TURNING DOWN THE HEAT

ADDRESSING HEAT INEQUITIES OF FRONTLINE COMMUNITIES IN LOS ANGELES

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The Luskin School of Public Affairs at UCLA acknowledges the Gabrielino/Tongva peoples as the traditional land caretakers of Tovaangar (the Los Angeles basin and So. Channel Islands). As a land grant institution, we pay our respects to the Honuukvetam (Ancestors), 'Ahiihirom (Elders) and 'Eyoohinkem (our relatives/relations) past, present and emerging.

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CLIMATE EMERGENCY MOBILIZATION OFFICE

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Our Subject Matter Expert Interviewees

Thank you to all of the everyday Angelenos who participated in our survey!

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EXECUTIVE SUMMARY

Los Angeles has been rated by the Federal Emergency Management Agency (FEMA) as the city facing the highest risk of natural hazards in the near future. In particular, Los Angeles is vulnerable to the adverse health impacts of climate change-induced extreme heat. Communities of color and low-income households face the greatest risk from extreme heat due to unjust policies like redlining, which have today led to the inequitable distribution of the resources necessary for communities to protect themselves against extreme heat.

This report uses existing research and municipal climate plans, a geospatial analysis, interviews with subject matter experts, community focus groups, and an online community survey to assess how the City of Los Angeles can better build equitable heat policy and long-term resilience among the most impacted and vulnerable communities.

In this report, we assess nine policy options based on their alignment with community preferences, their effectiveness at improving the health outcomes of frontline communities, whether they target an equitable redistribution of heat adaptation resources distribution, and their financial and administrative feasibility for implementation by the City of Los Angeles.

Based on this analysis, we recommend that the City of Los Angeles immediately expand access to green space in frontline neighborhoods, increase available at-home heat adaptation resources for frontline communities, equitably distribute pedestrian shade structures and water access in frontline communities, and improve the accessibility of communications about available heat adaptation resources. We also recommend the implementation of community ambassador programs, more accessible heat workplace trainings, and the expansion of the resilience center network after measures are put in place to improve their desirability to frontline community members. In addition, this report provides meaningful steps which the City of Los Angeles can take to implement or improve upon equity within existing policies and programs.

Chapter

01

Introduction

EXTREME HEAT: A GROWING ISSUE FOR LOS ANGELES

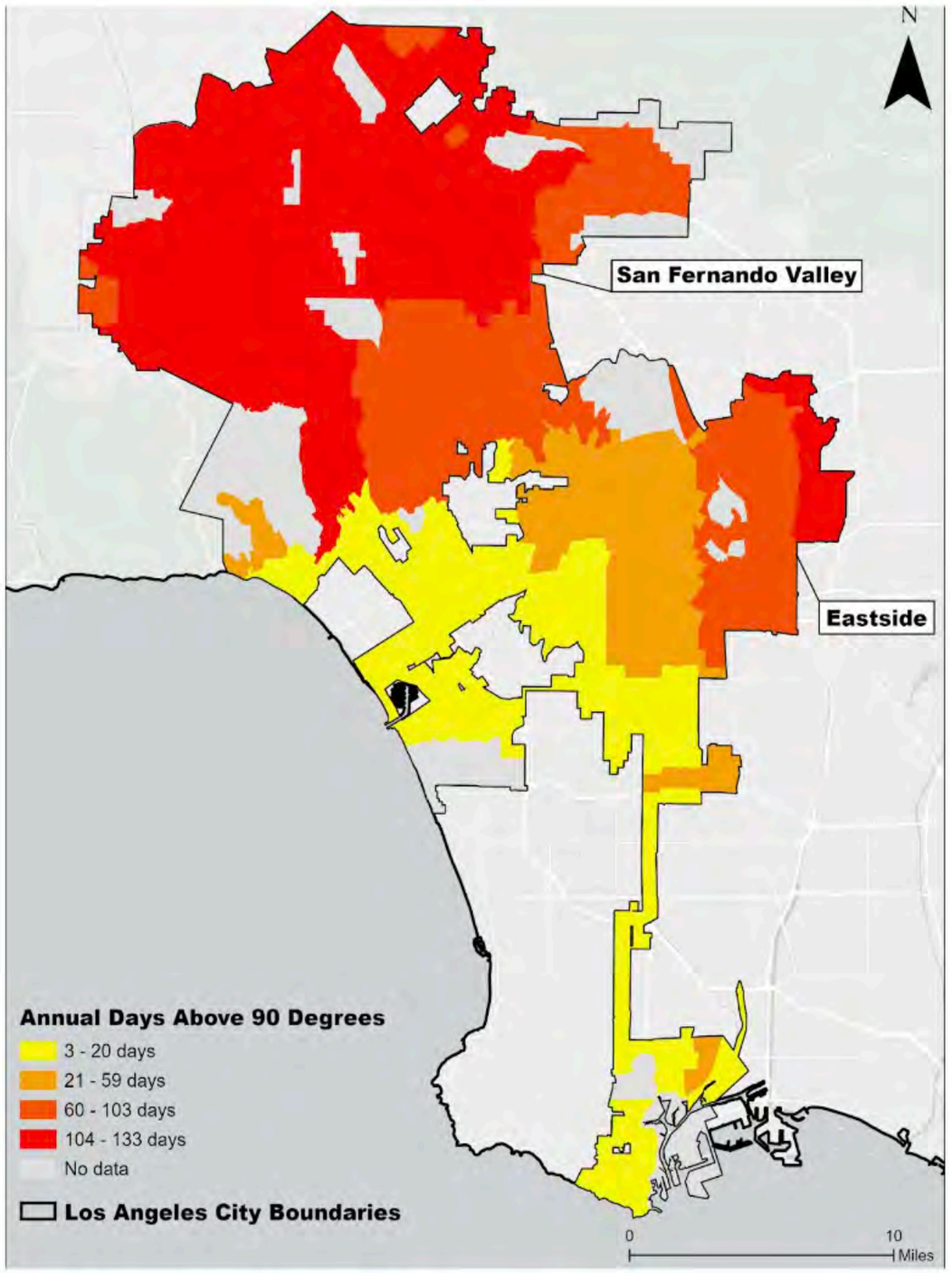
As the planet continues to experience the worsening effects of climate change, the topic of extreme heat has risen in prominence on local policy agendas worldwide. In the United States, extreme heat has led to more deaths over the past thirty years than any other weather-related event – more than hurricanes and tornadoes combined.[1] The Los Angeles Climate Emergency Mobilization Office characterizes extreme heat as the "primary climate hazard facing Los Angeles." [2]

As the century progresses, Angelenos can expect to endure more heat waves that are hotter and last longer.[3] Extreme heat events, like heat waves, are defined by LA County as three or more consecutive days with temperatures above 90 degrees.[4] Census tracts in the San Fernando Valley and Highland Park are expected to have the highest number of extremely hot days over 90 degrees in Los Angeles by mid-century, based on information from the California Healthy Places Index (Figure 1).[5] However, even the median census tract in Los Angeles is expected to experience 59 extremely hot days per year by 2050 – an increase of 31% from the recent historical average of 45 days for LA County between 1976 and 2005.[6]

Under these conditions of extreme heat, the risk of heat-related illnesses (HRIs), hospitalizations, and deaths for Angelenos rises significantly. [8] Indeed, Angelenos are already experiencing the dangerous health effects of extreme heat. On an average extreme heat day with temperatures above 90 degrees, there are 1,177 excess emergency room (ER) visits in Los Angeles due to HRIs. [9] This amounts to over 500,000 additional ER visits for Angelenos between 2009 and 2018. In addition to reflecting serious medical events, these ER visits can be extremely costly for Angelenos – especially if they do not possess health insurance. Areas of South Los Angeles, the San Fernando Valley, and Wilmington experience the most excess ER visits on extreme heat days within the city (Figure 2).

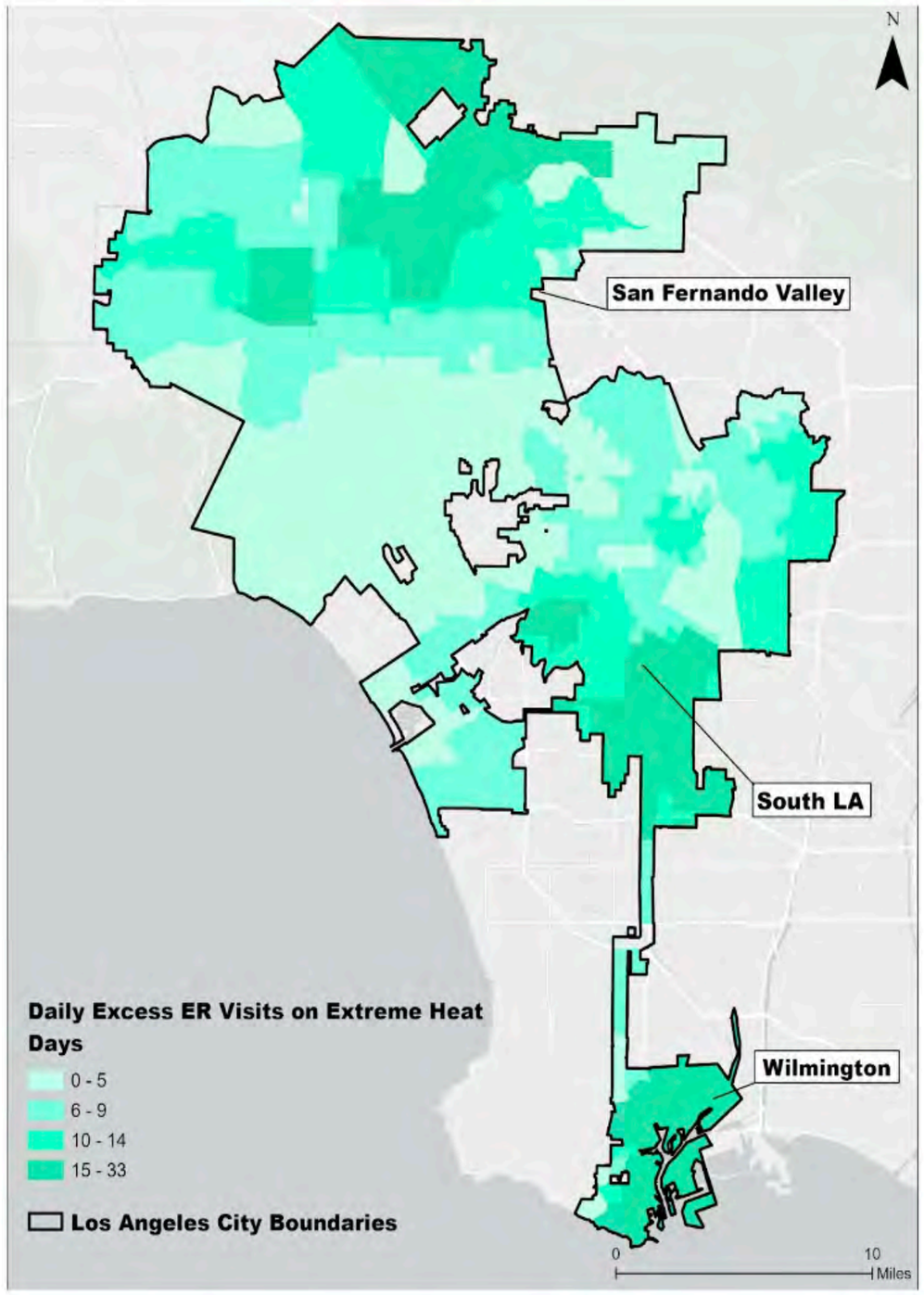
Extreme heat is a growing problem in Los Angeles that is causing the preventable hospitalization and death of Angelenos right now. The places where we live, work, and play are becoming increasingly dangerous to our collective health, and the cost of inaction is the very lives of our friends, neighbors, and colleagues.

Figure 1: Extreme Heat Day Projections in Los Angeles by Census Tract



Data source: California Healthy Places Index: Extreme Heat Edition.[7] Tracts with no data do not have temperature projection data available

Figure 2: Excess Emergency Room Visits on Extreme Heat Days in Los Angeles by Census Tract



Data source: UCLA Heat Maps (Eisenman/UCLA C-Solutions).[10]

A NEW OFFICE AND DEDICATED HEAT ACTION: HOW HAS THE CITY OF LOS ANGELES BEEN ADRESSING EXTREME HEAT?

Our client for this report is the City of Los Angeles' Climate Emergency Mobilization Office (CEMO) and Chief Heat Officer, Marta Segura. CEMO works to "identify and enact equitable climate strategies and policies to prevent, mitigate, and undo impacts from unequal pollution burdens and disinvestments from our past, and to ensure that we prioritize frontline communities to have a strong voice in policy and decision-making in the City of Los Angeles."[11]

CEMO is currently leading heat adaptation efforts through the #HeatRelief4LA campaign.[12] As a part of #HeatRelief4LA, City agencies provide cooling centers, hydration stations, and splash pads on extreme heat days above 90 degrees and conduct communications efforts to direct individuals to resources in their neighborhood. CEMO also leads heat education initiatives and sends communications to Angelenos, warning them of forecasted heat waves.

Despite these efforts, much work must be done to craft and implement equitable heat policy for Los Angeles. It is essential to have a centralized heat strategy for the city to prioritize resource and funding allocation – and such strategy must be community-engaged and centered on the most heat vulnerable communities to be truly equitable.[13]

To this end, CEMO is currently working to develop Los Angeles' first dedicated Heat Action Plan and a Climate Vulnerability Assessment by the end of 2023. This report makes policy recommendations to increase equity within these anticipated plans.

Community Engagement: "The process of working collaboratively with groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the wellbeing of those people…often [involving] partnerships and coalitions that help mobilize resources and influence systems, change relationships among partners, and serve as catalysts for changing policies, programs, and practices." [14]

Introduction

WHAT WILL THIS REPORT ACCOMPLISH?

Frontline Communities: "Frontline communities are groups of people who have disproportionately carried the burden of harm from…economic disinvestment, under-investment, and [sociopolitical] disenfranchisement. As a result, these are the same under-resourced communities that bear the disproportionate impacts of [environmental and climate] disasters."[15]

As part of their general approach to addressing extreme heat, CEMO seeks to collaborate with community partners to engage, educate, and uplift the voices of frontline communities in ensuring that interventions and policies within the Heat Action Plan are equitable and give priority to the perspectives of those most affected.[16] To help CEMO accomplish this goal, this report presents and centers the experiences and preferences of frontline community members in identifying heat adaptation policies in Los Angeles. We also offer recommendations on prioritizing policy options based on integrating community preferences and evidence from existing research. We have partnered with CEMO as our client to compose this report, which addresses the following policy questions:

How can the Los Angeles Climate Emergency Mobilization Office best incorporate frontline community needs, perspectives, and preferences into equitable heat adaptation policy for Los Angeles?

- What health inequities are local communities experiencing in extreme heat vulnerability, and how can local agencies and affiliated partners mitigate these inequities?
- How can local government agencies best collaborate with the community to provide equitable heat adaptation policy?
- How effective are local government entities' current outreach strategies at empowering frontline communities to combat extreme heat and to impact local heat policy?
- What do community members want local government agencies to do to facilitate equitable extreme heat policy, and how are they envisioning heat adaptation in their communities?
- How can best practices from existing adaptation policies and research findings be integrated into an effective implementation of community vision?

Chapter

02

Methods

UPLIFTING COMMUNITY VOICES IN POLICY MAKING: AN OVERVIEW OF METHODS

In their mission, CEMO aims to foster "equitable climate solutions and the creation of a healthy, thriving, resilient Los Angeles."[17] The fundamental framing of this report is the assertion that it is critical to actively uplift, empower, and prioritize the needs and perspectives of frontline communities to create heat adaptation policies that are environmentally just for marginalized Angelenos. By centering marginalized voices, policymakers can better ensure that all Angelenos have access to resources and community self-determination.

Environmental Justice: "Environmental justice embraces the principle that all people and communities are entitled to equal protection of environmental and public health laws and regulations."[18]

To gather frontline community perspectives on extreme heat in Los Angeles, we utilized frontline community focus groups and a community survey as our main sources of data collection. To create informed focus group and survey questions, we first gathered background information on the health impacts of extreme heat and existing policy options for municipal heat adaptation by reviewing existing research and plans and conducting interviews with subject matter experts. To identify which geographic areas in Los Angeles are most vulnerable to the adverse health effects of extreme heat, we conducted a mapping analysis of physical and social indicators known to contribute to heat vulnerability.

By conducting mixed methods data collection, we were able to acquire a greater spread and depth of data than would have been possible using a single method in isolation.[19]

Table 1 provides more details on our data collection methods and sources.

Table 1: Summary of Data Collection Methods and Sources

Methods	Sources	Goal
Assessment of Current Knowledge and Practices Regarding Extreme Heat	• Municipal adaptation and heat planning documents from 9 cities. • Academic reports on extreme heat, health impacts, and potential interventions. • Grey literature from community-based organizations on potential heat interventions.	To gather background information on the health impacts of extreme heat and existing policy options for municipal heat adaptation.
Geospatial Analysis of Community Vulnerability to Extreme Heat	US Census Bureau demographic data; projected climate data.	To identify which geographic areas in Los Angeles are most vulnerable to the adverse health effects of extreme heat due to known physical and social risk indicators.
Interviews with Subject Matter Experts	6 virtual interviews with subject matter experts on extreme heat, heat adaptation policy, and equity research: • 4 university faculty members • 1 Chief Heat Officer • 1 City staffer for homelessness	To gather background information on the health impacts of extreme heat and existing policy options for municipal heat adaptation.
Frontline Community Focus Groups	In-person and virtual focus groups with frontline community members: • 7 focus groups • 7 community-based organizations • 68 total participants • 6 languages (English, K'iche', Q'anjob'al, Spanish, Yucatec, Zapotec)	To gather frontline community perspectives on lived experiences and potential policy options regarding extreme heat in Los Angeles.
LA Community Heat Survey	Online and printed surveys administered to frontline community members via community-based organizations: • 546 total responses • 4 languages (English, Spanish, Mandarin, Korean)	To gather frontline community perspectives on lived experiences and potential policy options regarding extreme heat in Los Angeles.

ASSESSMENT OF CURRENT KNOWLEDGE AND PRACTICES REGARDING EXTREME HEAT

To understand the health impacts of extreme heat and identify potential heat adaptation policy options that the City could undertake, we conducted a thorough review of the literature on those topics. This existing knowledge base helped us to identify and evaluate the feasibility and equity impact of potential policy interventions. We also conducted a document analysis of existing municipal climate and heat plans in cities comparable to Los Angeles in climate, demographics and political structure to inform the policy options presented to frontline community members in our focus groups and survey.

GEOSPATIAL ANALYSIS OF COMMUNITY VULNERABILITY TO EXTREME HEAT

To identify which geographic areas in Los Angeles are most vulnerable to extreme heat, we performed a mapping analysis of physical and social risk indicators that contribute to heat vulnerability which can be found later in the report (Table 4).

After mapping these risk factors individually by census tract, we created an aggregated map of vulnerability to extreme heat. This index informed the selection of community-based organizations (CBOs) for participation in our focus group sessions and concentrated our outreach efforts for the survey.

INTERVIEW WITH SUBJECT MATTER EXPERTS

To supplement our understanding of the health impacts of extreme heat and adaptation policy options, we conducted interviews with individuals who have subject matter expertise in urban heat planning, policy implementation, or community outreach to frontline communities.

The full interview protocol can be found in Appendix 1.

FRONTLINE COMMUNITY FOCUS GROUPS

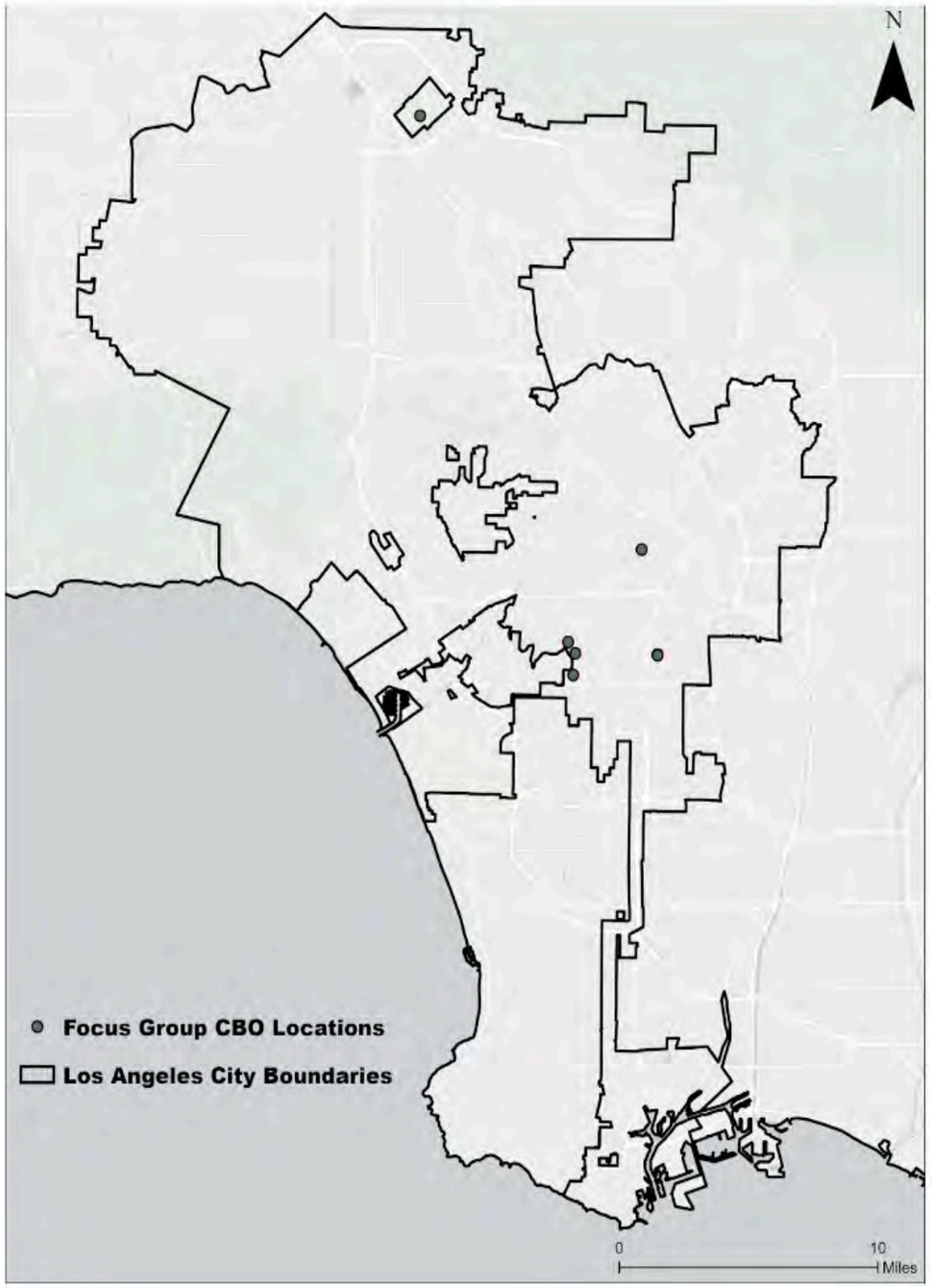
To gather frontline community perspectives, we conducted seven focus groups in February and March 2023 in collaboration with CEMO, the Liberty Hill Foundation, and participating CBOs. During the focus groups, participants shared their knowledge and experiences of existing community heat adaptation resources, community health challenges related to extreme heat, and potential policy options that would help their community during heat waves.

We conducted initial outreach with 23 CBOs. Based on their capacity and willingness to participate, seven CBOs ultimately agreed to participate in the focus groups. Table 2 and Figure 3 display details of these CBOs and the focus groups we conducted in partnership with each.

Table 2: Participant Characteristics of Community Focus Groups

Community-Based Organization	Number of Participants	Participant Demographics	Language(s) of Focus Group
Black Women for Wellness	14	Black women	English
Central American Resource Center (CARECEN)	6	Central American migrant youth and day laborers	Spanish
Comunidades Indígenas en Liderazgo (CIELO)	17	Indigenous migrant community members	K'iche', Q'anjob'al, Zapotec, Yucatec, Spanish
Fernandeño Tataviam Band of Mission Indians	4	Tribal Senators	English
Labor Community Strategy Center	5	Bus rider union members	English
Los Angeles Black Worker Center	11	Black workers	English
TRUST South LA	11	Low-income renters	English, Spanish

Figure 3: Locations of Focus Group Community-Based Organizations



Each participating CBO signed a Memorandum of Understanding with the Liberty Hill Foundation. Participating CBOs agreed to recruit five to twenty individuals to participate in one focus group session for two hours. CEMO and the Liberty Hill Foundation compensated each participant for their time with a $100 grocery or gift card and each CBO with agreed-upon fair compensation rates for their time, space, co-facilitation of focus groups, and language interpretation services as needed.

To practice procedural equity, our team worked with each participating CBO to coordinate focus group details like location and any language translation needs. We also shared the focus group questions, demographic questionnaire, and presentation slides with participating CBO staff for their review and feedback before each focus group.

To practice language justice, we conducted focus groups in the primary languages of our participants, with the help of translators, when necessary. For participants who could not read or write, our team and the CBO staff were available to assist in recording the participants' responses.

Language Justice: Language justice encompasses "individuals' fundamental right to have their voices heard."[20] Valuing language justice is a commitment to recognizing the sociopolitical barriers constructed against those who do not speak English as a first language, and providing opportunities for those individuals to access conversations and resources in their first language.

To analyze our focus group data, we used Dedoose to qualitatively code focus group transcripts. Our coding scheme was derived from research and our subject matter expert interviews, and matched the policy options we presented in our online survey. Recognizing that qualitative analysis is an iterative process, we added thematic codes throughout the coding process as necessary based on participant responses.

More information on our outreach process and the complete set of focus group questions, the demographic questionnaire, the presentation slides, and our coding protocol can be found in Appendix 2.

THE LA COMMUNITY HEAT SURVEY

To supplement the frontline community perspectives and experiences shared through our focus groups, we created and distributed a quantitative online and paper survey.

Our LA Community Heat Survey consisted of 33 questions about the respondents' experiences with extreme heat, resource needs, and heat adaptation policy preferences. To practice procedural equity, we shared the survey with CBOs working in frontline communities for their feedback before we finalized and released the survey on Survey123. To practice language justice, we released the survey in English, Spanish, Korean, and Mandarin – four of the most commonly spoken languages in the frontline communities identified in our mapping.

To increase responses, we did not limit our geographic or demographic scope in distributing our survey. This survey is not a representative sample of Los Angeles residents or of any demographic groups within Los Angeles. However, the purpose of this survey was not to capture statistically representative data, but to gain additional insight on the experiences and preferences of individuals we could not speak to in the focus groups.

The full text of the survey, dissemination strategy, and compensation information can be found in Appendix 3.

CHALLENGES AND LIMITATIONS

Selection of Community-Based Organizations to Participate in Our Focus Groups

Our selection represents a useful microcosm of frontline communities in Los Angeles. However, we were unable to reach people experiencing homelessness and those lacking the resources to engage with CBOs. We also recognize the sampling bias in selecting organizations with prior relationships with CEMO or the Liberty Hill Foundation. Nonetheless, we aimed to design our strategy to target the perspectives and preferences of frontline communities.

Furthermore, seven focus groups are not sufficient to capture the full range of frontline community perspectives and preferences in Los Angeles. Although we were able to elevate the perspectives of some individuals who do not have a voice through conventional political processes, we hope that future work can expand upon this report by soliciting and uplifting the perspectives of community members whom we could not reach in this report, particularly those experiencing homelessness and incarcerated individuals.

Although we did reach Latinx participants in our focus group and survey work Latinx communities were underrepresented in our focus group and survey work compared to their majority population in Los Angeles. We hope that future heat adaptation research and policymaking in Los Angeles can specifically focus on Latinx communities.

Accessibility of Our Survey

Our goal was to offer the survey in as many languages spoken by Angelenos as possible – but due to knowledge and technological limitations, we could only provide our survey in four languages. This may offer an explanation why our survey results display a large number of non-frontline respondents. Hence, we hope that future survey work can be conducted in more languages frontline Angelenos speak.

Due to time constraints, paper surveys were only provided to the CBOs participating in our focus groups. As a result, many frontline populations may have been unable to access our online survey, including individuals without reliable access to the Internet.

Chapter

03

Identifying the Problem: The Legacies of Redlining and Disinvestment

YESTERDAY'S POLICY, TODAY'S PROBLEM: HOW HISTORICAL REDLINING HAS CAUSED PRESENT-DAY HEAT DISPARITIES

While all Angelenos will feel the effects of extreme heat, not all Angelenos experience the health impacts of heat to the same extent. The ways that Angelenos experience and can build adaptive capacity against the effects of extreme heat has been determined by past policy decisions.

Historical redlining has caused intergenerational inequities in the social determinants of health amongst today's Angelenos – particularly Black, Latinx, and indigenous communities.[21] Residents living in areas of Los Angeles that had previously been redlined by banks, often based on racial prejudice, are now exposed to higher levels of extreme heat. These residents have also been deprived of the socioeconomic power necessary to combat the effects of contemporary extreme heat due to the persistence of residential segregation in Los Angeles.[22]

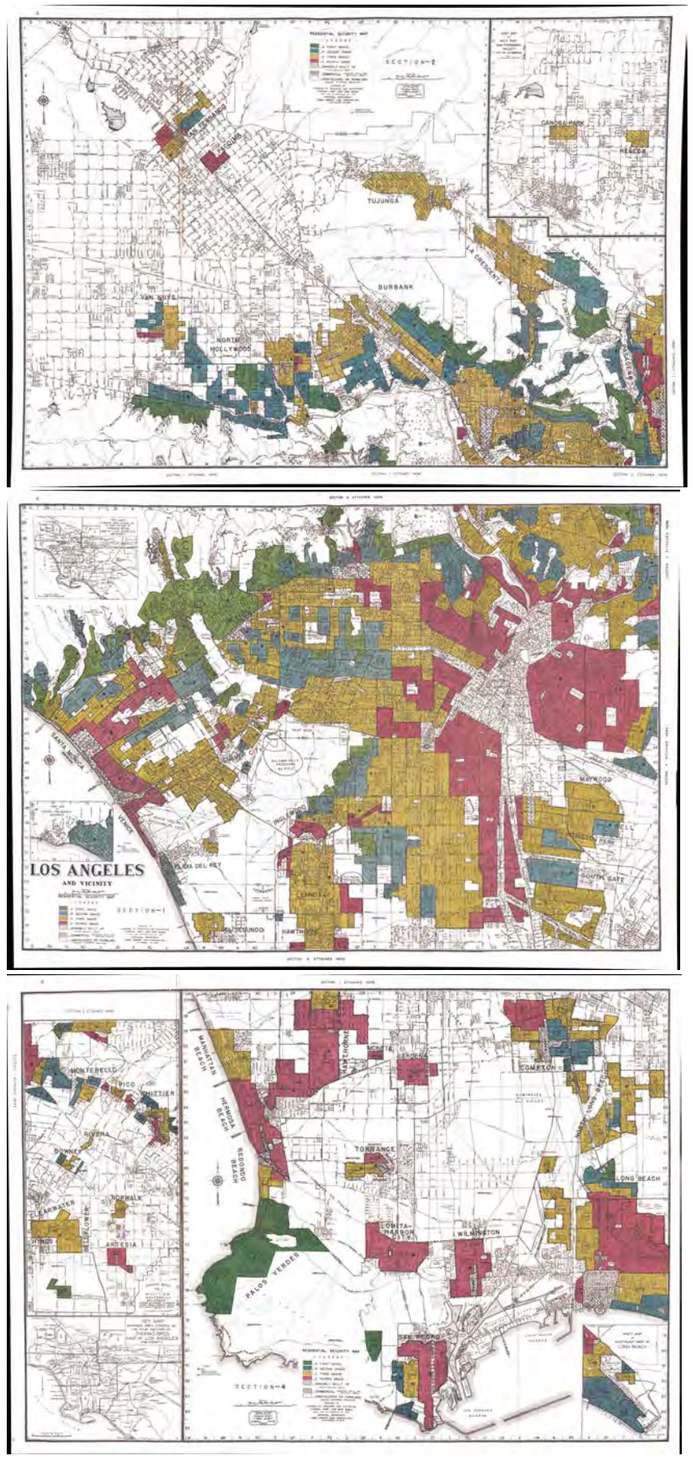
In the 1930s, the Home Owners Loan Corporation (HOLC) assessed neighborhoods in major cities in the United States for their suitability in lending and investments. Neighborhoods receiving the highest grade were deemed as areas with minimal risks for banks and mortgage lenders (and outlined in green), while neighborhoods receiving the lowest grade were "redlined" areas where "responsible lenders would withhold their investments." (Figure 4)[23]

Race and class were among the explicit criteria used for grading neighborhoods. Areas of Los Angeles that had high numbers of Black and immigrant individuals – like South Los Angeles, Westlake, and parts of the San Fernando Valley – were systematically redlined.[24]

Residential Segregation: The spatial separation of groups along racial and ethnic lines through enforced residence. Both in the form of legal redlining and present-day de facto separation, residential segregation acts as an institutional mechanism of racism designed to isolate communities of color – particularly African American and Native American communities – from White communities.[25]

Social Determinants of Health: "The non-medical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems."[26]

Figure 4: Home Owners Loan Corporation (HOLC) Maps of Los Angeles, 1939

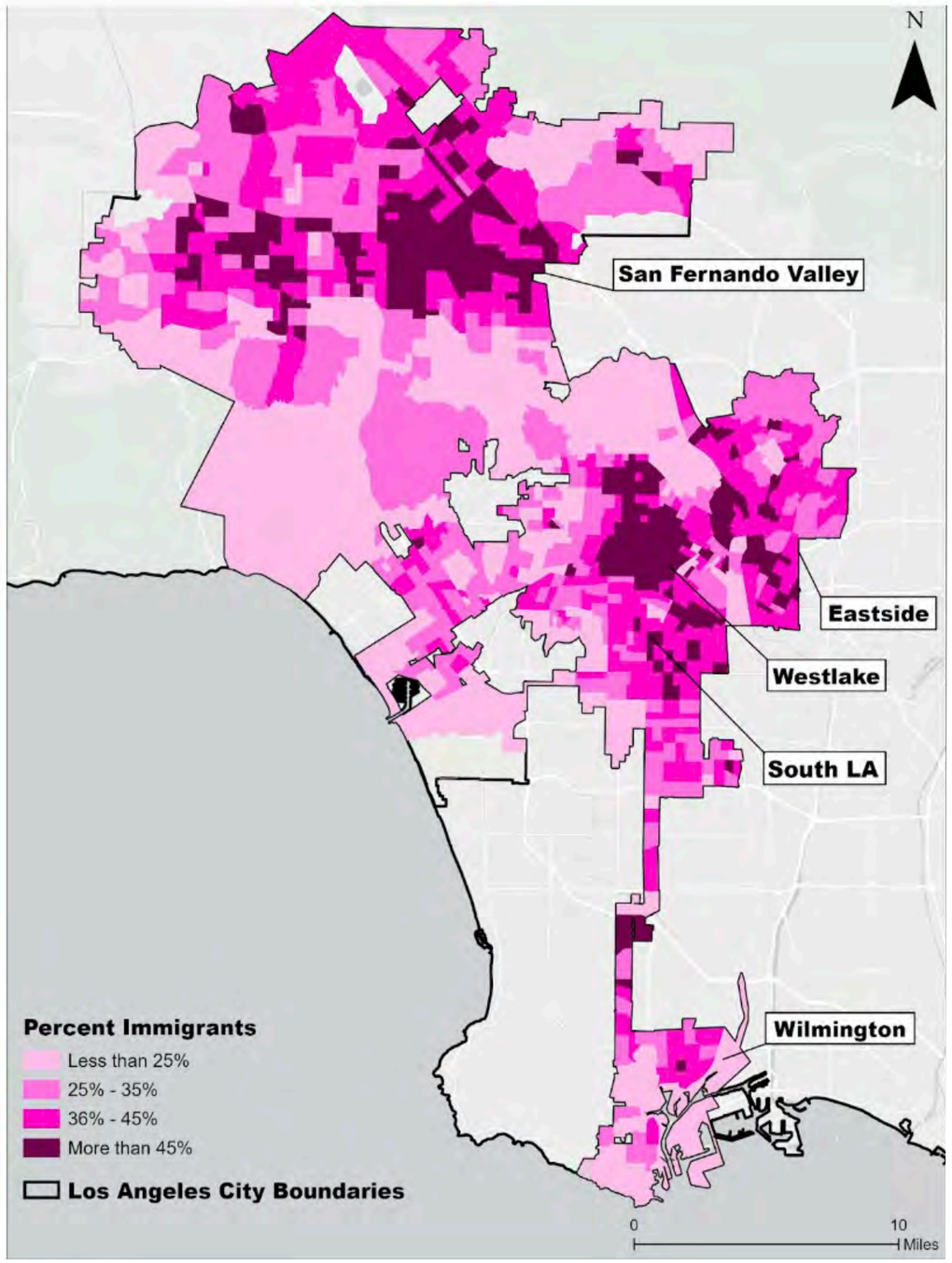


Source: Mapping Inequality: Redlining in New Deal America.[27] Areas in red were deemed "high risk" for banking investment in housing, yellow areas at a medium level of risk, and green areas as having little-to-no risk for investment.

Due to the racial nature of redlining, non-white Angelenos were legally segregated into redlined areas of the city that HOLC had coded as "undesirable." Although the Fair Housing Act, Title VIII of the 1968 Civil Rights Act outlawed racial segregation in housing, the intergenerational economic damage to Black, Latino, immigrant, and low-income Angelenos was already done.[28] Without avenues for mortgage lending, residents in redlined neighborhoods had been deprived of opportunities for homeownership and wealth-building enjoyed by White Angelenos for decades.[29] Property values in redlined neighborhoods failed to increase at the same pace as homes in majority-White neighborhoods.[30]

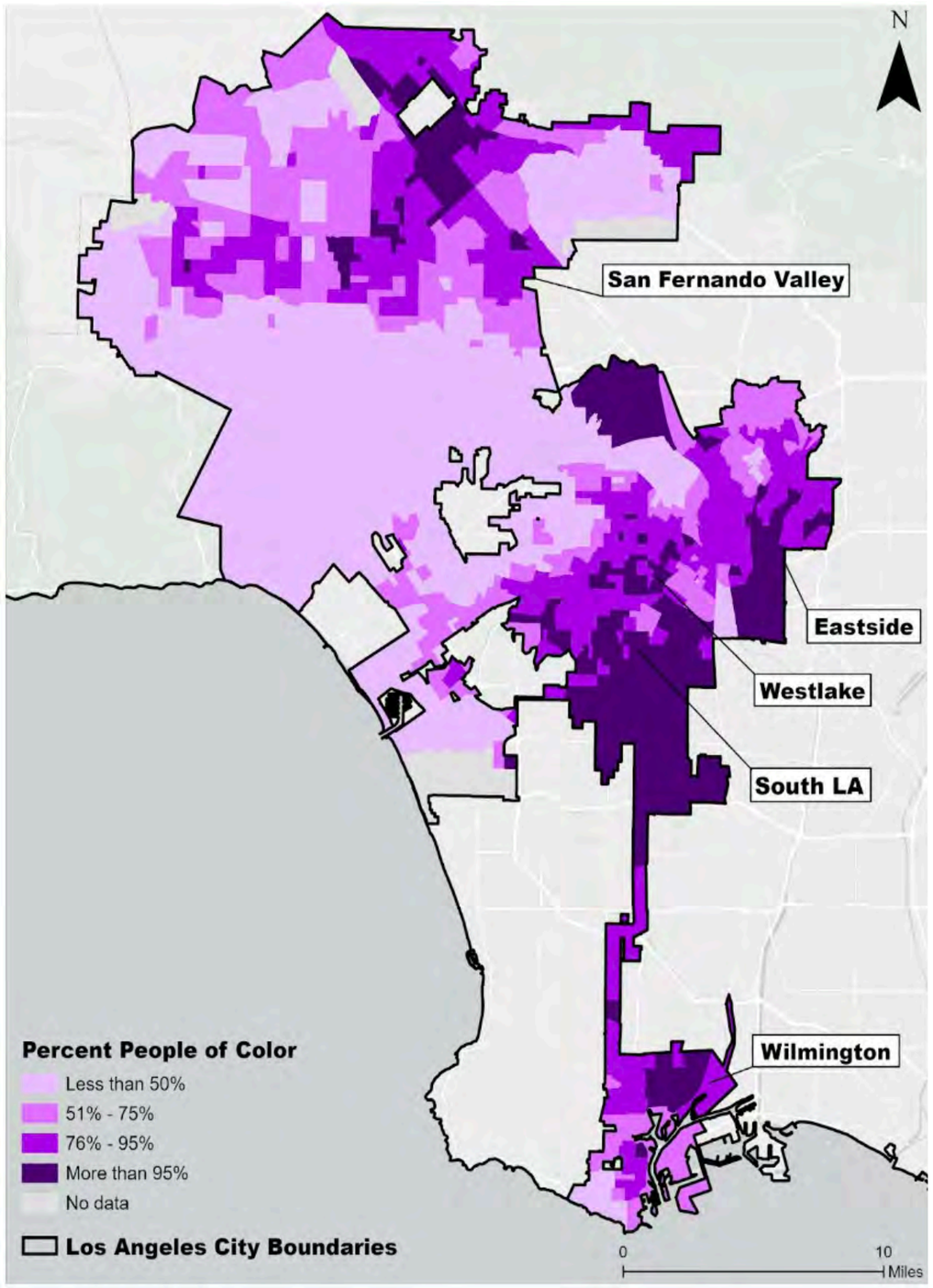
Today, formerly redlined areas of Los Angeles remain in neighborhoods largely inhabited by communities of color and immigrant communities (Figures 5-11). Residents of these areas systematically earn less than the Los Angeles median income (Figure 12).

Figure 5: Immigrants in Los Angeles by Census Tract

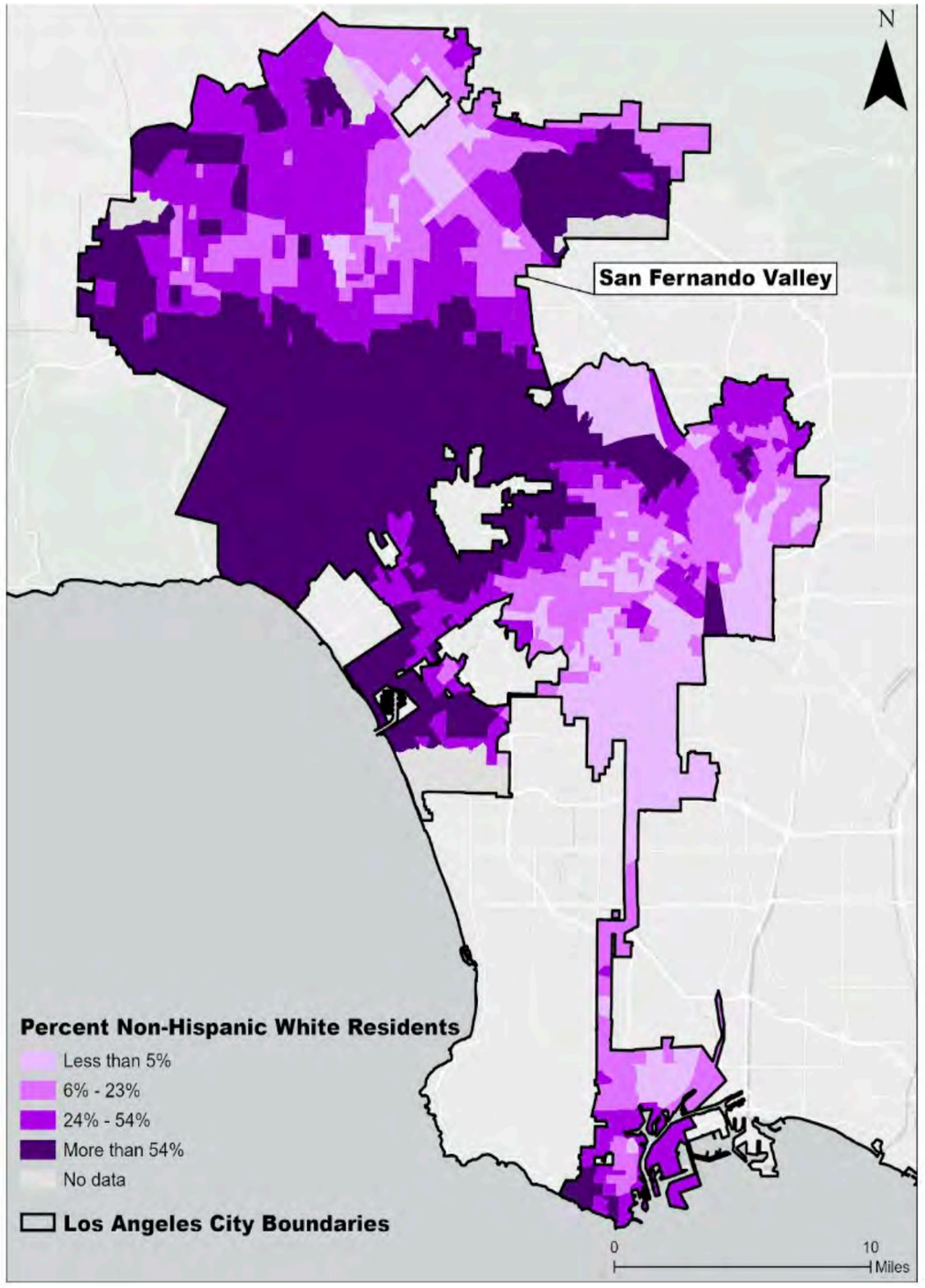


Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[31]

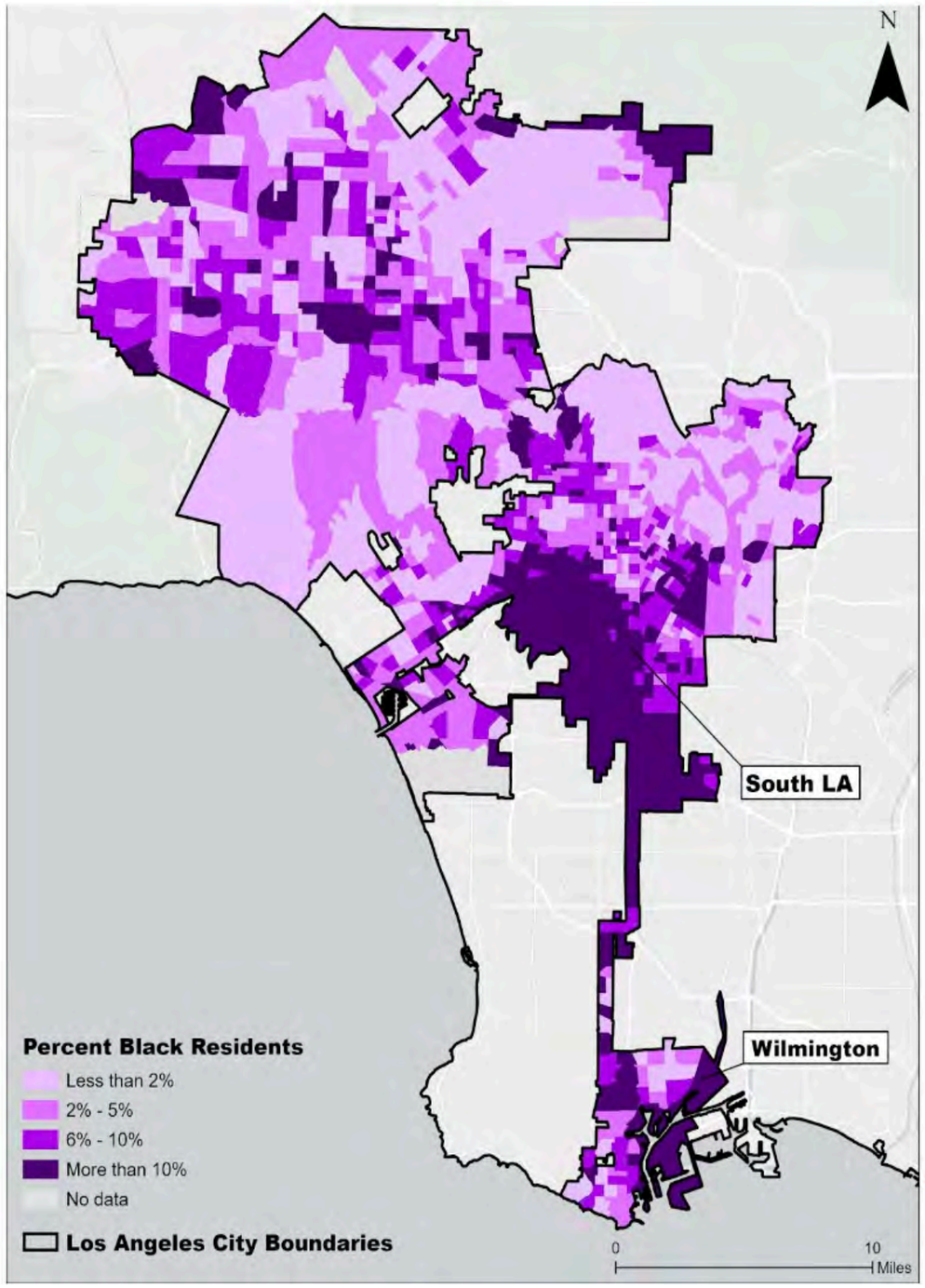
Figures 6-11: Populations of People of Color in Los Angeles by Census Tract



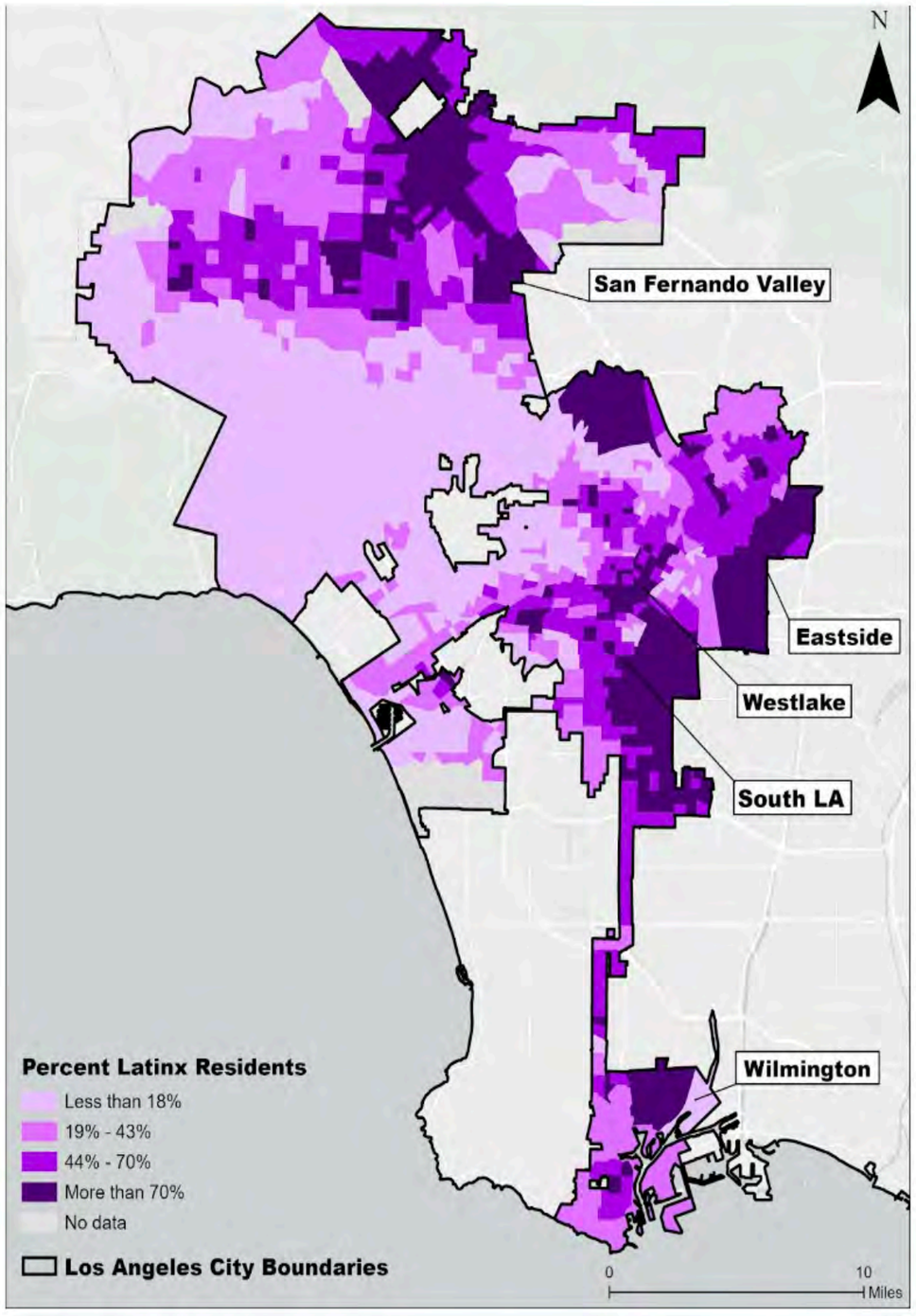
Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[32] We defined "People of Color" as individuals who identified as any racial or ethnic category other than non-Hispanic White -- namely, Black, non-White Hispanic, Asian, American Indian or Alaska Native, or Native Hawaiian or Pacific Islander.



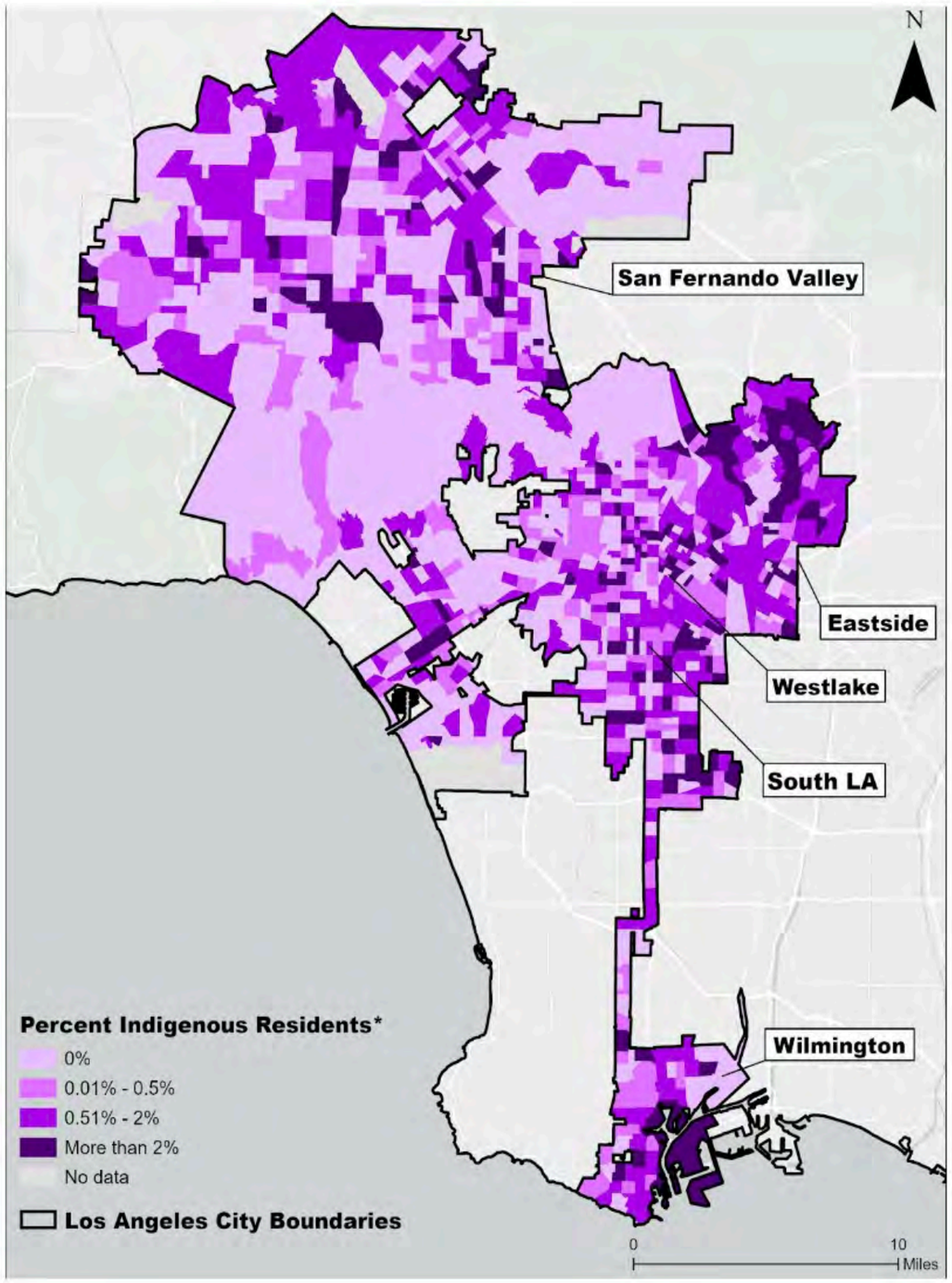
Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[33]



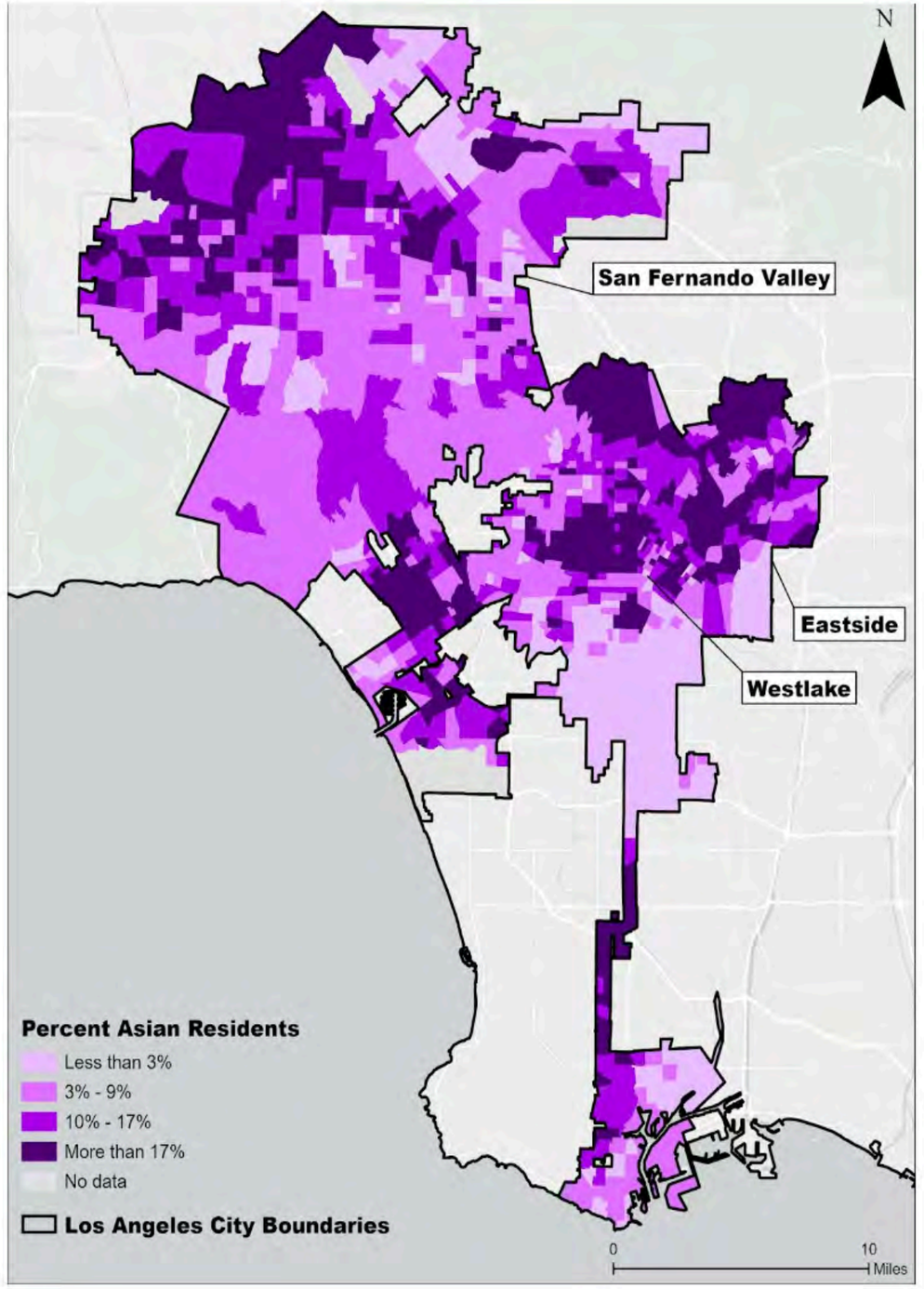
Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[34]



Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[35]

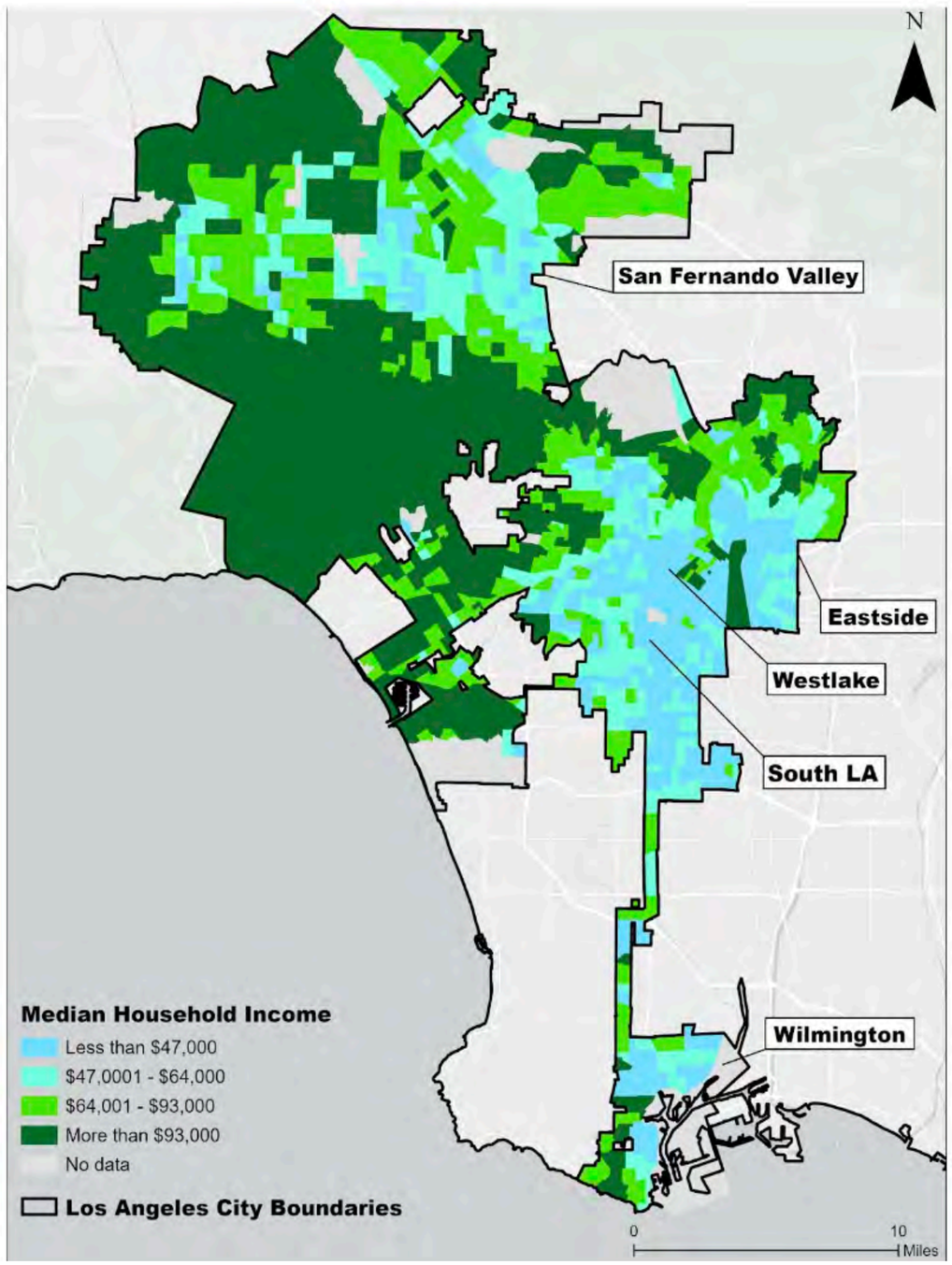


Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[36]



Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[37]

Figure 12: Median Household Income in Los Angeles by Census Tract



Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[38]

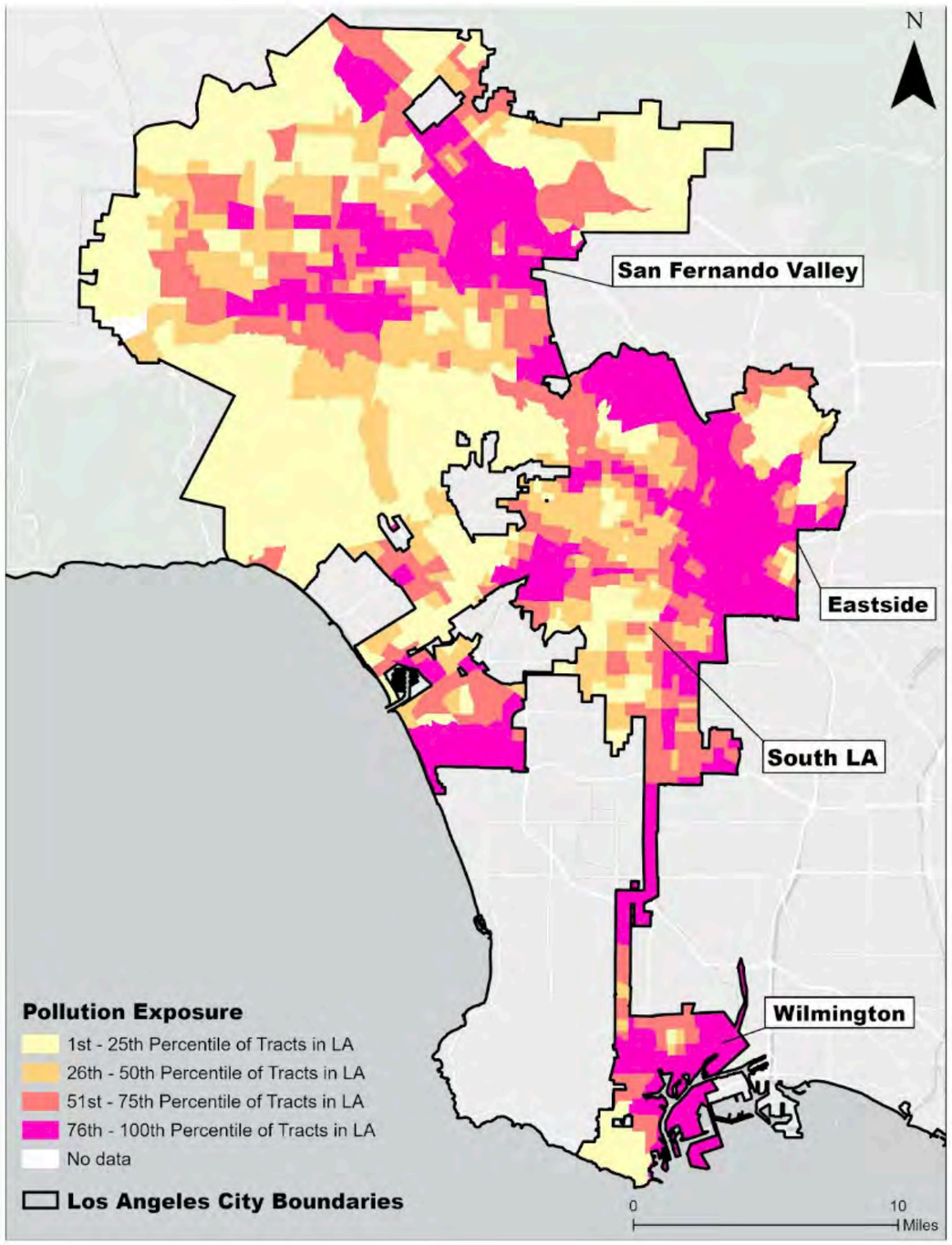
Redlining has not only led to persistent economic injustices, but has also been an issue of environmental injustice. Throughout the early development of Los Angeles, redlined neighborhoods were sites of industry associated with railroads and manufacturing.[39] Today, formerly-redlined communities of color in Los Angeles are exposed to disproportionately high levels of pollution as a result of the siting of industrial facilities in their neighborhoods.[40] Pollution exposure in Los Angeles remains the highest in the Eastside, the San Fernando Valley, and Wilmington – all areas with relatively large populations of people of color (Figure 13). South LA residents are also burdened with higher-than-average pollution exposure.

Finally, past redlines' geographic boundaries correlate with increased heat exposure for residents. In Los Angeles, formerly redlined areas experience temperatures 7.6 degrees hotter than formerly greenlined neighborhoods. Redlining is also associated with lower tree coverage and higher amounts of heat-absorbing surfaces, both factors that contribute to this heat inequity.[41]

In conclusion, low-income communities and communities of color living in formerly-redlined areas of Los Angeles like South Los Angeles and the San Fernando Valley have been deprived by racist and classist historical policy of their adaptive capacity to protect themselves against higher levels of extreme heat.

Adaptive Capacity: The ability of a community to change their actions in a way that minimizes potential harms and leverages opportunities to cope with the consequences of climate hazards like extreme heat.[42]

Figure 13: Pollution Exposure in Los Angeles by Census Tract



Data Source: CalEnviroScreen4.0.[43]

A SILENT KILLER IN LOS ANGELES: THE HEALTH EFFECTS OF EXTREME HEAT

Although extreme heat is a growing health issue for all communities, it affects particular Angelenos' health more severely. Table 3 defines common categories of vulnerability to extreme heat, and the communities that are affected by each.[44]

Table 3: Categories of Community Vulnerability to Extreme Heat

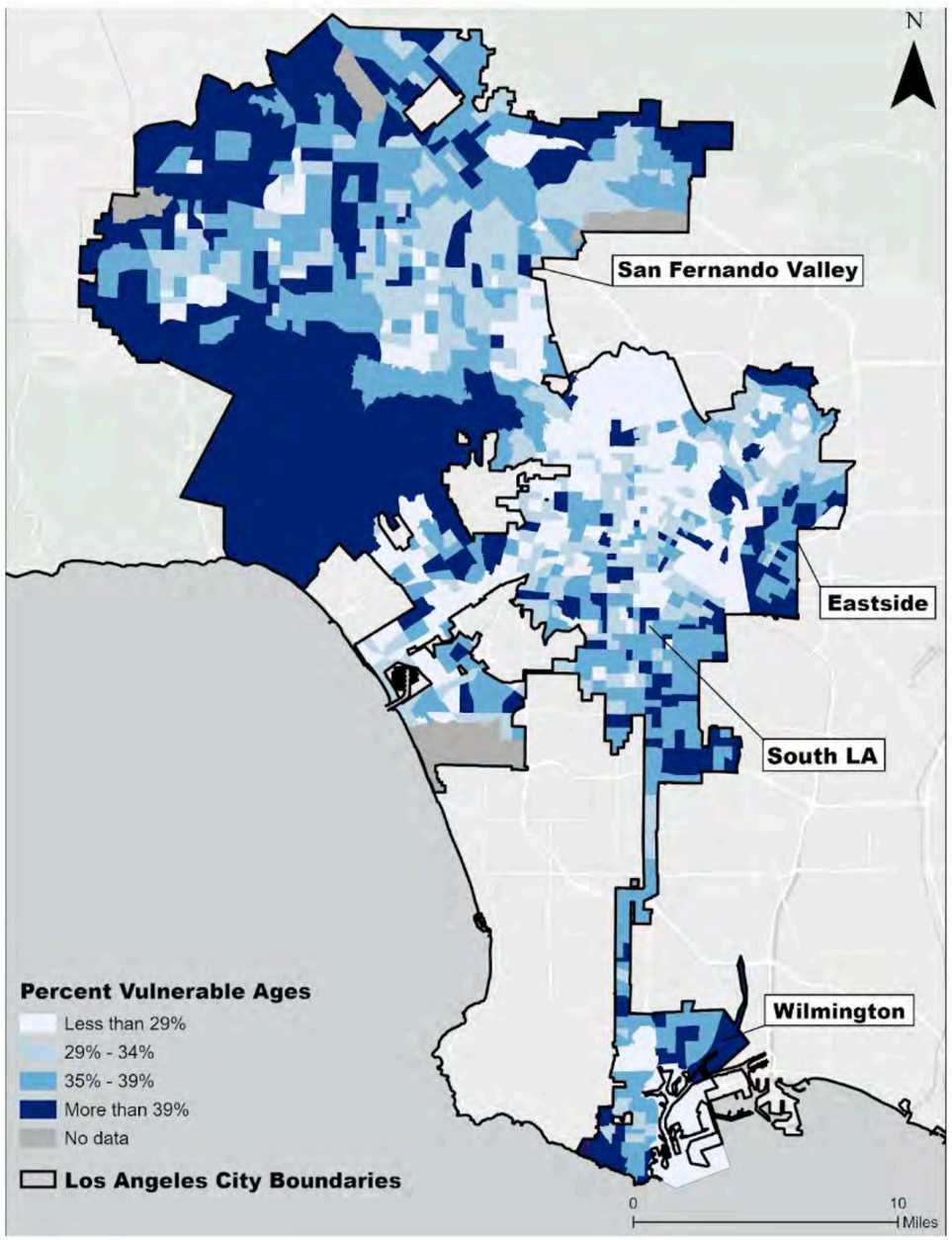
Risk Category	Guiding Question	Communities Affected
Adaptive Capacity	How are communities able to adapt to extreme heat with the economic resources and governance power that they possess?	Low-income communities, renters, immigrants, people who are incarcerated
Exposure	How often are communities physically exposed to extreme heat?	Low-income communities, outdoor workers, transit users, people experiencing homelessness, places with higher temperatures
Sensitivity	How are communities particularly sensitive to extreme heat physiologically?	Youth, seniors, people with pre-existing health conditions, places with higher pollution

Having assessed most of these risk factors, we assess the distribution of age and pre-existing health conditions in Los Angeles in the following pages.

Age

Youth and senior Angelenos are the most at-risk of HRI because they possess a lower ability to regulate body temperature.[45] Angelenos of these heat-vulnerable ages live throughout the city (Figure 14).

Figure 14: Heat-Vulnerable Ages in Los Angeles by Census Tract

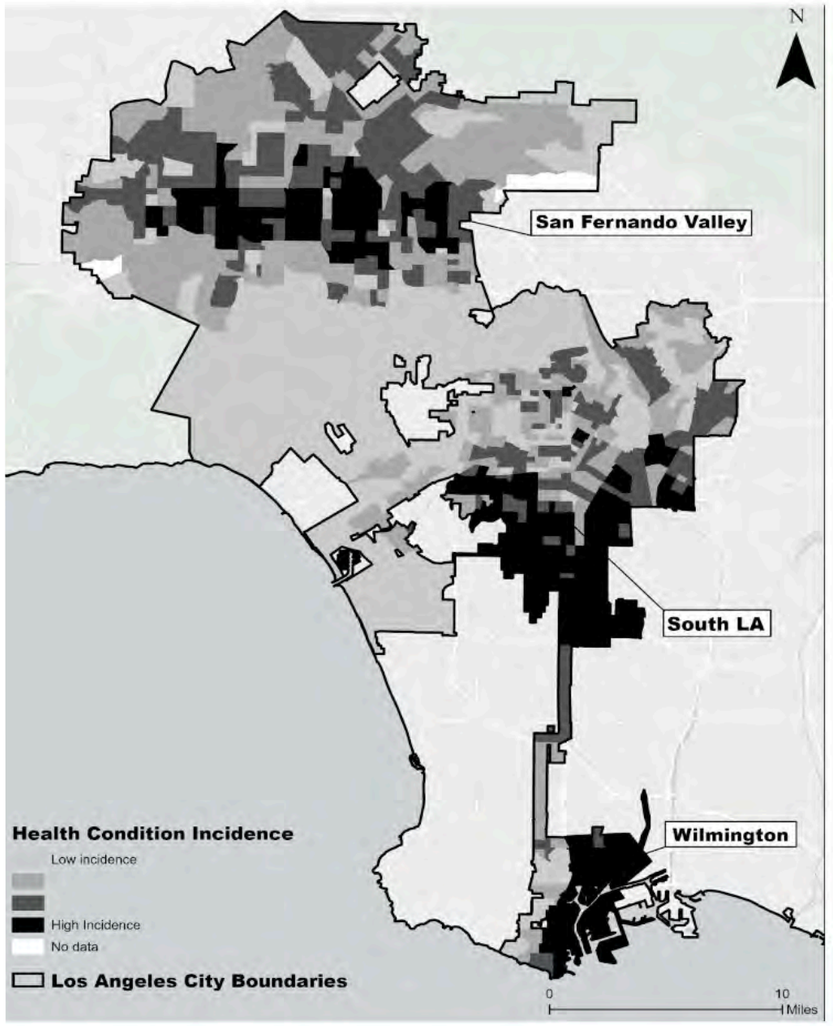


Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[47]

Pre-Existing Health Conditions

People with pre-existing health conditions face higher risk of heat-related mortality. In particular, asthma and cardiovascular disease can be worsened by heat exposure, high levels of ozone, and particulate matter exposure.[48] Individuals who take certain heart medications are also more susceptible to HRI, due to increased risks of dehydration.[49] People with asthma and cardiovascular disease live primarily in the San Fernando Valley, South Los Angeles, and Wilmington (Figure 15).

Figure 15: Incidence of Asthma and Cardiovascular Disease in Los Angeles by Census Tract



Data Source: US Census Bureau ACS 5-Year Estimates, 2015-2019.[50]

These impacts of heat on community health are preventable through proactive and equitable heat policy decisions to provide resources and assistance to the most heat vulnerable communities in Los Angeles.

COMBINED COMMUNITY HEAT VULNERABILITY: COMPOUNDING RISKS FOR COMMUNITIES OF COLOR

To assess which geographic areas of Los Angeles are the most vulnerable to the adverse health effects of extreme heat, we combined all of the factors in Table 4 into a combined map. We assigned each tract a score that reflected the sum of their quantiles for each of the previous maps, and then color-coded the tracts according to these combined sums.

Table 4: Populations and Variables Used in Heat Risk Index

Population or Variable	Indicator
Communities of Color	Number of individuals identifying as anything other than non-Hispanic white
Immigrants	Number of foreign-born individuals
Income	Median household income
Pollution Burden	Percentile of CalEnviroScreen4.0 pollution burden score amongst census tracts in Los Angeles
Age	Number of individuals under the age of 18 or over the age or 65
Pre-Existing Conditions	Number of individuals living with asthma or cardiovascular disease
Hospitalizations During Extreme Heat Events	Number of emergency room visits on extreme heat days

The risk index (Figure 15) looks much the same geographically as the previous figures – South Los Angeles, the San Fernando Valley, the Eastside, Wilmington, and Westlake are the most vulnerable areas in Los Angeles to the health effects of extreme heat. These regions are expected to have the highest temperatures in the near future, have populations with higher incidences of health conditions that can lead to higher heat risk, and have experienced policy failures leading to the imposed concentration of poverty and pollution in communities of color and immigrant communities.

The disproportionate compounding risk imposed upon frontline communities represents an ongoing environmental justice issue within the City of Los Angeles that contemporary heat adaptation policy must address. We aim to contribute to doing so through this report.

Figure 15: Combined Heat Risk Index in Los Angeles by Census Tract

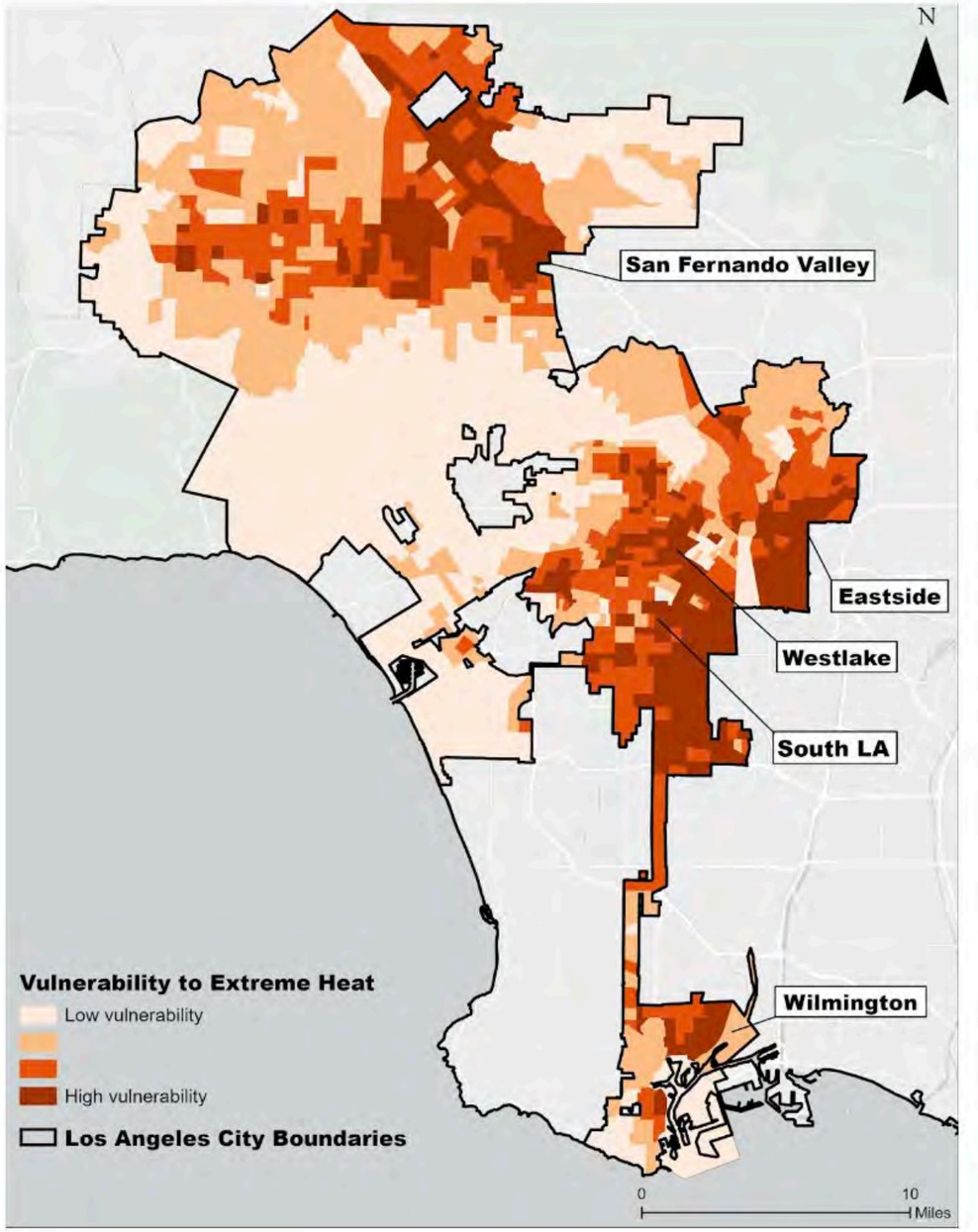


Table 5: Comparing the Demographics of High Vulnerability and Low Vulnerability Census Tracts

Vulnerability Level	Residents of Color	Immigrants	Median Household Income
High	94%	44%	$45,389
Low	37%	23%	$114,666

Chapter

04

What Can We Do? Heat Policy Options As Informed by Other Cities, Community Members, and Experts

Numerous policy options are currently being utilized by other municipalities to help communities adapt to extreme heat and reduce heat-related mortality. To determine which policy options to include in our focus group and survey questions, we conducted a document analysis of climate and heat action plans enacted in other cities. Since extreme heat is a relatively new area of planning focus for cities, we constrained our document search to plans from the past five years.

For this analysis, we selected plans from cities that are similar to Los Angeles in climate, frontline community demographics, and political structure (Table 6).

Table 6: Summary of Municipal Planning Documents Assessed for Policy Options

City	Climate[51]	Demographics[52]	Political Structure[53]	Document (Year)
Los Angeles, CA	Mediterranean: mild with hot, dry summer.	Large communities of color; high proportion of renters; high proportion of residents below the federal poverty line.	Strong Mayor-Council; Chief Heat Officer	--
San Diego, CA	Mediterranean: mild with hot, dry summer.	Large communities of color; high proportion of renters; low proportion of residents below the federal poverty line.	Strong Mayor-Council; Climate Resilience Officer	Climate Resilient SD (2021)[54]
Long Beach, CA	Mediterranean: mild with hot, dry summer.	Large communities of color; high proportion of renters; high proportion of residents below the federal poverty line.	Strong Mayor-Council	Long Beach Climate Action and Adaptation Plan (2022)[55]
Phoenix, AZ	Subtropical Desert: consis-tent hot and dry climate.	Large communities of color; moderate proportion of renters; high proportion of residents below the federal poverty line.	Council-Manager; Chief Heat Officer	Phoenix Climate Action Plan (2021)[56]
Miami, FL	Equatorial Monsoon: warm year-round with pronounced rainy season	Large communities of color; moderate proportion of renters; high proportion of residents below the federal poverty line.	Board of Commissioners; Chief Heat Officer	Miami Extreme Heat Action Plan (2022)[57]
New York, NY	Humid Subtropical: hot summer, mild with no dry season and variable rainfall year-round.	Large communities of color; high proportion of renters; high proportion of residents below the federal poverty line.	Strong Mayor-Council; Mayor's Office of Environmental Justice	AdaptNYC (2022)[58]
Dallas, TX	Humid Subtropical: hot summer, mild with no dry season and variable rainfall year-round.	Large communities of color; high proportion of renters; high proportion of residents below the federal poverty line.	Council-Manager	Dallas Comprehensive Environmental and Climate Action Plan (2020)[59]
Barcelona, Spain	Mediterranean: mild with hot, dry summer.	Moderate communities of color; high proportion of renters; moderate proportion of residents below the federal poverty line.	Mayor-Commission	Barcelona Climate Emergency Action Plan for 2030 (2021)[60]
Ahmeda-bad, India	Mid-Latitude Steppe and Desert: dry climate with seasonal monsoon.	Large communities of color; high proportion of residents below the federal poverty line.	Council-Manager	Ahmedabad Heat Action Plan (2019)[61]
Paris, France	Marine West Coast: mild, no dry season, warm summer and equal rainfall year-round.	Large communities of color; high proportion of renters; high proportion of residents below the federal poverty line.	Strong Mayor-Council	Paris Climate Action Plan (2018)[62]

Frontline community members may also have insights that policymakers have not considered. Therefore, we derived policy options from our focus group sessions and survey results. We also considered options suggested in our subject matter expert interviews.

After reviewing insights from city plans, community members, and subject matter experts, we categorized our eight policy options into five categories (Table 7).

Table 7: Policy Options

At Home Interventions	
Expanding subsidized home weatherization and energy utility assistance	Targeting grid resilience in frontline communities
Communications and Outreach	
Improving the accessibility and reach of heat communications	Expanding equitable access to green spaces for frontline communities
Community Level Interventions	
Expanding equitable access to water resources	Improving the thermal comfort of pedestrians and transit users
Accessibility to Workplace Resources	
Increasing the accessibility of workplace trainings against extreme heat	
Cooling Center and Resilience Centers	
Expanding the resilience center network	

AT HOME INTERVENTIONS

Providing Air Conditioning, Home Weatherization, Utility Assistance, and Grid Reliability for Frontline Communities

Many of the plans for American cities that we examined included expanding air conditioning availability to frontline community members to keep homes cool during heat waves. Miami, New York, and Dallas provide free or discounted air conditioning units to eligible residents.[63] Phoenix and Dallas also require landlords to provide air conditioning or other cooling units for all renters.[64] Most of the American plans that we examined also include home weatherization programs, which assist eligible homeowners and renters with replacing doors and windows, installing and replacing cooling systems, and updating insulation – all of which help to keep homes cool.

For these cooling actions to remain available to frontline community members, they must be affordable and reliable to use. Miami and New York have proposed programs to assist low-income residents with their electric bills, so that they can afford to use cooling systems during heat waves.[65] Long Beach is exploring the installation of community solar panels and microgrids to ensure that residents have reliable electricity to use cooling systems during heat waves. In one of our subject matter expert interviews, UCLA Professor Lara Cushing emphasized the importance of enacting grid resilience strategies in mitigating power outages in frontline communities.[66]

In Los Angeles, frontline communities have disproportionately low access to air conditioning in their homes. Power outages due to increased energy use in the summer are more likely to occur in frontline communities, and lower-income residents are less able to use cooling systems during heat waves due to electricity bills being unaffordable.[67]

Based on this information, we considered the following policy options:

Expanding air conditioning coverage in frontline communities by **providing free cooling units** to residents.

Expanding air conditioning coverage by **requiring landlords to provide minimum cooling standards** for rented spaces.

Increasing access to **new and existing home weatherization programs** for frontline communities through **targeted communications and outreach**.

Expanding the availability of **energy utility assistance programs** to frontline communities.

Ensuring grid reliability for frontline communities by **investing in upgrades and alternative energy sources**.

COMMUNICATIONS AND OUTREACH

Improving the Accessibility and Reach of Heat Communications

Most of our sample cities outlined efforts to improve the accessibility and reach of their heat communications and early warning systems for frontline communities. These cities employed various modes of communication, including radio, television news, billboards, social media, print newspaper, text messaging, and emails.

Miami conducted an analysis to better understand which communications channels are most effective at reaching their target communities.[68] San Diego and Miami are ensuring that their outreach and warning systems are available in the languages preferred by frontline neighborhoods, so that residents can equitably receive and utilize heat adaptation resources and information.[69] Barcelona also has a physical climate office in every neighborhood, where residents can stop by for information and resources.[70]

The City of Los Angeles coordinates with LA County and the National Weather Service to conduct heat early warning outreach through the NotifyLA Extreme Heat Alerts. The Cool Spots LA App also shows Angelenos who have access to the internet where they can cool off during extreme heat events, while NotifyLA allows users to opt into heat warnings through text messages, phone calls, or emails.[71] Angelenos can also call the 311 system to get updates and information on cooling centers and other resources during a heat wave. The City also has the ability to send emergency broadcast messages to all Angelenos through text messages and the interruption of television and radio broadcasts.[72]

In one of our subject matter interviews, UCLA Professor Kelly Turner stressed the necessity of ensuring that heat-related information is accessible to frontline communities, so that they can benefit from any resources, actions, or alerts that the City is sharing.[73]

Based on this information, we considered:

making heat adaptation communications from the City more accessible to frontline Angelenos by **targeting outreach through the channels and languages preferred by frontline communities** as a policy option.

COMMUNITY-LEVEL INTERVENTIONS

Expanding Equitable Access to Green Spaces for Frontline Communities

Expanding green spaces is a common policy tool to combat extreme heat in our sample of cities.

San Diego and Long Beach have prioritized the planting of drought-tolerant trees in frontline communities to overcome challenges like increasing temperatures and decreasing water availability.[74] In one of our subject matter expert interviews, University of Arizona Professor Ladd Keith noted that tree planting efforts must be complemented with maintenance resources to ensure that they provide long-term health benefits for frontline communities.[75]

Seven sample cities mention expanding access to parks for heat-vulnerable neighborhoods in their heat planning documents. Phoenix and Barcelona seek to ensure that all residents are within a certain walking distance to a park by expanding park availability in frontline communities.[76] Miami seeks to collaborate with the community to prioritize new park locations, and Ahmedabad mandates that parks remain open during extreme heat events.[77] Paris and Barcelona have worked to add green spaces to schoolyards, and to make these spaces available to the public outside of school hours.[78] To avoid green gentrification of frontline communities, Dallas is allocating funds to support community land trusts and to strengthen anti-eviction measures in neighborhoods where greening occurs.[79]

The Los Angeles Department of Recreation and Parks currently runs a system of 279 parks.[80] There have also been citywide tree planting efforts and free tree programs for residents.[81] However, frontline communities in Los Angeles have inequitably less access to green spaces like parks and trees.[82]

Based on this information, we considered the following policy options:

Expanding tree coverage access in frontline communities.

Expanding park access in frontline communities.

Improving the Thermal Comfort of Pedestrians and Transit Users

Increasing shade access and thermal comfort for residents as they travel – whether by foot or through public transit – is another common tool in our sample cities. In one subject matter expert interview, UCLA Professor Kelly Turner noted that expanding shade coverage is the most effective way to reduce heat burden on communities.[83]

Some cities are piloting the use of cool pavements, which reduce the amount of heat absorbed by sidewalks and streets during the day. However, most of our subject matter expert interviewees assessed cool pavements as detrimental to the thermal comfort of pedestrians. Therefore, we did not consider cool pavements as a policy option for this report.

To increase thermal comfort for transit users, some cities prioritize installing shade structures at transit stops. Long Beach seeks to work with transit riders in frontline communities to prioritize locations for shade installation.[84] Miami plans to include resources on extreme heat and pedestrian safety at bus shelters, and increase the frequency of buses so that riders spend less time waiting at bus stops.[85] Phoenix plans to install shade structures at all 4,050 of its bus stops by 2025.[86]

Los Angeles is currently exploring the prospect of expanding shade shelters to more transit stops to improve the thermal comfort of pedestrians and transit users.

Thermal Comfort: A person's natural feeling, awareness, and satisfaction of the thermal environmental around them.[87]

Based on this information, we considered:

Increasing the number of **transit stops that have shade structures** as a policy option.

Expanding Equitable Access to Water Resources

Access to public water, whether for hydration or external cooling, is another common policy intervention being taken to combat extreme heat in other cities.

Long Beach, Miami, and Ahmedabad all emphasize drinking water accessibility in frontline communities in their heat planning efforts through a combination of temporary hydration stations during heat waves and permanent water fountains.[88] In one of our subject matter expert interviews, City staffer Jarvis Emerson emphasized that water distribution is particularly relevant for unhoused communities who often suffer from dehydration during heat waves.[89]

Increased access to natural and artificial water features has also been incorporated in many of our sample cities' planning efforts. San Diego and Long Beach are increasing transit access to relatively cooler beaches for inland frontline communities.[90] Miami and Barcelona are installing temporary water features like splash pads and misting systems in frontline communities.[91]

Splash Pads: Interactive and recreational water features that act as sprinklers with little to no standing water.[92]

Los Angeles has an existing system of public swimming pools administered by the Department of Recreation and Parks as well as hydration stations and splash pads in public locations. However, there are gaps in access to these resources in frontline communities.

Based on this information, we considered the following policy options:

Expanding access to hydration stations and other water distribution points for frontline communities.

Expanding access to natural and artificial water features for frontline communities.

INCREASING WORKPLACE PROTECTIONS AGAINST EXTREME HEAT

Cities such as Miami and Ahmedabad have included workers' rights and protections in their heat plans.[93] These protections mandate minimum access to shade and water at work and decreased outdoor work hours during heatwaves.

Our subject matter experts identified outdoor workers as being one of the most vulnerable groups to extreme heat in Los Angeles. The main heat-related workplace interventions in Los Angeles stem from CAL/OSHA regulations – but Angelenos continue to experience preventable HRIs caused by excess heat exposure at work.[94]

Based on this information, we considered:

increasing the accessibility of workplace trainings on extreme heat as a policy option.

EXPANDING THE RESILIENCE CENTER NETWORK

Most of our subject matter experts and all nine sample cities identify resilience centers as a policy option. Although the exact resources available at resilience centers vary by municipality, these places can also offer material resources, such as breathable clothing and food, and connect people to additional heat-related programs and educational information.

Resilience Centers: Public indoor spaces run by City departments, like libraries and recreation centers, where individuals can go on hot days to cool off and acquire public resources.[95]

Cities such as Paris have aimed to make their existing resilience center networks more accessible by committing to having access to a center within a close walk for all residents.[96] Long Beach has developed an equity strategy to ensure that cooling centers are prioritized for frontline communities.[97]

Los Angeles currently has a network of over 100 resilience centers that are open to the public during the summer months. The City also offers free-air conditioned bus rides to nearby cooling centers. There are also two outdoor cooling centers available during heat waves for unhoused communities on Skid Row.[98] However, there are gaps in access to these resources in frontline communities.

Based on this information, we considered:

the expansion of the resilience center network by the City as a policy option.

Chapter

05

Criteria for Evaluating Our Policy Options

EVALUATING OUR POLICY OPTIONS

After completing our focus groups and survey work, we assessed each policy option based on community preferences, impacts on frontline community health and wellness, feasibility, and equitable distribution of benefits (Table 8):

Table 8: Categorizing our Policy Options

Criterion	Guiding Question
Does this policy option specifically address the stated preferences and heat health needs of frontline communities?	
Community Preferences	How much is this policy option desired by frontline community members?
Equitable Health and Wellness Outcomes for Frontline Communities During Extreme Heat Events	How much would this policy option specifically improve frontline community health and well-being by mitigating heat exposure or by increasing adaptive capacity?
Would this policy option contribute to closing the heat adaptation resource gap imposed upon frontline communities?	
Distributive Equity	How much would this policy option specifically target the heat adaptation resource inequities imposed upon frontline community members?
How feasible is this policy option for implementation by the City?	
Financial Feasibility	How financially feasible would it be for the City to implement this policy option, with existing and potential sources of funding?
Administrative Feasibility	How administratively feasible would it be for the City to implement this policy option?

CRITERIA FOR ADDRESSING THE NEEDS OF FRONTLINE COMMUNITIES

Community Preferences
Guiding Question: How much is this policy option desired by frontline community members?

To honor our commitment to uplifting the voices of frontline community members, we did not aim to outright dismiss any policy options that the community desires. These individuals have invaluable contributions to creating equitable heat adaptation policy for Los Angeles, based on their experiences of living through inequitable extreme heat conditions. Including community preferences as a criterion adds to the procedural equity of the heat adaptation policymaking process in Los Angeles by giving the communities most negatively impacted by extreme heat a meaningfully powerful role in determining policy directions.

We used the results from our focus groups and survey to measure frontline community preferences. We used our qualitative thematic coding analysis for the focus groups to identify the participants' opinions on our policy options across all questions. We included responses from all focus group participants, since they were all frontline community members. For the survey, we used the results from the questions that specifically asked about what resources frontline respondents would like to see in their neighborhood and questions relevant to each policy option.

Procedural Equity: "Inclusive and accessible engagement and representation, including the ability to participate in all stages of decision making."[99]

Health and Wellness Outcomes

Guiding Question: How much would this policy option specifically improve frontline community health and well-being by mitigating heat exposure or by increasing adaptive capacity?

While community members are the best arbiters of policy options that could work to improve their experiences during extreme heat events, they may not have access to information about all possible policy options or possess specific expertise on the relative effectiveness of policy options. Therefore, the research literature on the health impacts of each of our policy options are also crucial to consider to advance our collective goal of improving frontline community heat health outcomes. While we highlight some policy options that have greater health benefits than others, all policy options that the literature has shown to have a positive impact were given priority over those that have not.

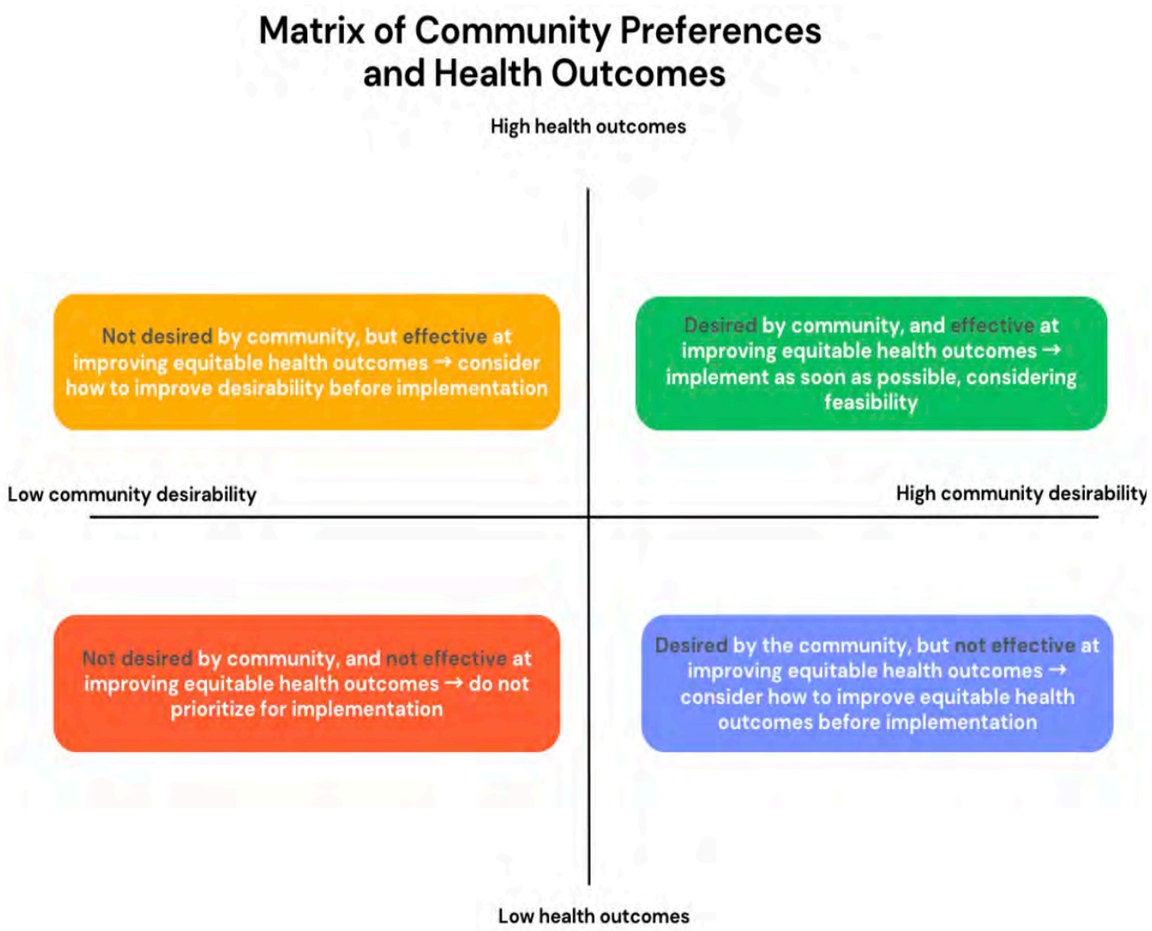
To measure equitable health and wellness outcomes for frontline communities during extreme heat events, we prioritized policy options that met at least one of the following metrics:

- The policy option has been shown by the literature to reduce the incidence of heat-related illnesses, hospitalizations, or deaths in frontline communities.
- The policy option has been shown by the literature to increase measures of thermal comfort of frontline communities.
- The policy option was mentioned by one of our subject matter experts as benefiting frontline community heat health.

TAKING BOTH COMMUNITY PREFERENCES AND HEALTH OUTCOMES INTO ACCOUNT

To take both of these important criteria into consideration when determining which policies to recommend for prioritization, we sorted each of our policy options into one of the four quadrants shown in Figure 16.

Figure 16: Criteria for the Prioritization of Policy Preferences for Recommendation



CRITERION FOR CLOSING THE RESOURCE GAP

Distributive Equity
Guiding Question: How much would this policy option specifically target the heat adaptation resource inequities imposed upon frontline community members?

A central goal of this report is to improve distributive equity by ensuring that the benefits of heat adaptation policies reach frontline communities. Distributive equity can be achieved through targeted resource allocations to frontline communities, while ensuring that policy options do not perpetuate existing harms to frontline communities.

Distributive Equity: "The fair distribution of benefits and burdens, prioritizing benefits to those communities with highest need."[100]

To measure distributive equity, we prioritized policy options that specifically target or benefit communities of color, immigrant communities, low-income households, individuals living with pre-existing health conditions, or those living in the geographic areas most vulnerable to extreme heat impacts.

CRITERIA FOR ASSESSING FEASIBILITY

To answer whether each policy option would be feasible for the City to implement, we used the criteria of financial feasibility and administrative feasibility.

Financial Feasibility
Guiding Question: How financially feasible would it be for the City to implement this policy option, with existing and potential sources of funding?

Implementing any policy option would require the financial capability of the City to do so. Some policy options, particularly lower-cost ones, may be able to be implemented by existing City agency budgets or funding streams. Such policy options may be able to be implemented more immediately, barring administrative barriers.

Other policy options, typically higher-cost ones, may not have readily available local funding streams, and could require outside funding sources like state or federal grants to be financially feasible for local implementation. Such policy options may not be able to be implemented until successful grantmaking proposals are accepted.

To measure financial feasibility, we prioritized policy options that met at least one of the following metrics:

- The policy option has the potential to be funded by existing agency budgets within the City of Los Angeles.
- The policy option has the potential to be funded by state or federal grant funding opportunities.

We also prioritized policy options that are relatively low-cost compared to other policy options, when possible. However, determining the exact costs of implementing and maintaining policy options for the City of Los Angeles would be impossible without extensive financial projections and access to internal agency budgets, and is outside of the scope of this report.

Administrative Feasibility
Guiding Question: How administratively feasible is the policy option for the City to implement?

Implementing any policy option would require the presence of governmental structures or agencies to do so. Without sufficient staffing, technical capacity, or resources to implement a policy option, the action would have little impact on addressing inequities faced by frontline Angelenos.

To measure administrative feasibility, we prioritized policy options that fit within local government agencies' existing administrative, technical, and resource capacity; and have the potential for interagency collaboration to pool resources.

Prioritizing interagency collaboration: In one of our subject matter expert interviews, David Hondula from the City of Phoenix's Office of Heat Response and Mitigation stressed that interagency collaboration is essential to implementing successful heat adaptation policy at the urban level. The intersectionality of extreme heat impacts requires parallel policy efforts between agencies like CEMO and other City agencies, to have a meaningful impact for frontline communities in Los Angeles. [101]

Chapter

06

Results from the Community Focus Groups

WHO WERE OUR FOCUS GROUP PARTICIPANTS?

In total, we had 68 participants across seven focus groups. All participants identified within our categorization of frontline community members. A plurality of focus group participants identified as Black or African American (Figure 17), and about 70% reported making less than $50,000 per year (Figure 18). Our focus group participants tended to be older, with over half being over the age of 50. Most participants live in South Los Angeles, Westlake, or the San Fernando Valley (Figure 19). In addition to the 22% of participants who identified as Hispanic or Latinx, the participants who identified as Indigenous or Indigenous Mexican were largely part of migrant communities from Mexico and Central America.

Figure 17: Racial and Ethnic Self-Identification of Focus Group Participants

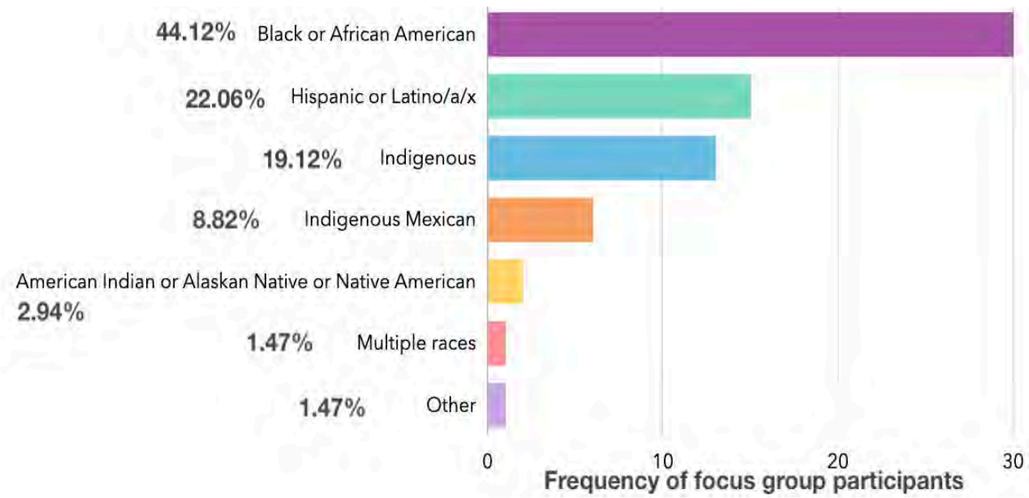


Figure 18: Income of Focus Group Participants

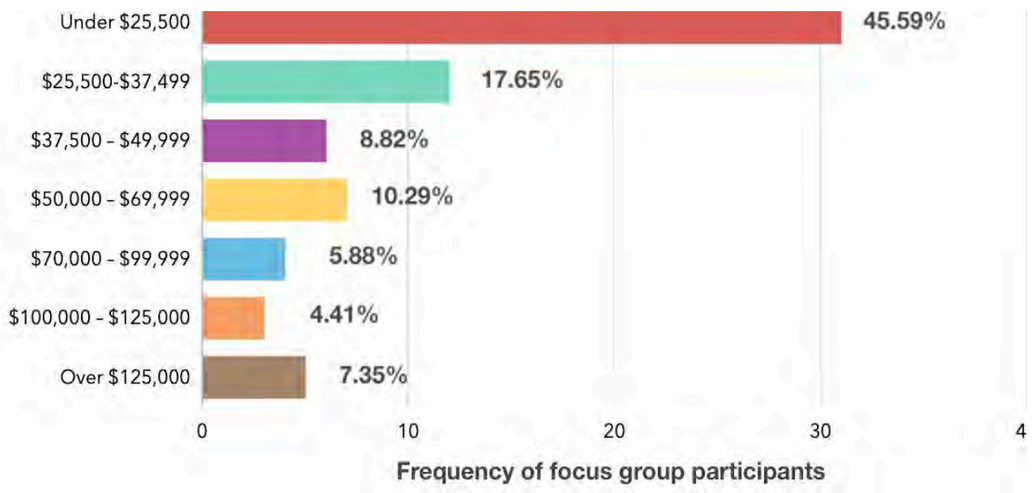
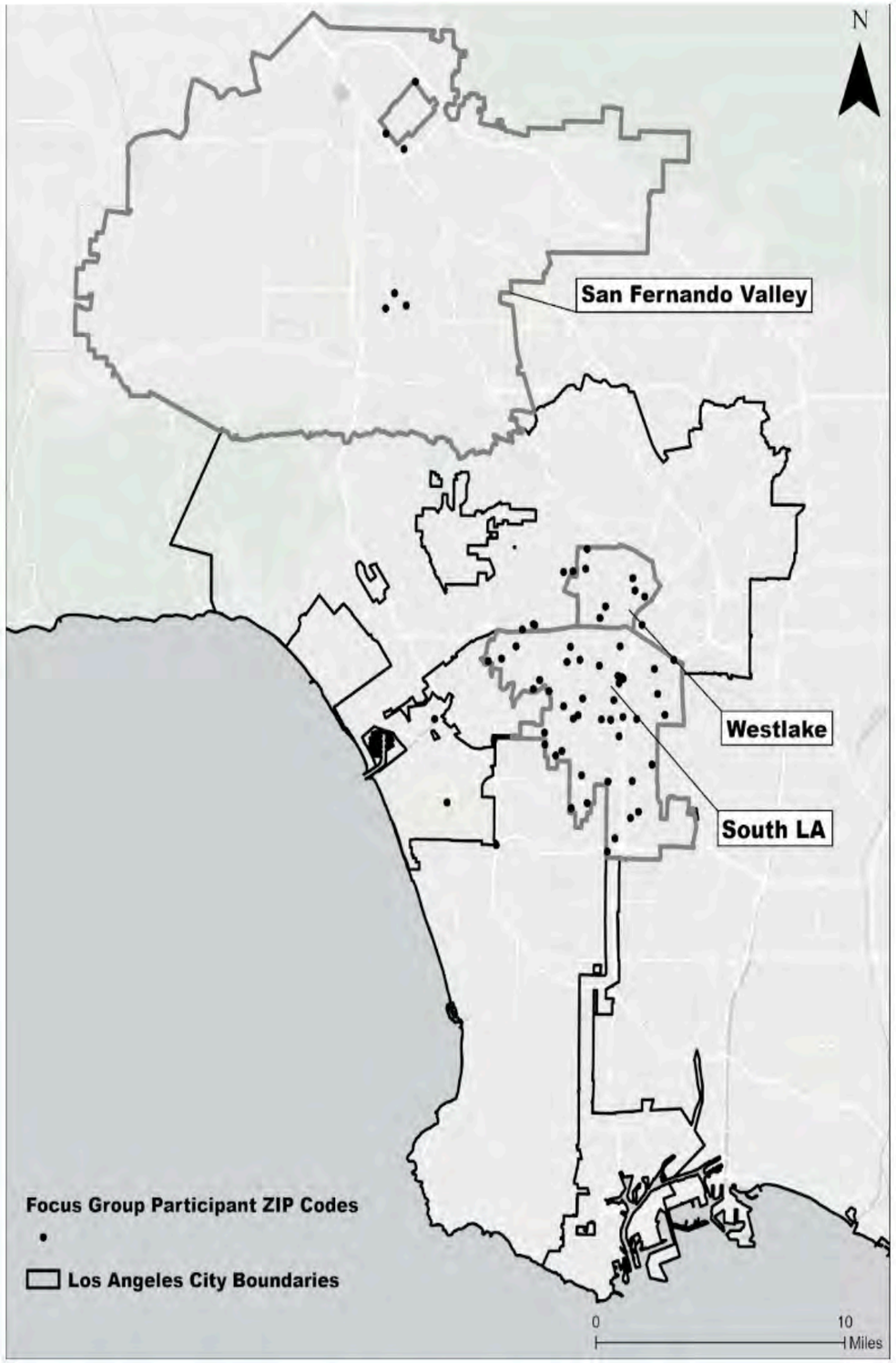


Figure 19: Zip Codes of Focus Group Participants



WHAT TOPICS DID OUR FOCUS GROUP PARTICIPANTS DISCUSS?

The most common topics brought up by participants in our focus groups were at-home interventions, green spaces, and the adverse health effects of extreme heat.

Figure 20 details the topics that were discussed across all of our focus group sessions. This was created based on the frequency of coded mentions of each of these topics by our focus group participants.

Figure 20: Frequency of Topics Discussed during Focus Group Sessions

WHAT WERE OUR FINDINGS?

Finding: In our focus groups, community members frequently mentioned that they had experienced a heat-related illness during extreme heat events or during the summer.

Participants shared extensive adverse impacts of extreme heat on their health, often mentioning that they suffer from dehydration, headaches, and a lack of sleep due to thermal discomfort. Participants living in South LA shared that they are affected by cumulative health impacts during extreme heat days, as the heat interacts with pre-existing conditions like asthma and central nervous system conditions. One participant shared that residents of their neighborhood have passed away due to extreme heat:

> "Three elderly neighbors in my building died from heat stroke last year."
> - Participant, TRUST South LA

Participants who work outside also emphasized the adverse health impacts of working in extreme heat conditions, especially in places like the San Fernando Valley.

> "Sometimes, I have to work in the summer when the heat is the worst. I have to install roofs, and the heat is suffocating because I have to work in uniform. I suffer from headaches, nausea, and vomiting when doing these jobs."
> - Participant, CARECEN

Finding: Community members showed the greatest interest in increasing the resources available from the City to build adaptive capacity and resilience against extreme heat at home.

Participants often expressed that they do not have access to air conditioning in their homes to cool off during the summer – and even those who have air conditioning are hesitant to use it because of high utility costs. One indigenous participant recalled how they cannot afford the high costs of air conditioning:

> "When it's too hot, I turn on the A/C and the bill is too expensive."
> - Participant, CIELO

This creates a forced trade-off for frontline communities between thermal comfort and financial stability. To solve this issue, participants in nearly every focus group emphasized energy utility assistance to alleviate the financial hardships caused by heat waves. When an existing LADWP program was brought up by a participant from Black Women for Wellness, no other participants had heard of it, although they were very interested to learn more.

When faced with a lack of air conditioning, participants shared that they often sit outside or open their windows to cool off, because their homes are usually hotter than the outside air. A few participants added that they cover their windows with dark sheets as a last resort to cool down on hot days. However, this is often ineffective in cooling community members off. Older participants shared that they often feel very hot at night, as they do not have cooling technology in their homes, and fear opening their windows due to safety concerns. Participants emphasized their desire to have air conditioning in their homes, and the need for landlords or the City to pay for expensive cooling technology.

> "I had to put my own AC in here…
> my building did not agree to pay to put it in… So I understand, you know, some landlords won't help us, you know, so we have to do this on our own."
> - Participant, LA Black Worker Center

Finding: Focus group participants frequently mentioned that they currently have little access to green space and they would like to see more trees, park spaces, and community gardens in their neighborhoods. Participants mentioned the need for more green spaces to provide heat relief and avoid heat-related illnesses.

Participants from all focus groups frequently mentioned that they do not have sufficient access to green spaces for heat relief in their neighborhoods. Participants from TRUST South LA described their communities as places where "los árboles desaparecen" - where the trees disappear:

> "Aquí en el sur de Los Ángeles, no
> tenemos árboles, pero tenemos que tener más árboles.
> Tenemos que plantar árboles, pero no se cuál sea el proceso de hacer eso, verdad? Porque en otras áreas que están fuera del centro este, hay demasiados árboles y está bien fresco si usted va en tiempo de calor. Pero usted llega como cuadras, digamos Vermont para acá, está caliente porque los árboles desaparecen."
>
> "Here in South Los Angeles, we don't have trees, but we have to have more trees. We have to plant trees, but I don't know what the process of doing that is, right? Because in other areas that are outside of the center here, there are too many trees, and it's very cool if you go in hot weather. But you get like blocks, say Vermont to here, where it's very hot because the trees disappear."
> - Participant, TRUST South LA

Participants from the Labor Community Strategy Center spoke extensively about the inequities they see in the distribution of trees across different neighborhoods of Los Angeles.

> "When you're talking about disparities
> across neighborhoods, you can tell where the people of color and white people live just by looking at the tree coverage."
> - Participant, Labor Community Strategy Center

Participants also frequently expressed frustration about their communities' lack of trees and tree removal actions in their communities.

> "Ideally, I would love more green space, but I know that that's really difficult to achieve because I just see how the City prioritizes property over people, and you know, more concrete is being put on the ground. Trees are being removed."
> - Participant, LA Black Worker Center

Additionally, participants from TRUST South LA mentioned community gardens as safe spaces that have provided residents with spaces to connect, cool down, and de-stress during extreme heat events.

> "Porque siempre las personas de mayor edad siempre andan buscando alguna actividad que hacer en el jardín comunitario donde yo soy...A ellas les ayuda bastante, porque a veces las personas con las que viven trabajan mucho, que ya no tienen la compañía de ellos, solamente los miran en la noche, y estas personas se quedan solitas. Entonces ellas necesitan que salgan y hagan algo y mantengan su mente ocupada y se salen contentos del jardín."
>
> "The older people are always looking for something to do in the community garden where I am from…It helps them a lot, because sometimes the people they live with work a lot, they no longer have their company, they only watch them at night, and these people are left alone. So they need to get out and do something and keep their minds busy, and they leave the garden happy."
> - Participant, TRUST South LA

Finding: Focus group participants frequently mentioned that public water features are inaccessible in their neighborhoods and need more access to drinking water during heat waves.

Participants commonly mentioned access to drinking water and public water features as barriers to staying healthy and cool during heat waves.

> "In my neighborhood, there's not any water fountains or anything around if your only form of transportation is to walk. There isn't anywhere you can get free water at."
> - Participant, LA Black Worker Center

Participants frequently mentioned using swimming pools as resources to stay cool, despite the lack of convenient access in areas like South LA.

> "Sometimes there are pools that students can access, so in summer, I usually go to the pool to refresh… It would be nice if these pools were free for everyone on hot days."
> - Participant, CARECEN

People were also very enthusiastic about splash pads in parks for children and water misting systems in areas such as bus stops, schools, and parks. of Los Angeles.

> "Maybe waiting at the bus stop, we could just have little mist sprays for them."
>
> "Like a city waterpark. I know that there's one in the new shopping center at Noho West. There's water that comes from the ground, and you see the kids in there all the time during the summer."
> - Participant, Fernandeño Tataviam Band of Mission Indians

Finding: Focus group participants generally use public transit or walk to get around on a daily basis. Their daily transportation experiences were challenging, given a lack of shade and unreliable transit services.

Participants in our focus groups expressed that they often use local transit systems to move around the city. Participants shared that transit stops in South LA lack shade coverage, causing thermal discomfort among transit users.

> "La verdad es que aquí en Los Ángeles tenemos una situación muy difícil, porque las paradas de los buses no tienen, algunas veces no tienen ni siquiera donde sentarse. Imagínese con el calor, no tiene donde sentarse, no tiene como cubrirse."
>
> "The truth is that here in Los Angeles we have a very difficult situation, because the bus stops don't have, sometimes they don't even have a place to sit down. Imagine with the heat, you have nowhere to sit, nowhere to cover yourself."
> - Participant, TRUST South LA

Participants from the Labor Community Strategy Center discussed the inequities of shade and seating availability at transit stops in South LA and the Westside and expressed frustration that the buses are often not equipped with air conditioning.

> "We need to stop calling them 'bus shelters' because they're just a piece of metal with holes in them, which does not help when it's hot or when it's raining."
> - Participant, Labor Community Strategy Center

Participants also often expressed frustration with the unreliability of transit systems in Los Angeles, noting that transit users often have to wait for long periods in the heat for their transportation – if it ever arrives at all.

Finding: Many community members were unaware of existing resilience and cooling centers. Participants generally valued the potential benefits that resilience centers could bring to their communities but preferred that the City provide resources for them to stay cool and healthy at home.

In general, our focus group participants approved of resilience centers as places to cool down if they are unable to at home. However, they shared that there need to be resources made available to the community for these resilience centers to be effective.

> "I don't think I would just go there and sit down and hang out… or do they have games for the kids or little things to keep people occupied? Maybe they could have little booths or tables to show what [resources] are available to the public as a one stop shop to provide services to the community besides heat related stuff… and things to keep people occupied whether it's like a movie or refreshments."
> - Participant, Fernandeño Tataviam Band of Mission Indians

However, participants also expressed skepticism about resilience centers as a "band-aid" solution rather than providing communities with at-home cooling resources. Participants frequently expressed that given the choice, they would prefer to stay home in familiar spaces with their families during heat waves.

> "They follow the assumption that people have the time and resources to just drop everything to go. It is almost a bandage because it does not take into account the daily lives of working people in Los Angeles."
> - Participant, Labor Community Strategy Center

Participants also frequently said resilience centers are inaccessible to their communities. Concerns about hours of operation during working hours, a lack of transportation, whether they are pet-friendly, and physical accessibility for older residents were all commonly mentioned.

Finding: In general, focus group participants were not aware of any resources provided by the City of Los Angeles to combat extreme heat.

Across all of our focus groups, participants shared that the City has not provided them with any resources to combat the adverse effects of extreme heat. In every focus group, participants either laughed or were confused when asked what heat adaptation resources they currently use from the City.

> "They only say they will invest in the community, but will not act on that."
> - Participant, Labor Community Strategy Center

Furthermore, participants expressed such skepticism that the City would help them, that they had not even viewed the City as a potential source of heat relief or assistance.

> "People are just tired. You have to tell people that these resources are real because a lot of them don't even trust the government."
> - Participant, Black Women for Wellness

> "I never even thought to ask the City for assistance with heat, but I came out of this realizing that I should be."
> - Participant, Black Women for Wellness

When resources are available to frontline communities, focus group participants expressed that the typical languages and methods of communication by the City are not accessible to all communities:

> "This is our first time getting any resources or conversations about these things in K'iche."
> - Participant, CIELO

> "You have to do everything on the phone or computer. If you can't use this tech, then you can't access any services."

Participants also shared that they typically find out about resources from sources like the news, radio, local businesses, Facebook groups, and even local unions. of Los Angeles.

Chapter

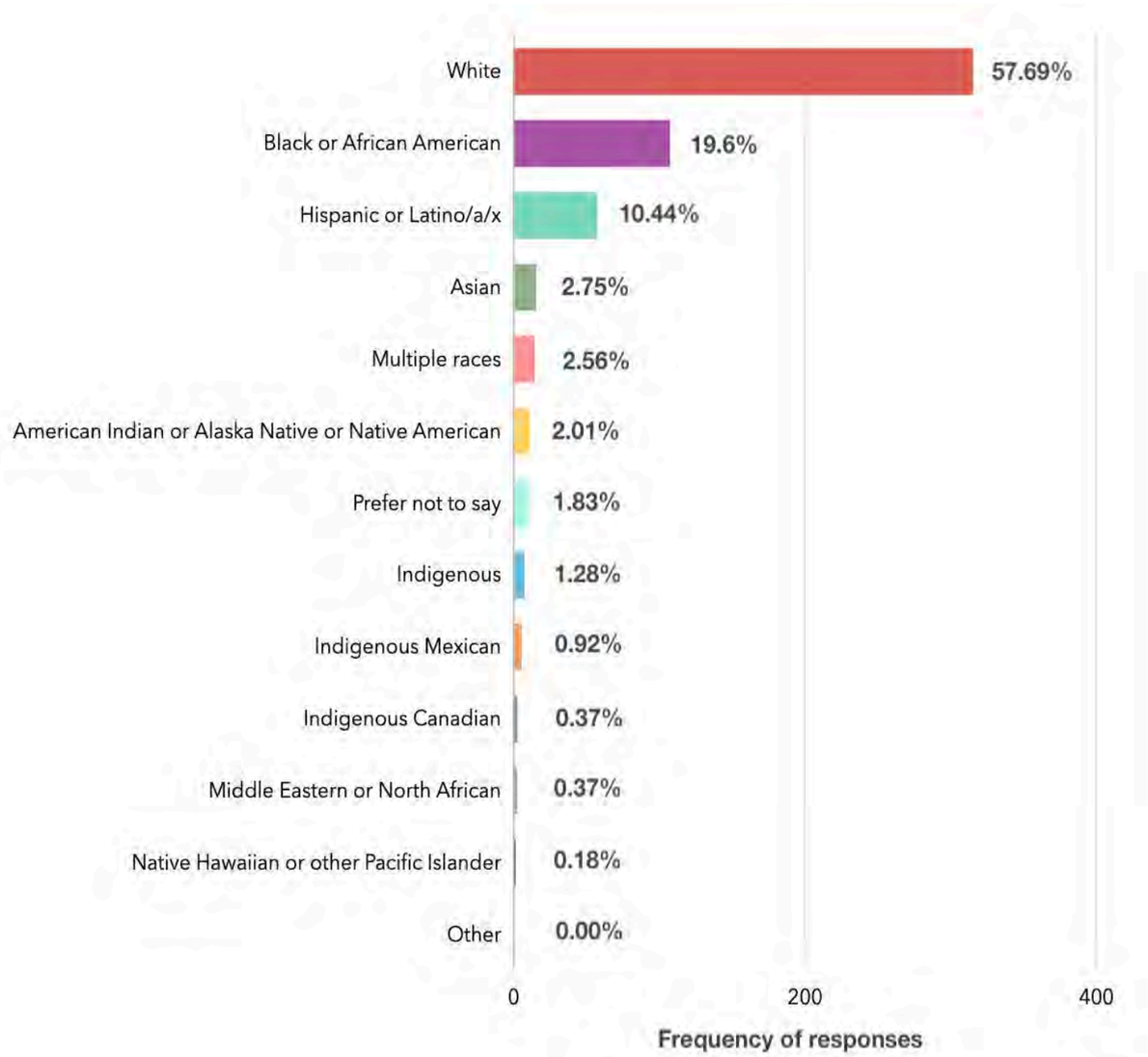
07

Results from the Community Heat Survey

WHO WERE OUR SURVEY RESPONDENTS?

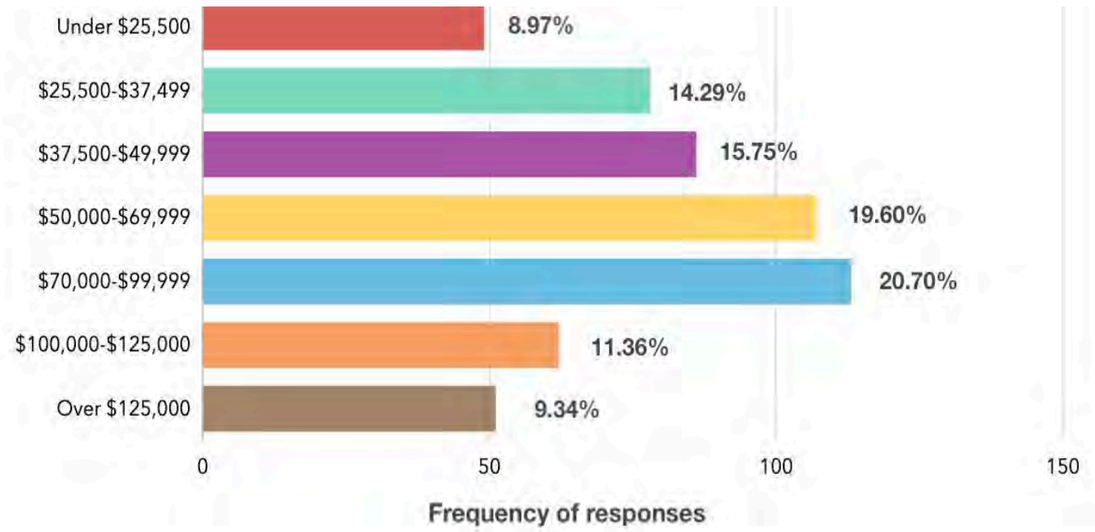
In total, we received 546 responses to our survey. Fifty-eight percent of respondents identified as White, while the other 42% identified as another racial or ethnic category. We categorized this 42% of non-White respondents as "people of color". Twenty percent of our total respondents identified as Black or African American, and 10% identified as Hispanic of Latino/a/x (Figure 21).

Figure 21: Racial and Ethnic Self-Identification of All Survey Respondents
Question: "How Do you Identify Yourself?"



We had a relatively normally distributed spread of income levels amongst our respondents (Figure 22). This suggests that our responses captured Angelenos with different socioeconomic backgrounds, although our reach was not representative of all Angelenos.

Figure 22: Income Distribution of All Survey Respondents
Question: "How much total combined money did all members of your family household earn in 2022?"



As this report is focused on uplifting the perspectives of frontline communities in Los Angeles, we separated our data into frontline and non-frontline categories. We defined frontline community members as respondents who fall into one of the following categories:

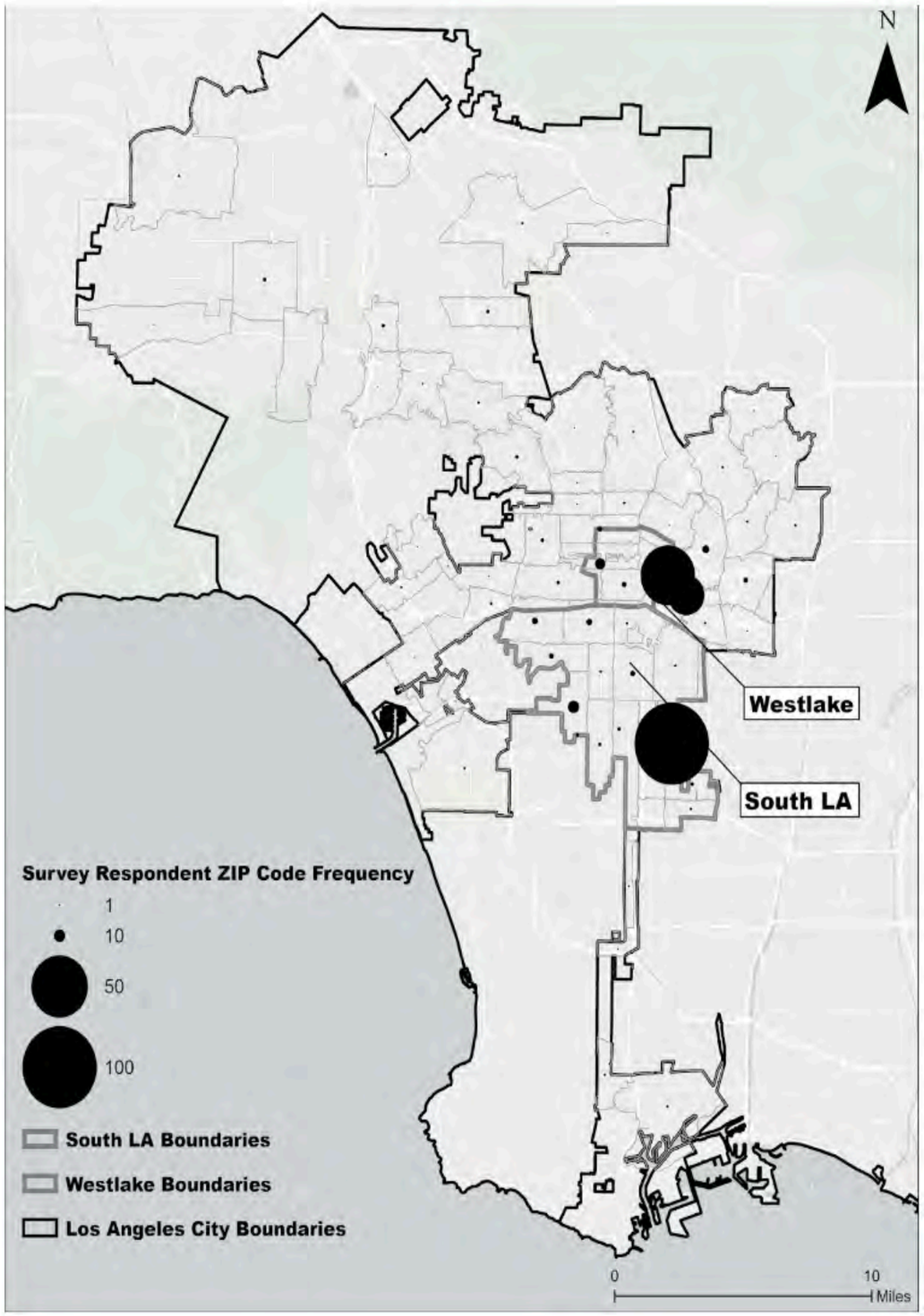
- Respondents who we categorized as people of color.
- Respondents who reported that their households made less than $50,000 in 2022, thus falling into the lowest quartile of household incomes amongst all Angelenos, as identified in our geospatial analysis.

Non-frontline community members were defined as respondents who did not fall into either of these categories; namely, respondents who identified as White and reported a 2022 household income of $50,000 or above.

In total, we categorized 334 respondents as frontline community members, and 212 respondents as non-frontline community members.

Most of our frontline survey respondents live in the heat-vulnerable regions of South Los Angeles and Westlake (Figure 23).

Figure 23: Zip Codes of Survey Respondents



Finding: Frontline communities perceive more than non-frontline communities that they face health risks associated with extreme heat in Los Angeles.

Frontline survey respondents perceived higher risks associated with extreme heat in Los Angeles than non-frontline respondents. 57% of frontline respondents believed that extreme heat threatens their health and safety either "a lot" or "severely," compared to 41% of non-frontline respondents. Respondents living in South LA, the San Fernando Valley, and the Eastside perceived the highest risk.

Despite these differences, 44% of all respondents believed that extreme heat threatens their health and safety "a lot." This indicates our respondents broadly are concerned about extreme heat as a pressing issue for Los Angeles.

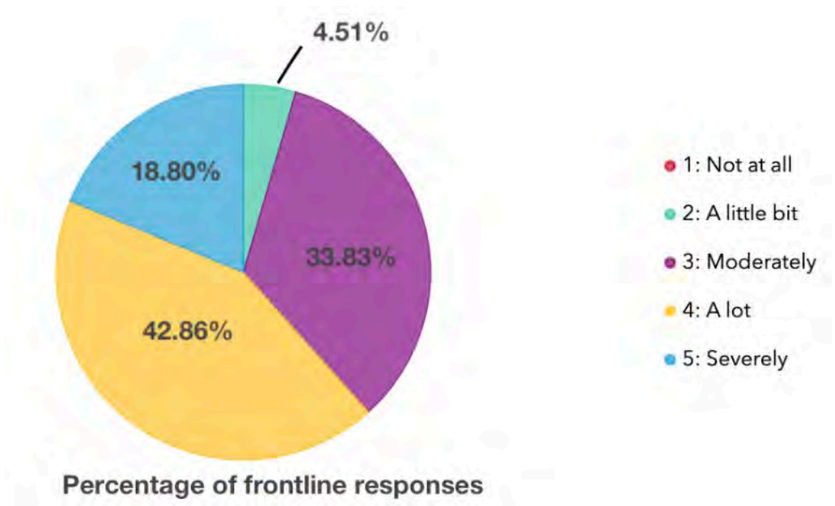
> "High temperature makes my mental state very poor… I am easily fatigued, have low energy, and sometimes dizzy."
> - Frontline Survey Respondent

Finding: The perceived risk of frontline communities to extreme heat is exacerbated by the incidence of pre-existing health conditions within their household.

77% of frontline survey respondents reported that they or someone in their household have a pre-existing health condition. The most commonly reported conditions were high blood pressure (31%) and asthma (30%). Amongst these frontline respondents with pre-existing health conditions, 43% believe that extreme heat threatens their health and safety "a lot," and 19% believe that it does so "severely" (Figure 24). In contrast, non-frontline respondents who reported a pre-existing health condition perceived fewer risks to their health from extreme heat.

> "I have been suffering from severe anxiety for 2 years, and when summer comes I have to go to public places because I feel like I can't breathe. Also, at night I struggle to sleep."
> - Frontline Survey Respondent

Figure 24: Perceived Risk to Extreme Heat Among Frontline Respondents with Pre-Existing Health Conditions in their Household
Question: "On a scale of 1-5, how much do you think extreme heat threatens your health, safety, and wellbeing?"



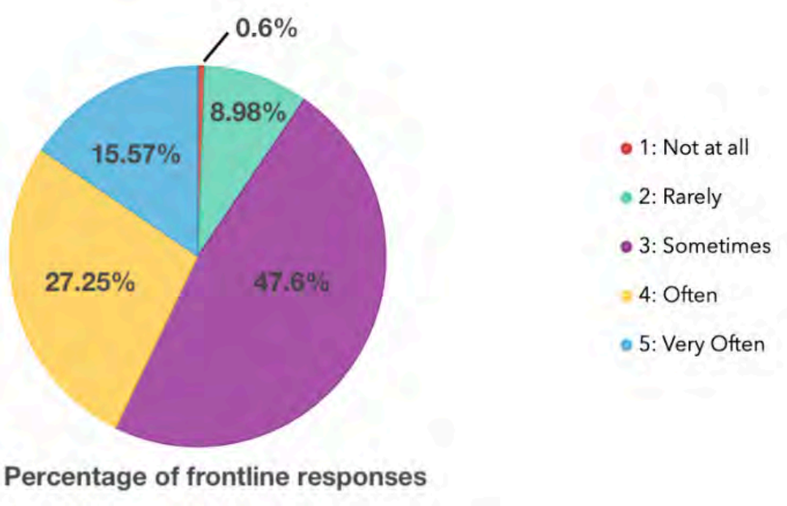
Finding: During extreme heat events, frontline communities experience more severe heat in their homes than non-frontline communities.

Frontline communities and non-frontline communities reported similar rates of feeling hot in their homes "sometimes" or "often" during extreme heat days. However, 19% of frontline respondents said that they feel hot in their homes "very often" on extreme heat days, compared to just 9% of non-frontline respondents (Figure 25).

While all communities in Los Angeles experience heat in their homes on extreme heat days, this data suggests that frontline communities report a higher severity and frequency of thermal discomfort in their homes.

> "The heat can be debilitating. I work in a studio and am self employed. If I have a project that is due, I cannot stop working."
> - Frontline Survey Respondent

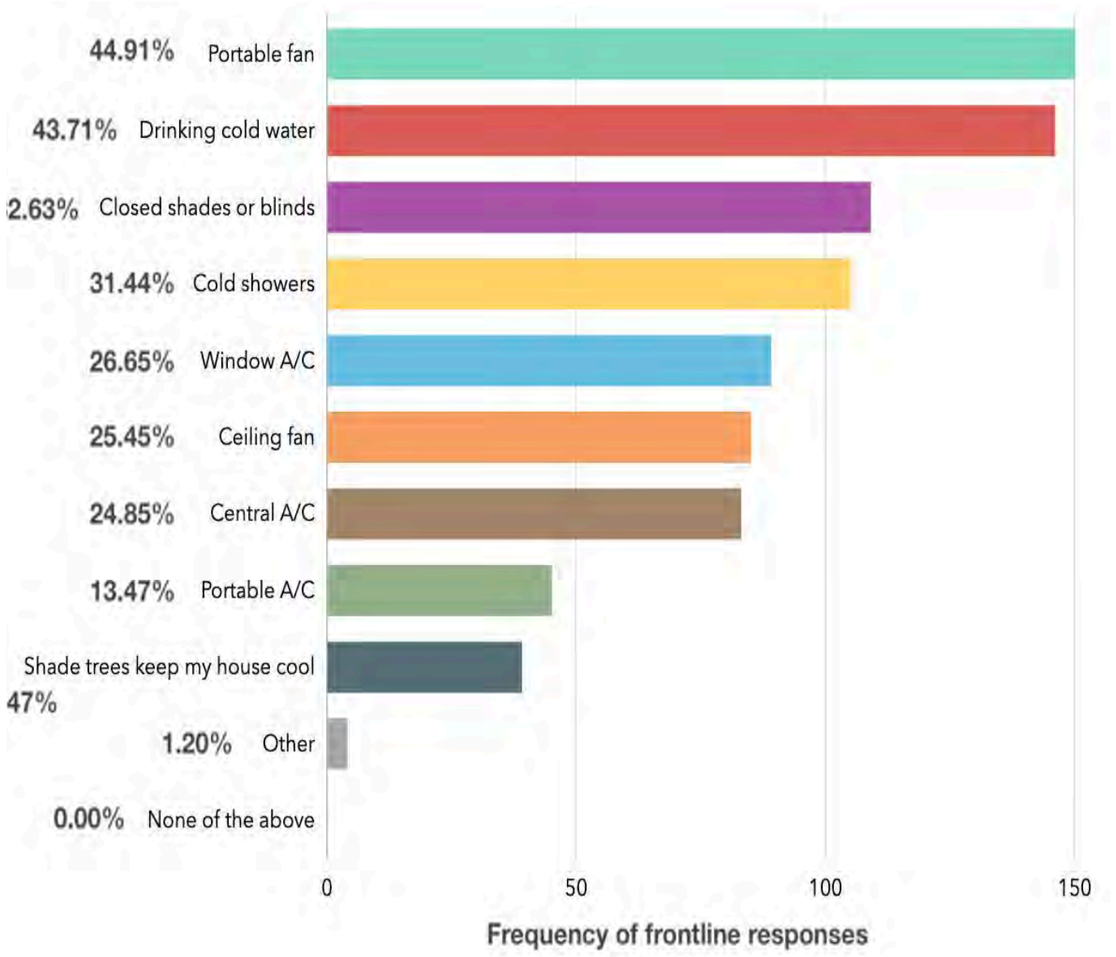
Figure 25: Frontline Respondent Frequencies of Feeling Hot in their Homes on Hot Days
Question: When you stay at home on a hot day, how often do you feel hot in your home?



Finding: Frontline communities face inequitable barriers to accessing cooling technologies at home, including cost and access to resources.

Frontline respondents reported that the most common methods that they use to cool down at home on hot days are using portable fans and drinking cold water (Figure 26). Only 64% of frontline respondents stated that they use some form of air conditioning to cool down their homes.

Figure 26: Ways that Frontline Community Respondents Cool Down at Home During Hot Days
Question: "When it is a very hot day, which of these do you use to stay cool inside your home? Check all that apply."



Frontline respondents who do not use air conditioning at home expressed that the main barriers to using air conditioning were the cost of electricity (23%), the cost of the air conditioning unit (21%), and that their landlord does not provide an air conditioner (16%). This data indicates that cost and access are the main barriers imposed upon frontline communities in using air conditioning.

> "Our utility bills are too expensive. I applied for assistance w/the Gas Co as I have metastatic cancer. I still have NEVER heard from them yet."
> - Frontline Survey Respondent

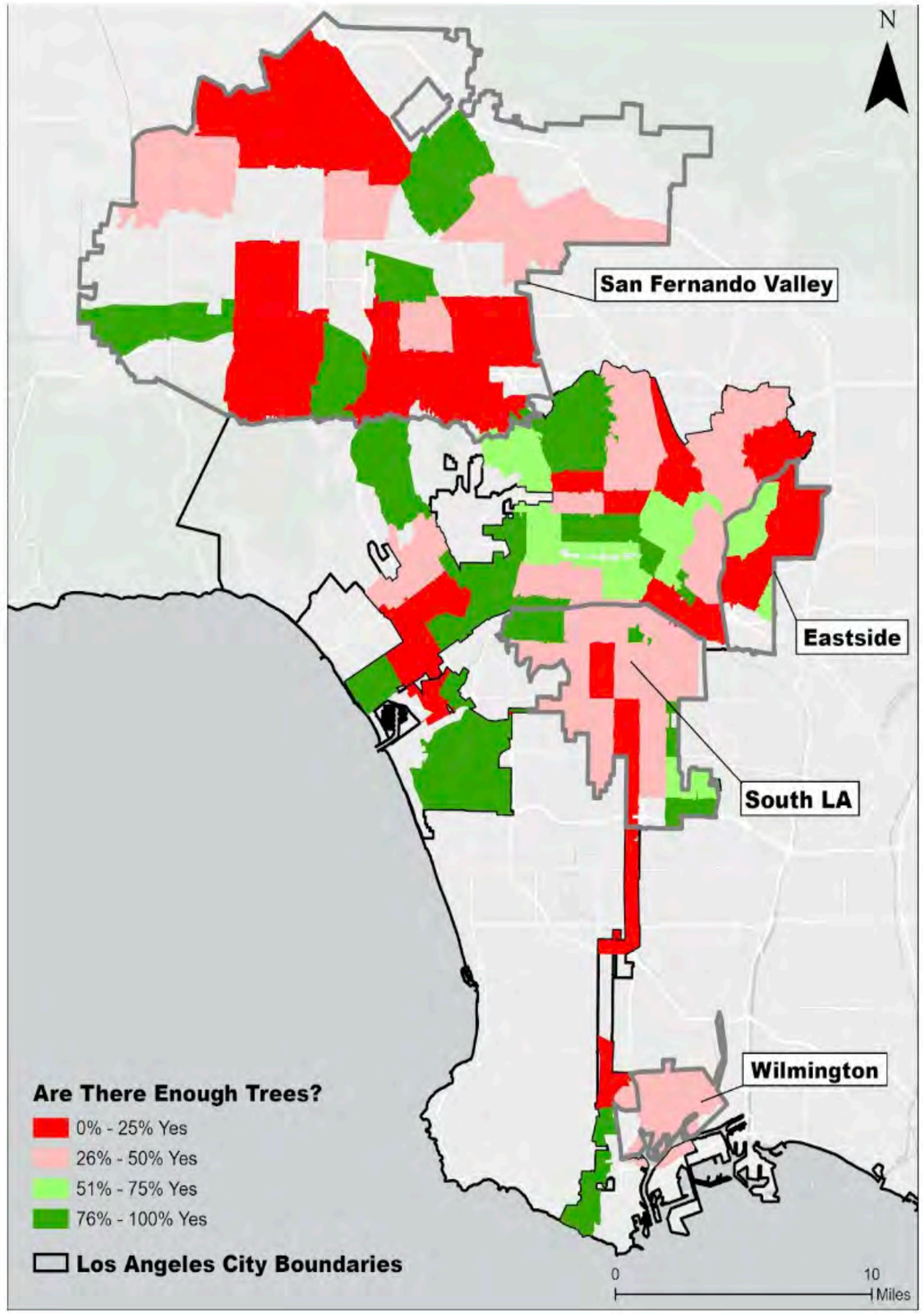
> "A problem we have experienced is that our AC unit at a past complex broke during a heatwave, and we had to wait for a new one to be installed. We had one small AC unit provided for an apartment of four at the time! Our pets were also put at risk."
> - Frontline Survey Respondent

This stands in contrast with non-frontline respondents, who selected central air conditioning as their most common method of cooling at home (44%). 95% of non-frontline respondents indicated that they use some form of air conditioning at home. This data illustrates the inequities between frontline and non-frontline communities in accessing cooling technologies in their homes.

Finding: Frontline communities face inequities in tree and green space coverage in their neighborhoods.

> "Our community doesn't have enough trees. Neighbors don't want trees for fear of trees' roots lifting sidewalks and property and the cost of watering them. Businesses don't want trees because they block the view from cars to their location. Schools desperately need trees, but LAUSD policies are too complicated to bring trees to every school due to cost and labor."
> - Frontline Survey Respondent

Figure 26: Distribution of All Survey Respondent Opinions on Tree Prevalence in their Neighborhood
Question: "Agree or disagree - there are enough trees to provide shade in my neighborhood on a hot day."



Finding: Information about existing extreme heat resources is not accessible to frontline communities.

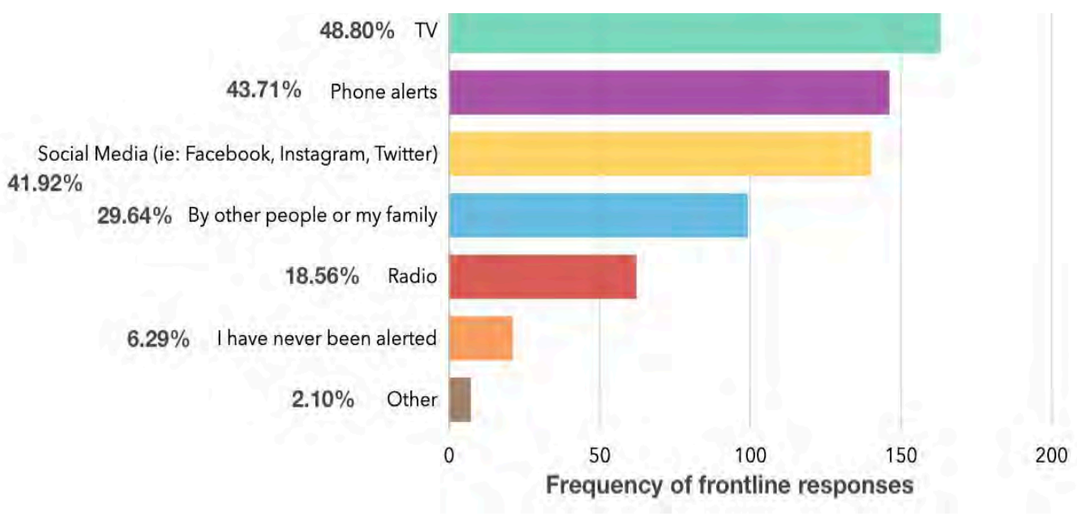
> "I feel like there is no awareness about cooling centers and it is unheard of here. I've not had a conversation about cooling centers in my whole life living in Los Angeles."
> - Frontline Survey Respondent

Frontline respondents generally expressed that they had not heard of City heat adaptation resources. Over 50% frontline respondents have never heard of cooling centers, rides to cooling centers, hydration stations, splash pads, the Cool Spots LA mobile application, NotifyLA emergency mobile alerts, the Cool LA electricity payment assistance program, the Cool Neighborhoods streets program, or the Green New Deal Neighborhood Council Toolkit. In contrast, between 42% and 52% of non-frontline respondents have heard of each of these resources.

This data shows that public communications about resources that Angelenos can use to build adaptive capacity against extreme heat are not reaching frontline communities to the same degree as non-frontline communities.

When asked about the communications channels that they use to gain information about extreme heat events, frontline respondents selected television (49%), phone alerts (44%), and social media (43%) most often (Figure 28). This relative ranking of communications methods is similar to those expressed by non-frontline respondents.

Figure 28: Main Sources of Heat Information for Frontline Respondents
Question: How do you get alerted about extreme heat events that are going to affect your neighborhood? Check all that apply.



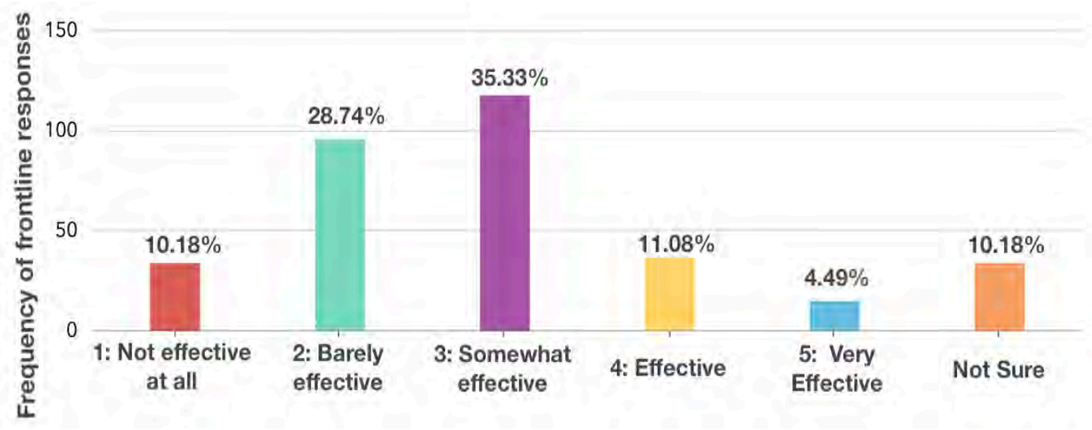
Finding: Frontline community members believe that the City of Los Angeles has been minimally effective at responding to extreme heat and including community voices in their response.

Frontline respondents generally expressed that the City has been ineffective at responding to extreme heat and in including community voices in these efforts (Figure 29). 17% of frontline respondents expressed that the City has been "effective" or "very effective" in responding to extreme heat, and 15% thought that the City has been "effective" or "very effective" in including community voices. In comparison, 37% of non-frontline respondents expressed that the City has been "effective" or "very effective" in responding to extreme heat, and 33% thought that the City has been "effective" or "very effective" in including community voices.

This data indicates that frontline communities do not feel heard in local heat adaptation policymaking, and that they are not experiencing many benefits from the City's existing efforts.

> "My homeless neighbors struggle the most and I wish there were more programs and outreach for them."
> - Frontline Survey Respondent

Figure 29: Frontline Perspectives on the City's Effectiveness in Including Community Voices in their Response to Extreme Heat
Question: On a scale of 1-5, how effective has the city been in including community voices in their response to extreme heat?

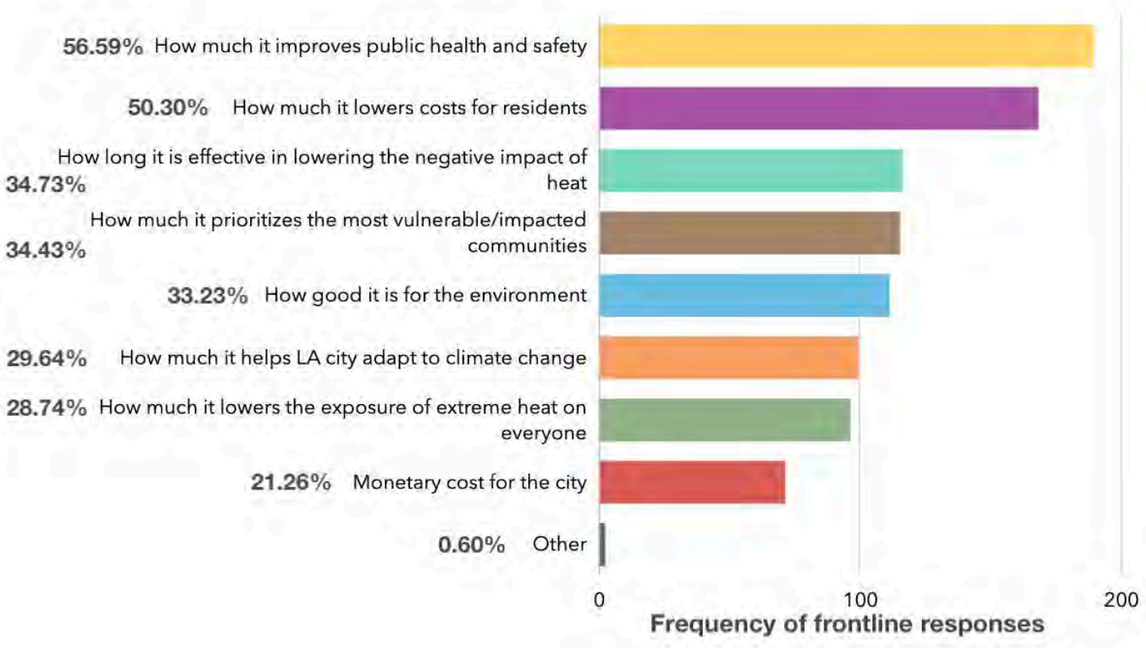


Finding: Frontline community members would like to see at-home and community-level interventions in the City of Los Angeles' response to extreme heat that prioritize equity, health and costs for residents.

> "Trees, trees, and more trees! We have lost many mature trees in Valley Village this past winter, plus a large number of mature trees due to the State's unrelenting housing push, without regard to the impact to the community. Also, we have only 1 park in Valley Village. It would be wonderful if people near the west of Valley Village had nearby access to a park or cooling off center."
> - Frontline Survey Respondent

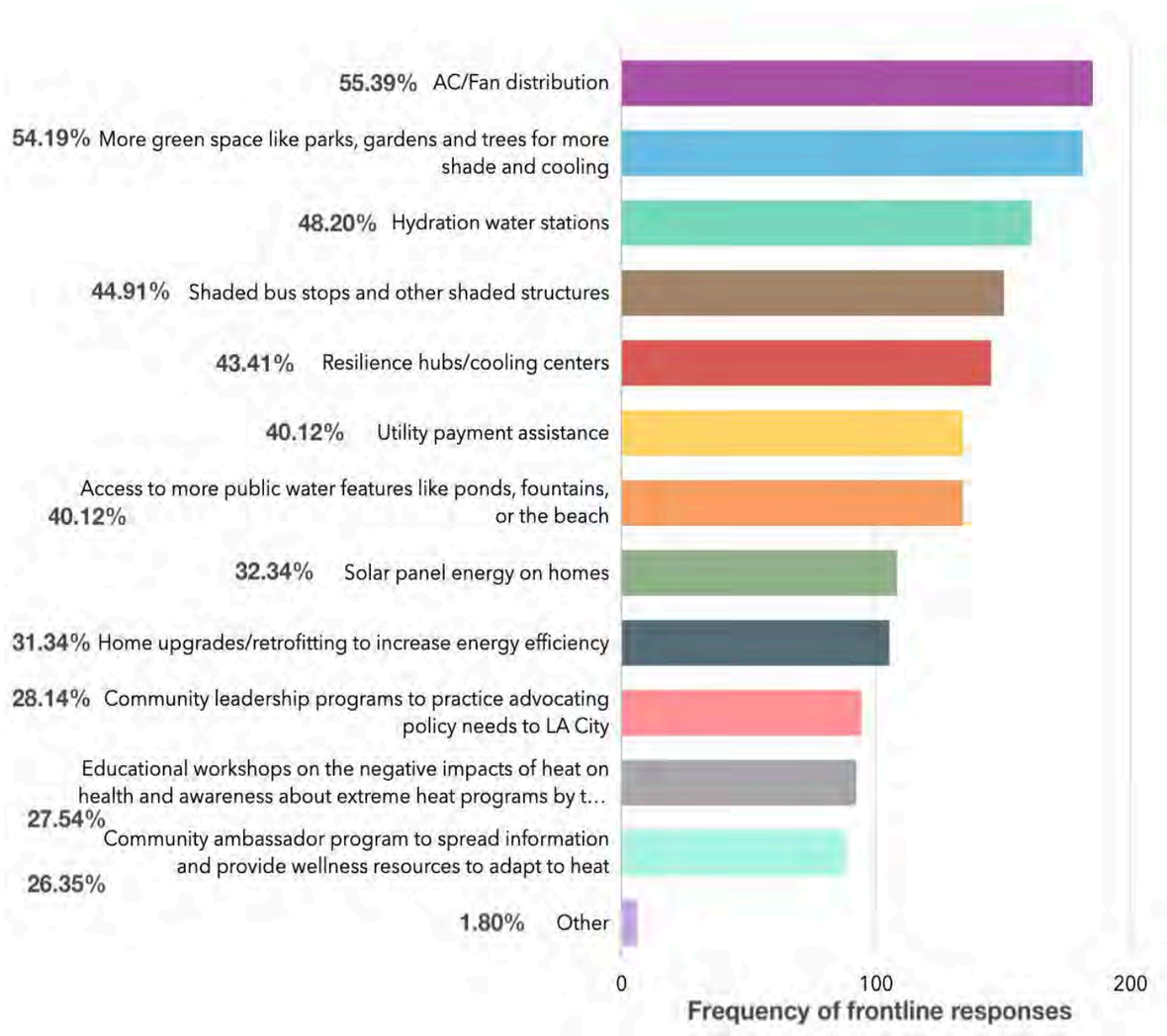
When asked how the City should prioritize which heat adaptation resources to invest in, frontline communities selected improving public health and safety (56%), lowered costs for residents (50%), long-term effectiveness (35%), and prioritizing the most impacted communities (35%) (Figure 30). Non-frontline respondents largely agreed with frontline respondents on this question, although they valued climate impacts more and environmental justice concerns less.

Figure 30: Frontline Community Preferences on How the City of Los Angeles Should Prioritize Heat Adaptation Policy Options
Question: Please select the top three priorities for how the city should invest in the resources identified above.



Frontline respondents selected a relatively even distribution of resources that they would like to see in their neighborhood (Figure 30). Ultimately, frontline respondents selected AC/fan distribution (55%), expansion of green space (54%), and expansion of hydration stations (48%) as their top policy priorities.

Figure 31: Frontline Community Priorities on Heat Adaptation Resources
Question: Which resources would you like to see in your neighborhood? Check all that apply.



Chapter

08

Assessing the Policy Options

PROVIDING AT-HOME INTERVENTIONS

Community Preferences

Frontline participants in our focus groups and survey frequently mentioned their desire for the City to provide their communities with more air conditioning, home weatherization, utility assistance, and grid reliability as indicated in the results section.

Health and Wellness Outcomes

Air conditioning has been shown to improve heat health outcomes for frontline communities. In California, cities with higher air conditioning coverage experience fewer heat-related deaths – with particularly large reductions for individuals living with cardiovascular conditions. [102] Having functional air conditioning also reduces heat exposure in poorly-insulated buildings, which are disproportionately occupied by frontline Angelenos and where temperatures during extreme heat events can exceed the outdoor air temperature. [103] Concerns about localized heat islands resulting from air conditioning use have been blunted by regulations which require the use of more energy-efficient and climate-friendly technologies. [104]

To gain the health benefits of using air conditioning, doing so must be affordable for frontline communities. Lower-income households in Southern California face a $1.60 daily increase in their energy bill during heat waves, increasing their risk of getting their electricity shut off due to non-payment. [105]
The risk of non-payment leads to reduced use of air conditioning during heat waves, increasing the risk of HRI for frontline communities. [106] Home weatherization measures would also lead to more effective cooling, lowering the costs of using air conditioning. [107]

To provide increased air conditioning usage by frontline Angelenos, there must be a reliable electric grid in frontline communities that can handle surges in electricity demand during heat waves. Investing in targeted grid resilience and alternative energy sources for frontline communities would increase grid reliability, reduce the chances of localized blackouts, and ensure the availability of cooling health benefits during heat waves for frontline Angelenos.

Distributive Equity

Expanding air conditioning access through direct provision of air conditioners or through building code requirements for landlords would increase the distributive equity of air conditioning. South Los Angeles currently has the lowest air conditioner prevalence in the County. [107] Households with white householders, higher incomes, and ownership status are also more likely to have air conditioning than other households. [108] Increasing future air conditioning and energy use in frontline areas would result in more blackouts for residents of frontline communities without grid resilience actions – risks that are lower in non-frontline communities. [109]

Financial Feasibility

Simply passing a regulation to require landlords to provide air conditioning for tenants would not impose any costs on the City. However, effective code enforcement by LAHD would require additional funding. In the meantime, LADWP could feasibly revive Cool LA with new funding, and is continuing to provide utility payment schedule options for low-income Angelenos. [110]

Creating a new local home weatherization program could prove more costly, as funds would have to be spent on materials, labor, and administration. However, there are various existing programs that provide agency grant funding and individual assistance with home weatherization and energy utilities (Table 9).

There are significant costs that would stem from implementing grid resilience measures in frontline communities. Although the region has enough energy import capacity to meet demand during the next few decades, agencies need to invest in transmission infrastructure to reduce the chances of overloading the grid.[111] Investing in further improvements in solar battery storage technology could help to power local community microgrids and reduce the need for energy imports. [112]

PROVIDING AT-HOME INTERVENTIONS

Table 9: Available Funding Sources for Providing Air Conditioning, Home Weatherization, Utility Assistance, and Grid Resilience

Policy Option	Funding Source	Administering Agency	Description
Home weatherization, grid resilience; providing air conditioning	Energy Efficiency Conservation Block Grant Program	U.S. Department of Energy	Provides local governments funding to implement policies to reduce energy use and improve energy efficiency, including weatherization and grid resilience efforts. [113]
Utility assistance	California Alternate Rates for Energy Program	California Public Utilities Commision	Provides a 30-35% electricity bill subsidy for qualified low-income households.[114]
Utility assistance	Low-Income Home Energy Assistance Program	U.S. Department of Health and Human Services	Provides energy utility assistance to eligible low-income households. [115]
Home weatherization	Weatherization Assistance Program	U.S. Department of Energy	Provides assistance for energy efficiency improvements to eligible low-income households. [115]
Home weatherization	California Low-Income Weatherization Program	California Department of Community Services and Development	Provides low-income households with solar panels and energy efficiency upgrades. [116]

Administrative Feasibility

The Los Angeles City Council passed a motion in November 2022 to commission reports on requiring landlords to provide indoor cooling and expanding the availability of home weatherization and energy assistance programs. [118] This motion suggests the political willpower within the City to pursue such policy options.

There are no administrative barriers to simply passing a building code update to require adequate cooling of rented spaces by landlords. However, enforcement of existing housing codes by the LA Housing Department has not been consistent, resulting in little action against landlords accused of violating these requirements. [119] For their part, LAHD have suggested that additional funding from the City budget would assist in ramping up code enforcement by allowing for more staffing hires. [120] In this environment, the administrative feasibility of enforcing an additional code requiring air conditioning is questionable without additional funding and administrative support. The administrative capacity of LADWP to establish a new home weatherization program is also doubtful without significant investment by the City.

In the meantime, LADWP has already shown the administrative capability to implement the Cool LA program, and could continue to do so with sufficient funding and communications efforts to frontline communities.

INCREASING ACCESSIBILITY AND REACH OF HEAT COMMUNICATIONS

Community Preferences

Participants in our focus groups expressed that heat information and adaptation resources are often unavailable or less easily accessible in their communities. Participants shared that information is often harder to access or completely unavailable in indigenous languages. Participants who speak English as their primary language also expressed a lack of access to information about heat adaptation resources in their communities.

Health and Wellness Outcomes

To ensure that heat adaptation resources are accessible to frontline communities, communications and information about extreme heat must be accessible to them. If frontline communities do not have information in their primary language or are not being engaged by the City through their primary channels of communication, they will be unable to take advantage of resources that they could use to increase their adaptive capacity during heat waves. [121] Simply put, creating more resources for people at home or in the community doesn't matter if frontline communities are unable to use them to take preventative and corrective measures against heat.

Distributive Equity

Research shows that public communications on heat and its health risks often do not reach the most vulnerable populations through typical avenues of communications by municipalities. [122] In Los Angeles, heat health information is often not accessible to populations who are linguistically isolated, low-income communities, and outdoor workers.[123] As a result, many individuals are excluded from communications and awareness campaigns by the City to take preventative and proactive measures against heat.

Financial Feasibility

Creating a new strategy for targeted heat communications to frontline communities may be somewhat costly to the City. The most effective method to ensure a broad communicative reach would be to commission a community-engaged report to identify the main communications networks and languages used by frontline communities in Los Angeles. [124] This could require hiring additional permanent or temporary staff.

Table 10: Available Funding Sources for Expanding Targeted Communications to Frontline Communities

Funding Source	Administering Agency	Description
Climate-Smart Communities Initiative	National Oceanic and Atmospheric Administration	Provides funding to develop climate literacy campaigns. [125]
Next Generation Warning System Grant Program	Federal Emergency Management Agency	Supports investments to improve public broadcasting of public health warnings.[126]
Extreme Heat and Community Resilience Program	California Governor's Office of Planning and Research	Provides funding to local, regional and tribal projects to build resilience against extreme heat. [127]

Administrative Feasibility

Improving communications accessibility and reach for frontline populations would be administratively feasible. Although the creation of a heat communications report may require additional staffing by CEMO, they may also share these efforts with other City departments, research institutions, and CBOs. In particular, the Los Angeles Regional Collaborative for Climate Action and Sustainability presents a promising research partnership, as they have already been conducting research on effective heat health communications.

EXPANDING EQUITABLE ACCESS TO GREEN SPACES FOR FRONTLINE COMMUNITIES

Community Preferences

Frontline participants in our focus groups and survey frequently mentioned their desire for the City to provide more access to parks, trees, and gardens in their communities, which currently lack these amenities.

Health and Wellness Outcomes

Shade is the major factor in determining thermal comfort in Southern California, and the ratio of tree coverage to impervious surfaces like concrete is the main determinant of temperature distribution in Los Angeles. [128] While non-native trees do provide more shade and thermal comfort, even native or drought-tolerant tree species like palms, palo verde, and honey mesquite can still provide enough shade and cooling to lower mean radiant temperatures by over 30 degrees compared to direct sun exposure. [129]

Increased access to tree shade also decreases the prevalence of HRIs by lowering heat exposure.[130] There is a strong relationship between tree coverage and heat-related mortality in Los Angeles, with every 1% increase in tree coverage leading to a 1.38% decrease in heat-related mortality. [131]

There is also a strong association between the presence of pocket parks or community gardens and improved health for frontline communities. [132] The relationship in LA County frontline neighborhoods between increased green space and lower asthma ER visit rates is stronger with pocket parks and community gardens than larger parks, as they can be placed more easily in neighborhoods and thus be more accessible to frontline communities. [133]

Pocket Park: Public parks that occupy less than one acre of space, typically originating from unused lots. [134]

Distributive Equity

Expanding green space access in heat-vulnerable areas of Los Angeles would increase distributive equity by reducing the gap in green space access between frontline and non-frontline communities. South LA, Wilmington, Westlake, the San Fernando Valley, and the Eastside all have some of the lowest rates of green space coverage in Los Angeles County. [135]
About 67% of Black Angelenos and 60% of Latinx Angelenos live in areas with below-median urban tree canopy coverage, while 31% of non-Hispanic white Angelenos live in such areas.[136]

Financial Feasibility

The cost of sourcing, planting, and maintaining hundreds of thousands of new trees could be significant. While existing City workers could carry out the work, the City would still need to purchase all of the necessary trees and supplies. Urban trees often lead to property and utility infrastructure damages as well, and use ever-dwindling water supplies – significant longer-term costs that must be considered as well.

Creating new park and garden spaces could also prove costly, as the City and its partners would have to pay labor and supply costs to remove paved surfaces and replace them with park amenities. Environmental remediation work would also be done before parks could be developed, and maintenance of park spaces would require funds as well. [137]

Table 11: Available Funding Sources for Expanding Equitable Access to Green Spaces

Funding Source	Administering Agency	Description
Los Angeles County Measure A (2016)	Los Angeles County	Provides $96.8 million in annual funding for parks and urban greening within Los Angeles County in perpetuity. [138]
Los Angeles City Proposition K (1996)	Federal Emergency Management Agency	Provides $143.65 million over a thirty-year period for urban greening efforts within the City of Los Angeles. Approximately $16.1 million remains to be allocated by 2026, including $10.65 million for school projects and $2.73 million for acquisition of parks.[139]
Statewide Park Development and Community Revitalization Program	California Department of Parks and Recreation	Creates new park space opportunities in frontline communities. [140]
Urban Greening Program	California Natural Resources Agency	Provides funding to support natural and green infrastructure projects. [141]
Urban and Community Forestry Grant Program	California Department of Forestry and Fire Prevention (CAL FIRE)	Provides funding to projects that improve urban forest planting and maintenance. [142]

EXPANDING EQUITABLE ACCESS TO GREEN SPACES FOR FRONTLINE COMMUNITIES

Administrative Feasibility

In Los Angeles, there is a network of City agencies and nonprofit organizations working to expand the urban tree canopy. The Forestry Division of the Department of Recreation and Parks is in charge of planting trees in parks, while the Urban Forestry Division of the Bureau of Street Services oversees trees along streets.[143] The City has also partnered with various nonprofit organizations, like City Plants and TreePeople, in tree planting efforts.[144]

To plant trees on residential streets in Los Angeles, there must also be approval from property owners and a commitment for residents to water the new trees for three to five years.[145] Historically, approval rates for this process in the county have been 10-20%, although a new community outreach campaign by the Los Angeles County Department of Public Health achieved a 66% approval rate. In non-residential streets, this approval is not required, but planting still requires extensive interorganizational coordination.[146]

Pocket parks could feasibly be developed through the acquisition and community-engaged redevelopment of empty or unused lots in frontline communities. The land acquisition process for new pocket parks would be the largest administrative hurdle for the City to clear, as this can take years to complete. However, nonprofit organizations can acquire land on a much faster timeline, and have worked in the past to acquire land and gift it to the City for co-facilitated parks development.[147] The City also partnered with KDI in the recent past to create pocket parks on a pilot co-management basis with CBOs.

Land trust organizations like the LA Neighborhood Land Trust and the Trust for Public Land have also created their own pocket parks and community gardens in frontline communities over the past decade.[148] It would be feasible for the City to partner with these organizations and offer financial and administrative resources to help maintain these spaces.

The Los Angeles Living Schoolyards Coalition has also advocated for greening schoolyards, especially in frontline communities where existing green spaces are scarce. The Los Angeles Unified School District is one of the largest landowners in the County, and working in coalition with them to green school properties would not require any land acquisition by the City or nonprofits.[149] This would thus be a solution with few administrative barriers. The Department of Recreation and Parks has already set the administrative groundwork of partnering with LAUSD and the LA Neighborhood Land Trust through the recent Community School Park Pilot Program.[150]

IMPROVING THE THERMAL COMFORT OF PEDESTRIANS AND TRANSIT USERS

Community Preferences

Frontline participants in our focus groups and survey frequently mentioned that they use public transit or walk as their main methods of transportation. They also expressed their desire for the City to create more shade structures for pedestrians and transit users in their communities.

Health and Wellness Outcomes

Shade structures, like those found at transit stops, improve thermal comfort for pedestrians and transit users by blocking solar radiation if they are properly maintained and designed based on local sunlight patterns.[151] The presence of shade at transit stops results in temperatures remaining within comfortable ranges for 90% of the day, while bus stops without shade only remain in thermally comfortable ranges before 11:00am on hot days. In addition to providing thermal comfort, shade structures also reduce the risk of long-term chronic skin diseases and of short-term HRI for pedestrians and transit users.

Distributive Equity

Research has found that 75% of bus stops in Los Angeles owned by LA Metro do not have any shade. Transit stops that do have shade available are disproportionately located in high-income neighborhoods, despite the fact that the average LA Metro transit user has a household income of below $20,000.[151] City Council District 15, which includes Wilmington, has the lowest percent of transit stop shading in the County.[152]

Financial Feasibility

In 2022, City Council approved a 20-year contract with Tranzito-Vector LLC to construct 3,000 bus shelters in Los Angeles. The contract also provides for minimum guaranteed revenues of $7.15 million to $46 million per five years, in addition to advertising revenue for ads displayed on transit stops.[153]

Since the costs of creating more bus shelters have already been approved by this contract, we expect that increasing their accessibility to frontline communities would be financially feasible. Advertising revenue could be diverted to financing community engagement on creating bus shade shelters in frontline communities, without affecting the revenues.

IMPROVING THE THERMAL COMFORT OF PEDESTRIANS AND TRANSIT USERS

Table 12: Available Funding Sources for Expanding Targeted Communications to Frontline Communities

Funding Source	Administering Agency	Description
Visionary Seed Fund Grants	LA Metro	Provides funding to innovative mobility projects which may increase ridership. [154]
Clean California Local Grant Program	California Department of Transportation	Provides funding to projects which invest in transit and design solutions to mitigate extreme heat for local communities. [155]
Affordable Housing and Sustainable Communities Program	California Strategic Growth Council	Provides funding to local housing and transportation projects which reduce GHG emissions. [156]
Environmental Enhancement and Mitigation Grant Program	California Natural Resources Agency	Provides funding to local and state agencies to mitigate negative climate impacts caused by public transportation facilities.[157]
All Stations Accessibility Program	U.S. Department of Transportation	Provides funding to assist federal, state and local agencies and private entities to retrofit infrastructure of public transit stations for passenger comfort. [158]
Areas of Persistent Poverty Program	U.S. Department of Transportation	Provides funding to assist federal, state and local agencies and private entities to improve mobility for underserved populations.[159]

Administrative Feasibility

Since Tranzito-Vector has already been selected as a contractor by the City to develop equitable bus shelters, creating more shade structures at transit stops is highly administratively feasible. To ensure accountability, a community advisory committee of trusted community leaders would need to be formed. The creation of this committee would be administratively feasible, and could build upon existing committee networks that CEMO has formed through the Climate Emergency Mobilization Commission.

EXPANDING ACCESS TO WATER RESOURCES

Community Preferences

Frontline participants frequently mentioned their desire for the City to provide their communities with more access to hydration stations, public pools, splash pads, and misting stations. Our survey also found that frontline community respondents were less likely to have heard of hydration stations, and less likely to have access to them. Additionally, one of our focus group participants shared that living in South Los Angeles, it's rare for anyone to be able to go to the beach on a consistent basis, especially since public transit does not offer reliable service between inland frontline communities and the coast.

Health and Wellness Outcomes

Hydration is the most effective way to prevent HRIs.[160] HRIs can be worsened by dehydration, because it lessens the ability of the body to cool itself by sweating.[161] Youth and senior frontline community members, alongside individuals with pre-existing conditions, are most at risk of HRI due to dehydration. Frontline communities would therefore disproportionately benefit from increased access to drinking water during heat waves.[162]

Immersion in cold water, either through swimming pools or misting stations, is also an effective method to cool the body and prevent HRIs during heat waves.[162] Beaches can also offer cooling through access to water immersion and through relatively cooler temperatures during heat waves in inland frontline communities.[163] Although coastal heat waves are expected to intensify in the near future, the health effects on frontline community members who are already exposed to extreme heat are expected to be relatively minimal.[164]

Distributive Equity

Water distribution points, artificial water features, and coastal access are currently not distributed equitably across Los Angeles. While hydration stations are found in all fifteen City Council Districts, there are large gaps in coverage within walking distance for frontline communities.[165]

EXPANDING ACCESS TO WATER RESOURCES

Artificial water features like pools, splash pads, and misting systems are not accessible to frontline communities in Los Angeles. The prevalence of at-home swimming pools is highly concentrated in higher-income communities with low heat vulnerability, leaving frontline communities dependent on public spaces for pool access.[166] There are few public pools accessible within walking distance for frontline communities. Of the four splash pads operated by the Department of Recreation and Parks, zero are located in frontline communities.[167]

Financial Feasibility

The costs of installing new hydration stations, water distribution points, splash pads, and mobile misting systems would be relatively minimal. Installing new permanent pools would be relatively high in labor and construction costs, but could be financially feasible. Creating new transit routes between inland frontline communities and the coast would be costly, as new buses and bus drivers would need to be paid for. However, increasing the frequency and reliability of existing inland-to-coastal routes would be less costly.

Administrative Feasibility

In Los Angeles, public swimming pools are usually located within recreation centers – so adding new pools may be administratively difficult due to land scarcity and the relative lack of recreation centers in frontline communities.

However, potentially-mobile amenities like hydration stations, water distribution points, splash pads, misting systems, and even temporary pools would be much more administratively feasible to procure and install in frontline communities during extreme heat events.

INCREASING THE ACCESSIBILITY OF WORKPLACE TRAININGS AGAINST EXTREME HEAT

Community Preferences

Frontline participants did not specifically mention workplace training as a policy priority. However, they frequently mentioned the adverse health impacts of working outside on hot days. Participants in our focus groups shared experiences of decreased thermal comfort and productivity when working outside on hot days, and one participant shared that they often burn themself while working on roofing.

Health and Wellness Outcomes

Increasing workplace protections against extreme heat through more accessible heat health training would provide health benefits through lowering heat exposure and increasing the adaptive capacity of outdoor workers.

Research has shown that current CAL/OSHA training standards on HRI have been ineffective, with 86% of outdoor workers unfamiliar with the risks and symptoms of HRI.[168] By increasing training accessibility, outdoor workers will be more able to assist themselves and colleagues when experiencing symptoms of HRI, and more empowered to recognize violations of workplace safety standards on hot days.

Distributive Equity

CAL/OSHA training on HRIs has been largely inaccessible to individuals who have less formal education and those who do not speak English as their primary language – populations that make up large proportions of outdoor workers in Los Angeles.[169] As a result, immigrant outdoor workers are subjected to disproportionately high rates of HRI on the job.[170]

Amending local workplace training standards on HRI to be more accessible to outdoor workers would increase distributive equity by empowering a largely immigrant and low-income workforce to decrease their own risk of developing HRI on the job. Trainings could further empower workers by equipping them with knowledge on how to hold employers accountable for CAL/OSHA violations on extreme heat days.

INCREASING THE ACCESSIBILITY OF WORKPLACE TRAININGS AGAINST EXTREME HEAT

Financial Feasibility

Increasing the accessibility of worker heat health training would be low-cost and financially feasible. In partnership with community health leaders and CBOs, the UCLA Labor Occupational Safety and Health Program (LOSH) has already created an accessible training program to protect outdoor workers against extreme heat exposure. [171] Since this framework already exists, CEMO could financially compensate LOSH to assist in expanding their training reach or in creating a new City-run training program. Running such a program would require minimal staffing additions.

Table 13: Available Funding Sources for Increasing Workplace Protections Against Extreme Heat

Funding Source	Administering Agency	Description
Worker Training Program	National Institute of Environmental Health and Sciences	Provides funding to deliver workplace trainings for vulnerable individuals in hazardous work environments. [172]
Susan Harwood Training Grant Program	U.S. Department of Labor	Provides funding for the training and education of workers on the recognition, avoidance and prevention of health hazards. [173]

Administrative Feasibility

There would be few administrative barriers to expanding the accessibility and reach of workplace heat health training. It would be administratively feasible for CEMO to leverage their existing relationship with LOSH to expand existing programming or create new training, thereby eliminating the barrier of forming new organizational connections. Implementing new or expanded training programs would also require coordination with other organizations working in this space to most effectively reach outdoor workers. However, there would be few administrative barriers to doing this.

EXPANDING THE RESILIENCE CENTER NETWORK

Community Preferences

Frontline participants frequently mentioned interest in having resilience centers in their communities, depending on the resources that they could provide. However, participants generally preferred that the City provide resources to enable residents to stay healthy and cool at home over creating resilience centers.

Health and Wellness Outcomes

Research has found that resilience centers lower the risk of HRI for frontline community members lacking at-home cooling through providing access to a cool space during heat waves. In particular, individuals over the age of 65 and individuals with chronic health conditions can benefit from resilience centers if they do not already have cooling resources at home. [175] Resilience centers can also themselves provide at-home cooling resources like air conditioning and heat health information to residents, either through direct provision or by connecting individuals to program-based assistance. Despite these benefits, research has found that resilience centers are not more effective at reducing HRIs than at-home cooling devices like air conditioning.[176]

Distributive Equity

Resilience centers can increase distributive equity by providing a cool environment for frontline community members who do not have access to cooling in their homes. Resilience centers also provide safe and social spaces for individuals who would otherwise be socially isolated and at risk of severe heat effects during heat waves.[177] The health benefits of resilience centers, therefore, disproportionately benefit frontline communities.

However, resilience centers are often not located within frontline communities themselves. The most heat-vulnerable areas are often underserved by resilience centers, and frontline communities face difficulties accessing resilience centers within walking distance.[178]

EXPANDING THE RESILIENCE CENTER NETWORK

Financial Feasibility

Ensuring that resilience centers are accessible and responsive to the needs of frontline communities could be costly for the City to implement. However, costs could be quite variable depending on the site – converting existing City-owned buildings into temporary resilience centers would cost very little, while constructing new resilience centers could cost tens of millions of dollars. Costs would also depend on the exact amenities offered by each resilience center, which would be dependent on the expressed needs of local frontline communities.

Table 14: Available Funding Sources for Expanding the Resilience Center Network

Funding Source	Administering Agency	Description
Community Resilience Centers Program	California Strategic Growth Council	Provides funding to to nonprofits, local agencies and tribal nations to construct neighborhood-level resilience centers to provide shelter against climate hazards.[179]
CDFA Community Resilience Centers Program	California Department of Food and Agriculture	Provides funding to nonprofits, local agencies and tribal nations to improve community centers in disadvantaged communities.[180]
Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program	U.S. Environmental Protection Agency	Provides funding to local governments, nonprofits and businesses to address local environmental hazards in their most vulnerable communities.[181]
Building Resilient Infrastructure and Communities Grant Program	Federal Emergency Management Agency	Provides funding to state or local agencies, tribal nations and nonprofits to reduce the risk of climate hazards or disasters in their communities.[182]
Resilience Hubs Grant	Pacific Gas and Electric Company	Provides funding to help communities build a network of resilience hubs to improve adaptive capacity against weather hazards.[183]

Administrative Feasibility

There is significant political momentum behind expanding resilience center networks at the state and federal levels. However, doing so in Los Angeles would face some administrative challenges. Existing resilience centers are located in existing City-owned properties like recreation centers and libraries. While expanding coverage in these locations would expand the network to a point, these properties are also concentrated in non-frontline areas and would not significantly increase coverage for frontline communities.

Therefore, the resilience center network would have to expand beyond City-owned properties to most effectively serve frontline communities. Creating these new resilience centers would take extensive collaboration between City agencies, CBOs, and community stakeholders on siting, design, and implementation.

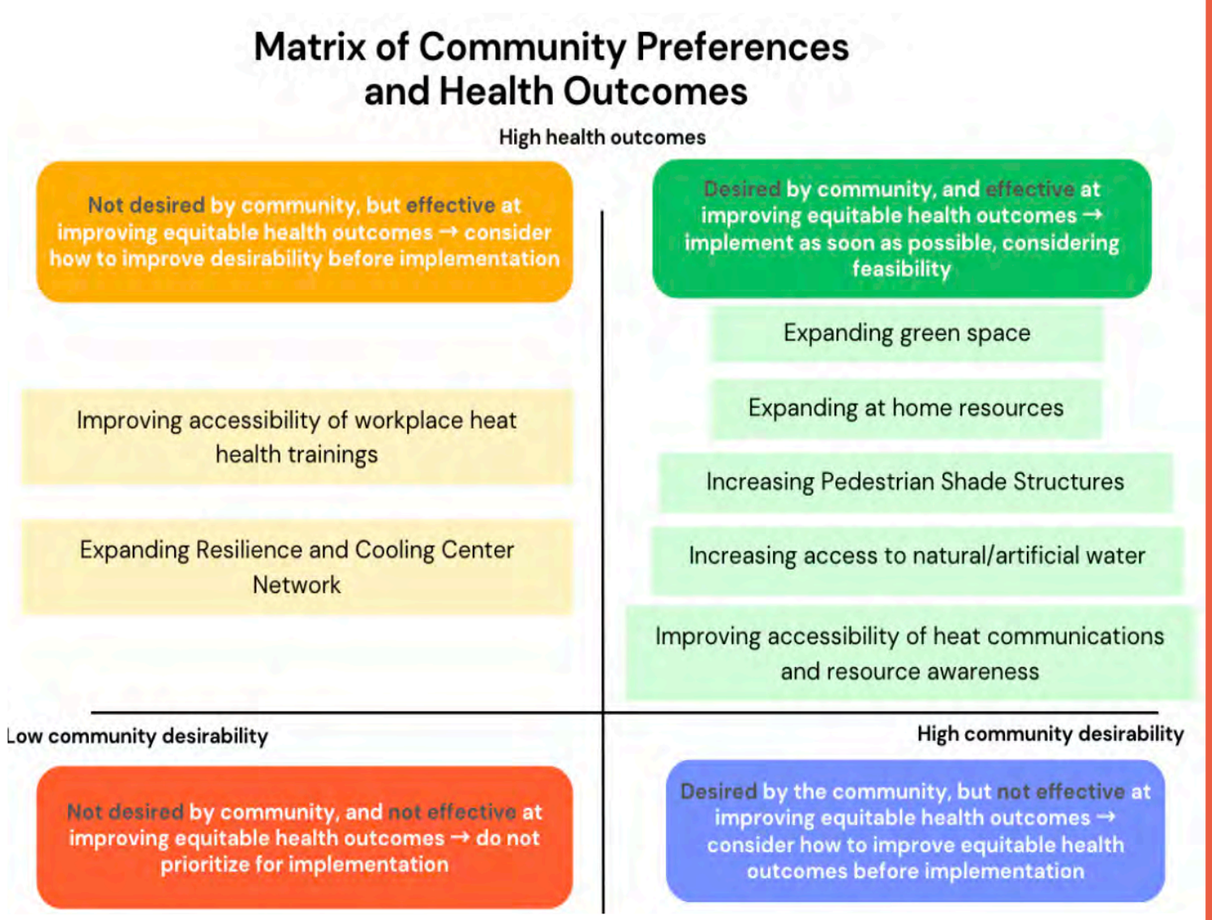
Chapter

09

Policy Recommendations

Based on the analysis of our policy options using our criteria and data from our focus groups and survey, the final policy recommendations for equitable heat policy by the City of Los Angeles can be found in Figure 32. None of our policy options fell into the quadrant indicating that the option was desired by community members but is ineffective at improving health outcomes – further illustrating the community knowledge and wisdom that should be included in heat adaptation policymaking processes.

Figure 32: Policy Recommendations based on Community Preferences and Health Outcomes



PROVIDING AT-HOME INTERVENTIONS

> "The cost of cooling POORLY INSULATED BUILDING is astronomical! As a tenant who pays for her own utilities, there ought to be a way to persuade property owners to maintain their buildings in such a way that air flow is a 'given.'"
> Frontline Survey Respondent

Our analysis found that providing air conditioning, home weatherization, utility assistance, and grid reliability are policy options that are desired by frontline communities in Los Angeles and that would improve health outcomes during extreme heat events. Therefore, we recommend that the following actions and approaches to ensure equity are implemented:

Recommendation: Provide free air conditioning units to frontline community members.

By building upon existing City efforts that provide subsidized air conditioning units to instead provide free air conditioners, access to this expensive resource would be more equitable and achievable for frontline Angelenos.

Recommendation: Pass building code requirements for landlords to provide sufficient cooling for renters, and invest heavily in code enforcement to ensure that these requirements are met.

For renters, purchasing their own air conditioning can be cost-prohibitive. Requiring landlords to provide air conditioning instead would increase equity by shifting the burden to the party with more financial resources to purchase and maintain cooling systems. Angelenos to save on their electricity bills.

Recommendation: Engage in targeted communications and outreach efforts to increase frontline community awareness and utilization of existing energy utility assistance programs.

There are numerous programs that frontline communities would benefit from, if they had the information necessary to take advantage of them. Using City resources to spread awareness of these programs would allow more frontline Angelenos to save on their electricity bills.

Recommendation: Consider other ways that the City can lower electricity costs for frontline communities through new local assistance programs.

Beyond spreading awareness of existing city, statewide, and federal programs, the City could explore the potential of creating a centralized electricity assistance program tailored specifically to the needs of frontline Angelenos. Angelenos to

Recommendation: Invest in targeted grid resilience efforts in frontline communities to lessen the occurrence of blackouts and ensure that frontline community members can use cooling devices during heat waves.

Ensuring that frontline communities can reliably use at-home cooling systems is a critical aspect of equitably distributing the health benefits of the other recommendations in this section.

EXPANDING EQUITABLE ACCESS TO GREEN SPACES FOR FRONTLINE COMMUNITIES

> "More trees and more shade when we're walking around would be good too. Since we're in the City we only get shade from the building but they also give us heat. Shade from trees would be a much better way to help keep us cool."
> Frontline Survey Respondent

This report has found that expanding equitable access to green spaces is a policy option that is desired by frontline communities in Los Angeles and that would improve health outcomes during extreme heat events. Therefore, we recommend that the following actions and approaches to ensure equity are

Recommendation: Create more green space in frontline communities through supporting and bolstering ongoing efforts by nonprofit organizations to create pocket parks and green existing paved spaces like schoolyards.

Local nonprofit organizations are already doing this work, and the financial and administrative support of City agencies would help to bolster these existing efforts. The City could also explore whether other paved spaces outside of schoolyards could be greened and made accessible to the public, without the City having to acquire the property.

To ensure equity, it is also critical that frontline communities are leading the way in planning and implementing new green spaces in their own neighborhoods. Joint public-private ownership of new green spaces between the City and community land trusts would be the best way to utilize City resources to support community-led efforts to reduce green space inequities.

Recommendation: Support the targeted planting and maintenance of new drought tolerant trees in frontline communities by City departments.

In the past, the City has relied too heavily on residents, property owners, and nonprofit organizations to plant and maintain trees – leading to continued tree inequities in Los Angeles. The City needs to take more of a leading role in planting and maintaining new trees in frontline communities, and should consider amending the code that inequitably requires frontline residents with limited financial resources and time to lead tree maintenance efforts.

To ensure that the trees being planted do not take away precious water resources from frontline communities, the City should prioritize the planting of drought-tolerant and native species. To ensure that new trees are being planted specifically in frontline communities, the City must also spatially track their efforts with as much specificity as possible.

IMPROVING THE THERMAL COMFORT OF PEDESTRIANS AND TRANSIT USERS

> "They've really prioritized advertising [in bus shelters].... Most bus shelters only ever have 3 seats. I have scoliosis so I should not be standing but I do not want to take the seats in case other people need it more. This causes a lot of pain when waiting for the bus."
> Participant, Labor Community Strategy Center

Our analysis has found that improving the thermal comfort of pedestrians and transit users is a policy option that is desired by frontline communities in Los Angeles and that would improve health outcomes during extreme heat events. Therefore, we recommend that the following actions and approaches to ensure equity are implemented:

Recommendation: Eliminate the ad-based revenue approach in determining the location of new bus shelters.

During the previous City bus shelter contract, the location of shaded transit structures was largely determined by an ad-based revenue model that disproportionately sited shade away from frontline pedestrians and transit users. Eliminating this ad-based siting approach in the new contract with Tranzito Vector LLC would help target the creation of well-maintained bus shelters in low-income neighborhoods, which is crucial to mitigate exposure to extreme heat among frontline communities.

Recommendation: Create a community advisory committee with leaders from frontline communities to provide oversight and recommendations on the development of new bus shelters in their communities.

To maximize distributive equity and accountability in the creation of new bus shelters, frontline communities must have power in this process. Community power can ensure that the new contractor meets their goals, and that bus shelters are tailored to the specific needs of each community in Los Angeles.

PROVIDING EQUITABLE ACCESS TO WATER RESOURCES

> "Pools in every park, even if they're temporary. Kids need places to cool off like splash pads."
> Participant, Black Women for Wellness

> "It would be good to see the City distribute water to unhoused folks - a lot of community based organizations do this, but the funding comes from personal donations or fundraising efforts."
> Frontline Survey Respondent

In our data, we found that providing equitable access to water resources is a policy option that is desired by frontline communities in Los Angeles and that would improve health outcomes during extreme heat events. Therefore, we recommend that the following actions and approaches to ensure equity are implemented:

Recommendation: Expand the accessibility and awareness of hydration stations and other water distribution points in frontline communities.

To increase equitable access to drinking water for frontline Angelenos during extreme heat events, the City should expand upon their existing goal to place hydration stations in all fifteen City Council districts. Instead, the City should specifically target the placement of new hydration stations and other water distribution points in frontline communities that are the most at-risk for experiencing adverse health effects from extreme heat. To increase awareness of these amenities, the City should conduct targeted outreach campaigns to frontline Angelenos.

Recommendation: Expand the accessibility of artificial water features like splash pads and misting stations in frontline communities.

To increase equitable access to artificial water features for frontline Angelenos, the City should greatly expand their existing network of only four City-run splash pad locations. The City should target the placement of splash pads and misting stations in frontline communities.

Recommendation: Expand transit options and reliability between frontline communities and beaches.

In the current absence of artificial water features in their neighborhoods, it is important that frontline community members have equitable access to natural water features like the beach. CEMO should work with LA Metro and other local transit agencies to expand the availability and frequency of transit service between inland frontline communities and the coast.

INCREASING THE ACCESSIBILITY AND REACH OF HEAT COMMUNICATIONS

> "If you don't know someone who works for the City…you won't find any help."
> Participant, Black Women for Wellness

This report has found that improving the accessibility and reach of heat communications is a policy option that is desired by frontline communities in Los Angeles and that would improve health outcomes during extreme heat events. It is important for the City to conduct their outreach on the ground and take actions that meet communities where they are at: at their door, at their job, and in the

Recommendation: Create meaningful pathways for frontline community empowerment in local heat adaptation policymaking.

Efforts by the City to conduct meaningful community empowerment in heat adaptation policymaking cannot end with this report. The City needs to engage in any and all efforts to meet frontline community members where they're at and to empower frontline communities to have a meaningful and powerful voice in local policymaking processes – including the potential implementation of the recommendations in this report.

Recommendation: Create and publish heat health information that is readily accessible in languages other than English or Spanish that are commonly spoken by frontline communities in Los Angeles.

To ensure that frontline community members are actually able to access and use information related to heat adaptation resources and practices, it must be available in their primary language. The City should create and publish this information in languages commonly spoken by frontline communities in Los Angeles, including K'iche', Mixtec, Q'anjob'al, Yucatec, Zapotec, Armenian, Mandarin, and Tagalog.

Recommendation: Conduct community-based research on the main communications networks being used by frontline communities in Los Angeles.

Sharing heat health information through the communications networks being used by frontline Angelenos would ensure that information is accessible, context-specific, and effective at reaching frontline community members.

Recommendation: Establish ongoing partnerships with local indigenous nations and organizations.

Establishing partnerships with local indigenous groups would help the City to determine how to best incorporate indigenous wisdom and communication networks into the City's public health and outreach strategies. To be implemented equitably, these partnerships must provide for equal power-sharing in indigenous heat adaptation decision-making.

INCREASING THE ACCESSIBILITY OF WORKPLACE TRAININGS AGAINST EXTREME HEAT

> "My personal employer hasn't provided that type of training on heat exposure like heat stroke or heat exhaustion. They haven't really addressed it in the workplace.
> Participant, LA Black Worker Center

This report has found that while increasing the accessibility of workplace training against extreme heat is a policy option that would improve health outcomes during extreme heat events, it is not currently a priority for frontline communities in Los Angeles. Therefore, we recommend that the following actions and approaches to ensure equity are implemented:

Recommendation: Collaborate with researchers and community health leaders to incorporate a new community-engaged City-run heat health training program for outdoor workers.

Currently, heat-related workplace training programs are decentralized across entities in the City. This acts to reduce community awareness of these programs, and likely contributes to such training not being a stated priority for frontline communities. To increase awareness and desirability while also helping to improve outdoor worker health, the City should create a centralized community-engaged heat training program.

The UCLA LOSH program already runs such programming with trusted community health leaders, and would be a valuable partner to create and co-implement a City-run program. To ensure equitable access for frontline outdoor workers, training should be available to workers with different education levels and primary languages.

Recommendation: Create a universal toolkit with all the necessary information required for workplace trainings against extreme heat. This toolkit should be provided in multiple languages with material that is accessible to individuals with different education levels.

In addition to providing centralized training to increase awareness and desirability, the City should also create a universal toolkit that is accessible to all frontline outdoor workers. This would ensure that workers are fully aware of their rights and are able to lower their risk of HRI in the workplace – even if they cannot access new or existing training.

EXPANDING THE RESILIENCE CENTER NETWORK

> "I live on a street with a large encampment. I am often the person bringing food, frozen water bottles, charging phones, and helping these folks. There are no weather shelters in walking distance from our area. Unhoused people can't be expected to walk over 30 minutes on days when the temperatures are over 90s. We need to have cooling centers within a 20 min walk to all areas (and specifically ones that won't turn away the unhoused)."
> Frontline Survey Respondent

Our focus groups and survey data generally varied on support for resilience and cooling centers. Some individuals were supportive of the idea as long as they are accessible, pet-friendly, offered resources, and were staffed by people from the community who speak different languages. However, other individuals emphasized that they feel like resources should be directed to at-home interventions to ensure that people are able to first-and-foremost stay cool in their homes. In recognition of these community perspectives, we are recommending the expanding of the resilience center network as long as they complement equally funded at-home interventions.

To make resilience centers more desirable to frontline community members, we recommend that the following actions and approaches to ensure equity are implemented:

Recommendation: Partner with trusted community-based organizations to support a network of community-owned and community-implemented resilience centers.

Our research has found that cooling centers that are not run by trusted CBOs are much less likely to be used by frontline community members. To address this, a memorandum of understanding should be created between the City of Los Angeles and trusted CBOs to establish frameworks for activating resilience centers that are community-owned and community-implemented. CEMO should also partner with the City's Chief Resilience Officer in these efforts to leverage a broader network of City agencies, resources, and capacity to uplift resilience centers by and for frontline communities.

EXPANDING THE RESILIENCE CENTER NETWORK

Recommendation: Ensure that resilience centers include heat adaptation resources, general City resources, and activities for frontline community members.

In creating this network of community-owned resilience centers, the City and its partners must also ensure that frontline communities benefit as much as possible from them. Resilience centers should include heat adaptation resources, general City resources, and activities for frontline communities to ensure that they are useful and responsive to community needs. Resilience centers should also be accessible and useful to all types of frontline households, and have specific resources for children, seniors, and pets.

Recommendation: Provide resilience centers in areas with relatively large unhoused communities to specifically distribute resources based on the stated needs of people experiencing homelessness.

Currently, people experiencing homelessness have little access to resilience centers – they are often not allowed into existing resilience centers and may not even trust the City to create indoor areas where they can feel safe. The City should specifically provide resilience centers where communities of people experiencing homelessness are living, and provide resources that are desired and useful to this population. The City should also work extensively with unhoused communities to determine what resources should be provided, and how such resilience centers should be set up.

CONDLUDING REMARKS

Our research has found that frontline communities bear the brunt of extreme heat in Los Angeles and wish to access more resources from the City to better build their adaptive capacity. To effectively build resilient communities, the City must meet frontline community members where they are at and ensure that people are on the ground in their neighborhoods providing them with resources to cope with extreme heat. It is important to acknowledge that these recommendations do not address the long-term changes that must be made to mitigate extreme heat through systemic emissions reductions and scaling up the implementation of clean energy sources. We hope that these recommendations act as a starting point for further research on integrating community needs and perspectives in Los Angeles' climate policy-making to ensure that frontline communities have the capacity and resources to adapt and thrive.

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APPENDIX 1: SUBJECT MATTER INTERVIEW PROTOCOL

Purpose
To get the context for extreme heat impacts and solutions on local, state, national, and international levels through semi-structured interviews with academics and policymakers.

Consent and Recording
We would like to do this for attribution, but please let us know at any time if you would like us to add protection we can discuss what you are most comfortable with.

Baseline Protocol*

How would you define "equity" as it relates to extreme heat policy?
If any, which communities face the highest vulnerability to the impacts of extreme heat? How involved are they in current decision-making processes in your city of expertise?
What are the health implications of extreme heat? How does this impact the communities identified above?
If any, what policy changes need to be made to more effectively address extreme heat as it relates to equity?
Do you have any particular jurisdictions/cities in mind that have been most proactive in addressing heat mitigation and adaptation both in terms of effectiveness and equity/community engagement?
How can the community be involved in the creation of these changes in the heat policy and planning process?
How have other jurisdictions done this? Are there any policies that you know of that were particularly driven by community engagement? How have community-based organizations and community members driven policy in the extreme heat context?
Based on your expertise, what are the 5 main heat interventions that local governments undertake and how effective are they?
What would be your recommendations for policy interventions that Los Angeles could enact which would effectively reduce extreme heat impacts while incorporating elements of equity and community engagement?
How would you engage/include the community in these policy interventions?

*Follow-up questions may be asked to pursue a particularly instructive line of thought or based on the interviewee's specific expertise.

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APPENDIX 2: FOCUS GROUP MATERIAL

Focus Group Outreach Process

CEMO and the Liberty Hill Foundation were central to facilitating connections between community-based organizations and our team. They provided an initial list of community-based organizations with whom they had prior relationships through policy or grantmaking processes as potential participants for the focus groups. Using the findings from our geospatial mapping analysis, we focused our outreach to community-based organizations from this list who serve South Los Angeles and the San Fernando Valley, as communities living in these regions of Los Angeles were shown to be subjected to the greatest risk of extreme heat impacts. We also placed particular emphasis on outreach to organizations serving communities of color and low-income communities, in recognition of their historic disenfranchisement from the Los Angeles policy process. Based on these factors, we conducted outreach with 23 organizations.

Seven community-based organizations ultimately participated in the focus groups:
- Los Angeles Black Worker Center (February 6, 2023, over Zoom)
- Fernandeno Tataviam Band of Mission Indians (March 9, 2023, over Zoom)
- TRUST South LA (March 15, 2023 at the TRUST South LA office)
- Black Women for Wellness (March 16, 2023 at the Black Women for Wellness office)
- Labor Community Strategy Center (March 17, 2023 at Strategy and Soul)
- Central American Resource Center (CARECEN) (March 22, 2023 at the CARECEN office)
- Comunidades Indígenas en Liderazgo (CIELO) (March 25, 2023 at CIELO office)

Upon their agreement to participate in our focus group work, we asked each community-based organization to select between five and twenty of their members to participate in one focus group session. Each focus group session included members from one organization. Before each focus group, our team worked directly with the organization to coordinate the following:
- Focus group location. Some organizations preferred to have a virtual focus group to lessen the travel and time burden for their participating members, while others preferred to have in-person gatherings. Each of the in-person focus groups was held at a location of the organization's choosing, which was usually their headquarters or usual community meeting space.
- Language translation needs. Not all of our focus group participants felt comfortable speaking in English, so live language translation services were provided in the participant's preferred language by the organization, CEMO, or one of our team members.
- Cultural competence. Each organization's staff was provided with the focus group questions ahead of time, to give them an opportunity to screen our questions for cultural competence. Before our focus group session with CIELO, the organization provided our team with an indigenous cultural competence training.

Each focus group session lasted two hours and began with a brief explanation of our research and purpose in conducting conversations with frontline communities. Each participant completed a short demographic survey before verbally answering ten discussion questions in small groups of three to five participants. To ensure that our focus groups were not a purely extractive exercise on the part of our team and CEMO, we shared information about existing heat adaptation resources and heat safety practices with participants at the end of each focus group. Most of the focus group sessions were recorded with the consent of all participants, and our team took written notes during all focus groups.

APPENDIX 2: FOCUS GROUP MATERIAL

Focus Group Demographic Questionnaire

Thank you for agreeing to participate in the LA Heat Equity Community Focus Groups being facilitated by the Los Angeles Climate Emergency Mobilization Office, the Liberty Hill Foundation, your community organization, and UCLA graduate students.

Before the focus group session, we would like to ask you some basic demographic questions. This information will not be attached to your name in any way. This information will be combined between all focus group participants in order to determine the general demographics of focus group participants as a whole. Please feel free to not answer any questions on this questionnaire that you do not want to answer.

Thank you again for your participation, and we look forward to speaking with you soon!

1. How old are you?
Under 18
18-20
21-29
30-39
40-49
50-59
60 or older

2. How do you identify yourself?
White
Hispanic or Latino/a/x
Black or African American
American Indian or Alaskan Native or Native American
Indigenous
Indigenous Mexican
Indigenous Canadian
Asian
Native Hawaiian or other Pacific islander
Middle Eastern or North African
Multiple races
Prefer not to say
Other, please specify:_____

3. If you identify as Hispanic or Latino/a/x please check all that apply to you:
Cuban
Guatemalan
Hispanic or Latino/a/x Indigenous
Mexican or Chicano
Puerto Rican
Salvadoran
Another Hispanic or Latino/a/x origin: _____
I do not identify as Hispanic or Latino/a/x
Prefer not to say

4. Which of the following genders do you identify with?
Female
Male
Non-Binary
Prefer not to say
Other

5. What is your employment status?
Employed full-time
Employed part-time
Student with employment
Student without employment
Retired
Currently not employed

6. If you are employed, do you primarily work indoors or outdoors?
Cool indoors
Hot Indoors
Outdoors
Vehicle/car with AC
Vehicle/car with no AC
I do not have a job

7. What is the highest level of school you have completed or the highest degree you have received?
Less than a high school degree
High school degree or equivalent (e.g., GED)
Some college but no degree
Associate degree
Bachelor degree
Graduate degree

8. How much total combined money did all members of your family household earn in 2022?
Under $25,500
$25,500 – $37,499
$37,500 – $49,999
$50,000 – $69,999
$70,000 – $99,999
$100,000 – $125,000
Over $125,000

9. What language do you mainly speak at home? Select ALL that apply.
English
Spanish
Korean
Tagalog
Zapoteco
Maya Yucateco
Maya Q'anjob'al
K'iche'
Other (please specify) _____

10. Do you, or any members of your household, have any of the following health conditions?
Asthma
Cancer
Heart Disease
Lung Disease
High Blood Pressure
Diabetes
Physical Disability which Limits Movement
Psychological/Mental Health Conditions
None
Prefer not to say
Other_____

APPENDIX 2: FOCUS GROUP MATERIAL

Focus Group Demographic Questionnaire

11. How much does this health condition affect your day-to-day activities?
1: Not at all
2: A little bit
3: Moderately
4: A lot
5: Severely
Does not apply

12. How would you describe your current living situation?
Section 8 housing
Rented apartment
Owned apartment
Single-family rented home
Single-family owned home
Living with family/friend
Housing insecure (unstable living situation)
Mobile home
Other_____

13. Have you ever been housing insecure or had an unstable living condition in the past?
Yes
No

14. How many people live in your current home, including yourself?
1
2-4
5-8
9 or more

15. How many current residents are at or over the age of 60, including yourself?
0
1-3
4 or more

16. What is your ZIP code? : _____

17. Which organization are you representing today? : _____

18. This focus group will be audio recorded for data collection purposes. Any identifying information will not be saved. Do you consent?
Yes
No

19. This focus group may be photographed for the purposes of this report. Do you consent?
Yes
No

20. Would you be willing to be contacted later for any follow up questions from the interviewers?
Yes
No

Please list your email address or phone number below if you are open to being contacted later: _____

Thank you for filling out this demographic questionnaire! Please return it to one of the researchers when completed.

Focus Group Questions

Bold = main question
Bullet Points= follow-ups

1. How have you experienced very hot days in your neighborhood? Feel free to describe an example or memory of how heat has affected you.

2. When it's very hot outside, how do you cool off?
- Where do you go? What do you do? What helps you escape the heat?
- Why do you take those actions?

3. I'm going to read a statement and you tell me how much you agree: 'When it's really hot outside, inside my house is still totally cool and comfortable.' (read 2-3 times) Show us on your hands how much you agree with that statement with 5=totally agree, inside my house is always cool and comfortable.
Go through the numbers and say the results out loud for the recording.
- Why did you respond with the numbers that you did?
- What resources does your home have to deal with hot days?
- (If AC not mentioned) Do you have AC? If so, do you use it?
- What resources would be needed to better equip homes for hot days?

4. What are your experiences while at work on hot days? Do any experiences stand out to you?
- Does your boss provide assistance/resources to manage in hot weather?
- Are you aware of any rules around working in the heat at your workplace?

5. How do you get around on very hot days?
- walking, transit, a car?
- On a hot day, can you tell us about this experience?
- How does your way of getting around affect your comfort during hot days?

6. What resources have you been given to help you or your family manage extreme heat in your neighborhood?
- What types of resources are there?
- How have your experiences been if you have used them?
- Where do you go for information and resources?
- Have you seen an extreme heat warning? What did you do when you saw it?
- Has the radio or television media communicated extreme heat days to you?
- If you were aware of available resources, how did that change your actions?

APPENDIX 2: FOCUS GROUP MATERIAL

Focus Group Questions

7. What are some of the challenges you face staying healthy, safe, and comfortable in the hot days of summer in your neighborhood?

8. One solution proposed by other community organizations are community resource centers where folks can stop in, have a common space to cool off, and get other heat-related assistance. What are your thoughts on this idea?
- What would you need from a center like this?
- How much would you use a center like this?
- What would prevent you or people from your community from using it?

9. If you had a magic wand, and we could do anything to help your neighborhood deal with the heat, what do you think would be most helpful? Each participant should offer at least one; write them down for all participants to see
- What do you think of the solutions that have been shared by the group members?
- What won't work? Where should the city not waste their time or money? Tell us why.
- If the city could only do one thing to help neighborhoods with heat, what would you want it to be?

10. Is there anything we might have missed that you would like to share with us related to your experiences of extreme heat?

Focus Group Coding Protocol

To code our data, we created the following parent and child codes in Dedoose based on pre-existing research and our subject matter interviews. While coding the data, we added additional codes along the way based on the responses provided by focus group participants about their challenges with extreme heat and preferred resources:

Category	Policy Option
Health Impacts	
At Home Interventions	
AC Unit	Central AC
Cool Roofs/Green Roofs	Energy Utility Assistance
Home weatherization	Grid resilience
Solar PV	Tax credits and subsidies
Community Level Interventions	
Green spaces	Public water access
Streetscapes and transportation	
Workplace Interventions	
Additional breaks at work	Access to shade
Work from home	Access to water
Workplace trainings on HRI prevention	General working conditions on hot days
Communications and Outreach	
Accessible outreach	Heat emergency alerts by the City
Social media outreach	Targeted outreach to vulnerable populations

APPENDIX 2: FOCUS GROUP MATERIAL

Focus Group Coding Protocol

Category	Policy Option
Community Empowerment	
AC Unit	Central AC
Cool Roofs/Green Roofs	Energy Utility Assistance
Cooling Infrastructure	
Green spaces	Public water access
Lack of Resources	
Resilience Centers and Cooling Centers	
Accessible outreach	Heat emergency alerts by the City
Social media outreach	Targeted outreach to vulnerable populations
Transportation	
Bus shelter	Shaded pedestrian corridor

APPENDIX 3: HEAT SUREVEY MATERIAL

Survey Dissemination Strategy

To disseminate the survey, the following types of organizations which reach heat vulnerable communities were identified and approached by our research team, CEMO and the Liberty Hill Foundation to share this survey with their communities for the opportunity to include their voices and perspectives in this report:
LAUSD Schools (73 schools)
Community-based Organizations (159 CBOs)
Unions (13 unions)
Neighborhood Councils (99 neighborhood councils)
Los Angeles Neighborhood Facebook Groups (23 facebook groups)

We also had versions of the survey in Tagalog and Armenian, but Survey123 did not support these languages on their online platform.

To disseminate the survey, CEMO and the Liberty Hill Foundation sent the finalized survey link to their email listservs. We also asked the CBOs that participated in the frontline community focus groups to send the survey to their email list, and offered additional compensation to print paper copies of the survey to distribute in their offices. We also asked CBOs, schools, unions, neighborhood councils, and neighborhood Facebook groups throughout the city of Los Angeles to share the survey with their email lists. Additionally, we printed posters with the survey link and posted them in South Los Angeles and the San Fernando Valley.

Survey Compensation Scheme

All individuals residing in the Los Angeles area who completed the survey were entered into a random raffle to receive one of 23 gift cards provided by the City of Los Angeles and the Liberty Hill Foundation through their standard City compensation processes. At the end of the survey, we asked participants to provide their phone number or email to be eligible for the raffle. These giftcards ranged from $25-$100.

APPENDIX 3: HEAT SUREVEY MATERIAL

Full Survey Text

Thank you for participating in the LA Community Heat Survey!

Extreme heat is the most deadly climate hazard facing Los Angeles. In response, the City of Los Angeles' Climate Emergency Mobilization Office (CEMO) is working on creating equitable heat policy to reduce the negative impacts of extreme heat on the health and livelihoods of vulnerable communities.

This survey is intended to contribute to equitable heat policy in Los Angeles by gaining the experiences, perspectives, and preferences of Angelenos living in communities affected by extreme heat. The results of this survey will be aggregated and included in a report being written for the City of Los Angeles by a group of graduate students at the UCLA Luskin School of Public Affairs, in consultation with CEMO.

We estimate that this survey will take approximately 8-10 minutes to complete. Upon completion, you will be entered into a random drawing for 30 gift cards ranging from $25-$100.

1. On a scale of 1-5, how much do you think extreme heat personally threatens your health, safety, and well-being?
1: Not at all
2: Rarely
3: Sometimes
4: Often
5: Very Often

2. Where are you most likely to go to stay cool if it is hot outside or at work?
Home
Mall
Pool
Park
Library
Place of Worship (Church, Mosque, Temple etc)
Recreation Center
Senior Center
Friend/Neighbors home,
Community center
Other

3. Do you or a family member have any of these health conditions that are affected by extreme heat?
Check ALL that apply:
Asthma
Cancer
Heart Disease
Lung Disease
High Blood Pressure
Diabetes
Psychological/Mental Health Conditions
Physical disability that limits mobility
Other_____
None
Prefer not to say

4. How much does this health condition affect your day-to-day activities?*
1: Not at all
2: Rarely
3: Sometimes
4: Often
5: Very Often
Does not apply

5. When you stay at home on a hot day, how often do you feel hot in your home?
1: Not at all
2: Rarely
3: Sometimes
4: Often
5: Very Often

6. When it is a very hot day, which of these do you use to stay cool inside your home?
Drinking cold water
Central A/C
Window A/C
Portable A/C
Cold showers
Closed shades or blinds
Ceiling fan
Portable fan
Shade trees keep my house cool
None of the above
Other

7. If you do not use AC at home, what is the main reason your household does not use air conditioning?
Landlord won't provide it
Cost of AC unit too high
Cost of electricity too high
At work most of the day
Prefer a fan
Do not need it
Do not like it
Other
Does not apply

8. Do you experience any of the following barriers going to a cooler building or place when it is very hot?
Hours of operation
Not accessible for people with disabilities
Distance from home
Lack of transportation
Personal safety
Cannot bring pets
Lack of information
Never needed to go to a cooled place
No, nothing prevents me
Other

9. What is your main source of transportation?
Bus or Train
Bicycle
Scooter
Walking
Personal Vehicle
Rideshare (ie Uber, Lyft)
Other

APPENDIX 3: HEAT SUREVEY MATERIAL

Full Survey Text

10. There are enough trees and shade in my neighborhood on a hot day. Agree or Disagree?
Agree
Disagree

11. What is your employment status?
Employed full-time
Employed part-time
Student with employment
Student without employment
Retired
Not currently employed

12. Do you primarily work indoors or outdoors?*
Cool Indoors
Hot Indoors
Outdoors
Vehicle or car and it has A/C
A vehicle with no A/C
I am not employed

13. If you are employed, does your employer provide any of the following accommodations or resources on a hot day? Check all that apply.*
Water
Extra breaks to cool off
Access to shaded areas
Cooling fans
Training for how to prepare for heat and heat injury
A/C
My employer does not provide any accommodations or resources
I work from home
I am not employed
Other

14. How do you get alerted about extreme heat events that are going to affect your neighborhood? Check all that apply.
Radio
TV
Phone alerts
Social media (e.g., Facebook, Twitter, Instagram)
By other people or my family
I have never been alerted

15. On a scale of 1-5, how effective has the City been in responding to extreme heat?
1: Not effective at all
2: Barely effective
3: Somewhat effective
4: Effective
5: Very effective
Not sure

16. On a scale of 1-5, how effective has the City been in including community voices in response to extreme heat?
1: Not effective at all
2: Barely effective
3: Somewhat effective
4: Effective
5: Very effective
Not sure

17. Have you ever heard of/used any of the following resources?
NotifyLA emergency alerts (311)
City of LA hydration / water stations program
City of LA cooling centers
Rides to cooling centers
City splash pads
Cool Spots LA app
Cool Neighborhoods streets program
Cool LA payment assistance program
Green New Deal Neighborhood Council Toolkit

18. Which resources would you like to see in your neighborhood? Check all that apply
Resilience hubs / cooling centers
Hydration water stations
A/C / Fan distribution
Utility / energy payment assistance programs
More green space like parks, gardens and trees for more shade and cooling
Access to more public water features like ponds, fountains, or the beach
Solar panel energy on homes
Home upgrades / retrofitting to increase energy efficiency
Shaded bus stops and other shade structures
Community leadership programs to practice advocating policy needs
Educational workshops on the negative impacts of heat on health and wellbeing and awareness about extreme heat programs by the City
Community ambassador program to spread information and provide wellness resources to adapt to heat

19. Please select the top three priorities for how the City should invest in the resources identified above.
Monetary cost for the City
How long it is effective in lowering the negative impact of heat
How much it lowers costs for residents
How much it improves public health and safety
How good it is for the environment
How much it helps LA adapt to climate change
How much it prioritizes the most vulnerable/impacted communities
How much it lowers the exposure to extreme heat for everyone
Other

20. Please share any other problems your household has experienced with heat in your neighborhood or what might help you and your neighbors stay cool. _____

APPENDIX 3: HEAT SUREVEY MATERIAL

Full Survey Text

21. How do you identify yourself?
White
Hispanic or Latino/a/x
Black or African American
American Indian or Alaska Native or Native American
Indigenous
Indigenous Mexican
Indigenous Canadian
Asian
Native Hawaiian or other Pacific Islander
Middle Eastern or North African
Multiple races
Other

22. If you identify as Hispanic or Latino/a/x, please check all that apply to you.
Cuban
Guatemalan
Hispanic or Latino/a/x Indigenous
Mexican or Chicano
Puerto Rican
Salvadoran
Other

23. Which of the following gender identities do you identify with?
Female
Male
Non-binary
Other
Prefer not to say

24. How old are you?
Under 18
18-20
21-29
30-39
40-49
50-59
60+

25. How much total combined money did all members of your family household earn in 2022?
Under $25,500
$25,500-$37,499
$37,500 – $49,999
$50,000 – $69,999
$70,000 – $99,999
$100,000 – $125,000
Over $125,000

26. How would you describe your current living situation?
Section 8 housing
Rented apartment
Owned apartment
Single-family rented home
Single-family owned home
Living with family/friend
Housing insecure (unstable living situation)
Mobile home
Other

27. Have you ever been housing insecure or had an unstable living situation in the past?
Yes
No

28. How many people live in your current home, including yourself?
1
2 to 4
5 to 8
9 or more

29. How many current residents in your home are at or over the age of 60?
0
1 to 3
4 or more

30. In which ZIP code do you currently reside?
—----------

31. Did you, or are you planning to participate in one of the extreme heat focus groups that took place between February to March 2023?
Yes
No

32. Please include your email or phone number to be eligible for the $100 raffle!
—----------

33. How did you hear about this survey?

APPENDIX 3: HEAT SUREVEY MATERIAL

Frontline Survey Responses

Figure A: On a scale of 1-5, how much do you think extreme heat personally threatens your health, safety, and wellbeing?

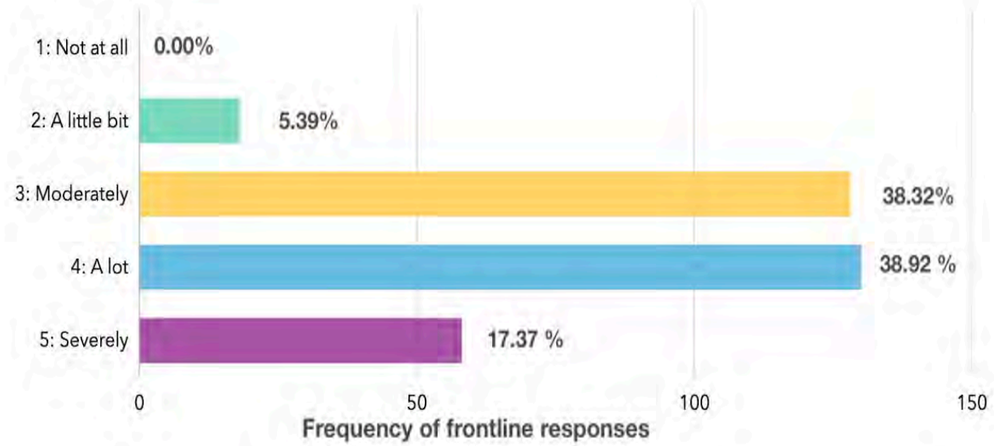


Figure B: If you do not use AC at home, what is the main reason your household does not use air conditioning?

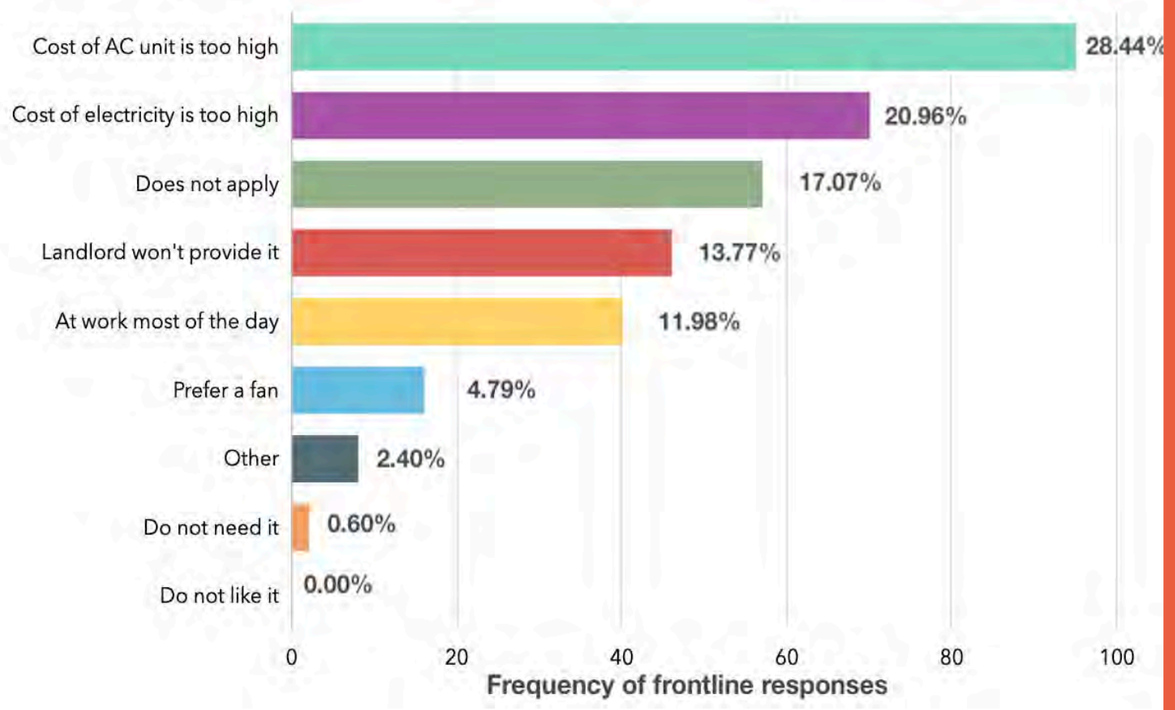
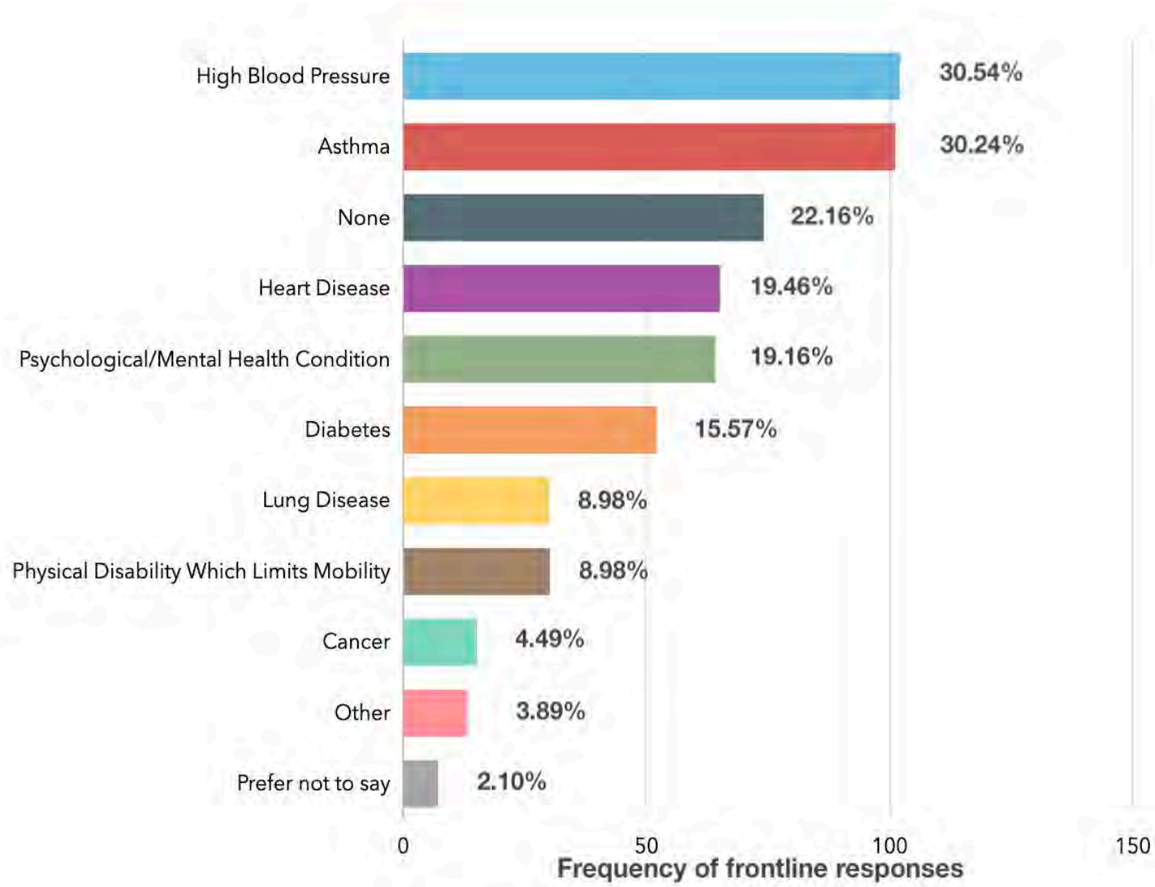


Figure C: Do you or a family member have any of these health conditions that are affected by extreme heat? Check ALL that apply.



APPENDIX 3: HEAT SUREVEY MATERIAL

Frontline Survey Responses

Figure D: How much does this health condition affect your, or your family member's, day-to-day activities?

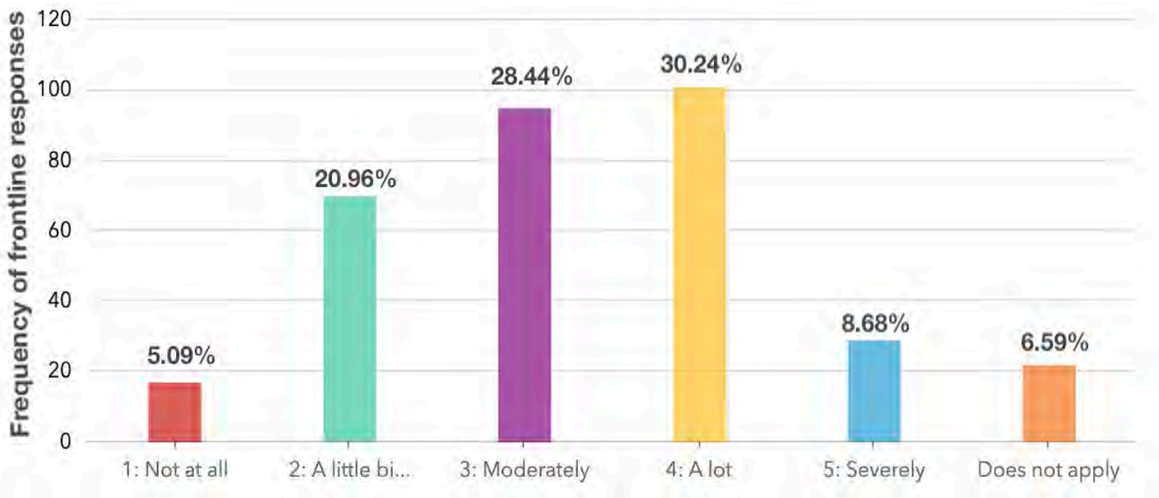


Figure E: What is your main source of transportation?

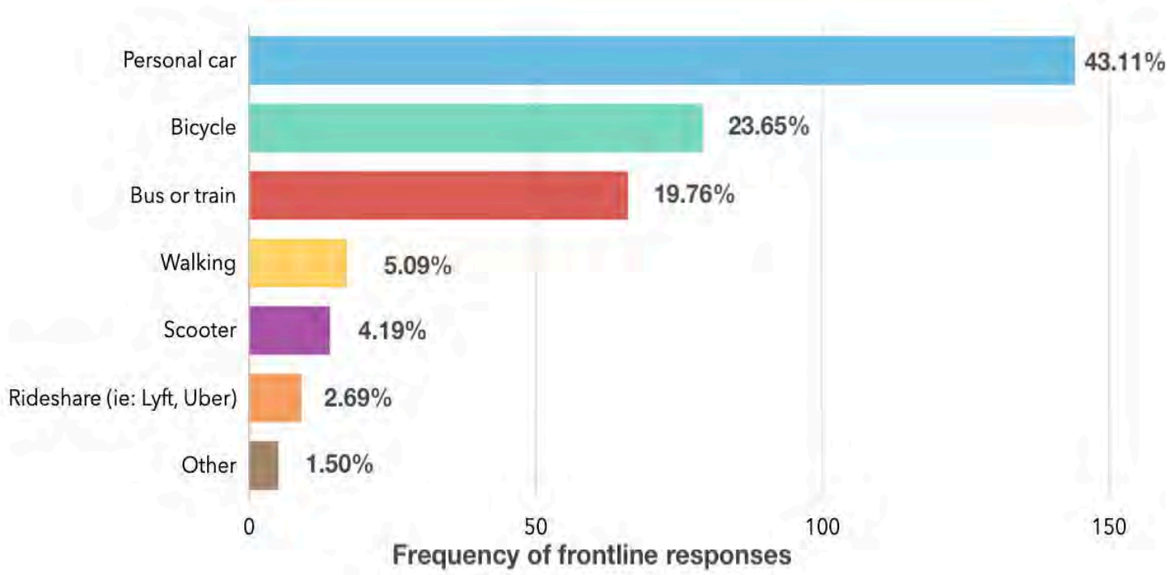


Figure F: There are enough trees to provide shade in my neighborhood on a hot day

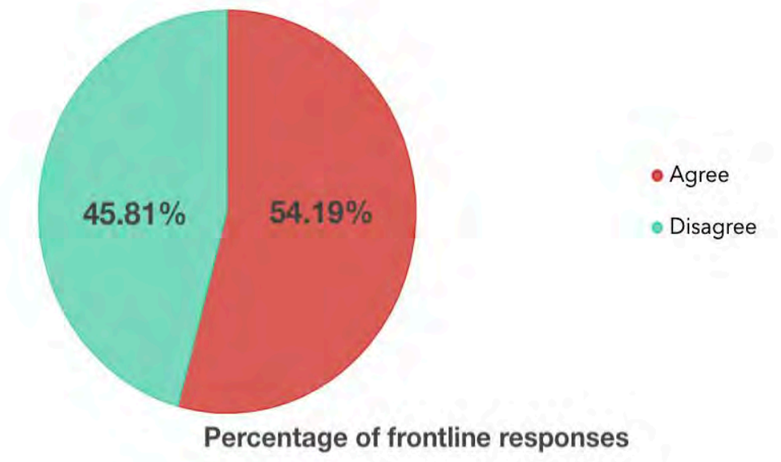
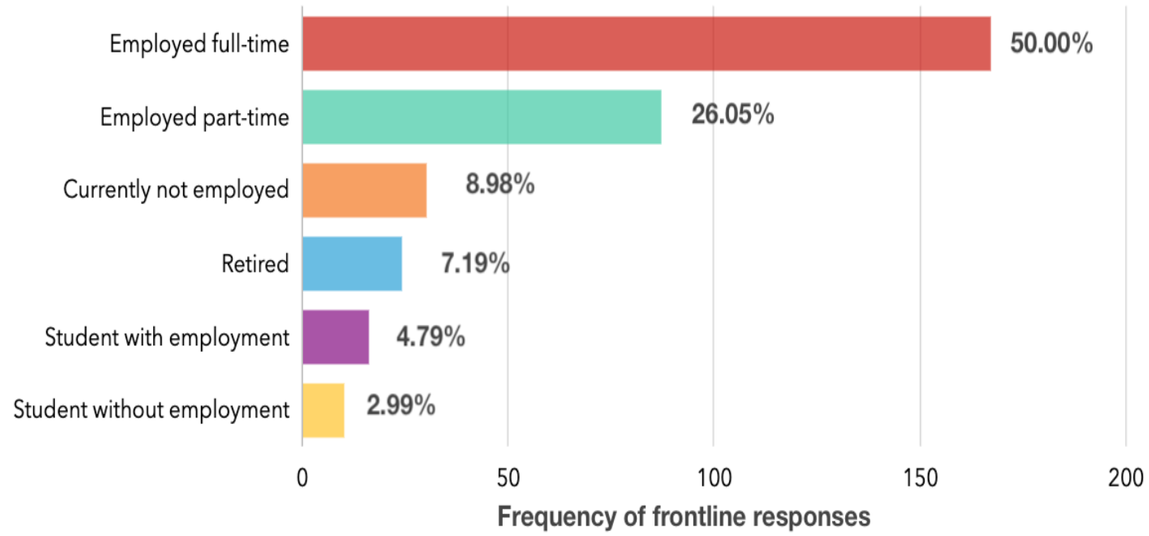


Figure G: What is your employment status?



APPENDIX 3: HEAT SUREVEY MATERIAL

Frontline Survey Responses

Figure H: On a scale of 1-5, how effective has the city been in responding to extreme heat?

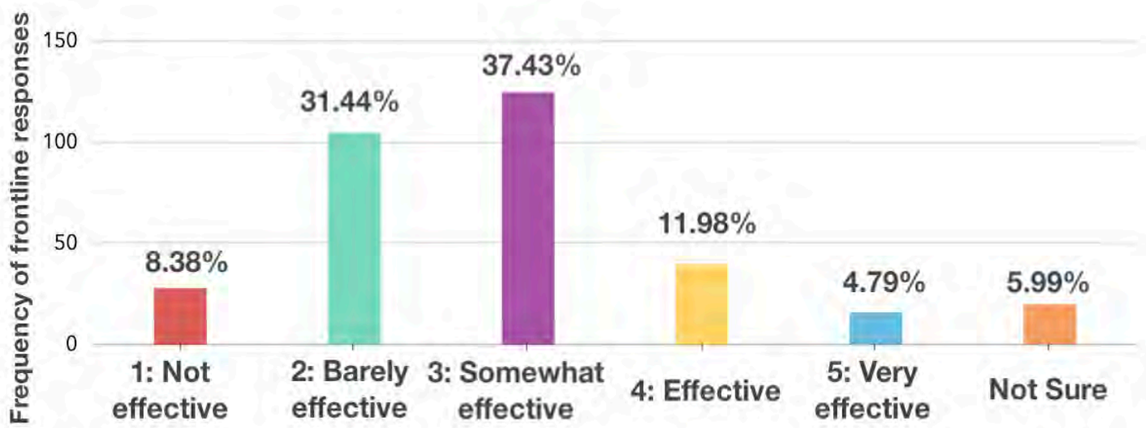


Figure I: If you identify as Hispanic or Latino/a/x, please check all that apply to you.

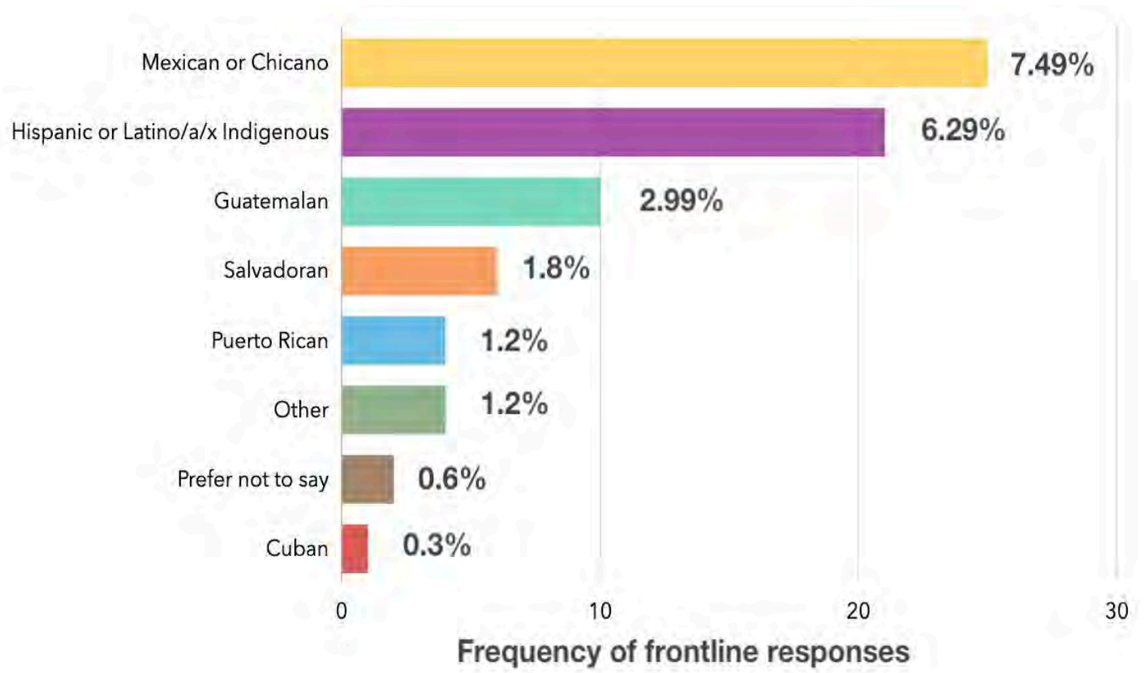


Figure J: Which of the following genders do you identify with?

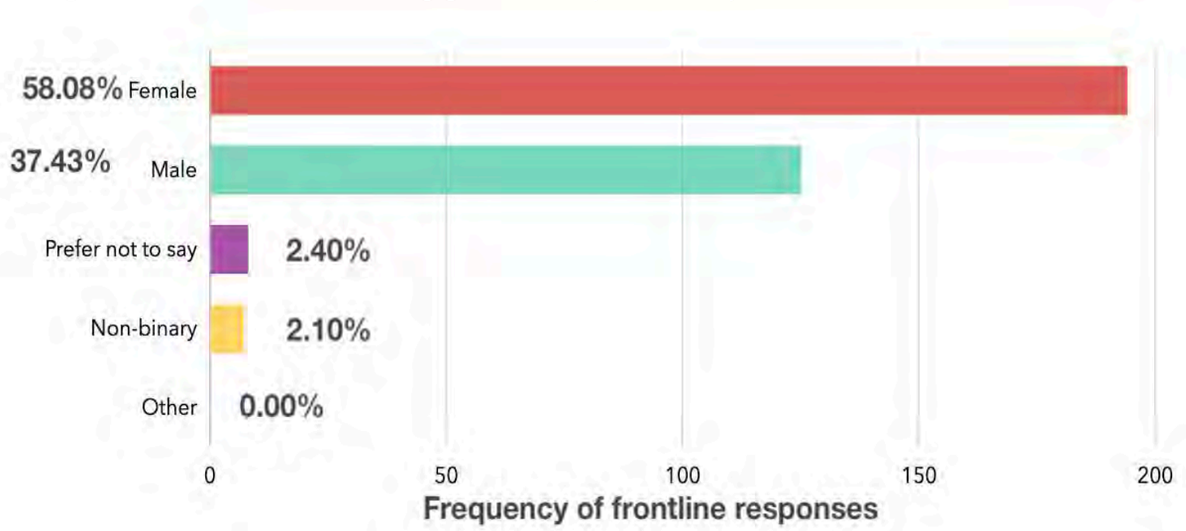
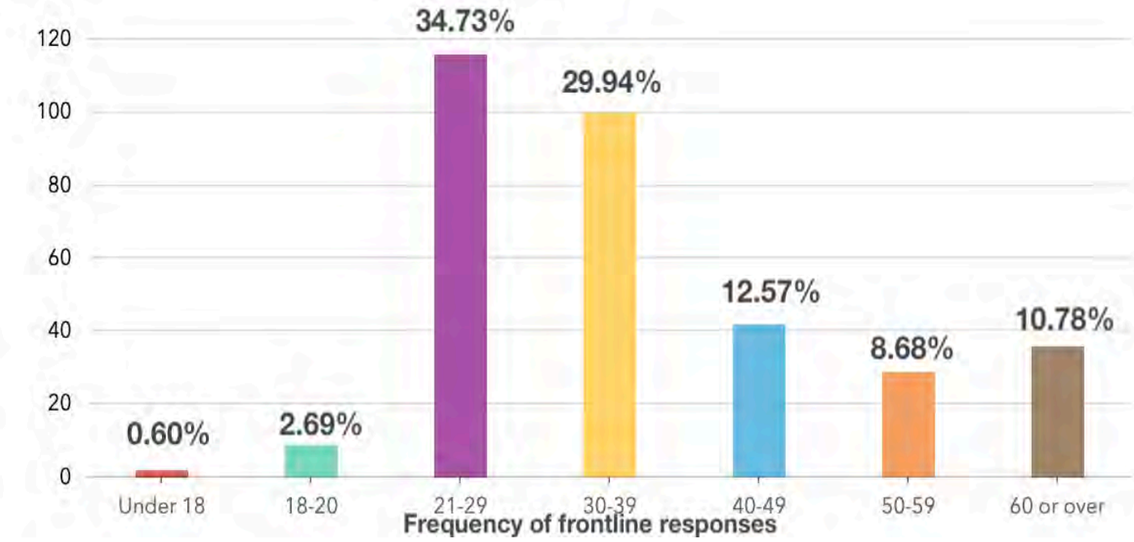


Figure K: How old are you?



APPENDIX 3: HEAT SUREVEY MATERIAL

Frontline Survey Responses

Figure L: How much total combined money did all members of your household earn in 2022?

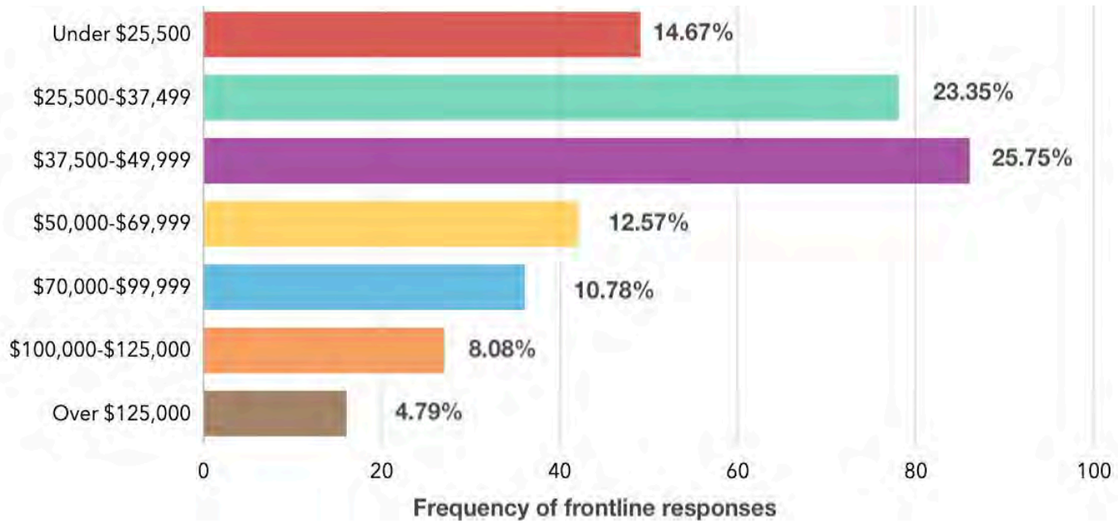
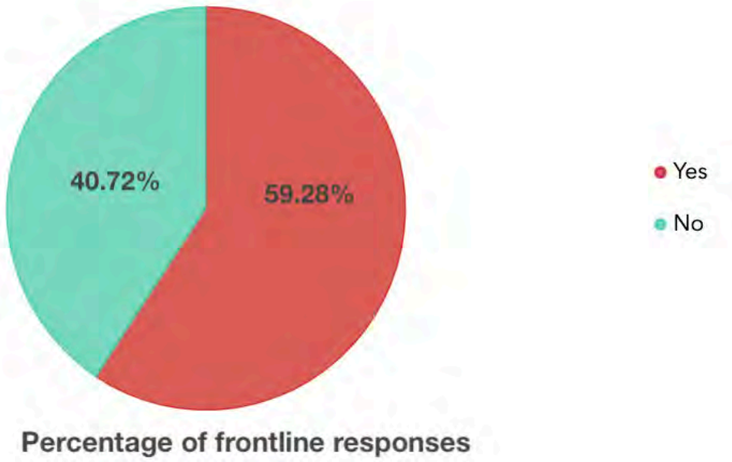
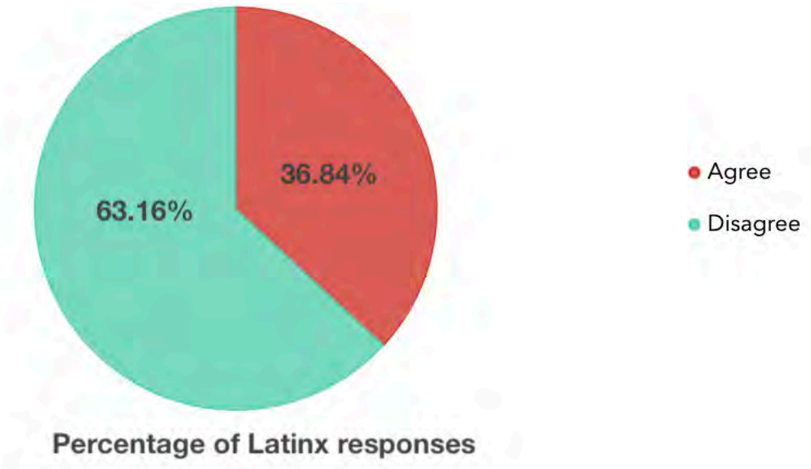


Figure M: Have you ever been housing insecure or had an unstable living situation in the past?



Selected Responses of Hispanic/Latinx Respondents

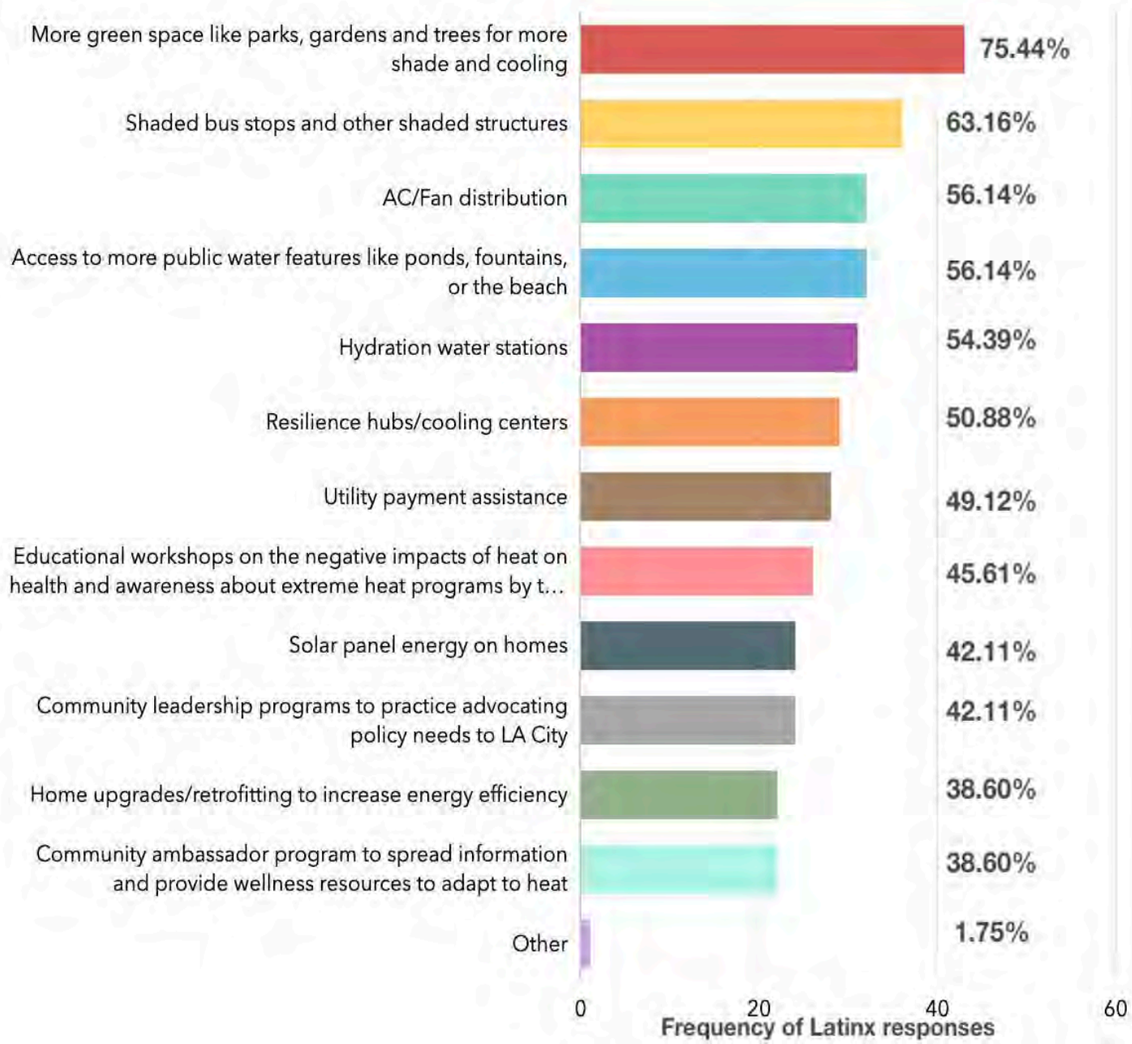
Figure N: There are enough trees to provide shade in my neighborhood on a hot day



APPENDIX 3: HEAT SUREVEY MATERIAL

Selected Responses of Hispanic/Latinx Respondents

Figure O: Which resources would you like to see in your neighborhood? Check all that apply



Selected Responses of Non-Frontline Respondents

Figure P: When you stay at home on a hot day, how often do you feel hot in your home?

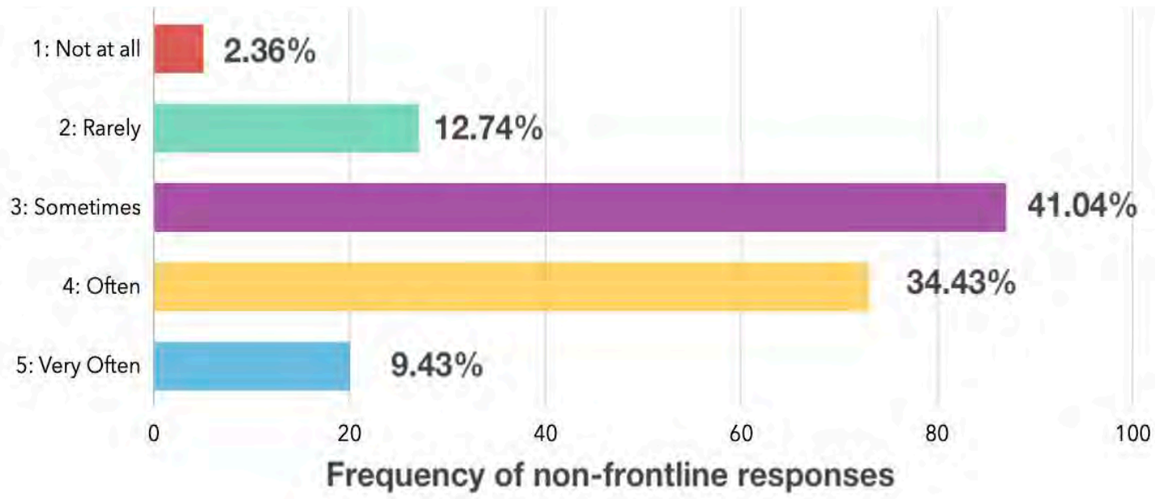
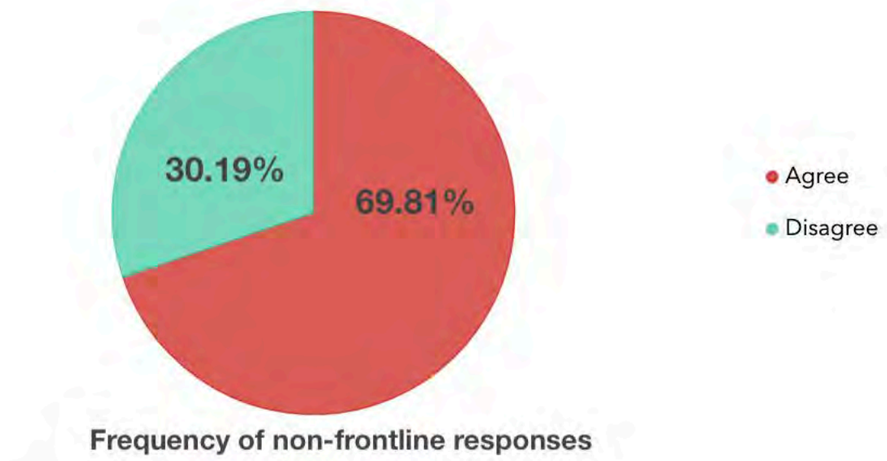


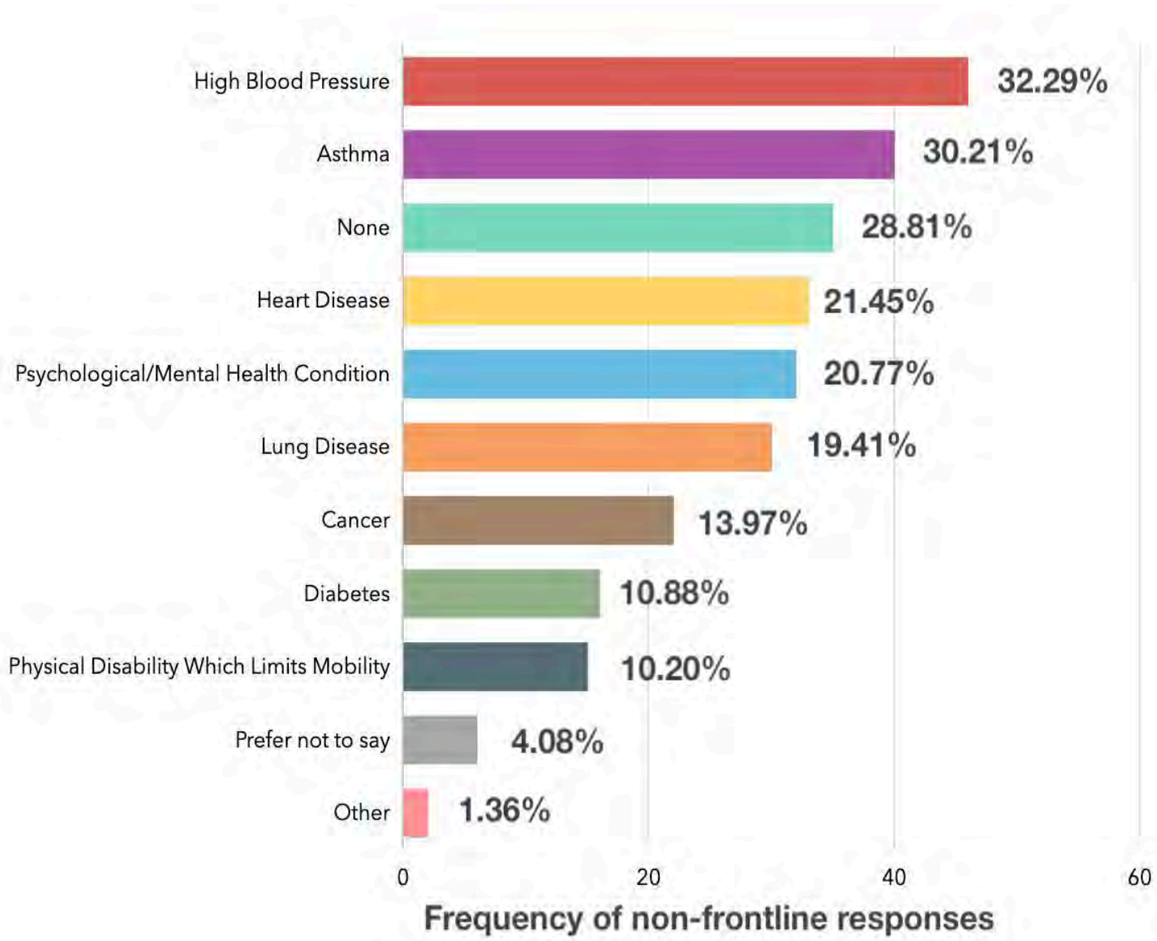
Figure Q: There are enough trees to provide shade in my neighborhood on a hot day. Agree or disagree?



APPENDIX 3: HEAT SUREVEY MATERIAL

Selected Responses of Hispanic/Latinx Respondents

Figure R: Do you or a family member have any of these health conditions that are affected by extreme heat? Check ALL that apply.



Selected Responses of Non-Frontline Respondents

Figure S: When you stay at home on a hot day, how often do you feel hot in your home?

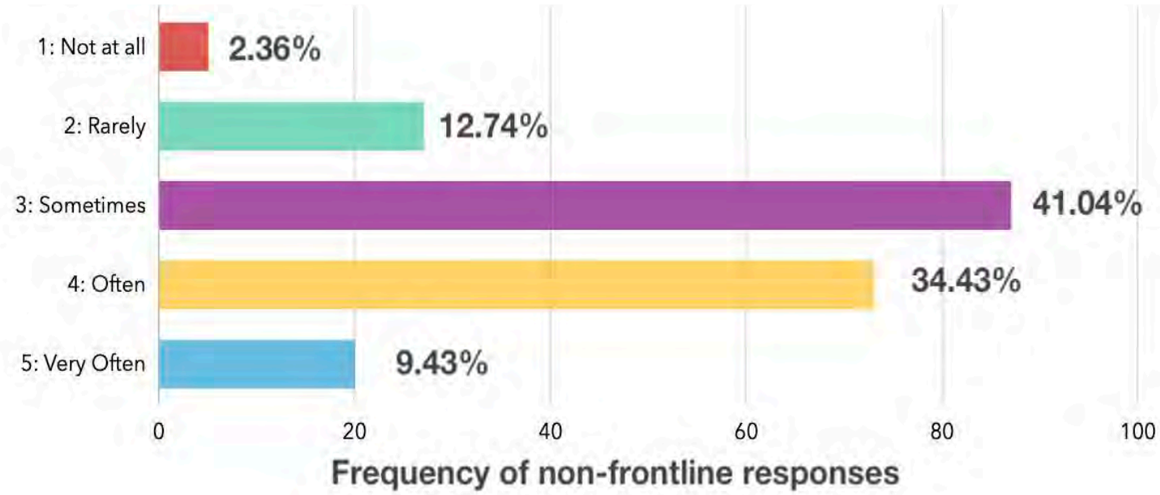
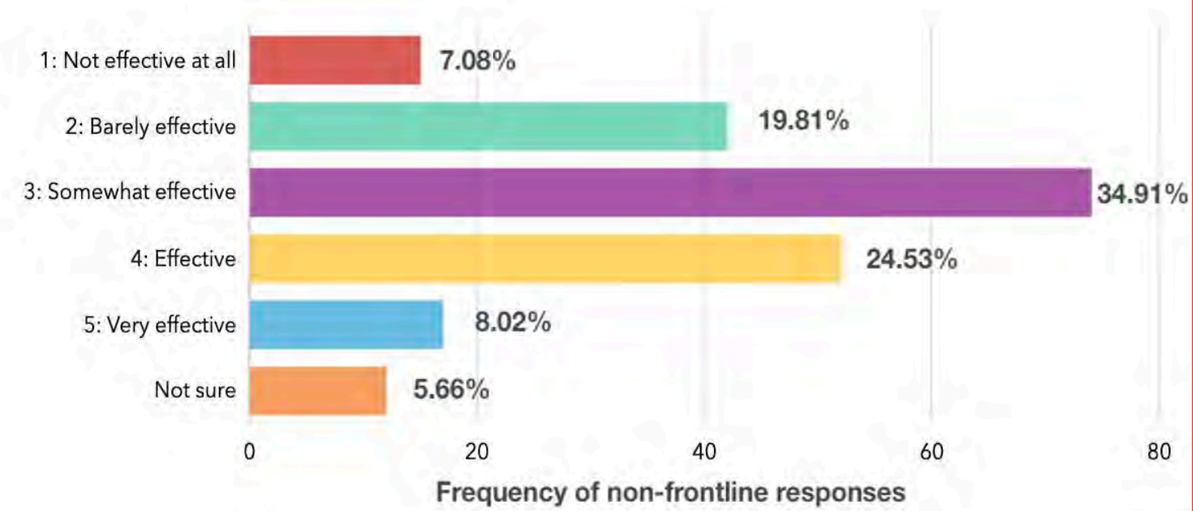


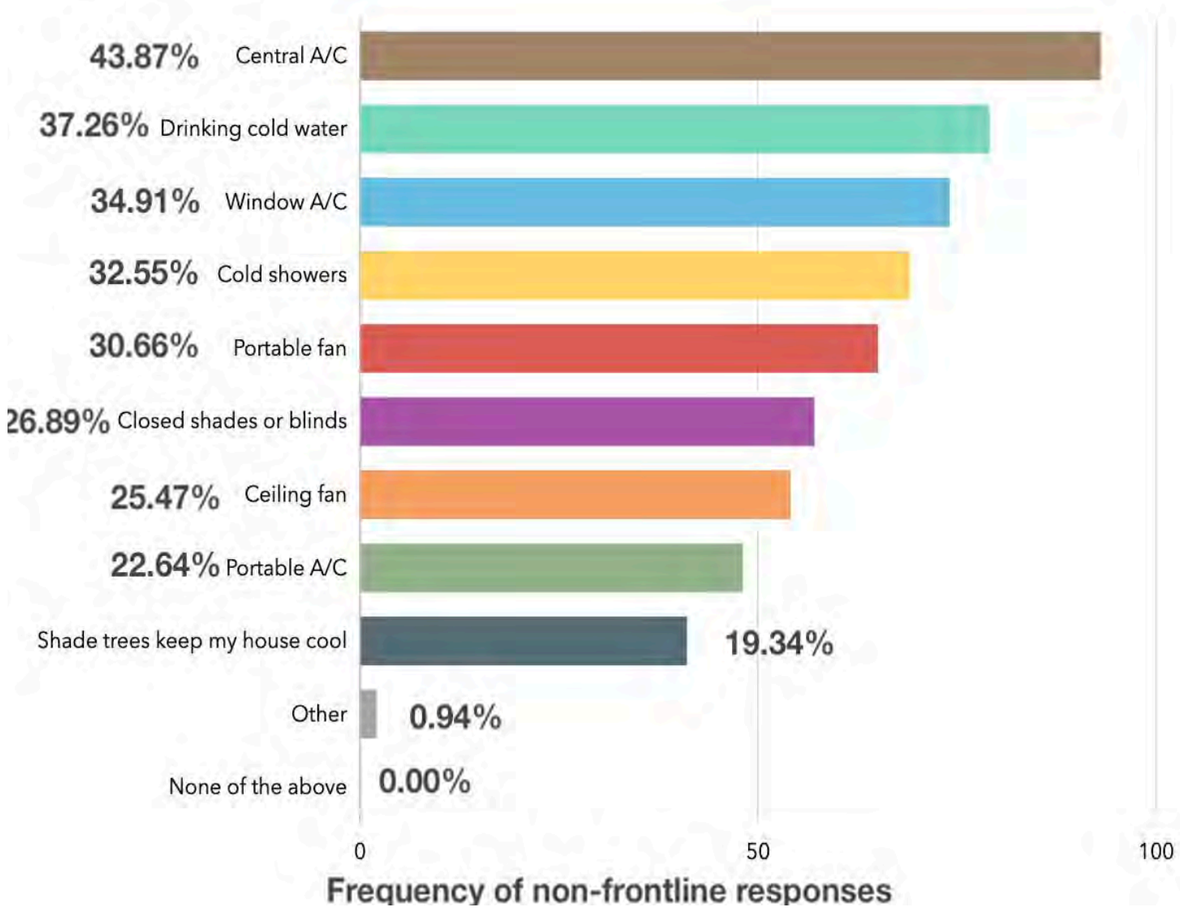
Figure T: On a scale of 1-5, how effective has the city been in responding to extreme heat?



APPENDIX 3: HEAT SUREVEY MATERIAL

Selected Responses of Hispanic/Latinx Respondents

Figure U: When it is a very hot day, which of these do you use to stay cool inside your home? Check ALL that apply.



Selected Responses of Non-Frontline Respondents

Figure V: On a scale of 1-5, how effective has the city been in responding to extreme heat?

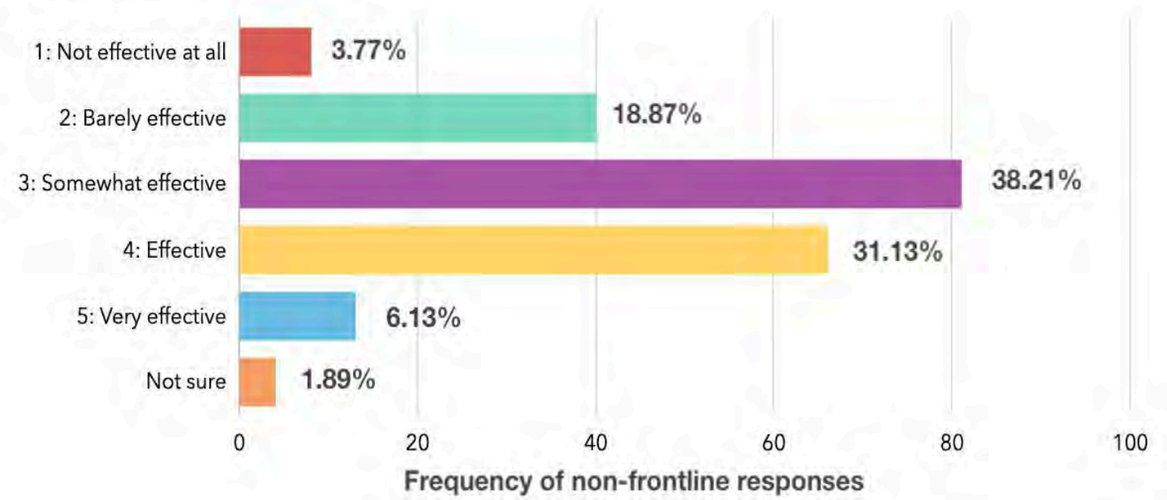
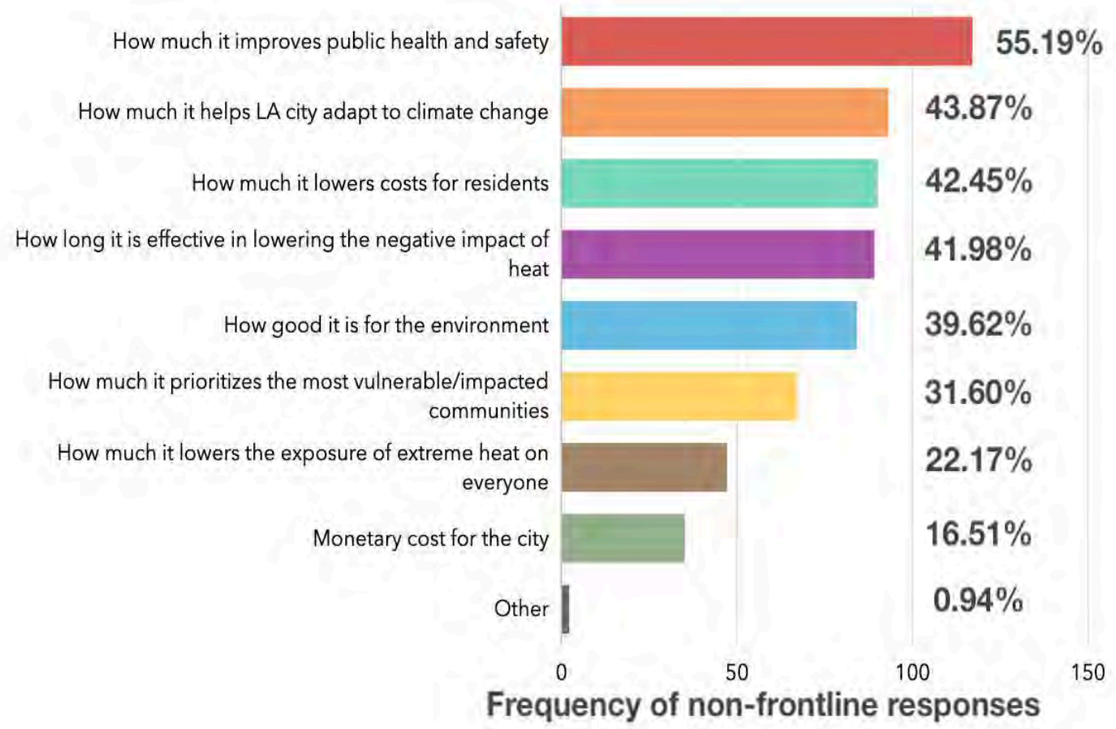


Figure W: Please select the top three priorities for how the city should invest in the resources identified above.



APPENDIX 3: HEAT SUREVEY MATERIAL

Selected Responses of all Respondents

Figure X: On a scale of 1-5, how much do you think extreme heat personally threatens your health, safety, and wellbeing?

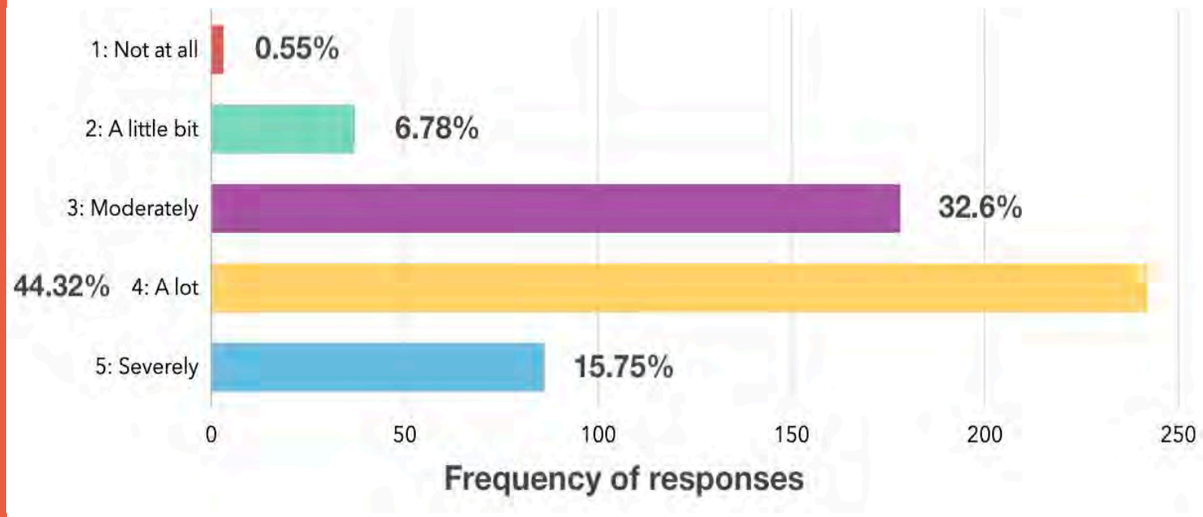


Table A: Have you ever heard of/used any of the following resources?

Resources	Frontline Communities	Non-Frontline Communities
NotifyLA Emergency Alerts (311)	Used: 26.05% Heard of: 52.4% Never Heard of: 21.56%	Used: 37.74% Heard of: 53.30% Never Heard of: 8.96%
LA City Hydration and Water stations	Used: 25.45% Heard of: 39.82% Never Heard of: 34.73%	Used: 30.66% Heard of: 42.45% Never Heard of: 26.89%
Cooling centers	Used: 21.86% Heard of: 55.69% Never Heard of: 22.46%	Used: 29.72% Heard of: 52.83% Never Heard of: 17.45%
Rides to cooling centers	Used: 17.37% Heard of: 37.72% Never Heard of: 44.91%	Used: 34.43% Heard of: 42.45% Never Heard of: 23.11%
City splash pads	Used: 16.77% Heard of: 40.12% Never Heard of: 43.11%	Used: 24.06% Heard of: 44.34% Never Heard of: 24.06%
Cool Spots LA app	Used: 18.56% Heard of: 36.53% Never Heard of: 44.91%	Used: 25.00% Heard of: 37.74% Never Heard of: 37.26%
Cool Neighborhoods Street program	Used: 12.57% Heard of: 42.51% Never Heard of: 44.91%	Used: 25.94% Heard of: 45.28% Never Heard of: 28.77%
Green New Deal Neighborhood Council Toolkit	Used: 23.35% Heard of: 26.65% Never Heard of: 50.00%	Used: 30.19% Heard of: 46.70% Never Heard of: 23.11%
Cool LA payment assistance program	Used: 11.68% Heard of: 38.32% Never Heard of: 50.00%	Used: 20.28% Heard of: 43.87% Never Heard of: 35.85%