

A Grassroots Approach to Food Insecurity-Lessons for Earthquake Resilience

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Glossary

Community food security- Community food security is a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that also maximizes community self-reliance and social justice.

Cultural competence- Cultural competence is defined as a set of values, behaviors, attitudes, and practices within a system, organization, program or among individuals and which enables them to work effectively cross culturally (Denboba et al., 1998)

Disaster- A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic and environmental losses, and impacts. (UNDRR, 2022).

Disaster impact- The total effect, including negative effects (e.g., economic losses) and positive effects (e.g., economic gains), of a hazardous event or a disaster. The term includes economic, human, and environmental impacts, and may include death, injuries, disease and other negative effects on human physical, mental and social well-being.

Food Apartheid- Intentional policy decisions that lead to inequitable food environments and access.

Food desert- Low-income census tracts with a substantial number or share of residents with low levels of access to retail outlets selling healthy and affordable foods.

Food justice- A movement that strives for universal access to nutritious, affordable, and culturally appropriate food for all, while advocating for the well-being and safety of those involved in the food production process. The movement aims to address disparities in food access, particularly for communities of color and low-income communities, by examining the structural roots of the food system.

Food security - Food security exists when all people, always, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life". (World Food Summit, 1996)

Food insecure households- Food insecure households means that households were, at times, unable to acquire adequate food for one or more household members because they had insufficient money and other resources for accessing food.

Vulnerability- Vulnerability describes the capacity of an individual or group to anticipate, cope with, resist, and recover from the consequences of disasters and disruptions.

Racial Discrimination- Racial discrimination is the unequal treatment of persons or groups based on their race or ethnicity. Racial discrimination includes two components: (1) “differential treatment on the basis of race that disadvantages a racial group” (disparate treatment) and (2) “treatment on the basis of inadequately justified factors other than race that disadvantages a racial group” (disparate impact). (Denboba et al., 1998)

Abbreviations

ACCFB	Alameda County Community Food Bank
ACDEH	Alameda County Department of Environmental Health
ACSSA	Alameda County Social Services Agency
ACPHD	Alameda County Public Health Department
BAF	William Averette Fund for Hazard & Disaster Mitigation Education & Research
CBO	Community Based Organization
CFS	Community Food Security
CGS	California Geological Survey
COVID	Coronavirus
DPEM	Office of Disaster Preparedness & Emergency Management
FEMA	Federal Emergency Management Agency
FJ	Food Justice
LGBTQIA	Lesbian, Gay, Bisexual, Transgendered, Queer, Intersexed, Aromantic/Asexual
SNAP	Supplemental Nutrition Assistance Program
USGS	United States Geological Survey
VOAD	Voluntary Organizations Active in Disasters

Project Background & Objectives

The overarching goal of the Diversifying HayWired Communication project is to assist the US Geological Survey (USGS) in identifying and engaging key stakeholders representing diverse communities within the San Francisco Bay Area regarding the findings of the HayWired scenario, which highlights the impacts of a hypothetical magnitude 7.0 earthquake on the Hayward Fault and its aftershocks. The findings of the third volume of the USGS Scientific Investigations Report highlight the societal consequences of damages and disruptions expected to result from the events described in the scenario, including impacts to socially vulnerable populations. Phase 1 of the Diversifying HayWired Communication project identified diverse groups to inform engagement and stakeholder consultation around the HayWired Scenario. Phase 2 focused on gaps in the analysis of societal consequences from the HayWired Scenario. Specifically, understanding the relevance of these consequences to underrepresented communities and identifying organizations to learn from.

This project examines how food security, a widely entrenched issue in the Bay Area, interacts with earthquake response, preparedness, and recovery. This project sought to build on insights from the Volume 3 report to answer the following questions:

1. What are the spatial patterns of food insecurity and seismic hazard exposure in the East Bay?
2. How are localized community-based organizations supporting food security in a culturally responsive manner with different cultural groups?
3. Are these localized organizations prepared to respond to the food security needs of these cultural communities in the event of a large- scale earthquake simulated in the HayWired Scenario?
4. What are the current knowledge and implementation gaps related to response planning for disasters, and specifically earthquakes, among small community-based organizations?

The activities carried out in this report were designed and implemented by doctoral student, Judanne Lennox-Morrison, a current third year Fellow of the William Averette Anderson Fund for Hazard and Disaster Mitigation Education and Research (hereinafter referred to as the Bill Anderson Fund, or BAF). The project design was informed by previous work carried out in Phase 1 of this project as well as research interests, academic goals and lived experiences. The first phase of the project focused in part on engagement with mutual aid organizations on seismic resilience and earthquake safety. The target users and information needs provided the background for researching the role of community-based organizations in food assistance before, during and after a 7.0 magnitude earthquake described in the HayWired Scenario.

A kickoff meeting was held on June 1st, 2022, with Dr. Nnenia Campbell (Research Associate at the Natural Hazards Center at the University of Colorado and Deputy Director of the BAF), Suzanne Frew (Hazard and Risk Resilience Consultant at The Frew Group) and Dr. Anne Wein Operations Research Analyst, United States Geological Survey (USGS). All played a mentorship and/or project supervisory role in the completion of this project and leveraged professional experience, partnerships, and subject matter expertise in the completion of this project.

Project Rationale

The issue of seismic safety and exposure in the Bay Area in California is very significant. In an earthquake probability study carried out in 2014 by scientists from the USGS, CGS, and SEC, it was determined that there is a 72% probability of a magnitude 6.7 or greater earthquake happening in the Bay Area by 2043 (Aagaard et al., 2016). The map below shows the probability of a magnitude 6.7 or greater earthquake occurring on active faults in the Bay Area region. Specifically, the Hayward-Rodgers Creek fault system, located in the East Bay, has a higher earthquake probability than the San Andreas fault in the San Francisco Peninsula. This is due to the number of faults in the East Bay (Field et al., 2008). The East Bay region consists of Alameda County and Contra Costa County. Earthquakes of this magnitude can damage physical infrastructure, result in loss of life and injuries, and disrupt livelihoods. The Hayward Fault has the highest probability at 33% of having a large earthquake within 30 years. This motivated the development and operationalization of the HayWired Scenario especially as it related to societal consequences in this diverse region.

This seismic risk is not evenly distributed across the varying demographic groups in the East Bay Region. Communities of color and social groups such as recent immigrants, the unhoused, formerly incarcerated, people with disabilities; just to name a few are disproportionately at risk of earthquake damages and disruptions. These groups are most at risk because of multiple challenges inclusive of but not limited to access to safe housing, lack of reliable income, racial and ethnic discrimination, inadequate access to social safety net services, and insufficient resources to respond and recover. While the seismic threat to the population is significant, the communities and groups described above are much more likely to suffer disproportionate impacts.

The East Bay has an estimated population of 2.8 million (United States Census, 2020). The larger regional nine (9) county Bay Area's population growth has outpaced the growth of the state of California (United Census, 2020). As the San Francisco Bay Area continues to grow it becomes more diverse with substantial increases in the Asian, Pacific Islander, and Latino populations. The African American population continues to decline in the Bay Area though the statewide population remains stable. While the San Francisco Bay Area is often touted for its racial diversity, it also remains as one the most racially segregated metro areas in the US. This racial and geographical segregation underpins other issues such as housing opportunity, access to health care, income inequality and of course hazard exposure. This understanding helped to craft the key components of this project.

Earthquake Outlook for the San Francisco Bay Region 2014–2043

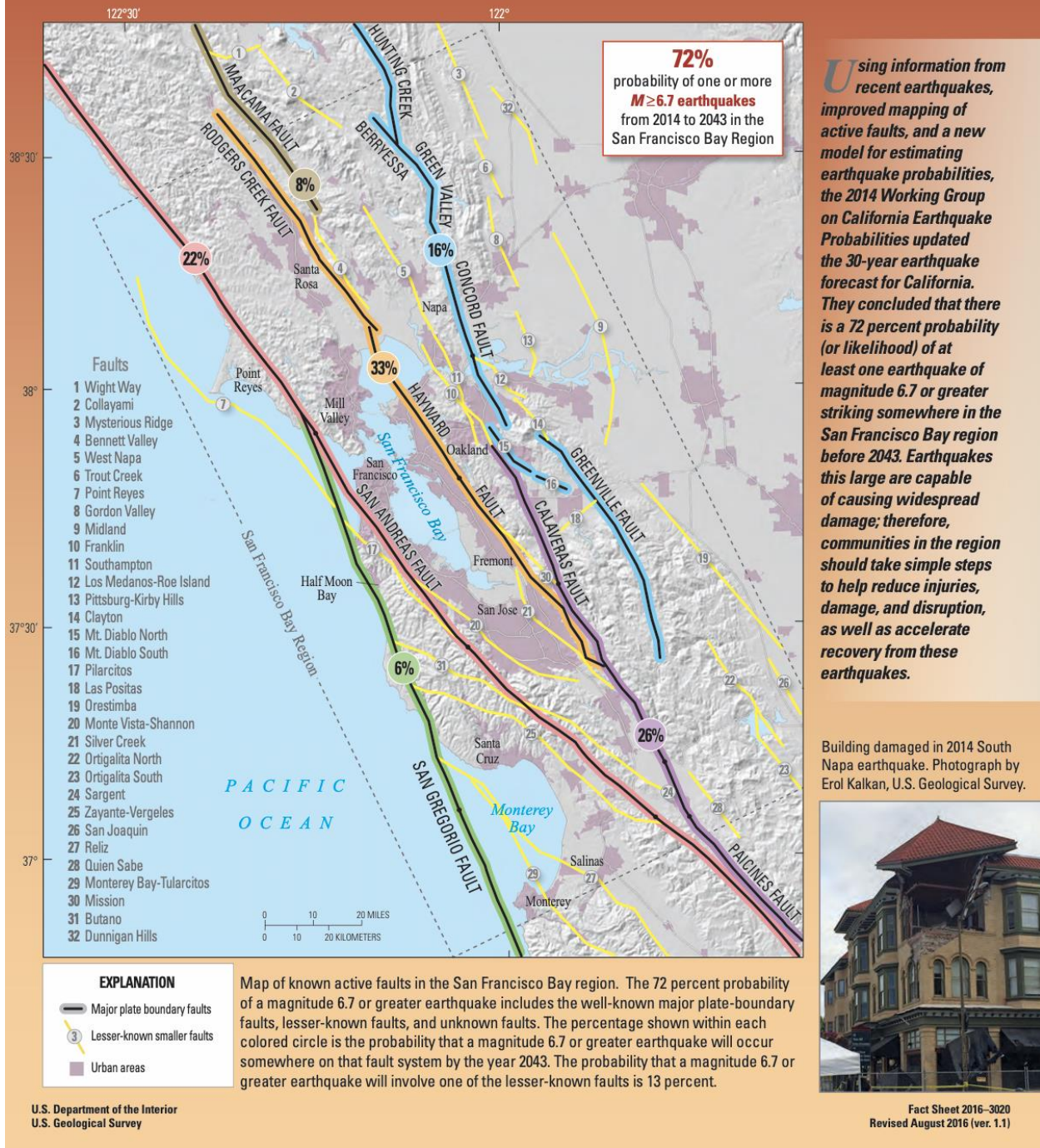


Figure 1- Map of the East Bay showing geological faults including the Hayward Fault.

Source: Aagaard, B.T., Blair, J.L., Boatwright, J., Garcia, S.H., Harris, R.A., Michael, A.J., Schwartz, D.P., and DiLeo, J.S., 2016, Earthquake outlook for the San Francisco Bay region 2014–2043 (ver. 1.1, August 2016): U.S. Geological Survey Fact Sheet 2016–3020, 6 p., <http://dx.doi.org/10.3133/fs20163020>.

Methods

The project used multiple methods to help enhance the understanding of the intersection of seismic exposure, food security pre-disaster preparedness, and food security post-earthquake response and recovery.

illustrates the project framework with the three main components. The methodological approaches were selected based on current competencies and the project timeline. The different methodologies selected provided the best framework to capture the multiple dimensions of the issues. The aim is to shed light on the relationship to food security issues, diverse populations and efforts to build resilience using the HayWired Scenario.

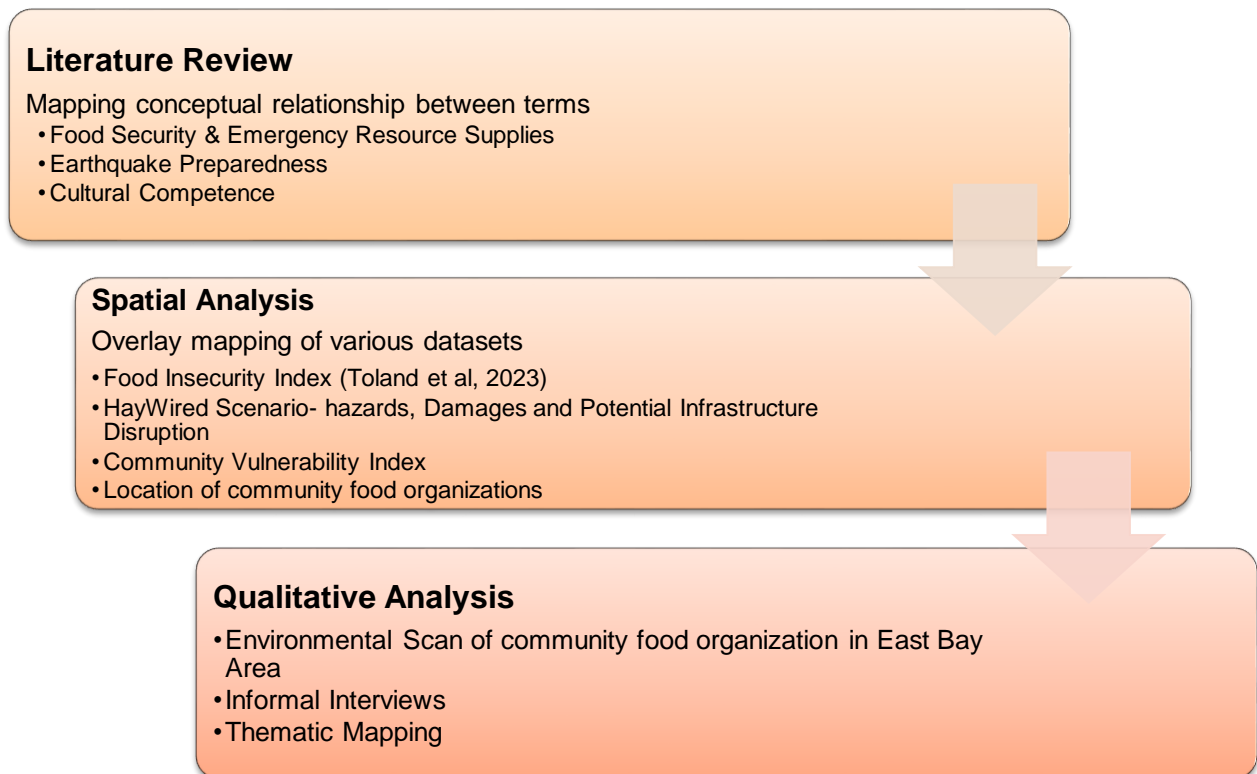


Figure 2- Diagram showing key methodological components.

Although the diagram presents a very linear research process, iterative work was involved in the further development of the environmental scan and continued spatial analysis. Each component assisted in the development and analysis of the project results.

1. Literature Review

A review of the literature served as the first major component of the project. This included a review of concepts of 'food security', 'earthquake preparedness/safety/resilience', and 'cultural competence' and a scoping study of their interrelationships. The literature review focused on ascertaining whether and to what extent there was existing research in academia and practice related to spatial patterns of food security, cultural diversity, equity and inclusion, and hazard preparedness activities. Through this review, we have sought to analyze its possible application to post earthquake recovery and identify which lessons and conceptual understanding can be gained from existing research and practitioner material.

2. Spatial Analysis

Spatial analysis used Geographic Information's Systems (GIS) to explore geographic patterns related to the sphere of influence of community-based food organizations captured in the environmental scan. Their potential exposure to damages and disruptions from the HayWired Scenario and community socio-economic vulnerabilities were mapped using the overlay process.

3. Qualitative Analysis

Qualitative analysis included the creation of an environmental scan to ascertain the localized community food assistance groups and the varying populations they serve. Informal interviews with six key contacts in the community food assistance landscape provided input on seismic resilience needs through a culturally responsive lens. The analysis of these interviews provides insights and recommendations for engaging with vulnerable communities in a post disaster context.

Research Process Details

Literature Review

A scoping literature review is a relatively new methodological approach being used in various disciplines. Scoping literature reviews share the same process as systematic literature reviews because they comprehensively review available literature pertaining to a research question. Scoping reviews are useful for examining emerging evidence when it is still unclear what other, more specific questions can be posed and valuably addressed by a more precise systematic review (Armstrong et al., 2011). The scoping literature review provides an evidentiary basis and maps the body of literature on a specific topic, in this case, food insecurity and cultural context in a post-earthquake disaster. This project uses the methodology to investigate research and other reporting of food security post disaster and assess how cultural competence/responsiveness was or could be woven into this discourse. The process included an examination of various terms to ground discussion of food security as a systemic issue and the process of feeding post seismic disaster. The literature review produced academic articles and practitioner reports that were focused on addressing food insecurity, mass care systems, earthquake safety and community outreach. Scoping review methodology also recommends

conducting consultations through interviews or other structured discussions that may enhance the results, making them more useful to policy makers, practitioners, and service users (Arksey & O'Malley, 2005). The scoping literature review provided discussion points that were subsequently developed into interview questions for the various representatives for the community-based food organizations.

Environmental Scan

The environmental scan methodology was made popular in various disciplines including public health, human resource management and facilities management. The methodology is often populated using public facing information from organization websites and search engines. Within the field of public health, the scan methodology is used to assess multiple facets of issues easily but comprehensively. The understanding of these issues can add value to programmatic or research questions (Wilburn et al., 2016). Federal agencies like the Department of Health and Human Services (HHS), specifically the Centers for Disease Control and Prevention (CDC) use environmental scans to get a quick “snapshot” of a research area of interest, and to support future primary research activities (Koo et al., 2016).

The environmental scan was used to capture the many local- and community- based food assistance organizations in the Bay Area. The search for organizations utilized a common internet search engine using Boolean operators. Terms searched were: “local food security” **AND** “community” **AND** “East Bay”. From the search results generated, state and federal organizations and programs were excluded because these organizations are more likely to receive state and federal funding and would have to be guided by legislative rules and processes. The next step involved a review of the mission and programmatic areas of the community organizations that remained. The organizations were selected and added to the scan if they were a localized community facing food organization¹ that served diverse communities and/or counties in and around the spatial area of the Hayward Fault. The limitations of the environmental scan in its application for this project included the availability of the data. Some community-based organizations do not have established or well-maintained websites, a wide social media footprint or a media liaison/public relation officer. The scan is not a census and can only reflect the data available and found during the collection period. To combat this issue, the scan also incorporated think tank reports and public-facing articles to note the organizations involved in alleviating food security challenges.

To expand the environmental scan database, partner lists and other programmatic activities were reviewed for each organization. This view helped to identify similar organizations working in community food assistance so that they could be added to the environmental scan. Emphasis was placed on organizations operating in the vicinity of the Hayward Fault and catering to specific cultural groups as part of their mandate. This scan did not include school meal

¹ Local community food-based organizations include grassroots community-based organizations that addressed wider socio-economic and health equity challenges but had established food programs based on community needs.

programs, aging facilities, or senior homes that receive federal and state funding to serve these communities.

The environmental scan specifically documented whether there were any alternative cultural provisions mentioned for communities they were working in. Some of the information collected in the environmental scan included but was not limited to:

1. Name, location, and physical address of the organization
2. Vision and mission statements
3. Food organization type (e.g., dine in program, packaged meals, food rescue/recovery, food distribution, community kitchen, social equity programming).
4. Priorities which could be identified through programs/activities and impact reports.
5. Alternative cultural provisions (e.g., whether the organization/website and information products and/or website are available in multiple languages, availability of interpreters mentioned, culturally relevant foods, dietary restrictions etc.)
6. Key activities and programs (derived from organizational lists of programs and initiatives)
7. Core competencies (e.g., organizations' key areas of knowledge and expertise based on their work and partnerships)
8. Point of Contact

Informal Interviews

Several interviews were carried out with representatives from community-based food organizations operating in the Bay Area. These interviews were meant to probe and ascertain how these organizations envision themselves functioning in the event of a magnitude 7.0 earthquake to provide food assistance and emergency supplies. Specifically, the interviews attempted to capture whether cultural awareness and relevance influenced their mission to provide food resources to the communities they served. The purpose of the interviews with community-based organizations was to a) understand their involvement in food security issues in the Bay Area and their experience with disaster planning, b) discuss the extent of their involvement with culturally diverse groups in the area and how they serve them and lastly 3) identify the information gaps and learning needs around culturally sensitive earthquake response and preparedness and how the HayWired Scenario could inform these needs.

In addition to interviews with community-based food organizations, targeted interviews were conducted with government representatives at the county and state levels, as well as with other large-scale nonprofit organizations. Interviews with local and state officials were chiefly organized by leveraging the experience and connections of the project supervisory team, who either conducted the interviews or made introductions. The purpose of this set of interviews was to get a better understanding of the food assistance landscape, the legislative environment and current socio-political context around food security and disaster planning.

The environmental scan was used chiefly to support an analysis of the organizations' networks and connections; thus, the interview strategy was heavily dependent on populating the

environmental scan. As part of the scan, organizations' websites, information products, and/or impact reports were reviewed to identify other organizations that were listed as partners. The organizations identified through this process were then added to the scan database. The most frequently seen and mentioned organizations were targeted and a request for an interview was sent via email. This strategy was mostly successful at securing interviews.

Spatial Analysis

The decision to include a spatial component was based on the ability of maps to provide a visualization of the relationship between food insecurity, vulnerable populations, and possible disruptions in the HayWired Scenario. Geographic information systems (GIS) and geospatial analysis was used to overlay datasets from the HayWired Scenario with US Census demographic and spatial datasets. The HayWired datasets consisted of the epicenter, estimated ground shaking, fault slips and after slips, aftershocks, landslides, liquefaction, and fire hazards, building and infrastructure damage and disruptions. Earthquake hazard datasets are presented in a previously launched interactive geonarrative of the HayWired Scenario titled "[The HayWired Scenario: An Urban Earthquake in a Connected World](#)". This overlay analysis includes both feature overlays of different feature datasets (point, lines, and polygons) as well as raster overlays² (ESRI, 2021). The inclusion of geospatial analysis adds a visual component to the geographic component of risk in the Bay Area, both from earthquake shaking and ground failure hazards (e.g., liquefaction and landslides) as well as food insecurity.

Organization address data from the environmental scan organizations were also georeferenced to spatially represent the geographical distribution of these community-based food assistance organizations across the East Bay. Analyzing the geographical patterns of both food security, based on previous research, seismic risk according to the HayWired Scenario can provide invaluable information on the groups of communities and areas that could face a combination of these challenges. Figure 3 below shows the overlay process and data sources involved in this process.

² <https://desktop.arcgis.com/en/arcmap/latest/analyze/commonly-used-tools/overlay-analysis.htm>

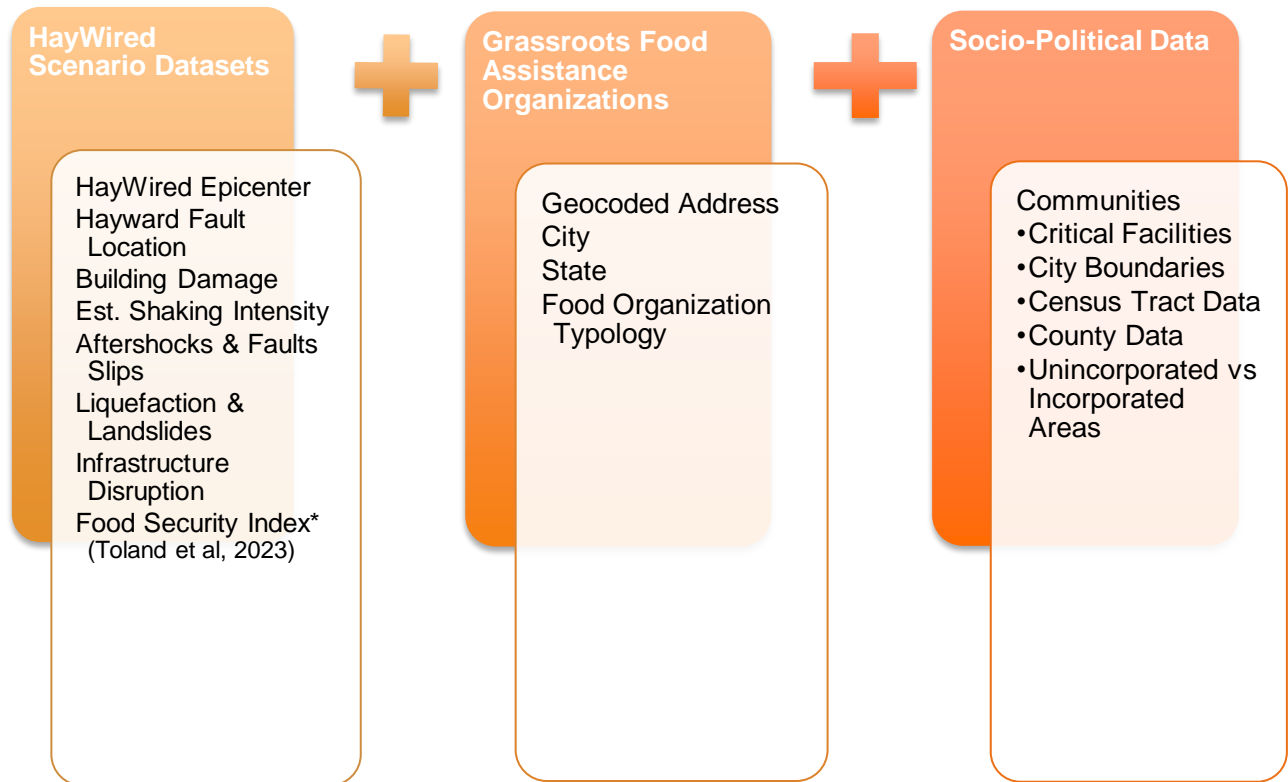


Figure 3- Diagram showing overlay methodology and data sources used in spatial analysis

Literature Review

The purpose of this literature review is to conceptually ground the basis of this project in an understanding of food access, food (in)security, post disaster food access and security and cultural competence. The spatial context of this project in the Bay Area also requires an understanding of the socio-political conditions that expose the area to both risks from earthquakes as defined in the HayWired scenario as well as food and social justice issues. The literature review covers peer reviewed articles, practitioner reports, and secondary data such as newspaper and magazine articles.

Defining Food (In)Security

The literature on food security has increased tremendously in the last decade with several prominent studies, systematic reviews, and case studies (Avilés-Vázquez & Bussmann, 2009; McKinnon et al., 2009; Walker et al., 2010) coined in the 1990s explains the multi-faceted nature of food security:

[Food security is] access by all people at all times to enough food for an active, healthy life and includes at a minimum: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways (e.g., without

resorting to emergency food supplies, scavenging, stealing, and other coping strategies). Food insecurity exists whenever [a] or [b] is limited or uncertain. (Anderson [ed.], 1990, p. 1560)

The US Department of Agriculture defines food security as “access by all people at all times to enough food for an active, healthy life” (USDA ERS - Food Security in the U.S., n.d.). According to a 2022 report titled [Household Food Security in the United States in 2021](#) by the USDA Economic Research Service, an estimated 89.8 percent of U.S. households were food secure throughout the entire year in 2021 while the remaining 10.2 percent of US households were ‘food insecure’. Within those households, food security ranged from ‘low food security’ to ‘very low food security’. The data that is collected for these reports and others like it, use survey methodology. The survey instruments, issued to households, aim to capture variations of household food security to make informed decisions around health, hunger, and other poverty alleviation programs.

However, it is critical to understand that many groups of people are underrepresented in these surveys. This underrepresentation reflects the shortcomings of the data collection methods, constraints, generalizations, and theories of understanding that can be drawn from such data. These limitations have led to the term “household food security” being challenged in academic and praxis spaces. Research literature demonstrates that the conceptualization of ‘household food security’ as defined using the parameters of the USDA ignores more nuanced issues and generalizes other challenges that may be happening within one household (Maxwell & Smith, 1993). Maxwell and Smith identify some of these challenges as the homogenous way that a household is defined. The concept of household food security ignores food security risks that may be faced by persons of different race, gender, and age within one “household.” The concept also ignores the impact of varying cultural values on food entitlement and divorces household food security from wider livelihood and social issues. The concept of “food deserts” attempts to tie household food security to other economic challenges.

Community food security and related research arose from critiques that household food security analysis was failing to capture and/or acknowledge issues such as the historical and socio-economic contribution to who is entitled to healthy and culturally acceptable food. Community food security is defined as: “all persons in a community having access to culturally acceptable, nutritionally adequate food through local non-emergency sources at all times” (Winne et al., 1998, p. 1). A more nuanced way to examine food security challenges includes understanding how the disparate effects and lived realities of communities are directly linked to the availability, access, and stability of their food sources. The concept of community food security incorporates how socio-political realities like poverty, cultural backgrounds, and unreliable income shape the ways that people make food choices. The theory of community food security faces its own theoretical challenges as the definition of “community” is often debated across disciplines (Anderson & Cook, 1999). Community has been defined as both a geographical space and a social group with similar norms and cultural values. The inclusion of a cultural component into the food security discourse introduces the possibility that food security (access, availability, and stability) is often culturally determined. The relationship between race/ethnicity and food insecurity is complex and is clearly intertwined with other established determinants of food

insecurity including poverty, unemployment, incarceration, and disability. Structural determinants of health impact food security through access, availability of sustainable food options and the ability to afford these types of food.

Food insecurity is often associated with other precarious living arrangements. Areas with high food insecurity often have high rates of indicators commonly associated with hunger, such as poverty or unemployment (ACCFB, 2020). Two strong indicators of food insecurity relate to race and housing. Predominantly white households are less likely than predominantly minority households to experience hunger in Alameda County. Food insecurity also tends to be lower in neighborhoods with high home ownership and low rental burden throughout the County (ACCFB, 2020). These patterns indicate that households in racial and ethnic enclaves and in neighborhoods that have been historically underinvested and plagued by structural racism are disproportionately likely to experience food insecurity. These are the antecedent conditions which can lead to more disastrous outcomes for non-white and non-native English-speaking persons, such as limited food supplies and lower capacity to prepare for disasters (Peacock et al., 1997), such as a magnitude 7.0 earthquake on the Hayward Fault.

Food Deserts: A Spatial Manifestation of Food Insecurity

There is a lack of consensus on the definition of food deserts. The phrase was first used in the early 1990s in Scotland by a resident in a public housing development (Cummins & Macintyre, 2002). The most widely used definition of 'food deserts' in the US was coined by the US Department of Agriculture (USDA) as: "low-income census tracts with a substantial number or share of residents with low levels of access to retail outlets selling healthy and affordable foods."³ USDA's definition of food deserts is the most widely used, although other literature defines a food desert based on the number of supermarkets present, the store size, the type and quality of food that be accessed as well as the socio-economic status of the persons living in that area (Walker et al., 2010; Zhang & Debarchana, 2016). These early definitions are concerned with the literal absence of a defined geographical area, however more recent definitions focus on disparate access to healthy and affordable food between socio-economically advantaged and disadvantaged groups. (Alkon & Agyeman, 2011; Beaulac et al., 2009). "Food deserts" are described as areas characterized by poor access to healthy and affordable food, which may contribute to social and spatial disparities in diet and diet-related health outcomes (Beaulac et al., 2009). One commonality across the varying definitions in of the last two decades is the linking of inconsistent food access, availability, stability and utilization to a specific geographic space or community with similar socio-economic realities. Whelan et al. (2002) find that food

³ Census tracts qualify as food deserts if they meet low-income and low-access thresholds:

1. Low-income: a poverty rate of 20 percent or greater, or a median family income at or below 80 percent of the statewide or metropolitan area median family income.
2. Low access: at least 500 persons and/or at least 33 percent of the population lives more than 1 mile from a supermarket or large grocery store (10 miles, in the case of rural census tracts)

deserts were used to describe socially and economically disadvantaged communities that were experiencing challenges with accessing healthy and affordable food.

Food deserts can be considered as the spatial manifestation of food insecurity and its social health determinants such as race, income, and access to housing. Food deserts define an area in which communities experience food insecurity. Research shows that food insecurity is disproportionately higher in vulnerable populations because of disparities in income, racial and ethnic background, and age. This is exacerbated by disparate physical and environmental health incomes (Morland et al., 2002). The geophysical location of these disparities coupled with the historical backdrop of neighborhood redlining, divestment, and supermarket redlining has set the stage for limited and unsustainable access to local and culturally relevant foods. The concept of 'food deserts' adds a geographic and spatial dimension to previous understandings of food security being managed and approached only at a household level. Recent research on food deserts indicates that communities within a certain geographical area with common socio-economic realities and vulnerabilities, can and have experienced similar food insecurity challenges.

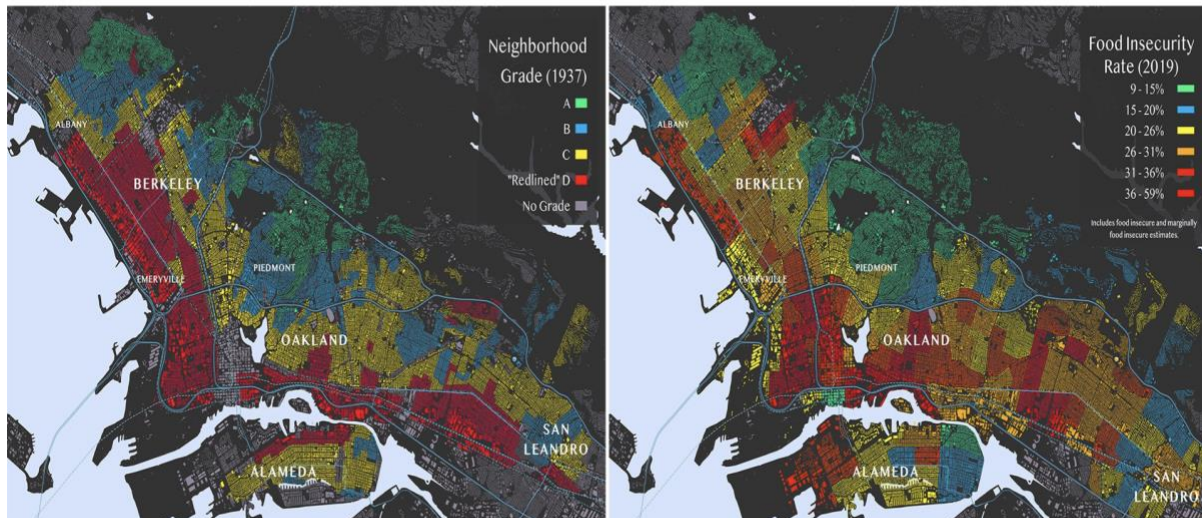
Scholars have also examined the impacts of transportation costs on the ways that socially disadvantaged communities access food. Attention to the role of transportation has had a direct impact on the neighborhoods considered to be 'food deserts,' especially as research on food security and food access became increasingly supported by Geographic Information Systems (GIS) to provide spatial connections to these local areas with these challenges. Previous literature also emphasized the importance of transportation in providing access to higher quality food (Acheson, 1998) because of the ability to expand one's options for healthy food.

However, there has been a recent pushback on this conceptual term as some criticize this language as obfuscating the structural inequities involved in the creation of food deserts. The term "food apartheid" has been mobilized to describe the intentional and historical policy decisions that lead to inequitable food environments and access. Literature on food deserts that focuses on the presence, or lack thereof, of retail food stores and the quality of food in these areas often ignores what has contributed to the disparate distribution of food retail stores and food access.

Historic practices rooted in racism and classism deliberately divested from specific communities and undergirded the decision to divest from specific communities. This divestment is strongly linked to the food access issues that these communities, and particularly people of color, face. One way in which this is manifested is through 'supermarket redlining' (Zhang & Debarchana, 2016)—the disinclination of chain supermarkets to locate within, or closure of existing stores within, impoverished neighborhoods. Figure 4 below shows the relation and legacy of historic racialized policy on recent food security challenges experienced by communities in the East Bay. As demonstrated by the image, historically redlined areas tend to have high rates of food insecurity in the present day. Redlining is a discriminatory practice in which services are withheld from potential customers who reside in neighborhoods classified as "hazardous" to investment; these neighborhoods have significant numbers of racial and ethnic minorities and

low-income residents (Nelson et al., n.d.). The image on the left shows the Homeowner Loan Corporation (HOLC) neighborhood grade maps and the image on the right shows Food Insecurity rates in 2019. The neighborhoods in D grade areas mainly face between 26-59% food insecurity rates.

Images comparing HOLC Redlined neighborhoods and Food Insecurity Rates, 2019



Source: [Roots Of Hunger: A Look At Current Food Insecurity In Historically Redlined Neighborhoods](#)

Figure 4- Comparison of images showing HOLC redlined neighborhoods and food insecurity rates, 2019.

Food Insecurity, Earthquake Risk & the HayWired Scenario

Food security has four main dimensions: food availability, access to food, stability of supply and safe and healthy use of food. These four dimensions are often drastically disrupted after a disaster as existing vulnerabilities and hazard exposure combine to create disparate impacts on socially marginalized demographic groups (Toland et al., 2023; De Haen & Hemrich, 2007; Dilley & Boudreau, 2001). The success or failure in maintaining food security along these various dimensions is a fundamental indicator of whether or not the most basic aspects of risk are being effectively managed (Christoplos, 2012, p. 543). Additionally, increases in the prevalence of disasters, erratic climate conditions, uncertainty regarding food prices, and national protectionism threaten everyday stability (Evenett, 2019).

The link between hazards and food security does not have a coherent agenda because the focus is mostly dichotomous. The focus is on the hazard itself or the impact, in this case, hunger and/or famine. Research emphasizes that various hazards do not inevitably lead to food insecurity, limited food aid and hunger (CITE). This body of literature emphasizes that the impact of a hazard on food security would potentially be minimized if there were existing social

structures and safety nets, especially for populations already experiencing poverty. Understanding the full context of antecedent risks will offer a much more comprehensive and proactive approach to understanding how a particular hazard, in this case an earthquake, will affect food security.

Wisner et al. (2004) describe the need for understanding the risk of earthquakes and people's vulnerability to earthquakes as involving both an ex-ante (potential) and an ex-post assessment of the spatial and temporal related characteristics of the earthquake against the socio-economic characteristics of the population at risk. Food insecurity is disproportionately distributed across racial and ethnic minority groups, with some evidence that non-Latino African Americans and Latinos experience higher rates than non-Latino whites (Myers & Painter, 2017). Studies have found that Latinos and African Americans are more likely to be food insecure regardless of immigration and citizenship status when compared to U.S. or foreign-born white individuals. Understanding of how food insecurity interacts with race, ethnicity and other characteristics that have historically been subject to discrimination can help to shed light on the potential impacts of an earthquake. This can provide better information needed to pre-position resources for the most affected people.

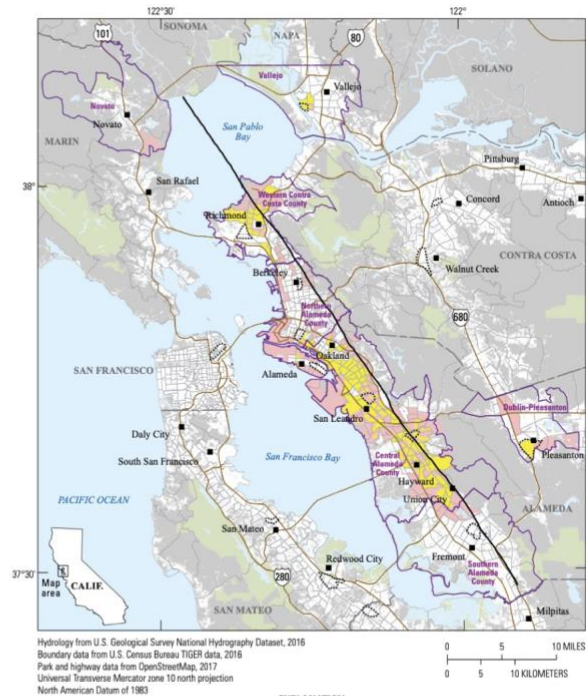
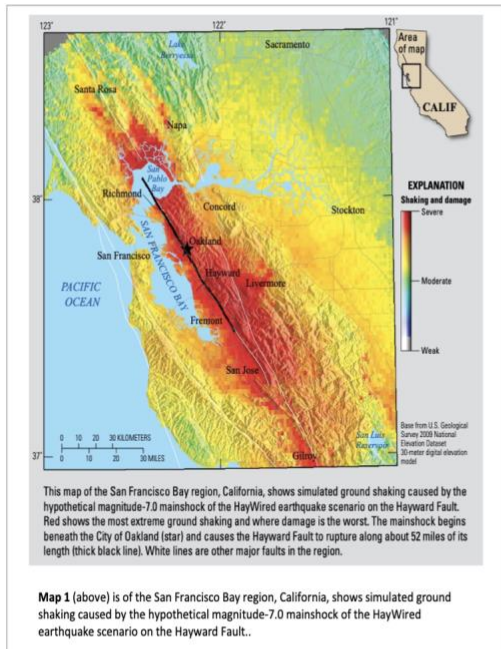
The highly racialized and food insecure antecedent conditions in the East Bay, coupled with the racial and ethnic enclaves in the area, can add multiple layers of complexity to an earthquake response and recovery effort. Within these racial and ethnic enclaves there are also differing impacts on various social groups because of age, gender, income, sexual identity, disability, immigration status, and other indicators of social vulnerability. It would therefore be unwise to assume homogeneity in the risks faced by similar racial and ethnic groups. Disasters emphasize and exacerbate already untenable socioeconomic disparities and existing social stratification. During a disaster, there is increased competition and urgency for numerous issues to be addressed as quickly as possible such as housing, building damage, infrastructure restoration, and rebuilding. Limited resources and challenges with decision-making around the prioritization of the issues and needs of various affected groups are core features of the complexities of disaster recovery (Olshansky et al., 2012). These conditions, apparent in disaster response as well as both short- and long-term recovery process, would undoubtedly emerge after a major devastating earthquake like the one described in the HayWired Scenario.

After a disaster, food systems experience a series of disruptions that interfere with their ability to provide emergency food supplies. Food pantries and other community-based food organizations play a critical role during the emergency response and disaster recovery periods (Toland et. al, 2023; Casellas Connors et al., 2022). These services provide vital resources for food insecure households, which are very prevalent in the East Bay. Many of the food assistance organizations included in this study are not federally funded and would be at much higher risk from being disrupted due to unreliable funding and limited personnel and resources. Disruptions to the operations of and access to these facilities could have far-reaching implications for regional food availability in the seismically at-risk East Bay. In the event of a large earthquake, households would suffer energy loss and property damage that can cause loss of food, prevent

food preparation, and impact healthy and sanitized food storage (Casellas Connors et al., 2022). In sum, energy disruptions and infrastructure damages would put already vulnerable populations further at risk.

A 7.0 magnitude earthquake on the Hayward Fault in the San Francisco Bay Area could extensively damage an area with a population of around 7 million people across nine counties (Hudnut et al., 2018). The cascading impacts of this earthquake with intense shaking include landslides, liquefaction, fires, building damage and or disruption to communications, utility, and transportation infrastructure, population displacement and business interruption. The HayWired Scenario estimated property damage and direct business disruption losses at more than \$82 billion in 2016 dollars (approximately \$104 billion in 2023 dollars). Most of the losses are attributable to shaking damage, followed by liquefaction damage, and then landslide damage (Hudnut et al., 2018). The cities of Oakland, Hayward, Fremont, Livermore, San Jose, and Gilroy are in areas which will experience severe shaking and damage.

The impacts on socially vulnerable groups are critical to the analysis of food security issues and their far-reaching implications in the HayWired Scenario. Socially vulnerable residents are disproportionately represented within areas that are estimated to be the most severely damaged by a 7.0 earthquake. According to [Chapter U](#) of the HayWired Societal Consequences report, many communities in these areas experience specific indicators of social vulnerability such as transportation and housing cost burdens, being non-native English speakers, age (elderly or young children), and racial and ethnic minority status. Figure 5 below compares the location of the areas of most intense shaking with the location of the most socially vulnerable populations living in areas of concentrated building damage in the Bay Area. Social vulnerability was determined using community vulnerability indicators developed by the Association of Bay Area Governments (ABAG) and San Francisco Bay Conservation and Development Commission. Map 1 (left) on Figure 5 shows the areas of most extreme ground shaking and Map 2 (right) shows where damage is most concentrated. The yellow areas have five or more community vulnerability indicators per census block group in areas of concentrated damage and pink areas have lower levels of community vulnerability in areas of concentrated damage.



Map 2 (right) shows the San Francisco Bay region and census block groups with populations that have Association of Bay Area Governments (ABAG) and San Francisco Bay Conservation and Development Commission (BCDC) community vulnerability indicator (CVI) scores of 5 or more in the areas of concentrated damage resulting from the HayWired earthquake scenario mainshock. Data from ABAG and BCDC (2016).

Source: Johnson, L.A., Jones, J.L., Wein, A.M., and Peters, J.A., 2020. Analysis of communities at risk in the HayWired scenario, chap. U of Detweiler, S.T., and Wein, A.M., eds., *The HayWired earthquake scenario—Societal consequences*: U.S. Geological Survey Scientific Investigations Report 2017–5013–R–W, 139 p., <https://doi.org/10.3133/sir20175013v3>.

Minority neighborhoods in the Bay Area have lower median income, are more housing cost burdened, and therefore are less likely to be adequately prepared for a major earthquake and have limited access to emergency food resources. Also critical to food security and the context of a major earthquake is the state of physical infrastructure, communication, and utilities in these communities, which are often in need of repair. For example, Chapter N and Figure 6 details that there will be widespread water disruptions and shortages following the HayWired Earthquake. The East Bay Municipal Utility District (EBMUD) has agreed with the scenario assumption that it would take them as long as a week to assess the extent of damage from the earthquake. Such delays can have devastating effects on food preparation and food storage.

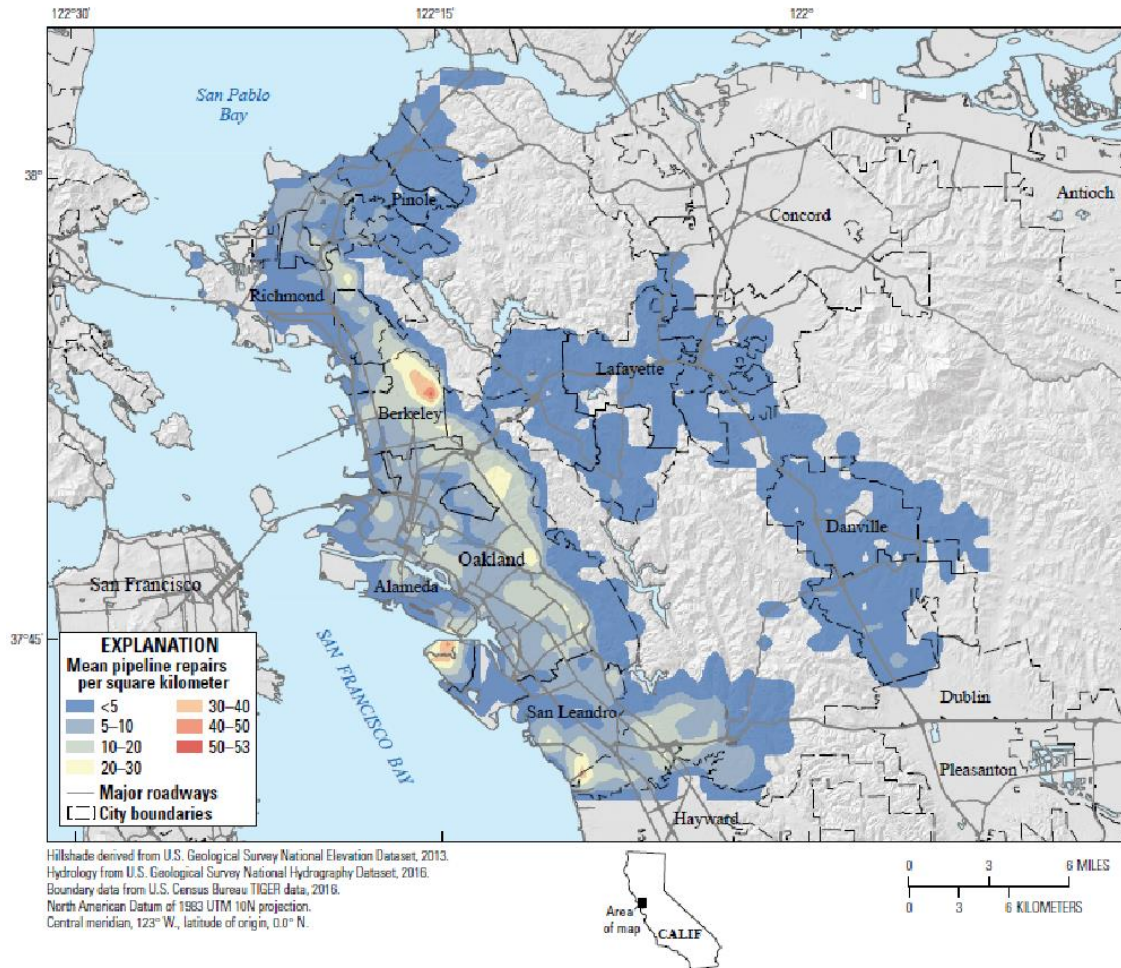


Figure 6- Map of buried water pipelines damage in the East Bay Municipal Utility District's service area in the hypothetical HayWired Scenario

[Chapter V4](#) of the HayWired Scenario Report focused on the characteristics of the businesses disrupted by building damages. Minority-owned businesses are associated with slightly larger disruptive building damage risk in the HayWired scenario. The greater risk for minority-owned businesses reflects the greater concentration of minority-owned businesses in Alameda County relative to the rest of the bay region and relatively larger representation in manufacturing and wholesale trade sectors (Wein et al., 2020). Minority-owned businesses in these areas are also likely to experience above average exposure since Non-white households represent more than 68% of the census block groups of the San Francisco Bay Area (Johnson et al., 2019). The damage caused by such an earthquake is likely to impact both residential units and commercial spaces, plunging already vulnerable populations into more economic uncertainty post-earthquake. Chapter V4 also explains that, as the size of businesses decreases, so does their capacity for preparedness and business continuity (Alesch et al., 2001). Income instability also limits the opportunities for these communities to mount comprehensive household or small business preparedness campaigns and/or recover from a 7.0 magnitude earthquake.

Food Justice and Food Sovereignty: An Entry Point for Cultural Competence

The term “food justice” has come to dominate the discourse about inequitable access to local, healthy, and sustainable food options, especially in communities of color. Food justice scholarship focuses on seeking an end to inequities in the food system, particularly those based on class and race (Gottlieb & Joshi, 2010; Smith, 2022, p. 20). Food sovereignty addresses power and control, advocating for the rights of people to define their own food and agriculture systems as opposed to governments and corporations (Patel, 2009). Both movements center critical analysis and social transformation in the food landscape. These concepts were initially developed and theorized to address gaps in the discourse around food security. Both scholars and activists have noted that the concept of food security has not sufficiently incorporated analysis of the power and control of food production and food access. It also fails to bring to light the historical and systemic causes of food systems inequities, yet it heavily emphasizes community self-determination and resilience (Levkoe et al., 2020; Reese, 2019). The food justice and food sovereignty movements thus bear significant implications for praxis. They have informed social work, influenced the growth of grassroots organizations in the food landscape, and transformed the kinds of approaches and discourses used to address barriers to food access.

These two movements have coalesced in the Bay Area because of the region’s cultural diversity. The Bay Area is one of the most diverse places in the U.S. across many dimensions, including race and ethnicity, income, and cultural backgrounds. This diversity forces issues of equity and justice to the forefront of many decisions. Food justice and food sovereignty movements argue that community ownership of food sources, locally driven solutions, and the democratizing of food policy can be used to address systemic food issues (April 02 & Sevilla, n.d.). The interrelationship between affordability, food access, and structural racism have mobilized the growth of various organizations in the Bay Area that seek to alleviate food insecurity and improve access to sustainable, local, culturally appropriate foods. An understanding of cultural values and norms, particularly how they affect social behavior and decision making, is a critical element of risk management, preparedness, and even disaster response. These issues are also critical for efforts to promote a proactive, culturally informed approach to addressing issues of food security and hunger alleviation in the context of a large earthquake.

The literature on cultural competency in disasters and emergency response is limited. Teasley (2007) described the importance of cultural competence in emergency response and across all phases of the disaster cycle- preparedness, mitigation, response, and recovery. Yet few studies have sought to explore mechanisms for integrating culturally competent approaches in the context of disaster management. There are many reasons why such issues need further consideration. Research consistently demonstrates that the most vulnerable communities, including low-income racial and ethnic minorities, will suffer disproportionate effects from disasters and possess the least private or public recovery assets (Fothergill & Peek, 2004, p. 89), and are therefore the most in need of understanding and specific intervention targeted towards them. Additionally, there are distinct differences and similarities with racial and ethnic groups that are critical to each of the phases of the disaster cycle, such as language barriers,

political access, community resources. It is also important to consider that identities intersect in that, in addition to racial and ethnic background, characteristics such gender, economic access, citizenship and immigration status and sexual orientation collectively shape the disaster experience in multiple, complex ways.

Spatial Analysis

Spatial analysis was used to analyze the research question regarding spatial patterns of food insecurity and seismic hazard exposure in the East Bay. Map 1 shows that community food-based assistance organizations are mostly located in Oakland, and more specifically the West Oakland Area in Alameda County. The distance from the epicenter of the hypothetical earthquake in the HayWired Scenario is approximately 5-9 km. About 89% of the organizations scanned were in areas that would experience an 8.1-9 on the Modified Mercalli Intensity Scale (MMI) in Figure 7 and others 9.1-10.

CIIM Intensity	People's Reaction	Furnishings	Built Environment	Natural Environment
I	Not felt			Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the earthquakes felt by people.
II	Felt by a few.	Delicately suspended objects may swing.		
III	Felt by several; vibration like passing of truck.	Hanging objects may swing appreciably.		
IV	Felt by many; sensation like heavy body striking building.	Dishes rattle.	Walls creak; window rattle.	
V	Felt by nearly all; frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows with the community.	Trees and bushes shaken noticeably.
VI	Frightens many; people move unsteadily.	Many objects fall from shelves.	A few instances of fallen plaster, broken windows, and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
VII	Frightens most; some lose balance.	Heavy furniture overturned.	Damage negligible in buildings of good design and construction, but considerable in some poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity.
VIII	Many find it difficult to stand.	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant, but severe in some poorly built structures. Widespread fall of chimneys and monuments.	
IX	Some forcibly thrown to the ground.		Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted to them.	
X			Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant.	

Figure 7- Image detailing the Modified Mercalli Intensity Scale. Source: [USGS Volcanic Hazards Program](#)

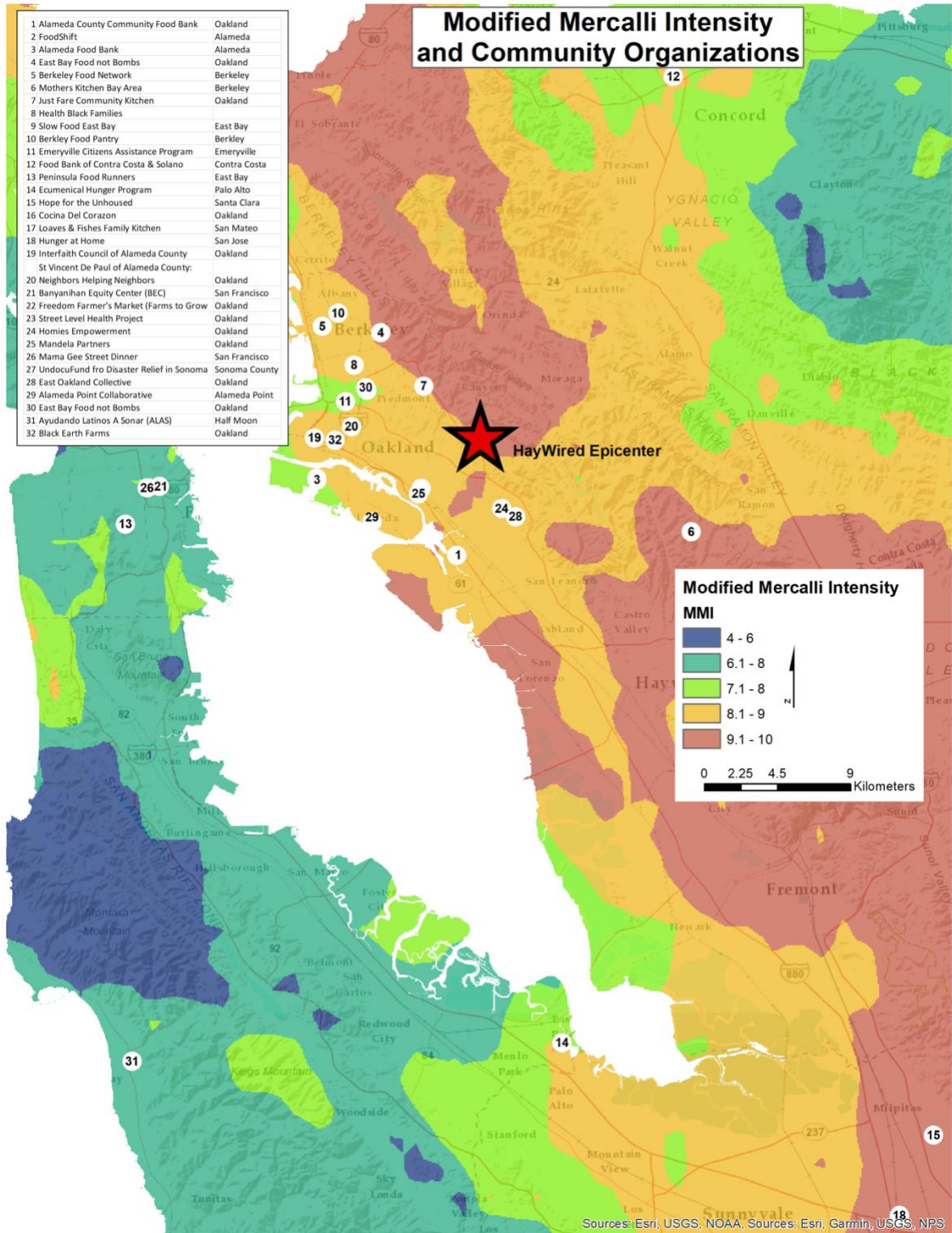
Map 2 shows that only around 31% of the locations of community-based food organizations scanned are in areas with a food insecurity index of greater than 44%. The organizations are concentrated in and around areas facing incidences of food insecurity.⁴ The approximately 70% of remaining organizations are based in areas with a food security index of 0-32%, such as Berkeley. More research would be required to ascertain if this locational mismatch is due to direct impacts such as availability of rental/lease spaces or whether the more complex involvement of white middle class agri-food activism mentioned by Sbicca (2012) might play a role. Additionally, these areas house large student populations that might also struggle with unique challenges around food security and housing.

Map 3 that shows that majority of the community food assistance organizations are in areas with low community vulnerability indices. Fewer than one-third of the food organizations are in moderately to highly socially vulnerable areas (those with an index of 5-9). The epicenter of the hypothetical magnitude 7.0 earthquake is quite proximate to some of the most vulnerable areas.

The absence of organizations in areas that are experiencing mid-tier food insecurity index percentages (33%-43%) as depicted in Map 2 may also indicate that residents in these areas are facing emergent food insecurity issues and would need to travel to areas such as Berkeley and Oakland to get emergency food assistance. These include communities such as Ashland and San Leandro. It is critical to note that Ashland is an unincorporated community.

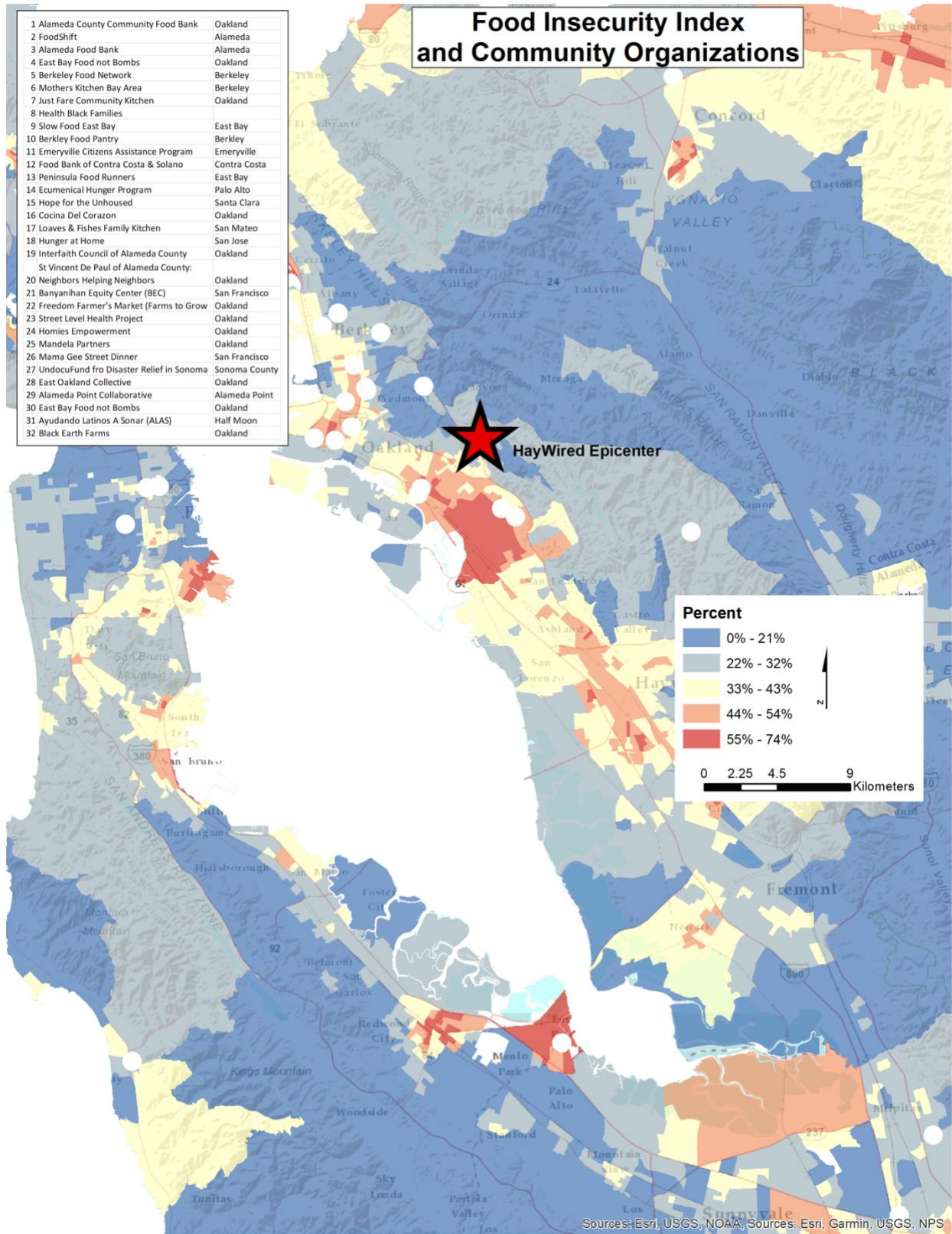
Map 1 and Map 2 show that with more than 70% of food organizations not located/headquartered in the most food insecure areas, most if not all, would encounter severe disruption, damage, and possible electric power outages in the 7.0 magnitude earthquake. Maps 4 and 5 more specifically show that most, if not all, organizations are in areas with 70-90% likelihood of water outages and disruptions. This intersection of possible impacts can be extremely dire for the communities these organizations serve, the safety of their own personnel, and finally, for the mission of food preparation, food safety, and providing emergency food supplies to those who need them.

⁴ Food security risk assessed using methodology from risk assessment in Toland et. al, 2023



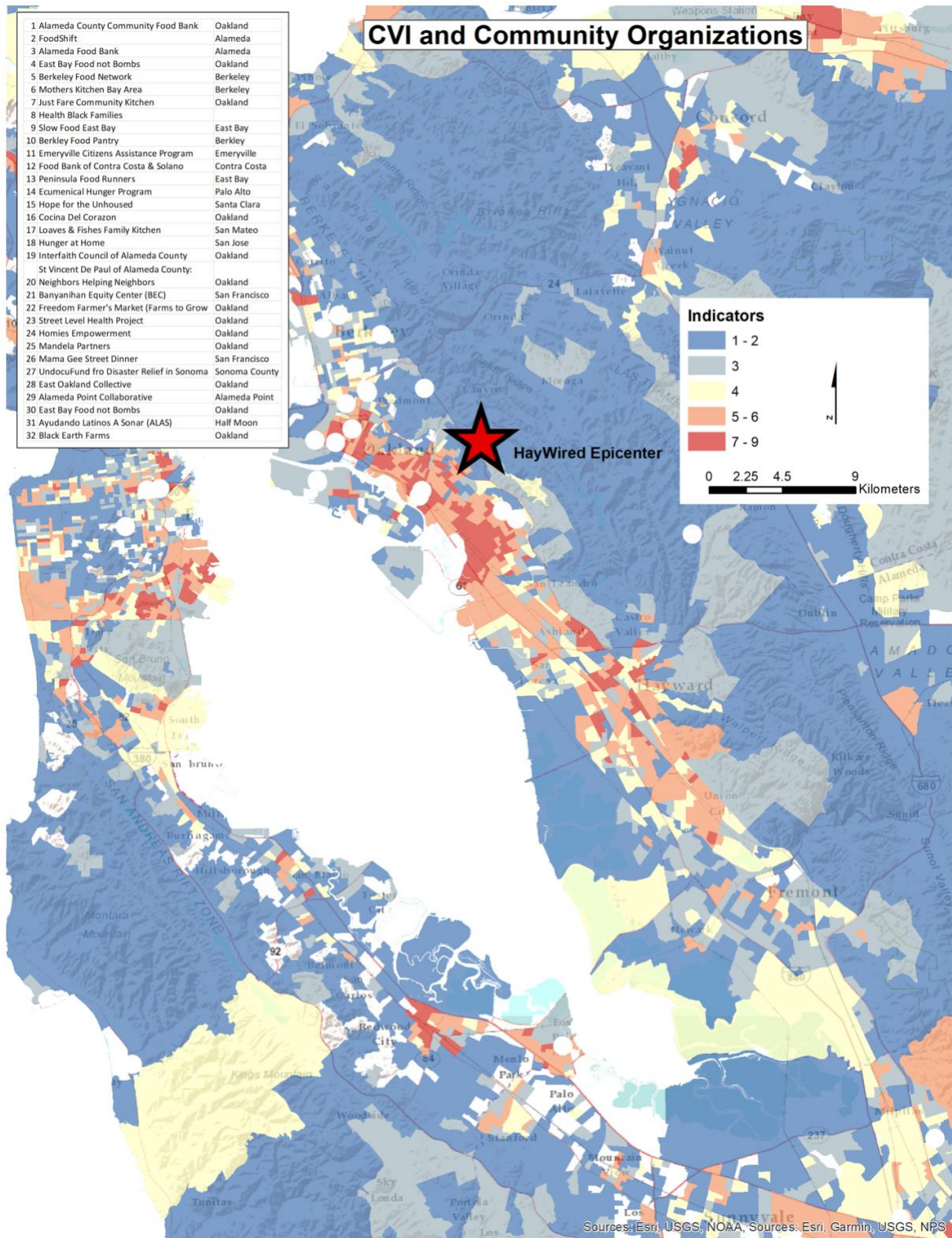
Map 1- Spatial distribution of food organizations in relation to estimated shaking in HayWired Scenario.

Map created by: Joseph Toalnd, University of Chicago & USGS Contractor..



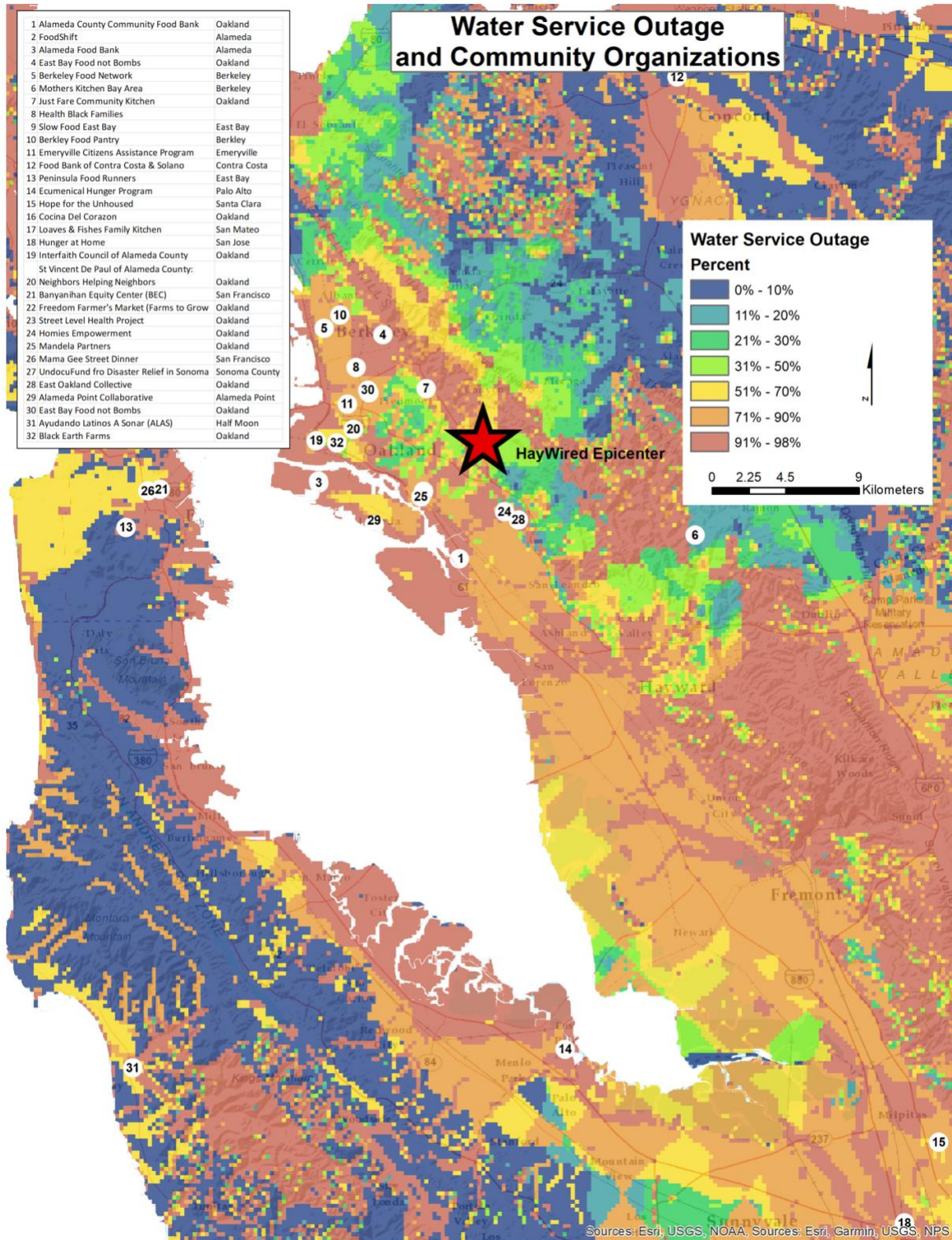
Map 2- Location of food-based organizations in relation to levels of food insecurity in census block groups.

Map created by: Joseph Toland, University of Chicago & USGS Contractor.



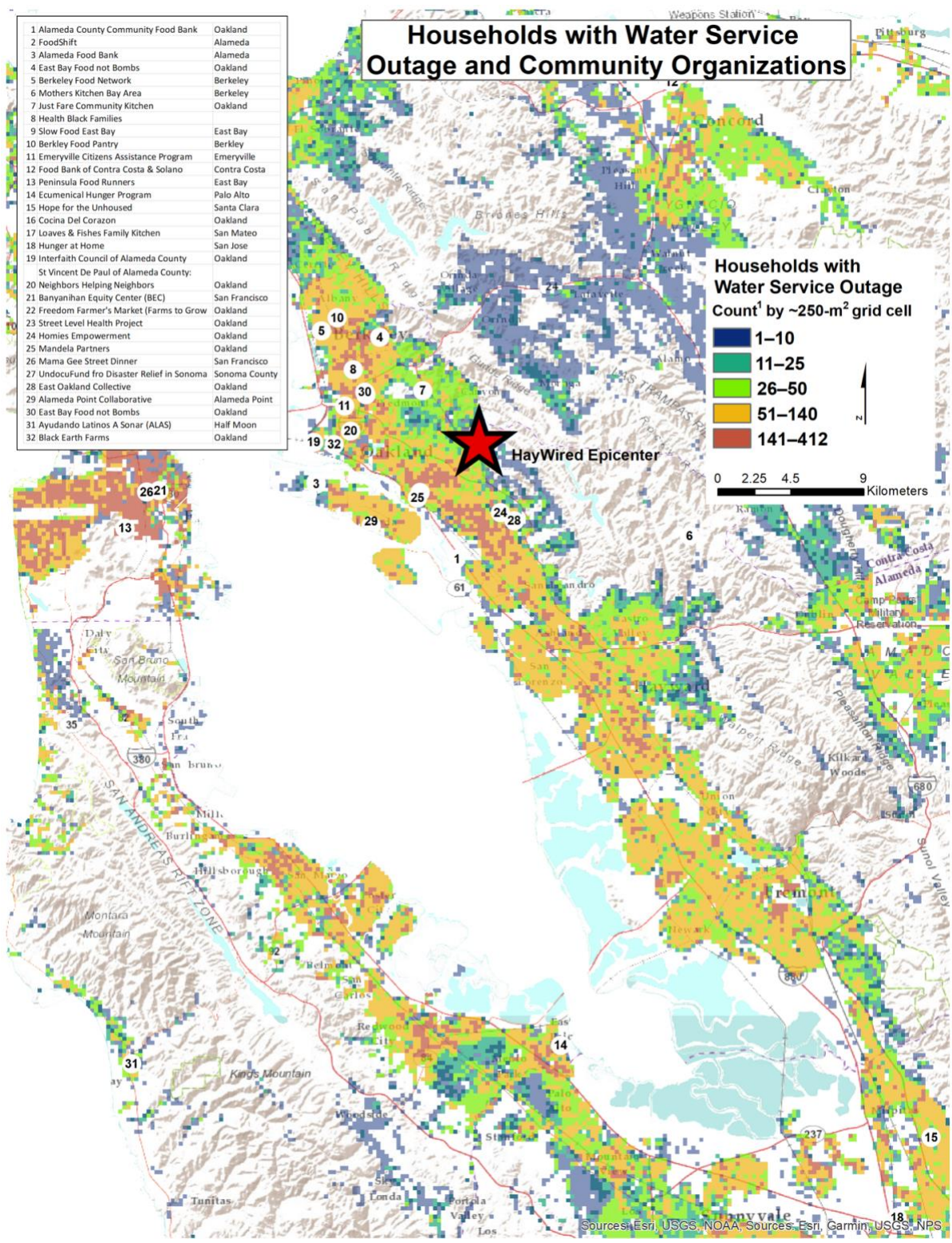
Map 3- Location of food assistance organizations in relation to communities ranked using the Community Vulnerability Ranking Index (CVI)*

Map created by: Joseph Toland, University of Chicago & USGS Contractor.



Map 4- Location of food-based organizations and estimated water outages using HayWired Scenario

Map created by: Joseph Toland, University of Chicago & USGS Contractor.



Map 5- Number of households with water service outages and community food-based organizations.

Map created by: Joseph Toland, University of Chicago & USGS Contractor.

Qualitative Analysis

The environmental scan coupled with informal interviews helped to fill in many of the knowledge gaps at the intersection of services catering to diverse communities, seismic resilience planning, and food security. Different organizations across the Bay Area were contacted to help provide an understanding of the food assistance landscape. These organizations were selected based on the frequency of their partnerships with other organizations involved in alleviating food security issues.

Summary of the Environmental Scan

The scan illustrated that there were many organizations that made up the food assistance landscape. Each was distinct in its approach to addressing food security challenges and, in some cases, the community it served. Organizations captured in the scan included food banks, community supported agricultural farms, food recovery, meal programs, social equity programs, community kitchens and grassroots community-based organizations (CBOs). Meal or food assistance programs attached to schools and aging centers that received regular federal or state funding were not included in the scan. Table 1 provides a brief description of the types of organizations captured by the scan and how they operate. These descriptions are based on secondary information found on websites, impact reports, and other secondary sources like reports and news articles.

Table 1- Typology of the food organizations captured in the Environmental Scan

Typology	Description/Mode of Operation
Food Bank	A food bank is a non-profit organization that collects and distributes food to hunger-relief charities. Food banks act as food storage and distribution depots for smaller front-line agencies; and usually do not themselves give out food directly to people struggling with hunger. (Feeding America, 2022)
Meal Program	A program designed to prepare and distribute hot and /or prepared meals to different populations through breakfast, lunch, or dinner programs. This is at no cost to the patrons it serves.
Community Supported Agriculture (CSA) & Farmer's Market	Community-supported agriculture or crop sharing is a system that connects producers and consumers within the food system closer by allowing the consumer to subscribe to the harvest of a certain farm or group of farms. To sustain farming practices and access to fresh food a Farmer's Market is also attached to these farms.

Food Justice Social Enterprise	A for profit enterprise focused on alleviating feeding challenges in the area is served by feeding vulnerable populations. These organizations depend on partnerships or contracts to provide these meals.
Grassroots Community Based Organizations (CBO)	A nonprofit organization focused on facing wider socio-economic challenges but has an entrenched food-based program based on the community needs found in the population it serves. These organizations might be focused on specific populations like the unhoused, the undocumented and other specific demographics.
Faith Based Organizations	A nonprofit organization connected to a faith based denominational church that leverages its position, partnership, and congregation to address food security challenges.
Food Recovery	Mostly nonprofit food recovery organizations source and obtain edible food that would otherwise go to waste from places such as farms, produce markets, grocery stores, restaurants, or dining facilities and redistribute it. These organizations sometimes use community or social enterprise kitchens to prepare meals using this surplus food.
Community Kitchen	Cooking programs where small groups of people meet to cook meals together. Groups may cook one meal or many meals at a time. Collective kitchens are like community kitchens, but the group members pool their money and time to produce large amounts of food
Food Pantry	A distribution center where hungry families can receive food and are supplied with food from a food bank. Typically, these pantries are a part of other community programs and sometimes serve very specific populations. Pantries are often the first place for newly food insecure household's access.
Volunteer Movement	An organization that is composed of or functions with the aid of volunteers and which provides aid or services to individuals, groups, or countries with addressing food security.

Composition of the Scan

Figure 7 shows the diverse types of organizations addressing food issues captured by the environmental scan methodology). Thirty-five (35) organizations were scanned. About 30% of

the organizations on the environmental scan were grassroots community-based organizations (CBOs) with established food-based and food assistance programs. The second most represented organization type was meal programs at approximately 15% of the sample. Community supported agriculture (CSA) farms were the third most represented organization at approximately 12%. Food banks and food recovery and rescue organizations made up approximately 9% of the organizations. Community kitchens, faith-based organizations and food pantries made up 6% of the organizations reviewed. Notably, only 3% of the organizations captured on the scan were for-profit social enterprises or for-profit programs. Operating in a close geographic area shaped these organizations' programs and their outcomes. This will be further discussed in the data analysis.

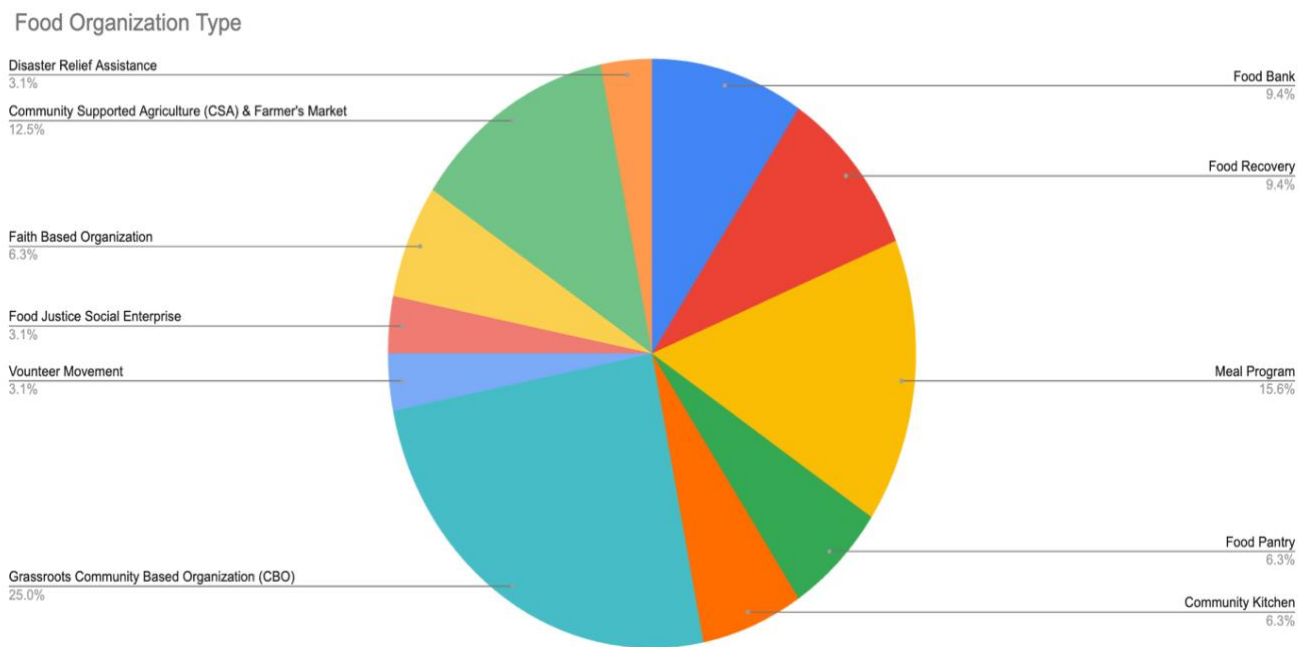


Figure 8- Pie Chart showing the types of food organizations captured in the Environmental Scan

The populations served by these organizations were mostly general but specifically included persons most at risk and/or most affected by food insecurity issues. Organizations targeted special populations like recent immigrants, Latinos, African Americans, at-risk or unaccompanied youth, formerly incarcerated persons, smaller ethnic groups from Vietnam, Korean, the Guatemalan Mam people, Chinese to name a few. Websites and reports mentioned or were available in multiple languages to serve diverse groups. Notably, almost 40% of these community-based organizations were in and served the Oakland area depicted in Figure 8.

Thematic Mapping

The analysis of data derived from informal interviews revealed common themes across organizations. These findings were reiterated by the information collected from the environmental scan and supported by other information sources such as peer reviewed articles and impact reports. The findings can be grouped into three broad thematic areas. These include: 1) food justice and equity challenges, 2) culturally responsive community support, and 3) organizational resource challenges. A total of eight (8) subthemes emerged in the analysis. Figure 7 below shows their alignment within the three broader thematic areas.

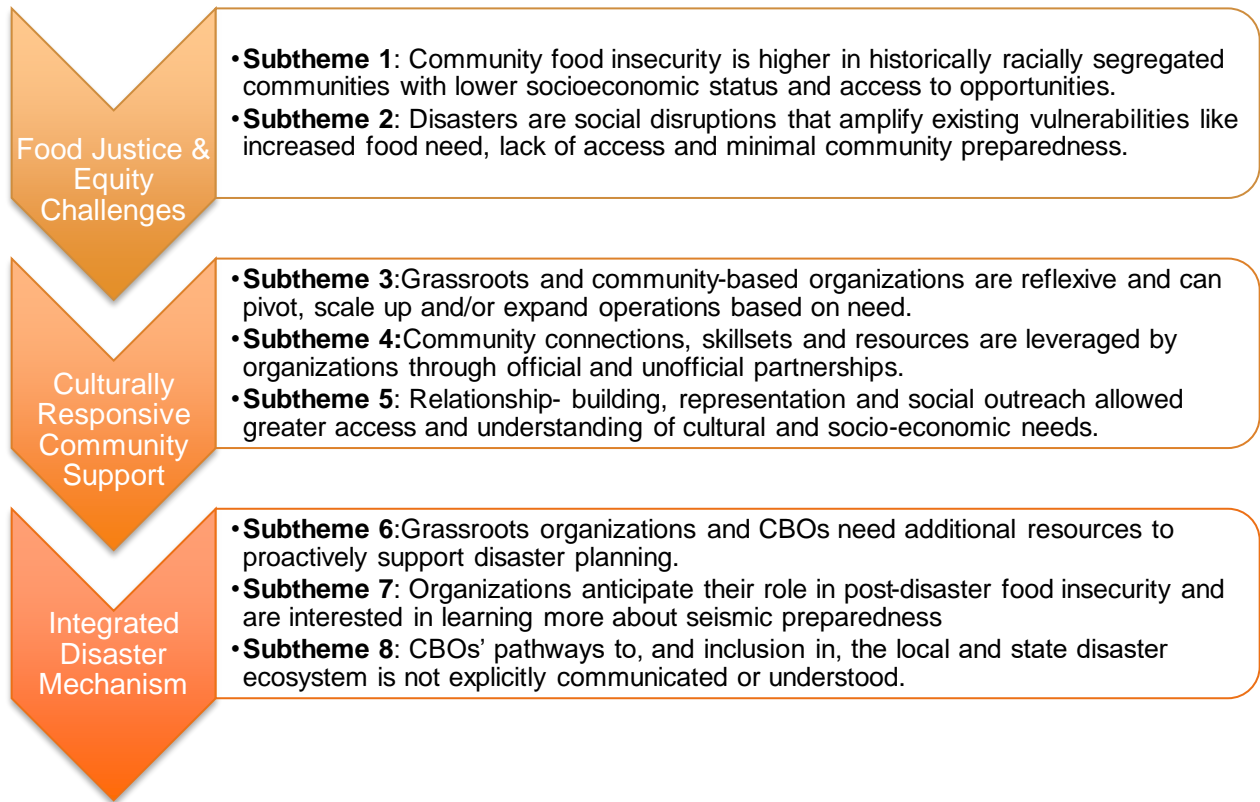


Figure 9- Thematic areas and the relationship to sub themes found across community based and grassroots food assistance organizations.

Each broad thematic area offers shared commonalities across the different organizations regarding their strategic priorities, the creation of their missions, and their day-to-day operations. To ground the analysis, Table 1 below provides a profile of the organizations interviewed without revealing identifying details. Each organization will be referred to from here as Organization A, B, C, D, or E, respectively.

Table 2- Profile and Description of the organizations interviewed.

Organization	Organizational Profile
A	A nonprofit organization that is focused on food recovery, food justice and climate justice. It uses a social enterprise approach the organization recovers food and prepares it in their social enterprise kitchen providing job opportunities, employment training and culinary skills to persons who are unable to access employment.
B	A grassroots community-based organization focused on education and integration of gang-impacted youth through civic engagement and asset-based community development. The COVID -19 pandemic triggered the organization’s transition from being a youth-development and educational focused organization to one that offered food assistance and meeting basic needs of their community members
C	A nonprofit food pantry that provides emergency groceries to individuals and families in need.
D	A large global and national nonprofit involved in providing emergency assistance, disaster relief and disaster preparedness education.
E	Local city government agency

Food Justice & Equity Challenges

The Food Justice and Equity Challenges theme captures the complexity and interrelationship between food security, diverse populations, and systemic and structural racism. The three subthemes connect community food security, household food security, and the pervasive social impacts of disasters and vulnerability. This theme is important to understanding the food security challenges in the East Bay and how these organizations have evolved to respond to those challenges. It provides an historical backdrop to the connection between food insecurity, poverty, and development. The organizations identified various ways in which this theme intersects with their work.

Subtheme 1: Community food insecurity is higher in historically racially segregated communities with lower socioeconomic status and access to opportunities.

A San Francisco Chronicle article detailed that more than 1 in 10 persons in the Bay Area is hungry (Duggan, 2018). These groups of people are often low-income families that have employment and partially secure housing but currently cannot keep up with the region’s post-COVID boom. These groups of people are often undocumented, low wage earners, and senior citizens. Community food security is an ongoing challenge in the Bay Area not only because of economic disparities that are present in various communities and ethnic enclaves, but also because of limited acknowledgment of how culture influences food choices, food entitlement,

and access. Community food security is a situation in which all community residents (can) obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that also maximizes community self-reliance and social justice. At least two of the grassroots organizations, while addressing food insecurity, provided employment and skill-building opportunities for groups of people that face employment discrimination such as parolees or unhoused people. Most of the community-based food assistance organizations are focused in the West Oakland area (See Map 1). The West Oakland area is characterized by a high level of household poverty linked to racial segregation after the 1906 San Francisco earthquake and persistent environmental inequality over the last 10-15 years (Fisher et al., 2006). More than 10% of families live below the poverty level⁵ during the period of 2017-2021 according to the Healthy Alameda County information hub⁶. Remarks from a representative of Organization A capture the structural connections between socio-economic standing and food security challenges being experienced in these culturally diverse communities:

“We know that (persistent) food insecurity... has nothing to do with availability of food in this country but rather financial security”- Organization A.

The complexities of race, ethnicity, and food security are multifaceted. Food insecurity is a persistent problem in the United States and is disproportionately distributed across racial/ethnic groups, with some evidence that Latino and non-Latino Black populations experience higher rates than non-Latino whites. Studies show that even when socio-economic status is held constant, African Americans and Latinos, regardless of immigration or citizenship status, are more likely to be food insecure than foreign born or native-born white individuals (Myers & Painter, 2017).

The representative for Organization A stated that the issue of food security and sustainability is “mobilized” around predominantly white and wealthy demographics. This observation is supported by literature in other areas affected by high food insecurity like New Haven, Connecticut (Corcoran, 2021). Research has found that predominantly white middle class activists are committed to environmental stewardship, sustainability, and recreating the agri-food system to dominate the landscape (Corcoran, 2021). As a result, racial and economic inequalities are often overlooked or not examined critically. For example, the representative of Organization A explained that options that were often promoted as being better for sustainability and more supportive of local food sources tended to be inaccessible to the communities and households that were most food insecure. “Pricey and organic farmers markets encouraging the use of reusable shopping bags” often located themselves in higher income communities, beyond public transportation access but within easy reach of those who already enjoy ample access to healthy food. This disparity in access, the representative explained, provided

⁵ Data source: American Community Survey 5-Year Estimates.

⁶ Healthy Alameda County is an information hub maintained by and sponsored by the Alameda County Public Health Department, a department of the Alameda County Health Care Services Agency.

<https://www.healthyalamedacounty.org/indicators/index/view?indicatorId=240&localeId=132167>

evidence that a justice lens was not being used in some areas of the food landscape in the East Bay.

The Food justice framework connects issues of food affordability, food production, and the ability to source local healthier food options to economic stability. This framework argues that procuring food from minority/underrepresented communities and farmers helps to actively undo historic harm and dispossession while addressing lack of agency these communities often face (Sbicca, 2012). The organizations interviewed for this study actively democratize food production and food supply by partnering intentionally with other organizations, farmer cooperatives, and grassroots organizations whose leadership is Indigenous, Black, spearheaded by women, or otherwise operated by underrepresented groups in the food assistance space. For example, one partner organization (not interviewed) that was referenced by numerous interviewees and included in the environmental scan operates community-owned initiatives such as a worker-owned cooperative in West Oakland. The organization is a worker cooperative that tackles “the low-income, low-access, and ownership issues for West Oakland...sells organic and local produce, holds high ethical standards for trade, offers cooking classes, and by definition, gives equity when becoming a member” (Hunter, 2021). This worker cooperative model creates sustainable, dignified jobs while offering employee ownership that serves as a source of community empowerment. Additionally, the collaboration of numerous community members at this local grocery builds community assets, skills, and wealth. In partnering with this organization, other grassroots food assistance organizations demonstrate their commitment to addressing food justice and food access issues in a community-driven and culturally relevant way.

The far-reaching impact of food justice organizations and their attention to racial inequalities provides them with the ability to organize and access resources for a variety of community needs. The collaborative ability of the food justice organizations demonstrates their strengths as organizers and the importance of social capital in communities that are often labeled “vulnerable.” Based on how social vulnerability is operationalized in disaster research, there are a range of susceptibilities at both an individual and community level (Peacock, 2003) that makes these communities and individuals less likely to be able to navigate and recover from the effects of disasters. For example, as noted above, Communities in West Oakland experience high levels of housing cost burden, large populations of non-native English speakers, income instability, limited home ownership and high racial and ethnic composition in communities. However, these challenges have helped organizations and community activists to develop programs and interventions based on prevalent and culturally specific community needs. Specifically, programs include grab-and-go breakfast packages for school aged children, hot meal dinners for unhoused families, and other prepared food items.

Subtheme 2: Disasters are social disruptions that amplify existing vulnerabilities like increased food need, lack of access and minimal community preparedness.

Disasters affect different communities in different ways. Variations in human vulnerability to disaster stem from a range of social, economic, historical, and political factors (Méndez et al., 2020). Disasters disproportionately impact communities of color like in West Oakland, Downtown Oakland/Chinatown, and Fruitvale because of pre-existing systemic inequalities such as divestment, loss of job opportunities, gentrification and other issues like unaffordable housing and homelessness. These communities, impacted by food insecurity issues, faced even more challenges during the COVID-19 pandemic. The complexity of challenges on the ground requires targeted intentional policy and community intervention. Existing vulnerabilities were also amplified for the grassroots organizing level leading to many changes to better serve the wider community and remain operational.

At a community level, the organizations included in this analysis targeted similar social and cultural groups that already were precariously situated in daily life. Mendez describes these communities as experiencing a “slow violence” (Nixon, 2011), which adds to their contextual vulnerability. ‘Slow violence’ is described by Nixon as precarious conditions which existed before the impact of a current disaster, amplifies vulnerabilities, and leads to disproportionate impacts of disasters in these communities (Méndez et al., 2020, p. 51). The grassroots organizations that serve these communities are familiar with this concept of slow violence, although they do not necessarily communicate it in the same way. In addition to providing emergency food supplies and alleviating food insecurity, community interventions and programs try to address inequalities like underemployment (Organization A), the effects of mass incarceration (Organization A), and youth development (Organization B).

The compound effects of antecedent social conditions, combined with more complex disasters like COVID-19, further expose the disparities and challenges that contribute to high food insecurity. The impact of COVID-19 severely and quickly accelerated these challenges. Unemployment, environmental racism, mass incarceration, and high incidences of homelessness plague these communities outside of disasters like the COVID-19 pandemic and the many wildfires in the state. Social health determinants play a major role in how the pandemic continues to affect these communities and their food consumption and access patterns. The pandemic amplified existing vulnerabilities already present in the community. For example, recent San Francisco data shows homelessness among Latinos increased by 55% from 2019 to 2022, compared with a total citywide drop of 3.5%. Latinos now make up 30% of the total homeless count, although they are only 16% of the general population (Moench & Fagan, 2022).

Black and Latino communities reeled from the impact of the COVID-19 pandemic. African Americans and Latinos have experienced disproportionately high infection and death rates, reflecting the fact that “today's disparities of health flow directly from yesterday's disparities of wealth and opportunity” (Bouie, 2020). Minority communities had more difficulty practicing social distancing and the necessary hygiene practices because of overcrowding in homes due to low

wage paying jobs and housing insecurity. Many persons in these communities were deemed essential workers and had to use public transportation to get to work because they were unable to ‘shelter in place.’ Economic instability resulting from greater exposure to the COVID-19 virus was directly related to an increase in the need for food assistance across the East Bay. The representative from Organization C recalls how the number of people they usually served kept “doubling and tripling” as the pandemic wore on in 2020-2021:

“More people were coming for groceries, and the ones who normally came were coming much more often”- Organization C

This sentiment was also shared by other organizations who recalled shifting operations to serve a larger and wider subset of the population. Although these grassroots organizations saw an increased need in their communities, the overall capacity of the food assistance landscape was and continues to be affected by the pandemic. Logistical challenges around inventory, warehousing, supply, and distribution became organizational nightmares as the world reeled from the impacts of COVID-19.

“COVID and any other disaster really disrupted the supply chain. How do we create a more local food system? And we thought we were thinking about this alone but come to realize counties, USDA and the Federal government are also thinking about this?”- Organization B

The economic downturn of COVID-19 and its effects on communities placed severe challenges on the operations of both existing smaller food assistance organizations and larger food banks, according to interviewees. This subsequently impacted their ability to source and supply food items. Larger food banks and food distribution centers regularly supply food to smaller food assistance organizations like pantries. Specifically, many accelerated feeding programs grew out of the impact of COVID-19 and brought to the fore many previously unconsidered challenges, as will be further discussed under Subtheme 3. One interviewee from Organization C mentioned how **“these big food organizations had their own fires to put out, so we could not get support from them on some days.”** That simply meant that larger organizations were also handling challenges related to COVID-19 and were thus unable to reliably find solutions to supply chain challenges. The pandemic severely impacted food sourcing, production, and access. Even the daily operations of food banks became compromised because of social distancing and quarantine orders in effect across many local jurisdictions. These challenges created an emergency food situation for many families, as their only means of accessing food items and/or supplementing their food needs were no longer accessible. The following quote outlines how dire the situation became for grassroots community-based organizations that normally depended on these larger food distribution centers to supply their feeding and pantry programs:

In the beginning of the pandemic, we had some of us shopping at five different Targets hoping to get five cans of beans. I don't even want to think about what that would look like in an earthquake” - Organization B

Responses to the pandemic completely disrupted what was considered the only means of accessing food, exacerbating food insecurity challenges across stressed communities that were already being served by the food organizations. The ability to meet household food needs would be severely compromised in an earthquake that triggered utility disruptions, caused infrastructure damage, and diminished transportation access under a limited plan of action for disaster response. Interviewees reflected on the initial difficulty of responding to increased food needs and limited community preparedness during COVID-19 and the wildfires as an indication that the situation would be even more complex in a 7.0 magnitude earthquake. Organizational representatives were aware that minority households and communities are less likely to mount successful preparedness campaigns, thereby putting them at greater risk. A disaster would severely impact these communities disproportionately by exacerbating existing vulnerabilities in addition to the impact of an earthquake and other associated hazards.

Culturally Responsive Community Support

The Culturally Responsive Community Support theme focuses on how cultural relevance, representation, and community support improve smaller organizations' abilities to meet expanding food needs. The three subthemes touch on reflexivity, partnerships, and community connections and how they advance the work of smaller localized organizations, in turn providing more lasting effects on the communities they serve.

Subtheme 3: Grassroots and community-based organizations are reflexive and can often pivot, scale up, and/or expand operations based on need.

All the interviewees recall their organizations regrouping and scaling up their operations quickly after seeing the continued impact of COVID-19 on their surrounding communities in the East Bay. Economic instability affected household financial security, which led to an increased need for support to meet food needs. The ability of these grassroots organizations to scale up and respond to emerging community needs is an intrinsic part of their success. This feature that not always common across larger scale local, regional, and/or global organizations. Even if scalability is possible across larger organizations, it normally happens over a longer period and requires capital injection, extensive agreements, and discussions.

The importance of participatory decision making with community members is also critical to the success of grassroots and/or community-based organizations. The organizations' decisions are led by on-the-ground community feedback and informal needs assessments. They can respond to emergent challenges and evolving conditions because of existing relationships with community members and because many employees in these organizations are from these same affected communities.

Community-based non-profit and grassroots organizations (CBOs) are key actors in individual and community change efforts and serve as mediators between the individual and the local community (Bess et al., 2011). Although the organizations included in this study had to navigate challenges related to staff shortages and insufficient financial resources, they strove to continue responding to the needs in the community. The following quote reflects how these organizations responded at the beginning of the pandemic based on their ability to connect with existing community networks and relationships, as well as their willingness to reconsider programmatic focus based on community needs.

A lot of our food programs came out of the pandemic...because larger organizations couldn't get to our people quick enough during COVID...we didn't used to be a food security organization. We evolved out of responding to the community during a crisis - Organization B

This pivot was made possible by the organization's decision to lean into partnerships with existing food banks as well as other food recovery organizations. The ability to retool existing operations also made clear in the interviews across all four grassroots organizations. The following quote from a representative of Organization A details how their social enterprise kitchen, often used for culinary training and workforce development, was repurposed to prepare and/or assist other organizations in preparing meals for communities that needed them.

Our program was developed after COVID to repurpose our organization's resources to serve community needs. It was a direct community need that we sussed out two weeks into the pandemic"- Organization A

Due to restrictions imposed due to COVID-19, persons were unable to come in physically to many organizations to receive prepared meals, so the organizations prepared meals and used existing partnerships and networks to transport and distribute the meals to those who needed them the most. The organizations were nimble enough to change the way they usually operated prior to the pandemic in recognition of the barriers that community members faced. The organizations' abilities to organize and transport meals demonstrates their willingness to pivot to different strategies. The following quote illustrates how Organization C shifted operations in a period of less than two weeks in response to the increased need for assistance:

We had to move the pantry operations to a bigger space because of social distancing and the influx of people needing groceries. We went from being open 3 days a week to four." - Organization C

Alleviating the food supply and food access challenges became a food justice and equity issue for these grassroots organizations. Like the antecedent social conditions that affect the communities they serve, grassroots organizations and mutual aid networks realized that government assistance (state and or federal) would be slow to arrive. Among the large networks of different cultural groups including recent immigrants, the undocumented, other non-native English speakers, the unhoused, and the recently incarcerated, many would not be able to

suitably navigate the process required for them to access public, state, or federally funded assistance. Inability to access federal food assistance benefits like the Supplemental Nutrition Assistance Program (SNAP, also known as food stamps) left many community members without reliable access to a food supply.

Unmet needs served as a catalyst for the shift from in-person collection of food supplies to delivery prepared meals, creation of dining programs, and extension of opening hours to serve community members' emerging needs. Moreover, this evolution in services supported many other organizational priorities, such as the ability to distribute more culturally relevant meals, reduce food waste, and limit the needs of storage and refrigeration space, especially perishables. This created opportunities for more partnerships to be developed with local, sustainable food sources closer to the communities.

Subtheme 4: Community connections, skillsets, and resources are leveraged by organizations through official and unofficial partnerships.

The organizations described many official and unofficial partnership arrangements that helped them to meet the varying needs of different cultural groups in a more effective way. Partnerships within the community-based food assistance space provided some of the following benefits:

1. Aligned vision to address common community needs.
2. Supported leadership and collaboration in problem solving and troubleshooting.
3. Facilitated access to sources of food without excessive interorganizational competition while prioritizing at-risk communities.
4. Created a robust food distribution system with existing organizations, organizers, and volunteers.
5. Fostered a network of community-based organizations that, through collaboration, were able to compete with the resource levels and operations of large nonprofits in the food assistance space.

The alignment of vision has been evident across the organizations interviewed. Outside of addressing food insecurity challenges, three organizations are heavily focused on equally important priorities such as: sustainability, creating local food system networks, engaging underrepresented minority farmers, creating culturally relevant meals, and promoting health equity through food access. These efforts go beyond just alleviating food security concerns and providing emergency supplies, although those services are also beneficial. Literature has found that some "charitable initiatives in the form of food banks, food pantries, and soup kitchens 'recognize the problems of the agri-food system without proposing an agenda to overcome inequalities'" (Sbicca, 2012, p. 461 as cited in Corcoran 2021:3). The grassroots organizations included in this study integrated a justice-oriented approach to assisting marginalized communities and reached beyond meal provision. Partnerships within a network of other grassroots organizations help these smaller organizations to be more intentional about

who they engage with and to create more advocacy opportunities. These efforts inevitably supported other tasks important to their continuity like grant writing, network building, and in some cases, contract negotiation.

Increased leadership and support in solving complex issues was also a benefit of the collaboration of multiple grassroots organizations operating in the food assistance space. Across the organizations interviewed, partnerships provide a means of addressing complex community issues in the East Bay, such as homelessness and underemployment, in addition to food insecurity. Demonstrating how partnerships optimize the ability of the organization to increase its impact, a representative from Organization A explained:

“Because we take the partnership model, we get to optimize for ALL. We get to be experts in helping different groups through our partnerships with different organizations.. - Organization A

Organization A strives to entrench more culturally specific approaches to managing food insecurity by partnering with existing organizations that have the community capital, trust, and understanding of various marginalized communities. Partnerships helped organizations connect with more resources provide opportunities for organizations to expand their reach and support more community members in more intentional ways. By partnering with existing businesses organizations that had their own impact and relationships in the community, food access was increased for different cultural and social groups. The food justice partnerships allowed resources to be leveraged to maximize each organization's service capacity. This consequently benefited those who were most vulnerable and in need of food. The following quote highlights one example of how these organizations built symbiotic relationships and shared resources to advance their priorities around community care.

“They already had their volunteers and had their transportation, what they were lacking was a consistent source of food”-

Organizations increased their reach by building relationships with similar grassroots organizations that had compatible priorities. These partnerships allowed the organizations and others to optimize their work and target different underserved groups including lesbian, gay, bisexual, transgendered, queer, intersex, and asexual community (LGBTQIA), the unhoused, formerly incarcerated, and other non-native English-speaking communities. Serving underrepresented social groups is highly impactful, as these groups of people are less likely to benefit from state and federally funded feeding programs and other government assistance. Partnering to serve the needs of underrepresented groups countered the distrust or hesitancy between these communities and state and local government agencies. Organizations addressed food insecurity issues in specific cultural groups because of the presence, community trust, and relationships that their partner organizations already had in these spaces. As a result, other organizations could more readily and efficiently carry out feeding campaigns because of existing relationships and shared resources like transportation and cold storage. The

partnerships between the community-based organizations (CBOs) reduced chances of food wastage and ensured that food supplies were better distributed.

As discussed briefly above in the context of nimbleness of operations, smaller localized organizations also leveraged partnerships to operate at a larger and impactful scale because they were cognizant of structural inequalities and socio-economic needs. The impact of these smaller localized organizations went beyond providing food supplies. Collaboration allowed the organizations to pool their resources, utilize existing relationships with diverse communities, and use food distribution and transport options, all with the aim to better serve the community at a lower cost and less labor-intensive cost. The ability to develop partnerships to support grassroots organizations became critical to their survival. The desperation and need to find food sources to continue with meal and dining programs is captured in the quote below:

“Before we had these community partnerships with other food organizations and food recovery organizations, we were just trying to shop all over and or to ask food distributors. It took a lot of creativity to get food.”

Grassroots organizations also discussed the competition to access fresh and/or recovered food items between them and bigger, more resourceful food banks. These food banks were often in possession of refrigeration, storage, and transportation centers. Partnerships between smaller community-based organizations are a means to be able to compete with the resources of large food distribution centers in and around Alameda County. Larger nonprofit organizations did not have the intimate community connections and cultural understanding compared to a network of localized community-based organizations (CBOs). The community connections facilitated easier deployment of a greater number of culturally relevant and well-prepared meals to various communities. For instance, Organization D partnered with an existing mutual aid network that placed refrigerators over the East Bay. They prepared organic culturally relevant meals for those communities and used the existing relationships to deliver them to refrigerators across the East Bay.

Sub- Theme 5: Relationship-building, representation, and social outreach allowed greater access and understanding of cultural and socio-economic needs.

The connection between these organizations and community members improved their understanding of cultural and socio-economic needs. Organizations B, C and D spoke of how their staff complement was representative of the communities and people they often served. The following quote provides insight into how representation informs their approach to both their work and to activism-oriented approaches to social/food justice and sustainability more broadly.

“Black, Indigenous and people of color (BIPOC)-led and BIPOC-majority organizations tend to be more holistic in their approach and so we don’t just do food recovery and food, we serve communities.”

Organizations A, B, and D were explicit in using their understanding of the cultural needs and of the community to better serve them. The organizations added that understanding cultural relevance was important to being able to serve these communities “with dignity.” The following quote shows how representation and remaining connected to communities assisted the organizations in crafting their organizational vision and incorporating cultural relevance.

“We believe in serving organizations and programs rather than individuals because we know that being hyperlocal, it is important for us to see the situation not as mouths to feed, which is sort of the more traditional food bank way, but seeing the whole person and nourishing the neighborhood and other grassroots organizations that specialize in serving a particular community, does that best” -Organization A

The quote refers to the use of partnerships with other similar or related organizations to more holistically service communities with different cultural values and norms. Rather than attempting to see all persons facing food insecurity challenges as one homogeneous group, organizational representatives explained that handing over/sharing leadership and decision making with a more localized organization would produce better outcomes.

Co-creation and partnership are important to evaluating and developing actionable solutions to issues being faced by communities. This is a core feature of grassroots organizing and more specifically informs their social justice and equity praxis. Studies have shown that many “charitable initiatives in the form of food banks, food pantries, and soup kitchens “recognize the problems of the agri-food system without proposing an agenda to overcome inequalities” (Sbicca, 2012, p. 461). These smaller organizations were from these communities and understood cultural nuances that the larger non-profit organizations did not.

This culturally responsive approach gave these organizations an acute understanding of multigenerational and cultural food needs. This perspective is one of the core tenets of community food security and underscores why it is more centered by practitioners than the traditional measurement of household food security. Community food assessments are a tool used to audit community food needs (Pothukuchi, 2004). They include the collection of various types of data to generate answers to questions about the ability of existing community resources to provide sufficient and nutritionally sound amounts of culturally acceptable foods to households in the community (Cohen et al., 2002, p. 8). The concept of community food security acknowledges that food needs and food entitlement are based on age, gender, race and ethnicity and other social factors. This contrasts with how household food insecurity continues to be addressed at a state, regional and federal level.

“Learning deeply about the community we were serving helped us understand multi-generational and cultural food needs”- Organization D

One example of the need for more understanding of cultural relevance was recalled by representatives of Organizations B and D. They indicated that federal, state, and local organizations often partnered with chain restaurants and other exogenous feeding programs to

respond to food needs. The food packages offered through such programs are mostly not received well in the communities that Organizations B and D serve because they are not informed by cultural and demographic needs. A key example that interviewees cited was a goods box by the USDA for the elderly. The box consisted of many firm fruits and dairy products which presented challenges for the elderly—a population that required soft and digestible foods. Elderly goods box recipients were unable to bite, chew, and digest the foods provided. Cultural values and how they inform food needs were also not at all reflected in the items selected for the food basket. Organization D stated the importance of cultural understanding in the preparation of food, even when choices are not vast. For example, when introducing alternative greens or grains that one cultural group might not be familiar with, the interviewee stated that it helps to prepare the new green/grain in a manner or recipe that is already familiar with that cultural group. Techniques such as these introduces healthy foods into the diet of cultural minority groups without isolating them while simultaneously reducing waste. Using varying cooking methods, familiar spices, and other methods to make foods more palatable can help ensure that meals are better by the community members. An example provided by one representative was using greens that are not necessarily used in Latin America, like bok choy, in a manner that is familiar to Latin American cooking.

Another feature of relationship-building in these organizations was the hiring of staff from the wider communities that they served. For example, one organization testified to the importance of a “service spectrum.” This approach involved hiring the same group of people who were once served by these institutions. Prioritizing lived experience in this way fostered community buy-in and sustainability of the organization because staff were already knowledgeable of how these communities advanced their priorities around alleviating food security, promoting the inclusion of different cultural and social backgrounds, and the importance of community.

“We work by meeting the community where they are culturally. Beneficiaries become volunteers and volunteers become staff members” - Organization B

The organizations represented in this study employ an asset-based approach to solve food security issues in their communities. Their connections to the communities give them a unique opportunity to mount more culturally relevant interventions. The organizers and activists are already aware of the challenges faced by community members, possibly having experienced these same challenges themselves, and use their experience to inform their service.

This level of familiarity and trust is also important for disaster planning and in times of crisis. For example, risk communication in vulnerable communities requires community connections, relationship building and trust. If these communities are primarily disadvantaged in disasters, these connections can positively support mitigation and preparedness in these communities. Communication also impacts participation in disaster planning exercises designed to familiarize community members with possible adverse outcomes in certain hazards.

Integrated Disaster Mechanism

The Integrated Disaster Mechanism theme covers matters specifically linked to emergency management, disaster response and recovery, and the integration of local food-based assistance organizations in the process. This theme analyzes perceptions and current awareness of earthquake safety and resilience as well as disaster preparedness and mitigation need at household, organizational or community scales. In discussing disaster preparedness needs and expectations with the key informants, it became clear that there was a need for local and grassroots organizations to be seen as valuable to disaster planning efforts to better safeguard already vulnerable communities. Much larger nonprofit organizations, such as the Red Cross, have established mass feeding programs and risk reduction activities that can support city and county emergency operations. For city and county emergency officials to include grassroots organizations in risk reduction, however, they would have to see these organizations' potential in an emergency. That recognition may prove difficult, given the current training and epistemological underpinning of emergency management⁷. Thus, the value of smaller, community-focused organizations like the ones in this study, is not necessarily recognized. The interviewees stated that disaster preparedness training was not officially mandated for nonprofit food assistance organizations that were not funded and/or financially covered by the local or state government.

Subtheme 6: Grassroots organizations and CBOs need additional resources to proactively support disaster planning.

The organizations interviewed did not have explicit disaster related plans that would inform their continuity in the event of a 7.0 magnitude earthquake and the many cascading effects detailed in the HayWired Scenario. The following quote indicates that, while important, these community-based organizations were not engaged in emergency plan development.

“We don’t have a current plan, is a simple way to put it”- Organization A

Many lessons about disaster preparedness, response, and business continuity were learnt as the organizations launched what remains an ongoing response to the COVID-19 pandemic. The pandemic also highlighted several of the challenges these organizations might face in the event of a 7.0 magnitude earthquake. The inability to pursue proactive disaster preparedness and mitigation was linked to three areas: unavailability of staff, limited financial resources, and ambiguity on how and where to access preparedness and mitigation information.

The organizations were sometimes only staffed minimally and thus lacked the capacity to assign an extensive staff complement, individual, or department with disaster-related and business continuity responsibilities. This is a common characteristic of grassroots organizations.

⁷ Emergency planning had roots in a militarized approach of “command and control” that viewed emergencies as matters of “social chaos” that required a military approach to control. (Dynes, 1994; Quarantelli, 2000).

Decisions regarding disaster preparedness and response were made on a situational basis and were not linked to an established business policy, operational strategy, or procedure.

“We know [disaster planning] is something we need, but our volunteer-run system is maxed out. Volunteers don’t necessarily have the training needed to respond to disaster needs”- Organization D

The above quote illustrates the challenges faced by these types of organizations, especially when they are chiefly run by volunteers. Volunteers for this organization had not received, nor had they been exposed to, disaster mitigation and preparedness training that could ensure the continuity of the organization’s operations in a disaster. Specifically, the representative reiterated that the volunteers also had not been not trained to respond to people's needs in a disaster. The interviewee also noted that many persons visiting the pantries are deeply stressed from both the economic fallout from the COVID-19 pandemic and the general fatigue resulting from their living conditions. Volunteers feel underprepared to manage these issues and recognize that there would be a need for a comprehensive case management, trauma, and care team in the aftermath of an earthquake.

Despite these constraints, organizational representatives recognized the value of business continuity and preparedness to ensure the ongoing provision of food and meals to the community. The following quote demonstrates that disaster planning was a priority for these organizations, even though many lacked the capacity to engage in this practice:

“We do not have any disaster plans in place, but it has been something that our leadership team has discussed and many of us are concerned about it”- Organization B

Another facet of the inability to pursue disaster or risk resilience-building efforts is linked to a lack of funding and capital to advance these priorities. As grassroots nonprofits, many of the organizations cannot adequately compete with larger and well-supported nonprofit organizations for grant opportunities and other sources of financial support. One representative reported that smaller organizations like theirs experienced barriers in access to funding through projects and grants. Although smaller organizations have a more connected presence in communities and would be able to better utilize funding to support these communities, they lacked the capacity to compete with bigger exogenous nonprofit organizations for funding. One interviewee lamented the issue of funding and how it is deployed:

“Scale is important because who are we really serving? Big funding packages like that go to large organizations. But how do we know what the range of impact is (in communities) since there are many requirements for administration, overheads? Less ends up reaching our communities”- Organization A.

The above quote demonstrates systemic challenges with funding access and opportunities. Nonprofit organizations rely on an annual round of grant applications. Given the many other

organizations operating in the food landscape, they are likely to be in competition with one another to access these funds. Access to funding supports these organizations' viability and survival. Yet a dearth of capital to pursue other goals not directly tied to food insecurity poses a significant barrier to disaster preparedness, mitigation, and business continuity within them.

It is critical to note that all the organizations saw value in disaster preparedness and emergency planning but were unaware how to integrate these practices sustainably in grassroots community organizations. There was an ambiguity around where to find required resources to help with earthquake safety that were specifically targeted at grassroots organizations for business continuity. Three of the organizational representatives interviewed felt that they had the community understanding needed to empathize with disaster victims but lacked the training and support necessary to plan for a disaster.

Organizational representatives indicated that it became even more apparent during the response to the COVID-19 pandemic that many partnerships could also be optimized to support earthquake response and emergency feeding programs. However, grassroots organizations did not necessarily know the scale of disaster response or what would be needed to support these activities. Moreover, they would need additional support through capital injection and capacity building initiatives to be able to engage in a large-scale response. At present, funding options do not align with disaster planning and preparedness needs within grassroots organizations.

Subtheme 7: Organizations anticipate their role in post-disaster food insecurity and are interested in learning more about seismic preparedness.

Interviewees took note of the relative distrust of formal local, state, and federal agencies within their communities and believed their organizations would be important to advocate for the protection and safety of these communities in the context of a disaster. The advocacy of grassroots organizations, however, would be hampered by their current inability to incorporate any preparedness activities while addressing the ongoing effects of food insecurity. Some of the training and information needs were centered on immediate earthquake resilience as well as more medium-term capacity building opportunities. Participants proposed several ideas to address these unmet needs, including but not limited to:

- Providing guided disaster emergency plan development for grassroots and community-based organizations
- Selecting and training a crisis management or emergency response team
- Improving overall awareness of earthquake risk and preparedness activities
- Holding business continuity training for CBOs
- Assisting with grant and proposal writing to support disaster preparedness and food insecurity.

As noted above, the pandemic also provided insight and informed how critical grassroots and community-based organizations would be to alleviating post disaster food insecurity. The

organizational representatives were aware that community food needs would be intensified in the event of a 7.0 earthquake like the HayWired Scenario.

Subtheme 8: CBOs' pathways to, and inclusion in, the local and state disaster ecosystem is not explicitly communicated or understood.

Interviewees felt that there was ambiguity regarding whether and how their organizations could be included in the already robust disaster and emergency planning for earthquakes. While they were cognizant that there were earthquake preparedness activities being advanced at the county and city levels, there were no explicit entry points for these organizations. One interviewee who worked at a local human services agency stated that there is an established policy for community-based food organizations to be trained in disaster preparedness activities. However, they did not comment explicitly on the process of including community-based food organizations in preparedness activities or whether the training is accessible to the organizations. It was also unclear which agency had the specific mandate of community-based food security and the integration into seismic preparedness procedures. The following quote captures a recommendation from one organizational representative who believed that disaster preparedness would not be prioritized by smaller organizations unless it was mandated and supported.

“The County needs to mandate that these guidelines be followed because these small organizations might not have the capacity to do it on their own”. - Organization C

Recommendations & Takeaways

The recommendations and reflections are organized across three major intersecting themes (see Figure 9). Some suggestions were gleaned through the analysis of the interviews while others were direct recommendations from these organizations that operate in the food assistance space. The feasibility of these recommendations and insights require further research as well as partnered community engagement.

The use of the HayWired Scenario, being cognizant of one of the East Bay's more principal challenges, can serve as means to understand the relationship between seismic preparedness, at-risk communities, and food insecurity. It may also provide an opportunity for local emergency managers and other local and state officials to plan for concurrent disasters that can have long and disparate effects on varying racial and ethnic backgrounds. Community engaged learning (CEL) for disaster planning has the potential to be used as a theoretical and practical model to build earthquake resilience. This model of learning for learning about disasters can be applied to wider resilience building and public health efforts (Wells et al., 2013). The model is well suited for the East Bay to build earthquake safety. Because of the highly scientific data involved in studying earthquake risk, the cascading hazards of earthquakes, the heterogeneity of racial,

ethical, and demographic groups in the East Bay and the complexities of vulnerability already present. This model might also be more successful, given the proliferation of nonprofit organizations (grassroots and otherwise), mutual aid groups, and the historic role of community organizing in the East Bay. Connecting food security, earthquake resilience, cultural competency and emergency planning requires an engaged, participatory action-oriented approach. Building out actionable strategies would be most beneficial to the grassroots organizing space since the organizations are currently dealing with food insecurity challenges and, with sufficient resources and support, demonstrate the potential to play a key role in responding to an earthquake.

The spatial analyses presented above indicate the need for vulnerable communities to play a more integral role in preparedness and mitigation activities, especially because they will be the most affected. The location of the community food assistance organizations in high-risk areas is evidence that seismic resilience and wider disaster management activities need to be pursued. The COVID-19 pandemic identified the importance of cultural awareness and competence in the creation and implementation of risk reduction measures.

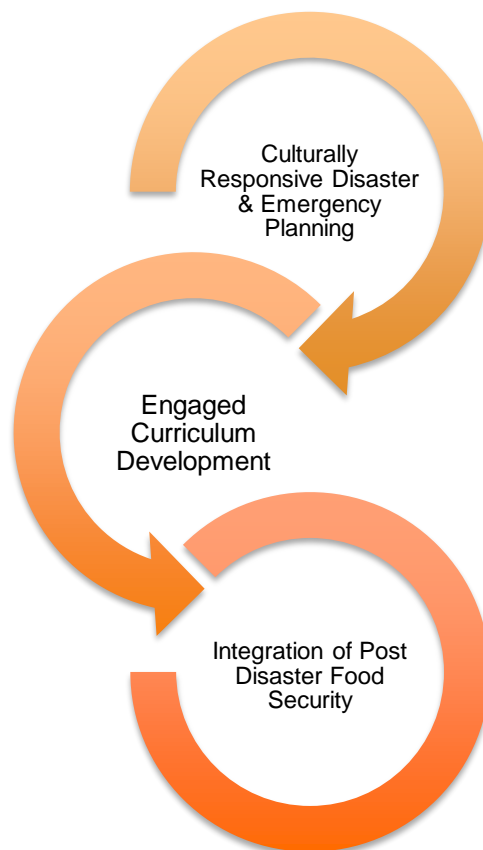


Figure 10- Thematic areas for recommendations

Culturally Responsive Disaster & Emergency Planning

There is little literature examining the connection of earthquake resilience, cultural competence, and food insecurity, yet the analyses presented above demonstrate the need for attention to these issues. To create the environment for a more inclusive emergency management process, emergency planners must consider cultural differences as part of preparedness, mitigation, response, and recovery. Larger emergency management agencies have taken modest steps in this direction. For example, the State of California, along with some efforts from the Federal Emergency Management Agency, has begun to address cultural issues such as language. However, there has been less focus on dietary restrictions, for religious reasons or otherwise. Rations, beyond providing nutritional value, must also be culturally relevant to the populations that are receiving them if they are to be useful. Anecdotes from key informants suggest that emergency planning must shift toward prioritizing culturally responsive approaches for mass feeding plans to change from the existing status quo. For instance, according to one interviewee, contracts are awarded to chain restaurants that are not considering cultural values but rather are engaged because of their sheer size and the perception that they can fill large orders.

Recommended Insights

Proposed Actions	Opportunities/Document Integration	Lead Stakeholders Involved	Disaster Phase Focus
Integrate reflexive ordinance for food handling to fast track permitting process so CBOs can respond	Review Municipal Code re Permits	ACDEH	Mitigation Recovery
Pre-identify feeding triage areas or shelters that may support food preparation in the East Bay		DPEM CBOs	Response Mitigation
Integrate community and community food-based organizations in earthquake simulations	HayWired Scenario Exercise Toolkit-	USGS DPEM	Preparedness
Cooperate with local food banks located in highest seismic risk areas to preposition culturally appropriate food supplies differently for possible earthquakes	HayWired Scenario Exercise Toolkit-	USGS DPEM	
Realign contracts for mass feeding and meal preparation to CBOs with community ties and cultural awareness		DPEM Non-Profits	Preparedness

Develop a more equitable resource access policy and infrastructure resilience investment in vulnerable communities (Toland et al, 2023, p. 3)	HayWired Scenario Exercise Toolkit-		Preparedness Mitigation
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Engaged Curriculum Design

The connections to the local population that community-based and grassroots food assistance organizations have and can leverage could greatly enhance risk communication and earthquake preparedness and mitigation activities. The HayWired Scenario and its associated tools could be efficiently used to create training opportunities, or at the very least, to support the development of specific tools that are more culturally relevant with assistance from community activists and organizations. Pre-event investments in coalition-building can help to foster the development of organizational networks among agencies as well as community human service organizations during response (Campbell et al., 2021, p. 5). The food-based organizations examined in this study have built trust and strong relationships that can be vital to disaster risk reduction activities. Partnering with activists who are truly connected to the communities they serve promote inclusion in the emergency management and hazard mitigation planning processes. Throughout this project it has become clear that the social justice lens used by activists in the East Bay has given them a boost in relationship- and trust-building with communities that are often excluded or overlooked or excluded by emergency managers and other large organizations.

The execution of culturally informed training activities would be better supported if there was a period of engagement and stakeholder consultation with grassroots organizations. This kind of outreach could have a far-ranging impact for incorporating equity and cultural competence into all preparedness, mitigation, and recovery actions.

Recommended Actions

Proposed Actions	Opportunities/Document Integration	Lead Organizations	Disaster Phase Focus
Co-produce a training program that integrates food-based grassroots/CBOs and their cultural awareness with disaster planning.	HayWired Scenario Exercise Toolkit- Integrate Chapters on Supply Chain and Movement of Goods, Power, & Water & Communications	CBOs, USGS	Preparedness Mitigation Recovery

Initiate and sustain engagement with underserved communities, including activists.	Establishing communication and engagement in project design and sharing information on scientific products	USGS, CGS, AC	Preparedness
Share/source easily digested templates for local preparedness for small food businesses focused on sustainability and social equity	Small business (SB) focused emergency planning toolkit. Business Continuity Templates. Disaster Resources Earthquake Safety Checklist	CBOs	Preparedness
Incorporate equity and cultural competency indicators into local emergency plans	HayWired Societal Impacts Report		Mitigation
Design simulation exercises (tabletop to full scale) with mass feeding components	HayWired Scenario Exercise Toolkit	CBOs, VOADS, DPEM	Preparedness

Integration of Post-Disaster Food Security

The HayWired Scenario focused on utility, transportation, and communication infrastructure damage, as well as the exposure of vulnerable populations but did not explicitly focus on food security as a topic area. Studying the damage to energy infrastructure and water lines further advances these analyses. Integrating a focus on post-disaster food security may be incredibly valuable by engaging various state, federal, and nonprofits of different sizes. Most of the recommendations captured in this section can be dependent on volunteer management. Food insecurity is an ongoing challenge in the East Bay and may be valuable for leveraging partnerships.

Proposed Actions	Opportunities/Document Integration	Lead Orgs	Disaster Phase Focus
Partner with local community-based food organizations already knowledgeable of community food insecurity needs and cultural/dietary restrictions.	Ordinances and developing memorandums of understanding.	CBOs VOADS Health & Human Services	Preparedness

Create a food triage location for NGOs to coordinate	Ordinances that are integrated into Standard Operating Procedures		Preparedness Response
Support small, community-based, food focused simulations with food assistance nonprofits at the county and state levels	Integration of larger food banks and their partners. Using HayWired Scenario on disruption to emergency resources		Preparedness

Limitations and Further Research

As with all studies, this project experienced limitations in its current format. The number of organizations that made up the scan was limited to those that had a social media presence and/or any related secondary data about their operations. The COVID-19 pandemic also hindered the availability of some activists/organizations to respond. The effects of the pandemic were extremely challenging in the East Bay, and this impacted the response rate of the ten organizations that were contacted for interviews. The project format also did not allow for more robust investigation since it was a preliminary scoping study. The format, methods, and results reflect these limitations.

The suggestions presented in this paper have not been evaluated against current plans and policies; however, but they reflect the insights and recommendations shared by representatives of the food-based organizations that were interviewed, as well as further analysis of the literature on the topics discussed above. Future research and action areas may include:

- I. More detailed spatial analysis inclusive of access to transportation infrastructure and other critical facilities in food insecure households in large earthquakes.
- II. Detailed spatial analysis of the multiple hazards in the HayWired Scenario, such as landslides, fires, and liquefaction, as well as analyses of the impacts within the population or subset of populations that will be affected by those specific hazards.
- III. Community engaged learning as a participatory approach for building earthquake resilience with key organizations.
- IV. More detailed analysis of the typology of nonprofit, community based, and grassroots organizations operating in the most vulnerable communities and how to engage them in disaster planning.
- V. Collaborative approaches to the creation of detailed, actionable strategies for earthquake resilience in these areas that utilize and expand upon existing HayWired products.

Appendix: Interview Questions



Diversifying HayWired Communications Phase II

Project: Community-based food security organizations and their relationship to seismic resilience and earthquake safety in Alameda County and surrounding areas.

Interview Questions

1. To help ground our discussion, please describe the extent of your involvement in food security issues in the community or jurisdiction that you serve.
2. Describe your organization's strategic priorities and impact areas?
3. How does your organization approach disaster planning and specifically planning for earthquakes?
4. Are there any specific considerations or challenges when working in or engaging in specific diverse communities?
5. Have there been any changes to food outreach activities, organizational programs, or emerging trends that your organization has implemented due to the pandemic or other issues that have emerged in the last two years?
 - a) Were there any specific lessons learnt and/or challenges involved in working with culturally diverse groups during or after a disaster?
 - b) How will your organization strive to meet these new realities when creating programs or activities?
6. What support was or would be most helpful to you immediately after or during a disaster?
7. Would your organization be interested in localized earthquake resilience programs and information products and what form would be the most beneficial?
8. Is there anything else we should know to help other community-facing food organizations prepare for disasters and specifically earthquakes?

Thank you for your time.

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