consumed at least one SSB every day was 13%, which decreased to 12% in 2019 before increasing to 17% in 2021.

The SDDT is also expected to impact health through use of revenue generated by the tax to improve the nutrition and physical activity environments in San Francisco, and to create economic opportunities and provide direct services for heavily impacted populations.

Preventable, diet-sensitive diseases are prevalent, have major health and economic impacts, and are unequally distributed in San Francisco.

In San Francisco, 6 of the 10 leading causes of death are preventable, diet-sensitive chronic diseases—ischemic heart disease, hypertension, stroke, Alzheimer's, diabetes mellitus, and colon cancer. Between 2010 and 2021, death rates due to ischemic heart disease, hypertensive disease, and colon cancer decreased or remained stable, while rates due to Alzheimer's, cerebrovascular disease, and diabetes increased.

These 6, and other diet sensitive chronic diseases affect San Francisco's residents differentially with residents of color and those with lower incomes most affected.[i]

Overall, Black/African American and Pacific Islander residents are the most impacted, particularly in these ways:

- Mortality rates for 5 of the 6 leading causes of death that are diet-sensitive are highest among Black/African American residents.[ii]
- Diabetes and hypertension rates among Black/African American residents are 2 to almost 3 times as high as the next highest group.
- Not only are rates higher, but Black/African American residents typically die younger due to these conditions. In San Francisco, on average, Black/African American males and females who die from diabetes live 3-9 fewer years than men and women of other races/ethnicities who die from diabetes.
- Rates of emergency room visits due to non-traumatic dental conditions are 2-18 times higher among Black/African American, Pacific Islander, and Native American residents as compared to White, Latinx and Asian residents.
- Note: data are often not sufficiently available for Native Hawaiian or Other Pacific Islander residents but the data we do have suggest they face similar degrees of health disparities as Black/African American residents.

Furthermore:

- While decreases seen for the age-adjusted mortality rate due to hypertension were observed for all race/ethnicities, the mortality rate due to colon cancer increased for White residents.
- Rates of emergency room visits due to diabetes among Black/African American residents are 25 times as high as those seen for White and Asian residents.

i Data are not available for all communities in San Francisco who likely experience health disparities. Data are often collected in a way that does not include certain designations and, when collected, data for smaller populations may be too sparse to calculate stable estimates and/or to protect the identity of affected persons.

ii Insufficient data is available to produce mortality rates for specific causes for Native Hawaiian or Pacific Islanders and American Indian and Alaska Native residents. Comparisons here are made with Asian, Latin(a), and White residents.

- Male Native Hawaiian and Other Pacific Islander residents have the most years of life lost due to diet-sensitive causes of death – around three times as much as White residents.
- While the disparities are not as vast as those seen for Black/African American and Native Hawaiian and Other Pacific Islanders, the following is occurring:
  - diabetes ER visit and hospitalization rates are also elevated among Latinx, and
  - the Alzheimer's mortality rate is elevated among White residents.

Those most impacted by diet-sensitive chronic diseases are impacted at younger ages. Black/African American residents experience the health consequences of diabetes, hypertension and heart failure earlier in life than do other residents.[iii] Hospitalization rates for Black/African American residents in their 30s and 40s are comparable to those of other race/ethnicities who are 30 or more years older.

In fact, for diabetes, hospitalization rates are higher among Black/African American 18-34 year-old residents than they are for others at any age.

San Francisco's youth are at risk for and experiencing diet-sensitive chronic diseases. In school year 2018-2019, 35% of 5th grade students, 36% of 7th graders, and 32% of 9th graders had a measured body composition outside the healthy fitness zone. In 2022, 35% of SFUSD kindergarteners had experienced caries and 23% had untreated caries and rates of experiencing caries were about three times higher for Black/African American, Asian, and Latinx students than for White students. For both healthy body weight and oral health, economically disadvantaged children are at highest risk.

The economic impacts of diet-sensitive chronic diseases are immense. A 2013 report estimated the direct and indirect costs of obesity and diabetes in San Francisco at $748 million. The report found the estimated costs of obesity and diabetes attributed to SSBs was $48.1 to $61.8 million. Hospitalization data for 2016 show that together diabetes, hypertension and ischemic heart failure were the primary causes of 12,448 hospital admissions resulting in more than 29,000 days of hospitalization and a partial reporting of associated medical charges exceeding $350 million in San Francisco.

To Address Diet-Sensitive Chronic Diseases in San Francisco, Upstream Causes Must be Targeted

Both the 2016 and 2019 San Francisco Community Health Needs Assessments identified poverty and racial health inequities as foundational issues which must be addressed in order to improve the health of all San Franciscans. Healthy eating and active living are only possible where conditions support them and many, especially Black/African American, Pacific Islanders, and Latinx San Franciscans do not experience those conditions. From 2016 to 2018 22.4% of Black/African American and 23.9% of Latinx pregnant women were food insecure compared to 9% of Asian pregnant women. A percentage of food insecurity among White pregnant women could not be calculated due to fewer than 5 women reporting food insecurity, the relative standard error was greater than 50%, or fewer than 100 White pregnant women had a live birth. The percentage of children living in poverty varies by race/ethnicity with 34% of Black/African American and 16% of Hispanic or Latino children under 18 years old living in poverty in 2021. Educational attainment and median household income vary drastically by race/ethnicity; the median household income for Black/African American and Hispanic or Latino households in San Francisco is only $44k and $85k, respectively, in a city where an estimated $60K is considered a self-sufficient income in 2021 for a single adult without any children while $124k is considered self-sufficient for a single adult with an infant. Upstream determinants of health – inadequate resources, inadequate education, experiencing an unjust criminal justice system, housing instability, systemic racism, and more, build up in a community and lead to the consistent health disparities that we see.

iii Data for Pacific Islanders are sparse but also suggest higher rates at younger ages.

BACKGROUND

In November of 2016, the voters of San Francisco approved the passage of Proposition V. Proposition V established a 1 cent per ounce fee on the initial distribution of a bottled sugar-sweetened beverage, syrup, or powder, within the City and County of San Francisco.[14] The legislation defines a sugary drink, or sugary-sweetened beverage (SSB), as follows:

> ***A sugar-sweetened beverage (SSB) means any non- alcoholic beverage intended for human consumption that contains caloric sweetener and contains 25 or more calories per 12 fluid ounces of beverage, including but not limited to all drinks and beverages commonly referred to "soda," "pop," "cola," soft drinks" "sports drinks," "energy drinks" "sweetened iced teas" or any other similar names.***

Proposition V established the Sugary Drinks Distributor Tax Advisory Committee (Committee) whose powers and duties are to make recommendations to the Mayor and the Board of Supervisors on the effectiveness of the Sugary Drinks Distributor Tax (SDDT) and to submit a report that evaluates the impact of the SDDT on beverage prices, consumer purchasing behavior, and public health. The Committee also provides recommendations regarding the potential establishment and/or funding of programs to reduce the consumption of SSBs and to otherwise address diet-sensitive diseases in San Francisco.

Report Requirements and Process

Starting in 2018, by March 1, of each year, the Committee shall submit to the Board of Supervisors and the Mayor a report that evaluates the impact of the SDDT on beverage prices, consumer purchasing behavior, and public health. The Committee in their report shall make recommendations regarding the potential establishment and/or funding of programs to reduce the consumption of SSBs in San Francisco. This data report fulfills the requirement to evaluate the impact of the SDDT.

While the SDDTAC has submitted its annual report and recommendations since 2018, this is the first time the data report has been updated since 2019 due to the COVID-19 pandemic. As of 2024, we are on track to resume the annual data report.

The goals of the SDDT, aka Soda Tax, are long-term. It takes time to see a decrease in diet-related chronic diseases. Whereas this data report may not yet show desired trends in health outcomes, Raimi & Associates, the evaluators for SDDT-funded work, have found positive changes with respect to norms and behavior changes. It takes time to translate into improved health outcomes, and more work and investments are needed. To help move forward these desired health outcomes, the newly funded second cohort of community-based grantees are being asked to include education about water and SSB in a more intentional manner.

Relationship Between Sugar-Sweetened Beverage Consumption, Health, and Health Equity

A large body of evidence exists indicating that SSB consumption increases risk for cavities, type 2 diabetes, hypertension, heart disease and death.[15-21] Although SSBs can contain hundreds of calories in a serving, they do not signal "fullness" to the brain and thus facilitate overconsumption.[22] SSBs are the leading source of sugar in the American diet, contributing 36% of the added sugar Americans consume.

Numerous organizations and agencies, including the American Heart Association, American Diabetes Association, American Academy of Pediatrics, Institute of Medicine of the National Academies, American Medical Association, and the Centers for Disease Control, recommend limiting intake of added sugar and SSBs to improve health. Studies show that SSBs flood the liver with high amounts of sugar in a short amount of time and that this "sugar rush" over time leads to fat deposits and metabolic disturbances that are associated with the development of type 2 diabetes, cardiovascular disease, and other serious health problems.[23] Of note, every additional sugar-sweetened beverage consumed daily can increase a child's risk of developing type 2 diabetes by 26%.[24]

Diseases connected to SSBs are also found to disproportionately impact ethnic minority and low-income communities in San Francisco – the very communities that are found to consume higher amounts of SSBs. According to Healthcare Access and Information (HCAI) data, diabetes hospitalizations are more than three times as high in low-income communities as compared with higher income communities. African American death rates from diabetes are two times higher than San Francisco's overall rate. With respect to oral health, the data indicate that Asian and Pacific Islander children suffer from cavities at a higher rate than other populations; but Latinx and African American children also have a higher prevalence than the average for cavities.

The SDDT is intended to discourage the distribution and consumption of SSBs in San Francisco by taxing their distribution. Mexico, where an average of 163 liters of SSBs are consumed per person each year, enacted an excise tax on SSBs in 2014, with the result that the purchase of taxed SSBs declined by 12% generally and by 17% among low-income Mexicans by December 2014.[25,26] The Mexico data indicate that, when people cut back on SSBs, to a significant extent they choose lower-caloric or non-caloric alternatives. Studies have projected that a 10% reduction in SSB consumption in Mexico would result in about 189,300 fewer incident type 2 diabetes cases, 20,400 fewer incident strokes and myocardial infarctions, and 18,900 fewer deaths occurring from 2013 to 2022. This modeling predicts the SSBs tax could save Mexico $983 million international dollars.[27] Following the implementation of Berkeley, California's SSB tax, the first in the nation, there was a 50% decline in SSB consumption among diverse adults over the first 3 years of the tax.[28] Modeling suggests that a national SSB tax that reduced consumption by just 20% would avert 101,000 disability-adjusted life-years; gain 871,000 quality-adjusted life-years; and result in $23.6 billion in healthcare cost savings over just 5 years.[29] The tax is further estimated to generate $12.5 billion in annual revenue. This body of research demonstrates that taxation can provide a powerful incentive for individuals to reduce their consumption of SSBs, which in turn can reduce the burden of chronic disease.

Efficacy of Sugar-Sweetened Beverage Taxes

Berkeley, CA became the first city in the U.S. to pass a SSB tax in 2014. Since then, there have been 8 jurisdictions within the U.S. that have implemented SSB taxes.[30] Various studies have shown that implementation of a soda tax results in a decline in SSB consumption. According to researchers from the University of California, San Francisco, SSB purchases declined nearly 27% between July 2017 and December 2019 in Oakland, CA. Here in San Francisco a recent longitudinal study reported a 34% decrease in the consumption of SSB, after two years of soda tax implementation; in comparison, there was a 16.5% drop in San Jose, CA, which does not have a SSB tax.[31] These data are part of the growing literature demonstrating the efficacy of SSB tax policies. Currently there are at least 85 countries implementing some type of SSB taxation helping to reduce diet sensitive chronic diseases.[32] According to Dr. Alisa Padon, research scientist at the Public Health Institute, "new data demonstrates that San Francisco was successful in simultaneously improving public health while raising revenue for critical programs that build healthy communities and address the root causes of systemic inequities." These studies indicate that SSB taxes are making good on their potential to decrease SSB consumption, thereby lowering risk for diet-sensitive chronic diseases. Additionally, SSB tax revenue is providing resources and health programs to lower-income communities and communities of color targeted by the beverage industry.[33] Over time, SSB taxes can improve diet and health, while also generating cost savings and providing support to communities.

History of Sugar-Sweetened Beverage Interventions in San Francisco

In evaluating the impact of the SDDT, it is important to recognize the previous efforts made to curb SSB consumption and subsequent health effects as consumption may have been affected and continue to be affected by these efforts.

2008

- City and County of San Francisco declares Soda Free Summer (SFS) with the Bay Area Nutrition and Physical Activity Collaborative.
- Shape Up SF sends 40,000 Soda Free Summer brochures to SFUSD, Summer lunch sites, worksites, clinics, community partners.
- SF Department of Public Health implements healthy food policies to help people make healthier eating and drinking choices by improving the nutritional quality of food and beverages sold on City property and served by the City.
- Mayor Newsom calls for nexus study to assess feasibility of local sugary drinks legislation.

Bay Area Nutrition &
Physical Activity Collaborative

2009

- City and County of San Francisco declares a Soda Free Summer.
- 25,000 "Drink Water Said the Otter" books were distributed to San Francisco pre-k and kindergarten classes.
- American Heart Association releases guidelines on sugar intake.
- California Center for Public Health Advocacy released Bubbling Over report, scientifically linking soda consumption to overweight and obesity.
- SFDPH releases nexus study on feasibility of SSB legislation in San Francisco.
- SF Organizations implement Soda Free policies: Boys and Girls Club, Junior Giants, Sunday Streets.

2010

- City and County of San Francisco declares a Soda Free Summer.
- SFDPH runs NYC's Pouring on the Pounds Campaign on MUNI buses.
- Mayor Newsom signs Executive Directives: Healthy and Sustainable Foods and Healthy Vending.
- Healthy Meals Ordinance Passes.
- SF organizations implement Rethink Your Drink/Soda Free policies: SF Recreation and Parks, Bay Area SCORES, and Kai Ming Head Start."

2011 - 2012

- City and County of San Francisco declares a Soda Free Summer.
- The Bay Area Nutrition and Physical Activity Collaborative launches *Potter the Otter, A Tale About Water.*
- City and County of San Francisco declares a Soda Free Summer.
- Shape Up SF supports youth-serving organizations to develop healthy beverage policies.
- *Nature* publishes paper that argues sugar is addictive and linked to diseases associated with metabolic syndrome.
- *Mother Jones* publishes expose on sugar industry and its parallels to big tobacco.
- New York City Health Department became the first in the nation to ban the sale of SSB larger than 16 oz. at restaurants, mobile food carts, sports arenas, and movie theaters.

2013

- City and County of San Francisco declares a Soda Free Summer.
- Senator Monning introduces SB622 for statewide soda tax and create a Children's Health Promotion Fund.
- SF Public Utilities Commission convenes water hearing.
- Mayor Lee and 17 other mayors urge congressional leaders to ban use of food stamps to buy sugary drinks.
- SF orgs implement Soda Free Policies: YMCA of SF, Bayview Hunters Point Foundation, Children's Council of SF.
- Shape Up SF secures $250k to run sugary drinks education campaign.
- Shape Up SF funds The Bigger Picture to develop sugary drink PSAs.
- SF Board of Supervisors unanimously pass resolution to support SB622.
- Bayview HEAL Zone implements "Water Week" at Carver Elementary to celebrate new tap station.
- The California Center for Public Health Advocacy (CCPHA) hosts the first Healthy Beverage Summit.
- CA State Senator Bill Monning introduces a soda tax (SB 622) to impose as 12 cent tax on a can of soda and direct funds to childhood obesity-preventing measures such as improving the quality of school lunches. The bill died in community three months later.

THE BIGGER PICTURE.ORG

Monica Mendoza introduces us to an unhealthy family tradition to analyze how sugary drinks impact Latino communities and contribute to the type 2 diabetes epidemic. Watch the video at https://www.opentruthnow.org/take-action/

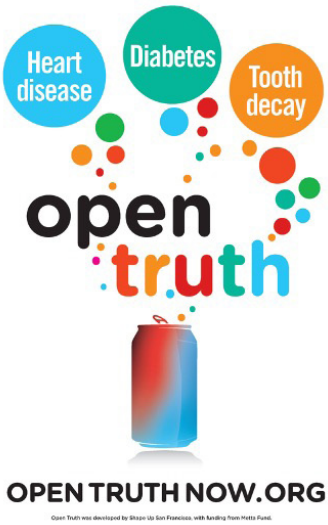
2014

- Shape Up SF launches Choose Healthy Drinks Campaign with Alameda, Sonoma, San Mateo counties.
- Shape Up SF launches Sugar Science trainings to educate about health impacts of sugary drinks and industry tactics.
- The Bigger Picture launches Canzilla campaign to engage young people to talk about type 2 diabetes.
- 56% of SF voters supported tax on sugary drink distributors. Over 123,000 San Franciscans voted yes, more than any other city in the world. Tax does not pass because it requires supermajority.
- Berkeley becomes first city in US to pass a voter-approved soda tax.
- UCSF launches SugarScience.org.
- Senator Bill Monning introduces bill (SB 1000) to add warning labels to drinks with added sugar that have 75 calories or more per 12 oz. that would say "State of California Safety Warning: Drinking beverages with added sugar(s) contributes to obesity, diabetes and tooth decay." The bill passed the state Senate but died in the Assembly.
- June 26, 2014 – New York Court of Appeals ruled that the New York City Board of Health's sugary drinks portion cap rule was unconstitutional and repealed the regulation.

SF community members pledge to be soda free at press conference for the Choose Healthy Drinks Campaign.

2015

SFSU Real Food Challenge students on campus, educating their peers about SSB.



- February 11, 2015 - California State Senator Bill Monning introduces Senate bill (SB 203) to add warning label to SSBs.
- February 27, 2015 - California State Assemblymember Bloom introduces AB 1357 to impose a tax on distributors of sugary drinks at $.02 per fluid ounce to establish a Children and Family Health Promotion Trust Fund. The bill died in committee on May 12, 2015.
- April 7, 2015 – SF Board of Supervisors unanimously adopt a resolution in support of SB 203 (Monning).
- Shape Up SF and partners launch Open Truth Campaign to expose tactics of the sugary industry, which targets young people, parents, and communities of color for profit.
- SF policymakers approve policies to eliminate use of public dollars to purchase sugary drinks and require warning labels on ads for sugary drinks.
- SF General Hospital and UCSF campuses become sugary-drinks free.
- California Healthcare Foundation and A Small Planet fund transcreation of Open Truth into Spanish.
- SFDPH issues policy prohibiting sugary drinks at any event led by DPH or at DPH facility, or to be paid for with DPH funding.
- In partnership with SF Health Improvement Partnership, Shape Up SF supports health equity coalitions with SSB outreach and education.
- Shape Up SF supports SF State University (SFSU) Real Food Challenge students to successfully end the university's contract negotiations for pouring rights. SFSU remains the ONLY CSU in the state without a pouring rights contract.

2016

- USDA guidelines recommend limiting sugar consumption to 12 tsp/day for adults.
- SF defends sugary drinks warning label law against the American Beverage Association.
- Open Truth campaign materials translated into Spanish and Chinese.
- SF policymakers adopt legislation requiring healthy vending machine standards and prohibit sales of drinks with added sugars.
- San Francisco, Oakland and Albany voters pass soda taxes!
- February 19, 2016 – California Assembly Member Bloom introduces AB 2782 to impose a $.02 per fluid ounce fee on distributors of sugary drinks. Funds would be deposited into a Healthy California Fund for our Children and Families. The bill failed in committee in November 2016.

2017 - 2018

- SF Warning Label fought in court– SF City Attorney's defends warning label policy.
- December 2017 – SDDTAC is convened.
- January 1, 2018 – **SF's soda tax goes into effect**.
- January 1, 2018 – Soda industry-sponsored "Keep Groceries Affordable Act of 2018" goes into effect, prohibiting cities, counties, or other local agencies to impose, increase, levy, or collect any new tax, fee, or other assessment on groceries.
- March 1, 2018 – the SDDTAC submits its first Annual Report and Recommendations to the Mayor.

2019

Corner stores in Tenderloin redesigned to increase access to fresh produce as a part of the Healthy Retail SF Program.

- First multi-year SDDT Healthy Communities Grants, administered through the San Francisco Public Health Foundation, awarded to 11 small community-based organizations. Funded organizations included: Bayview Hunters Point Community Advocates, BMAGIC/3rd Street Youth Center & Clinic, Bounce Back Generation, Community Grows, Community Well, Asociacion Mayab/Instituto Familiar de la Raza, Farming Hope, San Francisco African American Faith-Based Coalition, SisterWeb, SoMa Community Action Network (SOMCAN), and Urban Sprouts
- March 2019 - Sugary drink tax brings healthy food to more SF corner stores.
- Sept 19, 2019 - the 9th Circuit Court of Appeals reverses the district court's decision upholding the soda warning ordinance. Due to this decision, the Board of Supervisors ultimately rescinds the legislation (in 2021).

2020

- Launched www. sodatax-sf.org
- March 1, 2020 – SDDTAC submits annual report and recommendations to the mayor.
- March 11, 2020 – World Health Organization officially declares the Covid-19 outbreak a pandemic.
- March 18, 2020 - the SDDTAC voted to consider using unused funds from the fiscal year 2019-2020 to support food security and food distribution costs for the most vulnerable populations in the city and county of San Francisco. The SDDTAC has recommended that $1.65 million be allocated to increase food security for our priority populations, especially seniors, children, and pregnant women within minority communities.
- Developed and placed a campaign on Muni promoting how soda tax funding was being expended.
- First multi-year SDDT Policy/Systems/Environmental (PSE) Change Grants, administered through SF Department of Public Health (SFDPH) awarded to five organizations including 18 Reasons, CARECEN, Marin City Health and Wellness Center Bayview Clinic, Southeast Asian Development Center (SEADC), and Tenderloin Neighborhood Development Center (TNDC).

2021 - 2022

Community Grows BEETS Interns at Koshland Community Garden.

- March 1, 2021 – SDDTAC submits annual report and recommendations to the Mayor.
- April 2021 – the SF Board of Supervisors rescinded legislation to require warning labels on sugary drinks advertisements.
- March 1, 2022 – SDDTAC submits annual report and recommendations to the Mayor.

2023

- March 1, 2023 – SDDTAC submits annual report and recommendations to the Mayor.
- March 27, 2023 Sacramento County Superior Court rules the penalty provision of California's Keep Groceries Affordable Act of 2018 is unconstitutional.
- June 30, 2023 - 1st cohort of Healthy Communities grantees comes to a close.
- July 1, 2023 - Welcome second cohort of Healthy Communities grantees. The six funded organizations include: All My Uso's/ Fa'atasi Youth Services, Association of the Ramaytush Ohlone, CARE, Farming Hope, Florence Fang Community Farm, and SOMCAN.
- July 19, 2023 – Cambridge University Press publishes study that workplace sales bans can reduce SSB consumption in ethnically diverse employee populations, including those at higher risk for cardiometabolic disease.
- November 4 – 9, 2023 San Francisco celebrates the 5-year anniversary of the implementation of the soda tax with events that focused on community, science, youth and policy.

Faheem Carter, Farmer-in-Charge, speaks at the kick-off event for the 5-year anniversary of the soda tax at Florence Fang Community Farm.

A Note on the Social and Commercial Determinants of Health

According to the World Health Organization, the social determinants of health are "the conditions in which people are born, grow, work, live, and age, and the set of forces and systems shaping the conditions of daily life." [34] While biology, genetics, and access to medical services are largely understood to play an important role in health, social-economic and physical environmental conditions are known to be major, if not primary, drivers of health. [35-37]

This report only touches on select social determinants of diet-sensitive chronic diseases- the food and beverage environment, food security, and physical activity opportunities and barriers. However, according to the Institute of Medicine, the most important social factors determining health are income, accumulated wealth, education, occupational characteristics, and social inequality based on race and ethnic group membership [38] These determinants are not equally distributed in San Francisco and contribute to the disparities seen both in the health outcomes as well as the upstream behavioral risk factors presented in this report.[39] Furthermore, the 2019 San Francisco Community Health Needs Assessment identified poverty and racial health inequities as foundational issues which must be addressed in order to improve the health of all San Franciscans. Data on poverty and racial health inequities in San Francisco as well as housing, criminal justice and other upstream social determinants of health are presented in detail in the triannual Community Health Needs Assessment available at www.sfhip.org.

The World Health Organization defines commercial determinants of health as the "private sector activities that affect people's health, directly or indirectly, positively or negatively." The beverage industry's targeted marketing is a commercial determinant of health that can have detrimental impacts, especially on the health of impressionable youth. According to the American Psychology Association's Task Force on Advertising and Children, children under the age of 8 cannot tell the difference between advertising and reality and are therefore especially vulnerable to persuasive tactics. Companies shape our physical and social environments, and with billions of dollars at their disposal, the beverage industry's relentless marketing, misinformation, and lobbying activities that target the low-income, vulnerable, communities of color must be addressed in comprehensive public health strategies.

SUGAR-SWEETENED BEVERAGE PRICE, SALES, AND CONSUMPTION IN SAN FRANCISCO

We do not have great confidence in these data, because available data capture stores that are mostly larger retailers and thus miss important differences in consumer behavior at corner stores that would not be reflected in purchasing patterns at supermarkets, for example. In addition, data about sales of some beverages appear to be missing sporadically throughout the years. Further complicating these data is the classification of drinks as sugar-sweetened which was performed by UPC look up and manual spot-checking and thus subject to error. ***Therefore, when reviewing the data in this section, interpret with extreme caution as these summaries likely do not reflect true beverage sales, and we cannot assess or validate these data.*** Given all the limitations stated above, SFDPH will be sunsetting the use of this data for understanding SSB prices, sales, and consumption. SFDPH is currently exploring the availability of other data sources that can provide this information as these measures are critically important for understanding the impact of *Proposition V.*

Beverage Sales in San Francisco

For both SSBs and non-SSBs, the total dollar amount of beverages sold in San Francisco increased from 2015 through 2018 before decreasing to pre-2015 level by 2021 (Tables 1 & 2). From 2016 (before the SDDT went into effect) to 2021 the largest drop for non-SSBs was observed for energy drinks (42% decrease), diet soft drinks (27% decrease), and juices/drinks (25% decrease). The only non-SSB category that saw an increase in sales was milk (25% increase).

Excluding diet soft drinks which had incomplete data for several years, from 2016 to 2021 the largest decreases for SSBs were observed for milk (48% decrease), energy drinks (37% decrease), and bottled water (29% decrease). The only increases observed for SSBs were seen for juices/drinks (10% increase) and soft drinks (29% increase).

Table 1. Non-SSB Sales by Beverage Category in San Francisco, 2015-2021

Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Change from 2016 to 2021
Bottled Water	$17,044,590	$18,801,650	$20,208,204	$21,425,245	$19,990,684	$16,733,205	$16,188,516	-14%
Diet Soft Drink	$5,633,690	$5,514,199	$5,265,681	$5,721,881	$5,803,675	$4,379,745	$4,003,054	-27%
Energy Drinks	$2,892,485	$2,894,435	$2,785,491	$2,985,475	$2,858,375	$1,737,124	$1,684,613	-42%
Juices/ Drinks	$17,528,673	$17,429,179	$16,331,612	$15,322,719	$13,638,833	$14,383,375	$13,061,049	-25%
Milk	$2,467,355	$2,592,631	$2,649,546	$3,309,146	$3,141,884	$3,598,673	$3,229,237	25%
Soft Drinks	$1,628,603	$1,704,374	$1,507,400	$1,211,973	$1,102,686	$1,353,551	$1,345,127	-21%
Sports Drinks	$397,039	$407,147	$471,162	$497,371	$595,066	$374,018	$396,271	-3%
Tea/ Coffee	$2,276,558	$2,637,510	$2,996,182	$3,438,421	$3,196,502	$2,290,623	--	-13%*
Total	$49,868,991	$51,981,129	$52,215,283	$53,912,232	$50,327,703	$44,850,318	$39,907,869	-23%

Note: There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.

Data source: IRI

Table 2. SSB Sales by Beverage Category in San Francisco, 2015-2021

Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Change From 2016 - 2021
Bottled Water	$858,548	$866,843	$822,385	$753,864	$700,032	$574,507	$619,512	-29%
Diet Soft Drink	$6,056	$19,952	$14,852	$6,023	$3,093	$1,265	$12	-100%[x]
Energy Drinks	$2,742,813	$2,981,140	$2,772,224	$2,829,245	$2,727,925	$1,968,607	$1,868,000	-37%
Juices/ Drinks	$3,184,585	$3,291,813	$3,294,419	$3,346,213	$3,185,830	$3,890,258	$3,609,244	10%
Milk	$28,150	$27,029	$26,478	$20,890	$25,474	$21,604	$13,998	-48%
Soft Drinks	$8,684,953	$8,775,686	$8,613,705	$8,862,280	$8,891,352	$11,090,708	$11,303,568	29%
Sports Drinks	$2,996,107	$3,065,322	$2,887,606	$2,791,439	$2,634,857	$2,385,187	$2,332,508	-24%
Tea/ Coffee	$3,506,979	$3,917,134	$4,468,106	$5,166,582	$4,658,202	$3,566,592	--	-9%*
Total	$22,008,192	$22,944,915	$22,899,778	$23,776,537	$22,826,763	$23,498,724	$19,746,844	-14%

Note: There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. [x] = incomplete data for sugar-sweetened diet soft drink data. Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.
Data source: IRI

Price Per Fluid Ounce Sold

In order to adjust for the volume of beverages sold for each category, we can look at the average price in dollars for each fluid ounce sold (Tables 3 & 4). For non-SSBs, from 2016-2021 the average price per fluid ounce decreased 24%. By beverage category, the largest decreases were observed for bottled water (28% decrease) and juices/drinks (7% decrease). Interestingly, the average price per fluid ounce of non-SSB sports drinks increased 123% from 2016 to 2021 – non-SSB diet soft drinks also increased by 8%.

While the average price per fluid ounce of SSB decreased 9% from 2016 to 2021, there was a lot of variability by beverage category (Table 4). The largest increases in the price per fluid ounce sold from 2016 to 2021 for SSBs were observed for sports drinks (17% increase), soft drinks (12% increase), and energy drinks (10% increase). Meanwhile, milk, tea/coffee, and juices/drinks saw decreases in the average price of fluid ounce sold (26%, 16% through 2020, and 14% respectively).

Table 3. Non-SSB Sales Per Fluid Ounce by Beverage Category in San Francisco, 2015-2021

Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Change from 2016 to 2021
Bottled Water	$0.02	$0.02	$0.03	$0.03	$0.03	$0.02	$0.02	-28%
Diet Soft Drink	$0.04	$0.04	$0.04	$0.05	$0.05	$0.04	$0.04	8%
Energy Drinks	$0.19	$0.18	$0.18	$0.18	$0.17	$0.16	$0.18	-3%
Juices/Drinks	$0.07	$0.07	$0.07	$0.08	$0.08	$0.06	$0.06	-7%
Milk	$0.05	$0.06	$0.06	$0.06	$0.06	$0.05	$0.05	-4%
Soft Drinks	$0.05	$0.04	$0.04	$0.06	$0.06	$0.04	$0.05	6%
Sports Drinks	$0.03	$0.04	$0.04	$0.05	$0.05	$0.06	$0.08	-6%
Tea/Coffee	$0.06	$0.07	$0.08	$0.09	$0.09	$0.06	--	-6%*
Total	$0.04	$0.04	$0.04	$0.04	$0.04	$0.03	$0.034	-24%

Note: Data represent the average sales in dollars per fluid ounce of beverage sold. There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. **Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.**
Data source: IRI

Table 4. SSB Sales Per Fluid Ounce by Beverage Category in San Francisco, 2015-2021

Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Increase from 2016 to 2021
Bottled Water	0.06	0.07	0.06	0.07	0.07	0.06	0.07	0%
Diet Soft Drink	0.05	0.09	0.08	0.08	0.08	0.03	0.04	-55%[x]
Energy Drinks	0.16	0.16	0.16	0.18	0.18	0.16	0.18	10%
Juices/Drinks	0.06	0.06	0.06	0.07	0.07	0.05	0.05	-14%
Milk	0.30	0.31	0.33	0.33	0.32	0.20	0.23	-26%
Soft Drinks	0.03	0.04	0.04	0.05	0.05	0.04	0.04	12%
Sports Drinks	0.05	0.06	0.06	0.07	0.07	0.06	0.07	17%
Tea/Coffee	0.08	0.09	0.10	0.11	0.12	0.07	--	-16%*
Total	0.05	0.05	0.05	0.07	0.07	0.05	0.05	-9%

Note: Data represent the average sales in dollars per fluid ounce of beverage sold. There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. [x] = incomplete data for sugar-sweetened diet soft drink data. **Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.**
Data source: IRI

Beverage Volume Per Unit Sold

For both non-SSBs and SSBs, the average size (in fluid ounces) of a beverage sold increased substantially in 2020 and 2021 (Tables 5 & 6). For non-SSBs, the average unit or beverage sold increased from 59 fl oz in 2016 to 98 fl oz in 2021 (a 67% increase). The largest increases were observed among bottled water (94% increase), tea/coffee (36% increase through 2020), and diet soft drinks (35% increase). A decrease was seen for sports drinks (23% decrease).

Among SSBs, a similar trend was observed where the average SSB sold increased from 39 fl oz in 2016 to 55 fl oz in 2021 (a 42% increase). Excluding diet soft drinks which had incomplete data for several years, the largest increases were observed for tea/coffee (41% increase through 2020), juices/drinks (37% increase), and soft drinks (24% increase).

These increases in the average volume of a beverage sold likely explain why the price per fluid ounce sold for most beverages decreased, as value packs typically cost less when controlling for size/weight. It's also likely that these increases in the average size of a beverage sold can be explained by consumers choosing to purchase value packs of beverages due to the COVID-19 pandemic and a desire to make less frequent trips to the grocery store and/or purchase food and drinks online.

Table 5. Non-SSB Volume (Fluid Ounces) Per Unit Sold by Beverage Category in San Francisco, 2015-2021

Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Change from 2016 -2021
Bottled Water	78	78	80	76	77	150	152	94%
Diet Soft Drink	58	56	56	55	56	79	75	35%
Energy Drinks	15	16	16	16	16	18	17	11%
Juices/Drinks	46	45	44	41	41	54	52	17%
Milk	62	62	62	62	62	67	67	8%
Soft Drinks	39	42	43	40	40	51	53	26%
Sports Drinks	31	31	30	29	28	26	23	-23%
Tea/Coffee	35	33	31	30	30	45	--	36%*
Total	59	59	60	58	58	94	98	67%

Note: Data represent the average volume in in fluid ounces per unit of beverage sold. There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. **Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.**
Data source: IRI

Table 6. SSB Volume (Fluid Ounces) Per Unit Sold by Beverage Category in San Francisco, 2015-2021

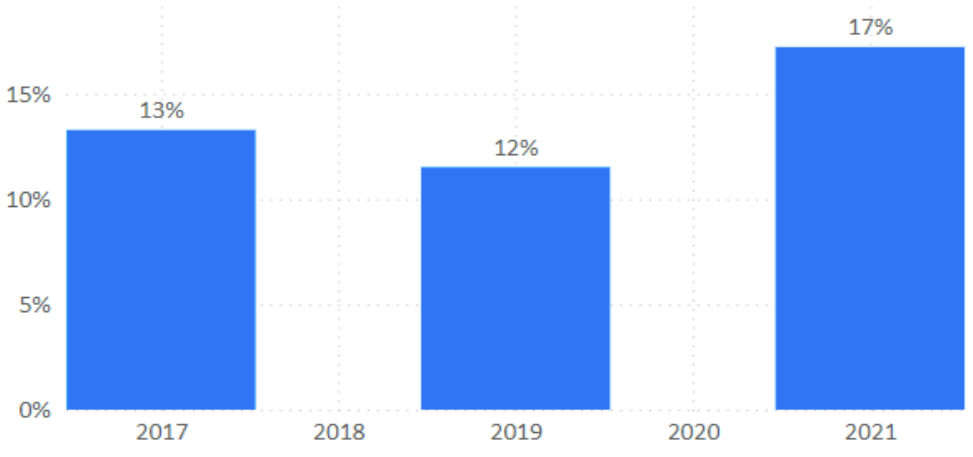
Beverage Category	2015	2016	2017	2018	2019	2020	2021	% Change from 2016 -2021
Bottled Water	22	22	23	23	23	25	26	17%
Diet Soft Drink	106	69	67	52	51	141	144	109%[x]
Energy Drinks	14	14	14	14	14	15	14	2%
Juices/Drinks	40	39	40	39	40	54	54	37%
Milk	16	16	15	15	15	22	19	20%
Soft Drinks	61	60	60	55	53	74	74	24%
Sports Drinks	30	29	30	29	30	31	30	3%
Tea/Coffee	26	25	24	22	22	35	--	41%*
Total	41	39	39	36	36	53	55	42%

Note: Data represent the average volume in fluid ounces per unit of beverage sold. There were no data available for tea/coffee beverages in 2021, indicated by a "--." Therefore, the percent change for tea/coffee compares 2020 sales to 2016, indicated by *. [x] = incomplete data for sugar-sweetened diet soft drink data. Data represent sales from a non-representative sample of participating stores and should be interpreted with extreme caution.
Data source: IRI

Sugar-Sweetened Beverage Consumption

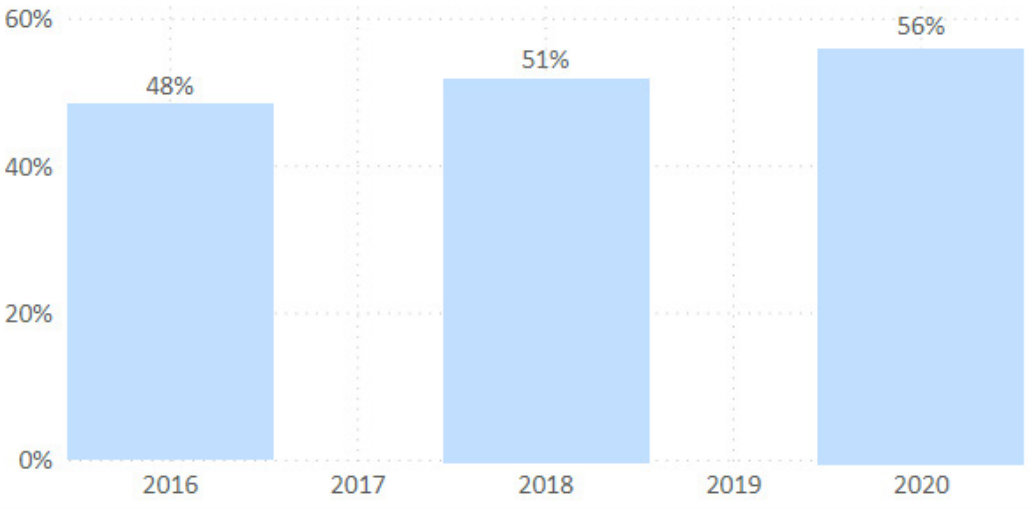
Youth Risk Behavioral Surveillance Survey (YRBS) collected prior to Sugary Drink Distributor Tax implementation shows that about half (48%) of SFUSD middle school students reported consuming any sugar-sweetened beverages the day prior and 13% of high school students report consuming SSBs daily during the prior week (Figure 1 and 2). More recent data shows this number increasing for both High School and Middle School students. In 2020, 56% of SFUSD middle school students reported consuming a SSB in the previous day while in 2021 17% of SFUSD high school students reported consuming a SSB one or more times per day in the last week.

Figure 1. Percentage of SFUSD High School Students Consuming SSB Daily, 2021



Note: The YRBS collects data from High School students on alternating years.
Data source: 2021 High School YRBS

Figure 2. Percentage of SFUSD Middle School Students Consuming SSB the Day Before the Survey, 2020



Note: The YRBS collects data from Middle School students on alternating years.
Data source: 2020 Middle School YRBS

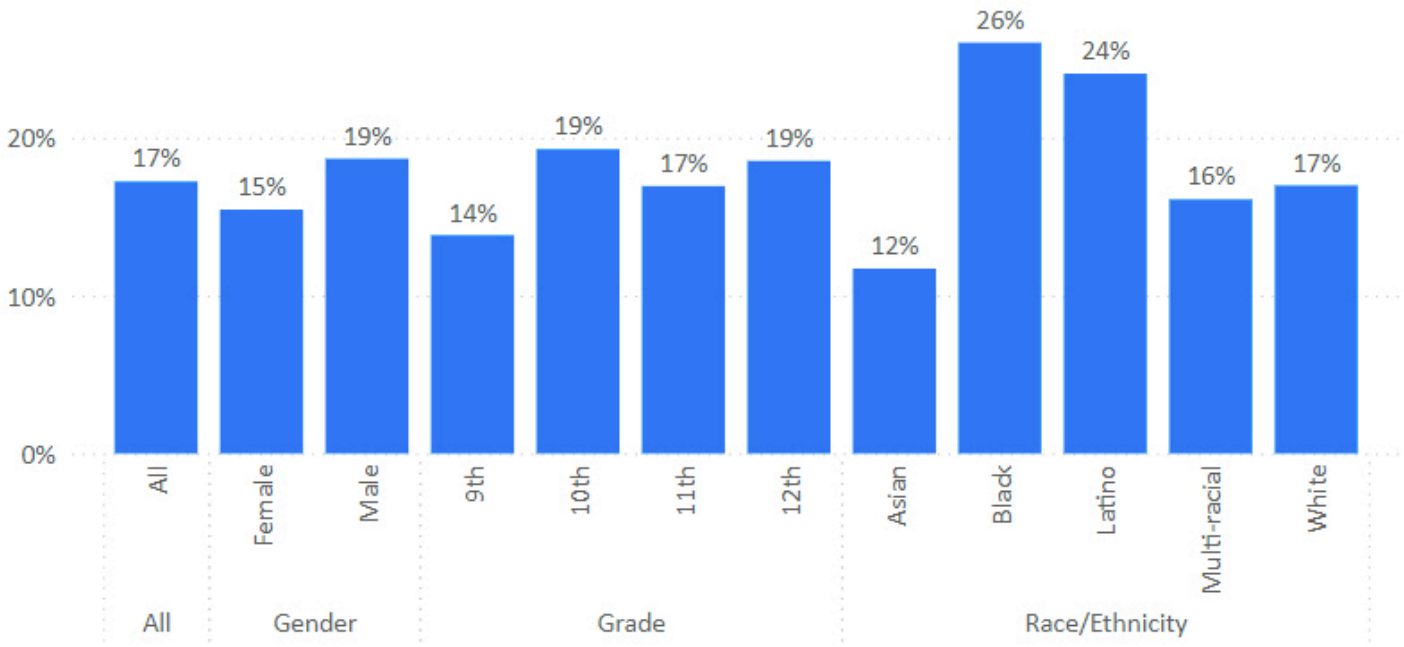
The School Health Survey has not been repeated since 2018. Please refer to 2019 SDDT report for past findings from this survey.

Disparities in Sugar-Sweetened Beverage Consumption Among SFUSD Students

Consistent with national trends, San Francisco SFUSD male students and students of ethnic minority backgrounds are most likely to consume SSBs.[40,41]

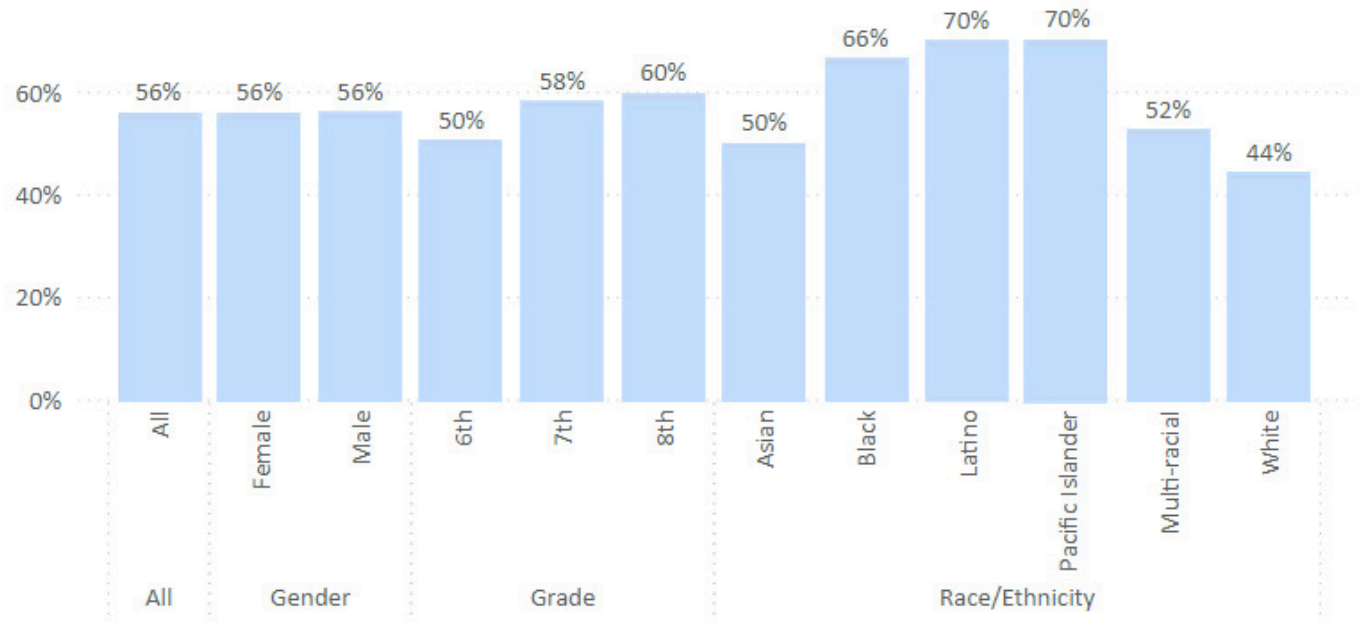
In 2021, Black/African American high school students were the most likely to report consuming SSBs daily and rates were 1.5 times higher than White students in High School (Figure 3a). In Middle School, consumption rates for Hispanic/Latinx and Pacific Islander students in 2020 were 1.4 and 1.6 times higher than consumption rates for White students, respectively (Figure 3b).

Figure 3a. Percentage of High School SFUSD Students Consuming SSBs Daily, by Race/Ethnicity, 2021



Note: Data for American Indian and Alaska Native and Native Hawaiian and Other Pacific Islander students are not reported because they were statistically unstable.
Data source: 2021 High School YRBS

Figure 3b. Percentage of Middle School SFUSD Students Consuming at Least One SSB the Day Before the Survey, by Race/Ethnicity, 2020



Note: Data for American Indian and Alaska Native and Native Hawaiian are not reported because they were statistically unstable.

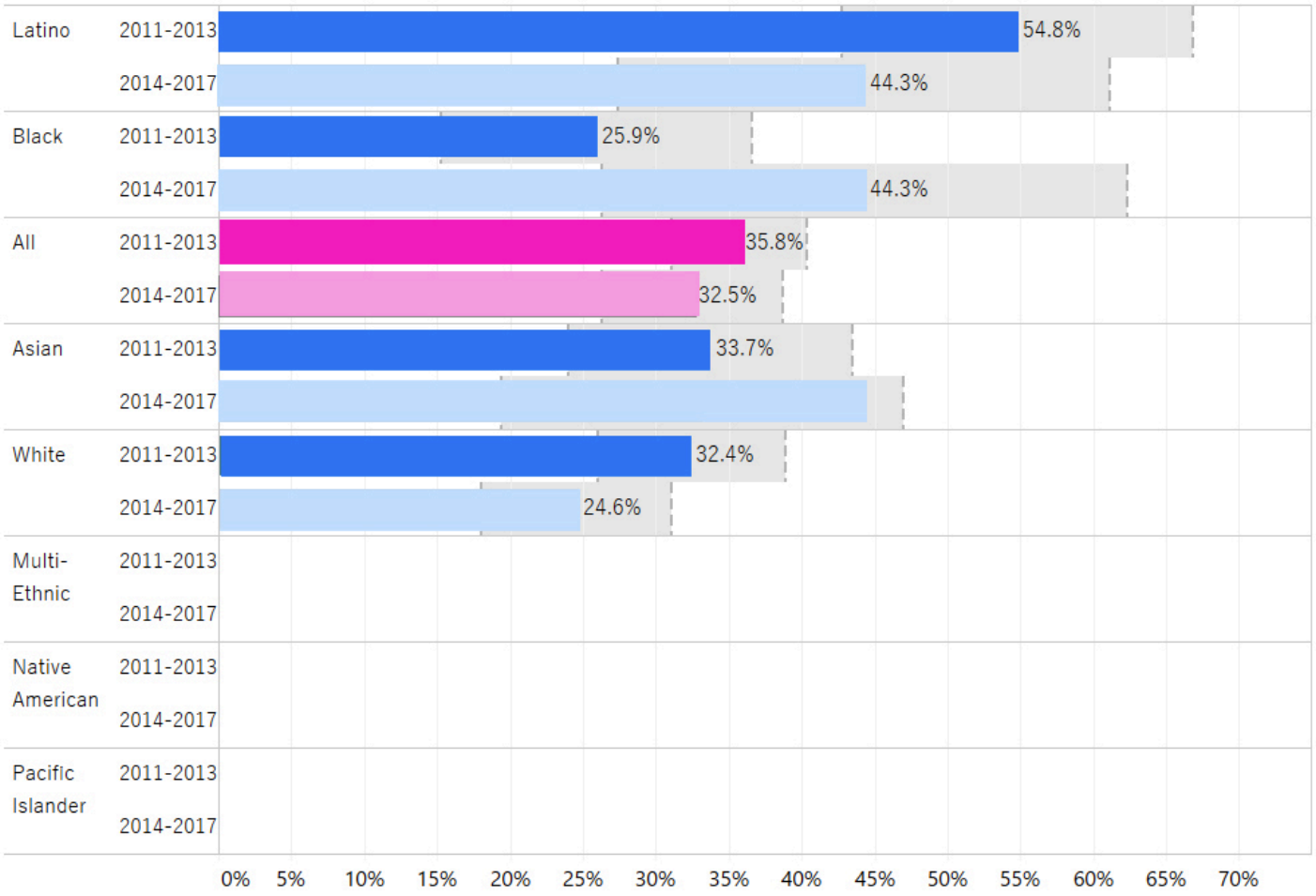
Data source: 2020 Middle School YRBS

SSB Consumption Among Adults

The available data on adult SSB consumption is limited to soda, which is just one type of SSB. However, more adults in U.S. report consuming soda than any other category of sugar-sweetened beverage and sodas remain an important source of added sugars in the diet.[42,43] While CHIS is the best available source of adult sugary beverage consumption data for adults in San Francisco, unfortunately, data collection on this measure has not been repeated by CHIS since 2017.

As reported in 2019 SDDTAC Report, approximately 32% of adults in San Francisco report drinking soda at least once per week. Males are about 50% more likely than women to report consuming any soda (40% vs 26%). Among those for whom data is available, a larger percentage of Latinx and Black/African American residents are more likely that consumed soda one or more times per week than White residents to consume any soda (Figure 4). See 2019 report for further details on CHIS findings: San Francisco Sugary Drinks Distributor Tax Advisory Committee.

Figure 4. Percentage of Adults Reporting Any Soda Consumption, by Race/Ethnicity, 2017



Data for Multi-ethnic, Native American, and Pacific Islander populations are unstable.

Current State of Food Security, Food & Beverage Environment, and Nutrition in San Francisco

Food Security

Food security is the ability, at all times, to obtain and consume enough nutritious food to support an active, healthy life.[44] Food insecurity exists when the ability to obtain and prepare nutritious food is uncertain or not possible. Food insecurity can have far reaching impact throughout the life course that helps establish and perpetuate health disparities; fetal development in utero is impacted by maternal food security and that impact on early development can increase unborn babies' lifetime risk of obesity and diabetes.[45-47] Children who are food insecure are more likely to have behavioral issues and worse school performance as well as more hospitalizations – all of which can limit socioeconomic advancement and lay the foundations for developing chronic disease as adults.[48,49] In adults, food insecurity increases the risk of multiple chronic conditions including type 2 diabetes, heart disease, and hypertension, and exacerbates existing physical and mental health conditions.[50] The San Francisco Food Security Task Force, frames food security as an issue of:

1. Food Resources: the ability to secure enough financial resources to purchase enough nutritious food to support a healthy diet on a consistent basis
2. Food Access: the ability to obtain affordable, nutritious, and culturally appropriate foods safely and conveniently
3. Food Consumption: the ability to prepare and store healthy meals, and the knowledge of basic nutrition, food safety, and cooking

The City does not currently have data infrastructure to fully assess food security in San Francisco. However, we do know that a primary driver of food security is inadequate resources to purchase food. In this regard, data on poverty rates reveal that 31% of American Indian and Alaska Native residents, 26% of Black/African American residents, 15% of Native Hawaiian and Other Pacific Islander residents, 13% of Latinx residents, and 10% of Asian residents are living at less than 100% FPL compared to 8% of White residents. Overall, approximately 10% of San Franciscans are living at less than 100% FPL and 21% are living at less than 200% FPL.[51] Data from the 2021 California Health Interview Survey revealed that 35% of San Franciscans surveyed who earned less than 200% FPL were food insecure, which decreased from 59% in 2019. However, it's important to note that this decline is likely transitory. Unparalleled financial assistance from the federal government during the COVID-19 pandemic resulted in the lowest levels of food security in decades in 2020 (16% in San Francisco). As expected, the rate increased in 2021 and is expected to return to pre-pandemic levels for 2022.

The Food Security Task Force will be releasing their Biennial Food Security and Equity Report by the end of 2023. This comprehensive report will describe the current state of food insecurity in San Francisco, outline the food-related programs and services delivered to San Franciscans as well as the infrastructure in place to address food insecurity across the city. Once published, this report can be accessed on the Food Security Task Force website.

At this time, we have some data on the food security status of some specific vulnerable groups including:

- **Pregnant Women:** Data from the Maternal and Infant Health Assessment (MIHA) survey indicate that approximately 9% of all pregnant women in San Francisco are food insecure, including 24% of Latinx and 22% of Black/African American women.
- **Low Income Families with Young Children:** See 2019 Sugary Drinks Distributor Tax Data Report for findings on this population.
- **Immigrants:** National research indicates that the risk for food insecurity among households with immigrants is higher than households with members who are all US born, and immigrant families with young children experience disparities in their ability to afford food.[52,53] Although food insecurity rates among immigrants living in San Francisco are not available, 25% of children in San Francisco living in households headed by

two immigrant parents live below 200% of FPL, compared to only 5% of children living with two US born parents.[54]

- **People Without Homes**: During the 2022 San Francisco homeless survey, 51% of respondents indicated that they had experienced a food shortage in the past four weeks[55] In 2019 59% reported food insecurity. It is estimated that around 7,700 people without homes live in San Francisco but up to 20,000 people may experience homelessness over the course of a year.

- **Residents of Single Room Occupancy Hotels:** See 2019 Sugary Drinks Distributor Tax Advisory Committee Data Report for findings on this population.

- **Transitional-Aged Youth and College Students:** There is growing awareness of high rates of food insecurity among youth and young adults in San Francisco. According to the 2021 National College Health Assessment data for San Francisco State University, 42% of students surveyed were food insecure. A recent assessment of 1,088 students at City College of San Francisco found that 41% were food insecure.

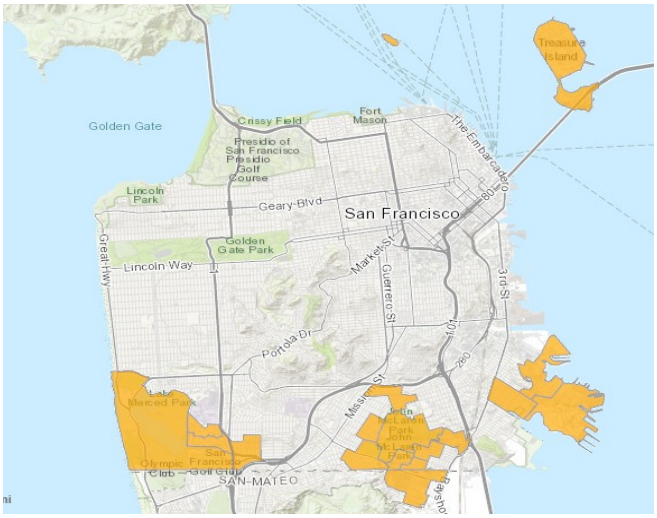
- **Seniors and People with Disabilities:** An estimated 32% of low-income seniors in San Francisco are reportedly unable to afford enough food.[56] In San Francisco, program data for Fiscal Year 2022-23 from the Department of Aging and Adult Services indicate that 44% seniors and adults with disabilities (18-59 years) seeking home delivered meal and congregate meals were food insecure.[57]

Despite the high level of need for food support among many communities in San Francisco, the food safety net is both impacted and not fully utilized. In 2016, 65.6% of eligible San Franciscans were enrolled in CalFresh, compared to a national average of 85% eligible enrollment. See 2019 Sugary Drinks Distributor Data Tax Advisory Committee Report for further information on CalFresh Enrollment.

Food Environment

Although research supports the primary role of income in healthy eating, the food retail environment is also an important component of equity and the equitable distribution of resources.[58] In several areas throughout San Francisco, there are concentrations of corner stores paired with a paucity of full-service grocery stores, most often found in low-income neighborhoods.

Figure 5. USDA-Designated Areas of Low-Income and Low-Food Access, 2019

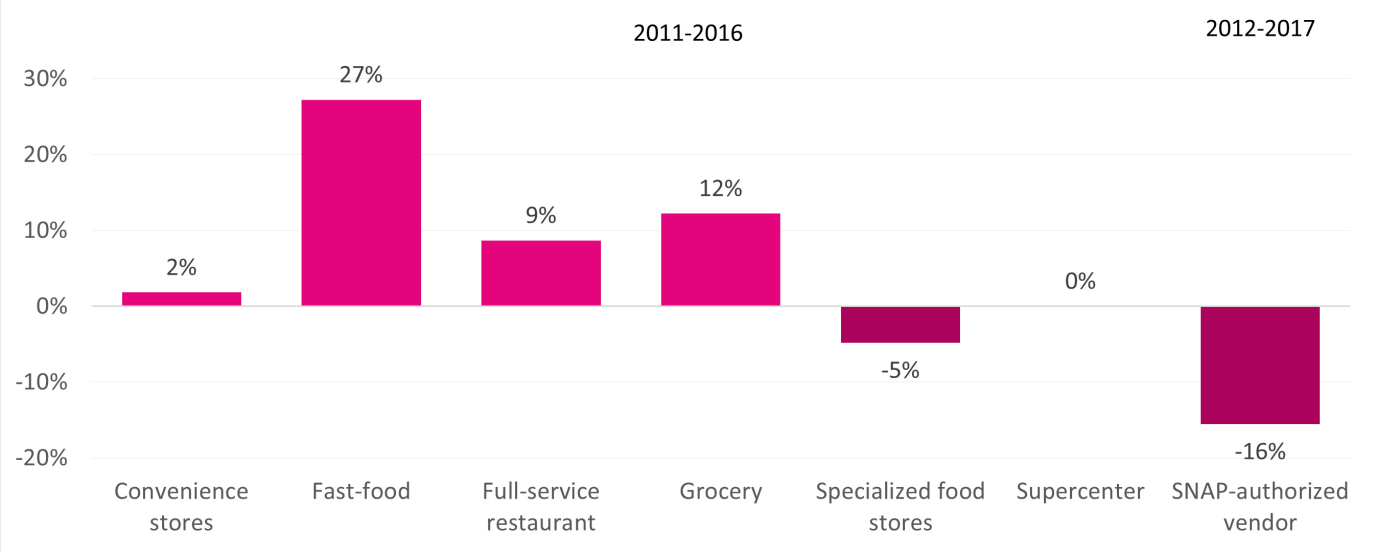


The USDA designated several areas in San Francisco as areas of low-income and low-food access (Figure 5) defined as census tracts where a significant number or share of residents is more than ½ mile (urban) from the nearest supermarket and have a poverty rate of 20% or higher, or tracts with a median family income less than 80% of median family income for the state or metropolitan area. Fresh produce and a variety of healthier food items can then be more inconvenient for low-income residents to access, requiring increased travel time and expenses. Whether or not a food retail environment facilitates food security and promotes health is dependent on several factors beyond the type of food retail establishments available in a given neighborhood (i.e. corner store, fast-food restaurant, grocery store, etc.). These include: the convenience, quality, affordability, and

cultural acceptability of healthy foods offered within the food retail store; the transportation infrastructure that affects accessibility; the acceptance of federal nutrition programs and local food purchasing supplements; the accessibility of online ordering options; and the food sourcing practices of the food retail establishment (i.e. production, distribution, and procurement of foods from local farms).

Consistent with nationwide norms to spend less time cooking and eating more meals away from home, access to ready-to-eat meals at fast food stores and full-service restaurants increased in San Francisco between 2011 and 2016 (Figure 6). The number of fast food restaurants increased by 27% from 753 to 958. The number of full-service restaurants increased by 9% from 1764 to 1917. In 2016, there were 1.1 fast food restaurants and 2.2 full-service restaurants for every 1,000 people in San Francisco. The magnitude of change in number of fast food stores was greater from 2011-2016 than what was previously observed from 2009-2014 (27% vs 21%), see 2019 Sugary Drinks Distributor Tax Report for more details. Meanwhile, the number of vendors authorized to accept SNAP (Supplemental Nutrition Assistance Program, formerly referred to as food stamps) decreased by 16%. In 2017, 0.50 stores per 1,000 people accepted SNAP. While a decrease in number of vendors accepting SNAP was observed in the past, the magnitude of the decrease from 2012- 2017 was 2 times greater than the previous change observed (16% vs 7%).

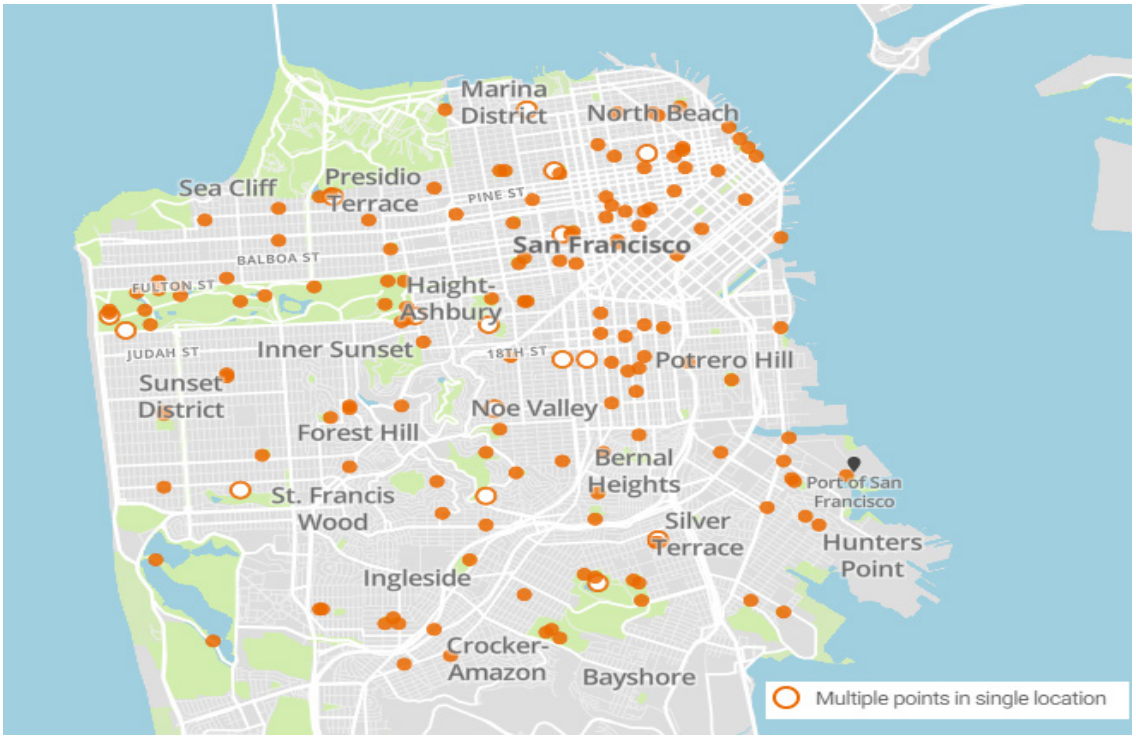
Figure 6. Change in the Types of Food Retail or Stores Available in San Francisco



Data source: United States Department of Agriculture Economic Research Service. Food Environment Atlas.[59]

As San Francisco communities increasingly recognize the health harms of SSB and the beverage industry tactics to maintain consumption, San Franciscans will increasingly turn to water as the preferred beverage. Infrastructure for water access, including hydration stations, water fountains, and refillable water bottles, must exist to support the community's desire for healthy, accessible drinking options. Hydration stations, distinct from drinking fountains, are stations designed to fill water bottles. Currently, they are not abundantly available nor equitably distributed throughout San Francisco (Figure 7).

Figure 7. Hydration Stations in San Francisco



Data source: City and County of San Francisco Public Utilities Commission, 2023.

Nutrition

Breastfeeding

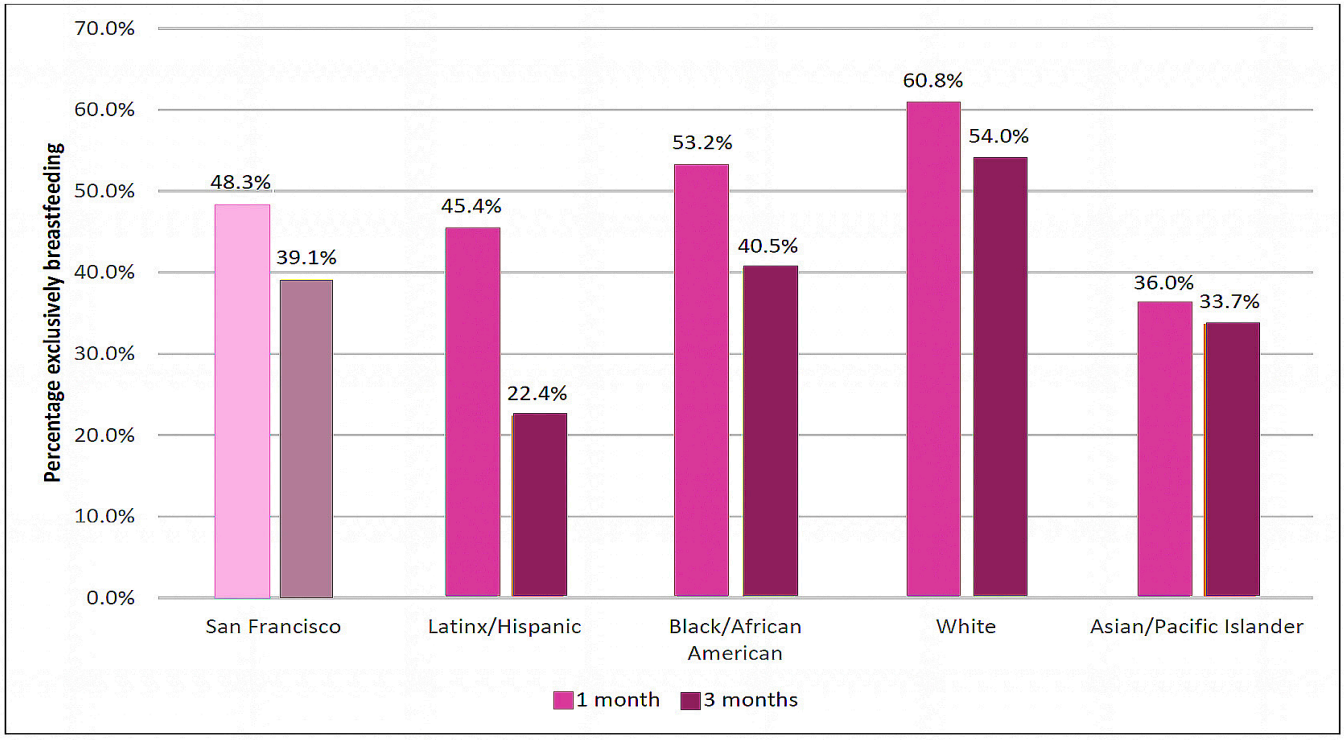
Breast milk is the optimal source of nutrition for most infants and is associated with health benefits for both the mother and infant. Mothers who do not breastfeed are at higher risk of several diet-sensitive chronic diseases such as diabetes mellitus, hyperlipidemia, hypertension, and heart disease, as well as breast and ovarian cancer.[60] Breastfeeding is consistently associated with a modest reduction in the risk of later overweight and obesity in childhood and adulthood.[61] Thus good, optimal nutrition in the early months of life can set the stage for health outcomes in adulthood. Breastfeeding also reduces risk of pediatric infections and death in the first year of life, promotes infant brain development and is associated with improved intelligence by about 2 IQ points.[62]

Breastfeeding has dose-dependent effects, such that both the duration and exclusivity of breastfeeding are associated with positive health benefits.[63] Annually, in the US, billions of dollars could be saved by reducing hypertension and heart attacks, and more than 4,000 infant deaths could be prevented, if 90% of U.S. mothers were able to breastfeed for one year after every birth.[64]

In San Francisco, rates of exclusive breastfeeding at 1 month and 3 months varied by mother's age, race-ethnicity, education, income level, and parity. Around one in three Asian/Pacific Islander and one in four Latinx women exclusively breastfed at 3 months, compared to 54% of White women (Figure 8). The proportion of women with a college degree who exclusively breastfed at 3 months was about 50% more than that of women with less than a high school degree. Almost half of women with an income over 200% of the Federal Poverty Level (FPL) exclusively breastfed their infant at 3 months, compared to about 23% of women with an income under 100% FPL (Figure 9).

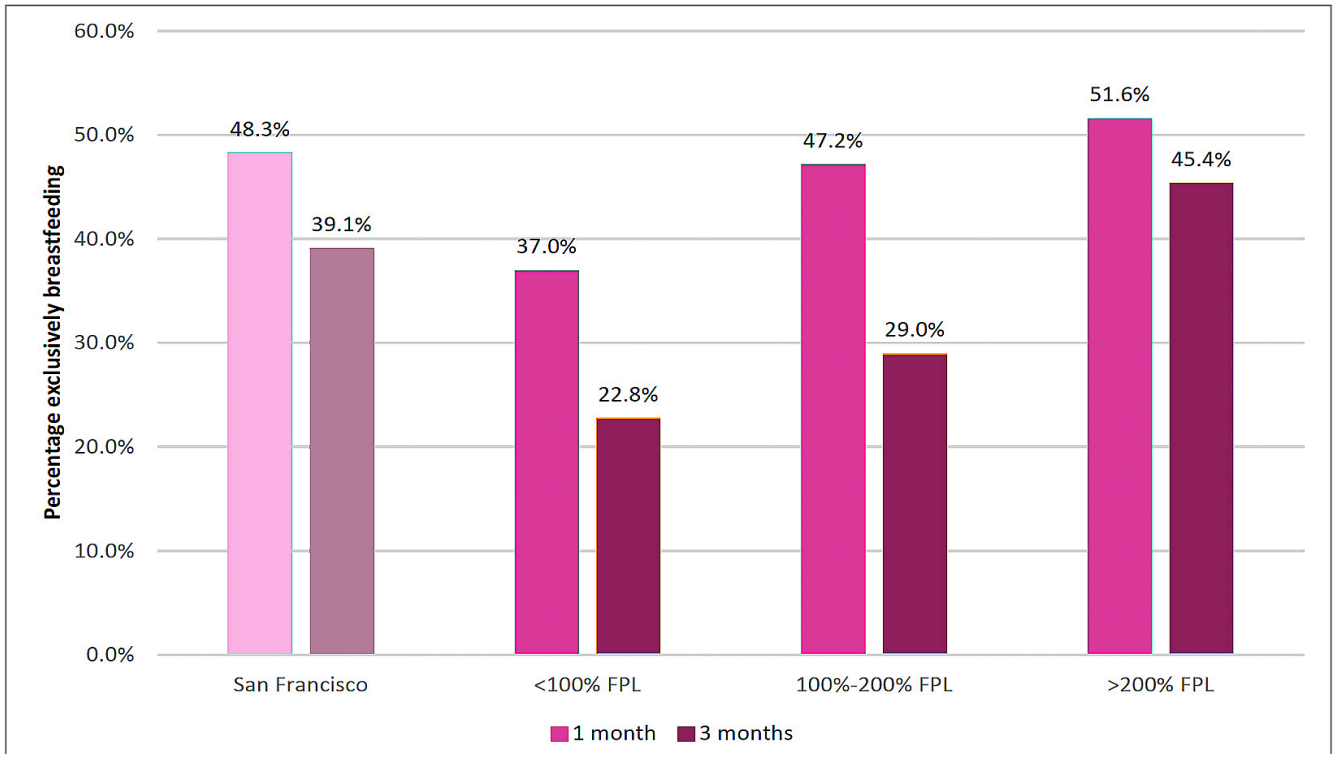
Among women with an income under 200% of the FPL, the proportion who exclusively breastfeed decreased by nearly 40% between 1 and 3 months postpartum. The corresponding decrease among women with an income above 200% of the Federal Poverty Level was 12%.

Figure 8. Exclusive Breastfeeding at 1 and 3 months by Race/Ethnicity, San Francisco, 2016-2018



Data source: Maternal and Infant Health Assessment

Figure 9. Exclusive Breastfeeding at 1 and 3 months by Federal Poverty Level, San Francisco, 2016-2018



Data source: Maternal and Infant Health Assessment

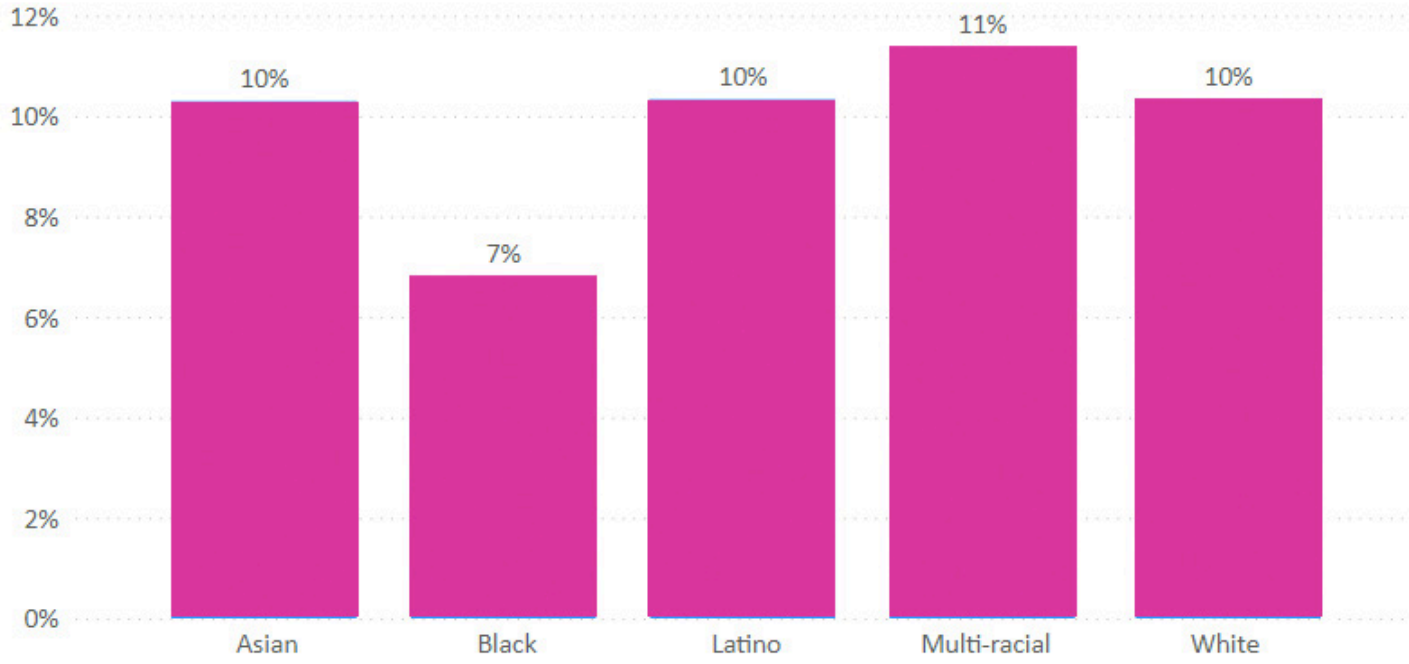
Healthy Food Consumption

Promoting health and reducing chronic disease risk through the consumption of healthful food and drink is a national priority.[65] Good nutrition is critical for growth, development, physical and cognitive function, reproduction, mental health, immunity, and long-term health. An estimated 45% of all heart disease, stroke, and type 2 diabetes deaths are associated with poor nutritional intake of 10 dietary factors (low intake of vegetables, fruits, seafood, whole grains, nuts/seeds, polyunsaturated fats and high intake of sodium, red meats, processed meats, sugary beverages).[66]

Local consumption of fruit and vegetables is below recommendations for the majority of adolescents and adults. Only 10% of high school students report eating 4 or more servings of fruit or vegetables daily. The Behavioral Risk Factor Surveillance System (BRFSS) asks similar questions about adult vegetable consumption which revealed that 14% of residents in the metropolitan statistical area including San Francisco reported not eating any vegetables.[67]

According to YRBS, among high school students, fewer Black students had 4 or more servings of fruits or vegetables per day than any other race/ethnicity (Figure 10). In 2021, 7% of Black students ate 4 or more servings of fruits or vegetables compared to 10% of Asian, Latino, and White students.

Figure 10. Percent of SFUSD High School Students Reporting 4+ Servings of Fruits or Vegetables per Day, by Race/Ethnicity, 2021



Note: Data for American Indian and Alaska Native and Native Hawaiian and Other Pacific Islander students are not reported because they were statistically unstable.
Data source: 2021 High School YRBS

CHIS is the best source of adult fast-food consumption in San Francisco. Unfortunately, data collection on this measure has not been repeated by CHIS since 2016.

As reported in 2019 Sugary Drinks Distributor Tax Advisory Committee Report, data from 2014 to 2016 show that 44% of San Franciscans reported eating fast food at least weekly. Differences in consumption by age, gender and race/ethnicity were observed. See 2019 Sugary Drinks Distributor Tax Advisory Committee Report for more details on those findings.

Current State of Physical Activity and Built Environment in San Francisco

Physical activity is defined as any bodily movement that requires energy expenditure. The Centers for Disease Control and Prevention (CDC) recommends that children and adolescents, age 5 to 17 years, should do at least 60 minutes of moderate -to-vigorous physical activity daily, while adults, age 18 years and above, should do at least 150 minutes of moderate-intensity physical activity, 75 minutes of vigorous-intensity physical activity, or an equivalent combination of moderate and vigorous activity throughout the week.[68] The National Association for Sport and Physical Education set physical activity guidelines for infants to children 5 years old at a minimum of 120 minutes daily in the form of 60 minutes of structured activity and 60 minutes of unstructured activity.[69]

Regular physical activity can help people live longer, healthier lives. According to WHO, physical inactivity has been identified as the fourth-leading risk factor (after hypertension, tobacco use, and high blood sugar) for mortality, causing an estimated 3.2 million deaths globally.[70] Physical activity protects against many chronic health conditions including obesity, cardiovascular disease, type 2 diabetes, metabolic syndrome, and cancer (breast and colon). Through the release of serotonin, exercise can help reduce stress, anxiety, and depression.[71]

Beyond physical and mental health, physical activity has been found to be important to the success of students. It supports learning by improving concentration and cognitive functioning, and is shown to have a positive influence on students' academic performance.[72] California uses the FitnessGram® to assess physical fitness of 5th, 7th and 9th graders. On average, California students who achieve more fitness standards perform better on standardized tests.[73]

Despite health advantages of physical activity, few are meeting public health goals. Less than a quarter (between 21% and 28% of children 6 to 17 years and just 23% of high school students in the U.S. are physically active for at least 60 minutes every day.[74] In 2020 just 25% of adults across the US met physical activity recommendations for aerobic and muscle-strengthening activity.[75]

The environments in which we live can have significant impact on our level of physical activity. Institutional policies and practices, living conditions, especially physical and social environments, and individual factors interact to promote or inhibit physical activity.[76,77] Land use and transportation policies determine the location and design of infrastructure and activities. Neighborhood features such as parks, sidewalks, bicycle trails, recreational facilities, nearby shops, and public transportation stops promote leisurely physical activity, sports, and active transportation.[78,79]

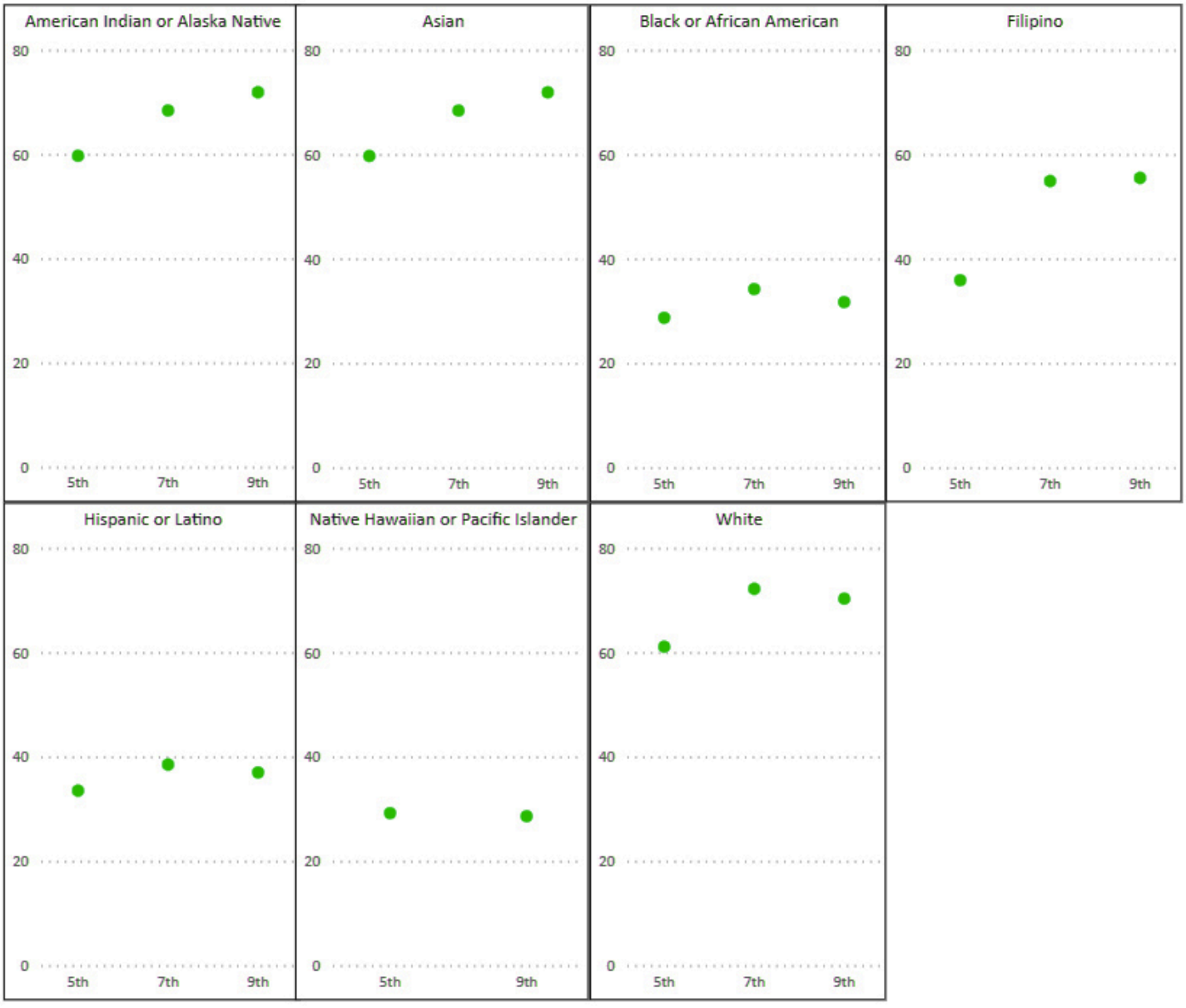
Although 100% of residents live within 10 minutes of a park, existence of infrastructure alone is insufficient. Barriers to use of facilities and physical activity include costs, poor access to facilities, and perceived unsafe environments.[80-82] Institutional policies, including those in the workplace and school and childcare, also affect health. Policies including transportation vouchers, on-location gyms, safe routes to school, recess, physical education, and after-hours availability of the school yard for play can boost physical activity among children and adults.[83] Additionally, social support is instrumental in starting and maintaining a physically active lifestyle. Persons who receive encouragement, support or companionship from family and friends are more likely to form positive views of physical activity and to begin and continue being physically active.[84-87] At the individual level, interest in and ability to do physical activity vary. Individuals may have physical or emotional blocks to doing physical activity. Examples include a lack of skills or confidence; a functional limitation associated with a disability, a chronic disease, or increased age; habits such as cigarette smoking or drinking alcohol; as well as a dislike for physical activity.[88-90] Additional personal barriers which are commonly cited are competing priorities, limited discretionary time and/or money, lack of childcare, and a lack of culturally-appropriate activities.

Walking or biking for utilitarian trips, sometimes referred to as active transportation, is an opportunity to incorporate routine physical activity into daily living. In San Francisco, 50% of adults report walking at least 150 minutes each week for transportation, fun or exercise. There is no difference in the percentage of adults walking by race, gender, or poverty status in San Francisco. The percentage of people walking in San Francisco is significantly higher than for California overall (38%).

According to the California State Board of Education's standardized FitnessGram®, which tests students in grades 5, 7, and 9 on six measures of fitness, 45-59% of 5th, 7th and 9th grade SFUSD students are physically fit - defined as being in five or six out of six Healthy Fitness Zones (Figures 11a, 11b, and 11c). Children from economically disadvantaged households perform worse than students from families who are not economically disadvantaged (Figure 11c). While around 60% of Asian and White 5th grade students score within five or six zones, only 29% of Black/African American and Native Hawaiian or Pacific Islander 5th graders, 33% of Hispanic or Latino, and 36% of Filipino 5th graders do the same.

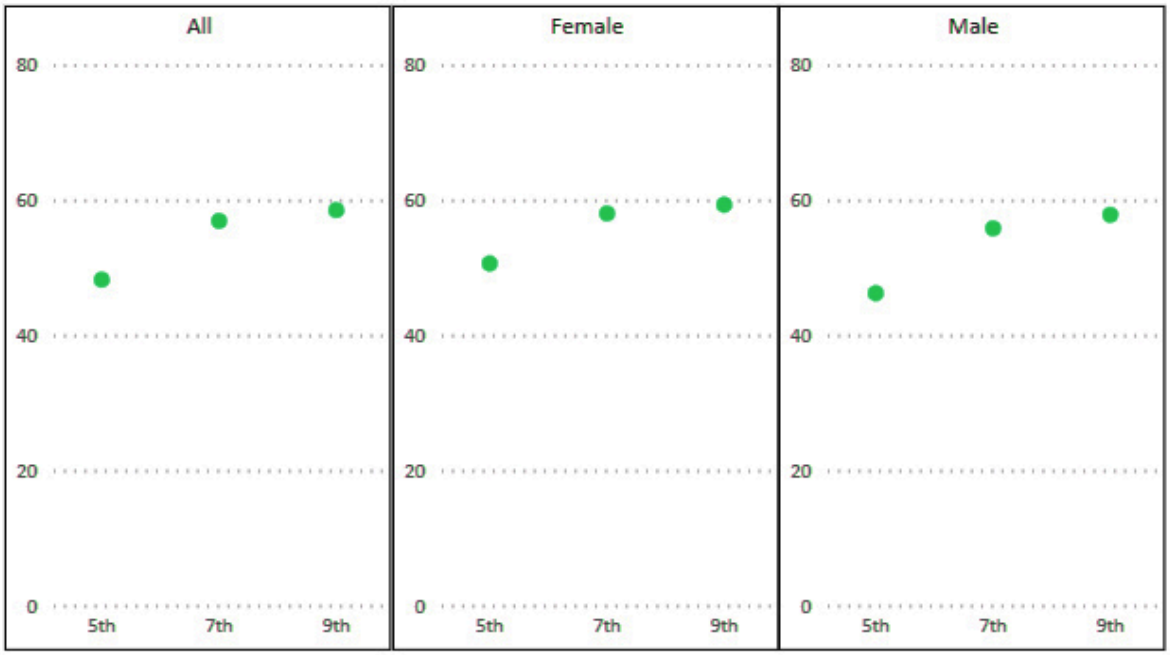
One of the most potent measures of physical fitness from the FitnessGram® test is aerobic capacity because of its relationship to cardiovascular and metabolic health. In San Francisco, about 72-74% of 5th and 7th graders meet the standard for aerobic capacity (Figure 12b) while about 65% of 9th graders meet the standard. When examined by income, the percentage of 9th graders identified as not economically disadvantaged who met the aerobic standard was more than 15 percentage points higher than those identified as economically disadvantaged. By race/ethnicity, 80% or more of White and Asian students meet aerobic standards in 5th and 7th grade while only 49-53% of Black/African American and 59-67% of Hispanic or Latino students do the same. In 9th grade those rates for White students drop to around 73%, while they drop to 35% for Black/African American, 29% for Native Hawaiian or Pacific Islander, and 48% for Hispanic or Latino students.

Figure 11a. Percent of SFUSD Students Meeting 5 by Race/Ethnicity, 2018-2019



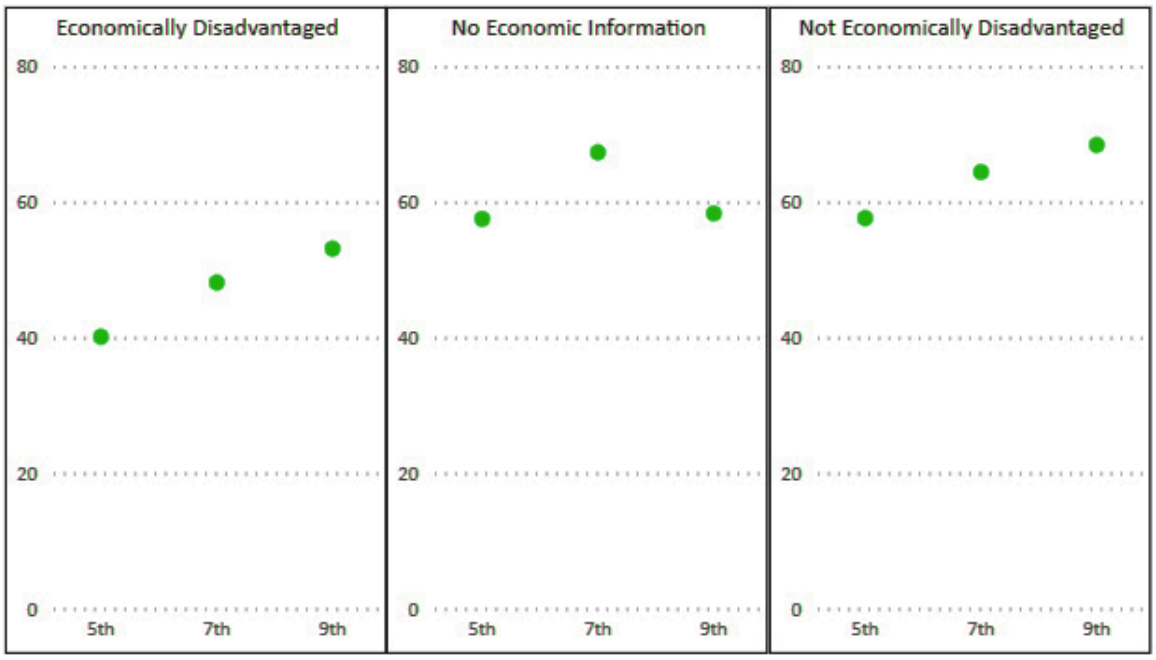
Note: Data represent the percent of SFUSD students meeting 5 or more of 6 different fitness tests – aerobic capacity, body composition, abdominal strength, trunk extension strength, upper body strength, and flexibility.
Data source: California Department of Public Health

Figure 11b. Percent of SFUSD Students Meeting 5 or 6 of 6 Fitness Goals by Sex, 2018-2019



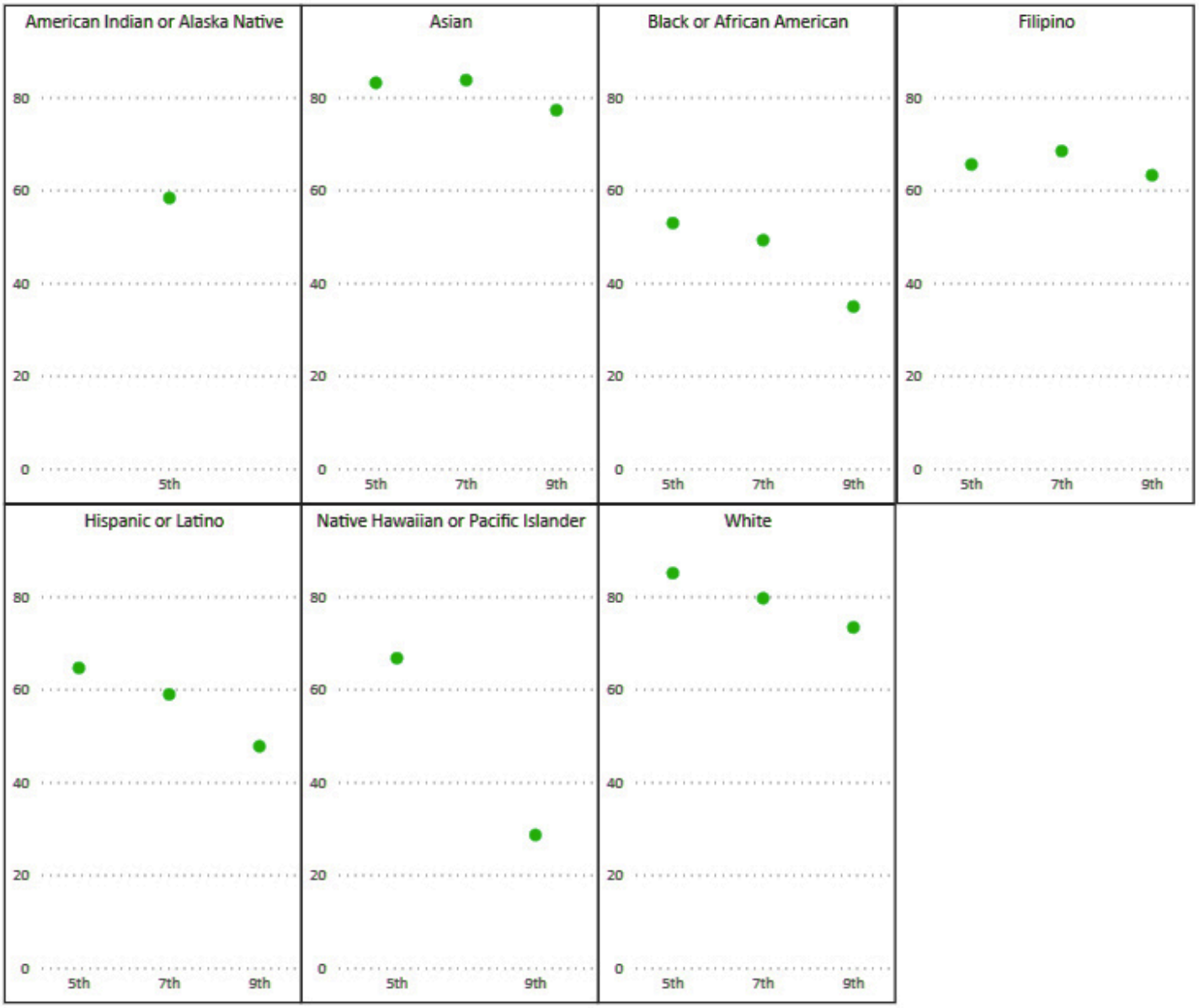
Note: Data represent the percent of SFUSD students meeting 5 or more of 6 different fitness tests – aerobic capacity, body composition, abdominal strength, trunk extension strength, upper body strength, and flexibility.
Data source: California Department of Public Health

Figure 11c. Percent of SFUSD Students Meeting 5 or 6 of 6 Fitness Goals by Economic Status, 2018-2019



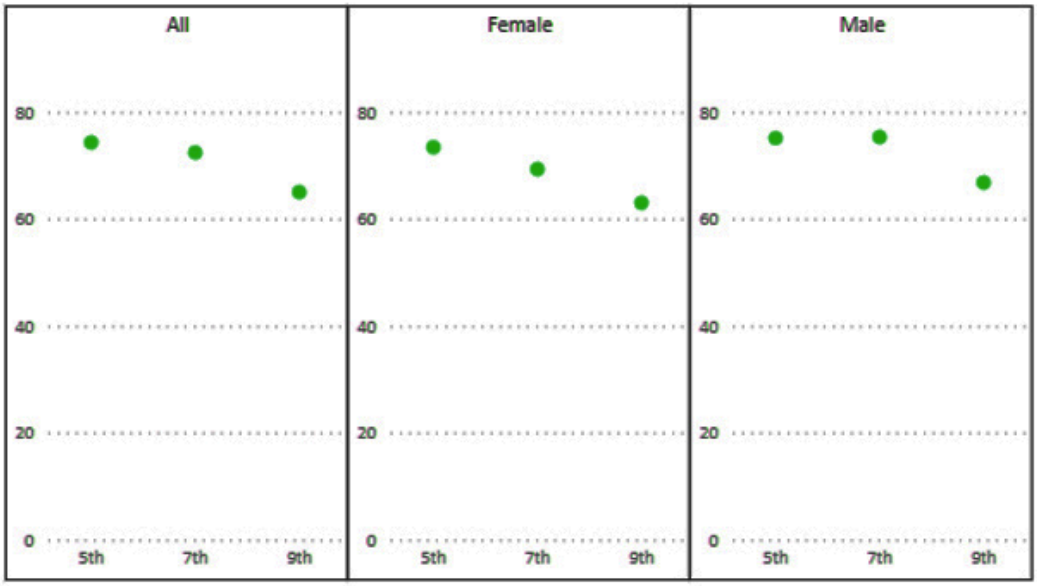
Note: Data represent the percent of SFUSD students meeting 5 or more of 6 different fitness tests – aerobic capacity, body composition, abdominal strength, trunk extension strength, upper body strength, and flexibility.
Data source: California Department of Public Health

Figure 12a. Percent of SFUSD Students with Aerobic Capactiy in the Healthly Fitness Zone by Race/Ethnicity, 2018-2019



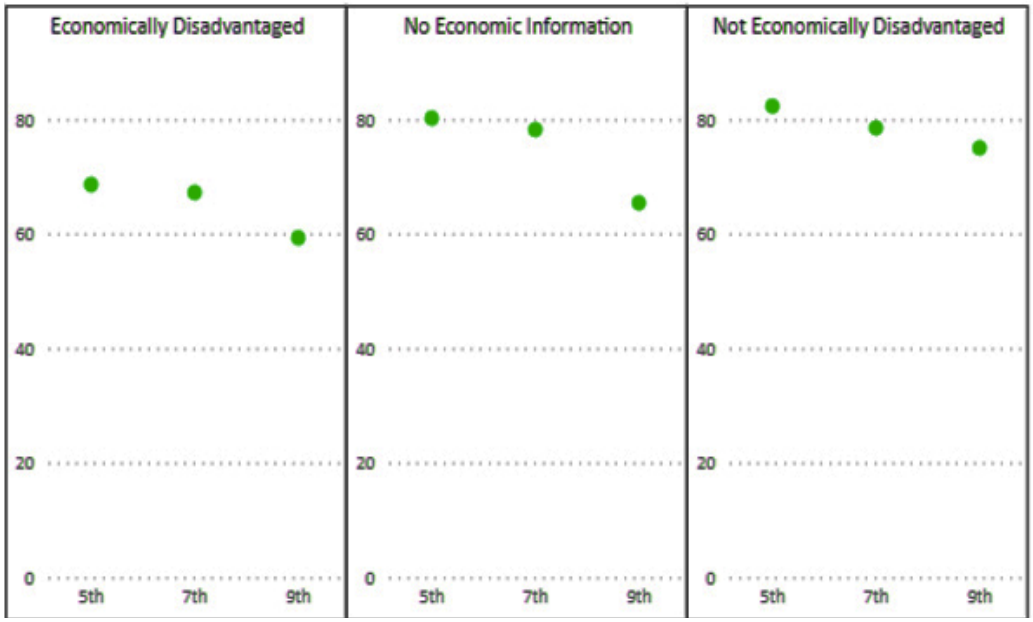
Note: Data represent the percent of SFUSD students meeting the healthy fitness zone for aerobic capacity. Missing data for a grade indicate that there were too few observations to report.
Data source: California Department of Public Health

Figure 12b. Percent of SFUSD Students with Aerobic Capactiy in the Healthly Fitness Zone by Sex, 2018-2019



Note: Data represent the percent of SFUSD students meeting the healthy fitness zone for aerobic capacity.
Data source: California Department of Public Health

Figure 12c. Percent of SFUSD Students with Aerobic Capactiy in the Healthly Fitness Zone by Economic Status, 2018-2019



Note: Data represent the percent of SFUSD students meeting the healthy fitness zone for aerobic capacity.
Data source: California Department of Public Health

CURRENT STATE OF DIET-SENSITIVE DISEASE

Oral Health

Oral health is essential to general health and quality of life. It is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial well-being.[91] SSB consumption is associated with increased tooth decay, cavities and tooth loss.[92-95]

Children's Oral Health

Tooth decay is the most common chronic disease of childhood and the leading cause for missed school days. Poor oral health can cause pain, dysfunction, school or work absences, difficulty concentrating, and poor appearance—problems that greatly affect quality of life and ability to interact with others. Children who experience dental decay miss more school, have lower academic achievement, and have an increased risk for a lifetime of dental problems.[96,97] California students are estimated to miss 874,000 days of school due to dental problems, costing schools over $29 million in funding based on reductions in the average daily attendance rate[98] Poor oral health can reflect systemic inflammation, which over time may limit growth and development, as well as increase risk of adverse health outcomes, including hypertension, cardiovascular disease, and cancer.[99]

Routine preventive dental care including daily oral hygiene, fluoride treatments and dental sealants, and reduction of sugars in the diet can prevent tooth decay. Fluoride varnish applications reduce decayed/missing/filled tooth surfaces by 43% in permanent teeth and by 37% in primary teeth.[100] Dental sealants can prevent up to 80% of tooth decay in children and adolescents.[101]

Despite steady decreases in caries (i.e. tooth decay or cavities) prevalence in San Francisco over the past 10 years, tooth decay remains a prevalent local health problem. In 2022-2023, 35% of SFUSD kindergarteners had experienced caries and 23% had untreated caries (Figure 26). As treatment of decay is alone insufficient and children who do not receive adequate treatment--fluoride treatments, dental sealants, ongoing care of cavity fillings—and reduce sugars in the diet are at higher risk for the development of further caries, the initial development of caries signals the beginning of a lifetime of otherwise preventable dental procedures. National and state data show that 52% to 71% of all children 6-9 years have caries[102,103]

Consistent with nationwide patterns and trends, disparities in oral health persist in San Francisco. Low-income and minority children have higher tooth decay rates. In San Francisco, Black/African American, Latinx, and Asian kindergarteners are two to three times more likely to experience dental decay as White kindergarteners (Figure 13). Disparities are similar for *untreated* caries with Black/African American, Latinx, and Asian kindergarteners more likely to experience untreated caries (Figure 14). Rates of dental caries and the untreated dental caries among kindergarteners at the lowest income schools are three times higher than rates at the highest income schools (Figure 14).

Figure 13. Percent of SFUSD Students in Kindergarten that had Experienced Caries By Race/Ethnicity and School Income Level, 2018-2023

	2018-19	2019-2020*	2020-21	2021-2022**	2022-23***
Total	34 (33-35)	28 (27-33)	-	34 (32-36)	35 (33-37)
Race-ethnicity					
Asian	40 (37-43)	38 (33-43)	-	38 (35-41)	39 (36-42)
Black or African American	40 (33-47)	32 (20-45)	-	37 (30-44)	46 (38-54)
Latino/a/x	37 (34-40)	41 (35-47)	-	43 (40-46)	47 (44-50)
White	14 (11-17)	11 (7-15)	-	14 (11-17)	14 (11-17)
School income level					
Highest	16 (18-20)	12 (8-16)	-	18 (14-22)	18 (14-22)
Medium	23 (21-25)	16 (12-20)	-	25 (23-27)	23 (21-25)
Low medium	38 (31-44)	29 (24-35)	-	43 (40-46)	43 (40-46)
Lowest	52 (47-57)	49 (44-53)	-	50 (46-54)	55 (51-59)

*Estimates based on incomplete data from screenings finished in Fall 2019, before the COVID-19 shelter in place orders, were weighted using enrollment data for 2019-2020.
**Estimates for 2021-22 and 2022-23 are not weighted. Note that screening response rates for 2021-2023 were below pre-pandemic levels. The unweighted estimates for 2019-2023 (based on n~3,000) may not be comparable to rates in 2018-2019 (n~4,000).
Data source: San Francisco Unified School District-San Francisco Department of Public Health Dental Services Kindergarten Oral Health Screening Program

Figure 14. Percent of SFUSD Students in Kindergarten with Untreated Caries Experience by Race/Ethnicity and School, 2018-2023

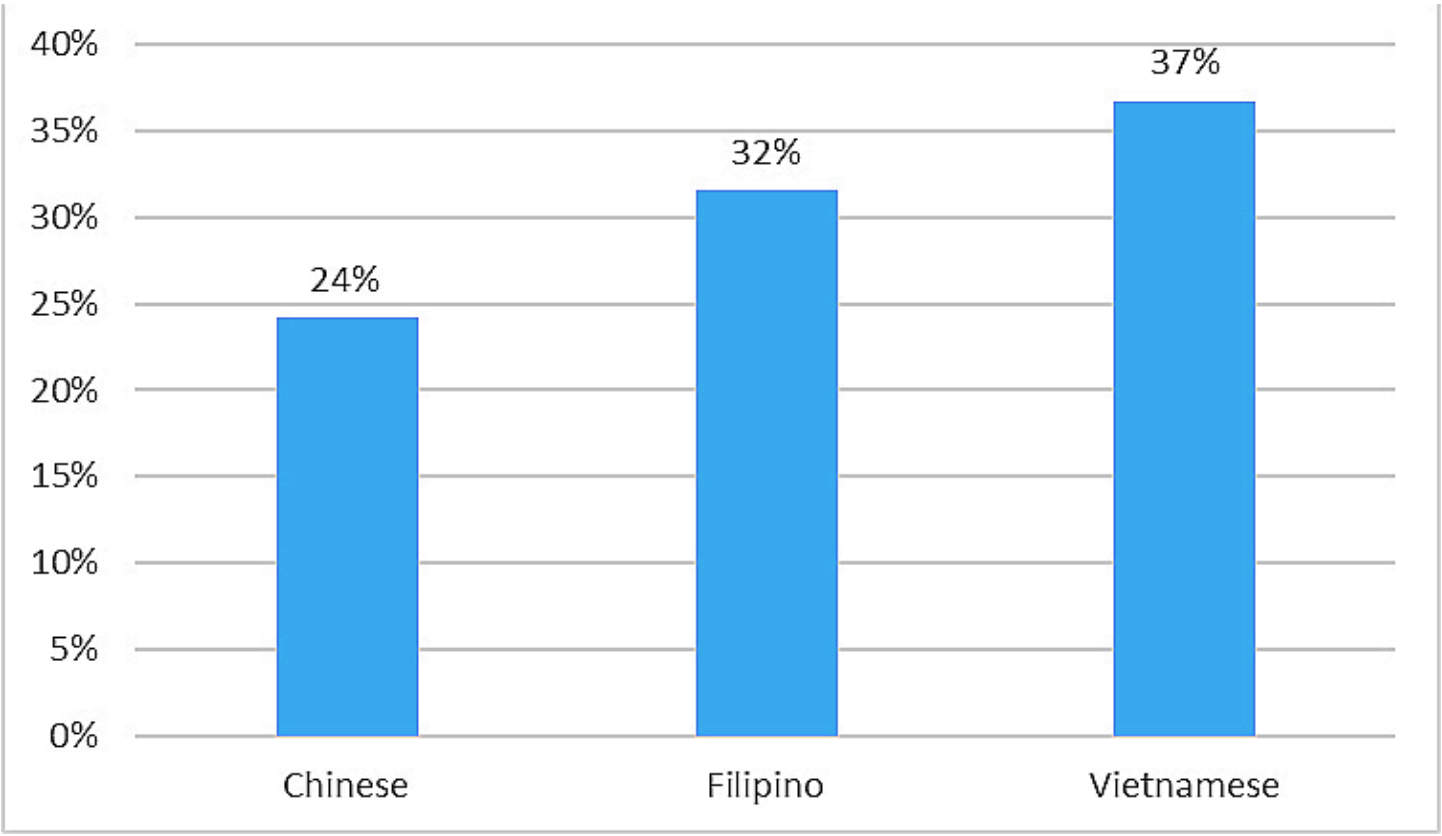
	2018-19	2019-2020*	2020-21	2021-2022**	2022-23***
Total	19 (18-20)	18 (16-21)	-	23 (22-24)	23 (22-24)
Race-ethnicity					
Asian	21 (19-23)	24 (20-29)	-	25 (22-28)	33 (30-36)
Black or African American	25 (18-32)	26 (14-39)	-	27 (20-34)	31 (24-39)
Latino/a/x	19 (16-22)	24 (19-29)	-	30 (27-33)	32 (29-35)
White	8 (6-10)	7 (3-11)	-	9 (6-12)	7 (5-9)
School income level					
Highest	8 (6-10)	9 (6-13)	-	11 (8-14)	9 (6-12)
Medium	12 (10-14)	6 (3-9)	-	16 (14-18)	13 (11-15)
Low medium	22 (16-27)	16 (12-21)	-	30 (27-33)	29 (26-32)
Lowest	31 (26-36)	33 (29-38)	-	36 (33-40)	38 (34-41)

*Estimates based on incomplete data from screenings finished in Fall 2019, before the COVID-19 shelter in place orders, were weighted using enrollment data for 2019-2020.
**Estimates for 2021-22 and 2022-23 are not weighted. Note that screening response rates for 2021-2023 were below pre-pandemic levels. The unweighted estimates for 2019-2023 (based on n~3,000) may not be comparable to rates in 2018-2019 (n~4,000).
Data source: San Francisco Unified School District-San Francisco Department of Public Health Dental Services Kindergarten Oral Health Screening Program

Rates of caries experience vary among Asians subpopulations in San Francisco (Figure 15). Asian Indian, Cambodian, Hmong, Japanese, Korean, and Laotian collectively have lower rates of caries prevalence (20%) compared to Chinese, Vietnamese, and Filipinx (37-45%).

Caries experience varies by neighborhood. In 2022, children living in the following zip codes 94112, 94134, and 94124 experienced caries at the highest percentages (data not shown). The most affected neighborhoods being those with high proportions of Latinx, African American, Asian, and low-income residents.[104]

Figure 15. Percent of SFUSD Kindergarteners with Untreated Caries by Asian Subgroup, 2022-2023



Note: Data are pooled estimates from 2022-2023
Data source: Kindergarten Oral Health Screening Program

Adult Oral Health

While data on tooth decay and caries experience rates is not available for San Francisco adults, there is statewide, county-level data on the number of emergency department visits for Non-Traumatic Dental Conditions (NTDCs), most of which are a result of tooth decay. During the years 2017-2021 there were over 84,000 visits to emergency departments in San Francisco where NTDCs were present (Table 7). Eighty percent of these visits were by individuals aged 18 and over. Black/African American, Native Hawaiian and Other Pacific Islander and American Indian or Alaska Native residents utilized emergency departments for NTDCs at much higher rates than other groups (Table 8). It's important to note that not presenting to the emergency department does not mean individuals are free of morbidity.

Table 7. Emergency Room Visits for Non-Traumatic Dental Conditions by Age Group, San Francisco, 2017-2021

Age Group	Count	Crude Rate (per 10,000)
Infants <1	2365	482.2
Children 1-4	6359	340.4
Children 5-8	3181	197.6
Adolescents 9-12	1976	154.7
Teens 13-17	2308	137.6
TAY 18-24	7786	220.9
25-34	13669	180.0
35-44	11221	160.6
45-54	10193	179.8
55-64	9699	194.6
65-74	6972	174.8
75+	8379	292.7

Note: Data represent emergency department visits where an individual had a related non-traumatic dental condition, regardless of the chief reason for the visit. Data are pooled 5-year esimates from 2017 to 2021.
Data source: California Department of Healthcare Access and Information

Table 8. Emergency Room Visits for Non-Traumatic Dental Conditions by Race/Ethnicity, San Francisco 2017-2021

Race/Ethnicity	Count	Crude Rate (per 10,000)
All	84108	197.7
American Indian or Alaska Native	478	494.1
Asian	13912	99.5
Black or African American	17270	788.8
Latino(a)	22662	327.0
Native Hawaiian or other Pacific Islander	1391	752.5
White	22800	129.7

Note: Data represent emergency department visits where an individual had a related non-traumatic dental condition, regardless of the chief reason for the visit. Data are pooled 5-year esimates from 2017 to 2021.
Data source: California Department of Healthcare Access and Information

Overweight and Obesity

A note regarding use of obesity as a measure of health. Evolving research indicates that focusing on overweight/obesity furthers stigma and can exacerbate or contribute to poor health. Whereas the Healthy Eating Active Living Team in SFDPH's Community Health Equity and Promotion Branch have focused on preventing chronic disease and promoting nutrition and physical activity as opposed to obesity prevention; their recommendation is to shift from using obesity as a measure in this work and focus instead on other health conditions impacted by sugary drink consumption. The Canadian Medical Association Journal provides additional context to this recommendation:

"Although obesity has been shown to contribute to certain types of health problems, anti-fat stigma is also a threat to health. Anti-fat stigma adds both psychological and physiologic stress to people who are considered excessively fat, which some experts argue partially accounts for health disparities by weight.[105,106] Anti-fat stigma is underpinned by common assumptions that fatness is highly malleable and under individual control, implying that people who are visibly fat have poor self-control, are unknowledgeable or are not invested in their health. Puhl and Heuer's 2009 review of over 200 studies (with experimental, survey, population-based and qualitative designs) highlighted how common such stigmatizing assumptions are and the discrimination that follows in multiple sectors.[107] In a 2016 systematic review and meta-analysis, Spahlholz and colleagues confirmed high rates of perceived weight-based discrimination in many life domains.[108] Stigmatization can be a daily occurrence; an analysis involving 50 overweight or obese women in the United States who filled out the Stigmatizing Situations Inventory over 298 days reported more than 1000 weight-stigmatizing events. Body mass index (BMI) was the strongest predictor."[109]

SSB consumption is associated with overweight and obesity.[110,111] Overweight and obesity reflect excess body weight relative to height. Overweight and obesity are associated with greater risk of chronic disease, pain, disability, anxiety, depression, mental illness, and lower quality of life. Obesity increases risk of chronic conditions, including high blood pressure, high cholesterol, heart disease, type 2 diabetes, osteoarthritis, breast and colon cancers, sleep apnea, and gynecological problems.[112-114] Obesity is associated with all-cause mortality, and is a leading cause of preventable death. Obese men age 20 to 39 have an estimated six years of life lost.[115] That being said, overweight and obesity are not absolutely predictive of negative health outcomes for a given individual whose personal risk of disease can be equivalent or less than that of a normal weight individual depending on their genetics, diet, and level of physical activity.

For adults, overweight is defined as a body mass index (BMI) of 25.0 to 29.9 kg/m2 and obesity as a BMI of ≥ 30kg/m2.[116] For infants and toddlers up to two years of age, excess weight is identified as a weight-for-length greater than or equal to the 98th percentile.[117] For children and adolescents, the CDC defines overweight as a body mass index (BMI) percentile over the 85th percentile for age and sex.[118]

FitnessGram® data for youth in San Francisco describe students as having body compositions either being within or outside the "healthy fitness zone" which is comprised of BMI and a measure of percent body fat.[119] For pregnant women, excess weight gain is defined as a gain of more than 40 pounds if the mother is underweight before pregnancy, more than 35 pounds if she is normal weight before pregnancy, more than 25 pounds if she is overweight before pregnancy, and more than 20 pounds if she is obese before pregnancy.[120]

Risk of overweight and obesity begins during pregnancy and tracks throughout the life course. Excess maternal weight gain during pregnancy programs the unborn fetus for a lifetime of exaggerated response to insulin and stress hormones, and increased susceptibility to weight gain.[121-127] Excess weight gain during pregnancy is associated with excess infant weight at birth, excess weight gain before age five, and childhood and adult obesity. Overweight children are more likely to become overweight adolescents who in turn have a 70% chance of becoming an overweight or obese adult.[128,129] Prevention and early intervention are very important, because obesity is difficult to treat once established.[130]

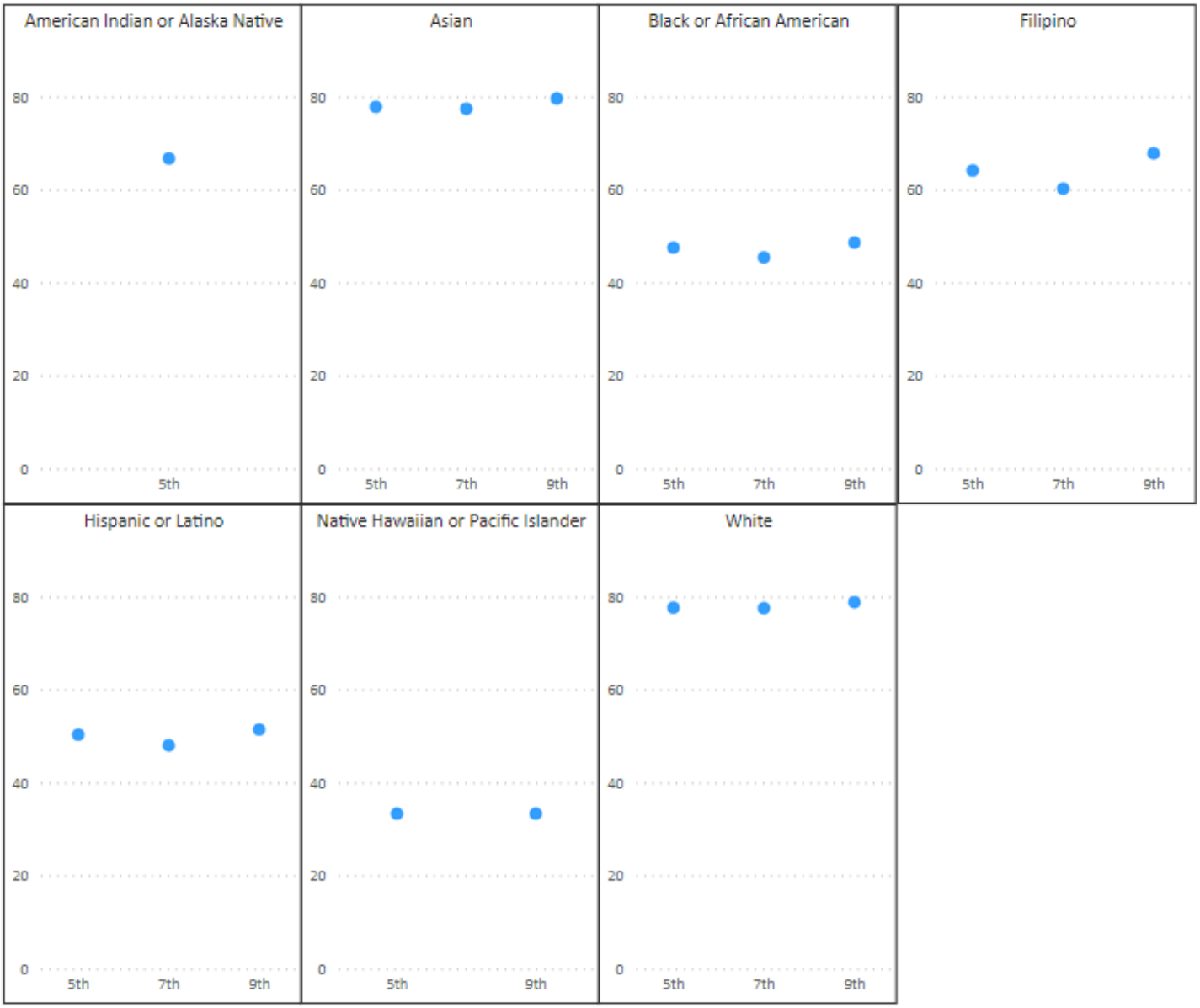
YOUTH – Overweight and Obesity

Nationally, childhood obesity has more than doubled in children and tripled in adolescents in the past 30 years; in 2010, more than one-third of children and adolescents were overweight or obese.[131]

SFUSD assesses students for body mass index (BMI) and other fitness measures annually in grades 5, 7, and 9 (the FitnessGram®). In school year 2018-2019, 66% of 5th grade students, 66% of 7th graders, and 69% of 9th graders had a measured body composition inside the healthy fitness zone.

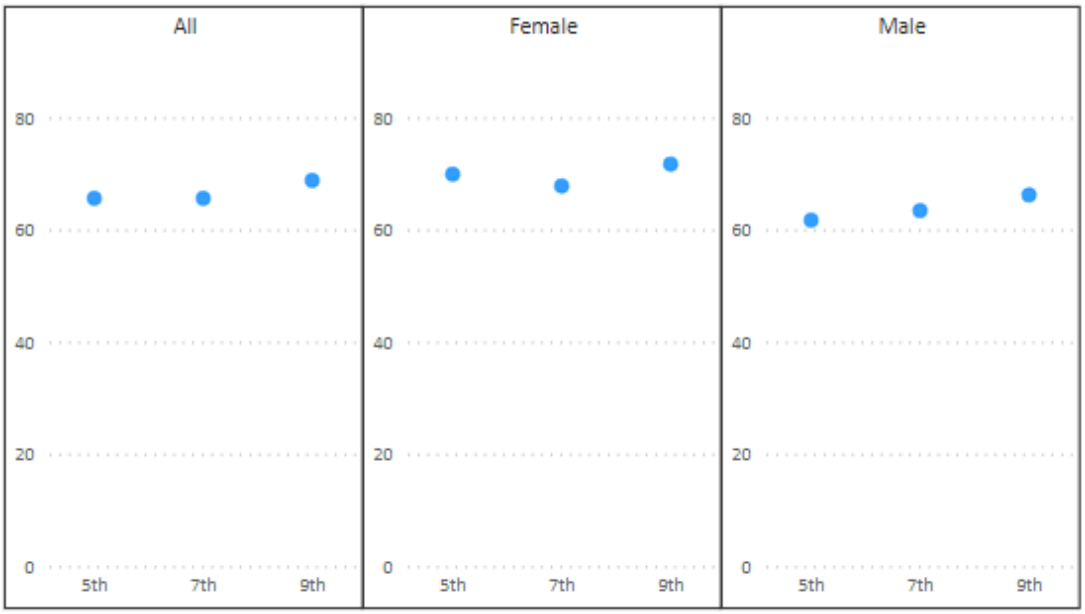
A lower proportion of racial minority, economically disadvantaged, and male students have a body composition inside of the healthy fitness zone (Figures 16a-16c). Asian and white students are about 2.2 times more likely than Pacific Islander students, 1.8 times more likely than Black/African American or Latinx students, and 1.2 times more likely than Filipinx students to have a healthy body composition. Similarly, economically disadvantaged students (58-65%) are less likely to have a measured body composition inside the healthy fitness zone than not economically disadvantaged students (67-76%). These trends among people of color, and those at an economic disadvantage are mirrored in the adult population; however, unlike among adults, female students (68-72%) appear to be more likely to be within the healthy fitness zone as compared to male students (62-66%).

Figure 16a. Percent of SFUSD Students with a Body Composition Inside the Healthy Fitness Zone by Race/ Ethnicity, 2018-2019



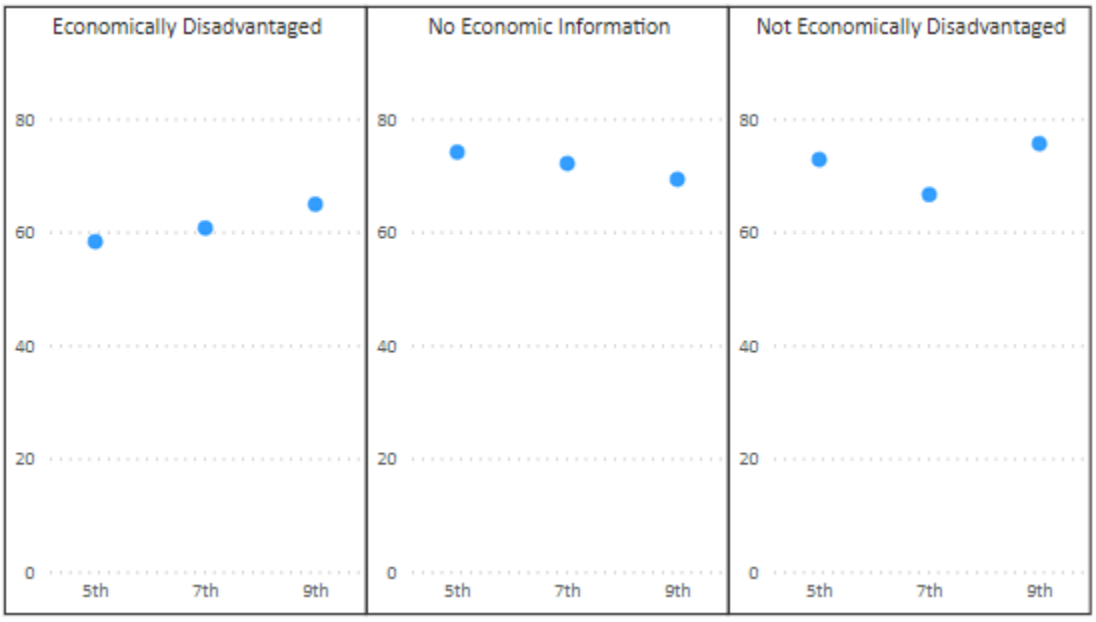
Note: Data represent the percent of SFUSD students meeting the healthy fitness zone for body composition. Missing data for a grade indicate that there were too few observations to report.
Data source: California Department of Public Health

Figure 16b. Percent of SFUSD Students with a Body Composition Inside the Healthy Fitness Zone by Sex, 2018-2019



Note: Data represent the percent of SFUSD students meeting the healthy fitness zone for body composition.
Data source: California Department of Public Health

Figure 16c. Percent of SFUSD Students with a Body Composition Inside the Healthy Fitness Zone by Economic Status, 2018-2019

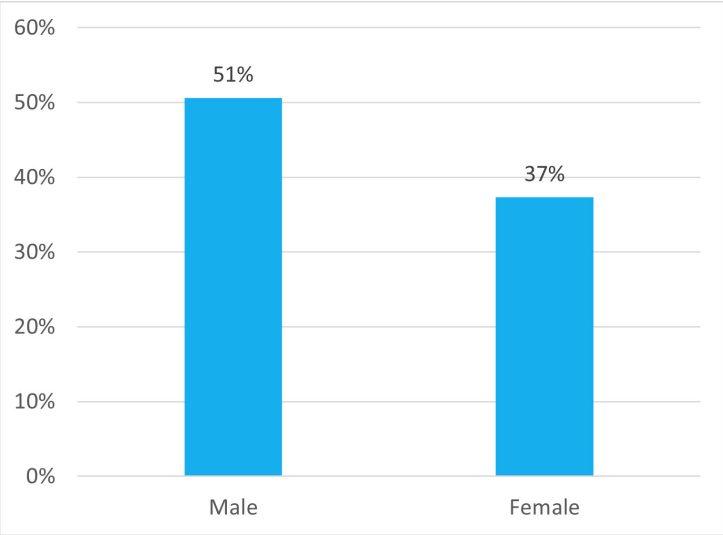


Note: Data represent the percent of SFUSD students meeting the healthy fitness zone body composition.
Data source: California Department of Public Health

ADULTS – Overweight and Obesity

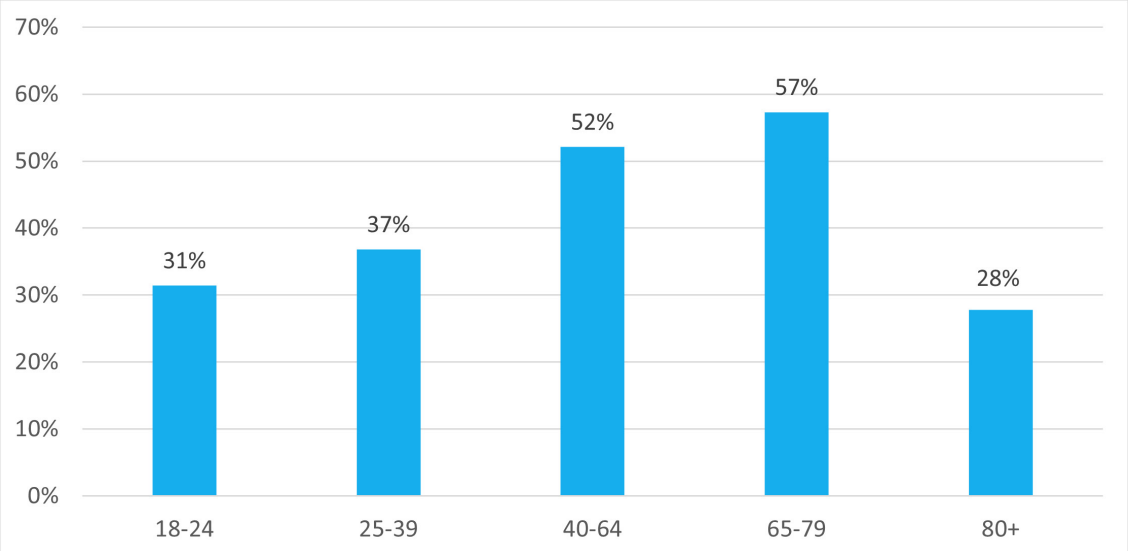
According to CHIS, the percentage of adults reporting weight and height consistent with overweight and obesity (which includes BMI ≥ 25) among adults has remained relatively stable since 2011. In 2011, 65.1% of San Francisco adults reported a height and weight consistent with being overweight/obese compared with 64.5% in 2021. More men report experiencing overweight or obesity than women 51% vs 37%, respectively (Figure 17). More than 50% of adults 40-79 years old in San Francisco are overweight or obese compared to 31% of adults 18 to 24 years.

Figure 17. Percentage of Adults Reporting Height and Weight Consistent with Overweight or Obesity, by Gender, 2021



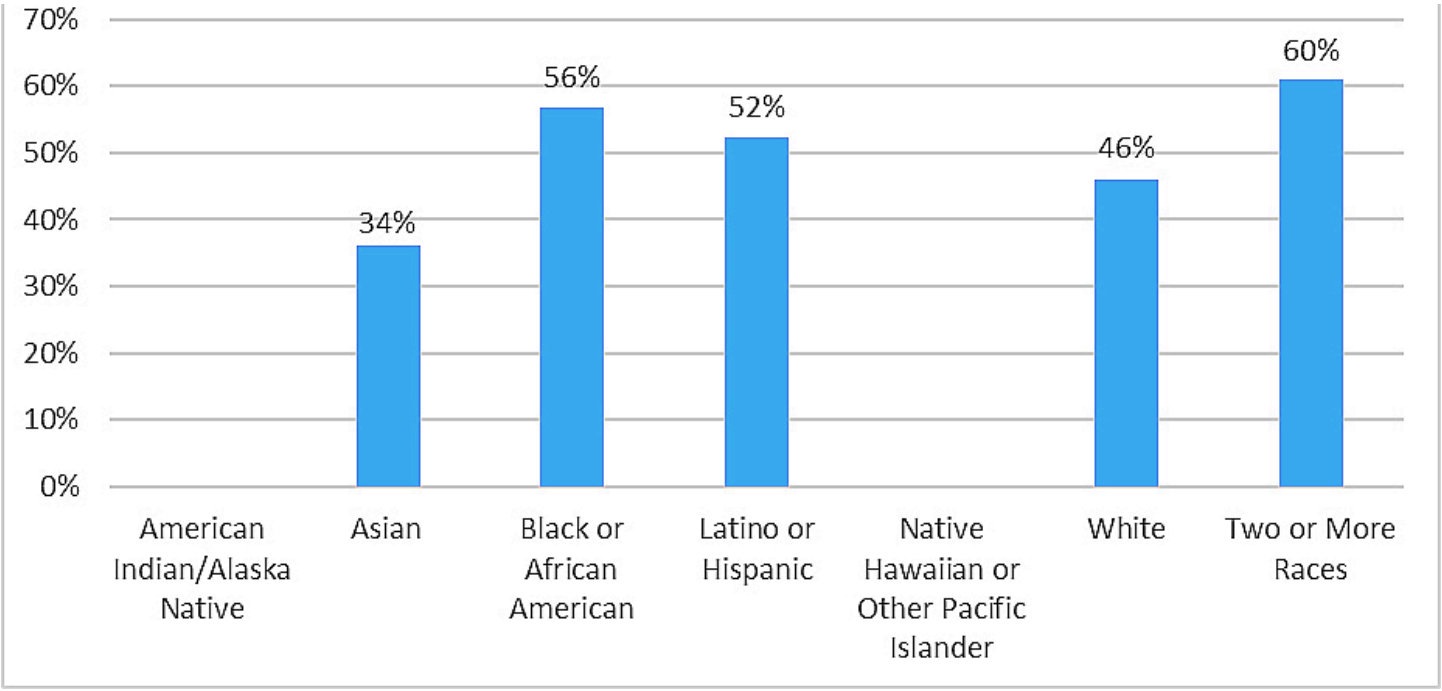
Data source: California Health Interview Survey

Figure 18. Percentage of Adults Reporting Height and Weight Consistent with Overweight or Obesity, by Age, 2021



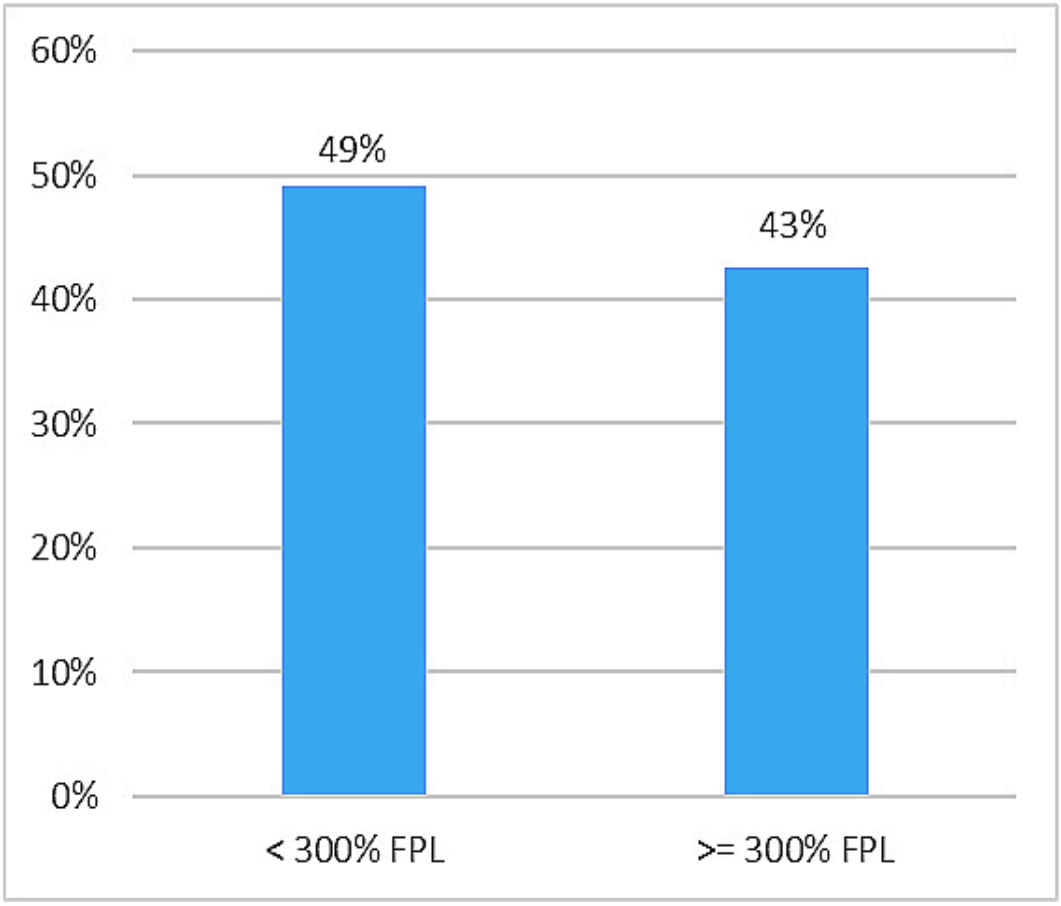
Data source: California Health Interview Survey

Figure 19. Percentage of Adults Reporting Height and Weight Consistent with Overweight or Obesity, by Race/Ethnicity, 2021



Note: Data were not available for American Indian/Alaska Native or Native Hawaiian or Other Pacific Islander residents due to small sample sizes.
Data source: California Health Interview Survey

Figure 20. Percentage of Adults Reporting Height and Weight Consistent with Overweight or Obesity, by Poverty Level, 2013



Data source: California Health Interview Survey

Consistent with national obesity disparities, locally, the rates of overweight and obesity vary by income, race/ethnicity, and zip code. Data from the California Health Interview Survey indicates that Black/African Americans (56%), Latinx (52%), and Whites (46%) have higher prevalence of overweight/obesity than Asians (34%), who have the lowest rate of overweight and obesity in San Francisco (Figure 34).[IV] Residents in households earning less than 300% of the federal poverty level are 38% more likely to experience overweight or obesity as compared to those at 300% or above (Figure 20).

IV While data does suggest that Asian people with a high risk of type 2 diabetes and cardiovascular disease is substantial at BMIs lower than the cutoff for overweight (>25kg/m^2), no clear cut-off point has been identified for all Asians for overweight and obesity. For international classification, the WHO recommends keeping the standard cut points. However, for many Asian populations public health action points were defined as 23 kg/m^2 indicating increased risk and 27.5 kg/m^2 as high risk. At this time data are not available for the different cut-points and guidance is required to determine which cut-off points are useful for San Francisco. ii Insufficient data is available to produce mortality rates for specific causes for Native Hawaiian or Pacific Islanders and American Indian and Alaska Native residents. Comparisons here are made with Asian, Latin(a), and White residents.

The CDC's modeling of obesity suggests that it is concentrated in parts of Bayview Hunters Point, Tenderloin, Western Addition, Hayes Valley, Visitacion Valley, and McLaren Park, coinciding with concentrations of populations at higher risk.[133]

Pregnant People

Data on excessive weight gain during pregnancy is provided by the Maternal, Child and Adolescent Health (MCAH) Section at SFDPH. An update on this indicator will be released Spring of 2024. Since this is later than this report's release, new data on this indicator will be included in the next version of this report.

As reported in 2019 Sugary Drinks Distributor Tax Advisory Committee Report, more than one third of women (37%) gained excess weight during pregnancy in San Francisco in 2018. Differences in excess weight gain during pregnancy by weight status prior to becoming pregnant, race/ethnicity, and insurance type were observed. See 2019 Sugary Drinks Distributor Tax Advisory Committee Report for more details on those findings.

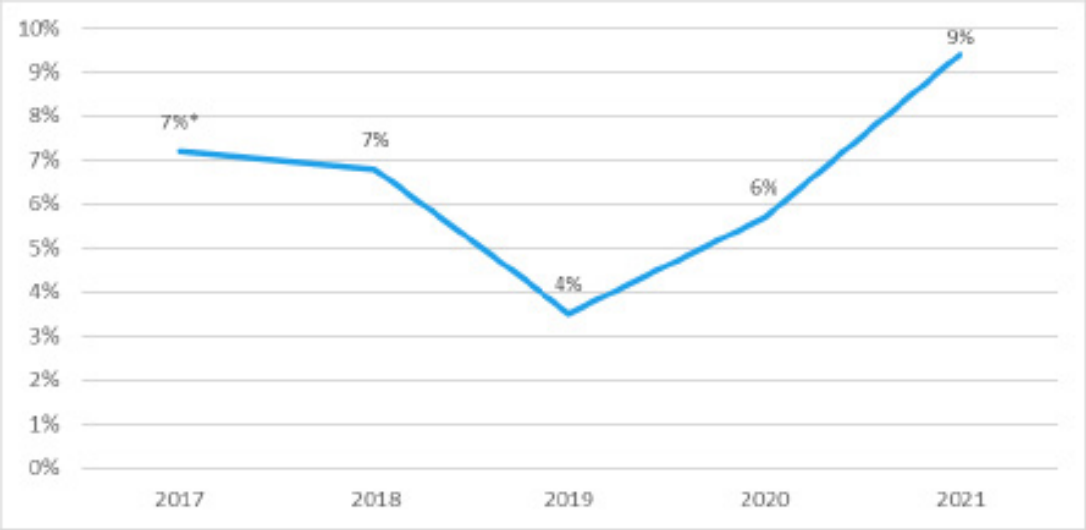
Diabetes

Diabetes is a condition in which the body does not properly process food for use as energy, leading to increased levels of glucose in the blood which can cause damage to tissues and organs throughout the body. The two main types of diabetes are type 1 diabetes and type 2 diabetes. Type 1 diabetes, previously called insulin-dependent diabetes mellitus or juvenile onset diabetes, accounts for 5-10% of all cases of diabetes and is considered primarily a genetic disease whose onset is not particularly influenced by diet or the environment.[134] In contrast, type 2 diabetes, previously called non-insulin-dependent diabetes mellitus or adult-onset diabetes, accounts for about 90 to 95% of all diagnosed cases of diabetes. SSB consumption is associated with increased risk of developing type 2 diabetes.[135,136] A third type, gestational diabetes, develops only during pregnancy. Babies born to mothers with gestational diabetes may suffer from excessive birth weight, preterm birth, respiratory distress syndrome, low blood sugar, and type 2 diabetes later in life. Women who have gestational diabetes during pregnancy have a 7.5-fold increased risk for the development of type 2 diabetes after delivery. This increased risk persists for their lifetime, even if diabetes does not develop immediately following pregnancy. Risk factors for type 2 diabetes and gestational diabetes include older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, unhealthy diet, physical inactivity, and race/ethnicity.[137]

Prediabetes, also referred to as impaired glucose tolerance or impaired fasting glucose, is a condition in which blood glucose levels are higher than normal but not high enough for a diagnosis of diabetes. People with prediabetes have a much higher risk of developing type 2 diabetes, as well as an increased risk for cardiovascular disease. Without intervention, up to 30 % of people with prediabetes will develop type 2 diabetes within five years, and up to 70 % will develop diabetes within their lifetime.[138,139] According to modeled prevalence estimates by the UCLA Center for Health Policy Research, approximately 44% of San Franciscans have pre-diabetes.[140]

Type 2 Diabetes can be prevented or delayed through moderate weight loss, exercise and improved nutrition, yet, type 2 diabetes impacts health and health spending significantly.[141,142] Diabetes is the eighth leading cause of death in San Francisco which is an underestimate since heart disease, the leading killer, is often worsened by having concurrent diabetes.[143] It is also the leading cause of kidney failure and the need for dialysis and can cause other serious health complications including blindness and lower-extremity amputations.[144,145] Diabetes reduced the lifespan of San Franciscans by approximately eight years and, as estimated by San Francisco's Budget and Legislative Analyst Office, the City and County of San Francisco pays over $87 million for direct and indirect diabetes care costs.[146]

Figure 21. Percentage of Adults Reporting Having Diabetes, by Year, 2017-2021

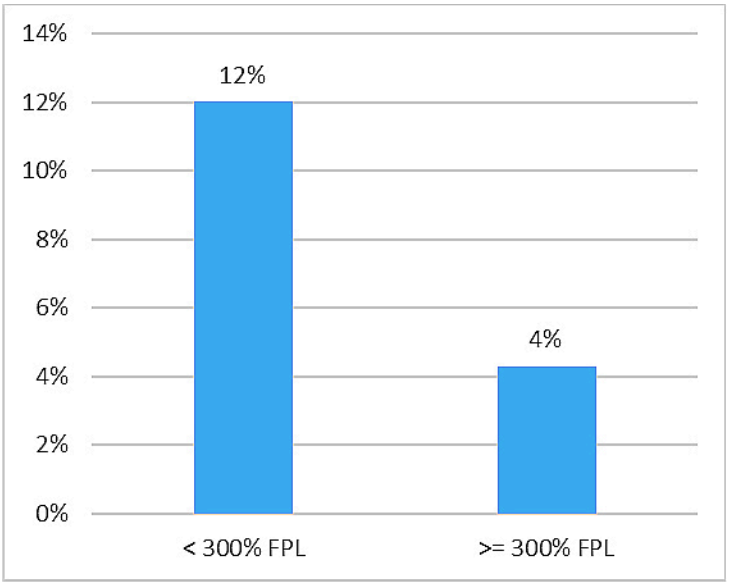


Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had diabetes or sugar diabetes. Data for 2017 is not statistically stable, indicated by the asterisk.
Data source: California Health Interview Survey

Diabetes Prevalence

According to CHIS, from 2019-2021 approximately 6% of adults in San Francisco reported ever being diagnosed with diabetes, excluding during pregnancy. However, the prevalence of diabetes appears to be increasing. In 2018 6.8% of adults in San Francisco reported having ever been diagnosed with diabetes while in 2021 that percentage rose to 9.4% (Figure 21). However nationally, nearly 1 in 4 people living with diabetes are undiagnosed thus the true prevalence of type 2 diabetes in San Francisco is likely higher.

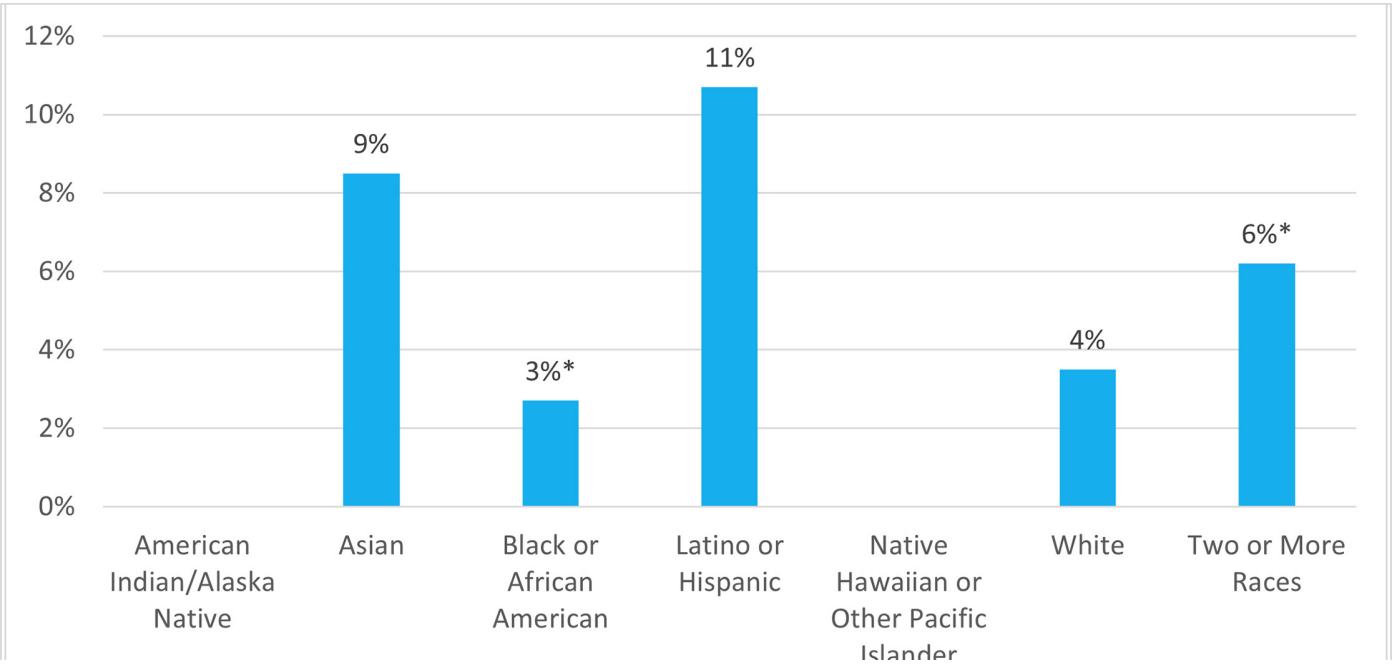
Figure 22. Percentage of Adults Reporting Having Diabetes, by Poverty Level, 2019-2021



Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had diabetes or sugar diabetes. Data are pooled for three years, 2019-2021.
Data source: California Health Interview Survey

Nationally and locally, diabetes affects poorer residents to a greater extent[147]; San Francisco residents living in household which earn less than 300% of the federal poverty level, are about 3 times as likely to have diabetes (Figure 22). By race/ethnicity, Latino/Hispanic and Asian residents had the highest rates of diabetes compared to White residents (11%, 9%, and 4% respectively). However, estimates were not statistically stable for Black/African American residents and were not available for American Indian/Alaska Native and Native Hawaiian or Other Pacific Islander residents due to the small number of respondents. Statewide, we know that the prevalence of diabetes is highest among Native Hawaiian or Other Pacific Islander, Black/African American, and Latino or Hispanic adults compared to White adults (20%, 15%, 12% and 9%, respectively) for 2019-2021.

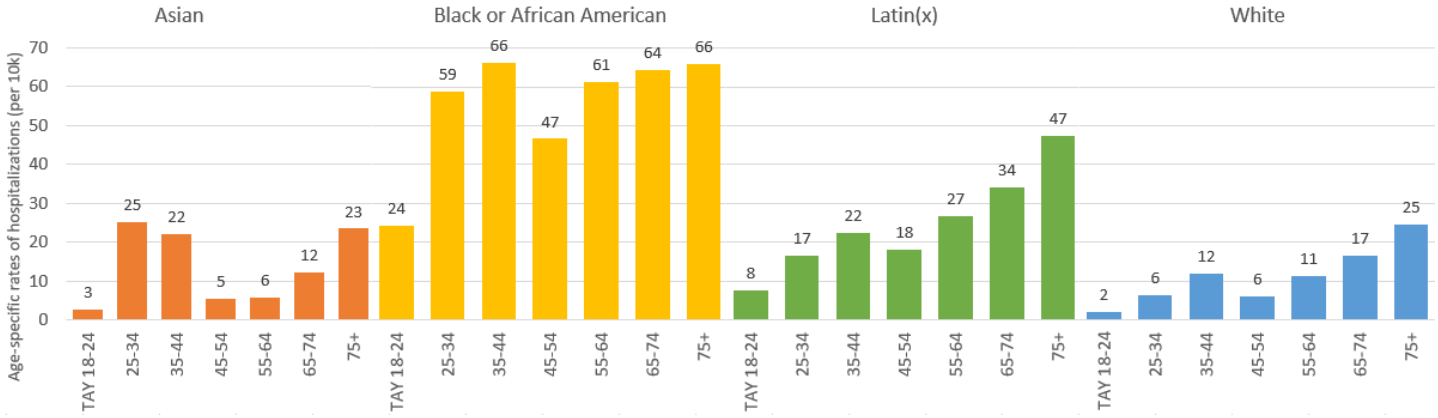
Figure 23. Percentage of Adults Reporting Having Diabetes, by Race/Ethnicity, 2019-2021



Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had diabetes or sugar diabetes. Data were not available for American Indian/Alaska Native or Native Hawaiian or Other Pacific Islander residents due to small sample sizes. Data are pooled for three years, 2019-2021.
Data source: California Health Interview Survey

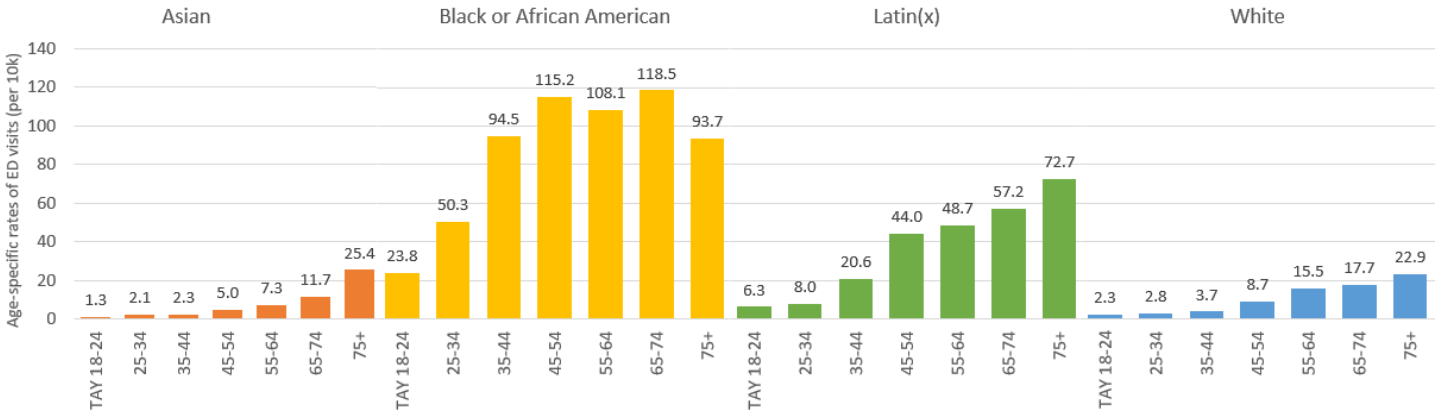
Rates of hospitalizations and emergency room visits are markedly higher for Black/African American and Latinx residents than for White and Asian residents (Figure 24a and 24b) at all ages. Residents in the eastern zip codes (specifically 94102, 94103, 94124, 94130, and 94134) are more likely to be hospitalized due to diabetes than those living elsewhere in San Francisco.[148,149]

Figure 24a. Age-Specific Rates of Hospitalizations Due to Diabetes Among Adults, 2017-2021



Note: Data represent hospitalization dicharges. Hospitalization rates for Native Hawaiian and Other Pacific Islanders and American Indian and Alaska Natives are not available because the population sizes are too small. Data are pooled 5-year esimates from 2017 to 2021.
Data source: California Department of Healthcare Access and Information

Figure 24b. Age-Specific Rates of Emergency Department Visits Due to Diabetes Among Adults, 2017-2021



Note: Data represent hospitalization dicharges. Hospitalization rates for Native Hawaiian and Other Pacific Islanders and American Indian and Alaska Natives are not available because the population sizes are too small. Data are pooled 5-year esimates from 2017 to 2021.
Data source: California Department of Healthcare Access and Information

Gestational Diabetes

Data on gestational diabetes is provided by the Maternal, Child and Adolescent Health (MCAH) Section at SFDPH. An update on this indicator will be released June 2024. Since this is later than this report's release, new data on this indicator will be included in the next version of this report.

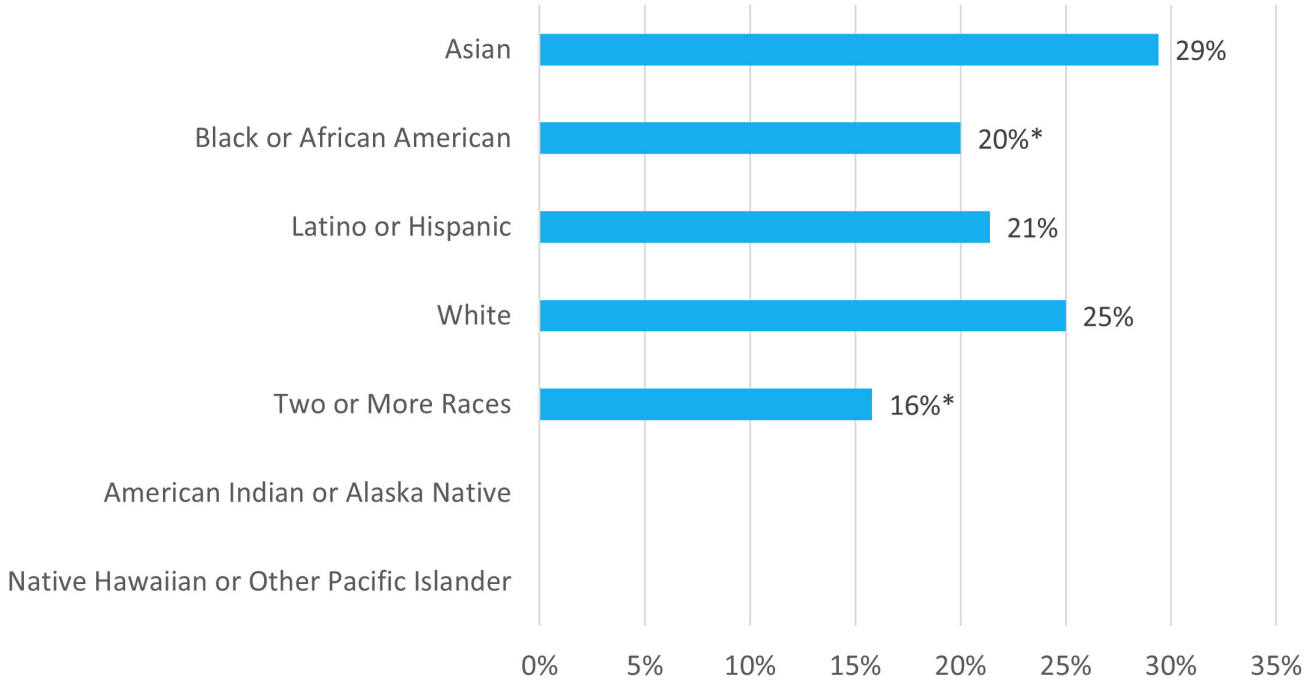
As reported in the 2019 Sugary Drinks Distributor Tax Advisory Committee Report, the incidence rate of gestational diabetes in San Francisco increased in 2017 and 2018 compared to 2014 to 2016. Differences were seen by race/ethnicity and zip code. See 2019 Sugary Drinks Distributor Tax Advisory Committee Report for more details on those findings.

Hypertension

Hypertension, also called high blood pressure, is a condition in which the force of blood pushing against the vessel walls is higher than normal. This increased pressure damages blood vessel walls and can lead to complications such as cardiovascular disease (including heart attack and stroke), kidney disease, and blindness. Hypertension is the second leading cause of kidney failure. Along with diabetes, hypertension is the major risk factor and contributor to cardiovascular disease which is the leading cause of death in San Francisco and nationally.[150] Diet, physical activity, smoking, stress, family history, and genetics all contribute to the development and management of hypertension.

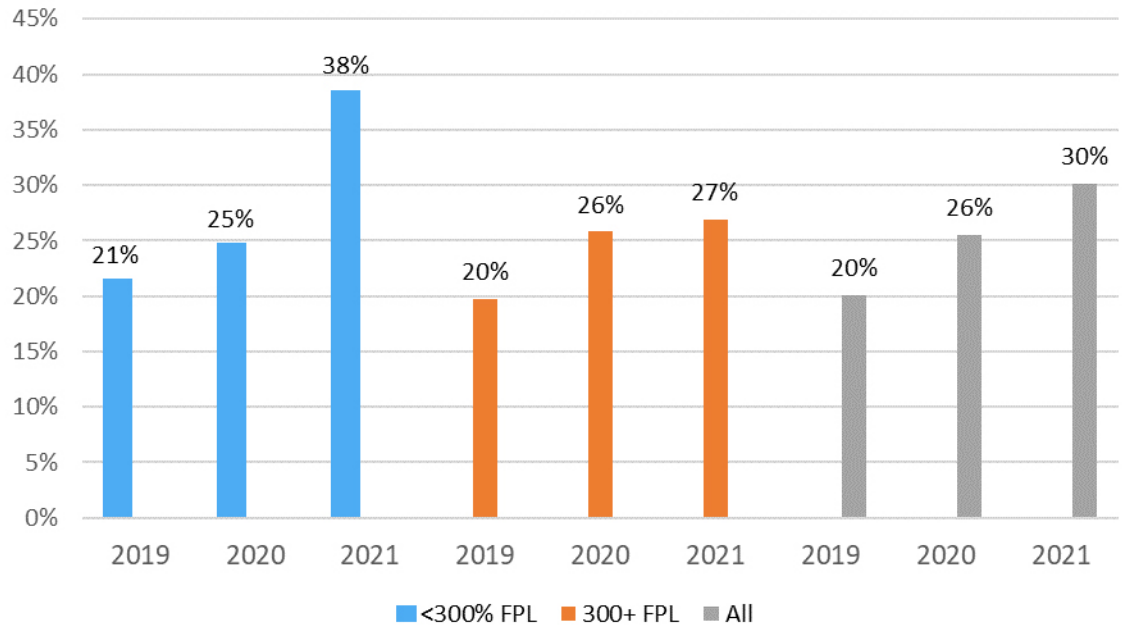
From 2019 through 2021 approximately 25% of surveyed San Franciscans reported ever being told they had high blood pressure or borderline high blood pressure on the CHIS survey. As with other chronic disease, disparities are seen across ethnicity and geography.[151] Unfortunately, recent CHIS surveys have had difficulty reaching respondents that accurately represent San Francisco – thus even when pooling data from multiple years, estimates for certain racial/ethnic groups are either not reliable or not available. Still, data suggest increasing prevalence of hypertension for most adults but especially among men and persons in households earning less than 300% of the federal poverty level (Figures 25-29).

Figure 25. Percentage of Adults Reporting Having Hypertension, by Race/Ethnicity, 2019-2021



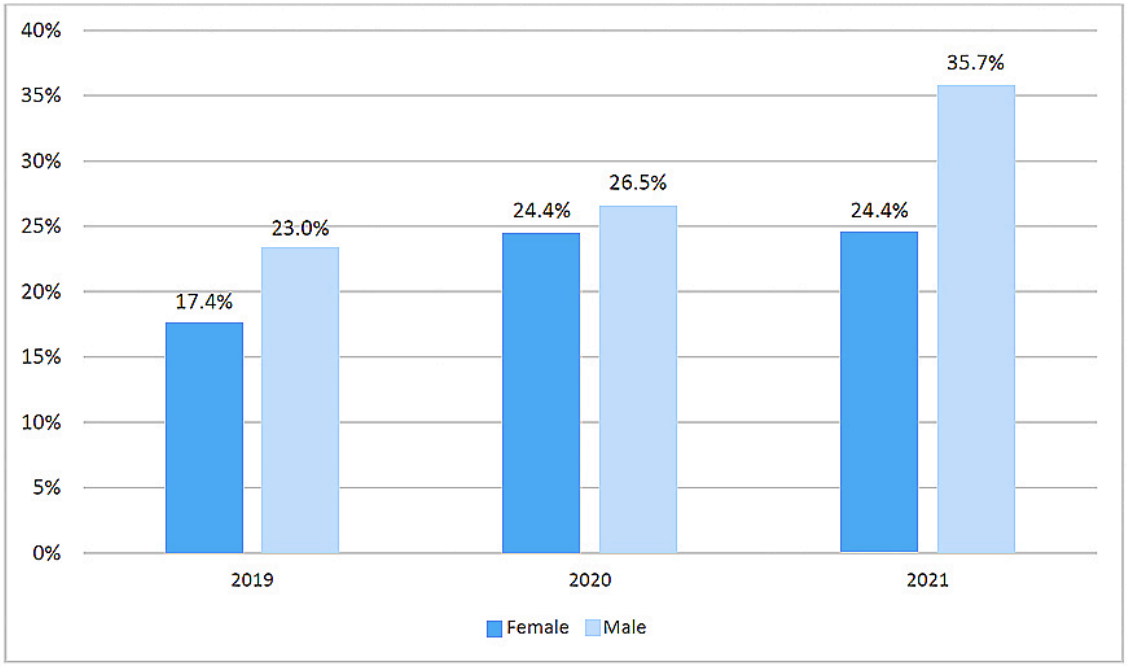
Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had high blood pressure or borderline high blood pressure. Data are pooled for three years, 2019-2021. Estimates were not available for American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander populations due to small sample sizes. Estimates with an asterisk are statistically unstable.
Data source: California Health Interview Survey

Figure 26. Percentage of Adults Reporting Having Hypertension, by Poverty Level, 2019 to 2021



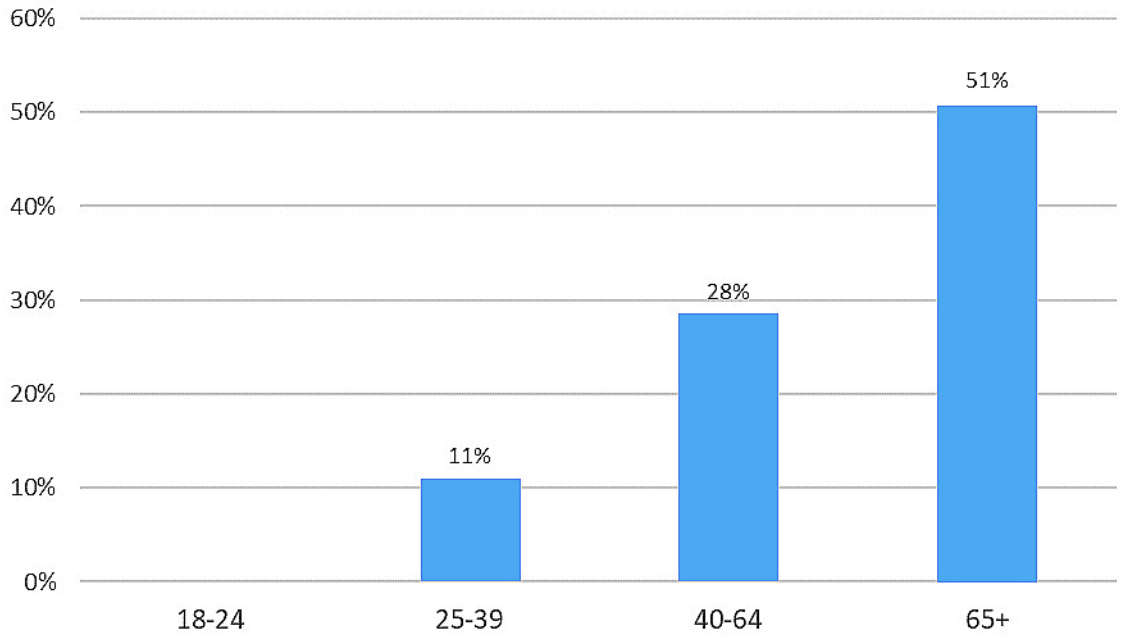
Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had high blood pressure or borderline high blood pressure.
Data source: California Health Interview Survey

Figure 27. Percentage of Adults Reporting Having Hypertension, by Gender, 2019 to 2021



Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had high blood pressure or borderline high blood pressure.
Data source: California Health Interview Survey, 2019-2021

Figure 28. Percentage of Adults Reporting Having Hypertension, by Age, 2019-2021



Note: Percentage of adults in San Francisco that have ever reported being told by their healthcare provider that they had high blood pressure or borderline high blood pressure. Data are pooled for three years, 2019-2021
Data source: California Health Interview Survey

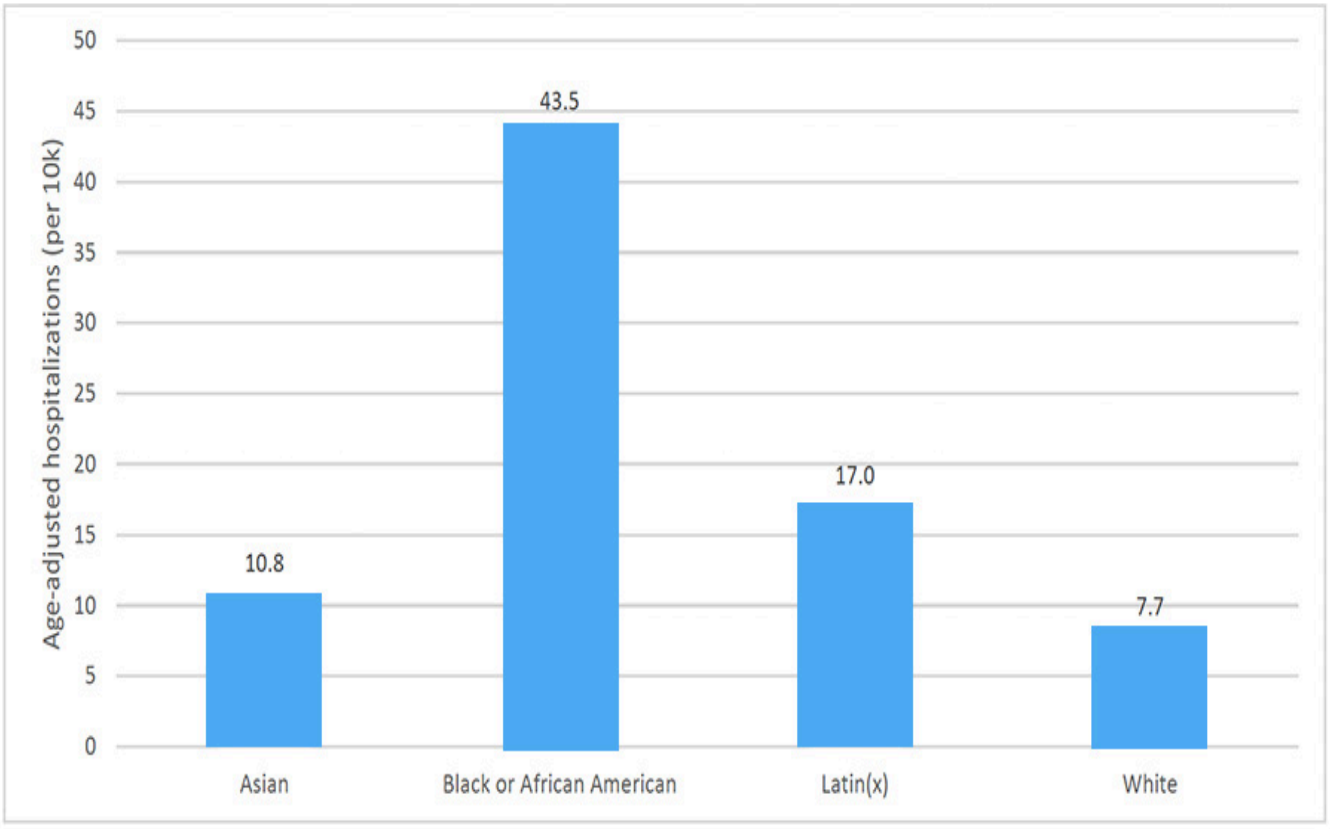
Cardiovascular Disease

Cardiovascular disease refers to a class of diseases that involve the heart and blood vessels and is the leading cause of death in San Francisco and nationally. Many of these diseases are attributed to atherosclerosis, a condition where excess plaque builds up in the inner walls of the arteries. This buildup narrows the arteries and constricts blood flow. Diet, physical inactivity, being overweight/obese, cigarette smoking, diabetes, stress, and hypertension all contribute to cardiovascular disease.[152] Common types of cardiovascular diseases include:

- Coronary heart disease which can lead to heart attack (when blood flow to the heart is blocked)
- Heart failure which is when the heart is not functioning at its full potential and the body is not receiving all of the blood and oxygen it requires.
- Stroke which occurs when not enough blood is getting to the brain which can be due to a blocked blood vessel or a burst blood vessel

In 2019-2021, 6.0% of adults living in San Francisco reported being told that they had any kind of heart disease. Hospitalization rates due to heart failure are highest among Black/African Americans. In 2021, Black/African American hospitalization rate (43.5 per 10,000 residents) for heart failure was more than five times higher than White San Franciscans (7.7 per 10,000 residents) (Figure 29). Hospitalization rates due to heart failure among Latinx (17 per 10,000 residents) was approximately 2.2 times that of White San Franciscans.

Figure 29. Age-Adjusted Rates of Hospitalization Due to Heart Failure, 2017 to 2021

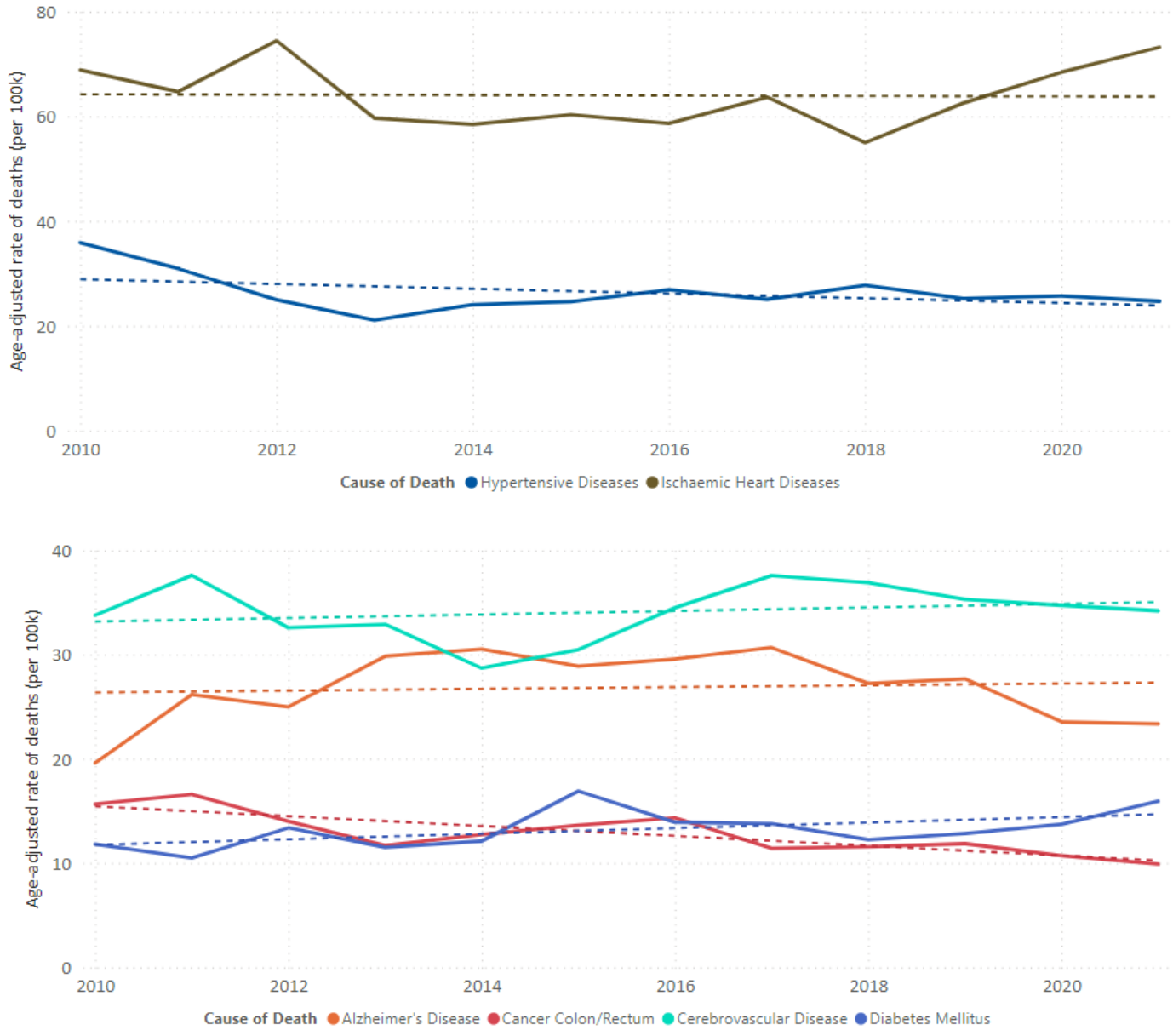


Note: Data represent hospitalization dicharges among all ages. Hospitalization rates for Native Hawaiian and Other Pacific Islanders and American Indian and Alaska Natives are not available because the population sizes are too small. Data are pooled 5-year estimates from 2017-2021.
Data source: California Department of Healthcare Access and Information

MORTALITY DUE TO DIET-SENSITIVE DISEASE

In San Francisco, the leading 10 causes of death are predominately chronic diseases and the majority of these, 6, are diet-sensitive chronic diseases associated, directly or indirectly, with sugar consumption—Ischemic heart disease, cerebrovascular disease, Alzheimer's, hypertension, diabetes, and colon cancer. Between 2010 and 2021, death rates due to Ischemic heart disease, hypertensive disease, and colon cancer decreased significantly, while rates due to and Alzheimer's, diabetes, and cerebrovascular diseases increased (Figure 30).

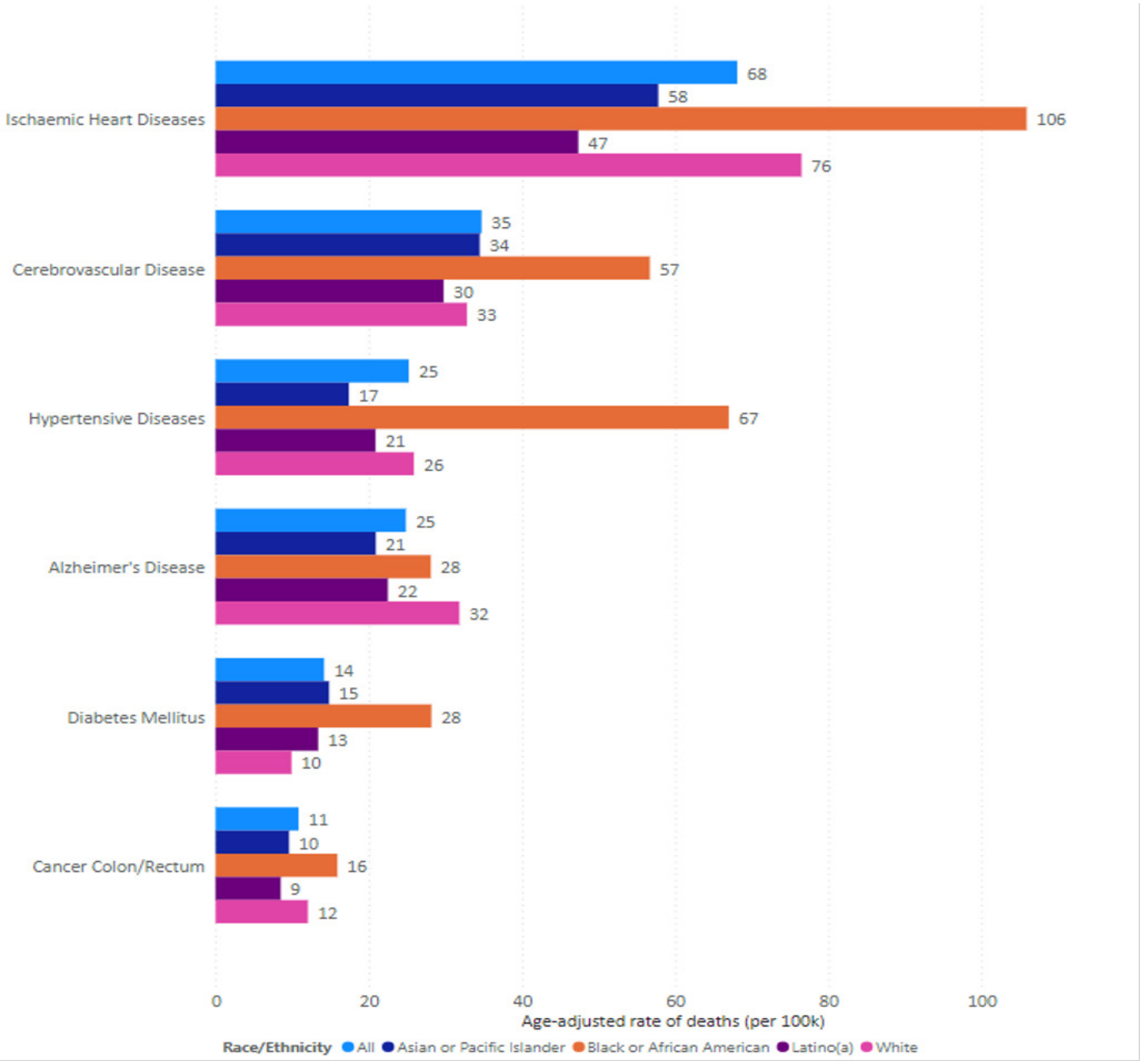
Figure 30. Age-adjusted Mortality Rates for the Leading Causes of Death, Diet-Sensitive Diseases



Note: Data are split into two axes due to the large differences in rates between causes of death. Linear trends are shows as dotted lines.
Data source: California Departmnet of Public Health, Vital Records Business Intelligence System (VRBIS) Death Statistical Master File, 2010-2021

Mortality rates for diet-sensitive diseases vary by race and ethnicity (Figure 32). For mortality overall, Black/African American residents experience the highest rates across most causes except for deaths due to Alzheimer's. Black/African American death rates due to diabetes are almost 2 times as high as that of the next highest group and 2.6 times as high for Hypertension. Years of life lost similarly show Black/African American residents experiencing the highest rates of death due to diet-sensitive diseases in San Francisco except for ischemic heart disease where Native Hawaiian and Other Pacific Islander residents experience the greatest years of life lost (Figure 32). Furthermore, trends for the population overall are not seen for all subgroups. While mortality rates due to ischemic heart diseases trended slightly downward from 2010 to 2018, since 2018 the mortality rate has increased – most notably for Black/African American residents and Asian or Pacific Islander residents. Overall, the mortality rate due to diabetes is increasing however this is mostly driven by increases seen among Black/African American and Asian or Pacific Islander residents. Notably, the rate of colon cancer is decreasing or remaining stable for most groups, and this is especially true for Black or African American residents (data not shown).

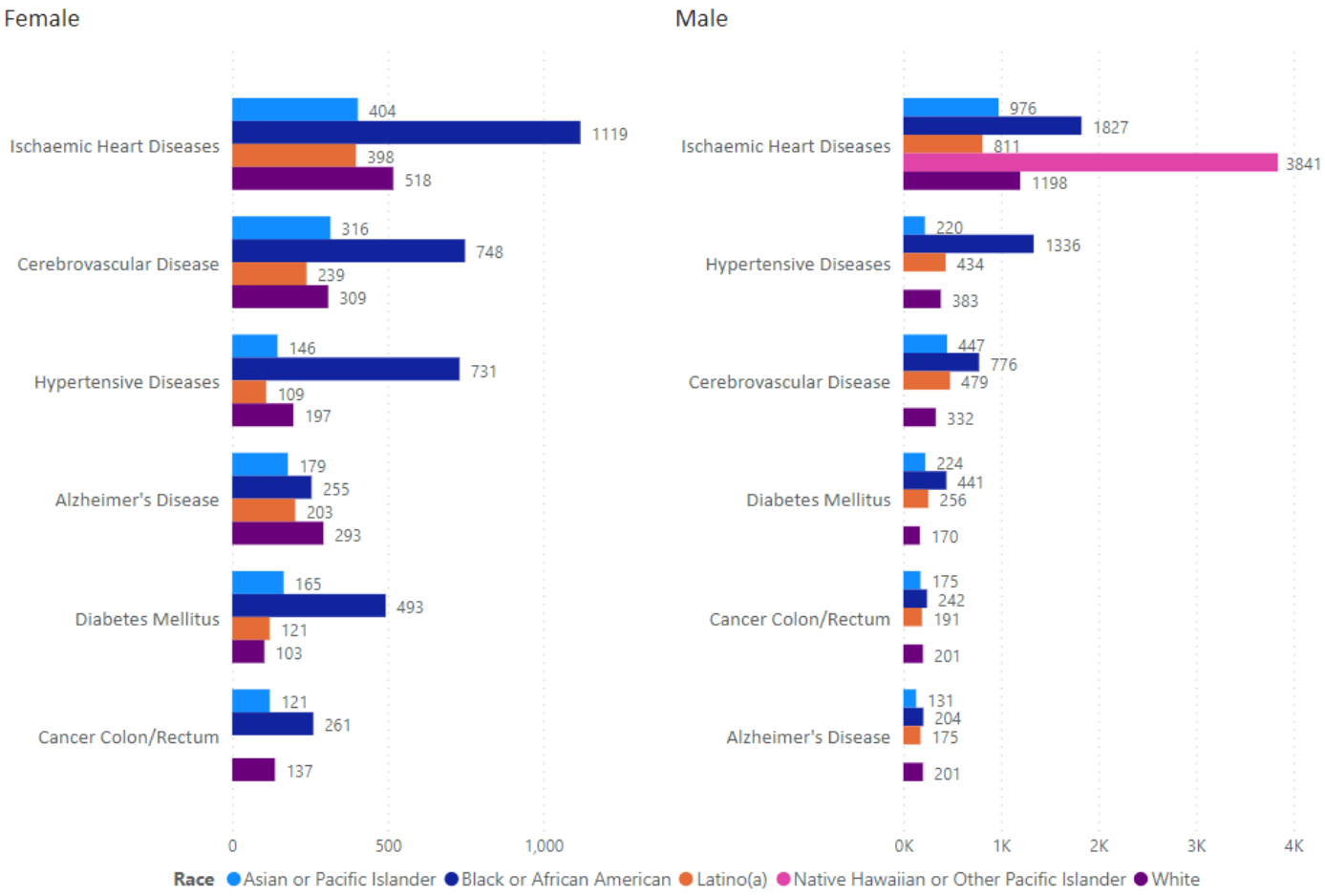
Figure 31. Age-Adjusted Mortality Rates for the Leading Causes of Death, Diet Sensitive Diseases, by Race/ Ethnicity, 2019-2021



Note: Data on Native Hawaiian and Other Pacific Islander and American Indian or Alaska Native residents were not available because too few deaths were reported.
Data source: California Department of Public Health, Vital Records Business Intelligence System (VRBIS) Death Statistical Master File, 2019-2021

For both females and males across all race/ethnicities, the leading diet-sensitive cause of death by years of life lost is ischemic heart disease. While data is not available for Native Hawaiian or Other Pacific Islander residents for most causes of death, the age-adjusted years of life lost due to ischemic heart disease is 2 times as high among Native Hawaiian or other Pacific Islander residents as it is for the next highest group – Black/African American males (3,841 vs 1,826, respectively). Among females, Black/African American residents have double the years of life lost than other race/ethnicities for ischemic heart disease, cerebrovascular disease, and diabetes and nearly 5 times the years of life lost for hypertensive diseases. Males have greater years of life lost than females for every diet-sensitive cause of death except Alzheimer's where females have 30% more years of life lost.

Figure 32. Years of Life Lost for Leading Diet-Sensitive Causes of Death, by Race/Ethnicity, 2019-2021



Note: The axes for female and male leading causes of years of life lost are on different scales. Data are suppressed when there are fewer than 11 deaths. Data are 3-year pooled estimates.
Data source: California Department of Public Health, Vital Records Business Intelligence System (VRBIS) Death Statistical Master File, 2016-2021

Figure 33. Life Expectancy at Birth

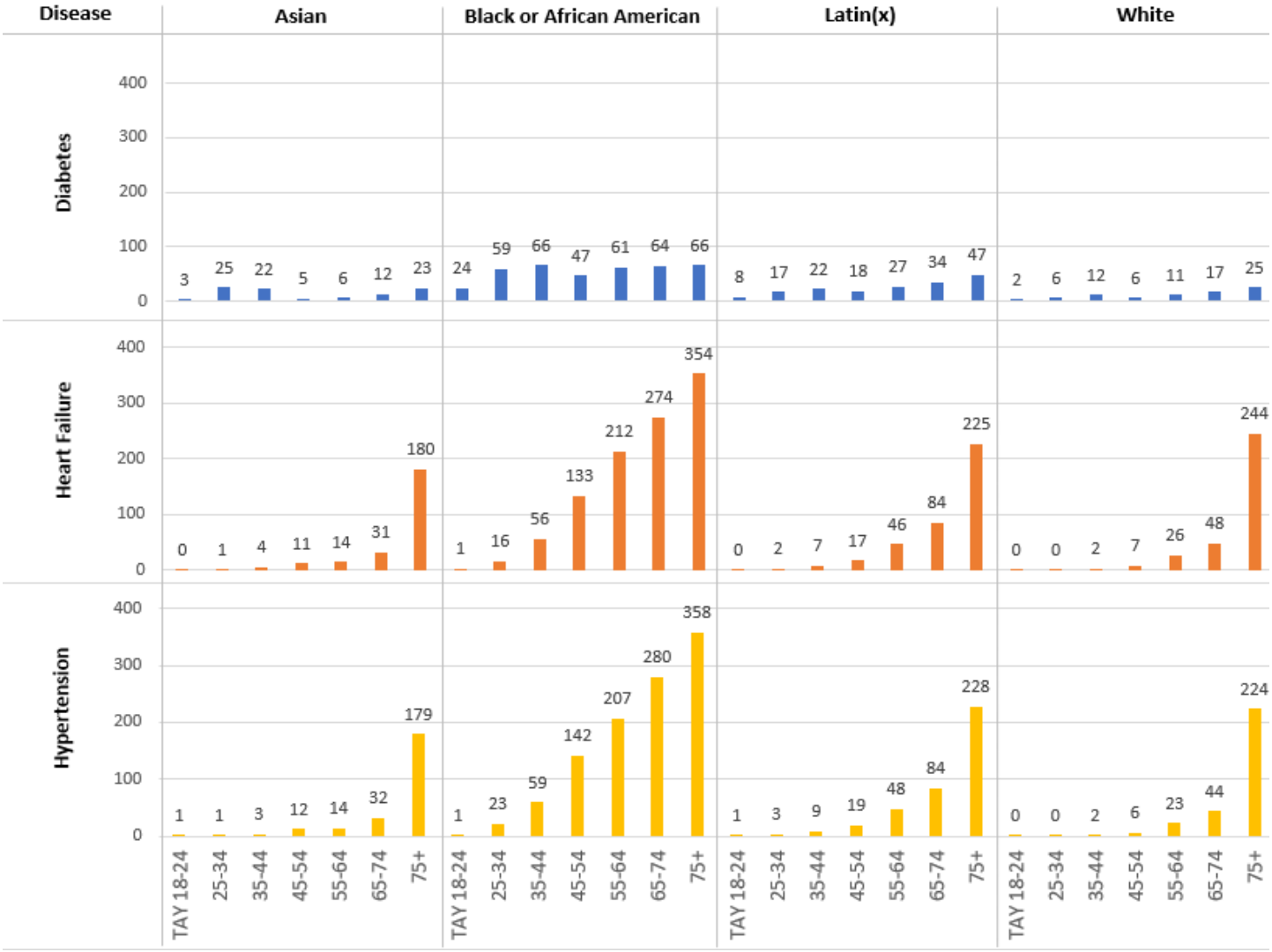
	2016 to 2018			2019 to 2021		
Race/Ethnicity	All	Female	Male	All	Female	Male
All	83.3	86.2	80.4	82.4	86.1	79.0
American Indian or Alaska Native	75.5	NA	NA	74.5	NA	NA
Asian or Pacific Islander	87.0	89.4	84.1	86.7	89.3	83.8
Black or African American	72.4	77.0	68.7	69.3	74.5	64.7
Latino(a)	85.6	88.7	82.7	83.1	87.8	78.9
Native Hawaiian or Other Pacific Islander	76.3	77.9	74.6	73.4	77.2	71.5
White	81.8	84.3	79.8	81.9	84.8	79.6

Note: Life expectancies for American Indian or Alaska Native residents by sex cannot be reported due to small numbers, indicated by "NA." Data are 3-year pooled estimates.
Data source: California Department of Public Health, Vital Records Business Intelligence System (VRBIS) Death Statistical Master File, 2016-2021

Given the disparities, seen not only in mortality rates and the most proximate risk factors for these diseases discussed in this report but also the social determinants of health discussed elsewhere, it is unfortunate though not surprising that Black/African American and Native Hawaiian or Other Pacific Islander residents have the lowest life expectancies in San Francisco (Figure 33).[153] Black/African American and Native Hawaiian or Other Pacific Islander residents, with an average life expectancy of 69 and 73 years, respectively, live 13-17 years less than Asian residents.

By definition, people are sick with chronic diseases for years to decades. While mortality data cannot tell us how long individuals experienced disease before dying, hospitalization data can provide insight into the burden of disease among the living. Hospitalization data for diabetes, heart failure and hypertension by race and age show that while rates for most groups starts to slowly creep up in the early 30s and 40s and only spike among the oldest, rates for Black/African American residents soar early (Figure 34).[154] Rates for Black or African Americans in their 30s and 40s are comparable to those of other race/ethnicities who are 30 or more years older. In fact, for diabetes, rates are higher among young Black/African American residents than they are for others at any age. For Asian residents, hospitalizations for diabetes tends to be highest among 25-34 year olds.

Figure 34. Age-Specific Rates of Hospitalization by Disease, per 10,000 Residents, 2017-2021



Note: Data represent hospitalization dicharges. Hospitalization rates for Native Hawaiian and Other Pacific Islanders and American Indian and Alaska Natives are not available because the population sizes are too small. Data are pooled 5-year esimates from 2017 to 2021.
Data source: California Department of Healthcare Access and Information

ECONOMIC IMPACT OF DIET-SENSITIVE CHRONIC DISEASES

An update to this section is not available for this report but is planned for update in 2024. See 2019 Sugary Drinks Distributor Tax Advisory Committee Report for past findings on the economic impact of diet-sensitive chronic diseases.

LIMITATIONS

Race/ethnicity classification: Data sources used in this report collect race/ethnicity data differently. This limits our ability to compare differences in trends across different race/ethnicity categories between data sources. It also means labels used in figures to classify individuals by race/ethnicity are inconsistent throughout the report. This report uses the language consistent with the data source rather than conforming that language to one standard because the language used to collect race and ethnicity affects how people identify their race and ethnicity.

Birth Statistical Master File, California Department of Public Health (CDPH)

The birth statistical mater file contains birth certificate data for all births. This data provides insights on the health of new mothers and babies born and includes data on gestational diabetes and weight gain during pregnancy.

California Health Interview Survey

The California Health Interview Survey (CHIS) is an annual telephone survey that uses a random-digit-dial technique to landlines and cell-phones and asks respondents to answer health-related questions. In San Francisco, CHIS samples about 400 adults, which provides data for the county, but does not allow annual stratification across different demographic categories for all variables. Data results were obtained either through http://ask.chis.ucla.edu/ or through analysis of the San Francisco-specific dataset. In the latter all weighting was done according to documentation provided by CHIS.

While CHIS asks a number of drink associated questions to children and teens, the sample size is insufficient to get stable estimates in San Francisco. Sample sizes are sufficient among adults to get overall one-year estimates and multiple year pool estimate by poverty, race/ethnicity and gender. Among adults, CHIS asks, "[During the past month,] how often did you drink regular soda or pop that contains sugar? Do not include diet soda." Results are converted to and presented as the soda consumption for an average week.

CHIS also included questions on respondents known chronic diseases. To ascertain diabetes status the question, "Has a doctor ever told you that you have diabetes or sugar diabetes?" is asked. For hypertension the survey asks, "Has a doctor ever told you that you have high blood pressure?". Additional questions on heart failure, stroke, and prediabetes do not have enough power to produce stable estimates for San Francisco.

To assess food security, CHIS asks persons with incomes less than 200% of the federal poverty level to answer a series of questions. Questions asked are 1) "The food that {I/we} bought just didn't last, and {I/we} didn't have money to get more."--Was that often true, sometimes true, or never true for you and your household in the last 12 months?"; 2) "{I/We} couldn't afford to eat balanced meals.-- Was that often true, sometimes true, or never true for you and your household in the last 12 months?"; 3) "Please tell me yes or no. In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food? - How often did this happen -- almost every month, some months but not every month, or only in 1 or 2 months?" 4) "In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?"; and 5) "In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?".

Survey respondents answer two questions on height and weight from which BMI is calculated--"How tall are you without shoes?" and – "{When not pregnant, how/How} much do you weigh without shoes?". A BMI of 30.0 or higher is labeled as obese, 25.0-29.99 as overweight, 18.5-24.99 as normal, and under 18.5 as underweight.

To determine If an adult walked regularly for transportation, fun or exercises. A series of questions were asked, "During

the past 7 days, did you walk to get some place that took you at least 10 minutes?"; "In the past 7 days, how many times did you do that?", "- {How long did that walk take/On average, how long did those walks take}? "; "Sometimes you may walk for fun, relaxation, exercise, or to walk the dog. During the past 7 days did you walk for at least 10 minutes for any of these reasons? Please do not include walking for transportation."; "In the past 7 days, how many times did you do that?"; and "{How long did that walk take/On average, how long did those walks take}?".

California Office of Statewide Health Planning and Development (OSHPD)

Hospitalization and ER rates measure the number of discharges or visits, not the number of residents who are hospitalized. Admissions records may include multiple admissions by the same person.

Diabetes. ICD-10 codes for Diabetes are based on PQI 93: Prevention Quality Diabetes Composite (September 2017) technical specifications published by the Agency for Healthcare Research and Quality. A medical visit was determined to be primarily due to Diabetes if the primary diagnosis field contained on the identified ICD-9-CM (discharges prior to October 2015) or ICD-10 (October 2015 and later) codes. To Identify visits where Diabetes was the primary cause, a co-morbidity, or coexisting with another primary cause, all 25 diagnosis fields were searched.

Hypertension: Agency for Healthcare Research and Quality's Clinical Classification Software versions 2017 (ICD-10) were used to identify hospitalizations with a primary diagnosis of hypertension.

Heart Failure: ICD-10 codes for heart failure were adapted from the PQI 08: Heart Failure Admission Rate (September 2017)technical specifications published by the Agency for Healthcare Research and Quality. The case definition used here varies from that in the PQI 08 in that records indicating cardiac procedures were not excluded. A medical visit was determined to be primarily due to heart failure if the primary diagnosis field contained the identified ICD-10 codes.

Hospitalization charges: Charges reflect the amount asked for health care services and goods. Charges do not necessarily reflect the expenses incurred by the provider to deliver health care services and goods. Furthermore, the actual amount paid may vary from both charges and costs. Not all hospitals report hospitalization charges to OSHPD.

Non-Traumatic Dental Conditions: ICD-10 codes for non-traumatic dental conditions were adopted by the Association of State and Territorial Dental Directors' Recommended Guidelines for Surveillance of Non-Traumatic Dental Care in Emergency Departments.

Information Resources Inc. (IRI)

To evaluate the effects of the SDDT on beverage purchases in San Francisco, retail scanner data were obtained from Information Resources, Inc. (IRI), a market research company. IRI collects the average price during the period (a weighted quantity), dollar sales, unit sales, and volume sales in ounces for products with UPC codes from a sample of 108 stores. Stores included in the sample are predominately chain stores and include groceries, pharmacies and mass merchandizers. Not included in the sample are corner stores and warehouses. Data, going back to 2015, are aggregated to 4-week periods.

IRI classifies UPCs into product categories. Beverage categories include-- regular soda, diet soda, sports drinks, energy drinks, juice and juice drinks, bottled water, club soda, milk, and teas and coffees. All analyses included in this report rely on IRI's product classification scheme and should be treated as preliminary. IRI categories are not based on the added sugar of a beverage and therefore preliminary analysis are not available for the following categories which combine SBB and non-SSBs-juice and juice drinks, and teas and coffees. Future analyses should examine nutrition facts panels and lists of ingredients for each UPC to determine whether each meets the definition of a taxable SSB under the municipal tax ordinances (Section 552 for San Francisco).

An appendix containing data on some beverages sold in San Francisco from 2015 through 2021 has been provided.

These data were bought from Information Resources, Inc. (IRI), a market research company, and include point-of-sale retail scanner data. The caveats and limitations mentioned below make it nearly impossible to understand the true trends in beverage sales over time, as such these data require **extreme caution when interpreting**.

Important caveats to understand when interpreting IRI data:

- Only about 10% of stores in San Francisco were included in the IRI dataset during any year. The stores included may change over time and/or make changes to their inventory that affect beverages sold in San Francisco.
- The IRI dataset only includes point-of-sale data on pre-packaged beverages and powders sold mostly at larger retailers and will not include beverages sold at many smaller corner stores. Made-to-order beverages such as boba, fountain soft drinks, and sugar-sweetened coffees and teas are also not included in this dataset.
- There are no data for the coffee/tea drink category after 2020.
- There are essentially no data (18 out of 20 4-week periods have zero data) for sugar-sweetened diet soft drinks after the middle of 2020, and prior years have sporadically missing data for 4-week periods.
- SSB categorization was performed by UCSF using a combination of Label Insight and manual searches. Spot-checking of a random sample of 1,000 UPCs found about a 10% error rate, disproportionately skewed towards misclassifying products as non-SSBs when they should have been categorized as SSBs.
- About 1% of UPCs do not have a SSB classification, which increased after 2018 to almost 5% by 2021.
- There are many data aberrations present in these data that we cannot explain.

Given the limitations stated above, we currently have not included IRI data in this report. Analyses included in the appendix are not validated and are only provided to meet mandatory requirements. **The appendix is not a presentaion on trends of beverages sold in San Francisco over time**– it is a presentation on the beverage data available from IRI.

Kindergarten Oral Health Screening Program

The San Francisco Unified School District (SFUSD) and the San Francisco Department of Public Health (SFDPH) Dental Services jointly run the Kindergarten Oral Health Screening Program which assesses all SFUSD kindergarteners for the experience of caries and treated caries.

Maternal and Infant Health Assessment

The Maternal and Infant Health Assessment (MIHA), is an annual, statewide-representative survey of women with a recent live birth in California. MIHA questions on mother's intention to breastfeed, food security during pregnancy, and more.

SFUSD FitnessGram

Measure of fitness and weight among San Francisco youth are captured by the FitnessGram® which SFUSD measures annually in grades 5, 7, and 9. The FitnessGram® assesses students in 6 areas-aerobic capacity, body composition, abdominal strength, trunk extension strength, upper body strength and flexibility. For each students are determined to be in the "Healthy Fitness Zone" or not. Body composition within the "Healthy Fitness Zone" is determined by BMI and a measure of body fat. Aerobic capacity testing includes the pacer, one mile run and the walk test.

Vital Records Business Intelligence Systems (VRBIS)

The California Department of Public Health maintains a dataset of all deaths in California. Each death has a recorded and coded primary cause of death. The analysis presented in this document examines only the indicated primary cause of death and cannot consider co-morbid or contributing causes of death. Specific cause-of-death categories were designed based on the World Health Organization Global Burden of Disease and Injury (WHO GBD) and the National Center for Health Statistics 113 Selected and 50 Rankable Causes of Death.[155,156] Race/ethnicity was categorized according to San Francisco ethnicity data guidelines.[157]

Youth Risk Behavior Surveillance Survey

The Youth Risk Behavior Surveillance Survey (YRBS) is a national biennial survey that asks students a range of health-related questions. The YRBS generally administers surveys to high schools on odd years and middle schools on even years. With respect to SSB consumption, the survey asks two questions:

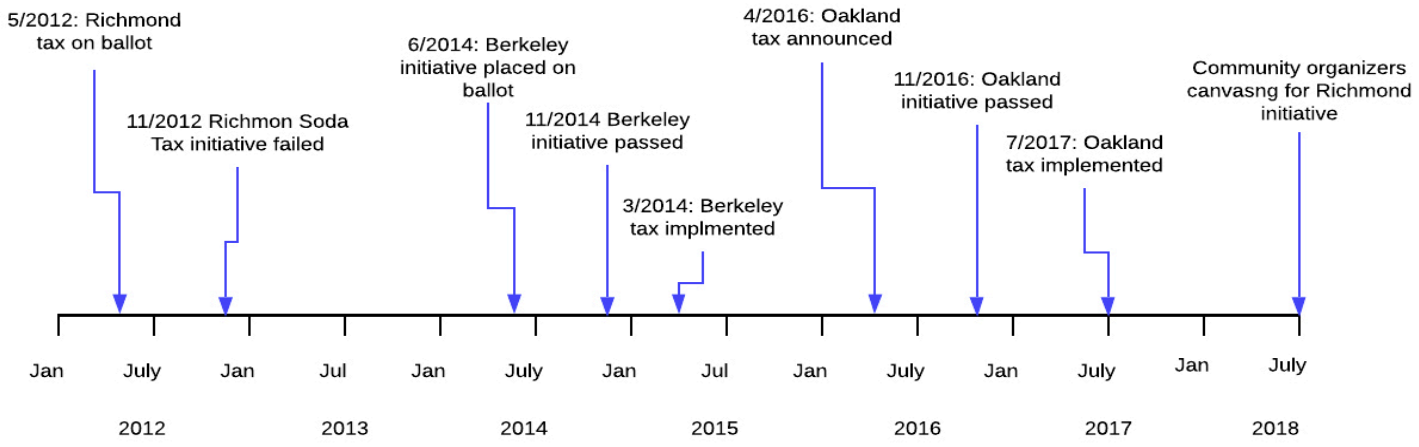
"During the past 7 days, how many times did you drink a can, bottle, or glass of a sugar-sweetened beverage such as a soda, sports drink, energy drink, lemonade, sweetened tea or coffee drink, or flavored milk? Examples include Coke, Sprite, Gatorade, Red Bull, Arizona, Snapple, Sunny Delight, bubble tea, and agua fresca?" and

For middle school:

"Yesterday, how many times did you drink a can, bottle, or glass of a sugar-sweetened beverage such as a soda or pop (for example, Coke or Sprite), sports drink (for example, Gatorade or PowerAde), energy drink (for example, Red Bull or Jolt), 100% fruit juice (for example, orange juice), lemonade, sweetened tea or coffee drinks (for example, Arizona), flavored milk, Snapple, Sunny Delight, bubble tea, or agua fresca?"

SUGAR-SWEETENED BEVERAGE TAX TIMELINES FOR COMPARISON CITIES

Figure 35. Sugar-Sweetened Tax Initiatives Timeline for Comparison Cities



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Christopher Lee is an epidemiologist on the Health Equity team in the Center for Data Science - Population Health Division at the San Francisco Department of Public Health (SFDPH). Before working with the Health Equity team at SFDPH Christopher worked on the COVID-19 response for San Francisco and Santa Clara County where he co-led the development and maintenance of both internal and public reporting systems. Prior to Santa Clara County Christopher worked at the UCLA Center for Health Policy Research where he helped evaluate the efficacy of public health policy work.

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Melinda Martin, MPH

Melinda Martin, MPH, Healthy Eating Active Living Team in the Community Health Equity and Promotion Branch of the San Francisco Department of Public Health. She is the backbone staff for the Sugary Drinks Distributor Tax Advisory Committee. The advisory committee makes recommendations to the Mayor and the Board of Supervisors on the effectiveness of the Sugary Drinks Distributor Tax, evaluates the impact of the sugary drinks distributor tax and funding recommendations regarding potential establishment of programs to reduce the consumption of sugar-sweetened beverages in San Francisco.

Kim Wong, MPH

Kim Wong, MPH, Healthy Eating Active Living (HEAL) Team in the Community Health Equity and Promotion Branch of the San Francisco Department of Public Health. As the Soda Tax Grants Coordinator, Kim develops and manages the request for proposals (RFP) processes to distribute SDDT funds according to SDDTAC recommendations, manages contracts with SDDT grantees, and provides support to grantees through technical assistance and capacity building.

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SUGARY DRINKS ARE MAKING US SICK

The sugary drinks industry **targets young people, parents, and communities of color** to increase profits and brand loyalty **despite scientific evidence that links sugary drinks to chronic diseases** including **type 2 diabetes, heart disease, kidney diseases, non-alcoholic liver disease, tooth decay, and gout.**

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