



READY OR NOT: ASSESSING SOCIAL CAPITAL FOR URBAN RESILIENCE IN THE US

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Abstract

Urban areas in the United States are acutely at risk of an array of natural disasters that will become more frequent as climate change intensifies. Urban resilience is a multi-faceted concept that cities have adopted to prepare and respond to disasters, allowing them to quickly 'bounce back' from the shocks and adaptively innovate to prevent future disruptions. These approaches require diligence in terms of engineering and infrastructural resilience but require community resilience through substantial reservoirs of social capital. Social capital is a concept that focuses on the intangible value of strong, connected, and trustworthy networks that when activated, accelerates a community's response and recovery to disruptive events. However, city governments struggle to grasp these theoretical concepts and embed them into their planning activities. This research seeks to enhance the understanding of social capital and urban resilience in the US context by examining small-medium-sized cities and illuminating how they recognize and operationalize their concepts. To do this, a comprehensive literature review was first conducted to explore the theory of social capital and urban resilience. This led to the development of an analytical framework that was applied to four US cities by conducting semi-structured interviews. The findings from the case studies revealed that cities typically do recognize and operationalize the concepts of social capital. However, they also encountered challenges related to augmenting social capital, primarily due to conceptual overlaps and contextual factors. Based on these insights, an assessment tool was drafted integrating empirical findings from the case study analysis with theoretical underpinnings through empirical confrontation. An expert session was conducted with the City of Norfolk, a US leader in resilience planning, to test the structure and aim of the tool. The resulting assessment tool is a novel attempt to guide practitioners through a critical reflection regarding key social capital operationalizations, Internal Synergy, Shared Vision, Network Collaboration, Equity & Justice, and Community Empowerment. Applications of this tool could provide benefits to internal governance processes, ensuring that social capital and its beneficial outcomes do not get lost in the governing processes. This will ensure that cities at risk of disasters are better prepared to activate the social capital within their networks and communities. However, recognition of the broader political and historical contexts of cities and further testing is required to avoid overgeneralizing the study's findings and to expand the tool's utility.

Keywords: Urban Resilience, community resilience, resilience planning, urban governance, social capital, SDG 11

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1. Introduction

In a swiftly urbanizing world, there is an urgent need to minimize the impacts of climate change in cities. As two-thirds of the world will be residing in urban areas by 2050, these populations will be at a particularly heightened risk of the detrimental impacts of climate change such as pollution, temperature increase, and the acute impacts of natural disasters (DESA, 2019; Tang & Lee, 2016). According to the United Nations (2018), nearly 60% of the world's cities are at high risk of exposure to one of six natural disasters (cyclones, floods, droughts, earthquakes, landslides, and volcanic eruptions). The impacts of such disruptions impact infrastructure, economies, and the livelihoods and health of the people in cities. Therefore, the implications of urbanization mean that coordinating infrastructural updates, public health interventions, social support, and recovery and mitigation efforts are crucial for cities to orchestrate to become fully resilient to disruptions in the future (Bulkeley & Betsill, 2013; Tang & Lee, 2016).

Today, the concept 'urban resilience' has gained traction in the field of urban governance as an umbrella term that accounts for the mitigating actions that can safeguard and future-proof a city from inevitable environmental disasters and the socio-economic repercussions that accompany them (Woodruff et al., 2022). Simply put, resilience is the ability of a subject to function in the face of disruption and was first introduced in physics and engineering disciplines (Sharifi & Yamagata, 2018). Globally, the urgent call to improve the resilience of cities is most notably summarized in United Nations Sustainable Development Goal (SDG) #11: "Make cities and human settlements inclusive, safe, resilient and sustainable" (UN, n.d.). In recognition of the short and long-term impacts of disasters, resilience should holistically encompass the physical, environmental, and social capabilities of a city to recalibrate and learn from past disruptions (Lambrou & Loukaitou-Sideris, 2022).

1.1 Urban Resilience in the United States

The US has a vast, geographically diverse landscape that is prone to many types of natural disasters. In 1979, the federal government created the Federal Emergency Management Agency (FEMA), which aimed to coordinate local efforts to mitigate, prepare, respond, and recover from disasters (McEntire, 2009). However, in 2005, Hurricane Katrina was a devastating wake-up call that illustrated the need for improved governance of urban resilience (Curtis, 2018). This catastrophic event resulted in over a thousand deaths, extensive flooding, and widespread looting, leaving thousands permanently displaced from their homes in New Orleans (Beaudoin, 2007). The aftermath revealed the critical role of social capital in disaster response and recovery as vulnerable communities had to facilitate their support systems due to the government's lack of coordinated response (Hawkins & Maurer, 2010). Subsequently, climate change has exacerbated the probability of these events, and in 2020, the United States witnessed a record-breaking number of 22 climate-related disasters, resulting in losses amounting to \$1 billion. (Deitchman et al., 2021). Scientists predict a continued surge in west coast wildfires, storms, and flooding in the southeast, extreme heat events in the Midwest, and severe winter storms on the east coast (Reidmiller et al., 2018).

In this regard, scholars are agreement that for cities to become more resilient, the inclusion of social capital as a tool is critical (Aldrich et al., 2018; Carmen et al., 2022; Pfefferbaum et al., 2017; Shahid et al., 2022; Smith et al., 2012). This is because social capital enhances a community's ability to shape the character of the places they live, through high-quality relationships (Adger et al., 2008). Managing disaster impacts relies on the crucial role of social capital, as it produces essential outcomes such as aiding behaviors, collective efficacy, and

fostering a sense of belonging within beneficial groups (Makridis & Wu, 2021). But in the broader academic discourse, social capital is deemed as a slippery variable because of its inability to be easily measured, and scholars recognize the difficulty of translating its worth into governance (Válsán et al., 2023). To date, only one study has attempted to provide an index that includes social capital as a resilience metric (Kyne & Aldrich, 2020).

This is in part because resilience in the US is still minimally pursued, and Woodruff et al. (2020) found that even amongst the 100 largest US cities, only 36% of them had institutionalized resilience plans. Furthermore, the methods employed by these plans to track progress and monitor data-driven indicators remained unclear. Despite the willingness of larger and more populous cities to embrace resilience measures, there is a notable gap in practice-based evidence and guidance on effective implementation strategies (Olazabal & Ruiz De Gopegui, 2021; Woodruff & Stults, 2016). Studies have also highlighted that of the small percentage of current resilience plans, most lack adequate attention to social aspects essential for community sustainability (Fiack et al., 2021; Kang et al., 2023; Keenan, 2018; Lambrou & Loukaitou-Sideris, 2022; Woodruff & Stults, 2016). Specifically, considerations of equity, justice, and other socio-cultural aspects of communities are largely underscored. Without consideration of these characteristics embedded in communities, scholars are aligned that this neglect will produce inefficient and short-term forms of resilience (Carmen et al., 2022; Hess & McKane, 2021; Meerow & Newell, 2019; Vale, 2014; Ziervogel et al., 2017).

Additionally, current assessment frameworks that have been developed to build urban and community resilience also fall short. Scholars have critiqued them for their oversimplification of approaches and disregard for shifting urban governance practices internally, to achieve more formative 'resilience thinking' (Coaffee et al., 2018). In a review of 36 community resilience frameworks, Sharifi (2016) identified that they often only provided a snapshot assessment of resilience and neglected the importance of the process of developing and enhancing community resilience through social capital. There is a notable absence of research on how these tools are implemented and integrated into local development plans and scholars identify a lack of practice-based methods for monitoring the ongoing strengthening of social capital (Carmen et al., 2022; Fazey et al., 2018; McTarnaghan et al., n.d.; Sharifi, 2016).

Furthermore, the current resilience planning research landscape is saturated in examining large cities governed by progressive mayors and entrenched environmental values (Fiack et al., 2021; Homsy, 2018; Kang et al., 2023; Lambrou & Loukaitou-Sideris, 2022; Schrock et al., 2015). Many of the cities with resilience plans are cities that have been funded by third parties such as the 100 Resilient Cities program by the Rockefeller Foundation, which are concentrated in wealthier, large cities (Leitner et al., 2018; Romero-Lankao et al., 2016). This overlooks the critical aspect of small-medium-sized cities, which may not necessarily possess comparable resources or ambitions to adopt resilience measures, but still face significant disaster risks (Cutter et al., 2016; Homsy, 2018). Additionally, one-fourth of Americans live in small to medium-sized cities, many of which have shown over 25% growth in population in the past 20 years (Raetz & Hedman, 2021). This highlights an important, yet under-researched area of urban resilience.

1.2 Research Objective

There exists a gap in research on how to meaningfully recognize and operationalize social capital as an enhancement for urban resilience. This research aims to contribute to the existing theory and empirical findings of social capital in the context of urban resilience and pinpoint areas for improvement. This is addressed through the following research question (RQ):

How can cities meaningfully evaluate social capital to enhance urban resilience?

To effectively answer this question, the following three sub-questions (SQs) were formulated:

SQ1: What is the relationship between social capital and urban resilience, according to existing literature?

SQ2: To what extent do government actors in small-medium-sized cities recognize and operationalize social capital?

SQ3: How can a social capital assessment tool help city government actors better evaluate and operationalize social capital for urban resilience?

1.2.1 Societal Relevance

The IPCC has strongly warned about the growing disaster risks to cities, particularly their vulnerable populations, and this risk can be mitigated by increasing the efficacy of resilience planning and activities (McTarnaghan et al., n.d.). The recognition of social capital's potential can lead to enhanced collaboration and community support, fostering a more resilient and connected urban environment for urban government actors, community actors, and civil society. Additionally, many societal co-benefits result from increased social capital and community resilience, as the social fabric of a community is inextricably linked to wellness, livelihood, equity, and economic opportunities (Hellerstein & Neumark, 2020). This research provides important insights to provide municipal practitioners, government officials, and other relevant stakeholders in under-researched and at-risk areas of the US with useful insights to ensure that climate change impacts on American communities are mitigated.

1.2.2 Scientific Relevance

In completing this research, a critical and timely theoretical analysis of the interpretations of social capital from an urban resilience perspective is provided. While actors have created urban resilience tools and frameworks such as the Rockefeller Foundation's "100 Resilient Cities" to mainstream ambitions through concrete actions and strategies, these are not easily translated into different contexts, especially considering the heterogeneity complex of urban areas and how their geographical factors, socio-economic priorities, and political ideologies influence their interpretations of resilience (Brelsford et al., 2017; Kang et al., 2023). This has led to limited uptake of resilience activities that successfully cater to a wider range of urban communities, and there continues to be a limited grasp of the theory of resilience in various contexts (Meerow & Newell, 2019; Woodruff et al., 2021). Furthermore, this study expands on previous research and adds relevant empirical insights on small-medium-sized cities and provides an opportunity to inform more robust methodological and theoretical approaches to improve how social capital can urban build resilience.

1.3 Research Framework

The research questions are answered following the research framework detailed in Figure 1. First, a literature review on urban resilience and social capital provided theoretical and empirical insights necessary for answering SQ1. This theoretical foundation was then conceptualized into an analytical framework, which was applied to four small-medium-sized cities in the US. Through semi-structured interviews, the multiple case study analysis provided practical insights and corroborated the framework to answer SQ2, which led to the iterative development of an assessment tool. The assessment tool combined the new empirical findings and confronted them with the analytical framework and was then presented in an expert session. This allowed for a final confrontation in terms of theoretical and practical usability, which culminated in a finalized social capital assessment tool, answering SQ3.

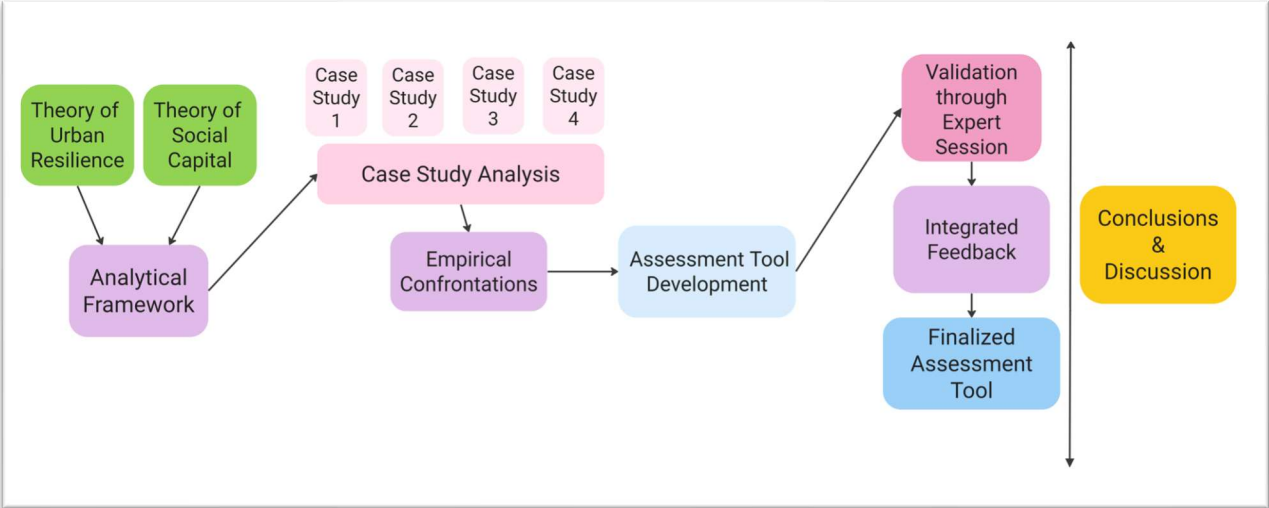


Figure 1: Research Framework

2. Theoretical Background

This section introduces relevant theories on urban resilience (2.1), social capital (2.2), and social capital in the context of urban resilience (2.3). In analyzing relevant studies, scholarly approaches to building social capital indicators and underlying implications on resilience are explained (2.4), which helped to create an analytical framework (2.5) to answer SQ1, *What is the relationship between social capital and urban resilience, according to existing literature?*

2.1 Urban Resilience

The concept of resilience was originally rooted in the engineering and physics discipline, until Canadian scholar, CS Holling and others developed the theory to manage and govern socio-ecological systems to minimize negative disruptions (Holling, 1996; Folke et al., 2005). This led to the development of the theory in the urban governance realm, where current scholars define urban resilience as “the ability of an urban system- and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales-to maintain or rapidly return to desired functions in the face of a disturbance, to adapt to change and to quickly transform systems that limit current or future adaptive capacity” (Meerow et al., 2016 pp. 49).

Therefore, approaching resilience requires recognition of the interconnectedness and vulnerability of urban systems. As disasters have compounding influences on various domains, coordination between critical sectors such as transportation, housing, healthcare, and social services can enhance urban resilience by ensuring their disruptions are kept to a minimum (Summers et al., 2018). Data-driven indicators on the physical and socio-economic characteristics of a city can provide helpful insights that quantify the need to make adaptations to urban infrastructure and services. Configurations of these data points have become more accessible in hopes to promote rigorous and widespread resilience action (Mehryar et al., 2022).

Two quantifiable indicators of resilience are risk and readiness. According to the University of Notre Dame’s Global Adaptation Initiative (NDGAIN), overall ‘risk’ encompasses the city’s vulnerability to different climate hazards, and ‘readiness’ pertains to the ability of the city to mobilize investments financially and socially. Socio-economic and geographical indicators such as population density, percentage of the population in flood zones, and main economic industries help quantify risk and socio-political indicators such as education in climate change, health insurance coverage, and civic engagement quantify readiness (University of Notre Dame, 2018). By assessing and monitoring these indicators, a more comprehensive assessment of a city’s resilience, and areas for improvement is provided through a score, which allows for more informed and effective planning and policy development. Typically, these efforts to mitigate risk and increase readiness are outlined in a city’s resilience, climate, or adaptation plan’ (Woodruff et al., 2022; McTarnaghan et al., 2022).

Additionally, national and transnational actors such as the US government and the Rockefeller Foundation have assembled maps, toolkits, and frameworks to help cities implement strategies to build resilience (Deitchman et al., 2021). The US Resilience Toolkit provides case studies, relevant tools, datasets, reputable reports, and training opportunities for local practitioners (U.S. Climate Resilience Toolkit, n.d.). The 100 Resilient Cities Framework focuses on the more complex and interconnected facets of urban resilience by assessing health and wellbeing, economy and society, infrastructure and environment, and leadership and strategy (The Rockefeller Foundation, 2023).

Still, many contextual interpretations of urban resilience exist in practice and theory which are shaped by the distinctive characteristics inherent in each city (Kang et al., 2023). This interplay has created a level of complexity and overwhelm when cities are confronted with generalized and multifaced frameworks as mentioned above (Deitchman et al., 2021). This results in a limited uptake and understanding of resilience actions in practice, and even frameworks such as the 100 RC are marginally successful due to their long-term implementation and temporary funding schemes (Galderisi et al., 2020; Spaans & Waterhout, 2017; Woodruff et al., 2020). Furthermore, critiques of their inability to holistically address issues of social vulnerability demonstrate the need for a method that examines and operationalizes resilience on a community level (Fitzgibbons & Mitchell, 2019; Woodruff et al., 2022).

2.2 Social Capital

Social capital has long been studied and promoted as a foundation for healthy and democratic civil societies (Tocqueville, 1835). Social capital can be understood as the individual and collective benefits that help society to function efficiently and the degrees of connection and sense of trust that inspire collective action amongst communities (Hays, 2015; Schoch-Spana et al., 2019). From the individual aspiration to connect with others, social capital is produced and fostered as a resource for the community as a whole (Siisiainen, 2003). Leading scholar, Robert Putnam defines it as “features of social life—networks, norms, and trust—that enable participants to act together more effectively to pursue shared objectives” and serves as the main definition of social capital (Putnam, 1995, p. 664–665).

Social capital is often characterized by three main typologies: bonding, bridging, and linking (Carmen et al., 2022; Claridge, 2018). **Bonding capital** is found within relationships that have closer, and more personal attachment values from shared identities, attitudes, or demographics. This kind of bonding capital is most found within informal groups such as families, friend groups, and ethnic or religious communities. **Bridging social capital** is found when groups have ties to external networks outside of their community. **Linking capital** is found when groups have engaged relationships across different hierarchies, such as actors in local and state governments, creating trust, reciprocity, and increased collective efficacy (Claridge, 2018; Saja et al., 2018). Therefore, social capital exists across multiple scales, from intimate relationships, to community relationships, and regional relationships (Wilson, 2010). This means that there are dynamic relationships between all forms and dimensions of social capital, which is constantly mediated by political, economic, and environmental influences (Aldrich et al., 2016; Woolcock, 2001).

2.3 Social Capital & Urban Resilience

Social capital and its benefits are well-aligned with the theory of community resilience, which is a sub-theory of urban resilience (Aldrich & Meyer, 2015). Community resilience encapsulates the ability to endure and recover from adversity on a local scale, where engaging with civil society through collaborative networks, partnerships, narratives, and accessible resources allows for communities to collectively act and adapt to challenges (Carmen et al., 2022; Fazey et al., 2018). Community resilience is strengthened by the community’s ability to learn and grow from past threats, communicate transparently, lead with compassion, develop knowledge, and share core values and beliefs (Berkes & Ross, 2013; Pfefferbaum et al., 2017).

One of the main contributing factors to community resilience is a strong sense of place and belonging through social networks, which are interconnected individuals or entities that are interlinked and can be defined by the qualities and configuration of the connections between them

(Pfefferbaum et al., 2017). Social networks can exist on informal, self-organized local levels as well as through formalized partnerships (Desouza & Flanery, 2013). Networks allow groups to transmit influence and information beyond their organizations, creating a structure that facilitates shared ownership and responsibility for achieving common objectives (Pfefferbaum et al., 2017). Moreover, they serve as avenues for collective actions, facilitating the establishment of linkages, sharing of assets and information, launching of initiatives, and offering support, all of which contribute to strengthening communities and reducing their susceptibility to disruptions. (Abrash Walton et al., 2021; Desouza & Flanery, 2013). This is in alignment with bonding, bridging, and linking variations of social capital which is why scholars identify the concept of social capital as critical to building community resilience (Carmen et al., 2022).

Kyne & Aldrich (2020) conducted a quantitative analysis of publicly available data to calculate and map social capital across the US, in terms of community and climate resilience (See Figure 2). The map and the study identified a majority of low-to-medium social capital scores and provided a visualization of the urgency in addressing the root concepts of social capital.

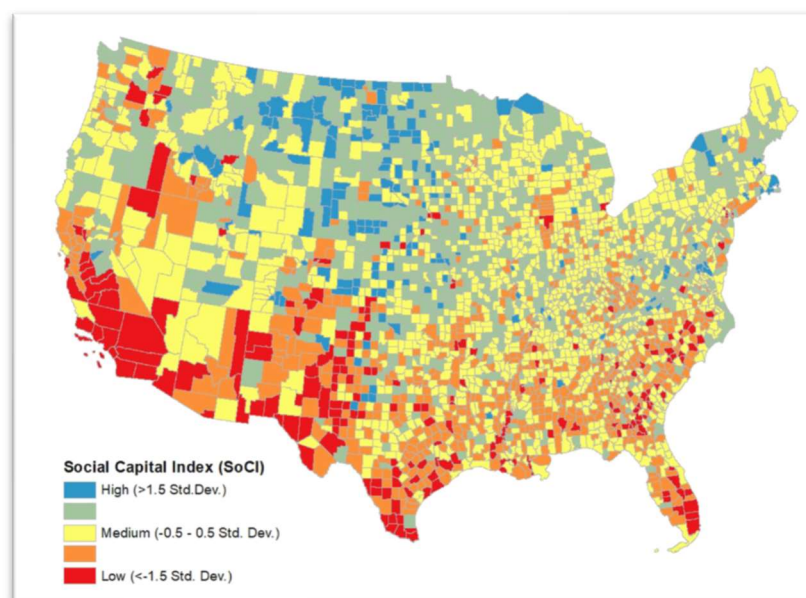


Figure 2: Social Capital Index Map (Kyne & Aldrich, 2020)

Academics, government actors, and organizations have widely attempted to provide empirical value to community resilience studies by developing toolkits, models, indices, scorecards, frameworks, and strategic guides regarding resilience best practices (Sharifi, 2016). Current frameworks that have been built around the concept of urban resilience include the FEMA Whole Community Framework, the Baseline Resilience Indicators for Communities (BRIC) Toolkit by The World Bank, the Natural Hazard Resilience Screening Index (NaHRSI), and the Community and Regional Resilience Initiative (CARRI) framework to name a few (Abrash Walton et al., 2021; Schoch-Spana et al., 2019; Sobelson et al., 2015; Summers et al., 2018). However, Sharifi (2016) noted that many frameworks adopt a summative rather than a formative approach, neglecting the temporal aspect of resilience building and only offering a static snapshot in time.

Neither social capital nor resilience can be characterized by a static value. It is always in flux, however, certain types of social capital give rise to different forms of resilience (Carmen et al.,

2022). Scholars make a distinction between resilience across three temporal levels: reactive, responsive, and proactive. **Reactive resilience** focuses on the actions necessary to deal with the immediate consequences of a shock, achieve stability, and quickly return to the previous state. **Responsive resilience** is considered an adaptive learning process in which adjustments and reinforcements are made to the environmental, or physical aspects of a system to prevent further shocks and disruption. Lastly, **proactive resilience** entails the continuous cycle of looking ahead, testing new approaches, reflecting, and learning from the past to instigate a transformation. It necessitates a holistic viewpoint and multi-level strategies that incorporate social norms, identities, values, and the need for radical changes. (Aldrich et al., 2016; Carmen et al., 2022).

2.4 Social Capital's Role in Building Urban Resilience

Despite social capital being intangible and dynamic, scholars agree that to build strong and resilient communities, recognition of where social capital can be strengthened is essential (Carmen et al., 2022). While social capital is well identified in the theory of community resilience, this research primarily focuses on the place-based scale of cities, allowing for a broader understanding of social capital compared to communities (Cutter et al., 2016). Therefore, the operationalization of social capital in building urban resilience requires more attention. In the examination of relevant literature and empirical evidence concerning social capital in the context of urban resilience, two key agents influencing social capital were identified: the city government and the socio-cultural aspects of the city (Carmen et al., 2022). Both agents influence social capital for urban resilience through different concepts, which are described below.

2.4.1 The Role of City Government

This section reviews the role of the city government in influencing social capital to build resilience. According to relevant literature, this includes facilitating strong and collaborative networks, improving governance capacity, enabling meaningful participation and engagement, and structuring a balanced vision for the city's future.

Network Strength

Understanding the strength of networks in cities can provide insights, particularly in cases where social capital is low, and can improve the implementation of policies, by providing context to how informal and formal networks provide beneficial outcomes for communities and cities. The social capital within strong networks translates directly to resilience because networks can be harnessed to facilitate resource distribution, provide emotional support, share information, increase goodwill, and catalyze collective action in the event of a disruption (Carmen et al., 2022; Panday et al., 2021).

In cities where natural disasters have occurred, scholars found that strong networks with deep social ties experienced lower fatalities and accelerated recovery post-disaster. After earthquakes struck areas of Nepal, Panday et al. (2021) found that even in remote communities with low access to resources, the networks with high bonding capital were better able to distribute aid packages efficiently in comparison to areas with lower levels of bonding capital. Additionally, strong networks can influence how a community rebuilds after a disaster, as ones with strong social capital, have a higher motivation for investing in future resilience no matter the cost (Kyne & Aldrich, 2020). This also has influences on recovery initiatives as strong networks create the capacity for self-organization of resources (Desouza & Flanery, 2013).

Therefore, measuring social capital in the context of existing social networks can be beneficial in conceptualizing community resilience. Previous studies have measured social capital's impact on

resilience by assigning weight values to the presence of formal networks and participation in public programs. This method specifically quantifies the influence of social capital through networks. (Mayunga, 2007; Rangwala & Chandra, n.d.; Saja et al., 2018). However, Carmen et al. (2022) and Saja et al. (2018) emphasize that it is more important to understand the depth and evolution of these networks by acknowledging process-oriented indicators that shape the experiences of people within networks. They recommend quantifying the membership and density of community-based organizations (CBOs), the effectiveness of projects undertaken by civic organizations, as well as measuring volunteering organizations through budget and membership (Saja et al., 2018). Other studies advocate for more granular methods such as social network analysis and network mapping, which are recommended to capture how networks change over time.

This is because gathering within groups that have similar interests increases bonding capital and at the same time, has the potential to increase bridging capital, as events, programs, and activities organized by networks boost socialization and attract participants from all kinds of ages and backgrounds (Aldrich et al., 2016). In other words, social capital from the physical grouping of individuals creates norms of trust and reciprocity, or the capacity and willingness to support each other (Wilkin et al., 2019).

Network Collaboration

In addition to having a substantial quantity of strong networks, collaborations between diverse networks have a multiplying effect as bridging capital leads to knowledge sharing, innovative ideation, and resource exchange (Carmen et al., 2022). When bridging capital is strengthened and expanded across different networks, and various actors are included and empowered in decision-making processes, studies have found a boost in social learning, innovative solutions, and sustainable decision-making (Lioubimtseva & da Cunha, 2022; Manzi et al., 2010; Mehryar et al., 2022; Mpanje et al., 2018). Examples of valuable collaboration include regional centers for resilience that bring academics, local actors, and community organizations together to contribute to more holistic policy-making and expand knowledge sharing across different cities (Selvaratnam et al., 2023). Other collaborations include public-private partnerships that provide opportunities for local business stakeholders to provide resources and support to local communities (Baxter, 2019; Mendizabal et al., 2018; White et al., 2015).

Studies have found that US counties that had developed bridging capitals through network collaborations across different organizations experience a reduction in poverty rates post-disaster, compared to counties that had more concentrated bonding capital within organizations (Aldrich et al., 2018). However, tracking network collaborations can be difficult, as partnerships form both organically and methodically over time. Local governments have an important role to play in building the capacity to maintain and collaborate with networks across stakeholders at the community, business, and regional levels (Desouza & Flanery, 2013).

Governance Capacity

The ways that city government influences social capital in its communities are highly dependent on their institutional capacity, embedded discourses, and attitudes, and how this shapes their policies and decision-making processes. These inner workings influence and are influenced by organizational efficiency, the ability to network and coordinate, and the accumulation of trust from the community which has implications on the provision of financial support and resources before, during, or after a disruption (Carmen et al., 2022; de Milliano & Jurriens, 2016).

Urban governments vary in their political context and orientations, which influences their approaches to urban governance and their beliefs about climate change (Adger et al., 2008; Koop et al., 2017). This, and other factors like city size play into the government's institutional capacity, which is defined as "how institutional setting, rules, and regulations enable actors to collaborate and address shared problems" (Koop et al., 2017). According to Coaffee et al. (2018), negative influences of institutional capacity and internal bureaucracy impede meaningful collaboration and procedural changes, which can hinder their ability to implement urban resilience initiatives. Laurian et al. (2017) highlight organizational silos, power distributions, leadership philosophies, and management culture to have either influencing or inhibiting effects on advancing resilience governance. When comparing resilience efforts in Rome and Athens, Galderisi et al. (2020) found that without ongoing technical and organizational support, the stability of local leadership had heavy implications for the success of resilience implementation. In a study of 20 cities, it was found that experimentation, internal networking, and getting political buy-in were essential for successful resilience coordination. This has implications for the skills of government actors to be effective communicators, project managers, and partners in bridging different government sectors together (Fastiggi et al., 2021).

Furthermore, Carmen et al., (2022) caution that decisions at the local level can erode bonding and bridging capitals, from poor interactions and conflict arising from power dynamics. Therefore, governance capacity should be analyzed in terms of their attitudes and ambitions for resilience, the formalization and execution of these ambitions, and the internal governance coordination, structure, and leadership that promotes increased bridging capital among collaborating networks and bonding capital between government actors.

Participation & Engagement

Another way in which the city government influences social capital for resilience is through its activities which promote participation and engagement with civil society. This creation of linking capital can be driven through informal or formal approaches such as interacting with citizens within their communities, or arenas for policy and decision-making processes (Madsen & O'Mullan, 2014). The most classic example of participation is inviting members of the community into discussions via council meetings or town halls. These kinds of engagements have been critical for democratic governance for decades, as it gives city residents autonomy in advocating for their communities, boost their awareness of local initiatives, and increase their sense of place (Dempsey et al., 2011; Iyer-Raniga & Treloar, 2000). Furthermore, participation also positively impacts the efficacy of urban resilience activities, as involving community members in planning processes can help provide valuable insights that may be overlooked and provide more depth into their specific needs (Spidalieri et al., 2022).

As the concept of participation and engagement have become embedded in governance strategies, it also risks the potential of being just another box to check. Therefore, the pursuit of participation should be approached with caution, to meaningfully influence social capital. Arnstein (1969) famously provided the earliest critiques of participation mechanisms, stating that higher levels of involvement led to better outcomes (i.e., delegating power to citizens to form decisions), in contrast to lower levels (i.e., gathering input at meetings), which can lead to the tokenization of citizens. It is not uncommon that the intentions and outcomes of participation are imbalanced and can therefore lead to failure, erosion of trust, and decreased social capital (Mandarano, 2015). Therefore, cities must provide opportunities to be involved in governance in a non-performative

way and increase citizens' commitment to be included in such processes (Campbell & Zellner, 2020; Legacy, 2017).

Vision

To conclude this section on the city government's role in building social capital, the city's overall desire to improve livelihoods for their citizens requires an interdisciplinary and innovative vision in addition to enhancing social capital. Carmen et al. (2022) state that a key component of this vision is 'balancing multiple capitals' which include physical, economic, natural, and human capitals. Physical capital includes the built environment of society such as housing and commercial infrastructure. Economic capital encompasses the availability of financial resources via savings, income, and investments. Natural capital includes environmental resources and ecosystem services (Garrigos-Simon et al., 2018). Human capital refers to individual characteristics and capabilities such as age, health, skills, and work experience (Ashmawy, 2021; Masterson et al., 2014). These capitals contribute to a city's economic and productive capacities and management of infrastructure, which influences a community's resilience and reservoirs of social capital (Pfefferbaum et al., 2017).

Other scholars refer to this balancing act as complex socio-ecological systems and have long studied the importance of governing resources of such systems carefully (Ostrom, 2009). This is especially the case in regions where natural resources are abundant (i.e., fishing towns, mines) and are at risk of being depleted from natural disasters and extreme weather (Berkes & Ross, 2013). However, across urban governments, scholars have documented that there is often a mismatch in how capitals is prioritized and that the main reasons for less-holistic approaches to resilience are a result of low government capacity and an over-prioritization of economic growth (Kang et al., 2023; Koop et al., 2017; Pahl-Wostl, 2009). They also note that cities do not often consider the co-benefits that resilience activities have on other sectors, such as increased innovative capacity that arise from a healthy and stable economy (Adger, 2000; Koliou et al., 2020).

Like governance capacity, the uptake of local policies and laws reflect priorities and discourses such as those related to climate change issues and directly reflect government attitudes on how resources are used, allocated, and prioritized (Carmen et al., 2022). Ashmawy (2021) recognized that the roles of different local actors in Cairo had different influences on capital: the private sector was seen to play a big role in improving human capital, through upskilling capacities for employment as well as physical capital, through the investment into key public spaces and services. The government, on the other hand, was more correlated with social capital, through the interaction with locals and meeting their demands, and economic capital, through the provision of employment opportunities (Ashmawy, 2021).

Therefore, creating a vision that is trans-disciplinary and intersectional requires similar capital as needed in the governance capacity concept, especially strong bridging capital between actors who influence physical, natural, human, and economic capital.

2.4.2 The Role of Socio-Cultural Dimensions

In this section, the role of socio-cultural dimensions and their influence on social capital for building resilience are reviewed. While the local government can instigate interventions that improve resilience in the short-term (such as funding and policy interventions), it is important to recognize that they are consistently influenced by variables that move more slowly, such as knowledge production, social norms and reciprocity, and nature of relationships (Kizos et al.,

2014). This has implications for proactive resilience and has often been observed to be undervalued in current resilience practices (Carmen et al., 2022; Koliou et al., 2020).

Collective Learning

Collective learning is defined as a collaborative procedure that involves gathering, evaluating, and interpreting information through various activities and sharing knowledge or opportunities in a formal or informal, collective setting. This can have a positive effect on bridging capital, as through a process of knowledge acquisition, translation, and dissemination, communities can produce new shared ideas, strategies, rules, or policies to overcome challenges (Heikkila & Gerlak, 2013). Scholars have noted that this is particularly useful in smaller communities that are reckoning with climate change, as behavior changes emerge from collective action (Smith et al., 2012). Cities can also facilitate collective learning, to help citizens understand resilience policies and decisions, The importance of interpreting information and sharing it transparently can contribute to collective learning as well, and some cities have taken an innovative and digital approach to making climate risks and planning approaches transparent to the public (Desouza & Flanery, 2013; Heikkila & Gerlak, 2013). For example, the WaterSim program at Arizona State University provides data on climate, land use, population growth, and water policy specifically for the Phoenix area. These tools were observed to expand access to critical planning functions, allowing for a wider range of participation opportunities to emerge and for important conversations to start at a civic level (Desouza & Flanery, 2013). Some cities have adopted more participatory learning approaches, such as social innovation hubs which promote hands-on problem-solving to spur creative solutions on the local level (Masik & Gajewski, 2021; Schauppenlehner-Kloyber & Penker, 2016).

Scholars note other forms of collective learning such as experiential learning which is when knowledge is produced through the transformation of an experience (Kolb et al., 2014). One particularly impactful and obvious source of such learning comes from experiencing a natural disaster, as both the city must undergo important infrastructural remediation efforts and the community is tested in their ability to utilize networks to support each other and recover as quickly as possible (Gunderson, 2010; Spaans & Waterhout, 2017). For example, after the earthquakes in Christchurch, New Zealand, the recovery process was critical in advancing knowledge on infrastructural design challenges and community needs. The community's ability to recover resulted in positive long-term changes such as creating multi-faceted community spaces and inspiring locals to get more involved in policy-making, community building, and innovation (Brand & Nicholson, 2016). Learning from experience can result in higher bonding social capital, as post-event, the collective memory of the community is still sensitive and traumatized from the damages and losses they have collectively experienced (Spaans & Waterhout, 2017).

The lessons that areas impacted by disasters can be spread broadly to help other cities increase resilience, either in terms of what was done well, or what could have been done better. However, it is important to note that transferrable learning is difficult in the face of vastly different urban contexts, disaster types, and political environments (Curtis, 2018; Rebotier et al., 2021). Overall, the learning process is most effective when learning is distributed to a variety of actors networks so that the diversity and inclusivity in the flow of knowledge produce more efficient decision-making while also creating space for new ideas (Carmen et al., 2022; Heikkila & Gerlak, 2013; Huggins et al., 2012).

Equity & Justice

Communities are comprised of a variety of norms, values, and cultures driven by diverse identities and ethnicities. Carmen et al. (2022) state that these socio-cultural dimensions are the most

undervalued in resilience practice but are key in ensuring that cities are developing with the livelihoods of all in mind. However, due to systemic racism towards marginalized groups, which has resulted in financial exclusion, disempowerment, and neighborhood segregation, achieving equitable and just cities has been an area of concern for decades (Cafer et al., 2019; Meerow & Newell, 2019). Black and brown communities in the US are the most vulnerable to environmental and economic stressors, as they continue to experience poverty, high crime rates, and low education rates (C. Hawkins & Wang, 2012; Howell & Elliott, 2019; Rucker & Richeson, 2021). Following natural disasters, city governments often struggle to remedy these institutionalized inequities, which results in an uneven provision of support and resources (Panday et al., 2021). Scholars, policy-makers, and urban practitioners have been slowly shifting their resilience approaches to include elements of equity and justice, as they recognize how climate change and disasters disproportionately affect marginalized communities (Jurjonas & Seekamp, 2018).

However, despite increased attention to this issue, marginalized communities often harbor a lack of trust in government actions (Jurjonas et al., 2020). Therefore, governments should work to build institutional trust through actions that show accountability and transparency (Claridge, 2018; Vasseur et al., 2022). Past studies have shown that increasing resource accessibility and financial empowerment for vulnerable groups is key to increasing their resilience, and governments can collaborate with high-risk populations through community networks that support them (Fitzgibbons & Mitchell, 2019; Howell & Elliott, 2019; O'Sullivan et al., 2014). Leveraging the linking capital of community-based organizations, whose key role is to advocate for locals, is critical to increasing bridging capital between the government and marginalized communities. Rudge (2021) describes the importance of CBOs in adaptation planning initiatives in NYC, stating that they were fundamental in spreading awareness about the importance of adaptation, as well as bringing diverse voices into the planning process.

Extending equity also requires a focus on societal blind spots such as youth and elderly groups to produce and extend the positive effects that social capital has on society (Adams et al., 2017). Many cities have tested and piloted mechanisms that enhance social capital at the community level, including the 'Friends and Neighbors' pilot in Ontario which connects a particularly vulnerable individual (i.e., disabled or elderly) with a volunteer who can assist them in emergencies (Vasseur et al., 2022). In Japan, a strong inclusion of elderly people in community leadership and decision-making has been proven to enhance the community's efficacy, friendships, and sense of place (Aldrich & Kyota, 2017). On the other side of the spectrum, youth populations are gaining more attention as key stakeholders given the intragenerational justice aspect of them inheriting the implications of the climate crisis (Derr et al., 2018).

Social Cohesion

Scholars agree that at a basic societal level, fostering relationships has positive influences on mental well-being, political engagement, economic livelihoods, and even local safety through decreased crime rates (Wilkin et al., 2019). Similar to bonding capital within informal networks between family and friends, other close relationships between neighbors allow for bonding and bridging capital to flourish (Kyne & Aldrich, 2020). Creating spaces and moments for social interactions to take place is also important in increasing neighborliness, connectedness, and even self-efficacy as cities can establish physical connections of networks through face-to-face interactions (Pflieger & Rozenblat, 2010). This is also referred to as cohesiveness, which creates a foundation that is necessary for aligning and driving social norms that safeguard a long-term vision of a healthy and sustainable community (Fazey et al., 2018). Through this cohesiveness,

a norm is set that allows for a high 'collective efficacy', or the community's ability to look out for one another (Hays, 2015). Volunteerism has been historically used as an indicator of what percentage of society is active and willing to help each other in times of need, especially as the effectiveness of disaster response and recovery can be enhanced through the active engagement of volunteers in community groups (Saja et al., 2018; Stukas et al., 2016).

In communities where disasters have struck, the process of recovery, rebuilding, and remediating also changed the levels of cohesion. According to Vasseur et al. (2022), 65% of residents who experienced a storm event said that within their close-knit communities, their relationships were made even stronger. This has important implications for long-term resilience because of the likelihood of communities returning to their ruined homes and attempting to rebuild and resettle (Curtis, 2018).

2.5 Analytical Framework

To better understand the influences that the social capital concepts have on each other and their implications for building proactive resilience, a conceptual framework was built (See **Error!**

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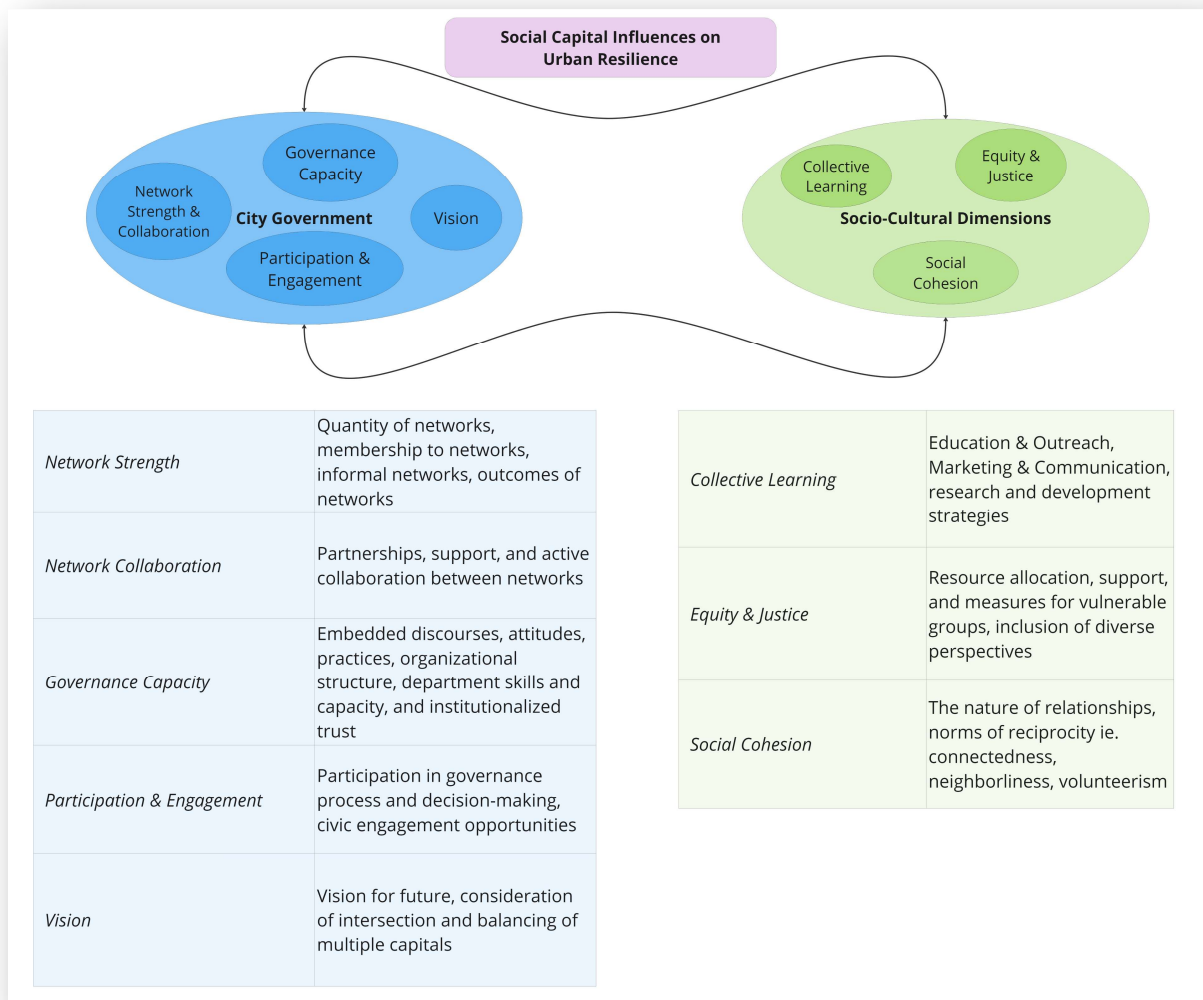


Figure 3: Analytical Framework

The framework operationalizes the main concepts found in the literature and shows the mutual influence that the actions, decisions, and perspectives of city governments have on the socio-cultural dimensions of the communities they serve.

The ideology and subsequent actions of local government influence and are influenced by the socio-cultural dimensions of a community. The distribution of resources and the management of multiple capitals have positive and negative effects on the communities they serve. This could be influenced by economic priorities and fundamental moral ideologies which mediate the differences in who gets what, and how easily. This range of accessibility of resources forms inequities and injustices, which shape the way communities trust and rely on government, and how they interact with each other. High bonding within these networks can occur, which may enhance or reduce their ability to achieve collective efficacy as resource scarcity could lead to tensions and conflict. In addition, the mismatch between the goals of formal organizations and the intricate needs of the community can lead to inefficient government interventions, such as financial support that is not received by the people who need it most. The lack of diverse networks could also be a result of formal organizations, that do not prioritize or recognize the importance of maximizing linking capitals through other actors. This could lead to missed opportunities in coordinating with external networks to help them better manage resources, and multiple capitals, and therefore sustainably support communities (Carmen et al., 2022).

3. Methods

This chapter provides an overview of the methodology, including the research strategies and main output (3.1) and how the data was collected and processed (3.2). Ethical considerations and validity within the research process are also reviewed (3.3).

3.1 Main Research Strategies and Output

This study employed a mixed method approach including a multiple case study analysis (3.1.2), to address SQ2. This ultimately led to the creation of an assessment tool as the main research output (3.1.3). The final method for answering SQ3 included an expert session (3.1.4), which provided validation and feedback for the finalized social capital assessment tool. As the research mainly leaned on data and knowledge gathered from the empirical evidence regarding the theories and the insights from the case study interviews, the research conducted in this study is qualitative in nature.

3.1.2 Case Study Analysis

The complexity of the influence of social capital on urban resilience requires a deeper look into the urban setting of small-medium-sized US cities. Therefore, the main research strategy selected was a multiple case study analysis (CSA), which is commonly used in qualitative research studies to gain in-depth knowledge of a phenomenon by examining and comparing multiple units or sites for their commonalities and differences (Gustafsson, 2017; Stewart, 2012). In this study, the multiple CSA produced an extensive description of how small-medium-sized cities are currently interpreting and operationalizing social capital as described in the analytical framework (Yin, 2009).

As was alluded to in the introduction, this profile of cities is largely left out of academic discussions which leads to an empirical blind spot regarding their resilience activities. Furthermore, the significant variations in urban governance practices and resilience approaches across the US necessitate a thorough exploration of their diverse contextual implications on social capital (Brelsford et al., 2017). This approach is interpretivist in nature which allowed for a rich understanding of social capital in the US and to fulfill the informational needs of SQ2, *To what extent do government actors in small-medium-sized cities recognize and operationalize social capital?* To obtain a diverse set of cities, three main criteria were used in the selection process:

1. *The city scores above .40 for risk and under .45 for readiness according to NDGAIN*

The NDGAIN Climate Vulnerability Assessment tool was selected to differentiate urban risk as it offers valuable insights into urban areas that have been identified as less prepared to manage resilience from both environmental and social standpoints (University of Notre Dame, 2018). Covering US 270 cities with 40 indicators, this tool provides a robust, accessible, and credible data set (Sieff, 2018). To pinpoint cities that could gain the most value from this research, a diverse range of cities from the top left quadrant were considered (which range from a .40 for risk and .45 for readiness), to reflect varying levels of risk severity and readiness (See Figure 4).

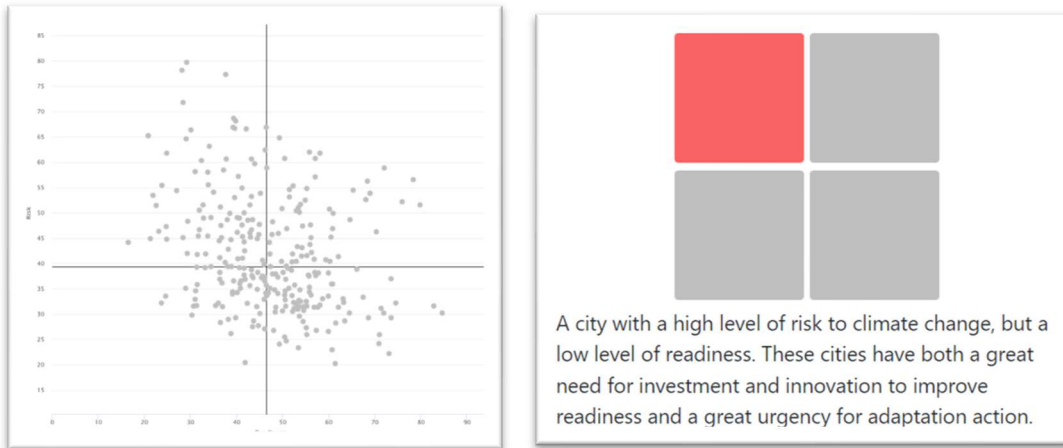


Figure 4: NDGAIN Climate Vulnerability Matrix Quadrants

2. *The city has a population ranging from (100,000-500,000)*

Using the Organization for Economic Co-operation and Development’s (OECD) population classifications, small-medium-sized cities were filtered from the NDGAIN data set (Kang et al., 2023; OECD, n.d.; University of Notre Dame, 2018).

3. *The cities represent different geographic regions in the United States*

Having a geographical representation of different areas in the United States is crucial due to the significant variations in disaster risk. The country’s vast landscape encompasses diverse regions that are exposed to a wide range of natural hazards such as hurricanes, earthquakes, floods, wildfires, and tornadoes (Reidmiller et al., 2018). Every city possesses distinct climate patterns and environmental conditions, coupled with diverse political contexts and socio-economic histories, which collectively contribute to varying degrees of vulnerability and resilience (See Appendix A and Figure 5).

Selected Cities

Upon applying the criteria to the NDGAIN dataset, 76 cities met the selection criteria (See Appendix A), and four were selected by means of convenience sampling. This meant that the cities that were selected represented the first four with interviewees willing to participate in the study (Omona, 2013). This led to the selection of Tacoma, Washington, Newark, New Jersey, Pasadena, Texas, and Fontana, California (See Table 1). Case study descriptions are provided in Chapter 4.

Table 1: Selected cities for Case Study Analysis

| City | State | Overall Risk | Overall Readiness | 2020 Population | Region |
|----------|-------|--------------|-------------------|-----------------|--------------|
| Tacoma | WA | 0.4521 | 0.430133 | 215,766 | Pacific |
| Newark | NJ | 0.66559 | 0.420625 | 281,917 | Mid-Atlantic |
| Pasadena | TX | 0.48303 | 0.294681 | 152,537 | Southwest |
| Fontana | CA | 0.44137 | 0.164831 | 212,704 | West Coast |



Figure 5: Locations of selected cities

3.1.3 Research Output – Social Capital Assessment Tool

Due to the critiques on current frameworks presented in the introduction, an ex-ante social capital assessment tool was selected as the desired output to help boost operationalizations of the theory of social capital for urban practitioners (Sharifi, 2016). The assessment tool aims to evaluate the recognition and current operationalizations of social capital to pinpoint weaknesses and guide cities toward enhanced urban resilience.

As theories of social capital are largely qualitative and can be conceptualized differently depending on the stakeholder, which means the tool requires an interpretivist method for its development (Cutter, 2016; Galliers & Huang, 2012). Still, the assessment tool should be simple to understand in theory, but not too simple in approach as it would undermine the depth and complexity of social capital in the context of resilience (Coaffee et al., 2018). The assessment tool should be applicable in broader urban contexts, which means case-specific insights and indicators would also retract from its usefulness and transferability (Pahl-Wostl, 2009; Wardekker et al., 2020).

3.1.4 Expert Session

Finally, to best substantiate and validate the assessment tool through the lens of small-medium-sized cities, the City of Norfolk (Virginia) was selected to participate in an expert session to provide insights and feedback on the usability of the analytical framework in practice. Expert sessions are valuable tools in qualitative research as they can accelerate procedural knowledge through access to insights and opinions that are typically difficult to access within the walls of academia (Lewthwaite & Nind, 2016).

The selection of Norfolk as an expert base was determined by three factors. First, the designated role of ‘expert’ is attributed to the fact that they are a 100 RC city and have received substantial support, resources, and guidance in building resilience for nearly a decade (Berke et al., 2021; Resilient Cities Network, 2022). Second, their risk and readiness scores lie within the same

quadrant as the four selected cities. Third, they are a medium-sized city, with a population in the same range as the case studies (University of Notre Dame, 2018).

3.2 Data Collection & Processing

The research collected qualitative data which is grounded in theory, and based on subjects of the study, creating unique depth within this field (Creswell & Poth, 2016). This is done through case study interviews (3.2.1), and an expert session (3.2.2). These methods allowed the developing assessment tool to be put to the test using the interviewees as potential stakeholders and key knowledge holders, providing important and practical insights that can calibrate and contribute to maximizing the assessment tool's use.

3.2.1 Case Study Interviews

The method of semi-structured interviews was selected as it allowed the researcher to ask open-ended questions regarding a specific topic, which in this case, were the concepts of social capital laid out in the analytical framework. Qualitative data was collected from interviews with relevant stakeholders at the city level to extract meaningful insights, identify patterns, and develop an analytical base (Lingard, 2019; Mason, 2017).

Purposive sampling was used as the method for selecting interview participants, meaning they were selected based on their expected relevance to the research topic (Mack et al., 2005). Broadly, the interviewees were selected based on their responsibilities and insights in the following areas of local governance which are typically related to resilience coordination activities according to Woodruff et al. (2020): community and economic development, community engagement, neighborhood affairs, culture and recreation, climate change and sustainability planning, and emergency, disaster, or risk management. Requests were sent via e-mail to government staff who have their data publicly available on the city's website. As some city websites had a mix of public information, some connections to certain titles and departments were made using snowball sampling (Mack et al., 2005).

To formulate questions for the participants, an interview guide (See Appendix C) was loosely followed in each interview, enabling greater flexibility and openness in the exploratory nature of the interviews (Creswell & Poth, 2016). The interview guide was not sent in advance to the interviewees unless requested. The variability in expertise and roles among the interviewees required tailored questions that, while similar, were not identical across all interviews. Additionally, the flow of the interview questions was modified as answers were given, creating a more natural conversation between the interviewee and the researcher (Kallio et al., 2016). Based on the responses regarding the concepts in the framework, an interpretivist approach was taken when analyzing the interviews (Verschuren & Doorewaard, 2010). The interviews were transcribed using Microsoft Teams, as the interviews were all conducted remotely online. The quotes from the interviews were analyzed using thematic analysis and were manually organized in a separate document to pinpoint the main takeaways (Willig & Rogers, 2017). This approach was preferred over qualitative coding as the interview data was highly contextual and reliant on individual experiences and perspectives (Eldh et al., 2020). Seven interviews were conducted in total, each consisting of roughly one hour. The list of interviewees is shown in Table 2.

Table 2: List of Interviewees

| Interviewee Code | City | Date of Interview (MM/DD/YYYY) | Role/Department |
|------------------|----------|--------------------------------|---|
| T-1 | Tacoma | 5/30/2023 | Business Development Manager |
| T-2 | Tacoma | 6/5/2023 | Office of Environmental Policy & Sustainability |
| N-1 | Newark | 6/6/2023 | Interim Sustainability Officer |
| P-1 | Pasadena | 5/30/2023 | Educational Liaison |
| P-2 | Pasadena | 6/15/2023 | Emergency Management Coordinator |
| F-1 | Fontana | 6/12/2023 | Economic Development Analyst |
| F-2 | Fontana | 6/19/2023 | Community Services Director |

During the analysis of the interview results, the rating mechanism in Table 3 was employed to assign a preliminary score to evaluate the feasibility of incorporating each concept into the final social capital assessment tool. This was determined based on the interviewee’s recognition of each social capital concept.

Table 3: Rating Table

| -- | - | + | ++ |
|--|---|--|--|
| Does not enhance social capital | Barely enhances social capital | Enhances social capital | Strongly enhances social capital |
| Indicators are not present, nor acknowledged | Indicators are barely present, with little acknowledgment | Indicators are mostly present, with acknowledgment for improvement | Indicators are present and highly acknowledged |

3.2.2 Expert Session

Two experts were recruited using the snowball method, leveraging the researcher's existing connection with one of the experts, who subsequently facilitated the involvement of another expert in the session (Mack et al., 2005). The experts requested to remain anonymous in the report, but together, they represent the Offices of Sustainability and Resilience in Norfolk (See Table 4).

The expert session was designed using a mix of elements of participatory action and workshop research methodologies. This approach was selected to provide a more interactive and less-biased presentation of the tool, which allowed for the experts to also help in guiding the session (Nared & Bole, 2020). Over an hour and a half, the session was held over Microsoft Teams and served a dual function: first, to pilot the operationalization of the analytical framework for the assessment tool via reflection, and second to receive feedback on its effectiveness and execution.

The two experts were first presented with the research background, the preliminary analytical framework, and the concepts from the analytical framework. Then, they were directed to open the online whiteboard platform, Miro, which was set up using guiding prompts derived from the analytical framework. The researcher provided 15 minutes of silent working time for the experts to interpret the prompts and answer two questions per concept, “What do we do well?” and “What

could we do better?” The answers to these questions were then discussed and compared between the two experts, to highlight their differences in opinions, and where they were aligned.

Then, an open-ended discussion was led by the researcher to better understand their responses to the Miro exercise and gather impressions and feedback about the framework’s structure. Feedback and questions were stimulated via an open-ended discussion on the framework’s shortcomings, areas for improvement, and future applicability. Additionally, best practices were shared in helping close theoretical gaps in the assessment tool.

The data from the Miro and the session transcription were analyzed and translated into feedback, both from the direct feedback the experts provided, but also the indirect feedback that was observed from their ability to answer and provide answers to the guiding prompts. This design aimed to provide the study with important feedback regarding the experts’ interpretations of the concepts, the guiding prompts, the intent of the tool, and its future applicability.

Table 4: List of Experts

| Expert Code | Role |
|--------------------|--------------------------|
| E-1 | Office of Sustainability |
| E-2 | Office of Resilience |

3.3 Ethical Considerations

Ethics were highly regarded in the process of selecting and conducting the interviews and the expert interviews. The potential interviewees were provided with information regarding the study prior to agreeing to be interviewed. They were also able to ask questions about the research in advance, and once they agreed to be interviewed, they reviewed and signed an informed consent form to ensure confidentiality throughout the process. To ensure full compliance with GDPR, appropriate data management and storage practices were followed by the researcher. In formulating the interview questions, ethics were also considered to ensure that they were framed respectfully. During the interviews and expert sessions, sensitive questions were asked with respect to the interviewee’s experiences and emotions.

Additionally, it is essential to address potential issues arising from positionality. Conducting case studies within the same country of the researcher’s nationality introduces the possibility of political biases influencing the research process and findings. To mitigate this concern, conscious efforts were made to maintain objectivity and impartiality throughout the study. Furthermore, it is important to highlight that in addition to empirical confrontations within the research process, personal interpretations and assumptions from the interviews and the expert session were required to produce the social capital assessment tool. The inclusion of reflexivity and transparency in the research process aims to ensure that potential biases and assumptions are acknowledged and do not negatively impact the study’s validity and credibility (Verschuren & Doorewaard, 2010).

4. Case Study Descriptions

The following section provides background information regarding the four cities in the case study selection: Tacoma, Washington (4.1), Newark, New Jersey (4.2), Pasadena, Texas (4.3), and Fontana, California (4.4). First, information is provided on the characteristics of the city’s socio-economic profile, city and state political orientation, demographics, risk and readiness scores, and the natural disasters they are most susceptible to. See Appendix B for a list of sources used for each data point.

4.1 Tacoma

The background information on the city of Tacoma is in Table 5. Tacoma is the third largest city in Washington State. Located south of Seattle, Tacoma’s north end borders the Salish Sea and is home to the Port of Tacoma, one of the largest deepwater container ports in North America (Port of Tacoma, n.d). Politically, Tacoma has voted majority democrat in presidential elections since 2000 (Best Places, n.d.a). The city operates with a city manager in addition to the mayor¹, Victoria Woodards (Democrat), who has been in office since 2018. The city manager is Elizabeth Pauli, who was appointed in 2017 (City of Tacoma, n.d.a).

Table 5: Background Data on Tacoma, Washington

| Background Information | Data | | |
|--|-------------|------------------------|----------------------------|
| State | Washington | | |
| Region | Pacific | | |
| County | Pierce | | |
| Population (2020) | 215,766 | | |
| # of Households | 86,600 | | |
| 2020 Median Household Income (\$) | 64,457 | | |
| Political Party (Mayor) | Democrat | | |
| Political Party (State) | Democrat | | |
| 2018 Poverty Rate | 15.90% | | |
| Top 3 Ethnic Groups | White | Black/African American | Multiracial (Non-Hispanic) |
| % of Ethnic Groups | 57.6 | 10.3 | 8.83 |
| NDGAIN Risk Score | 0.452098419 | | |
| NDGAIN Readiness Score | 0.430133407 | | |
| Top 3 Hazard Risks | Earthquake | Tsunami | Flood |
| Most Recent Declared Hazard for Public Assistance (FEMA) | 2001 | X | 2012 |

¹ A city manager is a professional administrator appointed by the city council to oversee day-to-day operations and manage city staff. Some US cities operate with both a city manager and a mayor

4.2 Newark

The background information on the City of Newark is in Table 6. Newark is the largest city in New Jersey and is known for its industrial manufacturing activity (Encyclopaedia Britannica, n.d). Located on the northeast edge of the state, Newark contributes to extensive port activity out of Newark Bay, which sits directly across from New York City. Politically, Newark has voted majority Democrat in presidential elections since 2000 (Best Places, n.d.b). City mayor, Ras J. Baraka (Democrat), has been in office since 2014 (City of Newark, n.d.).

Table 6: Background data on Newark, New Jersey

| Background Information | Data | | |
|--|------------------------|------------------|------------------|
| State | New Jersey | | |
| Region | Atlantic | | |
| County | Essex | | |
| Population (2020) | 281,917 | | |
| # of Households | 96,900 | | |
| 2020 Median Household Income (\$) | 37,476 | | |
| Political Party (Mayor) | Democrat | | |
| Political Party (State) | Democrat | | |
| 2018 Poverty Rate | 28.00% | | |
| Top 3 Ethnic Groups | Black/African American | White (Hispanic) | Other (Hispanic) |
| % of Ethnic Groups | 47.7 | 16 | 13.5 |
| NDGAIN Risk Score | 0.665594299 | | |
| NDGAIN Readiness Score | 0.420625141 | | |
| Top 3 Hazard Risks | Hurricane | Flood | Extreme Heat |
| Most Recent Declared Hazard for Public Assistance (FEMA) | 2021 | 1992 | X |

4.3 Pasadena

The background information on the City of Pasadena is in Table 7. Pasadena is the 23rd largest city in Texas. Pasadena is a fully land-locked city, located in Southern Texas, just south of Houston. Historically, the city has been known for fruit production, especially strawberries, and has been home to oil refineries since the early 1900s (World Population Review, n.d.a). City mayor has a strong mayor setup, and the mayor, Jeff Wagner (Republican), has been in office since 2017 (City of Pasadena, n.d.). The city has voted a mix of Democrats and Republicans in election races since 2000 (Best Places, n.d.c). Due to its proximity to the Mexican border, Pasadena and its surrounding cities are home to one of the largest undocumented immigrant populations in the US (Passel & Cohn, 2019).

Table 7: Background data on Pasadena, Texas

| Background Information | Data | | |
|--|------------------|----------------------|------------------------|
| State | Texas | | |
| Region | Southwest | | |
| County | Harris | | |
| Population (2020) | 152,537 | | |
| # of Households | 48,200 | | |
| 2020 Median Household Income (\$) | 57,781 | | |
| Political Party (Mayor) | Republican | | |
| Political Party (State) | Republican | | |
| 2018 Poverty Rate | 18.10% | | |
| Top 3 Ethnic Groups | White (Hispanic) | White (Non-Hispanic) | Multiracial (Hispanic) |
| % of Ethnic Groups | 55.6 | 23.7 | 10.1 |
| NDGAIN Risk Score | 0.483029164 | | |
| NDGAIN Readiness Score | 0.294680744 | | |
| Top 3 Hazard Risks | Hurricane | Flood | Extreme Heat |
| Most Recent Declared Hazard for Public Assistance (FEMA) | 2020 | 2017 | X |

4.4 Fontana

The background information on the City of Fontana is in Table 8. Fontana is the 21st largest city in California and is part of the “Inland Empire”, a region located east of Los Angeles and historically known for agricultural production (World Population Review, n.d.b). In the mid-1900s, a steel mill was opened in Fontana and classified the city as an industrial hub. As the city has access to several major highways, Fontana has a heavy industrial transportation focus as well. Fontana has voted majority Democratic or Republican in presidential elections in the past 20 years (Best Places, n.d.d). The city operates with a city manager in addition to the mayor, Acquanetta Warren (Republican), who has served as mayor since 2010. The city manager is Matthew Ballantyne, who was appointed in 2017 (City of Fontana, n.d.).

Table 8: Background data on Fontana, California

| Background Information | Data | | |
|--|------------------|------------------|----------------------|
| State | California | | |
| Region | West Coast | | |
| County | San Bernadino | | |
| Population (2020) | 212,704 | | |
| # of Households | 55,400 | | |
| 2020 Median Household Income (\$) | 75,681 | | |
| Political Party (Mayor) | Democrat | | |
| Political Party (State) | Democrat | | |
| 2018 Poverty Rate | 11.70% | | |
| Top 3 Ethnic Groups | Other (Hispanic) | White (Hispanic) | White (Non-Hispanic) |
| % of Ethnic Groups | 39 | 21.8 | 14 |
| NDGAIN Risk Score | 0.441365741 | | |
| NDGAIN Readiness Score | 0.164831094 | | |
| Top 3 Hazard Risks | Earthquake | Drought | Extreme Heat |
| Most Recent Declared Hazard for Public Assistance (FEMA) | 2019 | X | X |

5. Results

This chapter first highlights the results from the case study interviews (5.1). Then, initial reflections from the interviews explain minor adjustments and validation for the assessment tool (5.2). Next, the results of the expert session are provided, which resulted in feedback integration (5.3). Based on the empirical insights gained from the interviews, an overview and discussion of the empirical confrontations is provided (5.4). The chapter concludes with the presentation of finalized social capital assessment tool (5.5) and recommendations for its application (5.5.1).

5.1 Case Study Results

This section reviews the results of the case study and the interviews in alignment with the analytical framework. First, the interviewee's empirical insights are provided for each concept in the analytical framework. A rating was given, and the case study section concludes with useful operationalizations of indicators for the development of the assessment tool.

5.1.1 Tacoma, Washington

This section highlights the results from the Tacoma, Washington interviews with T-1, Business Development Manager, and T-2, who represented the Office of Environmental Policy & Sustainability.

City Government

Network Strength

The quantity of formal networks in Tacoma from the perspective of the interviewees is significantly smaller than those in larger cities. T-2 indicated that the number of CBOs in Tacoma is small and that there is only one environmental NGO in the city. T-2 noted that this is attributed to the proximity to Seattle, where people are more drawn to live and work. Therefore, they recognize the importance of fostering and nurturing relationships with CBOs to ensure they can continuously support their outcomes, which has implications for their collaborations which are discussed below. This happens both in terms of securing funding for them, but also in terms of nurturing a respectful relationship with them to understand their needs and challenges.

However, both interviewees described their recognition of growing their networks as the city develops. In ensuring their network was kept strong, T-2 described having full ownership and maintenance of a 500+ list of stakeholders in the building community, using LinkedIn, e-mails, and word-of-mouth to continuously build relationships. T-1 discussed their membership to Washington Maritime Blue, a state-wide network focused on advancing a sustainable blue economy.

Network Collaboration

CBOs in Tacoma are heavily relied upon in terms of outreach and education for city programs, especially in marginalized communities. In T-2’s work, they are one of the most important collaborators as they help with designing, marketing, and doing targeted outreach, for city programs.

Despite there being a less-than-ideal number of organizations that can support the city, T-2 stated that this did not hinder the nature of their collaboration with the city. T-2 emphasized the importance of nurturing and proactively growing relationships with CBOs, knowing that upcoming collaborations would be necessary to push certain policy initiatives, such as those emerging from the Inflation Reduction Act. T-2 strongly acknowledged the strain that the city puts on CBOs when they are already at full capacity, but stated there is no animosity between them when all the city’s requests cannot be fulfilled. T-2 recognized that only reaching out to CBOs when they need to ‘check off a box’ for community engagement is insulting to the work they do. Overall, while collaboration with CBOs is important, T-2 stated that outside of the work they can do in partnership with the city, their work benefits the city regardless.

T-1 stated that Tacoma entrepreneurs and business owners operate very organically, as a microcosm. Despite having a new green economy plan, T-1 stated that sustainable business ideas began naturally forming out of partnerships between schools, port engineers, waste management operations, and more. Once connected to the local business network, it is easy to build a strong network of support to further innovative ideas and develop partnerships between businesses. T-2 also agreed with T-1’s description of collaborative energy and stated that people are typically accessible and eager to connect. Given Tacoma’s proximity to Seattle, T-2 also indicated that competitive energy also contributes to how collaborative some actors are.

Table 9: Tacoma Network Strength & Collaboration Rating

| Concept | Rating | Explanation |
|------------------------------|--------|---|
| <i>Network Strength</i> | ++ | <ul style="list-style-type: none"> ➤ Interviewees take initiative and use informal methods for maintaining network strength and recognize its importance ➤ Both belong to and benefit from membership in professional networks |
| <i>Network Collaboration</i> | ++ | <ul style="list-style-type: none"> ➤ Strong, organic economic collaborations present ➤ CBO partnerships are critical and recognition that strong reliance on CBOs poses a potential risk to capacity ➤ Acknowledge the slow building and fostering of partnerships |

Governance Capacity

Tacoma has both a mayor and a city manager, T-1 stated was favorable in their opinion, as it allowed for the mayor to be more involved in city initiatives.

Above leadership, political orientation also has influenced the way the regulatory landscape has unfolded. The United States differs in approaches to governance, which is diagnosed by the two-

party system, which influences tax bases and perception of the role of government. In Tacoma, T-1 sees this as a benefit as the beliefs around taxes and government fuels a significant amount of sustainable planning in Tacoma.

In terms of individual capacity within their respective roles, both interviewees made statements about having to take on many kinds of responsibilities in addition to their own but responded positively in terms of their ability to organize across different city departments. Through joint meetings, they can stay aligned on the goals and projects that are happening in different departments, giving them the insights needed to work efficiently.

One major challenge that will influence the governance of the city regards internal staffing and job retention within the city, as many city employees are leaving or retiring. Proximity to Seattle was also mentioned here as a barrier, as jobs in larger cities are more attractive to the upcoming workforce. There will be a large need for hiring and building back up the institutional knowledge for the city to keep progressing. Specifically, T-1 stated that the culture of governance in Tacoma has been customer-oriented and highly ethical, which could be difficult to sustain with such a large exodus of former city employees.

In terms of working with regional governance, T-2 mentioned that there were some barriers to progress in terms of working with their Emergency Management Department, which is managed at the county level. Tacoma is looking into leveraging current facilities to be used as resilience hubs, where communities could easily access a known space to find shelter, relief, and resources should a disaster occur. However, T-2 stated that sometimes it felt like they were speaking a completely different language when pushing the envelope towards more holistic emergency planning and procedures as the county has a less-progressive approach to resilience.

When considering how long it takes to get approval and buy-in, this process to progress was noted as being akin to turning a large ship around; slow and impossible to do quickly. However, one approach in helping shift this issue is to leverage and learn from Seattle's approach in their county, as they were also investing in improving their emergency management responses in alignment with resilience hubs. By bridging their resources together, T-2 is striving to save federal funding dollars by creating an interlocal agreement with the City of Seattle to share resources in implementing resilience hubs.

Participation & Engagement

T-1 attributed much of the success of their planning and engagement process to the leadership approach of the mayor and the city manager. The emphasis on engagement from the top has a trickle-down effect on how engaged the council members are.

In terms of their department's interaction with the community, T-2 described their experiences in giving green building tours, in which they developed an approach that always involves someone from the community being represented to strengthen engagement outcomes. They recognized that some credibility is established when the city partners with members of the community to provide the tours. Credibility was also mentioned as a reason why CBOs are largely relied upon to push out messaging about city initiatives, in addition to not having the in-house expertise on social media and marketing in general.

While T-1 had less of a direct experience with civil society, they stressed the need for strong communication skills in daily operations within economic and real estate development as they need to get buy-in from multiple stakeholders.

Additionally, as T-2 is working with the city of Seattle in creating community-based resilience hubs, they stated that a big effort will include hosting focus groups in communities.

Vision

As previously mentioned, the Tacoma2025 plan encapsulates the long-term vision for the city and has a strong emphasis on economic growth and equity. When created each pillar of development for the city was imagined in 2025, and each section of the plan begins with “In Tacoma in 2025 is...” The city adopted the plan in 2015 and then created an action plan to achieve the goals set within the vision (City of Tacoma, n.d.b).

With the introduction of a Green Economy Strategy, there is a clear emphasis on the sustainability of businesses and not just the expansion of traditionally profitable markets. Tacoma also recognizes the need to proactively retain businesses in the community and foster local business leaders so that jobs and livelihoods stay within the city.

When considering how the city is balancing key issues such as homelessness, T-1 stated that even under public pressure, it was important that the city not lose sight of climate issues as well. The intersection of capitals was also recognized, especially in terms of leveraging local human capital to add economic capital back into the city’s communities in an equitable way. This was discussed by T-2, who is advocating for investing in locals to be trained in heat pump installations, as it will not only create jobs and increase electrification in the city, but also help in building back trust, credibility, and representation of and in marginalized communities.

Another area where intersectionality was highlighted was in terms of communication of initiatives. When discussing issues of climate change, T-1 mentioned that pairing resilience initiatives with issues of homelessness and public health was more effective.

Table 10: Tacoma Governance Capacity, Participation & Engagement, and Vision Rating

| Concept | Rating | Explanation |
|----------------------------|--------|--|
| Governance Capacity | + | <ul style="list-style-type: none"> ➤ High trust in the institutional structure ➤ Alignment with institutional discourses ➤ Recognition of internal capacity ➤ Work culture at risk due to high employee turnover |
| Participation & Engagement | + | <ul style="list-style-type: none"> ➤ Engaged citizens in the visioning process ➤ Government credibility is a weak spot within the community ➤ Recognition for a slow, relational approach ➤ Involving community member feedback in resilience hub planning |
| Vision | ++ | <ul style="list-style-type: none"> ➤ Vision is established in the Tacoma2025 plan ➤ Cross-departmental collaboration is positive in terms of driving climate programs in alignment with economic growth and equity and justice |

Socio-cultural Dimensions

Collective Learning

In terms of partaking in learning activities to help move the city forward, T-1 described their curiosity-driven approach to learning from business innovators and start-ups. In meeting entrepreneurs who were using 5G technology to improve the logistics of multiple businesses in California, T-1 was able to kickstart the application of a new communications technology in the Tacoma Tide Flats after completing a feasibility study and applying for grant funding. Now, there is a network of businesses that are benefitting from 5G connectivity, which not only boosts their

carbon footprint but also strengthens the economic network as mentioned before (Maritime Blue, 2022).

T-2 described their involvement in the Urban Sustainability Director’s Network (USDN) and the learning opportunities it provides in terms of advancing resilience programs, such as the creation of local resilience hubs.

Equity & Justice

In addressing vulnerable and marginalized communities, one strategy that aligns with Tacoma’s economic growth goals is its Minority Business Owners network. The goal is to help provide financial and networking support for business owners of color and is a recent development. However, T-1 noted that in the beginning phases of the network, many business leaders were not responsive to joining the network. This was largely due to the fact of institutionalized racism, and distrust in government entities. Developing trust in these business owners was a slow process, and involved help from the mayor, who is a Black woman, to help strengthen the relationships.

One key strength in terms of promoting equity and justice within the daily functions of the city government, T-1 spoke highly of their Equity Map, which is publicly available and is required to be used by all project managers at the city level.

However, a key area where T-1 still describes as difficult is the process in which some initiatives take to complete, because of all the considerations and influences that play into projects.

Social Cohesion

In terms of social cohesion, T-2 discussed their community-oriented approach to integrating resilience hubs across the city. Currently, the city plan has established the Tacoma Dome, a large stadium, as the earthquake evacuation point. However, the implementation of smaller hubs in communities would be more trustworthy and effective, which is why T-2 wants to involve the community in planning where these multi-use resilience hubs should go.

Additionally, many Tacomans face some infrastructural challenges when approaching neighborliness. This was noticed by T-1, especially in apartment buildings, and even more so after the isolating effects of COVID-19. To help promote neighborliness, they helped create a group with their local church members to facilitate interactions in the community, through a clean-up day that was inspired by the Thriving Cities Group (Thriving Cities Group, n.d.).

Table 11: Tacoma Collective Learning, Equity & Justice, and Social Cohesion Rating

| Concept | Rating | Explanation |
|---------------------|--------|--|
| Collective Learning | + | <ul style="list-style-type: none"> ➤ Recognition that networks can learn from each other’s experiences ➤ Credibility from national and regional networks facilitates learning at a local level ➤ CBOs help with the lack of social media and marketing savviness |
| Equity & Justice | ++ | <ul style="list-style-type: none"> ➤ New program in place to increase equity for local businesses ➤ Investing in local labor ➤ Taking a relational approach toward marginalized communities ➤ Utilizes Equity Map for project planning ➤ Recognizes CBOs have better outcomes implementing programs locally |
| Social Cohesion | + | <ul style="list-style-type: none"> ➤ Personal initiative via church group upon the recognition that COVID had an impact on neighborliness ➤ Strong sense of Tacoma identity ➤ Working towards community-based resilience hubs |

5.1.2 Newark, New Jersey

This section highlights the results for Newark, New Jersey informed by the interview insights from N-1, Interim Sustainability Officer.

City Government

Network Strength

In terms of networks that contribute to N-1's work, they noted their involvement with the PJM Cities and Communities Coalition as one particularly unique and valuable network for interlocal resource sharing. PJM is an energy provider, so the PJMCCC is made up of local governments that are in the PJM territory (PJM Cities and Communities Coalition, n.d).

As a department, N-1 also stressed the USDN as a valuable network for knowledge exchange. Previously, N-1 described their involvement with USDN to be quite strong, as they often provided knowledge to other communities in the network. Though while rebuilding capacity within their transitioning department, this learning became difficult to contribute to, especially without accountability from key network actors.

N-1 also stated that keeping up with former colleagues who have new roles in different lines of governance across the region and state allows them to provide institutional knowledge that would otherwise not have been there if they hadn't had a healthy and friendly working relationship prior.

Network Collaboration

N-1 described the importance of collaborating with CBOs to push sustainability initiatives at the city level and recognizes the value they provide for the careers of young citizens. In terms of maintaining good communications, N-1 stressed that sometimes it can be difficult to keep up with action items and topics of discussion, as there are many topics that CBOs assist the city with.

N-1 also spoke of the importance of uplifting and empowering the younger voices in CBOs to extend their value to the community throughout their career. Although this priority wasn't considered a formal part of their work, N-1 described it as a conscious effort that will continue to support the city and the CBOs' work congruently.

N-1 also mentioned some hindrances to the work that emerges from having a network of CBOs, as they can have a scarcity mindset around resources and funding, creating a more competitive environment that is not always conducive to collaboration.

Table 12: Newark Network Strength & Collaboration Rating

| Concept | Rating | Explanation |
|-----------------------|--------|--|
| Network Strength | + | <ul style="list-style-type: none"> ➤ Recognition of the importance of regional networks ➤ Used to be more involved in contributing to USDN but has less capacity to now ➤ Maintains relationships with old colleagues who provide institutional insights and advice |
| Network Collaboration | + | <ul style="list-style-type: none"> ➤ Strong collaborations with CBOs ➤ Recognition of the importance of supporting youth in their career growth to strengthen future networks and collaborations ➤ Some difficulties in conflict resolution between CBOs |

Governance Capacity

At the time of the interview, N-1 was experiencing a transitional period in the department and was serving as the interim sustainability director on a very small team. During this period, N-1 noted the informality of keeping up with other departments, using mostly e-mails and hallway interactions to stay apprised of different initiatives. However, this was not reflective of their views on the city’s organizational structure, and it was indicated that they still received sufficient support and access to continue to push their work forward.

Since N-1 is working on rebuilding its department, they often look towards other cities in the region to understand how other governance structures and departments are organized. However, due to political barriers at the state level, N-1 described that there are indeed limitations when drawing inspiration and lessons learned from other states.

N-1 was positive about the amount of funding they could secure to move sustainability initiatives forward. The city’s positioning in terms of resource provisions from the state and federal government was considered a political benefit, but one which creates a deficit of resources for other municipalities. The reasoning for this inequity refers to historical redlining, which stems from a US discriminatory practice by the Homeowner’s Loan Corporation beginning in the 1930s. It involved ranking the desirability of the neighborhood based on the quality of the environment and racial make-up, which resulted in denying financial services, such as loans and insurance, to certain neighborhoods because of the prejudices of the time. This systematic exclusion perpetuated racial segregation and socioeconomic disparities, which had rippling effects on voter block funding (Lane et al., 2022).

In terms of internal organization, one of the biggest challenges facing Newark is recruiting and retaining talent at the city level based on turnover caused by external factors such as the Inflation Reduction Act and individual aspirations to advance careers from small-medium-sized cities to larger cities.

Participation & Engagement

Newark has created opportunities for citizens to be involved in their communities as well as in the government’s decision-making process. Especially in building their future vision for the city, Newark facilitated a robust feedback process which was comprised of citizen input, and feedback from CBOs. N-1 described that this feedback is complicated and makes the process of moving forward with some of the initiatives more complex. The reasons for the pushback are further explained in the Equity & Justice section.

Vision

Newark’s vision is embodied in the Newark360 Master Plan, which was adopted in September 2022. In terms of balancing the multiple capitals of the city in the future, the city has difficulties in promoting certain land use development based on the historical layout of the city. As most of the residential community is built above sea level, the city is aware that properties that are ‘high and dry’ will experience a rise in value and attached living costs. Therefore, communities are skeptical of development plans, and the city is considering introducing a rent control measure to alleviate these concerns.

Newark also faces more visible challenges that shift focus from resilience and climate change such as crime and homelessness are noted to be more prioritized, but N-1 tries to counter this by framing climate change as an intersectional topic, correlating the effects of climate change with other issues of social justice and public health.

Table 13: Newark Governance Capacity, Participation & Engagement, and Vision Rating

| Concept | Rating | Explanation |
|---------------------------------------|--------|---|
| <i>Governance Capacity</i> | + | <ul style="list-style-type: none"> ➤ Undergoing re-organization and high turnover which results in temporary low-capacity ➤ Has access to leadership when needed and feels supported in work and future goals ➤ State governance hinders city-level changes |
| <i>Participation & Engagement</i> | ++ | <ul style="list-style-type: none"> ➤ Recognizes the importance of including the community in decision-making and establishing a point of contact formally and informally ➤ CBO feedback is highly considered |
| <i>Vision</i> | ++ | <ul style="list-style-type: none"> ➤ Vision established in Newark360 plan ➤ Recognition of intersectionality in balancing affordability of housing while also reinforcing parts of the city that are susceptible to flooding ➤ Frames resilience co-benefits with social justice and public health |

Socio-Cultural Dimensions

Collective Learning

To facilitate learning within the community, the city has begun to take a participatory approach to local climate issues. The Office of Sustainability has initiated a participatory game called “The Game of Extremes” which is a tabletop exercise focused on helping strategize resistance to future extreme weather events like flooding and heat (City of Newark, n.d.c). These initiatives not only help the city to improve its environment but allow citizens to be slowly brought into conversations around climate change in an interactive way. This approach was attributed to N-1 and their colleagues recognizing the importance of community ties, after learning about recovery rates following US disasters such as Hurricane Katrina and the Chicago Heat Wave. Reading studies related to these topics proved to be important to N-1 in building their approach to piloting new programs that bring people together while also promoting learning.

Equity & Justice

As mentioned in the above sections, Newark faces unique challenges with equity and justice which both drive and hamper the city's ability to develop sustainably. This is attributed to the ways that redlining shaped key urban infrastructure such as building highways and power lines, which have lasting implications for marginalized communities who live near them.

Therefore, the underlying fact of Newark's historical infrastructure being built off institutionalized racism requires equity and justice to be embedded into every level of urban planning. Across the state, this prioritization of equity and justice has resulted in monumental government policies such as the "Environmental Justice/Cumulative Impacts Ordinance" (EJCI) which was adopted in 2016 as a tool that provides more transparency to proposed commercial and industrial development and their potential environmental and social justice implications (NJEJA, n.d).

N-1 stated that overall, the tool has been successful, but still had some issues in terms of finding agreement across all parties despite the open and transparent process. In terms of developing industrial power plants, there are also contentious issues with existing industries such as the waste incinerator located in Newark. While from a carbon accounting perspective, the incinerator is a positive for the city, it still has negative implications for surrounding residents. This leads to tensions around their contributions to the city, in which their actions will always be considered problematic. When distributing what N-1 refers to as "blood money", CBOs who utilize these resources can get judged by other CBOs, fueling disagreements between them.

Another city-wide effort in reversing the effects of redlining includes the Urban Tree Canopy project which aims to provide more tree shade for historically underserved neighborhoods. This will not only reduce the effects of urban heat islands but also improve safety and well-being in those neighborhoods (Dunn, 2022; Kiefer, 2023). Additionally, the city is prioritizing training internally to carry out the work for the canopy training, investing in their local economy and bringing more jobs and therefore spreading economic livelihood. This kind of model for local investment was already established by the city and received national recognition during COVID when they trained locals to work on critical lead pipeline replacements for safer drinking water (Star-Ledger Editorial Board, 2021).

Social Cohesion

As mentioned in the collective learning section, N-1, and the city are working on emphasizing community ties as a resilience strategy. One program that exemplifies this effort is the "Love Your Block" program, which is a grant that encourages neighborhoods to start revitalization projects that are valuable to their communities.

Table 14: Newark Collective Learning, Equity & Justice, and Social Cohesion Rating

| Concept | Rating | Explanation |
|---------------------|--------|---|
| Collective Learning | ++ | <ul style="list-style-type: none"> ➤ Facilitates interactive learning about climate risks ➤ Recognizes that bringing people into the conversation slowly has better learning outcomes ➤ Inter-local learning helps build better policies and organizational structures |
| Equity & Justice | ++ | <ul style="list-style-type: none"> ➤ Recognition of historical inequalities and emphasis on justice lens is institutionalized in city ordinance ➤ Investing in local labor to enhance the local economy and livelihoods ➤ Works alongside environmental justice groups |
| Social Cohesion | + | <ul style="list-style-type: none"> ➤ Recognition of the need to empower the community through community initiatives ➤ The city is viewed as split between low and high income |

5.1.3 Pasadena, Texas

This section highlights the results from the interviews with Pasadena, Texas interviewees P-1, Educational Liaison, and P-2, Emergency Management Coordinator.

City Government

Network Strength

In terms of city networks, P-1 stated that the church groups in the community were particularly strong, especially after disasters struck. Most other networks discussed were in terms of collaboration.

Network Collaboration

Both P-1 and P-2 highlighted the importance of partnerships and collaborations. P-1's role was born out of necessity as the Texas school district operates independently, which meant that there was a need to create a bridge of communication between the city and the local schools. Additionally, creating P-1's role as educational liaison allowed for the two groups to be better partners for emergency response, which proved to be essential after a recent tornado.

In P-2's work, they discussed the importance of their regional and state partnerships within the emergency management department as well as within the city. The city also facilitates a 'neighborhood network' which P-2 partners with to interact with different areas of the community.

Table 15: Pasadena Network Strength & Collaboration Rating

| Concept | Rating | Explanation |
|-----------------------|--------|---|
| Network Strength | - | <ul style="list-style-type: none"> ➤ Mentioned the church network as a key network in emergencies |
| Network Collaboration | + | <ul style="list-style-type: none"> ➤ Schools connected with the city for emergency response ➤ Recognition of necessary collaboration across departments and on the state, and regional level ➤ Collaborations with CBOs, charities, businesses |

Governance Capacity

When discussing the functions of the Pasadena government, both P-1 and P-2 were supportive of the mayor and the organization of their departments. P-1 recognized the mayor’s servant leadership philosophy, which they felt was necessary to empower government employees and prevent similar damages from Hurricane Harvey in comparison to Hurricane Katrina.

When asked about internal capacity, P-2 stated that their department was well-staffed, which allows them to have the capacity to get their work done efficiently.

In terms of embedded discourses, both interviewees acknowledged that the political context of Pasadena has influenced the way that the city operates. For P-2, this meant recognizing different political approaches and staying neutral to do their job efficiently.

P-1 noted that the political divide between Pasadena and Houston had negative impacts on Pasadena’s infrastructural health. This is attributed to their political party orientations, as Houston has a democratic mayor and Pasadena’s mayor is more conservative.

Additionally, the impact of politicians who campaign in Houston was seen as having a negative impact on Pasadena, as potential economic activity from the politicians was spent in Houston rather than in the communities they were supposed to be serving.

Participation & Engagement

P-2 acknowledged the importance of gaining trust and empathy within the Pasadena community to get messaging across regarding emergency preparedness. To P-2, this is best done through creating visibility and being highly present in community events, such as at the city’s annual Hurricane Safety event.

Vision

As stated above, P-1 considers youth empowerment and education as a key role in building the future of the city. Regarding the city’s vision for the future, P-2 stated that economic growth was one of the main goals for the city and believed that while the city had some traditional ways of working, the leadership reflected the ambition to become more innovative to ensure the city’s progress.

P-2 also highlighted that since the city is landlocked, this vision required creative ways of building up rather than building out.

Table 16: Pasadena Governance Capacity, Participation & Engagement, and Vision Rating

| Concept | Rating | Explanation |
|----------------------------|--------|---|
| Governance Capacity | + | <ul style="list-style-type: none"> ➤ Strong trust in leadership ➤ No issues with internal capacity |
| Participation & Engagement | - | <ul style="list-style-type: none"> ➤ Strong recognition of being visible in the community to gain trust and empathy |
| Vision | -- | <ul style="list-style-type: none"> ➤ No holistic vision institutionalized in plan ➤ City operates in traditional ways but recognizes that innovation and proactivity are important for the city ➤ Economic growth is a priority ➤ Youth empowerment is recognized, but federal funding is seen as an impediment |

Socio-Cultural Dimensions

Collective Learning

As Pasadena is prone to tornados, hurricanes, and subsequent flooding, the city employs several education and outreach strategies to ensure citizens are prepared. There is an annual “Community Safety Fair & Hurricane Workshop” which has been organized by the Emergency Management Department for nearly a decade and aims to provide updated safety information and hurricane forecasts for the year. While P-2 stated that this event is well attended, there are still some difficulties in reaching some citizens through their outreach programs.

Both P-1 and P-2 mentioned the issue of collective memory from events like Hurricane Harvey in 2017. While many people remembered the impacts of the event, they were typically the ones who sought information for preparedness. P-1 stated that while this is important, people tend to forget after some time.

Additionally, the city developed an alarm system application called “ReadyPasadena” that pushes live updates to citizens regarding potentially hazardous events caused by weather, chemical spills, traffic issues, and other emergencies. P-2 stated that to avoid message fatigue, they only focus on communicating important updates regarding potential or active disruptions in the community.

In terms of other forms of education, P-2 emphasized that due to the unique political and economic context of Texas, adding language around climate change as an intersectional issue that relates to disaster frequency was not a reality. This would be seen as potentially disruptive in getting important messaging about risks out, and P-2 stated that it was not on them to tell people what to think about polarizing issues such as climate change. This was not seen as an impediment to P-2’s role as they stated they use a variety of resources to analyze data and trends to anticipate and prepare the city for natural disasters.

Equity & Justice

When discussing the impact of the disasters they’re susceptible to in Pasadena, P-2 noted that a key part of their messaging is that it impacts everyone.

Both interviewees acknowledged that most of the city suffers from poverty, which includes a large percentage of the Hispanic population. This creates barriers within governance due to the language barrier as well as a lack of trust in these communities toward government officials. P-2 stated that an approach to respecting the communities while still getting their emergency preparedness message across was to work with trusted community leaders, who are in some cases, council members, and are situated within each neighborhood.

In terms of receiving funding for schools in disadvantaged areas, P-1 critiqued the federal funding approaches to schools in poor areas and noted that this was not the way to improve the livelihoods of the students.

Social Cohesion

The social cohesion in Pasadena appears to be rooted in strong norms of reciprocity and caring for neighbors in times of stress based on past disasters. This exemplifies how social capital solidifies post-event, as the disasters impacted the entirety of Pasadena. P-1 stated that in comparison to Hurricane Katrina, there was hardly any looting in Pasadena after Hurricane

Harvey. Additionally, despite the economic divide in the city, P-2 stated that this didn't influence the nature of relationships.

Furthermore, P-1 mentioned that there were strong volunteering programs in the city, which had positive outcomes for serving the community but also in teaching citizens (especially the youth) lessons in generosity. This included local food drives, and Team-Up to Clean-Up, a program that serves low-income and disabled homeowners in completing exterior projects. P-2 stated that whenever their department requires volunteers, they don't have any issues with recruiting them.

Table 17: Pasadena Collective Learning, Equity & Justice, and Social Cohesion Rating

| Concept | Rating | Explanation |
|---------------------|--------|---|
| Collective Learning | - | <ul style="list-style-type: none"> ➤ Hurricane Safety fair is well-attended each year ➤ Political context prohibits the ability to embed climate change discourse |
| Equity & Justice | - | <ul style="list-style-type: none"> ➤ Recognition of vulnerable communities and their language barrier ➤ Community leaders help bridge communities to increase trust and credibility ➤ Acknowledge financial aid in poor areas is not impactful |
| Social Cohesion | ++ | <ul style="list-style-type: none"> ➤ Social capital and cohesion are high due to collective memory from past disasters ➤ Strong volunteering activity ➤ Little looting after Hurricane Harvey |

5.1.4 Fontana, California

This section highlights the results for Fontana, California informed by the interview insights from F-1, Economic Development Analyst, and F-2, Community Services Director.

City Government

Network Strength

According to F-1, the City of Fontana is exploring a partnership with the Inland Empire Economic Partnership, which is a California state-funded grant program that will help cities in the region advance economic and environmental resiliency. Other internal networks and the insights about these have more interplay with Participation & Engagement and Social Cohesion, so they are discussed in their respective chapters.

Network Collaboration

In terms of working with regional and city partners, F-1 described the importance of the Industry and Logistics chamber and the city commissions, which have been highly supported by the mayor. These meetings allow key stakeholders to be updated on legislation and learn about opportunities that will help their businesses grow.

The city's partnership and relationship with the county and regional networks are also important, and since F-1 was previously employed at the county level, they had insights from both ends that helped build an understanding of efficient and respectful collaborations. When asked if there were political tensions between the two, F-1 stated that in their opinion, there was no time for negativity.

Table 18: Fontana Network Strength & Collaboration Rating

| Concept | Rating | Explanation |
|-----------------------|--------|--|
| Network Strength | - | <ul style="list-style-type: none"> ➤ Potential partnerships with regional networks such as IEEP for improving resilience |
| Network Collaboration | + | <ul style="list-style-type: none"> ➤ Recognition for network alignment ➤ The mayor facilitates interactions between businesses, communities, and industry actors via chambers and commissions ➤ Positive relationships with regional partners |

Governance Capacity

When discussing the inner-workings of the city government, F-1 was supportive of the city manager’s role in driving the city’s progress forward and policy cohesion. F-1 described the council as active, which is essential in aligning its goals with the vision of the mayor and council.

In F-2’s position, as their department focuses on community events as well as after-school programming, the capacity of their department is quite large. They have around 50 full-time staff which is unique for a city of their size. Something F-1 is still aware of is high employee turnover, and in their department, they place importance on empowering the younger employees to help not only their department grow stronger, but to enhance their leadership skills.

Participation & Engagement

Throughout the conversations with F-1 and F-2, the importance of community engagement and soliciting feedback through surveys and events was mentioned several times. The city deployed a substantial community survey in 2021, that helped them get a pulse on how residents felt about the city’s development, how it could improve, and the quality of experience they had. F-1 stated that they received feedback to host more events, and so they worked with F-2’s department to promote specific events that would align with both the needs of the residents as well as the goals of the council. Events described included summer concerts (which were tailored to both American rock and roll fans, as well as Mexican Americans), sports camps for special needs children, and a night market featuring small local businesses. The success of the events is quantified in numbers, but more importantly, F-2 stated that they strive to have meaningful engagement with their community at each event.

In addition to surveys and demographic information, to coordinate events that meet the needs of the Fontana community, F-2 stated they consider recommendations from their Parks, Community, and Human Services Commission, which is comprised of appointed citizens who represent the community. As a recommending body, they can suggest and provide feedback on the kinds of events and services they think would benefit the most.

F-2 stated that the Commissions are very important and impactful for the work they do. City Council is also stated to appreciate the value they bring and often validate their feedback by implementing their suggestions. The city also validates the work of the commission by giving their meetings legitimacy to their functions.

Vision

Fontana’s approach to development is heavily influenced by its historical roots as a ‘bedroom community’. A bedroom community is defined as a highly residential area, where most inhabitants work outside of the city they sleep in (Kaufmann & Wittwer, 2019). Since the rise of the steel and agricultural industry in the early 1900s, Fontana has seen much of its economic growth and

development in the past two decades. F-1 stated their main mission is to recapture the value that is being lost to these commuter cities to bring more economic growth for Fontana itself.

This goal is outlined in their General Plan Outline, which was adopted by the city council in 2018, and details their vision until 2035. However, the city also recognized the need to be proactive and consider the future impacts of increased economic activity, especially in the manufacturing, transportation, and logistics industries. During COVID, the city witnessed a jump in commercial property demand and developed an ordinance to ensure their environmental impact was considered.

In considering introducing industries that will best serve their community, F-1 also stated that they have developed a more proactive system in accepting proposals from companies that want to expand to Fontana. Before companies can start requesting building permits and buying land, they must get the buy-in from the city’s council, planning commission, and residents. The long-term wellness of citizens also was a big consideration when California legalized cannabis.

In F-2’s department, their approach to shaping their vision for the community is influenced by the upcoming generation, and how they can provide innovative programming ideas. Especially after COVID, many programs had to move online, but youth employees and volunteers contributed to the introduction of online gaming and coding programs.

Table 19: Fontana Governance Capacity, Participation & Engagement, and Vision Rating

| Concept | Rating | Explanation |
|----------------------------|--------|--|
| Governance Capacity | ++ | <ul style="list-style-type: none"> ➤ Recognition of the importance of a city manager helping align the council's goals with policy ➤ The city council is active and drives internal synergy ➤ The CSD department is well-staffed and funded ➤ Recognition of empowering employees through leadership training |
| Participation & Engagement | ++ | <ul style="list-style-type: none"> ➤ Recognition of gathering citizen feedback via surveys ➤ Plans engaging and meaningful events across diverse communities ➤ Values input from commissions and validate their commitment |
| Vision | ++ | <ul style="list-style-type: none"> ➤ Vision established in General Action Plan 2015 ➤ Strong focus on economic development, created an environmental ordinance to align growth with sustainability ➤ Considers the economic impact on long-term livelihoods when expanding business sectors ➤ Values innovative approaches when designing programs |

Socio-cultural Dimensions

Collective Learning

Data transparency is important to the City of Fontana, in their planning documents, statistics on demographics, economics, approval ratings, and more show a unique dedication to visibility into how the city makes decisions. Through surveys and public comments, the city is consistently learning about its citizens’ needs. However, F-1 gave their perspective on marketing and communicating government programs, particularly around one called “Fontana Eats” which was created to help struggling families get access to affordable fresh and local food during COVID. During council meetings, community members stated their needs for support, but while they worked diligently on making the information as accessible as possible, the number of applications

received was much lower than anticipated. F-1 stated that they even offered their own office as a means for processing applications for citizens without access to a computer.

In terms of developing new ways of working, F-2 discussed the importance of going more digital with administrative processes and is also going to integrate more mapping technology into event planning.

Equity & Justice

Fontana’s vision includes creating a high quality of life for all residents. Especially since there are many families in Fontana, the city has prioritized building public parks across the city and has been enhancing the parks in every neighborhood. This is an approach to equity that allows every community to have access to parks, and the city has proactively addressed issues of green gentrification by upgrading all the parks to meet the same standards.

Social Cohesion

When it comes to improving positive community ties, F-1 stated that while the government can promote and provide ways to get people more involved with the community, it is still ultimately up to the individual. If residents want to know more about opportunities and events, they need to display initiative in finding more information about them.

F-2 works with hundreds of volunteers in their community service program and noted the importance of recognizing individuals for their contributions. Through an annual event, the city ensures that all members of the leadership team are visible in giving their appreciation.

Additionally, F-2’s leadership philosophy also aims to help their employees recognize the value they can provide to the community. Through their programs and events, F-2 teaches young adults how to be compassionate and how to meaningfully impact the lives of their neighbors.

Table 20: Fontana Collective Learning, Equity & Justice, and Social Cohesion Rating

| Concept | Rating | Explanation |
|-----------------------------|---------------|--|
| <i>Collective Learning</i> | ++ | <ul style="list-style-type: none"> ➤ Recognition of making data public on decision-making and city statistics ➤ Promoting programs can be tricky due to accessibility ➤ Recognition of the value of pursuing innovative approaches to planning and mapping |
| <i>Equity & Justice</i> | + | <ul style="list-style-type: none"> ➤ Recognition of proactive equity in making the city the same in terms of the quality of parks ➤ Acts on citizen input about vulnerable communities ➤ Integration of youth perspectives in community events |
| <i>Social Cohesion</i> | ++ | <ul style="list-style-type: none"> ➤ Increasing connectivity with the city is an individual choice, and cannot be forced from the city's perspective ➤ Community services the city recognizes volunteer efforts through a yearly event ➤ Trains youth employees to be compassionate towards their community |

5.2 Initial Case Study Reflections

The results from the case study interviews provide an answer to SQ2. Overall, the cities had strong recognition and operationalization of the indicators with only minor difficulties in responding to two concepts. Additionally, positive feedback was received which validated the importance of an assessment tool. These results are discussed below.

Table 21 shows a comparison of the case study results. Overall, while each interviewee represented a different department within the city, they had minimal issues in discussing the concepts from the original analytical framework. This is represented by the percentage of (+) or (++) ratings. However, when comparing the interview responses, two concepts were identified as soliciting a less detailed response. The interviewees had difficulties in defining strong networks and defining the social cohesion of the city. This meant that the evidence for these two concepts was mostly anecdotal and less operationalizable.

Table 21: Case Study Results Comparison

| Concept | Description | TAC | NEW | PAS | FON |
|---------------------------------------|---|-----|-----|-----|-----|
| <i>Network Strength</i> | Quantity of networks, membership to networks, informal networks, outcomes of networks | ++ | + | - | - |
| <i>Network Collaboration</i> | Partnerships and active collaboration between networks, diversity of stakeholders | ++ | + | + | + |
| <i>Governance Capacity</i> | Embedded discourses, attitudes, practices, organizational structure, department skills and capacity, and internal trust in leadership | + | + | + | ++ |
| <i>Participation & Engagement</i> | Participation in governance process and decision-making, civic engagement opportunities | + | ++ | - | ++ |
| <i>Vision</i> | Vision for the future, consideration of the intersection of multiple capitals | ++ | ++ | -- | ++ |
| <i>Collective Learning</i> | Education & Outreach, Marketing & Communication, research and development strategies | + | ++ | - | ++ |
| <i>Equity & Justice</i> | Resource allocation, support, and measures for vulnerable groups, the inclusion of diverse perspectives | ++ | ++ | - | + |
| <i>Social Cohesion</i> | The nature of relationships, connectedness, norms of reciprocity, neighborliness, volunteerism | + | + | ++ | ++ |

To reformulate the concepts, operationalized wording was used from the interview data, and the descriptions of each indicator were updated to reflect a simple action, versus standalone indicators (See Table 22). This resulted in the development of preliminary prompts which were then presented in the Expert Session.

Table 22: Reformulated Concept Prompts

| Concept | Reformulated Prompt for Expert Session |
|---------------------------------------|--|
| <i>Network Strength</i> | Maintaining a strong network of key partners and stakeholders (both formal/informal) |
| <i>Network Collaboration</i> | Using internal/external collaborations to help build programs, achieve goals |
| <i>Governance Capacity</i> | Improving internal department logistics, synergy, and organization |
| <i>Participation & Engagement</i> | Providing means for meaningful participation and engagement with citizens |
| <i>Vision</i> | Developing forward-thinking goals, considering innovations, and transdisciplinarity |
| <i>Collective Learning</i> | Providing accessible and valuable knowledge to the public |
| <i>Equity & Justice</i> | Taking into account the needs of diverse and vulnerable communities |
| <i>Social Cohesion</i> | Improving neighborhoods, increasing connectedness in the community |

The interviewees also provided validation in terms of utilizing an assessment tool to help streamline and evaluate social capital within their daily work (See Table 23). When possible, the cities were also asked about current tools they use to monitor progress in their respective work (See Appendix D), and how they felt about the potential for an assessment tool that would provide them with more insights into the concept of social capital on a local level. They were asked if they felt it could be important, and what kind of conditions would require it to be useful. The most positive feedback from F-2 validates that operationalizing social capital on an ongoing basis would be valuable, as maintaining relationships is critical in strengthening and maintaining key partnerships.

Table 23: Feedback on the idea of a Social Capital Assessment Tool

| Cities | Feedback on Social Capital Tool |
|-----------------|--|
| Tacoma | The concept of social capital is important and valuable but heavily dependent on Leadership (T-1) |
| Newark | A report on this subject would be interesting for those in city operations (F-1) |
| Pasadena | If social capital could be translated into numbers, it could be very insightful (P-1) |
| Fontana | A tool that aggregates social impact with economic development scenarios to forecast would be the most helpful (F-1) |
| | Diagnostic check under the engine is helpful in terms of maintaining stakeholder relationships (F-2) |

5.3 Expert Session Results

This section reviews the results of the expert session. The results reference the experts' piloting the modified indicators from 5.2 using Miro and feedback was received regarding the following areas: theories and concepts, guiding prompts, intent, and future applicability (See Table 24).

Table 24: Feedback from Expert Session

| Feedback | Main Comments |
|----------------------|--|
| Concepts | Transdisciplinarity is influenced by the urban context |
| | Governance Capacity and internal alignment as a pre-condition |
| | Equity & Justice perspectives and skills developed on the individual level |
| Guiding Prompts | Conceptual overlap can be condensed |
| | Prompts can produce different responses |
| Intent | Appreciation of forced continuous introspection |
| | Reflective approaches do not currently exist in meeting structure |
| Future Applicability | Consider how to deal with the variation of perspectives |
| | Recommendation for embedding best practices |

In terms of the concepts, the main feedback from the experts was that Vision was highly dependent on the political and environmental context and is therefore difficult to rate separately as a trans-disciplinary concept. In Norfolk, E-1 stated that transdisciplinarity within their planning was well supported due to the recognition of climate change impacts which frequently occur via flooding. This meant that political buy-in was less difficult to get in terms of facilitating departmental collaborations, as the leaders in government recognized the interconnectedness of resilience activities. E-2 similarly provided feedback that internal governance capacity is a pre-condition and should be prioritized before tackling the other concepts. Additionally, E-1 stated that the concept of equity and justice have implications for city actors, and operationalizing it requires their recognition of diversity, equity, and inclusion indicators.

When considering the phrasing of the prompts, E-1 recommended combining some concepts as there were perceived overlaps when responding. During the session and their responses to the prompts, this was observed within the Vision and Collective Learning concepts, as they work hand in hand when developing the goals and targets of a vision. Lastly, E-1 recommended that the generalized and simple prompts could be more streamlined, as they could produce different responses based on the users' perception and knowledge of the concept.

Regarding the intent of the assessment tool in general, both experts had a positive experience during the session. They stated that forced introspection was welcome, as it allowed them to critically assess their areas of achievement and growth. This also put their current actions and goals into perspective with each other since they represented different departments. The exercise allowed them to benefit from the internal reflections, as well as the shared experience with each other. This is an assessment that is currently not institutionalized in their day-to-day work.

Finally, the experts provided two recommendations to enhance the future applicability of the tool. Similar to the remark about streamlining the prompts, E-2 cautioned that variability in answering the prompts could lead to either overgeneralization or a 'gray area' of interpretations. E-1 stated that the tool could be strengthened if best practices or suggestions for action items could be provided as a supplement to completing the tool.

5.4 Empirical Confrontations

This section reviews the empirical confrontations that emerged from the full analysis of the case study results and the feedback from the expert session. To pinpoint the need for the confrontations, the case study interviews were analyzed and compared for themes and new operationalizations which were important to unpack in finalizing the social capital assessment tool. Therefore, the main empirical confrontations are provided per conceptual role, followed by necessary adjustments in terms of new concepts and operationalizations. Particularly, the feedback to streamline the concepts resulted in some being combined, which can be seen in Table 25.

Table 25: Empirical Confrontations and Adjusted Concepts

| Conceptual Role | Concept | Indicators |
|---------------------------|------------------------------|--|
| City Government | <i>Network Collaboration</i> | Partnerships with stakeholders, active collaboration between networks, and their outcomes, maintaining strong relationships with networks |
| | <i>Internal Synergy</i> | inter-department relations, department skills, and capacity, leveraging existing resources and efforts |
| Socio-cultural Dimensions | <i>Shared Vision</i> | Creating a shared vision for the future taking into account the needs of the people and environment, continuous internal learning, and provision of information, education, and resources that contribute to developing vision |
| | <i>Equity & Justice</i> | Resource allocation, support, and measures for vulnerable groups, inclusion of diverse perspectives, individual competencies of DEI |
| | <i>Community Empowerment</i> | Participation in the governance process and decision-making, encouraging civic engagement opportunities that enhance connectedness, norms of reciprocity, neighborliness, volunteerism |

Network Collaboration

Network Strength was difficult to pinpoint as some interviewees referenced formal networks that the city belonged to on both local and regional scales rather than informal networks that they belonged to. Tacoma received the highest rating (++) for this category, and they raised important considerations for operationalizing network strength. Particularly, T-2 mentioned having a system in place for growing their network in the city, which includes utilizing LinkedIn and building a robust e-mail list. Newark and Tacoma also discussed membership within inter-local networks and expertise-based networks such as the PJMCC or USDN. These networks required a level of collaboration and accountability to provide a mutual benefit in their respective work. Furthermore, in Tacoma, collaboration with regional networks was brought to light as useful in advancing their resilience goals and establishing their sense of identity, which has benefits in terms of social cohesion.

Across the other case studies, the actual strength of networks was mostly discussed in terms of their relationships with the city and the outcomes they produce. While it is still important to

recognize the number of networks and the memberships to them both formally and informally, the cities conceptualized networks more in terms of their collaborative function, so working towards how to maintain relationships with relevant networks that produce a mutual benefit is more applicable for the needs of the assessment tool. For this reason, the following adjustment was made.

Table 26: Network Strength Adjustment

| Concept | Adjustment | Justification |
|------------------|-------------------------------------|--|
| Network Strength | Combined with Network Collaboration | Strong networks are difficult to define, formal networks almost always have a collaborative function or positive benefit for the city, maintaining relationships with these groups is critical |

CBOs were noted as key partners for Network Collaboration. CBOs were described as producing both bridging and linking capitals, as they were embedded into neighborhoods and marginalized groups, educated locals on city programs, and established trust and credibility between both the community and the city. Therefore, these collaborations had positive influences on Governance Capacity, Collective Learning, and Equity & Justice. Tacoma provided important insights on the collaborative capacity of CBOs and recognized the risk of over-burdening them with requests. Moreover, Tacoma recognized that indirect support can also constitute a form of collaboration, as evidenced by their proactive search for grant funding opportunities on behalf of CBOs. This means collaborative efforts do not always have to be tied to direct outcomes.

Newark discussed experiences with competitiveness and conflict between CBOs, which can have rippling effects on their collective outcomes and future collaborations. While some details regarding these statements were contextual, they highlight potential issues that could occur in any governance setting. Therefore, CBO partnerships should be more explicitly analyzed to better understand how to avoid such barriers and cities should ensure that they are continuously supporting CBOs in producing positive outcomes.

To separate these empirical confrontations from their specific urban context for the needs of the assessment tool, the following questions pose as the potential new operationalizations:

1. *How can we support and maintain strong relationships with CBOs?*
2. *How can county/regional networks provide resources and improve governance functions and capacities?*
3. *How can partner networks collaborate in mutually beneficial ways?*
4. *How do I maintain consistent communication with important stakeholders, across and within networks?*

Internal Synergy

The interviewee's insights on Governance Capacity revealed that the political context, embedded discourses, and leadership structure were extremely important, but could not be operationalized for a fair assessment within the tool. Tacoma and Fontana both discussed the effectiveness of

city managers as a supplement to mayors and how their ambitions influenced engagement and synergy between government actors. While these are still important concepts that influence social capital, their embeddedness and interdependency could prove to be difficult to operationalize in the assessment tool. Therefore, the following adjustment is made:

Table 27: Governance Capacity Adjustment

| Concept | Adjustment | Justification |
|----------------------------|-------------------------------|---|
| Governance Capacity | Changed to 'Internal Synergy' | Leadership and organizational structure are pre-conditions, focus more on the internal alignment of functions and skills in the context of department goals |

A common experience that had implications on Governance Capacity in Tacoma, Newark, and Fontana was employee turnover. As hiring and training new city staff is time-consuming and replacing institutional knowledge is difficult, the need to enhance and leverage internal department functions was noted, in addition to empowering the next generation of government and community actors. In Newark and Fontana, the interviewees discussed elements of mentoring and empowering the youth in their networks and departments through leadership and career development. In most cases, the interviewees stated that the turnover was the result of retirement, but also due to individuals searching for opportunities in larger cities and on the state or federal level. None of the case studies mentioned having ongoing issues with receiving funding, which disproves the initial generalized limitation of institutional capacity in small-medium-sized cities in that regard (Cutter et al., 2016; Homsy, 2018).

Furthermore, Tacoma and Fontana discussed the importance of leveraging knowledge, insights, and efforts between government departments. Both cities recognized the overlap in efforts when pursuing economic growth and sustainability targets, which allowed them to internally collaborate and develop new plans and policies. The experts in Norfolk recommended looking for areas to leverage work, to avoid overlaps as it allowed them to better collaborate and warned that department silos can indeed prevent such collaboration. In this sense, silos describe when government actors become entrenched in their line of work and therefore disconnected and less cohesive (Bento et al., 2020)

This means that operationalizations should be more aligned with specific department functions, and how internal synergy could be better achieved:

1. *How can we empower current employees and members of the community to stay in our communities?*
2. *How can my department leverage and align with the work happening in other departments?*
3. *How can knowledge be better shared and passed down to avoid the loss of institutional knowledge?*

Shared Vision

The operationalization of a city's vision was largely seen to be influenced by Governance Capacity, as the government's propensity to establish a holistic action plan is heavily influenced by state regulations. Statewide regulations that promoted a city-led focus on sustainable growth were exemplified in Fontana, Tacoma, and Newark. However, these are deeply embedded values, and like governance discourses and attitudes, they are difficult to change and influence in the scope of the tool. Therefore, the assessment tool should focus more on how the vision is collectively created with the communities and environment it aims to serve, rather than the formal, top-down mechanisms that contribute to balancing multiple capitals.

Additionally, the feedback from the expert session stated that transdisciplinarity within the vision of the city was largely influenced by political buy-in and the environmental context. Receiving this buy-in requires internal collaboration, but also the facilitation of learning through innovation, leadership strategy, and expertise. Therefore, the following adjustment was made:

Table 28: Vision & Collective Learning Adjustment

| Concept | Adjustment | Justification |
|---------------------------------------|--|--|
| Vision and Collective Learning | Combined and changed to 'Shared Vision | Vision is created through the engagement of diverse actors, and citizens, which is produced by sharing knowledge, innovating, and learning from experiences internally and inter-locally |

This mutual benefit of collective learning for enhancing a shared vision was also exemplified and operationalized in Fontana through receiving and implementing citizen feedback via surveys and council meetings. Citizen commissions also provided an outlet for learning about future visions, as they recommended changes to the city. All cities aside from Pasadena mentioned the co-benefits of resilience and framed it as a public health issue to gain more political buy-in and collaboration between departments.

Tacoma displayed strengths in its ability to leverage and invest in external networks from a business innovation and resilience implementation perspective. In being open-minded to new technologies and partnerships, Tacoma has exemplified a high quality of collective learning that positively influences its vision, network collaboration, and social cohesion. This shows how multiple concepts of social capital can be boosted by leveraging and strengthening existing networks.

The Newark interviewee mentioned that building their vision was also inspired by learning from other cities and their experiences. While experiential learning that triggered collective memory was specific to Pasadena, based on their direct experiences with hurricanes and tornados, lessons learned from previous disasters (Hurricane Katrina and the Chicago Heat Wave) shaped the approaches of Newark, which highlights the importance of inter-urban learning.

Taking these confrontations into account, the following operationalizations are proposed to merge the operationalizations for both Vision and Collective Learning:

1. *How accessible and transparent are the goals of the city?*
2. *How does the city request and implement feedback from citizens?*
3. *How can less-engaged communities be brought into the conversation?*
4. *What can be learned from other cities?*

Community Empowerment

Participation & Engagement operationalizations differed considerably across all four cities. Fontana and Newark were rated for having strong participation and engagement. Newark focused on participatory learning opportunities, and Fontana’s engagement was well established through city-wide events and programs. However, differences in languages, income levels, and accessibility were noted by Pasadena and Fontana when discussing engagement with citizens. Pasadena and Tacoma also struggled with a lack of trust and credibility in marginalized communities. Using a relational approach to build trust and include voices in conversations slowly was highlighted by Tacoma, Pasadena, and Newark.

Therefore, this concept has implications that can enhance Collective Learning, Equity & Justice, and Social Cohesion which requires a more nuanced approach to understanding what kind of opportunities are available to citizens, why the city wants them to be involved, and how the city can reach more diverse communities. As participation and engagement increase linking capital between the government and communities, which requires a level of social cohesion, the following adjustment was made:

Table 29: Participation & Social Cohesion Adjustment

| Concept | Adjustment | Justification |
|---|---|--|
| Participation & Engagement and Social Cohesion | Combined and changed to 'Community Empowerment' | Opportunities to engage with community and government actors strengthen trust, norms of reciprocity, and opportunities to connect with neighbors |

As Social Cohesion proved to be quite difficult to receive insights on across the cities, community activities could be seen as proxies for the original indicators. Pasadena was the only exception, as their experiences with disasters resulted in high neighborliness and trust and little animosity despite differences in the community’s wealth and race.

Tacoma discussed a grassroots initiative to initiate neighborliness and is also preparing a community-based approach to doubling community areas of gathering to be resilience hubs. Fontana proved to be exceptionally focused on empowering youth to build programs and creating spaces for social cohesion through events and programs. Success at these events was reflected in the positive feedback they received regarding the number of people in attendance. Furthermore, volunteers for these programs were trained to be compassionate towards those in the community, and their efforts were recognized through a summer event.

Taking these confrontations into account, the following operationalizations are proposed to merge the operationalizations for Participation & Engagement, and Social Cohesion:

1. *What kind of participation and engagement does the city/department facilitate?*
2. *Who are the key groups that participate, and who could be better engaged?*
3. *How does the city currently recognize and validate members of the community, who volunteer or provide input?*
4. *How does the city engage with the youth community, and how can they be better empowered?*

Equity & Justice

The interviews showed that each city faces challenges in catering to vulnerable communities. Notably, Tacoma and Newark were focused on repairing historical injustices and developing policies and strategies to embed equity into the city's operations. In Tacoma, an equity map was developed to provide insight into vulnerable areas of the city. In Newark, the consideration of rent control is a means of combatting increased housing costs for low-income residents. Additionally, both cities recognized that initiatives that improve resilience and sustainability at a city level have co-benefits on equity and justice. This was exemplified by both cities creating local jobs to co-align with existing initiatives to install heat pumps in Tacoma and increase tree canopy equity in Newark. As mentioned before, Pasadena's vulnerable communities had a lack of trust in government officials, which made them reliant on community leaders to provide a bridge into those communities. Fontana discussed issues of accessibility and communications when delivering a food security program to low-income families.

While these issues and approaches are highly contextual, and connected to political context, the input from the expert session provided more generalizable insights for effectively operationalizing this concept. Specifically, the experts called out the importance of recognizing personal connections and competencies related to equity and justice. This provides a key baseline for how to better serve the community's vulnerable and marginalized communities. Therefore, the following questions are considered:

1. *What resources are available to advance equity and justice perspectives internally?*
2. *How are vulnerable communities recognized by the local government?*
3. *How does the government communicate and provide resources to vulnerable communities?*

5.5 Social Capital Assessment Tool

Table 30: Table version of the Social Capital Assessment Tool

| Concept | Indicator | Assessment Prompt |
|-------------------------|--|--|
| <i>Internal Synergy</i> | Strong inter-department relations, competent skills, and knowledge-building, leveraging existing resources and efforts | <p>1. I actively seek ways to empower my colleagues and advocate for their career growth²</p> <p>2. I am connected and engaged with other departments and their activities, and they are aware of my activities³</p> <p>3. I leverage the knowledge of other departments and seek ways to increase work efficiency</p> <p>4. I contribute to the maintenance of institutional knowledge and leverage the knowledge of my colleagues in other departments⁴</p> |
| <i>Shared Vision</i> | Creating a shared vision for the future taking into account the needs of the people and environment, continuous internal learning, and provision of information, education, and resources that contribute to developing vision | <p>5. The work that I do is accessible and transparent to all parts of the community⁵</p> <p>6. My department does a good job of requesting and integrating community feedback at every step of our processes⁶</p> <p>7. I consider the voices of stakeholders who are less involved or who haven't been engaged recently⁷</p> <p>8. I seek resources and case studies from experts and cities to gain insights on how to progress in my field of work</p> |

² Mentorship, emotional support, recognition, value sharing, career/work advice

³ Attending meetings/seeking updates with different departments, frequent check ins, leveraging existing projects where there might be some overlaps

⁴ Creating contact lists, working groups/liaisons, facilitating knowledge/transfer sharing sessions

⁵ Publishing updates and sources of data online, sharing information from meetings

⁶ Creating an open-door policy for feedback, creating a plan for continual engagement across project timelines

⁷ Implementing creative ways to reach out to inactive citizens

| | | |
|-------------------------------------|---|--|
| <p><i>Network Collaboration</i></p> | <p>Partnerships with stakeholders, active collaboration between networks, and their outcomes, maintaining strong relationships with networks</p> | <p><i>9. I consistently support partner networks and recognize our role in their success⁸</i> <i>10. I meaningfully contribute to and gain value from inter-local, regional, or other expert networks⁹</i> <i>11. I empower our partner networks to work together towards our common goals¹⁰</i> <i>12. I have a good system in place that allows me to regularly check in with my partners and networks, outside of the context of immediate needs¹¹</i></p> |
| <p><i>Equity & Justice</i></p> | <p>Resource allocation, support, and measures for vulnerable groups, inclusion of diverse perspectives, individual competencies of DEI</p> | <p><i>13. The city is inclusive and makes materials accessible when communicating with the public</i> <i>14. The work I do takes into account vulnerable communities, and I recognize the potential impact it has on these communities¹²</i> <i>15. I have access to resources that will help me advance my competencies in local environmental and social justice issues</i> <i>16. I feel that concepts of diversity, equity, and inclusion are understood in my department</i></p> |
| <p><i>Community Empowerment</i></p> | <p>Participation in the governance process and decision-making, encouraging civic engagement opportunities that enhance connectedness, norms of reciprocity, neighborliness, volunteerism</p> | <p><i>17. The city provides enough opportunities to engage citizens in decision-making processes</i> <i>18. The city and our partners empower locals of all backgrounds and ages to be involved in governance practices</i> <i>19. We do a good job of recognizing volunteers, and commission members, and consistently validate and show gratitude for their feedback</i> <i>20. The city facilitates strong community connection opportunities, i.e., volunteering, neighborhood-based programs, events</i></p> |

⁸ Helping secure funding, providing programmatic support, resource sharing

⁹ Regional alliances, sector-specific networks, professional networks, national networks (i.e., USDN)

¹⁰ CBOs and other stakeholder networks work together and have a mutual respect for each other's roles and activities

¹¹ Scheduling check ins, calendar reminders, e-mails, LinkedIn activities, frequently attending events

¹² I.e., equity map and vulnerability indices provide ability to pinpoint this impact

The final assessment tool in Table 30 integrates the original analytical framework and new key empirical confrontations from the case studies and the expert session, and provides a cumulative attempt in answering SQ3, *How can a social capital assessment tool help city government actors better evaluate and operationalize social capital for urban resilience?* A discussion of the tool's finalization and recommended uses are provided in the sections following.

Upon the positive feedback regarding 'forced introspection' from the expert session, it became clear that the approach of the tool should follow the same format. Therefore, in defining the questions for the tool, the first set of questions from 5.4 was collected and re-worded to be answerable through self-reflection. Additionally, as the rating table from the case study analysis provides a clear picture of where areas of improvement lie, the questions were also redeveloped to be ratable. But in certain concepts, answers cannot be provided solely by the individual, so some questions encompass reflections across the city level.

The concepts were re-arranged, and ordered based on the amount of influence they have on other concepts. This order was in part informed by how the interviewees framed their responses and areas of improvement, and where conceptual overlaps and interactions proved to be the most valuable. To summarize the process of re-ordering the concepts start with recognizing internal synergy as a fundamental step in establishing a shared vision. Building upon this shared vision necessitates consistent and robust collaborations across networks, which enables stronger support for equity and justice to be pursued. Finally, fostering trust and connectedness within communities is facilitated through the creation of opportunities for communities to be empowered.

However, it is important to note that these are not meant to be taken as literal steps towards enhancing social capital for resilience, but more to show the interconnectedness and mutual influence between the concepts. The tool is formative in nature, meaning that it is meant to be applied ex-ante, to elucidate opportunities that build social capital and resilience before a disruption occurs (Sharifi, 2016). The tool allows urban practitioners to increase their understanding of social capital complexities and improve within their local context (Wardekker et al., 2020). Therefore, the tool can be applied within local government and assessed by a city official in any sector. This is because social capital is stimulated across disciplines, and in the cases of the cities selected, no single department is held accountable for social capital (Keenan, 2018; Woodruff et al., 2020).

Therefore, the tool aims to enhance internal governance processes, preventing the loss of social capital and its beneficial outcomes in governing practices. This will enable disaster-prone cities to be better prepared in mobilizing social capital within their networks and communities.

5.5.1 Recommendations

The questions serve as a bridge between the theoretical and empirical aspects of this study, offering a practical and relevant approach that guides the user in reflecting and pinpointing areas of improvement toward the specific concepts of social capital. Using operationalizations from the case studies, the footnotes highlight best practices and examples taken from the interviews. Recommendations for its ideal applicability and frequency of use are provided below.

Based on the feedback from the Expert Session, the following suggestions are provided to help guide city actors in using the tool effectively. First, the tool depicted in Table 30 is an overview of the tool and its contents, but to fill out the tool easily, a form approach is recommended (See Appendix E). The PDF form was created to include a built in rating and reflection component, and

can be downloaded from [this link](#). Other ways to operationalize the tool would be to input the contents into an online survey form such as Google Forms, Microsoft Forms, or Survey Monkey but these methods are only recommended as a secondary option, as in-person reflections can lead to more fruitful discussions.

Second, the tool should be filled out in a collaborative setting, such as in a department or team project meeting. The meeting can be facilitated by a team leader, or an elected member of the group to ensure that all feedback is covered. The goal is to create a safe environment that is conducive to an open discussion on individual reflections and each user of the tool should feel comfortable in explaining their reasoning for their rating and explanations. An anonymized approach could also be taken, where the names are redacted from the assessment and the facilitator reviews the results for the group. From there, the group can decide what areas are the most important for prioritizing, and an action plan can be created.

The completion of the assessment should take around 20-30 minutes, and the discussion that follows will depend on how many users take part in the session. Groups could be formed to share their results, and then a group summary can be provided to contribute to the full group's next steps if necessary. Additionally, for ease of implementation, it is recommended that the team decides on what frequency the assessment tool will be completed in terms of their current project timelines. This could mean monthly, bi-monthly, or quarterly. Another approach could be to add the assessment to working groups of a particular policy or intervention, as it could help with project management and efficiency in terms of teamwork and vision alignment.

6. Discussion

This section serves as a ground for discussion regarding the results of the study, beginning with a short reflection (6.1) including the influence of the political and disaster contexts, and the limitations of the research and directions for future research (6.2).

6.1 Reflections on the Findings

The case study analysis, the expert session, and the empirical confrontations that were developed contribute to the literature on social capital and urban resilience by filling the gap in the empirical evaluation of US small-medium-sized cities. Additionally, the findings enrich the theory-building on enhancing resilience activities, by analyzing and comparing different contexts of social capital and streamlining the key operationalizations within an assessment tool. The analysis and the interviews also provided empirical evaluations for cities that typically are not highlighted in the literature, which also contributes to the overall theory building of urban resilience in the US.

In looking at the social capital ratings of the interview data, the case studies show an overall encouraging score majority of (+) and (++) in terms of identifying with and recognizing the indicators. This indicates that the concepts of social capital are embedded within government functions and receive attention in various forms. When zooming in on the case study results, it's clear that the most prominent feature of urban governance that considers social capital and resilience is institutionalized within their Vision, which in all cases aside from Pasadena, is displayed in a planning document. Lower scoring indicators included Network Strength, Network Collaboration, and Governance Capacity. However, as the tool was solidified after the original scoring, there are a few contextual areas to highlight that may contribute to the ratings of these indicators.

Political Context

The study was focused on urban level governance and forms of social capital generated between city government and their communities, and it was found that mayors and council members set the tone for how collaborative, engaging, and progressive the city's vision was. While leadership was removed as a point of assessment in the tool, internal synergy was still regarded as the most important pre-condition that should be evaluated as a first step in understanding how a city can best enhance and build resilience. Notably, the findings highlight the issue of fluctuations in capacity and departmental silos and how this influences the government's ability to effectively collaborate, learn, and address the transdisciplinarity of resilience building. Even though Norfolk is nationally recognized as a leader in resilience, the experts noted that traditional working methods and organizational structures are less conducive to continuous reflection. This makes the assessment tool a potential place to start critical conversations about the need to adjust and pursue more collaborative forms of governance.

However, in a broader sense, as the case studies were situated in four different states, political party orientation of the state laws and regulations, and the way taxes are collected and spent were all discussed during the interviews. These political contexts, while not operationalized in the framework, require further unpacking as they were seen to influence Shared Vision, Network Collaboration, and Equity & Justice.

State and urban level political orientations were mostly majority Democratic, with the exception of Pasadena. In the democratic states, cities were mandated to create a plan for economic growth

that considered environmental implications. States without a Growth Management Act or similar initiatives, such as Texas, would therefore need to show individual ambition in developing a holistic plan. This was not the case in Pasadena, and as it was alluded to in the interviews, topics of sustainability typically do not gain a lot of positive attention due to the polarizing views that many Texans have regarding climate change and the strong presence of oil production in the local economy. This lack of science-based policy-making has been a concern of climate scientists across the country in recent years (Akerlof et al., 2012). Furthermore, T-1 highlighted that funding for resilience-oriented activities primarily came from tax dollars, which tend to be higher on the west coast as democratic states have more trust in the use of government funds.

The political implications and tensions between different forms of government were also observed. Both in Newark and Pasadena, interviewees had distrustful opinions regarding the state and the federal government. In Newark, this was fueled by historical political decisions such as redlining, that had set the city up for a slew of environmental justice issues (Lane et al., 2022). N-1 stated that because of this, there was a general distaste between them and those working on the state level. Additionally, institutionalized political boundaries and systems in the US were seen as an impediment to certain concepts, which have hindering effects on the local government's capacity to enact change. N-1 indicated that how land use regulations work between the state and the city meant that they had little influence on infrastructure prioritization. In Tacoma, T-2 described institutionalized modes of regional emergency management that created a slower-than-ideal urban approach to climate resiliency.

Similarly, in Pasadena, P-1 stated that overreliance on the government was a dangerous mindset to have in terms of disaster management, especially following Hurricane Katrina. Conversely, Fontana and Tacoma, both had positive views of state legislation and often reaped positive benefits from their statewide funding schemes. In terms of interlocal politics, cities such as Newark and Tacoma shared beneficial networking and leveraging the resources of larger cities close by, but the opposite was observed between Houston and Pasadena. According to P-1, this was largely due to their political differences which have become more partisan over time.

Furthermore, the trust and relationships between city, state, and even federal-level decisions and beliefs are important to consider for the foundations of social capital to be built or eroded. Additionally, social capital scholars have warned that in areas where there is a lack of bridging and linking capital, the issue of homophily arises. This refers to the lack of collaboration and diversity of ideas, which creates an echo chamber that results in a limited desire for behavior and belief change (Dalisay et al., 2012; Smith et al., 2012). This has potentially negative effects on expanding potential social capital and could lead to exclusionary tendencies and conflict (Aldrich et al., 2016; MacGillivray, 2018). In the political science field, the danger of social capital erosion could lead to lowered levels of social trust, which has implications for society's ability to collectively work towards a sustainable future (Lee, 2022).

Disaster Context

As the concepts of social capital were originally rooted in being either reactive, responsive, or proactive, they often overlap which meant that these differentiations did not provide value when assessing the case studies. However, the distinctions still provide value when considering the different disaster contexts that the case studies faced, such as frequency and types of disasters. While the contextual variations prevented direct integration into the tool, the findings from Pasadena, Newark, and Tacoma demonstrated how this aspect interacted with Shared Vision through collective learning and Equity & Justice.

As Pasadena was the only city that had undergone a recent disaster (Hurricane Harvey), the collective memory regarding hurricanes was strong, and therefore their social cohesion was also among the strongest of the four cities. The drastic impact of hurricanes on the city was evident, and P-2 observed that the citizens of Pasadena understand hurricanes can be devastating, regardless of their location or financial status. To prepare residents, the main effort mentioned in the interviews was an early summer hurricane safety event and messaging updates using an application. This exemplifies a responsive form of resilience, as the event is based on seasonal predictions of hurricanes and the messages alert residents to potential impacts to the city.

Newark has a historical record of hurricane impacts and faces the risk of severe coastal flooding. As a result, the city recognized the need to raise buildings while also considering housing affordability. This is unique to coastal cities because as sea levels increase, residents are displaced due to rising costs of living, and cannot afford to relocate if they are economically compromised (Li & Spidalieri, 2021). In considering city-wide rent control to mitigate local displacement and improve equity, N-1 and colleagues recognized the importance of proactively managing disaster risks.

In Fontana and Tacoma, the main reoccurring risk was extreme heat events. In Tacoma, T-1 discussed their work around setting up accessible cooling stations and increasing the affordability of air conditioning units, as many homes in the pacific northwest do not have them. Similar to hurricanes, extreme heat events occur seasonally, and T-2 pointed out that outside of these seasons, council and commission members tend to be less focused on preparations and urgency. According to T-2, when the potential impact was not immediate, it was difficult to maintain urgency for actions geared towards proactive resilience that don't trigger alarmism. However, their work in implementing future resilience hubs also indicated a level of proactivity that will be more beneficial to communities managing risk in the long term.

6.2 Limitations & Future Research

The research presented is not without its limitations, especially due to its complex, iterative nature and the intangibility of social capital as a theoretical foundation for resilience. A few key limitations could influence the validity of the results, including the selection of case studies and interviewees, and the limited timeframe of the study. Furthermore, the inability to explore the political and historical contexts leads to potential avenues for future research.

First, the case study selection attempted to gather a variety of insights from small-medium-sized cities, which were, while at a similar risk level, susceptible to different kinds of disasters. This presents a limitation that prevents its transferability as the results show that contextual variables such as the political and historical context shape the way that social capital is fostered and activated. Therefore, comparing cities with the same contextual variables could highlight blind spots in terms of regionally specific networks or resources and promote more applicable lessons in resilience studies. Future research could focus more on similar contexts, such as comparing cities within the same state, to unveil if embedding more detailed variables within the assessment tool could glean more meaningful reflections and areas for improvement. Additionally, a zoomed-out analysis of the vertical relationship between social capital on a local, state, and regional level is required to highlight important policy and legislative implications to pinpoint best policy practices and areas for improvement.

Second, the timeline to conduct interviews was limited and the selection of interviewees primarily relied on those who responded to email requests, which may have hindered the ability to achieve a more diverse and representative pool of government actors. While the interviewees covered a wide range of disciplines, the issue of oversimplification of contextual variables that are embedded within their work and their knowledge on the indicators limited the analysis. Despite the intention to avoid generalizing the perspectives of each individual across all the case studies, key operationalizations in the assessment tool may be missing due to the limited amount of insight gathered. Future research should pursue a larger set of interviews with a wider range of stakeholders and complete an in-depth content analysis at the city and state level. This could provide more insight into how social capital is influenced over time, and how shifts at the city and state level take the concepts into account. This could include relevant information regarding embedded discourses in terms of past disasters produces historical implications that are critical outside of the local context.

Third, concentrating interviews solely on government actors may lead to a biased response regarding building social capital, potentially limiting the overall impact of the tool. Particularly, when addressing questions concerning city leadership philosophy and structure, interviewees may exhibit reluctance in providing candid responses. Considering the theoretical basis that social capital operates through both formal and informal networks, it becomes essential to explore broader perspectives. Therefore, to enhance the tool's applicability and extend its reach to include community-based organizations (CBOs) and other networks, future research should consider interviewing a more diverse set of actors in their perceptions and operationalizations of social capital.

Fourth, to enhance the validity and credibility of the assessment tool, future research could pilot the tool within multiple departments across multiple cities and conduct follow-up interviews with users of the tool. This would allow further empirical confrontations and adjustments to enhance the tool's applicability, as well as monitor the use of it over a continuous period. This is particularly necessary as Tacoma, Fontana, and Newark will be updating their climate and resilience action

plans within the next few years, so key insights and streamlined approaches gained from the continual use of the assessment tool could play a key role in setting new goals and shifting traditional working methods to be more reflective, iterative, and integrated across formal and informal city networks. Future findings could contribute to a repository of best practices for building social capital for resilience, that help cities create clear pathways towards concrete actions.

7. Conclusion

This research was designed using a qualitative, mixed-methods approach that investigated current theories and concepts of social capital in the context of building urban resilience. This included a deep dive into the landscape of literature regarding social capital and resilience, an analysis of four case studies across the US via semi-structured interviews and concluded with an expert session for validation. The results from the methods were critically reviewed and compared which led to the finalization of a social capital assessment tool that bridges the theoretical and empirical findings in a practical, user-friendly approach. This allowed the research to answer the following main research question: *How can cities meaningfully conceptualize and assess social capital as a tool for enhancing urban resilience?*

In answering SQ1, *What is the relationship between social capital and urban resilience, according to existing literature*, the literature revealed that the ongoing assessment of variables and indicators that build social capital for resilience is not well-institutionalized in US cities, but its value has been elaborated by scholars across the globe, resulting in concepts that were foundational to the research. The case study analysis provided the answer to SQ2, *To what extent do government actors in small-medium-sized cities recognize and operationalize social capital?* Overall, the four cities confirmed that the concepts of social capital were highly recognized in urban governance, and their operationalization occurs frequently across various roles in city government. However, the interviewees recognized and struggled with increasing social capital due to conceptual overlap with several contextual factors. By critically examining the operationalizations derived from the case studies, considering the empirical confrontations, and receiving validation and feedback during the expert session, the refinement of the assessment tool effectively addressed SQ3, *How can a social capital assessment tool help city government actors better evaluate and operationalize social capital for urban resilience?*

This study highlighted ways in which social capital can be enhanced for urban resilience outcomes on a more granular level within the work and contributions of local government actors. These are operationalized through Internal Synergy, Shared Vision, Network Collaboration, Equity & Justice, and Community Empowerment. While the tool illustrates a culmination of empirical confrontations and theoretical underpinnings, it is imperative to note that there is no silver bullet for building social capital and resilience. Further research and diligence are needed to untangle the implications of contextual differences across cities, particularly those that shape their political climate. Future testing of the assessment tool could highlight important changes that could either take these into account or validate their exclusion.

8. References

- Abrash Walton, A., Marr, J., Cahillane, M. J., & Bush, K. (2021). Building Community Resilience to Disasters: A Review of Interventions to Improve and Measure Public Health Outcomes in the Northeastern United States. *Sustainability*, 13(21), Article 21. <https://doi.org/10.3390/su132111699>
- Adams, R. M., Rivard, H., & Eisenman, D. P. (2017). Who Participates in Building Disaster Resilient Communities: A Cluster-Analytic Approach. *Journal of Public Health Management and Practice*, 23(1), 37–46. <https://doi.org/10.1097/PHH.0000000000000387>
- Adger. (2000). Social and ecological resilience: Are they related? *Progress in Human Geography*, 24(3), 347–364. <https://doi.org/10.1191/030913200701540465>
- Adger, Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D., Naess, L., Wolf, J., & Wreford, A. (2008). Are There Social Limits to Adaptation to Climate Change? *Climatic Change*, 93, 335–354. <https://doi.org/10.1007/s10584-008-9520-z>
- Akerlof, K., Rowan, K. E., Fitzgerald, D., & Cedeno, A. Y. (2012). Communication of climate projections in US media amid politicization of model science. *Nature Climate Change*, 2(9), Article 9. <https://doi.org/10.1038/nclimate1542>
- Aldrich, D. P., & Kyota, E. (2017). Creating Community Resilience Through Elder-Led Physical and Social Infrastructure. *Disaster Medicine and Public Health Preparedness*, 11(1), 120–126. <https://doi.org/10.1017/dmp.2016.206>
- Aldrich, D. P., & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, 59(2), 254–269. <https://doi.org/10.1177/0002764214550299>
- Aldrich, D. P., Page-Tan, C. M., & Paul, C. J. (2016). Social Capital and Climate Change Adaptation. In D. P. Aldrich, C. M. Page-Tan, & C. J. Paul, *Oxford Research Encyclopedia of Climate Science*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190228620.013.342>
- Aldrich, D. P., Page-Tani, C., & Frasier, T. (2018). A Janus-faced resource: Social capital and resilience trade-offs. *Domains of Resilience for Complex Interconnected Systems.*, Volume 2, 13. <https://doi.org/10.5075/epfl-irgc-262527>
- Ashmawy, I. K. I. M. (2021). Stakeholder involvement in community resilience: Evidence from Egypt. *Environment, Development and Sustainability*, 23(5), 7996–8011. <https://doi.org/10.1007/s10668-020-00894-9>
- Baxter, H. (2019). Creating the Conditions for Community Resilience: Aberdeen, Scotland—An Example of the Role of Community Planning Groups. *International Journal of Disaster Risk Science*, 10(2), 244–260. <https://doi.org/10.1007/s13753-019-0216-y>
- Beaudoin, C. E. (2007). News, Social Capital and Health in the Context of Katrina. *Journal of Health Care for the Poor and Underserved*, 18(2), 418–430. <https://doi.org/10.1353/hpu.2007.0024>
- Bento, F., Tagliabue, M., & Lorenzo, F. (2020). Organizational Silos: A Scoping Review Informed by a Behavioral Perspective on Systems and Networks. *Societies*, 10(3), Article 3. <https://doi.org/10.3390/soc10030056>
- Berke, P., Kates, J., Malecha, M., Masterson, J., Shea, P., & Yu, S. (2021). Using a resilience scorecard to improve local planning for vulnerability to hazards and climate change: An application in two cities. *Cities*, 119, 103408. <https://doi.org/10.1016/j.cities.2021.103408>
- Berkes, F., & Ross, H. (2013). Community Resilience: Toward an Integrated Approach. *Society & Natural Resources*, 26(1), 5–20. <https://doi.org/10.1080/08941920.2012.736605>

- Best Places. (n.d.a). *Voting in Tacoma, Washington*. Retrieved May 24, 2023, from <https://www.bestplaces.net/voting/city/washington/tacoma>
- Best Places. (n.d.b). *Voting in Newark, New Jersey*. Retrieved May 24, 2023, from https://www.bestplaces.net/voting/city/new_jersey/newark
- Best Places. (n.d.c). *Voting in Pasadena, Texas*. Retrieved May 24, 2023, from <https://www.bestplaces.net/voting/city/texas/pasadena>
- Best Places. (n.d.d). *Voting in Fontana, California*. Retrieved May 24, 2023, from <https://www.bestplaces.net/voting/city/california/fontana>
- Brand, D., & Nicholson, H. (2016). Public space and recovery: Learning from post-earthquake Christchurch. *Journal of Urban Design*, 21(2), 159–176. <https://doi.org/10.1080/13574809.2015.1133231>
- Brelsford, C., Lobo, J., Hand, J., & Bettencourt, L. M. A. (2017). Heterogeneity and scale of sustainable development in cities. *Proceedings of the National Academy of Sciences*, 114(34), 8963–8968. <https://doi.org/10.1073/pnas.1606033114>
- Bulkeley, H., & Betsill, M. M. (2013). Revisiting the urban politics of climate change. *Environmental Politics*, 22(1), 136–154. <https://doi.org/10.1080/09644016.2013.755797>
- Cafer, A., Green, J., & Goreham, G. (2019). A Community Resilience Framework for community development practitioners building equity and adaptive capacity. *Community Development*, 50(2), 201–216. <https://doi.org/10.1080/15575330.2019.1575442>
- Carmen, E., Fazey, I., Ross, H., Bedinger, M., Smith, F. M., Prager, K., McClymont, K., & Morrison, D. (2022). Building community resilience in a context of climate change: The role of social capital. *Ambio*, 51(6), 1371–1387. <https://doi.org/10.1007/s13280-021-01678-9>
- City of Fontana, CA. (n.d.). *Acquanetta Warren, Mayor*. Fontana, CA - Official Website. Retrieved May 24, 2023, from <https://www.fontanaca.gov/2788/Acquanetta-Warren-Mayor>
- City of Newark, NJ. (n.d.). *City Mayor*. Retrieved May 24, 2023, from <https://www.newarknj.gov/city-mayor>
- City of Pasadena, TX. (n.d.). *Mayor Jeff Wagner*. Retrieved May 24, 2023, from <https://www.pasadenatx.gov/578/Mayor-Jeff-Wagner>
- City of Tacoma, WA. (n.d.a). *Office of Mayor Victoria Wood*. Retrieved May 24, 2023, from <https://www.cityoftacoma.org/cms>
- City of Tacoma, WA. (n.d.b). Retrieved May 24, 2023, from <https://www.cityoftacoma.org/cms>
- Claridge, T. (2018). *Functions of social capital – bonding, bridging, linking*.
- Coaffee, J., Therrien, M.-C., Chelleri, L., Henstra, D., Aldrich, D. P., Mitchell, C. L., Tsenkova, S., Rigaud, É., & Participants, T. (2018). Urban resilience implementation: A policy challenge and research agenda for the 21st century. *Journal of Contingencies and Crisis Management*, 26(3), 403–410. <https://doi.org/10.1111/1468-5973.12233>
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications.
- Curtis, C. A. (2018). Organizational Networks in Times of Crisis: Lessons from Katrina. *Journal of Contingencies and Crisis Management*, 26(2), 202–211. <https://doi.org/10.1111/1468-5973.12138>
- Cutter, S. L. (2016). The landscape of disaster resilience indicators in the USA. *Natural Hazards*, 80(2), 741–758. <https://doi.org/10.1007/s11069-015-1993-2>

- Cutter, S. L., Ash, K. D., & Emrich, C. T. (2016). Urban–Rural Differences in Disaster Resilience. *Annals of the American Association of Geographers*, 106(6), 1236–1252. <https://doi.org/10.1080/24694452.2016.1194740>
- Dalisay, F., Hmielowski, J. D., Kushin, M. J., & Yamamoto, M. (2012). Social Capital and the Spiral of Silence. *International Journal of Public Opinion Research*, 24(3), 325–345. <https://doi.org/10.1093/ijpor/eds023>
- Data USA. (n.d.a). Data USA. Retrieved May 24, 2023, from <https://datausa.io/profile/geo/tacoma-wa/>
- Data USA. (n.d.b). Data USA. Retrieved May 24, 2023, from <https://datausa.io/profile/geo/newark-nj>
- Data USA. (n.d.c). Data USA. Retrieved May 24, 2023, from <https://datausa.io/profile/geo/pasadena-tx>
- Data USA. (n.d.d). Data USA. Retrieved May 24, 2023, from <https://datausa.io/profile/geo/fontana-ca>
- de Milliano, C. W. J., & Jurriens, J. (2016). Realities of resilience in practice: Lessons learnt through a pilot EU Aid Volunteer Initiative. *Resilience*, 4(2), 79–94. <https://doi.org/10.1080/21693293.2015.1094171>
- Deitchman, S., Kirsch, T., Auerbach, P., & Hill, A. (2021). *Climate Resilience: It Is Time for a National Approach*. <https://doi.org/10.1089/hs.2021.0108>
- Derr, V., Sitzoglou, M., & Gülgönen, T. (2018). *Integrating Children and Youth Participation into Resilience Planning: Lessons from Three Resilient Cities*.
- Desouza, K. C., & Flanery, T. H. (2013). Designing, planning, and managing resilient cities: A conceptual framework. *Cities*, 35, 89–99. <https://doi.org/10.1016/j.cities.2013.06.003>
- Dunn, P. (2022, February 2). *Camden, Newark, & Baltimore lead in building equitable access to urban tree canopy*. Planet Detroit. <https://planetdetroit.org/2022/02/camden-newark-baltimore-lead-in-building-equitable-access-to-urban-tree-canopy/>
- Eldh, A. C., Årestedt, L., & Berterö, C. (2020). Quotations in Qualitative Studies: Reflections on Constituents, Custom, and Purpose. *International Journal of Qualitative Methods*, 19, 1609406920969268. <https://doi.org/10.1177/1609406920969268>
- Encyclopaedia Britannica. (n.d.). *Newark summary*. Encyclopedia Britannica. Retrieved May 24, 2023, from <https://www.britannica.com/summary/Newark-New-Jersey>
- Fazey, I., Carmen, E., Chapin, F., Ross, H., Rao-Williams, J., Lyon, C., Connon, I., Searle, B., & Knox, K. (2018). Community resilience for a 1.5°C world. *Current Opinion in Environmental Sustainability*, 31, 30–40. <https://doi.org/10.1016/j.cosust.2017.12.006>
- FEMA. (n.d.a). *Disaster 4056*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/4056/designated-areas>
- FEMA. (n.d.b). *Disaster 3573*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/3573/designated-areas>
- FEMA. (n.d.c). *Disaster 4574*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/4574/designated-areas>
- FEMA. (n.d.d). *Disaster 973*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/973/designated-areas>
- FEMA. (n.d.e). *Disaster 3540*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/3540/designated-areas>
- FEMA. (n.d.f). *Disaster 4332*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/4332/designated-areas>

- FEMA. (n.d.f). *Disaster 3415*. FEMA.gov. Retrieved May 23, 2023, from <https://www.fema.gov/disaster/3415/designated-areas>
- Fiack, D., Cumberbatch, J., Sutherland, M., & Zerphey, N. (2021). Sustainable adaptation: Social equity and local climate adaptation planning in U.S. cities. *Cities*, 115, 103235. <https://doi.org/10.1016/j.cities.2021.103235>
- Fitzgibbons, J., & Mitchell, C. L. (2019). Just urban futures? Exploring equity in “100 Resilient Cities.” *World Development*, 122, 648–659. <https://doi.org/10.1016/j.worlddev.2019.06.021>
- Galderisi, A., Limongi, G., & Salata, K.-D. (2020). Strengths and weaknesses of the 100 Resilient Cities Initiative in Southern Europe: Rome and Athens’ experiences. *City, Territory and Architecture*, 7(1), 16. <https://doi.org/10.1186/s40410-020-00123-w>
- Galliers, R. D., & Huang, J. C. (2012). The teaching of qualitative research methods in information systems: An explorative study utilizing learning theory. *European Journal of Information Systems*, 21(2), 119–134. <https://doi.org/10.1057/ejis.2011.44>
- Garrigos-Simon, F. J., Botella-Carrubi, M. D., & Gonzalez-Cruz, T. F. (2018). Social Capital, Human Capital, and Sustainability: A Bibliometric and Visualization Analysis. *Sustainability*, 10(12), Article 12. <https://doi.org/10.3390/su10124751>
- Gunderson, L. (2010). Ecological and Human Community Resilience in Response to Natural Disasters. *Ecology and Society*, 15(2). <https://www.jstor.org/stable/26268155>
- Gustafsson, J. (2017). *Single case studies vs. Multiple case studies: A comparative study*.
- Hawkins, C., & Wang, X. (2012). Sustainable Development Governance: Citizen Participation and Support Networks in Local Sustainability Initiatives. *Public Works Management & Policy*, 17(1), 7–29. <https://doi.org/10.1177/1087724X11429045>
- Hawkins, R., & Maurer, K. (2010). Bonding, Bridging and Linking: How Social Capital Operated in New Orleans following Hurricane Katrina. *British Journal of Social Work*, 40(6), 1777–1793. <https://doi.org/10.1093/bjsw/bcp087>
- Hays, R. A. (2015). Neighborhood Networks, Social Capital, and Political Participation: The Relationships Revisited. *Journal of Urban Affairs*, 37(2), 122–143. <https://doi.org/10.1111/juaf.12137>
- Heikkila, T., & Gerlak, A. K. (2013). Building a Conceptual Approach to Collective Learning: Lessons for Public Policy Scholars. *Policy Studies Journal*, 41(3), 484–512. <https://doi.org/10.1111/psj.12026>
- Hellerstein, J. K., & Neumark, D. (2020). Social Capital, Networks, and Economic Wellbeing. *The Future of Children*, 30(1), 127–152.
- Homsy, G. C. (2018). Unlikely pioneers: Creative climate change policymaking in smaller U.S. cities. *Journal of Environmental Studies and Sciences*, 8(2), 121–131. <https://doi.org/10.1007/s13412-018-0483-8>
- Howell, J., & Elliott, J. R. (2019). Damages Done: The Longitudinal Impacts of Natural Hazards on Wealth Inequality in the United States. *Social Problems*, 66(3), 448–467. <https://doi.org/10.1093/socpro/spy016>
- Huggins, R., Johnston, A., & Thompson, P. (2012). Network Capital, Social Capital and Knowledge Flow: How the Nature of Inter-organizational Networks Impacts on Innovation. *Industry and Innovation*, 19(3), 203–232. <https://doi.org/10.1080/13662716.2012.669615>
- Jurjonas, M., & Seekamp, E. (2018). Rural coastal community resilience: Assessing a framework in eastern North Carolina. *Ocean & Coastal Management*, 162, 137–150. <https://doi.org/10.1016/j.ocecoaman.2017.10.010>

- Jurjonas, M., Seekamp, E., Rivers, L., & Cutts, B. (2020). Uncovering climate (in)justice with an adaptive capacity assessment: A multiple case study in rural coastal North Carolina. *Land Use Policy*, 94, 104547. <https://doi.org/10.1016/j.landusepol.2020.104547>
- Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, 72(12), 2954–2965. <https://doi.org/10.1111/jan.13031>
- Kang, K. E., Bowman, A. O., Hannibal, B., Woodruff, S., & Portney (deceased), K. (2023). Ecological, Engineering and Community Resilience Policy Adoption in Large US Cities. *Urban Affairs Review*, 10780874221150792. <https://doi.org/10.1177/10780874221150793>
- Kaufmann, D., & Wittwer, S. (2019). Business centre or bedroom community? The development of employment in small and medium-sized towns. *Regional Studies*, 53(10), 1483–1493. <https://doi.org/10.1080/00343404.2019.1585529>
- Keenan, J. M. (2018). Types and forms of resilience in local planning in the U.S.: Who does what? *Environmental Science & Policy*, 88, 116–123. <https://doi.org/10.1016/j.envsci.2018.06.015>
- Kiefer, E. (2023, January 19). *Newark Will Get \$1.2M To Plant Hundreds Of Trees, Remove Dead Ones*. Newark, NJ Patch. <https://patch.com/new-jersey/newarknj/newark-will-get-1-2m-plant-hundreds-trees-remove-dead-ones>
- Kizos, T., Detsis, V., Iosifides, T., & Metaxakis, M. (2014). Social Capital and Social-Ecological Resilience in the Asteroussia Mountains, Southern Crete, Greece. *Ecology and Society*, 19(1). <https://www.jstor.org/stable/26269500>
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2014). Experiential Learning Theory: Previous Research and New Directions. In R. J. Sternberg & L. Zhang (Eds.), *Perspectives on Thinking, Learning, and Cognitive Styles* (0 ed., pp. 227–248). Routledge. <https://doi.org/10.4324/9781410605986-9>
- Koliou, M., van de Lindt, J. W., McAllister, T. P., Ellingwood, B. R., Dillard, M., & Cutler, H. (2020). State of the research in community resilience: Progress and challenges. *Sustainable and Resilient Infrastructure*, 5(3), 131–151. <https://doi.org/10.1080/23789689.2017.1418547>
- Koop, S. H. A., Koetsier, L., Doornhof, A., Reinstra, O., Van Leeuwen, C. J., Brouwer, S., Dieperink, C., & Driessen, P. P. J. (2017). Assessing the Governance Capacity of Cities to Address Challenges of Water, Waste, and Climate Change. *Water Resources Management*, 31(11), 3427–3443. <https://doi.org/10.1007/s11269-017-1677-7>
- Kyne, D., & Aldrich, D. P. (2020). Capturing Bonding, Bridging, and Linking Social Capital through Publicly Available Data. *Risk, Hazards & Crisis in Public Policy*, 11(1), 61–86. <https://doi.org/10.1002/rhc3.12183>
- Lambrou, N., & Loukaitou-Sideris, A. (2022). Resilience plans in the US: An evaluation. *Journal of Environmental Planning and Management*, 65(5), 809–832. <https://doi.org/10.1080/09640568.2021.1904849>
- Lane, H. M., Morello-Frosch, R., Marshall, J. D., & Apte, J. S. (2022). Historical Redlining Is Associated with Present-Day Air Pollution Disparities in U.S. Cities. *Environmental Science & Technology Letters*, 9(4), 345–350. <https://doi.org/10.1021/acs.estlett.1c01012>
- Laurian, L., Walker, M., & Crawford, J. (2017). Implementing Environmental Sustainability in Local Government: The Impacts of Framing, Agency Culture, and Structure in US Cities and Counties. *International Journal of Public Administration*, 40(3), 270–283. <https://doi.org/10.1080/01900692.2015.1107738>
- Lee, A. H.-Y. (2022). Social Trust in Polarized Times: How Perceptions of Political Polarization Affect Americans' Trust in Each Other. *Political Behavior*, 44(3), 1533–1554. <https://doi.org/10.1007/s11109-022-09787-1>

- Leitner, H., Sheppard, E., Webber, S., & Colven, E. (2018). Globalizing urban resilience. *Urban Geography*, 39(8), 1276–1284. <https://doi.org/10.1080/02723638.2018.1446870>
- Lewthwaite, S., & Nind, M. (2016). Teaching Research Methods in the Social Sciences: Expert Perspectives on Pedagogy and Practice. *British Journal of Educational Studies*, 64(4), 413–430. <https://doi.org/10.1080/00071005.2016.1197882>
- Li, J., & Spidalieri, K. (2021). Home is where the safer ground is: The need to promote affordable housing laws and policies in receiving communities. *Journal of Environmental Studies and Sciences*, 11(4), 682–695. <https://doi.org/10.1007/s13412-021-00702-4>
- Lingard, L. (2019). Beyond the default colon: Effective use of quotes in qualitative research. *Perspectives on Medical Education*, 8(6), 360–364. <https://doi.org/10.1007/s40037-019-00550-7>
- Lioubimtseva, E., & da Cunha, C. (2022). Community Engagement and Equity in Climate Adaptation Planning: Experience of Small- and Mid-Sized Cities in the United States and in France. In B. Petersen & H. B. Ducros (Eds.), *Justice in Climate Action Planning* (pp. 257–276). Springer International Publishing. https://doi.org/10.1007/978-3-030-73939-3_13
- Lynch, A., LoPresti, A., Fox, C. (2019): The 2019 US Cities Sustainable Development Report. New York: Sustainable Development Solutions Network (SDSN).
- MacGillivray, B. H. (2018). Beyond social capital: The norms, belief systems, and agency embedded in social networks shape resilience to climatic and geophysical hazards. *Environmental Science & Policy*, 89, 116–125. <https://doi.org/10.1016/j.envsci.2018.07.014>
- Mack, N., Woodson, C., MacQueen, K. M., & Guest, G. (2005). *Qualitative research methods*. Family Health International.
- Madsen, W., & O'Mullan, C. (2014). 'Knowing me, knowing you': Exploring the effects of a rural leadership programme on community resilience. *Rural Society*, 23(2), 115–160. <https://doi.org/10.5172/rsj.2014.23.2.151>
- Makridis, C. A., & Wu, C. (2021). How social capital helps communities weather the COVID-19 pandemic. *PLOS ONE*, 16(1), e0245135. <https://doi.org/10.1371/journal.pone.0245135>
- Mandarano, L. (2015). Civic Engagement Capacity Building: An Assessment of the Citizen Planning Academy Model of Public Outreach and Education. *Journal of Planning Education and Research*, 35. <https://doi.org/10.1177/0739456X14566869>
- Manzi, T., Lucas, K., Jones, T. L., & Allen, J. (2010). *Social Sustainability in Urban Areas: Communities, Connectivity and the Urban Fabric*. Routledge.
- Masik, G., & Gajewski, R. (2021). Working towards urban capacity and resilience strategy implementation: Adaptation plans and strategies in Polish cities. *Cities*, 119, 103381. <https://doi.org/10.1016/j.cities.2021.103381>
- Mason, J. (2017). *Qualitative Researching*. SAGE.
- Masterson, J. H., Peacock, W. G., Van Zandt, S. S., Grover, H., Schwarz, L. F., & Cooper, J. T. (2014). Assessing Physical Vulnerability. In J. H. Masterson, W. G. Peacock, S. S. Van Zandt, H. Grover, L. F. Schwarz, & J. T. Cooper (Eds.), *Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters* (pp. 83–96). Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-586-1_5
- Mayunga, J. S. (2007). *Understanding and Applying the Concept of Community Disaster Resilience: A capital-based approach*.

- McEntire, D. A. (2009). Emergency management in the United States: Disasters experienced, lessons learned, and recommendations for the future. *Comparative Emergency Management: Understanding Disaster Policies, Organizations, and Initiatives from Around the World*. <http://training.fema.gov/EMIWeb/edu/CompEmMgmtBookProject.asp>. Federal Emergency Management Agency: Emmitsburg, MD.
- McTarnaghan, S., Morales-Burnett, J., & Marx, R. (n.d.). *Urban Resilience: From Global Vision to Local Practice*.
- Meerow, S., & Newell, J. P. (2019). Urban resilience for whom, what, when, where, and why? *Urban Geography*, 40(3), 309–329. <https://doi.org/10.1080/02723638.2016.1206395>
- Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. *Landscape and Urban Planning*, 147, 38–49. <https://doi.org/10.1016/j.landurbplan.2015.11.011>
- Mehryar, S., Sasson, I., & Surminski, S. (2022). Supporting urban adaptation to climate change: What role can resilience measurement tools play? *Urban Climate*, 41, 101047. <https://doi.org/10.1016/j.uclim.2021.101047>
- Mendizabal, M., Heidrich, O., Feliu, E., García-Blanco, G., & Mendizabal, A. (2018). Stimulating urban transition and transformation to achieve sustainable and resilient cities. *Renewable and Sustainable Energy Reviews*, 94, 410–418. <https://doi.org/10.1016/j.rser.2018.06.003>
- Mpanje, D., Gibbons, P., & McDermott, R. (2018). Social capital in vulnerable urban settings: An analytical framework. *Journal of International Humanitarian Action*, 3(1), 4. <https://doi.org/10.1186/s41018-018-0032-9>
- NCDP. (2023, May 19). *US Natural Hazards Index*. National Center for Disaster Preparedness. Retrieved May 25, 2023, from <https://ncdp.columbia.edu/library/mapsmapping-projects/us-natural-hazards-index/>
- NJEJA. (n.d.). New Jersey Environmental Justice Alliance (NJEJA) FAQ. In *NJEJA.org*. New Jersey Environmental Justice Alliance (NJEJA). Retrieved June 20, 2023, from https://www.njeja.org/wp-content/uploads/2019/10/FAQ_EJ_CumulativelImpacts.pdf
- Olazabal, M., & Ruiz De Gopegui, M. (2021). Adaptation planning in large cities is unlikely to be effective. *Landscape and Urban Planning*, 206, 103974. <https://doi.org/10.1016/j.landurbplan.2020.103974>
- Omona, J. (2013). Sampling in qualitative research: Improving the quality of research outcomes in higher education. *Makerere Journal of Higher Education*, 4(2), 169–185.
- Ostrom, E. (2009). A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science*, 325(5939), 419–422. <https://doi.org/10.1126/science.1172133>
- O’Sullivan, T. L., Kuziemsky, C. E., Corneil, W., Lemyre, L., & Franco, Z. (2014). The EnRiCH Community Resilience Framework for High-Risk Populations. *PLoS Currents*, 6, ecurrents.dis.11381147bd5e89e38e78434a732f17db. <https://doi.org/10.1371/currents.dis.11381147bd5e89e38e78434a732f17db>
- Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change*, 19(3), 354–365. <https://doi.org/10.1016/j.gloenvcha.2009.06.001>
- Panday, S., Rushton, S., Karki, J., Balen, J., & Barnes, A. (2021). The role of social capital in disaster resilience in remote communities after the 2015 Nepal earthquake. *International Journal of Disaster Risk Reduction*, 55, 102112. <https://doi.org/10.1016/j.ijdrr.2021.102112>
- Passel, J., & Cohn, D. (2019). Most U.S. unauthorized immigrants live in just 20 metro areas. *Pew Research Center*. <https://www.pewresearch.org/short-reads/2019/03/11/us-metro-areas-unauthorized-immigrants/>

- Pfefferbaum, B., Van Horn, R. L., & Pfefferbaum, R. L. (2017). A Conceptual Framework to Enhance Community Resilience Using Social Capital. *Clinical Social Work Journal*, 45(2), 102–110. <https://doi.org/10.1007/s10615-015-0556-z>
- Pflieger, G., & Rozenblat, C. (2010). Introduction. Urban Networks and Network Theory: The City as the Connector of Multiple Networks. *Urban Studies*, 47(13), 2723–2735.
- PJM Cities and Communities Coalition*. (n.d.). World Resources Institute. <https://www.wri.org/initiatives/pjm-cities-and-communities-coalition>
- Port of Tacoma. (n.d.). https://www.cityoftacoma.org/government/city_departments/community_and_economic_development/economic_development_services/port_of_tacoma
- Putnam, R. D. (1995). Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America. *PS: Political Science & Politics*, 28(4), 664–683. <https://doi.org/10.2307/420517>
- Raetz, H., & Hedman, C. (2021). Housing characteristics of small and mid-sized cities. *The Stoop-NYU Furman Center*. Retrieved on May 3, 2023.
- Rangwala, L., & Chandra, M. (n.d.). *IMPLEMENTING THE URBAN COMMUNITY RESILIENCE ASSESSMENT (UCRA) IN THREE COMMUNITIES IN SURAT CITY*.
- Rebotier, J., Pigeon, P., & Glantz, M. H. (2021). Learning from Past Disasters to Prepare for the Future. In S. Eslamian & F. Eslamian (Eds.), *Handbook of Disaster Risk Reduction for Resilience: New Frameworks for Building Resilience to Disasters* (pp. 79–105). Springer International Publishing. https://doi.org/10.1007/978-3-030-61278-8_4
- Reidmiller, D. R., Avery, C. W., Easterling, D. R., Kunkel, K. E., Lewis, K. L. M., Maycock, T. K., & Stewart, B. C. (2018). Fourth national climate assessment. *Volume II: Impacts, Risks, and Adaptation in the United States*, 440.
- Resilient Cities Network. (2022, October 25). *Member Cities - Resilient Cities Network*. Retrieved February 22, 2023, from https://resilientcitiesnetwork.org/member-cities/?_sft_regions=north-america
- Romero-Lankao, P., Gnatz, D. M., Wilhelmi, O., & Hayden, M. (2016). Urban Sustainability and Resilience: From Theory to Practice. *Sustainability*, 8(12), Article 12. <https://doi.org/10.3390/su8121224>
- Rucker, J. M., & Richeson, J. A. (2021). Toward an understanding of structural racism: Implications for criminal justice. *Science*, 374(6565), 286–290. <https://doi.org/10.1126/science.abj7779>
- Saja, A. M. A., Teo, M., Goonetilleke, A., & Ziyath, A. M. (2018). An inclusive and adaptive framework for measuring social resilience to disasters. *International Journal of Disaster Risk Reduction*, 28, 862–873. <https://doi.org/10.1016/j.ijdr.2018.02.004>
- Schauppenlehner-Kloyber, E., & Penker, M. (2016). Between Participation and Collective Action—From Occasional Liaisons towards Long-Term Co-Management for Urban Resilience. *Sustainability*, 8(7), 664. <https://doi.org/10.3390/su8070664>
- Schoch-Spana, M., Gill, K., Hosangadi, D., Slemph, C., Burhans, R., Zeis, J., Carbone, E. G., & Links, J. (2019). The COPEWELL Rubric: A Self-Assessment Toolkit to Strengthen Community Resilience to Disasters. *International Journal of Environmental Research and Public Health*, 16(13), Article 13. <https://doi.org/10.3390/ijerph16132372>
- Selvaratnam, T., Haselbach, L., Eren-Tokgoz, B., Gummelt, G., Boudreaux, K., Williams, B. D., Pyne, M. I., & Linkov, I. (2023). Establishing a regional interdisciplinary resilience center: A bottom-up approach. *Environment Systems and Decisions*. <https://doi.org/10.1007/s10669-023-09898-y>

- Shahid, M., Rana, I. A., Jamshed, A., Najam, F. A., Ali, A., & Aslam, A. (2022). Quantifying the role of social capital for enhancing urban resilience against climate crisis: Empirical evidence from formal and informal settlements of Pakistan. *Cities*, 130, 103851. <https://doi.org/10.1016/j.cities.2022.103851>
- Sharifi, A. (2016). A critical review of selected tools for assessing community resilience. *Ecological Indicators*, 69, 629–647. <https://doi.org/10.1016/j.ecolind.2016.05.023>
- Sharifi, A., & Yamagata, Y. (2018). Resilience-Oriented Urban Planning. In Y. Yamagata & A. Sharifi (Eds.), *Resilience-Oriented Urban Planning: Theoretical and Empirical Insights* (pp. 3–27). Springer International Publishing. https://doi.org/10.1007/978-3-319-75798-8_1
- Siisiainen, M. (2003). Two concepts of social capital: Bourdieu vs. Putnam. *International journal of contemporary sociology*, 40(2), 183-204.
- Smith, J. W., Anderson, D. H., & Moore, R. L. (2012). Social Capital, Place Meanings, and Perceived Resilience to Climate Change*. *Rural Sociology*, 77(3), 380–407. <https://doi.org/10.1111/j.1549-0831.2012.00082.x>
- Sobelson, R. K., Wigington, C. J., Harp, V., & Bronson, B. B. (2015). A whole community approach to emergency management: Strategies and best practices of seven community programs. *Journal of Emergency Management (Weston, Mass.)*, 13(4), 349–357. <https://doi.org/10.5055/jem.2015.0247>
- Spaans, M., & Waterhout, B. (2017). Building up resilience in cities worldwide – Rotterdam as participant in the 100 Resilient Cities Programme. *Cities*, 61, 109–116. <https://doi.org/10.1016/j.cities.2016.05.011>
- Spidalieri, K., Ghosh, S., McCormick, K., Li, J., & Georgetown Climate Center. (2022). Greaxing Resilience at Home: A Collection of Lessons and Case Studies from Louisiana and Beyond. In <https://www.adaptationclearinghouse.org/>. Adaptation Clearinghouse. Retrieved June 3, 2023, from https://www.georgetownclimate.org/files/Louisiana%20Regional%20Vision/Greaxing_Resilience_Full_Case_Studies.pdf
- Star-Ledger Editorial Board. (2021, May). *Newark teaches America a lesson on lead pipes – and hiring local | Editorial*. Nj.Com. <https://www.nj.com/opinion/2021/05/newark-teaches-america-a-lesson-on-lead-pipes-and-hiring-local-editorial.html>
- Stewart, J. (2012). Multiple-case Study Methods in Governance-related Research. *Public Management Review*, 14(1), 67–82. <https://doi.org/10.1080/14719037.2011.589618>
- Stukas, A. A., Snyder, M., & Clary, E. G. (2016). Understanding and encouraging volunteerism and community involvement. *The Journal of Social Psychology*, 156(3), 243–255. <https://doi.org/10.1080/00224545.2016.1153328>
- Summers, J. K., Harwell, L. C., Smith, L. M., & Buck, K. D. (2018). Measuring Community Resilience to Natural Hazards: The Natural Hazard Resilience Screening Index (NaHRSI)—Development and Application to the United States. *GeoHealth*, 2(12), 372–394. <https://doi.org/10.1029/2018GH000160>
- Tang, H.-T., & Lee, Y.-M. (2016). The Making of Sustainable Urban Development: A Synthesis Framework. *Sustainability*, 8(5), Article 5. <https://doi.org/10.3390/su8050492>
- The Rockefeller Foundation. (2023, February 7). *100 Resilient Cities - The Rockefeller Foundation*. Retrieved February 22, 2023, from <https://www.rockefellerfoundation.org/100-resilient-cities/>
- Thompson, J. H. (2014). The United States Census Bureau.
- Thriving Cities Group. (n.d.). *History*. Retrieved June 18, 2023, from <https://thrivingcitiesgroup.com/history-1>
- Tocqueville, A. de. (1835). *Democracy in America*. Regnery Publishing.

- University of Notre Dame. (2018). *Climate Vulnerability of UAA Cities*. Notre Dame Global Adaptation Initiative (NDGAIN). Retrieved February 1, 2023, from <https://gain-uaa.nd.edu/matrix/>
- University of Notre Dame. (n.d.). *Methodology*. Notre Dame Global Adaptation Initiative (NDGAIN). Retrieved March 6, 2023, from <https://gain.nd.edu/our-work/urban-adaptation/methodology/>
- Vâlsan, C., Goschin, Z., & Druică, E. (2023). The Measurement of Social Capital in America: A Reassessment. *Social Indicators Research*, 165(1), 135–161. <https://doi.org/10.1007/s11205-022-03007-3>
- Vasseur, L., Thornbush, M. J., & Plante, S. (2022). Engaging Communities in Adaptation to Climate Change by Understanding the Dimensions of Social Capital in Atlantic Canada. *Sustainability*, 14(9), Article 9. <https://doi.org/10.3390/su14095250>
- Verschuren, P., & Doorewaard, H. (2010). *Designing a Research Project*.
- Wardekker, A., Wilk, B., Brown, V., Uittenbroek, C., Mees, H., Driessen, P., Wassen, M., Molenaar, A., Walda, J., & Runhaar, H. (2020). A diagnostic tool for supporting policymaking on urban resilience. *Cities*, 101, 102691. <https://doi.org/10.1016/j.cities.2020.102691>
- White, R. K., Edwards, W. C., Farrar, A., & Plodinec, M. J. (2015). A Practical Approach to Building Resilience in America's Communities. *American Behavioral Scientist*, 59(2), 200–219. <https://doi.org/10.1177/0002764214550296>
- Wilkin, J., Biggs, E., & Tatem, A. J. (2019). Measurement of Social Networks for Innovation within Community Disaster Resilience. *Sustainability*, 11(7), Article 7. <https://doi.org/10.3390/su11071943>
- Willig, C., & Rogers, W. S. (2017). *The SAGE Handbook of Qualitative Research in Psychology*. SAGE.
- Wilson, G. (2010). Multifunctional 'quality' and rural community resilience. *Transactions of the Institute of British Geographers*, 35(3), 364–381. <https://doi.org/10.1111/j.1475-5661.2010.00391.x>
- Woodruff, S., Bowman, A., Feiock, R., Hannibal, B., Kang, K. E., Oh, J., & Sansom, G. (2020). *Resilience in US Cities: A survey of policies & programs*.
- Woodruff, S., Bowman, A. O., Hannibal, B., Sansom, G., & Portney, K. (2021). Urban resilience: Analyzing the policies of U.S. cities. *Cities*, 115, 103239. <https://doi.org/10.1016/j.cities.2021.103239>
- Woodruff, S., Meerow, S., Stults, M., & Wilkins, C. (2022). Adaptation to Resilience Planning: Alternative Pathways to Prepare for Climate Change. *Journal of Planning Education and Research*, 42(1), 64–75. <https://doi.org/10.1177/0739456X18801057>
- Woodruff, & Stults, M. (2016). Numerous strategies but limited implementation guidance in US local adaptation plans. *Nature Climate Change*, 6(8), Article 8. <https://doi.org/10.1038/nclimate3012>
- Woolcock, M. (2001). *The Place of Social Capital in Understanding Social and Economic Outcomes*.
- World Population Review. (n.d.a). *Pasadena, Texas Population 2023*. Retrieved May 24, 2023, from <https://worldpopulationreview.com/us-cities/pasadena-tx-population>
- World Population Review. (n.d.b). *Fontana, California Population 2023*. Retrieved May 24, 2023, from <https://worldpopulationreview.com/us-cities/fontana-ca-population>
- Yin, R. K. (2009). *Case Study Research: Design and Methods*. SAGE.

Appendices

Appendix A

Table 31: Prospective Cities (University of Notre Dame, 2018)

| Region | Count of City |
|--------------------|---------------|
| Caribbean | 4 |
| Mid-Atlantic | 6 |
| Midwest | 4 |
| New England | 5 |
| Pacific | 2 |
| Rocky Mountains | 1 |
| Southeast | 12 |
| Southwest | 9 |
| West Coast | 33 |
| Grand Total | 76 |

Appendix B

Table 32: Case Description Data Sources

| Background Information | Source |
|---|---------------------------------|
| State | |
| Region | Thompson (2014) |
| County | Data USA (n.d.a-n.d.d) |
| Population (2020) | Data USA (n.d.a-n.d.d) |
| # of Households | Data USA (n.d.a-n.d.d) |
| 2020 Median Household Income (\$) | Data USA (n.d.a-n.d.d) |
| Political Party (Mayor) | Data USA (n.d.a-n.d.d) |
| Political Party (State) | Data USA (n.d.a-n.d.d) |
| 2018 Poverty Rate | Data USA (n.d.a-n.d.d) |
| Top 3 Ethnic Groups | Data USA (n.d.a-n.d.d) |
| % of Ethnic Groups | Data USA (n.d.a-n.d.d) |
| NDGAIN Risk | University of Notre Dame (2018) |
| NDGAIN Readiness | University of Notre Dame (2018) |
| Top 3 Hazard Risks | NCDP (2023) |
| Most Recent Declared Hazard (Public assistance activated in county) | FEMA (n.d.a-n.d.f) |

Appendix C

Table 33: Case Study Interview Guide

| Concept | Q1 - Probe | Q2 - Mediation | Q3 - Operationalization |
|------------------------------|--|--|--|
| Network Strength | Can you tell me about the kinds of social groups (organizations, businesses, NGOs) that are important in the city? | What kind of interactions or relationships does the city have with these groups? | What important regional/state networks does the city belong to? |
| Network Collaboration | In your work, what kinds of partnerships exist with the social groups you mentioned? | Can you tell me about the process by which collaborations are formed & maintained? | What are some barriers to setting up meaningful and lasting partnerships? |
| Governance Capacity | Do you feel that you have the capacity internally to execute your goals within the city? | How do departments work together to embed these values and stay aligned? | What kinds of tools, and frameworks help you get your work done? |
| Participation and Engagement | How do you approach citizen involvement in decision-making and engagement? | How do you measure/track citizen feedback and public opinions? | What are some successes/failures in terms of participation and engagement? |
| Vision | What are the main goals, priorities, and values that the city is focusing on? | What is the city doing proactively to manage obstacles? | What are some examples of how the city has overcome past challenges, and what decisions/leaders/programs were key? |
| Collective Learning | How does the city distribute resources to educate citizens on important matters (disaster preparedness, policies, politics)? | Who else is involved in learning efforts? | What are some successful channels for outreach/education? What doesn't work? |
| Equity & Justice | Who are the most vulnerable groups in the city and what are their main challenges? | In your work, how are these groups addressed? How are their voices represented? | What does the city do well in terms of diversity/inclusion? What are the barriers to increasing equity? |
| Social Cohesion | What is the social fabric of the city like and how do people interact with each other? | How does the city facilitate a strong, supportive community? | What are the best practices for strengthening community (increasing neighborliness & connectedness)? |

Appendix D

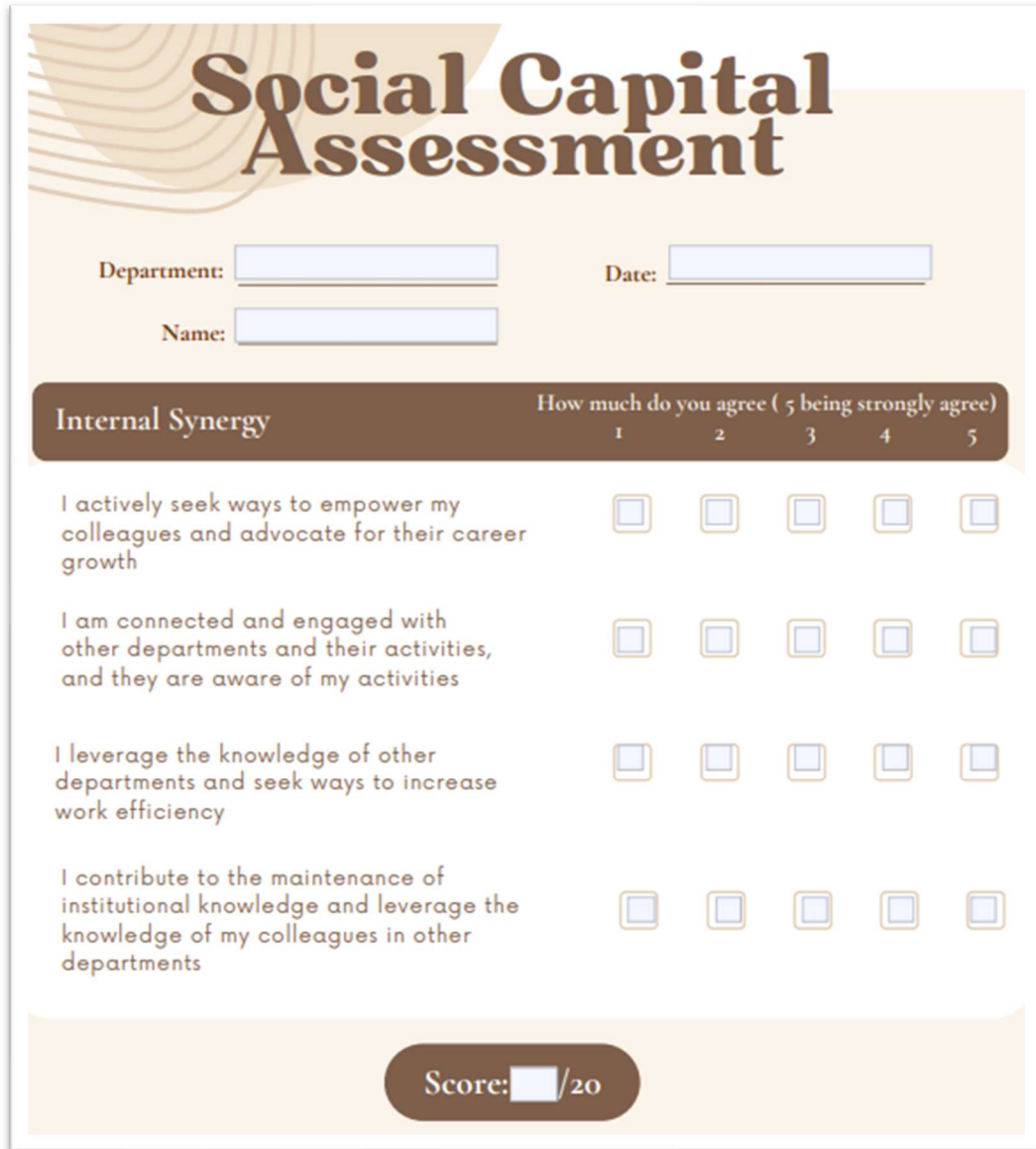
Table 34: Current tools utilized by interviewees

| Cities | Tools Mentioned |
|----------|---|
| Tacoma | Equity Map, Salesforce, Accella, USDN Toolkit |
| Newark | Non-Profit Happy Hour |
| Pasadena | |
| Fontana | CoStar Economy, JobsEQ, Chmura, Placer, ESRI |

Appendix E

[Link to downloadable PDF here.](#)

E-mail acfujika@gmail.com for any questions or issues



Social Capital Assessment

Department: Date:

Name:

Internal Synergy How much do you agree (5 being strongly agree)

| | 1 | 2 | 3 | 4 | 5 |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| I actively seek ways to empower my colleagues and advocate for their career growth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I am connected and engaged with other departments and their activities, and they are aware of my activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I leverage the knowledge of other departments and seek ways to increase work efficiency | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I contribute to the maintenance of institutional knowledge and leverage the knowledge of my colleagues in other departments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Score: /20

Figure 6: PDF Snapshot of the tool