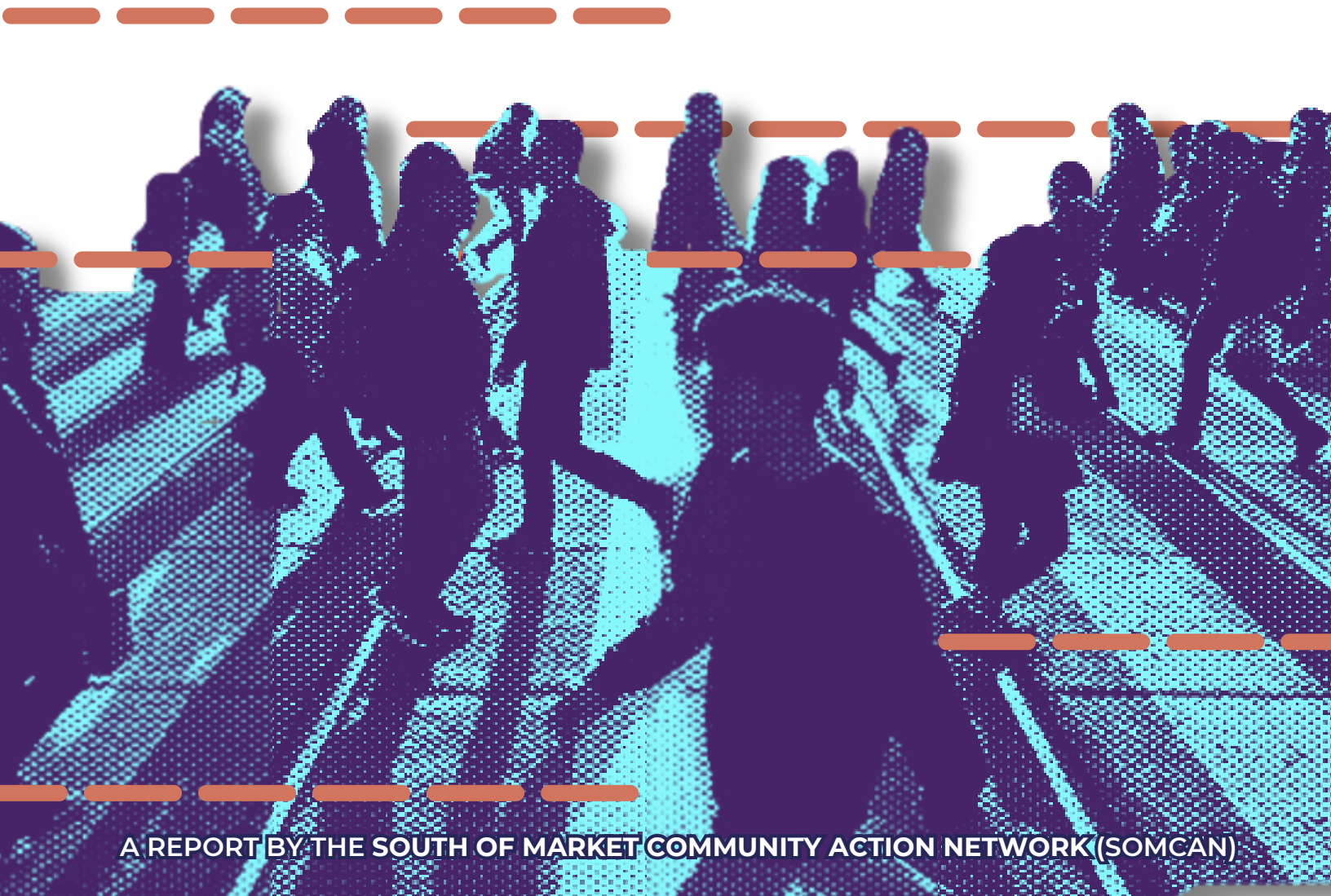


**URBAN AIR POLLUTION IMPACTS ON**

**health, wellness  
& safety**

**IN THE SOUTH OF MARKET NEIGHBORHOOD OF  
SAN FRANCISCO**



**A REPORT BY THE SOUTH OF MARKET COMMUNITY ACTION NETWORK (SOMCAN)**



**SOUTH OF MARKET COMMUNITY ACTION NETWORK**

URBAN AIR POLLUTION IMPACTS ON HEALTH, WELLNESS &  
SAFETY IN THE SOUTH OF MARKET NEIGHBORHOOD OF  
SAN FRANCISCO

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# ACKNOWLEDGEMENTS

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## COMMUNITY AMBASSADORS

The research team would like to acknowledge the following Community Health Ambassadors for all of their community outreach efforts to make this project happen.

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## MASTER IN PUBLIC HEALTH STUDENT INTERNS

Graduate students from San Francisco State University contributed to the literature review research, initial data collection and analysis, and training the community ambassadors in participatory action research. Thank you to:

Robyn Cross

Bonnie Dundee

Maia Feinman-Welcher

Angelina Gutierrez

Daisy Hernandez

Jacquelynn Hoang

Kohinoor Joshi

Georjean Morado

Cynthia Rohrer

Angellynn Tam

Edel Vaovasa



## PARTICIPATING ORGANIZATIONS

Many thanks to the following community-based organizations that provided valuable support and outreach for this project.

- API Parity Health Coalition
- Bayanihan Equity Center (BEC)
- Canon Kip Senior Center
- FEC Galing Bata
- Filipino Service Providers Network (FSPN)
- Lalaine Favis of Curry Senior Center
- Mabini Adult Day Center
- Mendelsohn House
- Pilipino Senior Resource Center (PSRC)
- SOMA Pilipinas
- Wolf House

## FUNDING SUPPORT

This project was funded by the Bay Area Air Quality Management District James Cary Smith Community Grant Program.



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# EXECUTIVE SUMMARY

Community members of San Francisco's South of Market (SOMA) neighborhood are disproportionately exposed to traffic-induced air pollution resulting from the area's proximity to major freeways and downtown businesses. Ongoing construction projects that release particulate matter and the increased likelihood of residing in older buildings that lack updated filtration units can also exacerbate community exposure to poor air quality. Urban air pollution is particularly harmful for children, seniors, and people with underlying health conditions or disabilities. Poor air quality has been linked to chronic health conditions such as asthma, respiratory infections, cardiovascular disease, and cancer.

A community health assessment was conducted to help the South of Market Community Action Network (SOMCAN) better understand the health impacts of air quality and traffic congestion in the SOMA neighborhood. The assessment utilized both quantitative and qualitative methods including surveys and follow-up interviews from SOMA residents, workers, and visitors. The assessment also inquired about community members' access to open space, as well as their recommendations to address environmental health, safety, and quality of life. Assessment data will inform SOMCAN's programs and can drive community planning, organizing efforts, and policy advocacy strategies to address traffic safety, environmental health, and community well-being.

## HOW DATA WAS COLLECTED

A total of 350 online and paper surveys were completed over a two-month period. The survey was translated in multiple languages and included questions specific to each of the three target groups: residents, workers, and visitors. Survey data was

collected in person by trained community health ambassadors and via electronic platforms including email, listservs, and social media.

Five follow-up interviews were conducted after the two-month survey data collection period and were based on survey respondents' comments about health, pedestrian safety, open space, and community development.

## WHAT WAS LEARNED

### DEMOGRAPHIC CHARACTERISTICS:

- Of the 350 survey participants, 38.9% were residents, 33.4% were workers, and 27.7% were visitors.
- Almost half (49.0%) of survey respondents were 55 years or older.
- Almost two-thirds (62.0%) of participants identified as Filipino.

### TRAFFIC-RELATED IMPACTS & HEALTH:

- Speeding cars endanger pedestrian safety and produce noise pollution.
  - Participants overwhelmingly report feeling unsafe while crossing neighborhood intersections, frequently citing Mission Street at 6th and 8th Streets.
  - Participants constantly hear traffic noise in the neighborhood which regularly disrupts their concentration and sleep.
- Community members are continuously exposed to air pollution which impacts their health.
  - Residents
    - 85.4% live within 2 miles of a freeway. Of these, 35.4% live within a ½ mile of a freeway, and 34.6% live between ½ to 1 mile of a freeway.
    - 54.2% stated that traffic sits idling in front of their home at least 3 days a week, with 33% reporting that idling traffic lasts 4+ hours per day.
    - Headaches, asthma, and fatigue were the most commonly reported health issues experienced by residents.
  - Workers
    - 67.2% stated that they work within 1 mile from a freeway.
    - 60.6% mention that traffic sits idling in front of their workplace at least 3 days a week, and 34.5% experience idling traffic in front of their workplace 4+ hours per day

### QUALITY OF LIFE:

- SOMA community members need greater access to alternative modes of transit.



- 66.4% of residents, 58.8% of workers, and 57.3% of visitors indicated that they rely on public transit to navigate around the neighborhood, yet frequently cite issues of reliability, accessibility, and safety as barriers.
- SOMA lacks sufficient green space.
  - 43% of residents, 40.9% of workers, and 26.3% of visitors accessed parks or open spaces in the SOMA only once per month or not at all.
- Community members support community-led planning efforts.
  - Residents, workers, and visitors expressed a strong belief in community voice and input regarding efforts to improve neighborhood conditions.

## RECOMMENDATIONS

Based on the assessment data findings, SOMCAN recommends the following transformative and equity-minded strategies to improve public health and safety in the SOMA neighborhood. We urge the City and County of San Francisco to:

- **ADOPT BOLDER MEASURES TO INCENTIVIZE PUBLIC TRANSIT USE**
  - Fare-free public transport and re-evaluation/expansion of existing transit subsidy programs; improved public transit services that focus on performance and reliability, safety and maintenance, and transitioning to a zero-emissions bus fleet; as well as strengthened community partnerships with local and state governments are evidence-based strategies to incentivize public transit use and improve air quality.
- **PRIORITIZE INNOVATIVE TRAFFIC CALMING MEASURES AND INITIATIVES IN THE SOUTH OF MARKET**
  - Implementing changes in road infrastructure and expanding SFMTA's Residential Traffic Calming and Slow Streets Programs can improve safety and walkability in the neighborhood, especially for families, seniors, and persons with disabilities.
- **INCREASE GREEN SPACE IN THE SOUTH OF MARKET**
  - Prioritizing construction and upkeep of parks and recreation centers, as well as the implementation of greening programs in the neighborhood can enhance community members' quality of life, mitigate heat island effects, and improve air quality.
- **INVEST IN COMMUNITY LEADERSHIP AND TRAINING PROGRAMS TO PROMOTE TRAFFIC AND ROAD SAFETY**
  - Adopting community-based alternatives to promote traffic and road safety, such as the presence of community traffic ambassadors in the neighborhood, could generate stable employment and increase social capital among community members.

- **PROVIDE AIR PURIFIERS OR FILTRATION UNITS TO ALL LOW-INCOME SOMA RESIDENTS**
  - Expanding current air purifier distribution and installation measures to all low-income SOMA residents, regardless of diagnosis and residence, contends with existing requirements that disqualify vulnerable community members who live in older buildings or who have not yet developed asthma.



# INTRODUCTION

Air pollution results from the release of substances into the air that are detrimental to the health of humans and the environment (Mackenzie & Turrentine, 2021). The most harmful air pollutants to human health are ozone and particulate matter. Ozone pollution occurs when pollutants emitted from motor vehicles, power plants, and chemical plants react with the sun to create a toxic ozone layer at the ground level (EPA, 2015). Particulate matter consists of tiny solid or liquid particles that are emitted into the air. Sources of particulate matter include combustion of gasoline, oil, diesel and wood, as well as dust from construction sites, wildfires, and pollen. One of the most common sources of air pollution in urban areas is traffic-related air pollution (TRAP). TRAP refers to the mixture of vehicle exhausts, secondary pollutants formed in the atmosphere, evaporative emissions from vehicles, and non-combustive emissions such as road dust and tire wear (Matz et. al, 2019). TRAP is one of the main contributors to both ozone and particle pollution.

Nationally, air pollution concentrations have declined significantly since 1990. Between 1990 and 2021, ozone concentrations dropped by 25% and particulate matter concentrations dropped by 41% since 2000 (U.S. EPA, 2021). In California, the number of days exceeding national standards for ozone and particulate matter have decreased since 1990 as well (CARB, 2019c). Within San Francisco, the air quality index remains “good” throughout most of the year. Despite an overall improvement in air quality across the U.S., California, and San Francisco, not all communities are exposed to the same quality of air. In San Francisco, different parts of the city experience poorer air quality than others due to location. Specifically, the South of Market (SOMA) neighborhood adjacent to Interstate 80, Interstate 80, and Highway 101 had one of the highest yearly average particulate

matter concentrations in 2020, exceeding  $10 \mu\text{g}/\text{m}^3$ . The SOMA neighborhood exceeded particulate matter concentrations due to significant pollutants from cars, trucks, and major roadways (San Francisco Department of Public Health, 2020, p. 36).

## Environmental Indicators

Toxic air pollution consists of several different components, including gases, particles in suspension, and liquid droplets. Their release into the environment is caused by both natural and man-made elements (BAAQMD, 2019). Typically, regulations and policies are focused on specific air pollutants, despite the fact that air pollution almost always exists in mixtures. Historically, this focus caused research gaps and masked the harmful repercussions of overall pollution. Current research is increasingly focusing on the overall effects of TRAP (Guarnieri & Balmes, 2014). Numerous governmental agencies at the national, state, and city levels have developed standards for controlling pollution for the health of the community.

The U.S. Environmental Protection Agency (EPA) “protects people and the environment from significant health risks, sponsors and conducts research, and develops and enforces environmental regulations” (USAGov, n.d.). The EPA has collaborated with states and tribes to reduce common air pollutants and established air quality standards for organizations to follow (U.S. EPA, 2022a). The EPA’s air quality database monitors and calculates air pollution levels across the U.S. (U.S. EPA, 2022b). However, some counties lack air quality sensors, so significant amounts of pollution may go unnoticed (U.S. EPA, 2022b). Therefore, the EPA developed National Ambient Air Quality Standards (NAAQS) for the six common air pollutants (carbon monoxide, nitrogen dioxide, ozone, particulate matter, lead, and sulfur dioxide) intended to protect the public health. These standards are designed to protect public health, including the health of at-risk populations. State and local environmental agencies measure pollutants in the outdoor air and compare the results to the NAAQS. The EPA calculates an air quality index from this data (U.S. EPA, 2022b). The air quality index is an important piece of information that lets people know the air quality in a given area and how it might affect their health.

The State of California continues to prioritize addressing air pollution as a major public health issue. The California Air Resources Board (CARB) sets health-based ambient air quality guidelines for eight “traditional pollutants” and 200 “toxic air

contaminants” (CARB, n.d.). Steps are still being taken to reduce toxic air emissions. Locally, the Bay Area Air Quality Management District (BAAQMD) is in charge of “regulating stationary sources of air pollution in nine San Francisco Bay counties,” including San Francisco (BAAQMD, 2020). The BAAQMD monitors two major pollutants that have been identified as the most problematic: ozone and fine particulate matter (BAAQMD, 2019). Using this information, the San Francisco Department of Public Health (SFDPH) has developed and implemented municipal rules concerning air pollution (SFDPH, n.d.).

## Health Indicators

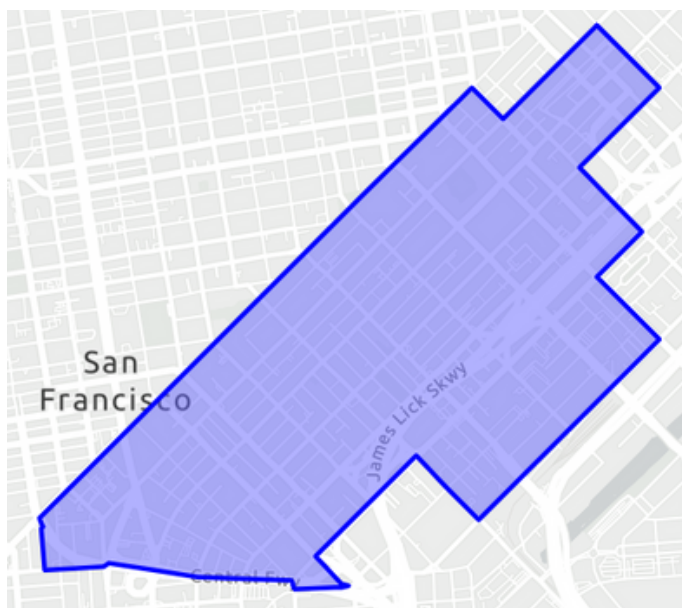
Many urban residents, like those in San Francisco, live in close proximity to major highways or are subjected to traffic-related air pollution as a result of commuting. Exposure to this particular mixture of gasses has been associated with a rapidly growing range of negative health outcomes (Matz et. al, 2019). Urban air pollution is particularly harmful to infants, seniors, and individuals with chronic heart or respiratory diseases (Samet & White, 2004). The Health Effects Institute (2022) conducted a comprehensive scientific review confidently linking air pollution and early death due to cardiovascular disease (including atherosclerosis), lung cancer, asthma, and acute lower respiratory infections. Outdoor air pollution is also shown to exacerbate pre-existing asthma and may cause new-onset asthma (Guarnieri & Balmes, 2014). Traffic-related air pollution has also been associated with neurological outcomes such as cognitive decline, neurodegenerative diseases, as well as metabolic diseases like diabetes and obesity (Kries, 2020). Significant associations have been found between low birth weight and traffic-related air pollution, which has particularly harmful effects on young children including post-birth risk of asthma and worsened asthma (Guarnieri & Balmes, 2014; Wang et. al, 2020).

Beyond the physical toxins, annoyance from heavy traffic noise is associated with sleep disturbance, mental disorders, and children’s cognition, affecting speech intelligibility, reading comprehension, memory, motivation, attention, problem-solving, and performance on standardized tests. It may also be adversely associated with physical activity (Seto et al., 2007). Also of great concern are traffic-induced injuries and fatalities among pedestrians, motor vehicles, and bicycles, particularly in the downtown and South of Market areas of San Francisco (Controller’s Office of Performance Program & Vision Zero SF, n.d.; SFDPH, n.d.). Injury counts have not significantly declined since 2015, except for modest dips in

2020 during the pandemic, while traffic fatalities have continuously increased since 2014 (City Performance Scorecard, n.d.-a; SFDPH, 2021). All of these negative health outcomes can affect mental well-being, quality of life, and productivity.

## San Francisco's South of Market Community

As defined by San Francisco Planning (2019), the South of Market neighborhood roughly encompasses a rectangular area bordered by Market Street, Highway 101, Bryant St, and 2nd St. It also includes smaller areas extending beyond 2nd St. to Beale St, and beyond Bryant St. to Townsend St. (see Figure 1). Three major freeways cross through the area: Interstate 80, Interstate 280, and Highway 101, shown in Figure 2 (IPoint21 Interactive & Walkup, Melodia, Kelly & Schoenberger, 2021). The primary zip code for SOMA is 94103, but the area is also surrounded by the Tenderloin (94102), Russian Hill (94109), and the Financial District (94104, 94108, 94111) (United States Census Bureau, 2019a).



**FIGURE 2**

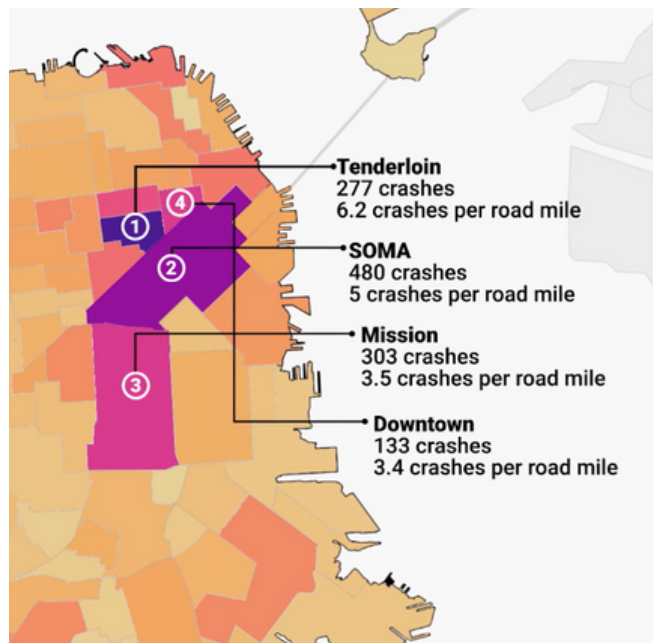
Impact of Traffic Congestion on Health & Safety in South of Market

Note: From "The Most Dangerous Pedestrian Intersections in San Francisco," by IPoint21 Interactive & Walkup, Melodia, Kelly & Schoenberger, 2021.

**FIGURE 1**

Map of the South of Market Neighborhood

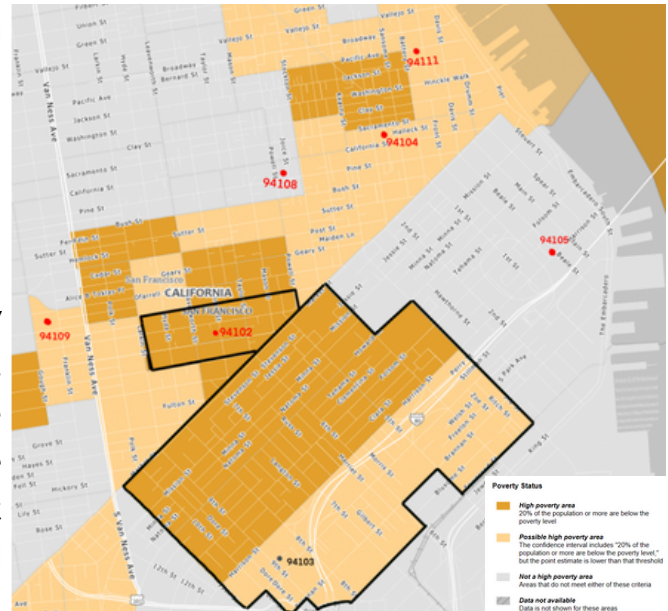
Note: From SF Find, a collaboration of the San Francisco Planning Department, Department of Technology, Mayor's Office of Neighborhood Services, and the Neighborhood Empowerment Network.



In 2020, the U.S Census Bureau (2020b) recorded population size for the South of Market area was 31,585. The racial/ethnic breakdown of the population was 29.8%

Asian, 27.3% White, 22.7% Hispanic or Latino, 11.5% Black, 2.2% Native Hawaiian and Other Pacific Islander, 0.3% American Indian, 4.5% two or more races, and 1.6% other (Advameg, Inc, 2019). Within the population, 35% of households live 200% below the federal poverty level. As shown in Figure 1, the majority of SOMA (94103) residents live in or near high poverty areas (United States Census Bureau, 2019a). Poverty is also increasing in the neighboring communities of the Tenderloin and the Mission District (94102, 94104, 94109, and 94111) (United States Census Bureau, 2019a). San Francisco's low-income neighborhoods are surrounded by higher income areas, such as Nob Hill and the Financial District, with households far above the federal poverty level (94105 and 94108) (United States Census Bureau, 2019a). As illustrated in Figure 3, people living in 94111 have a median household income of \$141,230, which is significantly higher than the surrounding area (United States Census Bureau, 2020b). Housing expenses in these areas hinder other communities from relocating.

**FIGURE 3**  
San Francisco South of Market Poverty Status Data—2015-2019 American Community Survey 5-year Estimates



Note: This graph was produced by the United States Census Bureau, representing the poverty status determined from 2015-2019 American Community Survey 5-year estimates. From "Census Poverty Status Viewer," by U.S. Census Bureau, 2019. All U.S. Census Bureau materials, regardless of the media, are entirely in the public domain.

**TABLE 1**  
San Francisco South of Market Neighborhood–Demographic Characteristics by Zip Code

Zip Code	Total Population (2020)	Total Households (2020)	% Adults (2020)	% Children (2020)	Median Household Income (2020)
94102	33,264	19,089	91.5%	8.5%	\$53,539
94103	31,585	15,918	90.2%	9.8%	\$87,587
94104	438	228	86.1%	13.9%	\$56,944
94108	13,535	7,298	91.5%	8.5%	\$64,908
94109	55,797	33,011	94.6%	5.4%	\$98,567
941011	4,023	2,218	88.7%	11.3%	\$141,230

Note: This table is a compilation of demographic characteristics by zip code. From "ACS Demographics and Housing Estimates" and "Households and Families," by the United States Census Bureau, 2020. All U.S. Census Bureau materials, regardless of the media, are entirely in the public domain.

SOMA residents are susceptible to losing their homes due to eviction and increased rental prices. The San Francisco Department of Public Health (SFDPH) developed a program dedicated to climate and health in San Francisco, which scores neighborhoods on their resiliency. The score represents the capacity of individuals and households to absorb, endure, and recover from social and economic challenges. The SOMA neighborhood (94103) received an overall resilience score of 1 and a housing resilience score of 2, with 1 being the least resilient and 5 being the most resilient (San Francisco Department of Public Health, 2015). According to the Urban Displacement Project, the SOMA neighborhood is classified as "early/ongoing gentrification" and "advanced gentrification," as a result of rising housing costs (Chapple et al., 2021). Gentrification and the displacement of communities may contribute to the low scores seen in SOMA.

The population is not only disproportionately impacted by gentrification but also air and noise pollution. With more people commuting into downtown San Francisco, traffic in the city has increased, particularly in the SOMA neighborhood. Residents of SOMA are exposed to substantial air pollution due to its proximity to Interstate 80, Interstate 280, and Highway 101. It was previously mentioned that in 2020, SOMA had the highest yearly average particulate matter concentrations. A San Francisco-based study found that risk of traffic-related noise annoyance was also a huge issue in the South of Market neighborhood. This study found that traffic in SOMA was on average 72% greater than the city average, despite the population in SOMA ranking only 13th highest among 18 neighborhoods in San Francisco (Seto et al., 2007).

A 2022 report by the California Office of Environmental Health Hazard Assessment (OEHHA) shows that 78.27% of the population living in the 94103 area code are affected by pollution. According to climate data-gathering company Aclima, Inc. (2022), SOMA has typical long-term level concentrations of NO<sub>2</sub> between 9.5-10.4 ppb (WHO guideline: 5.3 ppb), PM<sub>2.5</sub> between 8.4-9.0 µg/m<sup>3</sup> (WHO guideline: 9.0 µg/m<sup>3</sup>), O<sub>3</sub> between 24.3-24.5 ppb, CO between 0.35-0.38 ppm, and CO<sub>2</sub> between 459-462 ppm.<sup>1</sup> In short, low-income SOMA community members not only experience socioeconomic barriers, but are also at risk of developing long-term health conditions due to high rates of toxic air pollutants.

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<sup>1</sup> This data was measured from October 1, 2019, to September 30, 2020, and collected from the area roughly east-west between 3rd and 9th Streets, and north-south between Market and King Streets.



## Public Health & Health Equity Implications for SOMA Communities

Previous studies have found significant associations between living in low socioeconomic status (SES) areas and adverse health outcomes. Disparate health outcomes can be compounded in urban areas due to the downstream effect of generations of discriminatory policies, displacement, and segregation in the community (Tessum et al., 2021). A San Francisco study found key drivers of premature deaths due to chronic disease and homicide in SOMA and the Tenderloin, which were also found to be neighborhoods with higher rates of individuals with less than a high school education, a larger proportion of Black and/or other minority residents, and higher rates of unemployment (Boeck et al., 2022). Air pollution also follows this trend, as “[r]acial-ethnic minorities in the United States are exposed to disproportionately high levels of ambient fine particulate air pollution (PM<sub>2.5</sub>), the largest environmental cause of human mortality (Tessum et al., 2021, p.1). Outdoor air pollution’s effects on underrepresented racial/ethnic groups and low SES populations are exacerbated by living conditions marked by indoor contaminants, along with disproportionate disease burden experienced by these communities.

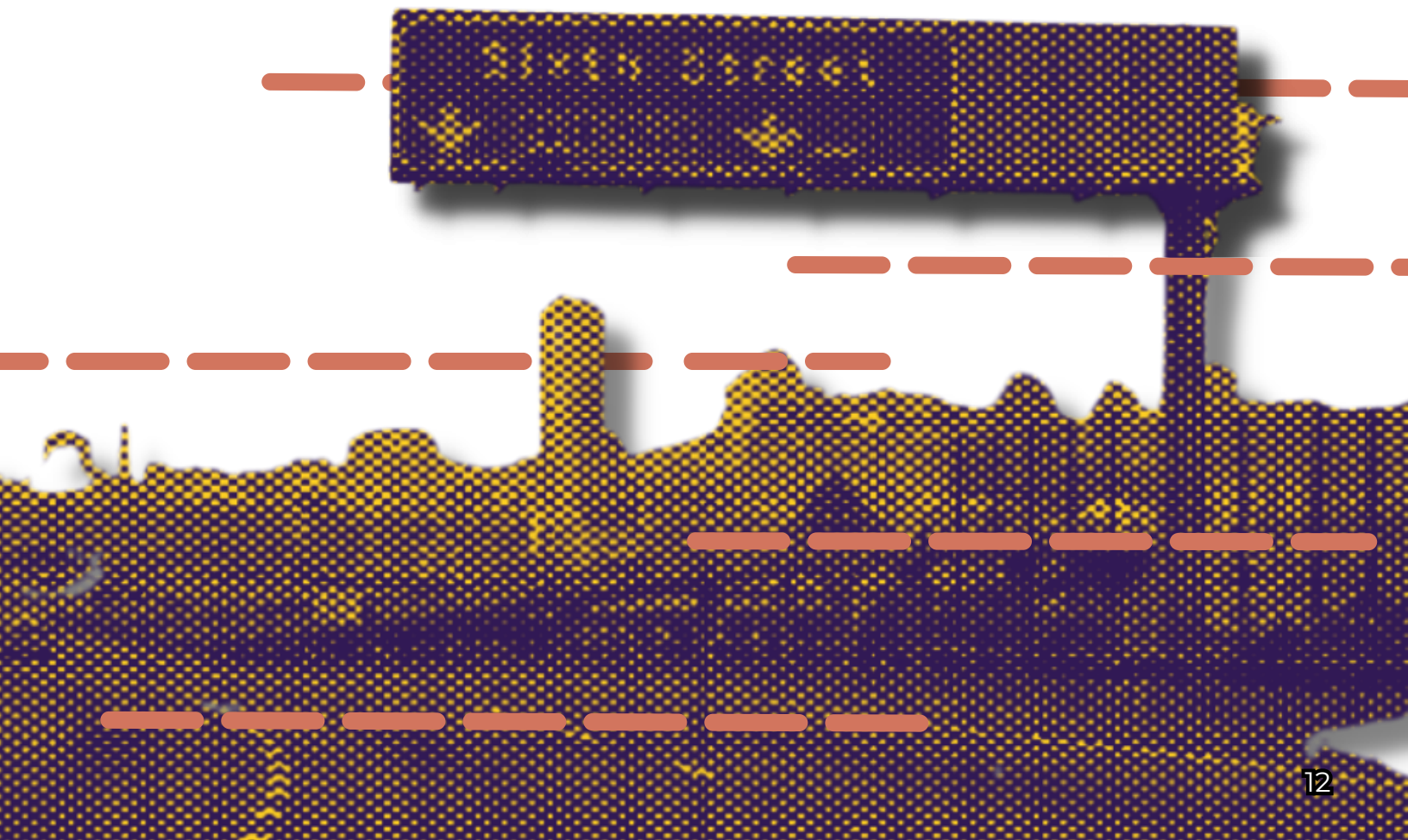
Environmental hazards in urban areas disproportionately affect low-income people, and the same is true for traffic impacts and its associated negative health outcomes (Seto et. al, 2007). Due in part to persistent housing segregation, racial/ethnic disparities have persisted despite reduction in overall pollution exposure in the U.S. For example, in U.S. urban areas, 73% of exposure derives from sources that disproportionately affect Black (71%), Latinx (71%), and Asian American (56%) residents, when compared to White residents (31%) (Tessum et al., 2021). Racial/ethnic disparities are also evident when looking at traffic fatalities. In 2021, Black/African-Americans represented 30% of all traffic fatalities in San Francisco yet make-up only 5% of the City’s total population (SFDPH, 2022).

## Study Purpose & Research Questions

Urban air pollution and traffic congestion-related impacts are associated with increased morbidity and mortality, and pose a significant environmental justice issue due to the high concentration of racial/ethnic minorities and low SES individuals living in communities with poor air quality. The traffic-related air pollution, noise, and safety issues experienced by SOMA residents interact with other area-based social determinants to create a disproportionately risky

environment conducive to adverse health outcomes. To document the opportunities and challenges faced by SOMA community members, the South of Market Community Action Network (SOMCAN) and the Community Health Ambassadors, in conjunction with public health graduate students from San Francisco State University and University of San Francisco and a geography doctoral student from UCLA, conducted a survey and follow-up interviews to evaluate the impacts of increasing amounts of vehicular traffic and its resulting impact on environmental health, safety, and quality of life on residents, workers, and visitors of the South of Market. Major research questions for this assessment are:

1. What are San Francisco South of Market (SOMA) residents', workers', and visitors' experiences of neighborhood traffic conditions and air quality?
2. How do neighborhood traffic conditions and air quality impact respondents' daily life, health and wellness?
3. What are respondents' usage, attitudes, and barriers toward using open public spaces and parks in the area?
4. What are respondents' recommendations for changes they would like to see in SOMA to address environmental health, safety, and quality of life?



# METHODS

To assess the impacts of traffic congestion on the health and safety of residents, workers, and visitors in the South of Market neighborhood in San Francisco, data was gathered from three variations of a 30-question survey and four qualitative interviews. This research was produced by the South of Market Community Action Network (SOMCAN) in collaboration with Professor Ruby Turalba and a team of graduate students from San Francisco State University, University of San Francisco, and the University of California, Los Angeles. This project was funded by the Bay Area Air Quality Management District.

## **SURVEY DATA COLLECTION & ANALYSIS**

Surveys were distributed to gather health-related quantitative and qualitative data from residents, workers, and visitors in the South of Market neighborhood in San Francisco. Three surveys of varying lengths were developed by the research team in consultation with SOMCAN staff and Community Health Ambassadors, with questions differing slightly based on whether the respondent was a resident, worker, or visitor.<sup>2</sup> These surveys focused specifically on the impacts of traffic congestion on health and pedestrian safety, as well as related environmental issues such as access to green space. Paper and online versions of the survey were disseminated in English, Filipino, and Spanish, with community members providing oral translations of the survey in Mandarin, Cantonese, and Russian. Using quota sampling methods, a total of 350 responses were collected over a two-month period. To consolidate data, all paper surveys were inputted as entries using the online version of the survey. Descriptive statistics were used to analyze the survey data.

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<sup>2</sup> The category of visitors was used to encompass all non-residents and non-workers. This primarily included senior citizens who did not live in the South of Market but commuted several times a week to visit community centers in the neighborhood, such as the Canon Kip Senior Center.

Ten multi-generational Community Health Ambassadors (CHAs), who participated in a 1-hour training in community-based participatory action research (CBPAR), conducted outreach to the South of Market community to collect data through paper surveys. All of the CHAs are Filipino-speaking and have active, strong ties to the Filipino community in the South of Market. The ten CHAs included youth, adults and seniors. In addition to the paper surveys, the online survey was distributed via SOMCAN's online newsletter, SOMCAN's mass text and email listserv. The research team and CHAs also emailed community-based organizations to help with outreach.

### **FOLLOW-UP INTERVIEWS**

Five qualitative interviews were conducted by one staff member and one intern following the two-month survey collection period. Interviewees were selected based on the length, quality, and content of their survey responses, particularly as they related to the themes of health, pedestrian safety, open space, and community development. The five interviewees included two transitional-aged youth, two adults, and one senior. Interviews lasted anywhere from 30 minutes to 1.5 hours, and interviewees were asked to expand on their initial answers to the survey. Interviews were conducted on Zoom or over the phone at the convenience of the interviewee.

### **QUALITATIVE DATA ANALYSIS**

The research team read all transcripts individually and independently formulated a list of initial codes. At subsequent research team meetings, the codes were compared and corroborated followed by an extraction of key themes and categories.

### **LIMITATIONS**

While this project intended to gather quantitative and qualitative data to understand the impacts of traffic congestion on the health and safety of residents, workers, and visitors in the South of Market neighborhood in San Francisco, as well as their recommendations to improve environmental health and safety, there were some limitations to our report. First, we used quota sampling methods for the surveys and convenience sampling for the follow-up interviews. All participants were recruited at neighborhood events or through other community-based organizations in San Francisco helping with outreach. Additionally, we asked respondents to inform other SOMA residents, workers, and visitors in their network to participate in this project. Because our criteria for participation was

specific, SOMCAN staff recruited clients who best matched the required description for the study. Survey respondents were also recruited by SOMCAN through its partnerships with other community-based organizations and via online communications. Due to these biases in sampling, the majority of survey respondents were Filipino-identified. Consequently, the data represented in this report may not be fully generalizable to all residents, workers, and visitors of the SOMA neighborhood. The purpose of this project, however, was to understand how air quality and traffic congestion impact the health of community members in the South of Market, with emphasis on the Filipino community. With a total of 350 participants, including residents, workers, and visitors, the total sample size could have been increased to provide more reliable results. In addition, a standard quota for each group would have offered a balanced perspective of air quality and traffic congestion. Finally, self-reported data may be biased and individuals may either under- or over-report their experiences. Furthermore, participants may have not given full answers or give answers that they believe the researchers or CHAs wanted to hear because they seek to make a good impression.



# FINDINGS & RESULTS

This section of the report will first summarize the quantitative data across the three target groups surveyed and then provide a detailed discussion of themes that emerged when we asked community members about their suggestions to improve environmental health, safety, and quality of life in the South of Market neighborhood.



## QUANTITATIVE DATA FINDINGS

The survey was organized into the following three categories of questions with varying lengths depending on the target group of residents, workers, or visitors: Demographics; Traffic Congestion & Noise; Traffic Impacts, Safety, & Health. The survey concluded with two final questions asking about respondents' suggestions for addressing environmental health, safety, and quality of life, as well as their interest in being contacted for a follow-up interview. A summary of the qualitative findings is included later in this report. A total of 350 surveys were completed, with 38.9% residents (nr=136), 33.4% workers (nw=117), and 27.7% visitors (nv=97).

### Demographics

The survey asked participants about their age, race/ethnicity, and other characteristics specific to each target group. For example, residents were also asked about household size and their residence's proximity to a freeway. Workers and visitors were asked about the frequency of days spent in SOMA and proximity of either the work site or place they visited the most to a freeway.

**Age & Race/Ethnicity for All Survey Responses.** Survey participants across all three target groups were asked about their age and race/ethnicity. Table 2 shows

the age ranges across all survey respondents, except for one person from the worker group who did not answer this question. Adults over the age of 25 make up a majority of the survey respondents, with almost a third (31.5%) of them 65 years or older. The following table shows the age ranges of all survey participants. Aggregated age ranges by target group will be discussed in latter sections of this report.

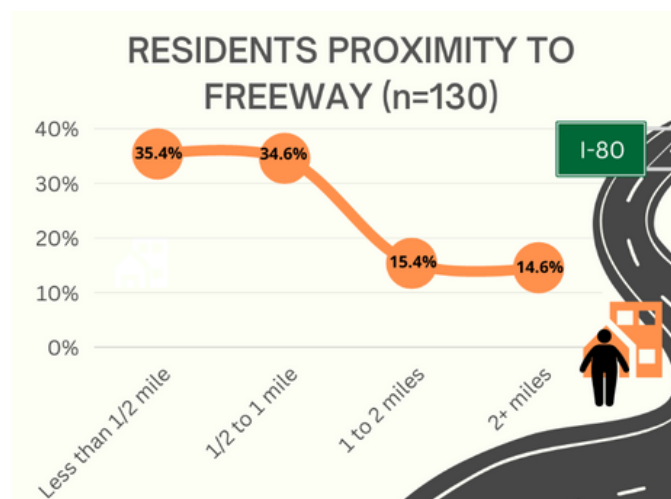
**TABLE 2**  
Age Range for All Survey Participants

Age Range (years)	Under 18	18-24	25-34	35-54	55-64	65+
% (n=349)	2.8	6.9	17.5	23.8	17.5	31.5

Survey respondents were asked to self-report their race and ethnicity. Of the 350 respondents, 21 individuals did not answer this question. Out of 329 respondents, the majority identify as Filipino at 62.0%, followed by Chinese and other Asian ethnicities at 14.0%, White at 7%, Hispanic/Latinx at 6.1%, multiracial at 4.3%, Black at 4%, and Other at 2.6%.

**Residents.** Approximately 38.9% of the total survey respondents are residents of SOMA. Of the resident group participants (nr=136), 41.2% are seniors and 59.7% identify as Filipino.<sup>3</sup> Less than a third of residents (30.6%) live alone, whereas a quarter (25%) live with another person. More than three-quarters (85.4%) of the resident participants reported they live within two miles of a freeway, with 35.4% reporting they live within a half mile of a freeway and 34.6% stating they live between ½ to 1 mile of a freeway.<sup>4</sup>

**FIGURE 4**  
Residents' Proximity to Freeway



<sup>3</sup> Two residents did not respond to the question of race/ethnicity. The 59.7% of residents who identify as Filipino is based on a total of 134 residents.

<sup>4</sup> This percentage is based on a total of 130 residents, as six residents did not respond to the question about proximity to a freeway.

**Workers.** Approximately 33.4% of survey respondents are individuals who work in SOMA (nw=117). About half of the workers (56.9%) are between 25-54 years old, and almost a quarter (24.1%) are between 55-64<sup>5</sup> years old. An estimated 56.1% of workers identify as Filipino.<sup>6</sup> Less than half of the workers (45.2%) surveyed typically spend 5-6 days per week in SOMA, and about a quarter of workers (25.2%) are in the neighborhood 3-4 days per week. More than two-thirds of workers (67.2%) stated that they work within 1 mile from a freeway.

**Visitors.** Approximately 27.7% of survey respondents are individuals who visit SOMA, meaning they neither reside nor work in the neighborhood (nv=97). Roughly three-quarters of visitor participants identify as Filipino (72.7%),<sup>7</sup> and 41.2% of visitor respondents are seniors. While almost two-thirds of visitors (64.2%) reported they frequent SOMA only 0-2 days a week, the remaining reported visiting the neighborhood 3-7 days a week. Approximately 66% of visitors stated their usual destination is within 1 mile, or 1-6 blocks, from a freeway.

## Traffic Congestion & Noise

Specific survey questions asked community members about their experiences with traffic congestion and noise while in the SOMA neighborhood.

**Residents.** More than half of residents reported that they hear traffic noise “always” or “very often” combined (58.1%). Over a third of resident respondents said that traffic noise “always” or “very often” disrupts their concentration (37.8%), and “always” or “very often” disrupts their sleep (36.3%). Slightly more than half (54.2%) of residents stated that traffic sits idling in front of their home at least three days a week, with a third reporting that idling traffic lasts at least four hours per day (33.0%).

**Workers.** Almost three-quarter of workers reported that they hear traffic noise “always” or “very often” (71.8%), and more than a third feel that traffic noise disrupts their concentration “always” or “very often” (35.9%). Less than two-thirds of workers mention that traffic sits idling in front of their workplace at least three days a

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<sup>5</sup> The percentages are based on 116 worker respondents, as one resident did not answer the question about age.

<sup>6</sup> This percentage is based on 110 worker respondents, as 10 worker individuals did not respond to the question about race/ethnicity.

<sup>7</sup> This percentage is based on 97 visitor respondents, as 9 visitor individuals did not respond to the question about race/ethnicity.



week (60.6%), and about a third experience idling traffic in front of their workplace at least four hours a day or longer (34.5%).

**Visitors.** More than half of the visitors surveyed hear traffic noise “always” or “very often” when they are in SOMA (53.1%), with about a third reported their concentration disrupted “always” or “very often” as a result of the traffic noise (30.1%).

## Traffic Impacts, Safety, and Health

One section of the survey asked all three target groups about pedestrian safety, modes of travel and transportation, and access to public spaces in the SOMA. Residents responded to additional questions about health conditions that could be attributed to air pollution exposure.

**Residents.** More than a third of residents reported that they feel unsafe crossing the street (38.9%). The most frequently cited modes of travel and transportation in the neighborhood are walking and public transportation. While less than half of residents mentioned they access open spaces like parks or playgrounds frequently – weekly or more than four times a month (42%) – a similar proportion of residents visit public spaces in the SOMA only once per month or not at all (43%). Headaches, asthma, and fatigue were the most commonly reported health issues experienced by residents.

**Workers.** Just under half of the workers surveyed (47.2%) feel somewhat or very unsafe crossing the street in the SOMA, and the top three modes of travel transportation they reported were public transportation, driving, and walking. An estimated 40.9% of workers mentioned accessing public spaces only once per month or not at all, with slightly fewer workers (39.1%) accessing public spaces in the SOMA weekly or more than four times a month.

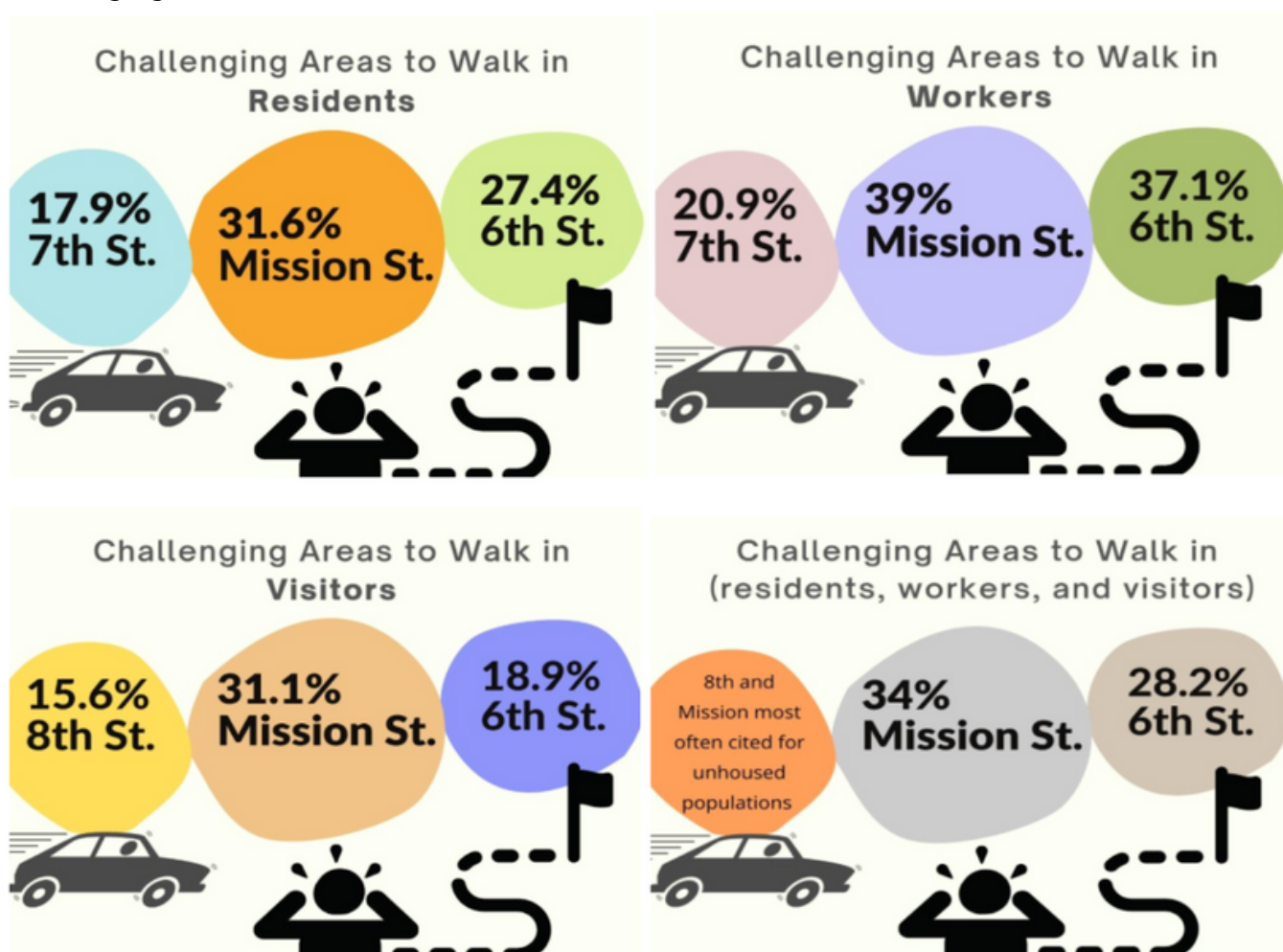
**Visitors.** More than a third of the visitors surveyed feel unsafe crossing the street in the SOMA (34.8%), and the top three modes of travel or transportation used in the neighborhood are public transit, walking, and driving. Over a quarter of visitors reported not accessing public spaces in the SOMA (26.3%), whereas more than half of visitors have accessed public spaces one to three times a month (53.6%).

## Challenging Areas for Walking

Residents, workers, and visitors were asked about the most challenging streets to navigate while walking in the SOMA. Overwhelmingly, all three groups reported the intersections of 6th and Mission Streets, as well as 8th and Mission Streets.

**FIGURE 5**

Challenging Areas to Walk In



## ▶ QUALITATIVE DATA FINDINGS

Using short answers from the survey and follow-up interviews with five survey respondents, this section examines the impacts of traffic congestion and air pollution on the health, safety, and overall quality of life for residents, workers, and visitors in the South of Market neighborhood. Overarching themes from the qualitative data analysis include: Impacts of Traffic Congestion on Health and Safety, Non-Traffic-Related Impacts on Health and Safety, and Improving Overall Quality of Life. Several findings or sub-themes fall under each of these categories and will be discussed in this section of the report.

## Impacts of Traffic Congestion on Health and Safety

As indicated in the beginning of this report, residents, workers, and visitors in the South of Market are disproportionately affected by huge flows of traffic through the neighborhood. Interstate 80, Interstate 280, and Highway 101 all converge in the South of Market neighborhood, and many commuters into the city must pass through the South of Market in order to reach the Financial District, Civic Center, and other downtown areas. As a result, we learned that cars and other vehicles endanger pedestrian safety, speeding cars produce noise pollution, and traffic-induced air pollution disproportionately impacts SOMA residents.

**Cars and Other Vehicles Endanger Pedestrian Safety.** According to a study by 1Point21 (2021), SOMA is the second most dangerous neighborhood in San Francisco with regard to pedestrian safety, having the highest gross number of collisions out of any neighborhood in the city from 2016-2020. A majority of respondents indicated they do not feel safe crossing the street, as they have witnessed many incidents in which cars do not respect traffic laws in the neighborhood. Many cars often exceed the speed limit, also speeding through intersections to catch a light or making turns when pedestrians are still crossing the street. Two respondents shared their difficulties and fears while crossing the street:

“ cars will be driving fast and sometimes are trying to turn right away before I start walking. I always feel like I might get hit. Also cars nowadays make turns when they are not supposed to, causing more traffic [and it] affects me being able to cross the street.

(Worker, adult/35-54 years old)

“ some drivers block the crosswalk. Therefore, I don't know when they are going to move/drive the car forward. I am scared that the car will hit me.

(Worker, adult/35-54 years old)

Cars disregarding pedestrian safety is a particular risk for seniors and people with disabilities, who reported in their survey responses that they need more time than is allotted to cross the street. Many respondents requested that community ambassadors or crossing guards be stationed at busy intersections, especially along Mission Street, to help enforce traffic laws and protect pedestrian safety.

In addition to seniors and people with disabilities, speeding cars are also a risk for children in the neighborhood. Bessie Carmichael PK-8 School/Filipino Education

Center has two separate campuses for elementary and middle school grades, and both are located one block from the freeway entrances and exits along Interstate 80. Morning commuters using these access points into the city must cross paths with children heading to Bessie Carmichael. Crossing guards directing traffic can help prevent risk of accidents between children and morning commuters. While crossing guards are present before and after school hours at the elementary school campus, there are none present at the middle school. In both areas, the use of crossing guards would also be helpful outside of these times (i.e., late afternoon and weekends), as there are many families and seniors that reside and walk in this area of SOMA.

Threats to pedestrian safety are not limited to cars, as senior-aged residents and one wheelchair user mentioned that they also feel threatened by bicycles, skateboards, and electric scooters that occupy the sidewalks and rush past them, despite local and state policies that prohibit such usage (California Vehicle Code, 1999; Office of the Legislative Analyst, 2003; San Francisco Transportation Code, 2021). However, even bicyclists are at risk from traffic collisions, as cars cut in front of bicyclists in designated bike lanes. Data from 1Point21 Interactive (2018) indicated that SOMA had the highest number of bicycle crashes out of any neighborhood in San Francisco from 2013-2017. As illustrated in the following quote, one bicyclist mentioned that on several occasions, he was cut off by a car who suddenly made a right-hand turn, nearly resulting in a collision:

*Yung stop light, minsan yung mga kotse kinacut ka na lang! Yun ang problema na napakalaki. Yung mga sasakyan hindi sumusunod. Nakasenyas na yung bike, ready to go na then biglang lumiliko na lang ng kanan. Ilang beses na nangyayari sa akin yun. Halos bumagsak ka sa bisikleta para maiwasan, ikaw pa ang mumurahin. Sasabihin pa nila hindi ako tumitingin eh sila ang mali.*

*Through a stop light, sometimes cars just cut you off! That's a huge problem. Those cars don't follow. I signaled my bike, ready to go, then suddenly [a vehicle] turned right all of a sudden. That happened to me several times. I almost fell off the bike to avoid it, then they're the ones who've got the nerve to curse at you. They'll even argue that I was at fault for not looking, but they're really the ones who are in the wrong.*

*(Resident, senior/65+ years old)*

In addition to crossing guards acting as traffic law enforcers, many survey participants indicated the need for other traffic calming measures to instill more caution in drivers. Suggestions included placing speed bumps, yield and “no right turn on red” signs, and red-light cameras at busy intersections in the neighborhood. Several senior-aged respondents and participants with disabilities also recommended allocating longer crossing times to allow them to move safely across the street, as one senior explicitly mentioned that 30 seconds was not enough time for him to cross the street. To improve pedestrian safety at night, many respondents also recommended installing new streetlamps and repairing existing ones. Designating more Slow Streets and car-free zones, especially along residential alleyways, were other proposed solutions, as this would also free up public space for recreational activities and community events. Many of these measures proposed by survey respondents correlate with San Francisco’s Vision Zero Action Strategy to eliminate traffic-related pedestrian and bicyclist fatalities in the city.

**Speeding Cars Produce Noise Pollution.** Cars speeding down alleyways are not only a hazard to pedestrian safety but produce a large amount of noise. As indicated in the previous section, nearly half of SOMA residents are affected by traffic noise, with over 50% indicating that traffic noise affects their concentration and disrupts their sleep. One interviewee mentioned how she is often woken up by the sound of car engines speeding through the streets at night:

“

*Kahit sa gabi may maingay din. Hindi lang mga ibang car. Kahit nasa bahay ka na, may madidinig ka pa din. Yung mga ambulance, okay lang yun kasi emergency. Pero madalas ang mga car maingay, humaharurot. Akala mo racer na, ginagawang racing ang karsada. Hindi naman madalas pero may ilang mga araw din. Tapos mawawala. Okay na lang din, kasi wala ka namang magawa. Kapag pagod na ako at kailangan ko na magpahinga, medyo may marining ako, itutulog ko na lang. No choice ako.*

*Even at night there is noise. Not just other cars. Even if you are at home, you will still hear something. The ambulances, that's okay because it's an emergency [vehicle]. But the cars are often noisy, speeding most of the time. [The noise will make] you will think it was a racer [car], the road turns into a racing track. Not often, but there are some days too. Then it will disappear. Sometimes you just let it be, because there's nothing you can do. When I'm really tired and need to rest, there'll be cars roaring. I just go to sleep. I have no choice.*

*(Resident, middle-aged/55-64 years old)*

”

Traffic calming measures such as speed bumps and Slow Streets help protect pedestrian safety and would also reduce residents' exposure to noise pollution.

**Traffic-Induced Air Pollution Disproportionately Impacts SOMA Residents.** As indicated in the beginning of this report, long-term exposure to air pollution is correlated with the development of chronic health conditions like asthma, respiratory diseases, and cancer. Paralleling survey data in the previous section, several residents mentioned in their responses that they or a member of their household have experienced daily asthma attacks, headaches, nausea, fatigue, or chest pain for several years – all symptoms correlated with long-term exposure to car exhaust. Many of these same residents also indicated that they live with someone who wears a respirator. One resident explicitly stated that she and her family began experiencing these symptoms when her family moved to SOMA. While it is impossible to fully determine whether the development of these health conditions was directly caused by their residence in the South of Market neighborhood, these conditions are undoubtedly worsened by continued exposure to traffic-induced air pollution. Many residents live in older buildings like SROs that are not equipped with double-pane windows or air filtration devices to mitigate the effects of air pollution. One resident said that their landlord would not pay for these improvements:

“

*I live in a very old building with a low rent fee. The landlord would not provide these treatments [to filter air pollution]. And these won't fit to our budget due to its expensive price.*

*(Resident, adult/24-35 years old)*

”

Another resident living in a local shelter explicitly connected the lack of environmental treatments to the exacerbation of their health problems, stating:

“

*I live inside the shelter at 525 5th and air circulation is a major problem. Our entire environmental system is ancient. And I have allergies and asthma.*

*(Resident, adult/55-64 years old)*

”

Thus, not only are residents of SOMA disproportionately more exposed to air pollution because of the neighborhood's proximity to major freeways and downtown areas, but residents are also more likely to live in buildings that lack treatments to protect against the hazardous impacts of air pollution.

### Non-Traffic-Related Impacts on Health and Safety

While traffic congestion is the main source of concern with regard to air pollution and pedestrian safety in SOMA, there are other street hazards and sources of air pollution that should also be noted. For instance, during the writing of this report, one of the researchers, who is a parent of a middle school student at Bessie Carmichael, received notice about the siting of a new diesel generator along Howard Street in close proximity to the school. Exhaust from this generator would expose children at this school to more harmful pollution, a prospect made worse by the fact that the school is already exposed to air pollution from traffic along Interstate 80. The remainder of this section examines other non-traffic-related sources of air pollution and pedestrian hazards, namely construction and lack of road maintenance, that affected survey participants' health and safety.

**Construction and Lack of Road Maintenance Hinder Walkability.** The prevalence of construction in the South of Market is a major source of air pollution in the neighborhood. Not only do construction sites produce dust and other particulate matter, but construction also has a compounding effect on health and safety, worsening traffic congestion by causing traffic bottlenecks. Idling cars produce more exhaust as they are stopped in traffic, contributing to already prevalent air pollution in this area. This was a particular problem along 6th Street, in which only two lanes were open for cars, causing severe congestion. Some construction also cordoned off available walking space on sidewalks, forcing pedestrians to walk along the street and thus putting their safety at greater risk. As one worker mentioned:

“  
*With the construction, it is very dangerous to cross or stand on 6th and Howard, 6th and Natoma. (Worker, adult/35-54 years old)*  
 ”

*Several respondents also complained that construction contributes to noise pollution in the neighborhood as well.*

While survey participants noted that construction sites hinder their ability to walk along sidewalks, the lack of regular sidewalk and roadway maintenance also contributes to issues of pedestrian safety. Seniors in particular mentioned how unclean sidewalks, potholes, and cracks force them to walk in the street to avoid tripping, slipping, and falling. One senior who limps because of an aching foot noted that lack of sidewalk maintenance in SOMA makes it difficult for her to walk:

“

*Okay lang kung ang dadaanan mo ay maayos. Medyo iba dito, hindi naman maayos ang daanan. May lubak lubak, madumi at makalat. Syempre iiwasan mo iyon lalo na't kung nagmamadali ka. Pero kahit nagmamadali ka, bilisan mo man ang lakad mo, kapag okay ang lakad mo kung smooth and daan.*

*It's okay if [the road] you're walking on is fine. It's a bit different here, the road is not as smooth. Potholed, dirty and messy. Of course you will avoid that especially if you are in a hurry. But even if you're in a hurry, even if you speed up your walk, it's okay as long as the road is smooth/well-taken care of. (Resident, adult/55-64 years old)*

”

Thus, in addition to enforcing traffic laws, many respondents also requested for more frequent cleaning and repairing of streets and sidewalks in SOMA to aid in their ability to safely navigate the neighborhood.

### Improving Overall Quality of Life

In line with SOMCAN's mission and philosophy, the aim of this report is to analyze the problem of traffic congestion and air pollution holistically. Measures to reduce traffic flow through SOMA must be evaluated in tandem with other ways to improve the overall quality of life for residents in the area. Improving public transit access will not only incentivize commuters to take the bus or metro but also increase mobility for residents. Dedicating more green space in the neighborhood will not only provide fresh, clean air to residents, but provide more open, public space for residents in an area notoriously lacking in parks and other recreational areas.

**SOMA Residents, Workers, and Visitors Need Greater Access to Alternative Modes of Transit.** As evidenced in survey data, the vast majority of residents (66.4%),



workers (58.8%), and visitors (57.3%) indicated that they rely on public transit to navigate around the neighborhood. However, several participants expressed that buses would not arrive on time due to traffic congestion, making them late for work, class, and medical appointments, as evidenced in the following response:

*I commute, therefore [I] will schedule my day around when rush hour is or if there's an event near my work...I know it will be hard to get around and do errands and other things.*

*(Worker, adult/35-54 years old)*

In response, many survey participants discussed the need for improving accessibility and reliability of existing transit lines, particularly with regard to MUNI buses. As a solution, a couple respondents advocated for increasing the frequency of buses or adding more bus stops, with one respondent expressing the need to restore the bus stop at 3rd and Howard. As with cars, buses are also affected by construction in the neighborhood, with stops being moved or blocked entirely. Many respondents expressed issues with the bus stop at 8th and Mission, feeling unsafe because of illicit drug sales in the area. While this report does not advocate for the further criminalization of any individual's right to public space, adding more stops would allow residents more freedom of choice in accessing transit if they do not feel safe using a particular bus stop or if construction work blocks access to the bus stop. Improving MUNI accessibility also reduces the distance that seniors, children, and people with disabilities need to walk in order to access destinations along Mission Street and other areas in SOMA.

Reducing car dependency in SOMA necessitates the implementation of a variety of measures to incentivize the use of alternative modes of transit throughout the neighborhood. As one survey respondent indicated,

*Clean, safe & on time public transportation would help a lot [to] reduce the use of personal vehicles that cause or add air pollution.*

*(Worker, adult/35-54 years old)*

Other measures suggested by survey respondents to reduce car dependency include free or reduced-cost rideshare programs for low-to-moderate income (LMI) and disabled individuals, bikeshare programs, and expansion of existing bicycle infrastructure. In addition to these measures, SOMCAN has long advocated for expanding the Free MUNI program, currently available only to youth aged 18 and under, LMI seniors, residents with disabilities, and people experiencing homelessness (SFMTA, 2013-2023d). Expanding the program could potentially incentivize more residents and commuters to take public transit instead of driving, as evidenced by multiple municipalities in the U.S. and abroad who have adopted fare-free public transport models (Cats et al., 2017; Dai et al., 2021; Kębłowski, 2020). While the City of San Francisco is a major leader in crafting innovative policies, accessible public transportation and incentives for transit ridership remain limited for many SOMA residents, workers, and visitors.

**SOMA Lacks Sufficient Green Space.** The South of Market is located in District 6, the district in San Francisco with the least amount of parks per capita (Budget and Legislative Analyst, 2013). In other words, it is a densely-populated area with sparse green space available for residents. Access to green space is not only important for providing fresh, clean air for residents and visitors in the area, but also for providing recreational space for children, seniors, and families. Many low-income families in SOMA live in densely-crowded buildings due to the high cost of living in the downtown area. Parks and playgrounds form a pivotal extension of these families' households, fulfilling the role of a backyard by allowing children to play outside. However, one interviewee reported that the playgrounds adjacent to his residence are not well-maintained or cleaned, disincentivizing their use and "alienating" him from his own neighborhood:

“  
*the playground about a block from where I live...if it were maintained and if it were accessible to everybody in terms of safety, cleanliness, and all of that would actually encourage people to take account of the overall state of our neighborhood. So I do find value in being able to lay claim to a green space within proximity of one's household because it engenders a sense of responsibility for that place. I could always walk down to the ferry building, of course, like everybody else does. It's cleaner. It's more beautiful, obviously. But at the end of it, it also alienates me from my own neighborhood.*

*(Resident, adult/35-54 years old)*

A greater prevalence of public spaces would not only benefit children and families but seniors as well. One respondent expressed that more green space would allow seniors like her to engage in active exercises, like Tai Chi. This became even more crucial during the pandemic, as many community centers were forced to temporarily close their doors to public use.

According to respondents, Yerba Buena Gardens and Victoria Manalo Draves (VMD) Park are two of the most frequented green spaces in SOMA. Many residents, particularly those who live in the western or southern parts of SOMA, believe VMD Park is the sole park in the neighborhood. Moreover, they wished there was another space they could use, since VMD Park closes after dark. Similarly, one couple who lived in the eastern part of SOMA stated that VMD Park was too far for them to walk to, speaking to the need for more parks spread geographically throughout the neighborhood. Similarly, another resident mentioned that they would go more often to Yerba Buena Gardens if it was closer:

*Schools have open spaces for children but not a lot for residents. My grandchild would have to go to a different neighborhood for him to skateboard or bike safely instead of my neighborhood. I go to a park occasionally (Yerba Buena garden) if I am in the area. But not often because it's a bit of a walk from where I live.*

*(Resident, adult/55-64 years old)*

Survey respondents not only pointed out the need for more parks and playgrounds in the neighborhood but also suggested alternative forms of green space. Urban gardens would cultivate a sense of stewardship among residents and forge stronger community ties. Trees would provide shade for pedestrians, and benches would allow residents and visitors, particularly seniors and people with disabilities, to take rests while walking. As mentioned before, closing off residential alleys to cars would provide more public space for recreational activities and community-oriented events.

**Community-Led Planning Has Been Successful in Addressing Traffic-Related Issues.** Several respondents indicated the need for collaboration between city agencies, community-based organizations, and community stakeholders to resolve several of the issues pertaining to traffic congestion and air pollution, as indicated in the following quote:

*“ We should all align businesses and companies to push sustainability in all aspects for a thriving and safe neighborhood. SOMA is a powerful and lovely space. Let's keep it that way. ”*  
*(Resident, transitional aged youth/18-24 years old)*

However, at the same time, one resident reported feeling powerless to deal with traffic congestion and noise in the neighborhood. SOMCAN is uniquely positioned to address these issues, as our work has focused on empowering and organizing community stakeholders to fight for these necessary changes in the neighborhood. One interviewee recalled the efforts of elders to install a stoplight at the intersection of Natoma and 8th Streets, helping to reduce traffic accidents at a critical intersection where seniors would cross the street to reach a local community center. She recalls that:

*“ Nagkaroon nga [ng tawiran] kasi noong nag-rally yung mga matatanda. Nagkaroon ng stoplight mula sa Natoma St. papunta sa kabila...dati wala iyon. Kasi yung mga matatanda tumatawid sila kahit walang stoplight. Buti na lang nagkaroon ng stoplight. Nalalayuan sila kasi kung galing sila sa Natoma, pupunta pa sila sa may Howard St., parang...gusto nila shortcut.*

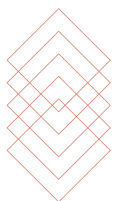
*[a pedestrian crossing] was made because when the elders rallied. A stoplight was added from Natoma St. going to the other side...it didn't exist before. Because the elders usually cross even without a stoplight. Good thing a stoplight was added. They find it very far because if they are coming from Natoma St., they will have to go to Howard St., like...for a shortcut. (Resident, senior/65+ years old)*

SOMCAN has also assisted in organizing other community efforts to improve traffic safety, including the installation of street lamps for walking at night and the implementation of the Folsom-Howard streetscape and Slow Streets programs.

This report showcases the importance of procuring community input to identify issues, needs, and concerns in the South of Market. Through survey responses and interviews, this research was able to highlight what problems most affected residents, workers, and visitors in the neighborhood.

# RECOMMENDATIONS

This assessment has found that traffic congestion and air quality needs to be addressed to improve the health and safety of SOMA community members. Vehicle traffic endangers pedestrian safety and produces noise and air pollution. A higher density of construction projects and poor road infrastructure in SOMA relative to other neighborhoods in San Francisco also negatively impacts community members. Implementing strategies that are transformative and equity-minded to improve public health and safety are key to addressing these issues. Assessment data gathered from the surveys and follow-up interviews will inform SOMCAN's programs and can drive community planning, organizing efforts, and policy advocacy strategies to address traffic safety, environmental health, and community well-being. Based on our assessment findings, SOMCAN proposes the following recommendations.



## **ENCOURAGE NON-MOTOR VEHICLE USE WITH FARE-FREE PUBLIC TRANSPORT, IMPROVED PUBLIC TRANSIT SERVICES, AND STRENGTHENED COMMUNITY & GOVERNMENT PARTNERSHIPS**

Public transportation is an evidence-based sustainable strategy for improving air quality that can reduce carbon dioxide (CO<sub>2</sub>) emissions up to 45%. The U.S. public transportation system is estimated to save 37 million metric tons of carbon dioxide (CO<sub>2</sub>) emissions annually, while an increase in bicycle usage could save an estimated 6-14 million tons (U.S. EPA, 2022e; Pei, 2021). Because SOMA residents, workers, and visitors are constantly exposed to high volumes of motor vehicle traffic and resultant poor air quality, SOMCAN recommends that the City of San Francisco adopt bolder measures to encourage non-motor vehicle use through

fare-free public transport, improved public transit services, and strengthened community and government partnerships.

### **Fare-Free Public Transport**

SOMCAN has long advocated for expanding the Free MUNI program, currently only available to youth aged 18 and under, low-to-moderate income seniors, residents with disabilities, and people experiencing homelessness (SFMTA, 2013-2023d). Expanding the program to a completely fare-free model would incentivize more residents and commuters to take public transit instead of driving, with long-term benefits to the environment. In their efforts to reduce carbon emissions, fare-free public transport systems (FFPT) have been adopted internationally and domestically yielding increases in ridership.

In the European Union, two nations and multiple local municipalities have implemented FFPT to mitigate global warming and limit fossil fuel dependency. Luxembourg was the first European country to eliminate public transit fares in March 2020, followed by Malta two years later. Because of the COVID-19 pandemic and its economic downturn, a clear picture of ridership rates remains to be seen. One year later, however, Luxembourg reached a peak of 42,000 passengers per day compared to a baseline of 31,000 in February 2020 (Research Luxembourg, 2021). In Malta, recent data shows “4.5 million passengers in the first month of 2023 – an increase of 59% compared to January 2022 and 17% when compared to January 2019” (Times of Malta, 2023). One year after the city of Tallinn, Estonia adopted FFPT in 2013, public transportation ridership rates increased by 14%, with greater shifts among lower-income residents (Cats et al., 2017).

While several U.S. cities have implemented FFPT programs in recent years, ridership rates and data continue to be collected and evaluated. Since the 2019 inception of ZeroFare KC, the first universal zero-fare transit system in the U.S., Kansas City residents have reported increased mobility and financial benefits (Smith, 2022). Preliminary data from Olympia, Washington showed that after one month of launching its 2020 pilot program, “Zero-Fare Demonstration Project,” ridership increased 20% from the previous year, equivalent to 60,000 riders in one year (Hess, 2020). Following this trend and as a response to the COVID-19 pandemic, other cities that have piloted FFPT or zero-fare public transit programs in the last few years including Boston, Massachusetts; Tampa, Florida; and Fort Collins, Colorado (Bohannon, 2023; City of Boston, 2022; Wronka, 2022). While forthcoming evaluation data from these locales will be instrumental in

determining the ridership success of these programs, emissions-free public transit can reduce community exposure to harmful air pollutants. SOMCAN urges the City of San Francisco to follow other global and U.S. leaders in implementing fare-free public transport.

**Transit Subsidy & Benefit Programs.** While Free Muni can improve the environment and community health, SOMCAN understands that transformative equity-based initiatives are sensitive to the political climate. We recommend that existing transit subsidies or other transit benefit programs be scaled up in San Francisco and throughout the Bay Area, as well as mass marketed to ensure that employers provide and commuters take advantage of such offerings. Such initiatives can increase public transit ridership and reduce commuters' reliance on personal motor vehicle use.

San Francisco's Environment Code Section 427, adopted in 2009 and known as the Commuter Benefit Ordinance, mandates that businesses offer monthly pre-tax deductions (up to \$300 per month for transit expenses), employer-paid transit benefits (equivalent to the cost of a Muni "A" pass), employer-provided transportation, or any combination of the aforementioned perks. Emergency Ride Home is another program that provides free rides or transit-related reimbursements for qualifying emergencies (San Francisco Department of the Environment, 2023; SF Environment Code Chapter 4 Sec. 427, 2009).

These local transit initiatives serve as a resource for communities. Providing information and education about these programs is essential in ensuring that employers provide these benefits and that commuting workers can access support for their transportation costs. While information about these programs are readily available to the public on the San Francisco Department website (Rules & Regulations - Commuter Benefits Ordinance, How to Implement a Commuter Benefits Program, Business Commute Program), on-the-ground visibility is greatly needed. Evaluation results of the Commuter Benefits Program after its first year of implementation show modest impacts. Of 1400 employees surveyed, 55% were aware that their employer offered such incentives, compared to 45% who were unsure or stated their employer did not provide a commuter benefits program (True North, 2015). Of those who indicated they were aware of their employer-sponsored benefits program, 28% utilized the program whereas 27% chose not to use it. Finally, only 6% of respondents said they had increased their use of alternative transport, resulting in at least one less motor vehicle trip per month.

Clearly, more research is needed to understand why the program is not being used by more Bay Area residents. Increased visibility of the Commuter Benefits Program and outreach to hard-to-reach populations may be instrumental in expanding its utilization.

SOMCAN recommends that the City partner with local organizations to conduct community educational workshops and information sessions, social media outreach, and dissemination of print and online materials available in multiple languages (currently only English, Spanish, and Mandarin are available) to increase employer/employee participation in these programs, particularly for the Bay Area's culturally and linguistically diverse communities. To be in compliance with San Francisco's Language Access Ordinance, SOMCAN especially recommends that SFMTA hire language-specific staff to increase transit program accessibility to residents with limited English proficiency, specifically communities whose primary languages are Cantonese, Mandarin, Spanish, and Filipino. Community partnerships and linguistically diverse transit agency staff can increase program accessibility, promote public transit use, and decrease daily motor vehicles trips.

In addition, SOMCAN recommends having transit benefit programs for all colleges in San Francisco. As high school students graduate and enter college, they age out of the Free MUNI program which benefits youth "18 years and younger, regardless of household income level and residency" (SFMTA, 2013-2023d). While public transit is considered more affordable than owning a private vehicle, a monthly transit pass can also be cost prohibitive. On top of their tuition, school-related supplies, and other living expenses, an average college student in California spends about one-fifth of their living expenses on transportation – an estimated \$114 per month or \$1,026 annually (California Student Aid Commission, 2021; Clay & Valentine, 2021; Price & Curtis, 2018). Though there are several commuter benefits offered in SF's four-year universities such as the University of San Francisco's Muni Pass and SFSU's Gator Pass that offer discounted BART rides and unlimited rides on MUNI and SamTrans, local two-year community colleges do not typically offer comparable transit or commuter benefits programs. For example, City College of San Francisco only offers parking and commuter benefits to current employees, not to its students. Transportation subsidies could provide students with reliable and affordable access to public transportation, with long-term environmental benefits.



## Improved Services

Fare-free transport schemes and transit benefit programs are worthy strategies to increase public transit ridership; however, stronger incentives of public transit use entail effective and reliable services. To reduce motor vehicle use and improve air quality, SOMCAN recommends that San Francisco's Municipal Transportation Agency (SFMTA) prioritize public transit performance and reliability, address safety and maintenance, and transition to a zero-free emission bus fleet.

**Performance & Reliability.** Transit riders expect predictable and reliable services. Measures of performance and reliability include ridership, percent of scheduled service hours delivered, and transit on-time performance. According to San Francisco's Transportation Scorecard, targets for ridership and on-time performance have "not been met" while percent of scheduled service hours "needs improvement." Low scoring indicators suggest the need for SFMTA to identify creative strategies to encourage public transit usage (City Performance Scorecard, n.d.-b).

SOMA bus lines 14-Mission, 9-San Bruno, and 8-Bayshore are considered some of the busiest routes in the city, traversing the entire span of the city. During peak times, these lines are typically crowded with passengers and can be extremely delayed due to high volumes of vehicle, pedestrian, and passenger activity in the SOMA neighborhood (SFMTA, 2013-2023a; San Francisco County Transportation Authority, 2007). Out of 63 bus lines, on-time rating performance (OTP) for the 14-Mission, 9-San Bruno, and 8-Bayshore ranked 17th, 40th, 52nd respectively, while MUNI achieved a 55.6% overall OTP rating in 2022-2023, about 30% less from its 85% target (Brinklow, 2019; City Performance Scorecard, n.d.-b). Poor performance and reliability of public transit, such as longer wait times, boarding delays at stops, and multiple transfers to other bus lines, could potentially affect public transit ridership rates (Taylor et al., 2009; Manville et al., 2018).

Congested roadways shared between buses and motor vehicles can also affect transit performance and reliability. The rise of transportation network companies (TNC) like Uber and Lyft exacerbates traffic congestion by adding more cars on the road. Ridership from TNCs has been increasing in major cities due to its features of "point-to-point service, ease of reserving riders, shorter wait times, lower fares... ease of payment, and real-time communication with drivers" (San Francisco County Transportation Authority, 2018). In 2016, an estimated 62 million trips were

made using TNC services, about 15% of all San Francisco vehicular trips. “TNCs accounted for approximately 50% of the change in [traffic] congestion in San Francisco between 2010 and 2016,” negatively affecting air quality and health for community members in SOMA and other neighborhoods (San Francisco County Transportation Authority, 2018). To address transit performance and reliability, SOMCAN recommends: increasing frequency of buses arriving on time and improving bus capacity guidelines to reduce overcrowded buses; adding more bus stops to increase accessibility for seniors, people with disabilities, and children; and providing real-time arrival information at bus stops and improving available apps that track bus arrivals (i.e., NextBus or Routesy).

**Safety & Maintenance.** Despite SFMTA’s measures to address service reliability and accessibility issues by adding rapid lines through the MUNI Forward Rapid Network and establishing street design changes (e.g. red transit lanes), other gaps in safety and lack of cleanliness makes its services “unreliable” for riders and contribute to negative customer experience. While MUNI-related crime rates consistently fall below target levels, meaning current rates do not exceed the 3.9 target rate of crimes for every 100,000 miles of MUNI service, these figures may not truly represent riders’ experiences (SFMTA, 2023a). For example, incidents may not be reported to the police, and thus crime rates may not reflect riders’ feelings of safety on public transit or waiting at bus stops (Yu, 2023). Questions on MUNI’s Safety Survey, which was rolled out in 2023, focus primarily on gender-based harassment and violence. While these issues are important, other measures are needed to better understand riders’ feelings of safety. For example, our assessment found that participants felt unsafe at certain bus stops where illicit drug sales were present or while riding on buses with individuals who had mental health or substance abuse issues. A need for cleanliness on buses and at bus stops was also reported by participants, which aligns with the City’s Performance Scorecard on customers rating of MUNI cleanliness (SFMTA, 2016-2017).

**Transition to a Zero-free Emission Bus Fleet.** SOMCAN’s final recommendation to improve transit services is for the City to transition its entire bus fleet to zero-free emissions. Doing so would improve air quality, particularly in neighborhoods such as SOMA that experience greater levels of traffic congestion.

In 2018, the Battery-Electric Bus Program (BEB) was launched by the SFMTA to meet the City’s goal of achieving net-zero greenhouse emissions by 2040 (Dunn &

Lu, 2020; SFMTA, 2013-2023b). Currently, bus lines 1-California, 9-San Bruno, 22-Fillmore, 24-Divisadero, 29-Sunset, and 44-O'Shaughnessy are the only hybrid-electric buses deployed by the BEB program, with the 9-San Bruno being the only line passing through SOMA. To reduce carbon emissions, all MUNI bus lines should be shifted to battery-electric and hybrid models with an equitable rollout plan. For example, the 8-Bayshore, 14-Mission, 14R-Mission Rapid, and 49-Van Ness bus lines should be prioritized for the BEB program, as these routes are commonly used by low-income community members of SOMA to go to work and school. Transitioning these lines to zero-free emissions would reduce SOMA community members' exposure to bus exhaust in the neighborhood while waiting at bus stops and while riding transit.

### **Strengthening Community & Government Partnerships**

The City and County of San Francisco has comprehensive inter-agency partnerships to improve air quality, traffic congestion, and community health that includes the Department of the Environment, Department of Public Health, Municipal Transportation Agency, among many others. Partnerships with regional and state agencies, such as BAAQMD and the San Francisco County Transportation Authority, have also been imperative in addressing the intersection of environmental health, public transit, and city planning. Similarly, relationships with local advocacy groups such as the San Francisco Bicycle Coalition have supported efforts to encourage non-motor vehicle transportation making the City safer and more liveable. While cross-agency collaborations should continue, SOMCAN recommends strengthening partnerships with local community-based organizations that serve the South of Market neighborhood to truly understand community members' needs, concerns, and recommendations for increasing public transit use. Community-based partnerships are necessary for elevating community voices in decisions that impact them, particularly for hard-to-reach groups such as low-income individuals, families, seniors, and persons with disabilities.

Importantly, these community-based partnerships must ensure that city policies are not alienating low-income workers who must commute into the city via motor vehicles. The adoption of measures like increased bridge tolls, parking fees, and vehicle registration fees put undue financial burdens on low-income workers, many of whom were displaced from the city because of high living costs (Boarnet et al. 2021, Council of Community Housing Organizations, 2021). As such, all transit measures adopted by the City must take into account the financial impacts that

regressive tax measures and other policies will have on low-income individuals. Any long-term goals of reducing motor vehicle traffic through the South of Market must be matched with long-term housing solutions that will allow San Francisco workers to live in their place of work.



## **PRIORITIZE TRAFFIC CALMING MEASURES AND INITIATIVES IN THE SOUTH OF MARKET**

While community-based initiatives to encourage safe driving habits and increase pedestrian safety hold much promise, a multi-pronged approach that includes physical changes to the built environment and traffic calming programs is also imperative, particularly for SOMA community members who report feeling unsafe while crossing high volume traffic intersections. The concerns of residents, workers, and visitors regarding traffic congestion and pedestrian safety in SOMA are not unfounded, as the area was reported to be one of San Francisco's neighborhoods with the highest density of traffic-related fatalities and injuries (Controller's Office of Performance Program & Vision Zero SF, n.d). SOMCAN recommends that the City continue to prioritize innovative traffic calming measures and initiatives in the South of Market, implementing changes in road infrastructure and expanding SFMTA's Residential Traffic Calming and Slow Streets Programs.

Combining engineering road changes and evidence-based educational campaigns to raise awareness on driving behaviors are key to improving traffic safety. Pedestrian and traffic-related accidents can be reduced by investing in road infrastructure and improvements, as well as traffic calming methods. In 2014, about 40% of traffic-related deaths in San Francisco were caused by drivers who improperly made left turns while speeding (Safer Intersection Project, 2021). As a city response to promote safer turns and decrease speeding, the San Francisco Municipal Transportation Agency (SFMTA) developed the Vision Zero Quick Build Initiative to combat traffic deaths and improve pedestrian and bicycle safety. Some Vision Zero initiatives adopted in SF include road safety and traffic calming projects like "Safety - It's Your Turn," an educational campaign about safe left-turn awareness, and the Left-Turn Project which included the installation of "waist-high vertical delineator posts, small rubber speed bumps, and painted safety zones" (Ngo, 2021). The Left-Turn Guide Bumps were installed at seven different

intersections throughout the City, with the majority located downtown, resulting in a 17% reduction in average speed and 71% decrease of cars turning left at higher speeds (Ngo, 2021; Vision Zero SF, n.d.). SOMCAN played a pivotal role in Vision Zero SF's educational campaign and was selected as a community partner because of their understanding of the neighborhood's needs and concerns, particularly as a priority area for traffic safety (Vision Zero SF, 2021).

SFMTA's Residential Traffic Calming Program (RTC) is a resident-driven, application-based program that prioritizes physical safety improvements (speed humps, speed cushions, speed tables) to mitigate speeding on residential streets and intersections (SFMTA, 2013-2023e). However, there are program challenges and barriers, especially in its eligibility and application processes. The program does not consider "larger-scale solutions to traffic congestion or speeding challenges, speeding on higher-volume arterial streets, nor does it involve multi-block infrastructure improvements" (SFMTA, 2013-2023e). SOMA is geographically surrounded by three major freeways with a high volume of vehicles passing through its streets per day. In effect, the majority of SOMA streets are disqualified from the program's traditional calming methods. The cumbersome application and review process may also be a barrier to SOMA residents who may lack the navigational capacity to apply and appeal any decisions which impact their neighborhood. SOMCAN urges the City and SFMTA to reconsider the eligibility requirements and application procedures of the Residential Traffic Calming Program. For example, designated SFMTA personnel should work closely with the SOMA community to identify priority streets requiring traffic calming measures that are currently ineligible for the program. SOMCAN is uniquely positioned to be liaison for residents and SFMTA, particularly for its prior educational campaign work with Vision Zero SF. Although the Vision Zero Action Strategy holds great potential in addressing traffic safety, achieving its intended goal of zero traffic fatalities will require transformative policy change beyond engineering and restrictive initiatives.

### **Expand Slow Streets in the South of Market**

During the COVID-19 pandemic, SFMTA implemented Slow Streets across the City of San Francisco as an emergency measure in order to provide additional outdoor space for SF residents to socialize and engage in recreational activities at a safe distance. By reducing traffic flows and promoting more pedestrian-friendly uses of street space, Slow Streets support city initiatives like Vision Zero and the Active Communities Plan (SFMTA, 2013-2023f).

Within the South of Market, only one area has been designated for Slow Streets, the senior village in the eastern side of SOMA that includes the San Lorenzo Ruiz Center, Mendelsohn House, and Steppingstone Mabini Adult Day Center. The streets of Lapu Lapu, Mabini, Rizal, Tandang Sora, and Bonifacio were designated as Slow Streets in April 2021 during Phase 4 of the program. According to survey data from SFMTA, 77% of respondents believe that streets are currently safer because of the program. This is likely due to the fact that there are significantly less speeding cars and traffic in this area, as reported by 64% of the participants (SFMTA, 2022). However, despite 72% of survey respondents in favor of making SOMA Slow Streets permanent, these streets have not been included in SFMTA's most recent iteration of the permanent Slow Streets Network (SFMTA, 2023b).

SOMCAN highly recommends that SFMTA maintain the designation of Lapu Lapu, Mabini, Rizal, Tandang Sora, and Bonifacio as Slow Streets. Aside from making the aforementioned Slow Streets permanent, SOMCAN also urges the expansion of the Slow Streets program to other roadways in SOMA. The majority of SOMA's streets are disqualified from inclusion in the Slow Streets network because of their status as high-volume corridors or local alleys. As with the Residential Traffic Calming Program mentioned above, SOMCAN advocates that SFMTA reevaluate the standards of inclusion within the Slow Streets network and work with community members to identify particular streets and alleys that currently pose hazards to pedestrian safety. Based on our survey data, some suggestions for inclusion are the alleyways of Natoma, Minna, and Russ, and the sections of Harrison Street immediately adjacent to the Bessie Carmichael elementary and middle school campuses.



## **INCREASE ACCESS TO GREEN SPACE IN THE SOUTH OF MARKET**

Our assessment found that participants overwhelmingly believe SOMA has an inadequate amount of open, green spaces. Parks, playgrounds, public gardens, and other greenery are linked to improved health and wellness, encouraging positive mental health habits and lessening the likelihood of developing chronic diseases (WHO, 2016). SOMCAN recommends that the City improve access to green space in the South of Market by prioritizing the construction and upkeep of parks and recreation centers and by implementing greening programs.

## Prioritizing the Construction and Upkeep of Parks and Recreation Centers in SOMA

According to data from the Trust for Public Land (2022), 98% of San Francisco's population lives within a 10-minute walk from a park, much greater than the national average of 55%. However, certain neighborhoods in San Francisco, particularly District 6, are "park deserts," or geographic areas where parks and green spaces are not readily accessible for public use (Slater et al., 2020). Across the City, residents in neighborhoods of color have 56% less park space than those in white neighborhoods, and residents in low-income neighborhoods have 54% less park space than those in high-income neighborhoods (Trust for Public Land, 2022). According to a 2013 report on socioeconomic equity by the Board of Supervisors Budget and Legislative Analyst, District 6 has both the least amount of parks per district at 9 total parks and the smallest amount of acreage of parks at approximately 12 acres, with an average of 1.4 acres per park. At a low of 0.17 acres per resident, District 6 has 147 times less park space than District 2, the district with the most park space (at 1740.7 acreage of parks and 25.01 acres of park per resident), and 36 times less park space than the city average (at 6.14 acres of park per resident) (Budget and Legislative Analyst, 2013). While the SF Recreation and Parks Department (RPD) is currently building a new park in SOMA at 11th and Natoma, SOMCAN recommends that RPD continue to work with SOMA residents to identify sites for the construction of new parks in the neighborhood that will serve community needs.

In our survey data, SOMA residents, workers, and visitors reported that parks and playgrounds in the neighborhood are not well-cleaned or maintained. These findings are supported by city agency-produced data. The Controller's Office collaborates with RPD to annually assess park maintenance across the City of San Francisco, using standards based on cleanliness, lighting, upkeep of park structures and seating, and usability of equipment, among others. According to these standards, out of 166 total parks, the Gene Friend Recreation Center ranked within the ten lowest-scoring parks in Fiscal Years 2019 and 2022. The Gene Friend Recreation Center also experienced the fourth-largest decrease in park maintenance scores from FY 2020 to FY 2022, dropping 13.4 percentage points. Overall, District 6 consistently ranked among the lowest-scoring districts (San Francisco Office of the Controller, 2022). While RPD is currently undertaking a large-scale renovation of the Gene Friend Recreation Center, other parks and playgrounds not included in the Park Maintenance Standards annual reports also

fail to meet the city standards. To increase residential usage of open space, SOMCAN recommends that RPD implement regular cleaning and maintenance of parks and playgrounds in the South of Market.

### Implementing Greening Programs

According to data from the SF Climate and Health Program, SOMA ranks among the least environmentally resilient neighborhoods in the City. 100% of the neighborhood lies in “high” or “very high” heat vulnerability areas, 88.8% of the neighborhood is covered by an impervious surface like asphalt or concrete, and only 4.7% of the neighborhood has any sort of tree coverage (San Francisco Department of Public Health, 2015). SOMA’s lack of tree coverage and preponderance of concrete and asphalt exacerbates the “urban heat island” effect in the neighborhood, which occurs in areas that absorb and concentrate large amounts of heat. Due to the urban heat island effect, temperatures can be 1-7°F higher in heat islands than in outlying areas during the daytime and 2-5°F higher at night (U.S. EPA, 2022e). The U.S. EPA also found that heat island effects are more likely to impact low-income neighborhoods than high-income neighborhoods. This inequity not only forces low-income households to spend more on energy bills to cool their homes, but can compound with other risk factors, worsening air quality on hot summer days and thus putting residents at higher risk of exposure to air pollution (U.S. EPA 2022g).

Trees and vegetation can help to mitigate the effects of urban heat islands by providing shade and evapotranspirative cooling (Livesly et al., 2016). Shaded surfaces may be 20-45°F cooler than unshaded areas, and evapotranspiration, or the process by which water moves through plants and evaporates into the air, can additionally cool temperatures by 2-9°F (U.S. EPA, 2022f). The installation of green roofs or rooftop gardens can also provide major cooling benefits, with temperatures of green roofs being 30-40°F lower than those of conventional roofs and reducing ambient temperatures by up to 5°F (U.S. EPA, 2022c). In addition to their cooling benefits, trees and vegetation also can improve air quality by removing pollutants such as ozone from the air and offsetting CO<sub>2</sub> emissions (Livesly et al., 2016). As many of our survey participants believed that there were not enough trees along SOMA’s streets, SOMCAN recommends that the SF Department of Public Works not simply plant more trees in the neighborhood, but plant larger trees that will provide adequate canopy cover and shade sidewalks along major roadways. SF Planning can also approve the retrofitting of green roofs



on residential and other buildings in SOMA to enhance the cooling benefits of trees and vegetation.

Aside from planting more trees and installing green roofs, there are also other novel ways that cities have incorporated greenery into the urban landscape to improve overall air quality. Mexico City's Via Verde (Green Way) project has transformed over 1,000 highway pillars into "vertical gardens" by installing vegetation along the columns (Mexico News Daily, 2019). Cities across the UK, the Netherlands, Denmark, and Sweden have constructed green roofs on bus shelters, which not only provide cooling benefits but act as natural habitats for birds, bees, and butterflies (Weston, 2022). The City of San Francisco can adopt these measures and implement them in SOMA and citywide.

Lastly, SOMCAN recommends that the SF Planning Department include more SOMA streets within the Green Connections Network (SF Planning, 2014). The Green Connections Network aims to promote access to San Francisco's parks and green spaces by creating a series of "green connectors." Recognizing that San Francisco's streets were designed to prioritize flows of vehicular traffic over that of pedestrians and bicycles, the Green Connections Networks aims to invest in traffic calming measures that are pedestrian- and bicycle-friendly and transform major roadways into "greenways" that incorporate more trees and vegetation into the streetscape. Despite the fact that major SOMA streets both lack adequate greenery and are overwhelmingly unsafe for pedestrians and bicyclists, many SOMA streets were disqualified from consideration because of their status as high volume corridors. While Folsom and 7th Streets were included in the Green Connections Network, the inclusion of other major streets such as Mission, Howard, and 6th Streets within the network would not only help to reduce urban heat island effects in SOMA but improve overall air quality for pedestrians and residents.



## **INVEST IN COMMUNITY LEADERSHIP AND TRAINING PROGRAMS THAT PROMOTE TRAFFIC AND ROAD SAFETY**

Community members reported that traffic congestion impacts pedestrian safety and contributes to poor air quality and noise pollution. To address these concerns, we recommend that the City of San Francisco invests in community leadership

and training programs to promote traffic and road safety.

Traditional notions of public safety require the implementation and enforcement of laws, often through police presence and force – the latter currently a heated topic of debate for vulnerable communities who are often the target of racial profiling and police brutality. Innovative approaches to public safety that involve community-based alternatives and less reliance on police enforcement are essential. Such measures envision public safety beyond policing and punitive law enforcement action by providing community-based and equity-focused initiatives with the potential to address underlying racial and other systemic inequities.

Community-based alternatives to policing can also be a cost-effective method to promote safety. The U.S. spends 4% of its general funding on police, while local and city governments spend 13% of their budgets on police (Lazere, 2021). In San Francisco, the adopted police budget last FY 2020 was \$704,682,307 million, and about 14% of SF's general funding was dedicated to spending on police departments (Vera Institute of Justice, n.d.). Instead of police-based funding, resources could be allocated towards public safety reforms and programs that create safer and stable communities.

As an alternative to police presence, several metropolitan areas respond to traffic and other public safety concerns (e.g., community traffic ambassadors) with unarmed, trained civilians. For example, the City of Berkeley implemented a community initiative called the Berkeley Department of Transportation (BerkDOT) as a way to “enhance pedestrian and bicyclist safety by focusing enforcement at problem intersections rather than relying on police to make stops on their patrols when they happen to encounter a traffic violation. BerkDOT will also free up police resources and reduce the prevalence of pretext stops” (Arreguin, 2022). This initiative trains civilians in handling non-major traffic enforcement that would report to appropriate social services agencies and dedicate police for major emergency situations.

Adaptations of crisis intervention programs can also be implemented to focus on traffic enforcement. In Oregon, the Crisis and Safety Assistance Helping on the Streets (CAHOOTS) program was launched as a collaborative partnership between a non-profit clinic and the Eugene County Police department, a mobile intervention and response service that addresses mental health and substance-

abuse related situations other than traffic safety (White Bird Clinic, 2020). The program is a “hybrid service capable of handling non-criminal, non-emergency police and medical calls, as well as other requests for service that are not clearly criminal or medical” (Climer & Glicker, 2012). Teams operate as a pair of two workers: a “crisis intervention worker who is trained and skilled in counseling and de-escalation techniques, and a medic (EMT or a nurse). This pairing allows CAHOOTS teams to respond to a broad range of situations” (Climer & Glicker, 2012). In 2017, the Eugene Police Department allocated \$798,000 of its budget to the CAHOOTS program, and has since increased the program’s funding by an additional \$281,000 in 2020, demonstrating the commitment and efficacy of innovative community-based alternatives to police enforcement (Eugene Police Department, n.d.).

Following this model, traffic enforcement and pedestrian safety initiatives could implement training and certification programs that fit the scope of San Francisco’s pedestrian safety needs and traffic-based emergencies. Long-term funding could be dedicated towards community traffic ambassadors to generate stable employment, enhance workforce development, and increase social capital among communities. SOMCAN recommends the use of community leadership and training programs as an alternative to traditional law enforcement to promote traffic and road safety.



## **PROVIDE AIR PURIFIERS OR FILTRATION UNITS TO LOW-INCOME SOMA RESIDENTS**

According to the American Lung Association (2022), living near freeways increases the risks of asthma, impaired lung function, cardiovascular disease, and premature death. Traffic-related air pollution, compounded with increased exposure to wildfire smoke resulting from climate change-induced droughts and wildfires, necessitates the mitigation of harmful air pollutants to protect public health.

In response to recent wildfires, the Bay Area Air Quality Management District has partnered with Regional Asthma Management and Prevention (RAMP), a project of the Public Health Institute, to provide air purifiers to low-income residents enrolled in California’s Asthma Mitigation Project (AMP). Currently, the air purifiers are distributed by several organizations that serve multiple Bay Area counties with

plans to extend its program to Marin, Napa, and Solano (BAAQMD, 2021). Adopted in 2008, Article 38 of San Francisco's Health Code requires new development projects sited in poor air quality areas, such as SOMA, to install enhanced ventilation systems to protect public health (SFDPH, n.d).

While these initiatives are commendable and necessary, they focus on downstream tertiary measures that do not adequately address the root cause of these problems and prevent health issues before they begin. For example, the BAAQMD and RAMP air purifier distribution program requires that recipients be low-income and diagnosed with asthma or other respiratory conditions. This requirement may disqualify low-income families with young children who may not have a diagnosed respiratory issue but whose developing bodies are still very sensitive to air pollutants. Similarly, San Francisco's Health Code applies only to new construction projects, leaving out older buildings that may lack sufficient air filtration devices that protect its residents from breathing polluted air. To address these gaps, SOMCAN recommends that the BAAQMD and RAMP expand their air purifier distribution program requirements so anyone living in close proximity to or residing in high air pollution neighborhoods, regardless of income or diagnosis, is eligible for an air purifier. Further, SOMCAN recommends that the City of San Francisco draft legislation that mandates the provision of free air purifiers and air filtration systems to all low-income SOMA residents, regardless of diagnosis and residence. Local legislation should specify how building owners are responsible for providing air filtration devices in their building's units, as well as the processes for obtaining them from the City. Finally, air purifiers distributed to low-income residents must include descriptions about their use and importance in multiple languages.

# CONCLUSION

Community members of San Francisco's South of Market neighborhood are disproportionately exposed to traffic-related air pollution due to its proximity to downtown businesses and major freeways. Census data shows that residents predominantly identify as Asian or Latino and low-income, and long-term residents are sensitive to displacement and gentrification resulting from increased redevelopment of the area. Low socio-economic status compounded by high exposure to air pollutants can worsen health outcomes such as asthma, respiratory illnesses, cardiovascular disease, and cancer. Traffic congestion and urban air pollution can be extremely harmful for children, seniors, and people with underlying health conditions or disabilities.

In this community assessment, we found that traffic congestion has significant impacts on community members' health, wellness, and safety. Speeding cars endanger pedestrian safety and produce noise pollution, while continuous motor vehicle traffic exposes community members to air pollution impacting their health. Residents regularly report asthma, headaches, and fatigue, conditions which may be attributed to poor air quality in the area. We also learned that residents, workers, and visitors need greater access to public transit, the neighborhood lacks sufficient green spaces necessary for recreation and cooler temperatures, and community voices must be part of any planning decisions that impact the neighborhood.

Transformative and equity-minded strategies are key to improving health and safety in the SOMA. Based on the assessment findings, SOMCAN recommends that the City and County of San Francisco adopt bolder measures to encourage non-

motor vehicle use, prioritize traffic calming measures and increase green spaces in the SOMA, invest in community leadership programs to promote traffic and road safety, and provide air purifiers to all low-income SOMA residents. Such efforts support both San Francisco and the State of California's climate goals of reducing greenhouse gas emissions while also centering principles of equity and public health. While the State and the City are at the forefront of forward-thinking environmental policies and initiatives, domestically and internationally, racial and social inequities persist in our 49-square-mile city. The most vulnerable and socio-economically disadvantaged communities are disproportionately burdened with environmental injustices impacting their health, wellness, and safety.

SOMCAN urges policymakers and other key stakeholders to listen to our community and implement programs that will improve health and safety outcomes for all San Franciscans. We hope that the findings and recommendations in this report can help guide future policies to build a more sustainable, liveable, and equitable City for present and future generations to come.



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# APPENDICES



## APPENDIX A: RESIDENTS SURVEY

1. Do you live in, work in, or visit SOMA neighborhood?

- Live
- Work
- Visit

### **Demographic Questions (Residents)**

This portion of the survey will help us to understand a bit about you, the survey taker, and your household.

2. What is your age?

This question will help us understand what you and other people in your age range experience living in the SOMA neighborhood.

- Age under 18
- Age 18-24
- Age 25-34
- Age 35-54
- Age 55-64
- Age 65+

3. What is your race and ethnicity? \_\_\_\_\_

4. How many people are living in your household? \_\_\_\_\_

5. How many children and seniors are living in your household? \_\_\_\_\_

This question will help us account for individuals who may not be taking the survey.

6. Where do you live in the SOMA neighborhood? (List address or nearest intersection)

Please be as specific as possible. This information is collected to determine how where you live relates to the impacts you might experience from increased traffic conditions in your area. It will be kept confidential. You can also share a landmark or street intersection if that is more comfortable.

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### 7. How far do you live from a freeway?

Using city blocks or miles, or whichever measurement you feel comfortable, estimate how many blocks you live from the nearest freeway. Some freeways located in the South of Market neighborhood include the Central Freeway, the Central Skyway, Interstate 80, Interstate 280, US Highway 101, and the Bay Bridge.

- Less than a half mile (1-3 blocks)
- 1/2 to 1 miles (4-6 blocks)
- 1 to 2 miles (7-12 blocks)
- More than 2 miles (more than 12 blocks)

### **Traffic Congestion and Noise (Residents)**

This portion of the survey will help us to understand a bit about you, the survey taker, and your household.

### 8. How often do you hear traffic noise at your home in the SOMA neighborhood?

Please choose one option below.

- I always hear traffic noise.
- I very often hear traffic noise.
- I sometimes hear traffic noise.
- I rarely hear traffic noise.
- I never hear traffic noise.

### 9. Does traffic noise ever affect your ability to focus or concentrate?

Please choose one option below.

- Traffic noise always affects my ability to focus.
- Traffic noise very often affects my ability to focus.
- Traffic noise sometimes affects my ability to focus.
- Traffic noise rarely affects my ability to focus.
- Traffic noise never affects my ability to focus.

### 10. Does traffic noise ever impact your sleep?

Please choose one option below.

- Traffic noise always disrupts my sleep.
- Traffic noise very often disrupts my sleep.
- Traffic noise sometimes disrupts my sleep.
- Traffic noise rarely disrupts my sleep.
- Traffic noise never disrupts my sleep.

11. Does traffic ever sit idling in front of your home?

Idling refers to cars sitting with the engine turned on, but not moving. This question helps us to understand how often you are exposed to cars sitting in front of your home or waiting to proceed through the intersection for at least one traffic light phase.

- Traffic sits idling in front of my home every day, 7 days per week.
- Traffic sits idling in front of my home 5 or 6 days per week.
- Traffic sits idling in front of my home 3 or 4 days per week.
- Traffic sits idling in front of my home 1 or 2 days per week.
- Traffic never sits idling in front of my home.

12. About how many hours per day does traffic idle in front of your home?

- Traffic sits idling in front of my home more than 6 hours per day.
- Traffic sits idling in front of my home 4 to 6 hours per day.
- Traffic sits idling in front of my home 1 to 3 hours per day.
- Traffic never sits idling in front of my home.

13. Does traffic congestion impact how you schedule your day? Please explain why it does or does not impact you.

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14. Does your home have any treatments to prevent pollution? If so, which? These treatments might include double-pane windows to decrease noise, or window seals or filtration systems to improve air quality.

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### **Traffic Impacts, Your Safety, and Your Health (Residents)**

This portion of the survey will help us to understand how you cope with the impacts of traffic in your daily life.

15. Do you or a member of your household experience any of the following health conditions?

All of these health problems can result from long-term exposure to air pollution. You can choose more than one option below.

- Asthma
- Nosebleeds
- Headaches
- Nausea
- Fatigue
- Chest pain
- None of the above.
- Other \_\_\_\_\_

16. If you selected any of the above conditions, how long and how often have you or a member of your household experienced this health problem?

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17. Do you or a member of your household wear a respirator?

Yes

No

18. Do you or a member of your household have any other chronic health conditions? If so, what conditions and for how long?

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19. Do you have access to a doctor or periodic medical care? If so, how often do you go?

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20. How do you typically travel to different areas in the SOMA neighborhood?

You can choose more than one option below.

I drive.

I take transit (bus, metro, streetcar).

I bike.

I walk.

I use an assistive mobility device (wheelchair, scooter, etc.).

I do not travel anywhere.

Other \_\_\_\_\_

21. How safe do you feel when you cross the street in the SOMA neighborhood?

You can choose more than one option below.

I feel very safe crossing the street.

- I feel somewhat safe crossing the street.
- I feel neither safe nor unsafe crossing the street.
- I feel somewhat unsafe crossing the street.
- I feel very unsafe crossing the street.

22. Do you ever experience any problems when walking around the SOMA neighborhood due to traffic? If yes, please explain.

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23. If you answered "yes" above, what are some ways we can improve traffic safety in the SOMA neighborhood?

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24. What areas are most challenging for you or a member of your household to walk in the SOMA neighborhood?

Please be as specific as possible, using a landmark or street intersection.

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25. Do you feel there are adequate open, public spaces, like parks and playgrounds, in the SOMA neighborhood? Please explain why you think there are or are not enough public spaces in SOMA.

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26. If you answered "no" above, what types of public spaces would you like to see in the SOMA neighborhood?

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27. How often do you access public spaces in the SOMA neighborhood?

Please choose one option below.

- I access local public spaces at least once per month.
- I access local public spaces at least 2 to 3 times per month.
- I access local public spaces at least weekly or 4 times per month.
- I access local public spaces more than 4 times a month.
- I do not access local public spaces.

### **Concluding Questions**

29. What are some changes you would like to see in SOMA that would address environmental health, safety, and quality of life?

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30. Please list your email address or phone number if you would like to be contacted for a follow-up interview. This contact info will be shared with the researchers only.

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

*Thank you again for your time and input!*



## APPENDIX B: WORKERS SURVEY

1. Do you live in, work in, or visit SOMA neighborhood?

- Live
- Work
- Visit

### **Demographic Questions (Workers)**

This portion of the survey will help us to understand a bit about you, the survey taker.

2. What is your age?

This question will help us understand what you and other people in your age range experience working in the SOMA neighborhood.

- Age under 18
- Age 18-24
- Age 25-34
- Age 35-54
- Age 55-64
- Age 65+

3. What is your race and ethnicity? \_\_\_\_\_

4. How many days per week are you in the SOMA neighborhood?

Please choose one option below.

- Every day, 7 days per week.
- 5-6 days per week.
- 3-4 days per week.
- 1-2 days per week.
- Less than once a week.

### 5. Where do you work in the SOMA neighborhood?

Please be as specific as possible. This information is collected to determine how where you work relates to the impacts you might experience from increased traffic conditions in your area. It will be kept confidential. You can also share a landmark or street intersection if that is more comfortable.

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### 6. How far do you work from a freeway?

Using city blocks or miles, or whichever measurement you feel comfortable, estimate how many blocks you work from the nearest freeway. Some freeways located in the South of Market neighborhood include the Central Freeway, the Central Skyway, Interstate 80, Interstate 280, US Highway 101, and the Bay Bridge.

- Less than a half mile (1-3 blocks)
- 1/2 to 1 miles (4-6 blocks)
- 1 to 2 miles (7-12 blocks)
- More than 2 miles (more than 12 blocks)

### **Traffic Congestion and Noise (Workers)**

This portion of the survey will ask you about the traffic conditions near your workplace and how they impact you on a daily basis.

### 7. How often do you hear traffic noise at your workplace in the SOMA neighborhood?

Please choose one option below.

- I always hear traffic noise.
- I very often hear traffic noise.
- I sometimes hear traffic noise.
- I rarely hear traffic noise.
- I never hear traffic noise.

### 8. Does traffic noise ever affect your ability to focus or concentrate?

Please choose one option below.

- Traffic noise always affects my ability to focus.
- Traffic noise very often affects my ability to focus.

- Traffic noise sometimes affects my ability to focus.
- Traffic noise rarely affects my ability to focus.
- Traffic noise never affects my ability to focus.

9. Does traffic ever sit idling in front of your workplace?

Idling refers to cars sitting with the engine turned on, but not moving. This question helps us to understand how often you are exposed to cars sitting in front of your workplace or waiting to proceed through the intersection for at least one traffic light phase.

- Traffic sits idling in front of my workplace every day, 7 days per week.
- Traffic sits idling in front of my workplace 5 or 6 days per week.
- Traffic sits idling in front of my workplace 3 or 4 days per week.
- Traffic sits idling in front of my workplace 1 or 2 days per week.
- Traffic never sits idling in front of my workplace.

10. About how many hours per day does traffic idle in front of your workplace?

- Traffic sits idling in front of my workplace more than 6 hours per day.
- Traffic sits idling in front of my workplace 4 to 6 hours per day.
- Traffic sits idling in front of my workplace 1 to 3 hours per day.
- Traffic never sits idling in front of my workplace.

11. Does traffic congestion impact how you schedule your workday? Please explain why it does or does not impact you.

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12. Does your workplace have any treatments to prevent pollution? If so, which? These treatments might include double-pane windows to decrease noise, or window seals or filtration systems to improve air quality.

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**Traffic Impacts, Your Safety, and Your Health (Workers)**

This portion of the survey will help us to understand how you cope with the impacts of traffic when you work in SOMA.

13. How do you typically commute to your workplace in the SOMA neighborhood?

You can choose more than one option below.

- I drive.
- I take transit (bus, metro, streetcar).
- I bike.
- I walk.
- I use an assistive mobility device (wheelchair, scooter, etc.).
- I do not travel anywhere.
- Other \_\_\_\_\_

14. How safe do you feel when you cross the street in the SOMA neighborhood?

You can choose more than one option below.

- I feel very safe crossing the street.
- I feel somewhat safe crossing the street.
- I feel neither safe nor unsafe crossing the street.
- I feel somewhat unsafe crossing the street.
- I feel very unsafe crossing the street.

15. Do you ever experience any problems when walking around the SOMA neighborhood due to traffic? If yes, please explain.

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16. If you answered "yes" above, what are some ways we can improve traffic safety in the SOMA neighborhood?

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17. What areas are most challenging for you to walk in the SOMA neighborhood?  
Please be as specific as possible, using a landmark or street intersection.

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18. Do you feel there are adequate open, public spaces, like parks and playgrounds, in the SOMA neighborhood? Please explain why you think there are or are not enough public spaces in SOMA.

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19. If you answered "no" above, what types of public spaces would you like to see in the SOMA neighborhood?

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20. How often do you access public spaces in the SOMA neighborhood?

You can choose more than one option below.

- I access local public spaces at least once per month.
- I access local public spaces at least 2 to 3 times per month.
- I access local public spaces at least weekly or 4 times per month.
- I access local public spaces more than 4 times a month.
- I do not access local public spaces.

21. Are there any barriers to accessing or enjoying these spaces? If yes, please explain.

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### **Concluding Questions**

22. What are some changes you would like to see in SOMA that would address environmental health, safety, and quality of life?

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23. Please list your email address or phone number if you would like to be contacted for a follow-up interview. This contact info will be shared with the researchers only.

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

*Thank you again for your time and input!*

## APPENDIX C: VISITORS SURVEY

1. Do you live in, work in, or visit SOMA neighborhood?

- Live
- Work
- Visit

### **Demographic Questions (Visitors)**

This portion of the survey will help us to understand a bit about you, the survey taker.

2. What is your age?

This question will help us understand what you and other people in your age range experience working in the SOMA neighborhood.

- Age under 18
- Age 18-24
- Age 25-34
- Age 35-54
- Age 55-64
- Age 65+

3. What is your race and ethnicity? \_\_\_\_\_

4. How many days per week are you in the SOMA neighborhood?

Please choose one option below.

- Every day, 7 days per week.
- 5-6 days per week.
- 3-4 days per week.
- 1-2 days per week.
- Less than once a week.

### 5. What places do you visit in the SOMA neighborhood?

Please be as specific as possible. This information is collected to determine how the places you visit relate to the impacts you might experience from increased traffic conditions in your area. It will be kept confidential. You can also share a landmark or street intersection if that is more comfortable.

### 6. How far from a freeway is the place you visit most in SOMA?

Using city blocks or miles, or whichever measurement you feel comfortable, estimate how many blocks the place you visit is from the nearest freeway. Some freeways located in the South of Market neighborhood include the Central Freeway, the Central Skyway, Interstate 80, Interstate 280, US Highway 101, and the Bay Bridge.

- Less than a half mile (1-3 blocks)
- 1/2 to 1 miles (4-6 blocks)
- 1 to 2 miles (7-12 blocks)
- More than 2 miles (more than 12 blocks)

### **Traffic Congestion and Noise (Visitors)**

This portion of the survey will ask you about the traffic conditions in the SOMA neighborhood and how they impact you on a daily basis.

### 7. How often do you hear traffic noise at the places you visit in the SOMA neighborhood?

Please choose one option below.

- I always hear traffic noise.
- I very often hear traffic noise.
- I sometimes hear traffic noise.
- I rarely hear traffic noise.
- I never hear traffic noise.

### 8. Does traffic noise ever affect your ability to focus or concentrate?

Please choose one option below.

- Traffic noise always affects my ability to focus.



- Traffic noise very often affects my ability to focus.
- Traffic noise sometimes affects my ability to focus.
- Traffic noise rarely affects my ability to focus.
- Traffic noise never affects my ability to focus.

9. Does traffic congestion impact how you schedule your day when you visit the SOMA neighborhood? Please explain why it does or does not impact you.

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### **Traffic Impacts, Your Safety, and Your Health (Visitors)**

This portion of the survey will help us to understand how you cope with the impacts of traffic when you visit SOMA.

10. How do you typically travel to different areas in the SOMA neighborhood?

You can choose more than one option below.

- I drive.
- I take transit (bus, metro, streetcar).
- I bike.
- I walk.
- I use an assistive mobility device (wheelchair, scooter, etc.).
- I do not travel anywhere.
- Other \_\_\_\_\_

11. How safe do you feel when you cross the street in the SOMA neighborhood?

You can choose more than one option below.

- I feel very safe crossing the street.
- I feel somewhat safe crossing the street.

- I feel neither safe nor unsafe crossing the street.
- I feel somewhat unsafe crossing the street.
- I feel very unsafe crossing the street.

12. Do you ever experience any problems when walking around the SOMA neighborhood due to traffic? If yes, please explain.

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13. If you answered “yes” above, what are some ways we can improve traffic safety in the SOMA neighborhood?

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14. What areas are most challenging for you to walk in the SOMA neighborhood?  
Please be as specific as possible, using a landmark or street intersection.

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15. Do you feel there are adequate open, public spaces, like parks and playgrounds, in the SOMA neighborhood? Please explain why you think there are or are not enough public spaces in SOMA.

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16. If you answered "no" above, what types of public spaces would you like to see in the SOMA neighborhood?

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17. How often do you access public spaces in the SOMA neighborhood?

You can choose more than one option below.

- I access local public spaces at least once per month.
- I access local public spaces at least 2 to 3 times per month.
- I access local public spaces at least weekly or 4 times per month.
- I access local public spaces more than 4 times a month.
- I do not access local public spaces.

18. Are there any barriers to accessing or enjoying these spaces? If yes, please explain.

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### **Concluding Questions**

19. What are some changes you would like to see in SOMA that would address environmental health, safety, and quality of life?

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20. Please list your email address or phone number if you would like to be contacted for a follow-up interview. This contact info will be shared with the researchers only.

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

*Thank you again for your time and input!*

## APPENDIX D: INTERVIEW QUESTIONS

### SOMCAN Air Quality & Traffic Impacts Research Study: Interview Protocol- updated as of **08-29-2022** **ENGLISH VERSION**

#### **BEFORE INTERVIEW Protocol:**

1. Reach out over email or phone call.
2. Set up time to meet over Zoom or phone call.
- 3. Review survey answers with respondents (see Survey Number to locate Google Form response).**
- 4. Ask to elaborate on questions related to the issue area(s) highlighted below.**
5. Connect with local resources (e.g., medical) if necessary.

#### ***Welcome & Introductions***

Hi, my name is [*facilitator name*] and this is [*co-interviewer/note-taker name*] from [*name of institution*] [*student major/department*]. Thank you for taking the time to talk to us today and agreeing to be part of this interview session. This conversation will last for about 30-40 minutes and will be recorded. We would like to record this conversation so we can use the recording to transcribe notes. The recording will be kept in a secure location and will not be used for any other purpose other than this project. No names will be associated with any of the comments you make during this interview. I will be leading the conversation today and [*co-interviewer/note taker's name*] will be taking notes. I am first going to go over a few details before we start. If you have any questions, please ask as they come up.

May I also ask permission to audio record this interview?

Before we begin, let me tell you a little about SOMCAN, the organization who is leading this research project.

#### ***SOMCAN Background & History***

Established in 2000, the South of Market Community Action Network (SOMCAN) nurtures family and individual wellness and cultivates collective power among low-income and immigrant communities to create a more just society.

As a multi-issue, multi-strategy organization, we work to improve lives on a family/individual level as well as affect broader social change by engaging in

culturally competent services, policy campaigns, civic engagement, advocacy and community organizing. We work on a wide range of issues—from housing (tenant rights) to language access to employment to community health—and provide culturally competent direct services ranging from tenant counseling to language access to workforce development and workers' rights. We also have case managers who work with select cases and referrals regarding legal assistance.

### ***Purpose of the Interview***

The organization, [SOMCAN] is currently doing a community research project to better understand [the impacts of traffic on youth, seniors, and families in SOMA]. The information you share will help [SOMCAN] in their organizing efforts for [health and traffic safety]. In addition, the information you provide can help develop policy recommendations [to address socio-economic and environmental factors that impact health in the heavily urban, car-populated neighborhood of South of Market.] Your participation is key as it represents the ideas of the [residents, workers, and visitor communities specifically focused on South of Market]. We welcome your input and your voice matters to SOMCAN so we need you to be honest with us and share your thoughts and opinions openly.

### ***Guidelines***

We'll first discuss general ground rules that can help ensure a safe environment where everyone's ideas are shared and valued, and to ensure we capture what everyone says on the recorder and in our notes. Again, your name will not be attached to your comments.

1. WE WANT YOU TO DO THE TALKING. We need everyone to participate and talk to each other as you are comfortable. If we ask a question, it would be best to answer as honestly as you can and share your thoughts openly.
2. THERE ARE NO RIGHT OR WRONG ANSWERS. Every person's experiences and opinions are important. We want to hear what each of you think and feel about the South of Market neighborhood, traffic situations and health safety impacts, parks/recreational/open/green spaces/landmarks in general, and within SOMA in particular. If you're not familiar with parks in SOMA, respond based on your knowledge of whatever parks/recreational/open/green spaces/landmarks come to mind for you.
3. WHAT IS SAID IN THIS GROUP/ROOM STAYS HERE. Everything you tell us today is anonymous. That means we will not share anything you say with your name attached. While we might use quotes or ideas that you share, as mentioned, we will never use your name in any way.

Are there any questions before we begin our interview segment? (related to study: close ended q's)

*[Interviewee has been provided a copy of the questions beforehand. Interviewer turns on digital recorder and begins taking typed notes on laptop].*

*Icebreaker:* Please briefly introduce yourself to us (name, age, ask if interviewee is a South of Market resident/worker/visitor).

*[After icebreaker, interview questioning will start]*

### **Interview Questions**

***(Elaborate on questions related to issue area(s) highlighted below)***

#### **Pedestrian Safety:**

1. How do you normally travel/commute to different areas in SOMA?
2. Can you describe an experience in which you felt unsafe walking in SOMA because of cars/traffic? How did it make you feel?
  - a. What would have made you feel safer?
3. Are there any areas/streets/intersections that you feel are particularly dangerous because of cars/traffic?
  - a. Do you see other people (children, seniors, people with disabilities) having difficulty walking around parts of the neighborhood?
4. Do you feel cars tend to obey or disobey the traffic laws? Can you describe an experience in which you saw a car/vehicle disobey the traffic rules?
5. Have other vehicles (bicycles, buses, electric scooters) made you feel unsafe while walking in SOMA? If so, can you describe an experience in which this happened?
6. What are some things you would like to see in SOMA that would make you feel safer while walking?

#### **Open Space:**

1. What are some open/green/public spaces that you like to visit in SOMA? Why do you like to visit them? How do you feel when you visit them?
2. Is there anything that prevents you from enjoying public spaces? Can you describe an experience in which you felt you couldn't (or didn't want to) go to a public space?
3. Do you feel there are enough public spaces in the neighborhood? Why or why not?

4. What types of public spaces would you like to see in the neighborhood? Where would you like these to be located?

### **Health:**

1. Do you or a member of your household experience asthma, nosebleeds, headaches, nausea, fatigue, or chest pain?
  - a. Do these issues interfere with your (or their) daily tasks? Can you describe an experience in which this happened?
2. When did you (or they) start developing these health issues? Was it before or after you started living in SOMA?
3. Are there particular times when these symptoms are worse? (During rush hour, when walking outside, with the window open, etc.)
4. Have you (or they) sought out treatment for these issues? Why or why not? (Are there barriers to accessing care?)
5. Are you often bothered by noise from traffic? How often do you hear noise?

### **Community-Led Development:**

1. Do you have any other ideas that could improve the health and safety of people in SOMA?
2. Do you think your needs are prioritized in the neighborhood and by city planning? Or do you think the city prioritizes the needs of other people?
3. What types of programs would you like to see funded in the neighborhood? Would this help you or the community?
4. What is your ideal vision for SOMA?
5. Are you interested in getting involved in the work that SOMCAN does around community planning?

Always close with “Do you have anything else to add based on what we’ve talked about or something else you’d like to share?”

### ***Closing & Wrap Up***

Thank you again for participating in this important conversation. The information you provided is significant and meaningful and can really help improve the community. If you are interested in the results and findings of this conversation, a summary report can be sent out to you upon request. We will provide a follow-up email after this interview session asking if you want to be given a copy of the report. So please look out for that.

Also, please feel free to contact me in my email if you have any questions or further



clarification that you may want to ask me about this research project, or SOMCAN in general. Thank you!

[Interviewer turns off digital recorder, note-taking ends].

### **Equipment & Supplies**

1. Sign in sheet (Google Form record sheet)
2. Protocol copies (both English and Tagalog translations)
3. Interview Question copies (both English and Tagalog translations)
4. Audio recording device with transcriber (Otter.AI)
5. Computer device (laptop with a mic, and strong internet connection)
6. Visual charts, graphs, maps & brochures
7. Mailing list sheet



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

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