Just Resilience?

Evaluating Equity and Justice in a Sample of 100 Resilient Cities Plans

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Resilience has become an increasingly prominent discourse within urban planning to address the sustainability challenges faced by many urban areas. Resilience offers a framework to holistically approach environmental, economic, and social issues simultaneously, thus appealing to a wide range of actors. The language of resilience largely corresponds to risk reduction and as such can be used to address the many stresses and shocks within a city. This thesis explores how resilience can be used as an opportunity to redress social inequities and injustices. I examine the plans of the cities in the United States involved in the 100 Resilient Cities network. I explore the discourses of procedural, social, geographic, and economic equity within these resilience plans. I examine who may benefit from the actions within these plans, focusing on whether vulnerable and disadvantaged populations are considered. I also outline the implementation structure of the plans in terms of project leads, funding, timelines, and the potential impact these actions may have in addressing inequalities.

Using critical discourse analysis, I examine how these resilience plans discuss social justice, power, and systemic inequality. These plans largely accept resilience as a universally beneficial concept. While the plans do recognize differences in vulnerability, action is lacking in remedying the long-standing inequities and injustices that have produced this vulnerability. While these plans have gone further to address inequities than the sustainability, disaster management, and climate change literature discuss, resilience continues to be framed as a return to an improved normal and not as an opportunity for transformative change. Each city must consider procedural and substantive justice for resilience planning to produce this transformative change.

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1. Introduction

1.1 Research Context

Given the sustainability challenges faced by many urban areas, a framework is needed to holistically approach environment, economy, and society simultaneously. Resilience is becoming an increasingly used discourse within urban planning to address such challenges. Coaffee and Lee (2016) discuss the ability of resilience to consider multiple hazards and risks. Its large scope and interdisciplinarity correspond with the broad approach of comprehensive planning and sustainability. However, this approach leads to questions of what resilience actually means in practice. Similar to the critiques of sustainability, resilience has been interpreted in many ways and each interpretation considers success differently. This thesis examines how resilience can be used as an opportunity to redress social inequities and injustices. In particular, it looks at the plans of the 100 Resilient Cities initiative in the United States.

Cities have largely been the focus of the resilience conversation in planning due to the concentration of risk within cities. The language of resilience largely corresponds to risk reduction and as such can be used to address the many stresses and shocks within a city. Local governments are able to use land use planning as a tool for resilience. Anguelovski et al. (2016) explain that planning is an important tool, as its connection to local residents and geographies offers an opportunity for contextualized responses to local vulnerabilities. Furthermore, many city governments are increasingly engaging in global networks in response to inaction and downloading of responsibility from higher levels of government. 100 Resilient Cities is one such network that offers an opportunity to push the resilience agenda forward.

Gotham and Greenberg (2014) explain that this downloading of responsibility is a "rescaling of risk", whereby governments take a reduced role in the redistribution of societal welfare. Resilience may be accepted as a universally beneficial concept that is equally shared by all, however the implications of policy actions may actually reproduce social inequalities. Instead, Pellow (2016) advocates for a "just resilience" in order for policies to commit to equity. In this context, resilience is not simply about bouncing back to a previous state, but bouncing forward to a more equitable society.

The purpose of this study is to examine whether resilience is framed as an opportunity to redress social inequities and injustices in a sample of specific plans. In other words, I seek to understand whether resilience is framed as a return to normalcy or the transformation of society. I ask the question: How is urban resilience presented as an opportunity to address social inequities in the 100 Resilient Cities plans? More specifically, I examine how the plans frame issues of procedural, social, geographic, and economic equity. I look at who or what benefits from moves toward resilience, especially in terms of populations considered vulnerable. Lastly, I question how successful these plans may be in addressing inequities throughout their implementation.

In this research I take a qualitative approach to examine the different framings of resilience and social equity. I use critical discourse analysis to determine the implications and meanings behind the text. In particular, I examine the considerations of social justice, power, and systemic inequality inherent in the text. To do so, I group the content of the plans into common themes to determine the common as well as the rare discourses. This study looks only at the fully completed resilience plans of cities in the United States that are part of the 100 Resilient Cities

network plans. These cities include: Atlanta, Berkeley, Boston, Boulder, El Paso, New Orleans, New York, Norfolk, Oakland, Pittsburgh, and San Francisco.

1.2 100 Resilient Cities Context

100 Resilient Cities is a network that was initiated by the Rockefeller Foundation in 2013. The first group of cities was selected in 2013, the second round in 2014, and the third round in 2016 from a pool of over 1000 city applicants (100 Resilient Cities [100 RC], 2018a). Expert judges decide which cities are included in the network based on "innovative mayors, a recent catalyst for change, a history of building partnerships, and ability to work with a wide range of stakeholders" (100 RC, 2018a, "Our History"). By engaging in this network, cities are provided with resources and support, thereby overcoming a major barrier in plan-making. 100 Resilient Cities provides financial and logistical guidance for a Chief Resilience Officer, support in the development of the resilience strategy, engagement in a global network of cities, and access to partners (100 RC, 2018a). This approach thereby takes advantage of network governance by engaging with other municipalities as well as private-sector and not-for-profit organizations to enable cities to develop and implement their resilience plans.

The Rockefeller Foundation's focus on cities is justified by the same reasons as outlined in the literature. 100 Resilient Cities explains the focus on cities is due to the large concentration of residents in cities as a result of urbanization as well as the pressures on cities from global forces (100 RC, 2018b). Cities can be considered as complex systems, thus a focus on resilience can address the multiple components of these systems. 100 Resilient Cities selection criteria focuses on cities that are already leaders and as such the chosen cities are largely global cities already taking action and not necessarily those cities in the most need of support.

100 Resilient Cities explains that resilience goes beyond and incorporates both sustainability and disaster risk reduction (100 RC, 2018b). Urban resilience is defined by 100 Resilient Cities as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience" (100 RC, 2018c, "What is Urban Resilience?"). Chronic stresses "weaken the fabric of a city on a day-to-day or cyclical basis", whereas acute shocks are "sudden, sharp events that threaten a city" (100 RC, 2018c, "What is Urban Resilience?"). This definition closely corresponds with definitions in the literature and considers both stresses and shocks as disturbances to which the city must respond (e.g. Desouza & Flanery, 2013; Meerow, Newell, and Stults, 2016). It is recognized that systems are capable of change and learning in order to adapt to disturbances. Furthermore, 100 Resilient Cities recognizes many characteristics of resilience by considering resilient systems as reflective, resourceful, robust, redundant, flexible, inclusive, and integrated (100 RC, 2018c). With the assistance of the global design firm Arup, 100 Resilient Cities designed a City Resilience Framework as a tool to achieve resilience. This framework is broken down into four categories shown in Table 1. These categories address environmental, economic, and social elements of resilience.

Table 1: City Resilience Framework

Leadership & Strategy	Promote leadership and effective management
	Empower a broad range of stakeholders
	Foster long-term and integrated planning
Health & Wellbeing	Meets basic needs
	Supports livelihoods and employment
	Ensures public health services
Economy & Society	Promote cohesive and engaged communities

	Ensure social stability, security, and justice
	Foster economic prosperity
Infrastructure & Environment	Provide and enhances protective natural and man-made assets
	Ensure continuity of critical services
	Provide reliable communication and mobility

Adapted from 100 RC, 2018c, "The City Resilience Framework".

1.3 Overview of Thesis

This thesis is divided into seven main chapters. The first chapter introduced the research context and purpose of the study. The second chapter discusses the relevant literature on the implications for equity and justice within definitions of resilience and sustainability, conceptions of environmental, procedural, and distributive justice, and resilience planning in practice. The third chapter outlines the method used in this study. Chapters four through six describe and analyze the findings. Chapter four examines the discourses of equity and justice within the resilience plans. Chapter five examines who benefits from resilience. Chapter six outlines the implementation of the plans in terms of project leads, funding, and timelines, resilience-related issues, and a resilience typology. Finally, the seventh chapter concludes the study with future directions and recommendations on how resilience can more adequately address equity and justice.

2. Literature Review

2.1 Conceptions of Resilience and Sustainability

2.1.1 Definitions of Resilience

Resilience is a multidisciplinary issue (Bhamra, Dani, & Burnard, 2011). As such, a variety of fields use the term. Resilience is a commonly used term in fields such as engineering, ecology, disaster and emergency planning and recovery, climate change mitigation and adaptation, economic development, business continuity, psychology, and health (Shaw & Maythorne, 2013; Wilkinson, 2011). Most relevant to this study is resilience in socioecological systems. Meerow et al. (2016) explain that modern resilience theory comes from Holling (1973) in an ecological context where resilience refers to ecosystems' abilities to continue to function when faced with change. Adger (2006, pp. 268-269) defines socioecological resilience as "the magnitude of disturbance that can be absorbed before a system changes to a radically different state as well as the capacity to self-organise and the capacity for adaptation to emerging circumstances". Meerow et al. (2016) add that resilience also includes the system's ability to maintain or return to a desired state given a disturbance. Socioecological resilience thus involves the capability to absorb stress and disturbance as well as the ability to adapt to change.

Cartalis (2014) explains that resilience can be viewed as the ability of a system to return to a stable equilibrium after a disruption, whereas a non-equilibrium perspective views resilience as the capacity of a system to adapt and adjust to changing processes. Meerow et al. (2016) explain that there are different interpretations of equilibrium in the resilience literature. Single-state equilibrium occurs when a system returns to its previous equilibrium after a disturbance, which is the dominant framing in engineering, disaster management, psychology, and economics. Multiple-state equilibrium is when a system has different stable states and is

transformed from one point of stability to another during a disturbance. Non-equilibrium systems do not have a stable-state and constantly undergo change. Meerow et al. (2016) discuss that conceptions of urban resilience have used a non-equilibrium understanding of resilience, recognizing the constant change within cities.

Equilibrium perspectives of resilience assume that returning to the previous state is positive. On the other hand, evolutionary perspectives of resilience stress and encourage flexibility and adaptability of systems (Coaffee & Lee, 2016). Adaptability ensures a system is able to continue in times of stress by being able to face uncertainty (Desouza & Flanery, 2013). Gotham and Greenberg (2014, p. 232) argue that resilient systems are able to "adapt to uncertainty and surprise; absorb recurrent disturbances; retain essential structures and processes; and build capacity for learning, improvement, and advancement over predisturbance conditions". It is this ability to learn from experiences and adapt to new and changing circumstances that allows a system to be proactive in the future (Joseph, 2013; Meerow et al., 2016; Sovacool and Linnér, 2016). Matyas and Pelling (2015) explain that individuals and societies have the capacity for this learning. Redundancy can also assist systems in increasing proactivity through a backup plan and to deal with the additional capacity of systems (Coaffee & Lee, 2016; Desouza & Flanery, 2013).

Handmer and Dovers (1996) and Matyas and Pelling (2015) divide actions to increase resilience into three categories: resistance/maintenance, incremental actions, and transformation. According to Handmer and Dovers (1996), resistance actions maintain the status quo and existing power structures, and as such lack flexibility and adaptability. Matyas and Pelling (2015) explain that resistance may be stable, but is also vulnerable to sudden collapse. Torabi, Dedekorkut-Howes, and Howes (2017) explain this approach as a "coping approach" that

restores current ways of life. Incremental adjustments allow for slight changes while continuing with normal system functions (Matyas & Pelling, 2015). Handmer and Dovers (1996) explain this approach as "change at the margins", which acknowledges the problem and makes minor changes, but does not address the underlying causes. Pelling, O'Brien, and Matyas (2015) agree that incremental changes avoid deep rooted change, which may delay transformation and according to Handmer and Dovers (1996) create a false sense of security.

Transformative actions address deep-rooted issues to challenge systems of power (Matyas & Pelling, 2015). Handmer and Dovers (1996) label transformation as openness and adaptability, recognizing the changes to power structures that address underlying causes of vulnerability. However, these substantial changes may potentially be maladaptive, as they may create instability, be economically inefficient, or appear chaotic (Handmer & Dovers, 1996; Matyas & Pelling, 2015). Maladaptive responses include "inappropriate" solutions that may aim to reduce vulnerability, but have adverse impacts on the vulnerability of other systems or groups (Coaffee & Lee, 2016, p. 74).

2.1.2 Urban Resilience

Urban resilience is similar to socioecological resilience. Meerow et al. defines 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 capacity. (2016, p. 39).

Desouza and Flanery (2013) also recognize the temporal aspect of resilience in terms of uncertainty of what will and should happen and spatial aspect in terms of the multiple scales at which resilience takes place. Leichenko (2011 cited in Bené et al., 2018, p. 119) go into more detail about what may constitute a disturbance, defining urban resilience as "the ability of a city or urban system to withstand a wide array of shocks and stresses". This definition is similar to the 100 Resilient Cities' definition by including both shocks and stresses.

The characteristics of urban areas make them particularly vulnerable to resilience challenges. Risk is concentrated in cities, which makes them vulnerable to these shocks and stresses (Coaffee & Lee, 2016). Cities are at particular risk due to a concentration of people and infrastructure exposed to hazards and extreme weather, such as flooding, heat waves, droughts, and storms (Birkmann, Garschagen, Kraas, & Quang, 2010; Hodson & Marvin, 2010). In addition to these shocks, cities are often vulnerable to stresses, such as uneven development, inequality, poverty, marginalization, segregation, disinvestment, and health insecurity (Chaefer Caniglia, Frank, & Vallée, 2016; Gotham & Greenberg, 2014).

2.1.3 Definitions of Sustainability

Sustainability has been prominent in environmental discourses for decades. The predominant definition of sustainable development includes some variation of describing the three pillars of environment, society, and economy (Finn & McCormick, 2011). To Wilbanks (2003), sustainable development means achieving economic goals while protecting the physical environment. This definition neglects to address the social aspect. Sustainability policy has often neglected to address broader social concerns, especially equity and justice (Finn & McCormick, 2011; Pearsall, 2010). Schrock, Bassett, and Green (2015) explain that as a result, environmental and economic priorities often overshadow social goals. Campbell (1996) explains that economic

growth, environmental protection, and social justice are dependent on each other and should not be thought of as competing interests, often framed as "jobs versus environment" or "people versus nature".

Equity and justice have been embedded into sustainability in many definitions. Steele, MacCallum, Byrne, and Houston (2012) acknowledge that sustainability can incorporate justice through ideas of intergenerational equity, intragenerational equity, and preserving biodiversity. Agyeman, Bullard, and Evans (2003, p.2)'s just sustainability approach recognizes that a "truly sustainable society is one where wider questions of social needs and welfare, and economic opportunity, are integrally connected to environmental concerns". Therefore, for a society to be sustainable, it must also be just. Contrarily, Portney (2013) states that the inclusion of social justice as part of sustainability is largely unexplained and assumed.

Finn and McCormick (2011) propose a more comprehensive definition, referred to as "holistic sustainability" to address the lack of equity in definitions and especially in practice. Holistic sustainability only places a minor focus on the environment, with only two pillars being dedicated to environmental protection. These pillars include environmental protection and green economic development, which means addressing the externalities of economic development. The other four pillars are dedicated to equity. These pillars include procedural equity as the commitment to open and transparent processes, geographic equity as the freedom from environmental harms, social equity as attention to sociological factors, and equitable economic development as the distribution of employment opportunities and wealth.

2.1.4 The Political Nature of Resilience and Sustainability

Resilience and sustainability are often presented as politically neutral concepts with which everyone can agree. In terms of sustainability, Krueger and Gibbs (2007) argue that

despite political orientation, most can agree that the goals of social equity, environmental stewardship, and economic prosperity are admirable. However, both resilience and sustainability have become overused in policy discourses, thereby losing their meaning and becoming buzzwords (Bené et al., 2018; Coaffee & Lee, 2016; Shaw and Maythorne, 2013). Joseph (2013) and Meerow et al. (2015) argue that the definition of resilience lacks clarity and meaning, despite its general acceptance as a desirable goal. Shaw and Maythorne (2013) argue that resilience can be perceived as even more politically neutral than sustainability. For example, in their study of local resilience planning for emergency planning and climate change adaptation in England, a climate change officer explains that despite different interests and professions "everybody cares about resilience" (Shaw & Maythorne, 2013, p. 57).

By treating resilience and sustainability as apolitical discourses, larger issues of inequality are often neglected. Bené et al. (2018, p. 117) argue that there is danger in misusing or abusing the term resilience, as it can be "co-opted to accommodate rather than challenge economic or political status quos that are socially and/or environmentally harmful". Similarly, Fainstein (2015) argues that the large scope of issues means that trade-offs are disguised, thus inadequately addressing questions of political power and the role of the state. Any resilience decision is political, often reinforcing uneven power relations that thus have justice implications (McManus Shrestha, & Yoo, 2014; Shi et al., 2016; Swyngeodouw, 2007).

Meerow et al. (2016) found that most studies on urban resilience define it as a positive concept, however there is an emerging debate as to whether resilience is always positive. Resilience is most likely to neglect power and politics when the single equilibrium definition is used, or resilience is seen as resistance or maintenance. Fainstein (2015, p. 163) argues that "[w]hat exists is seen as normal, and resilience is commonly defined as the creation of a new

normality after disruption". This interpretation of resilience promotes a return to the same and resists change instead of accounting for what state may be the desirable state. When this state is one of inequality, resilience can be used to retain systemic inequality, as power inequities determine whose agenda is prioritized (Joseph, 2013; Meerow et al., 2016). Evolutionary and transformative approaches to resilience can go further in addressing these challenges; however, as Coaffee and Lee (2016) explain, these approaches are rare in practice.

Despite resilience not necessarily being an inherently progressive concept, resilience is displacing sustainability in environmental discourses (Gleeson, 2014/2016). Sustainability focuses on current and future equilibrium, whereas resilience shifts the focus to crisis, threat, disruption and flexibility to adapt to change and uncertainty (Coaffee & Lee, 2016; Gleeson, 2014/2016; Hoffman, 2014). Portney (2013) explains that the focus on resilience is perhaps emerging due to increased focus on climate action and adaptation and disaster management. Furthermore, Wilkinson (2011) is hopeful that the focus on crisis offers an opportunity to address the ecological issues that the sustainability movement has largely failed to improve.

2.2 Constructions of Risk, Hazard, and Vulnerability

2.2.1 Risk and Hazard

Resilience is often used in the disaster literature as a framework for disaster preparedness, response, and recovery. Gotham and Greenberg (2014) explain that crises present an opportunity for political intervention and potentially innovation. Both Füssel (2007) and Wheeler (2012) argue that climate change adaptation efforts are triggered by these extreme events, as natural disasters create a sense of crisis that motivates action. This idea is reflected in Italian climate adaptation plans that conflate adaptation with emergency (Juhola, Keskitalo, & Westerhoff,

2011). Framing resilience in terms of risks and hazards assumes that the greatest threats come from the impacts of shocks, such as from extreme events and climatic events.

In addition to these sudden shocks, resilience must include resilience to stresses. Desouza and Flanery (2013) break down stressors into four categories. Natural stressors include the disaster event. Technological stressors are caused by errors in technical systems. Economic stressors include unemployment, poverty, deteriorating housing and infrastructure, and recession. Human stressors include deliberate acts such as terrorism, war, crime and riots.

Coaffee and Lee (2016) argue that a shock is not confined to a single event, but to the circumstances preceding and the response afterwards. Similarly, to Gotham and Greenberg (2014, p. 6), crisis is the "large-scale and long-term breakdown" after the disaster itself. Gotham and Greenberg summarize,

> the ultimate development of a crisis is dependent upon the underlying *landscape of risk and resilience*, a landscape itself conditioned by the existing degree of inequality and risk and the strength or weakness of social and environmental protections. (2014, p. 6)

Crisis is therefore produced by pre-existing social conditions and not solely the disaster itself.

2.1.2 Social Production of Vulnerability

The vulnerability discourse largely fits within the risk and hazard discourse, as vulnerability is linked to extreme events, disasters, and risk (Füssel, 2007; Sovacool & Linnér, 2016). Vulnerability is not solely determined by physical hazards, but also the larger political economy of society (Adger, 2006; Adger et al., 2006; Eriksen, Nightingale, & Eakin, 2015;

Füssel, 2007; Rumbach & Kudva, 2011; Steele et al., 2012). In fact, physical risk cannot be separated from social inequity, as "hazards become disasters through the filter of economic inequality and social injustice" (Benton-Short & Rennie Short, 2013, p. 226).

Recognizing the social elements of vulnerability, the most comprehensive definitions recognize three aspects of vulnerability: exposure, sensitivity, and adaptive capacity. Adger (2006, p. 269) summarizes the Intergovernmental Panel on Climate Change definition of vulnerability as the "susceptibility to be harmed". Exposure is a system's experience with environmental, social, economic, or political stress (Adger, 2006; Hjerpe & Glaas, 2012; Pearsall, 2010). Berke et al. (2015) explain exposure as the physical vulnerability to hazards based on characteristics of the built environment. Sensitivity is how a system is affected, modified, and/or changed by that stress (Adger, 2006; Hjerpe & Glaas, 2012; Pearsall, 2010). Berke et al. (2015) explain sensitivity as social vulnerability based on characteristics of a certain population.

The characteristics of a certain population are what Young (2000/2016) refers to as social locations in structures. People are differentiated by socioeconomic status, gender, age, ability, race or minority status, indigeneity, education, language, transience, etc. (Agyeman, Schlosberg, Craven, & Matthews, 2016; Berke et al., 2015; Chaefer Caniglia et al., 2016; Hunt & Watkiss, 2011; Steele et al., 2012; Young, 2000/2016). Osborne (2015) argues that intersectionality and kyriarchy further produce vulnerability, as social structures shape vulnerability to natural disasters. Intersectionality identifies the multiple axes of identity that govern relations to power, whereas kyriarchy describes the power structures created by intersectionality (Osborne, 2015). Young (2000/2016) explains that these structures affect spatial distribution, through processes such as racial segregation, that have resulted in concentrated poverty of Blacks and Latinos in the

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United States. The issue with framings of vulnerability is that certain people are labeled as inherently vulnerable due to their position in the social structure, which obscures the systemic challenges that relate to the construction of an individual's vulnerability (Tscharkert, van Oort, St. Clair, & LaMadrid, 2013).

Adaptive capacity is the ability, capacity, or resilience of a system to cope with, adapt to, and withstand stresses and potentially increase how much stress the system can tolerate (Adger, 2006; Hjerpe & Glaas, 2012; Pearsall, 2011; Smit & Pilifosova, 2003; Smit & Wandel, 2006). Adaptive capacity is determined by economic, social, institutional, and technological factors (Smit & Pilifosova, 2003). Chaefer Caniglia et al. explain that socially disadvantaged groups are

> especially at risk in times of shock or change as they lack: the option to avoid, mitigate and adapt to threats posed to the system's social, environmental and cultural integrity; the capacity and freedom to exercise the options that are available to them; and the ability to actively participate in obtaining these options. (2016, p.2).

This statement exemplifies how socially disadvantaged groups may have lower adaptive capacity, as they may be unable to withstand or recover from the stress posed by a shock.

2.3 Environmental Justice

Environmental justice is concerned with both distributive and procedural justice (Pearsall, 2010; Pearsall & Pierce, 2010). The environmental justice movement emerged from several other movements including the civil rights movement, occupational health and safety, indigenous land uses, public health and safety, solidarity, and social and economic justice

movements (Faber & McCarthy, 2003). Environmental justice is based on the concern that environmental issues disproportionately impact particular groups of people, namely low-income and minority communities (Douglas et al., 2012; Portney, 2013). Pellow (2016) explains the first generation of the environmental justice movement as focused on environmental inequality through a lens of race and class, whereas the second generation extends to issues of gender, sexuality, and other categories of difference. As a result of this interdisciplinary history, environmental justice covers a range of topics, including affordable and safe housing, crime and police conduct, employment and living wages, accessible public transportation, and education systems (Faber & McCarthy, 2003).

Pellow (2016) moves beyond traditional discussions of environmental justice to explore critical environmental justice. Critical environmental justice has four dimensions that require consideration. First, social inequality and oppression intersect, as powerful groups maintain domination over less powerful groups. Second, environmental justice is spatial, temporal, and multiscalar. Third, social inequalities are embedded in society and reinforced by power. Last, people of colour must be recognized as indispensable parts of socioecological systems.

2.3.1 Procedural Justice

Procedural justice revolves around the decision-making process. Legitimacy of institutions, transparency of decision-making, and inclusion in the decision-making process are central tenets of procedural justice. The legitimacy of institutions ensures that actions are acceptable to all who are affected by a decision (Adger, Arnell, & Tompkins, 2005; Sovacool & Linnér, 2016). Transparency is essential to avoid corruption in decisions, as it is clear what decisions are made and why, and for creating the conditions to be able to access this information (Eriksen et al., 2011; Sovacool & Linnér, 2016). Discourses of hazard and risk as well as climate

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change adaptation are often framed in technocratic language and as such assume an even distribution of costs and benefits; however, these impacts vary by location and an individual's position in the socioeconomic structure (MacCallum, Bryne, & Steele, 2014; Urry, 2011).

Inclusion involves moving past consultation in decision-making to allow local voices, especially those most affected and most vulnerable, to have the opportunity to meaningfully participate in decision-making processes (Anguelovski et al., 2016; Eriksen et al., 2015; Hughes, 2015; MacCallum et al., 2014; Steele et al., 2012). These inclusive planning processes can improve outcomes by understanding how populations experience the initiative in question to create relevant and culturally accessible information (MacCallum et al., 2014; Pearsall, 2010; Shi et al., 2016; Steele et al., 2012). However, Campbell (1996, p. 303) notes that societies often "view themselves as "fair" if the *procedures* of allocation treat people equally, even if the *substantive* outcome is unbalanced". Furthermore, many authors discuss the lack of procedural equity and justice in practice. For example, in their analysis of PlaNYC, New York's sustainability plan, Finn and McCormick (2011) found a lack of transparency and community engagement in practice despite the document mentioning the importance of participatory planning.

Before local residents can be meaningfully involved, the barriers to involvement need to be addressed (MacCallum et al., 2014; Shi et al., 2016). Labonté, Hadi, & Kauffmann (2012) explain that these barriers include a lack of material resources, income, access to formal labour markets, access to affordable/adequate housing, access to education and health care, opportunities for social participation and networks, the power or voice to affect policy changes, and freedom from discrimination. These processes can lead to social exclusion, defined by Labonté et al. (2012, p. 9) as "a state in which individuals are unable to participate in economic,

social, political and (for some theorists) cultural activities at a level considered to be normatively acceptable".

Even when stakeholders are included in the process, issues of power can determine who is present in discussion and whose voices are heard. Sovacool and Linnér (2016) argue that climate change adaptation has often involved exclusionary decision-making procedures. For instance, Anguelovski et al. (2016) explain that in Santiago and Jakarta, elites and experts were privileged in climate adaptation planning processes, whereas the poor and vulnerable were insufficiently included. As a result of this exclusion, community-based adaptation has become increasingly popular as a way to incorporate local knowledge (Birkmann et al., 2010; Eriksen et al. 2011). Even when groups are offered the opportunity to become involved, access to this opportunity may not be equally accessible.

2.3.2 Distributive Justice

Distributive justice addresses the fair distribution of resources, including access to goods and freedom from harms (Shi et al., 2016; Steele et al., 2012). Steele et al. (2012) also include a redistribution of those resources to those most in need in their conception of distributive justice. Shi et al. (2016) recognize the importance of fair distribution over time and space, thereby recognizing intergenerational as well as spatial aspects of justice. Portney (2013) explains that social justice is often about the maldistribution of resources, such as income and wealth, quality housing, employment opportunities, crime, health and wellbeing, and access to services. Similarly, Campbell (1996, p. 303) proposes "viewing social justice as the striving towards a more equal distribution of resources among social groups across the space of cities and of nations".

This uneven distribution of resources among social groups and across space can contribute to the formation of environmental justice communities, which are considered at greater risk of environmental harms. Banzhaf (2012) argues that poor and minority households are systematically more likely to live in polluted neighbourhoods. Banzhaf (2012) discusses James Hamilton's three categories of explanations for environmental justice correlations in terms of industrial hazards. The first category is "pure discrimination", which involves sheltering White people from pollution and harming minorities. The second is "coming to the nuisance", which occurs when low-income residents move into an area with low land values due to the presence of an industry that had chosen that area because of the low land values and access to transportation corridors. The third is the government's failure to enforce environmental standards equitably. Gotham and Greenberg recognize,

> these outcomes [economic segregation, concentrated poverty, and suburban sprawl] are not just shaped by policy actions but by policy inactions, including the failure to enforce antidiscriminatory statutes, build moderately priced rental housing, and create socially integrated schools and communities. (2014, p. 179).

These same ideas extend to other environmental justice issues related to flooding and access to amenities. In the United States, rapid population growth has led to many people living in areas at risk of natural hazards in cities (Lee & Jung, 2014; Martinich, Neumann, Ludwig, & Jantarasami, 2013). Lee and Jung (2014) explain that affordable housing is often located in hazardous areas, thereby causing many low-income residents in Austin, Texas, for instance, to reside in vulnerable areas such as floodplains. Additionally, the low-income population inside

floodplains continues to grow (Lee & Jung, 2014). Similarly, in New York City, Superstorm Sandy disproportionately impacted public housing residents (Graham, Debucquoy, & Anguelovski, 2016) and people living below the poverty line (Faber, 2015). Faber (2015) additionally discovered that Black and Latino residents in flooded areas and those aged 65 plus who were directly exposed to a storm surge had higher poverty rates. Evidently, these interacting social factors resulted in higher vulnerability for certain individuals. The problem is compounded once again in industrial waterfront communities that are at increased risk due to the hazardous substances located in areas vulnerable to sea level rise, storm surges, and flooding (Bautista, Osorio, & Dwyer, 2015).

Environmental justice communities are also considered to have less access to environmental amenities, such as green space and transportation networks. In the United States, lower income residents in the inner city often do not have access to green space or it is poorly maintained, whereas greenspace is abundant in the more affluent suburbs (Wolch, Bryne, & Newell, 2014). Yet the "urban green space paradox" suggests that when these amenities are improved, rising housing costs can lead to gentrification (Wolch et al., 2014, p. 235). Banzhaf and McCormick (2007) state the defining characteristics of gentrification as rising property values, construction or upgrading of housing, turnover of the local population that brings in residents with higher socioeconomic status, and changes in the mix of public and private goods. To avoid triggering gentrification, Curran and Hamilton (2012) recommend a "just green enough" approach where clean-up of industry and the creation of green space are targeted to existing populations and not as new development.

Climate justice emerged from the larger environmental justice discourse, as it is yet another environmental issue that demonstrates broader social inequities (Agyeman et al., 2016).

It is becoming better known that climate change will disproportionately impact communities that are already socially, economically and politically marginalized (MacCallum et al., 2014; Shi et al., 2016). Not only are the impacts of climate change itself likely to be unequally distributed, but the "actions taken to adapt to climate change can themselves have important justice implications because their benefits and costs are frequently distributed in ways that consolidate or exacerbate current vulnerabilities rather than reduce them" (Adger et al., 2006, p. 4). Furthermore, vulnerable and marginalized groups are often excluded from decision-making due to a lack of access to power and resources, meaning that climate change policy discussions are not considering how interests and impacts differ (Adger et al., 2005; MacCallum et al., 2014).

2.4 Economic Opportunity

The focus on the environment and economy is prominent not only in discussions of sustainability, but also resilience. The ecological modernization paradigm restructures "current systems of production [to] be made "ecologically rational" by putting an economic value on nature…, changing current business and consumer behavior to incorporate ecological goals, and integrating environmental policy into all other policy areas" (Finn & McCormick, 2011, p. 399). For instance, many major cities in the United States are embracing green economic development as a driver of local economic development in the face of declining manufacturing industries (Portney, 2013).

The private sector is taking an increasing role in implementing policy, partly through the formation of public-private partnerships, largely in order to finance projects that the public sector is unable to fund (Anguelovski et al., 2016; Bulkeley, Edwards, & Fuller, 2014; Joseph, 2013; Shi et al., 2016; Whitehead, 2013). Brugmann (2012, p. 217) discusses financing the "resilient

city", stating that "[u]rban risk reduction itself needs to be re-framed as an investment opportunity to improve the economic performance of urban assets and locations". Financial tools to do so include value capture investments, securitization and structured finance, insurance, social and catastrophe bonds, and climate adaptation funds (Burgmann, 2012).

MacCallum et al. (2014) argue that by favouring economic opportunity over addressing issues of equity and justice, issues of gentrification can occur. Whitehead (2013, p. 1362) similarly argues that property development and redevelopment that seeks profit in adaptation can represent "fairly aggressive forms of climatological gentrification". Whitehead (2013) states that at the urban scale, this may take the form of desirable and costly "climate proofed" areas and at the interurban scale, "climate secure cities" could become more unaffordable. On a global scale, these are often centres of global investment and economic growth (Shi et al., 2016). Hodson and Marvin (2010) explain that these global cities are often centres for strategic protection in order to build resilience.

At the urban scale, certain areas with adaptation or resilience measures in place can be more expensive due to the protection they offer, thus not everyone can afford to live in these areas. Shi et al. (2016) call these protected areas "ecological enclaves". These gentrified areas can be created through the development of climate proof infrastructure. Anguelovski et al. (2016) argue that climate proof infrastructure and large-scale projects may seem like a resilient form of development, however they often prioritize economically valuable areas. For instance, Storbjörk and Hjerpe (2014) found that in Sweden, valuable waterfront areas were protected with precautionary measures, whereas less attractive areas had strict guidelines to restrict development due to the flood risk. Similarly, Gotham and Greenberg (2014) found that in post-9/11 New York, the white and wealthy Financial District was prioritized over the working class

and non-white Chinatown and Lower East Side, as well as in post-Katrina New Orleans, where the Lakeview neighbourhood was prioritized over the Lower Ninth Ward.

Large-scale infrastructural developments and redevelopment post-disaster can result in the displacement of low-income and vulnerable communities, whether through resettlement or gentrification, while wealthier residents are able to remain and benefit from the upgrade (Anguelovski et al., 2015; Chu, Anguelovski, & Roberts, 2017; Gotham & Greenberg, 2014). Post-disaster "spaces labeled as "blighted," "damaged," or otherwise "obsolete" are targeted for repair, redesign, and repurposing using the rhetoric of "renewal," "revitalization," and "progress"" (Gotham & Greenberg, 2014, p. 134). This post-disaster state offers a branding opportunity for cities, as they can appear to take a more transformative approach toward sustainability or resilience (Gotham & Greenberg, 2014). However, it is this rhetoric that causes low-income areas, such as the Lower East Side in New York City, to fear that "resilient" improvements to their community will accelerate gentrification (Graham et al., 2016). Resilient development or redevelopment can therefore contribute to reproducing inequities by prioritizing economically valuable areas, especially under the guise of post-disaster revitalization.

2.5 Planning for Resilience

2.5.1 Resilience Planning

Resilience-related challenges occur at the local level, thus the impacts and vulnerability to those impacts vary by geography (Measham et al., 2011; Shi et al., 2016). Resilience planning at the local level is thus necessary to address the differential contexts across space. Planning can act as a policy tool for local governments to create plans and offers an opportunity for interaction with the public in order to create these contextualized responses (Anguelovski et al., 2016;

Bukeley & Betsill, 2005; Measham et al., 2011; Pickett, Déry, & Curry, 2014). Campbell (1996) explains that land use design and control offers potential to implement sustainable development since planners possess knowledge of the interactions among cities, economies, and ecologies. Desouza and Flanery (2013) further explain that planning offers an opportunity to build in capacity for resilience. Coaffee and Lee (2016) outline how resilience has been incorporated into planning processes. First wave resilience was a top-down process focused on high-risk situations, such as security to protect against terrorist attacks or engineered flood protection. Second wave resilience has shifted to a more proactive approach that engages more stakeholders and therefore has increased foresight and preparedness.

2.4.2 Mainstreaming and Interdisciplinarity

Municipalities comprise many sectors that rarely communicate. As a result, environmental policies have largely come from environmental departments. For example, Shi et al. (2016) found in their review of climate adaptation plans that the environmental and land-use planning departments are the dominant sectors, whereas other sectors, such as economic development and health, play a minimal role. Similarly, planning departments are often tasked with sustainability in order to embed sustainability into comprehensive planning processes (Portney, 2013). This separation of sectors makes communication difficult to organize (Rauken, Mydske, & Winsvold, 2015; Shi et al., 2016). The issue is especially problematic given the interdisciplinary nature of resilience, thus Coaffee and Lee (2016) argue that resilience needs to move beyond siloed governance approaches.

To overcome this barrier, mainstreaming takes environmental issues out of a single sector and into the centre of decision-making so that these issues are reflected in other sectoral policies (Rauken et al., 2015). Picketts et al. (2014) argue that mainstreaming can encourage more

holistic solutions and actually improve the chances of implementation. Chances of implementation may increase when the environment is placed within a more agreeable discourse. For example, resilience, sustainability, new urbanism, and smart growth have gained more acceptance than an explicit focus on climate change (Gotham & Greenberg, 2014; Picketts et al., 2014). These urban policies attempt to manage the unintended consequences of growth, such as sprawl, deteriorating infrastructure, and declining public services, while still supporting economic growth and lifestyle improvements (Gotham & Greenberg, 2014; Portney, 2013). These approaches can be problematic, as quality of life improvements are aimed toward the creative class, who are highly educated (Finn & McCormick, 2011) and have political influence (Curran & Hamilton, 2012). In practice, these policies have yet to address injustice and the concerns of the working-class or those living in poverty (Finn & McCormick, 2011; Steele et al., 2012).

In terms of sustainability plans, Pearsall and Pierce (2010) explain that environmental quality indicators largely focus on overall improvements for the entire city, addressing quality of life instead of social or environmental justice. Pearsall and Pierce argue,

[s]ustainability indicators that fail to monitor how changes and improvements are distributed geographically, as well as across race, class, and gender lines, also fail to adequately illuminate how social, ecological, and economic factors interact in producing unsustainable cities; they also hinder environmental justice analysis by providing information at the aggregate level only. (2010, p. 577).

Similarly, Berke, Cooper, Aminto, Grabich, & Horney (2014) discovered that disaster recovery plans are focused on returning back to "normal" and did not use many participation tools or involve many stakeholders.

In contrast, Schrock et al. (2015) found in a study of municipal climate change adaptation and sustainability plans in United States, that 90 percent of plans have at least some discussion of equity. Social equity is addressed by nearly all the plans, whereas geographic equity is less common and procedural equity is not prominent in any plan. The most commonly addressed inequities are geographical disparities in environmental amenities and neighbourhood livability and vulnerability to impacts.

2.5.3 Overcoming Barriers

Many local governments face challenges aside from lack of communication in siloed governance. Local governments may have limited financial resources and capacity for implementation (Hjerpe & Glaas, 2012; Measham et al., 2011). Aylett (2015) found that 78 percent of municipalities claim a lack of funding for implementation and 66 percent a lack of staff time in climate change planning. Whitehead (2013) discusses how local governments are financially stressed by increasing responsibility, thereby leading to privatization as a solution to funding constraints.

Common to long-term environmental problems, the decision-making of local authorities depends on a political timeframe. Elections often determine the prioritization of issues, as there is a perceived need to see results within a political term (Aylett, 2015). The issues included under resilience can be short-term and/or long-term (Coaffee & Lee, 2016). Furthermore, many issues deal with a degree of uncertainty. The framing of uncertainty can make the issue less of a priority since it calls into question the seriousness of the issue, making political support difficult

(Woodruff, 2016). In response to concerns of lack of priority, no-regret actions can be utilized. No-regret actions are actions that are beneficial regardless of the potential future (Woodruff, 2016). These actions are often able to tackle multiple policy goals simultaneously and as such have multiple benefits. Additionally, the climate change adaptation literature commonly discusses lack of municipal leadership as a barrier in implementation. However, Aylett (2015) discovered that most cities actually support climate change initiatives.

Aylett (2015) also argues that institutional path-dependency creates obstacles to change, as established practices and structures must first change. Action is therefore largely dependent on the political climate. However, based on Yiftachel (1998), Osborne (2015) explains that planning can sometimes perpetuate injustice, defend White privilege, and privilege the interests of the rich. Therefore Anguelovski et al. (2016) argue that land use planning tools can reproduce the same injustices that these institutions have produced in the past. Coaffee and Lee (2016) explain path dependency as maladaptive in that outdated behaviours in planning processes can begin to show their deficiencies. Furthermore, Handmer and Dovers (1996, p. 502) state that transformative action is difficult since "[t]here is a clear paradox here, in that the state is the institution generally expected to override vested interests for the common good, yet the state is, more often than not, entwined closely and sometimes indistinguishable from these same interests". It is therefore difficult for the local government to break from this path dependency to create meaningful action that addresses injustices.

While local authorities do have power over planning, there are some jurisdictional limits to this power. Similar to Canada and Australia, in the United States the power of local governments is assigned by the state government (Jones, 2013). As a result, Aylett (2015) explains that internationally, 48 percent of local authorities feel they lack jurisdiction over key

policy areas relating to climate change adaptation. Additionally, higher levels of government are downloading responsibility to local government, thereby expanding local government mandates (Measham et al., 2011). Gotham and Greenberg (2015, p. 15) refer to this shift of responsibility to the local/urban scale as the "rescaling of risk", which can be perceived as placing the burden on citizens and not the government.

To make up for the failure of national governments, many cities are shifting toward public-private partnerships (Gotham & Greenberg, 2014; Jones, 2013). These partnerships often take place through networks. Bauer and Steurer (2014) explain network governance as the dependence of governments on cooperation and resource sharing with non-state actors. Networks can be beneficial in terms of increased funding and assistance, building a culture of collaboration, and exploring innovative ideas outside of a formal organization's objectives (Hodson & Marvin, 2010; Howes, 2015; Meijerink & Stiller, 2013).

However, many criticize partnerships and networks as lacking accountability. Bauer and Steurer (2014) recognize the approach of formalizing the ideas of non-state actors as a "post-sovereign approach" that shifts the authority and responsibilities of public and private actors. The public sector has traditionally had formal decision-making power due to its accountability to the public. Therefore, reassigning this power to the private sector risks accountability and legitimacy, as private actors are not elected and often have vested or conflicting interests (Bauer & Steurer, 2014; Vignola, Leclerc, Morales, & Gonzalez, 2017). Vignola et al. (2017) thus argue for the continued efforts of the public sector to legitimize the process and involvement of informal leaders. It is then important that formal leaders retain their authority, but also have the political will to formalize the innovative ideas of informal actors in the private sphere.

2.6 Literature Gaps

The largest gap in the resilience literature is the exclusion of social stresses. Urban resilience has largely focused on urban hazards, disaster risk reduction, urban ecological resilience, and resilience governance (Bené et al., 2018). This literature is mostly focused on recovery from physical hazards due to climate change and disasters, the unsustainability of urbanization in terms of the impacts on biodiversity, and the existence of multilevel governance. Bené et al. (2018) discuss that the urban resilience literature is largely missing a social justice element – no articles they reviewed discussed statistics of urban inequality. A lack of social justice is evident in the lack of discussion of stresses as opposed to shocks. Discussions of chronic stresses and the unjust systems that produce vulnerability are limited to how they influence vulnerability to the shock. For example, there is extensive literature on vulnerabilities to disasters, namely Hurricane Katrina in New Orleans (e.g. Coaffee & Lee, 2016; Dawson, 2010; Wilbanks & Kates, 2010) and Superstorm Sandy in New York City (e.g. Bautista et al., 2015; Coaffee & Lee, 2016; Faber, 2015; Gleeson, 2014/2016; Graham et al, 2016; Hoffman, 2014).

Furthermore, Bhamra et al. (2011) explain that the resilience literature is largely focused on concepts, theories, and definitions, and not empirical studies of how to actually achieve resilience. Similarly, Wilkinson (2011, p. 163) states that "there are few empirical studies researching a case in urban settings where a social-ecological resilience approach informed ongoing planning processes. This is somewhat surprising given the importance of resilience as an urban policy discourse". More specifically, Shi et al. (2016) question how planning prioritizes vulnerability in adaptation plans and how these dimensions can create forms of maladaptation. There is therefore a need to examine the ethical dimensions of plans to consider the equity and

justice impacts of the policies themselves. Normative studies of resilience plans can examine how resilience is used in practice and whether plans could solve or perpetuate inequities and injustices. This study attempts to address these gaps in the literature by examining how social stresses are included in a set of urban resilience plans.

3. Methods

3.1 Research Question

This study seeks to answer the overarching question: How is urban resilience presented as an opportunity to address social inequities and injustices among case study cities chosen from the 100 Resilient Cities plans in the United States? The thesis furthermore seeks to address: How are procedural, social, geographic, and economic equity discussed? How are vulnerable populations represented? How does the implementation structure of each plan allow for success or not? These questions aim to address how discourses of equity and justice fit within resilience in the specific case of the 100 Resilient Cities plans.

3.2 Approach

The research philosophy or paradigm represents a general framework that guides research (Creswell, 2014). This study uses a transformative paradigm. The transformative paradigm investigates issues of social justice, inequality, domination, oppression, politics, and power (Creswell, 2014). These are essential elements of this research, as it addresses how opportunities for change relate to unequal relationships that can contribute to further marginalization of disadvantaged populations. This research takes what Neuman and Robson (2011) refer to as a critical approach, as it recognizes that research is not value free, but instead that knowledge is political in that information is used to achieve a certain end. This research uses a constructivist ontology and an interpretivist epistemology. Constructivism sees social phenomena and meanings as socially constructed by the perceptions and actions of social actors (Bryman, 2014; Grix, 2014). Interpretivism explains that social actions do not have an external reality, but are

interpreted and filtered through socially constructed perceptions (Bryman, 2014; Neuman &

Robson, 2012).

This research paradigm, ontology, and epistemology leads to qualitative methods in order

to explore how issues are framed. Qualitative research is an exploratory approach seeking to

understand how the social world is interpreted and meanings are constructed (Robson, 2011).

This approach lends itself to answering the "how" questions proposed. Qualitative research is

concerned with meanings, contexts, and perspectives (Robson, 2011). The use of qualitative

methods in this study is essential to explore interpretations of equity and justice in the 100

Resilient Cities plans, as demonstrated by their prominence in the literature. As Agyeman et al.

(2016, p. 327) explain, "[i]n the mid-1990s EJ [environmental justice] research methods shifted

from almost exclusively quantitative methods to a more qualitative approach". Issues of justice

are largely not quantifiable and as such perceptions and experiences and the meanings behind

these are equally, if not more, important. This research makes no attempt to quantify data, but

instead to interpret the meanings behind actions for resilience.

Qualitative studies are often associated with flexible and emergent research designs.

Creswell (2014) and Robson (2011) describe flexible and emergent designs as ones that shift or

change during the data collection process. My approach allows for this flexibility in order to

capture the variety of discourses present within these plans. Qualitative studies can use inductive

and/or deductive logic. My approach was largely inductive. Inductive approaches begin with

observations that develop into more abstract generalizations (Creswell, 2014; Neuman &

Robson, 2012). Creswell (2014) explains that a deductive approach can then be used to gather

more evidence that fits into the developed themes.

3.3 Methods: Critical Discourse Analysis

I use critical discourse analysis to analyze these resilience plans. Discourse analysis looks at language and how that language reflects a broader situation or context (Gee, 1999; Paltridge, 2012). Furthermore, critical discourse analysis examines why a discourse is used to frame an issue in a certain way and the implications of that use (Paltridge, 2012). Critical discourse analysis goes beyond understanding what the text says to explore the meanings behind that text. Van Dijk (2012, p. 596) explains "[d]iscourses are like icebergs. Only a minor part of their meaning is 'visible' as *explicit* propositions expressed in their sentences. The major part of their meaning remains implicit, namely as *implied* propositions". As such, there is meaning behind the written text, which is determined by context.

Gee and Handford (2012, p. 5) assert that language is used within the context of "society, culture, history, institutions, identify formation, politics, power, and all other things that language helps us to create and which, in turn, render language meaningful in certain ways and able to accomplish certain purposes". Additionally, Van Dijk (2012) explains knowledge as a shared belief among an epistemic community, which is relative to that community. Context produces different understandings of discourse based on the relative knowledge of a community. Therefore, each sentence has a situated meaning where the language used can take on a different meaning in a different context (Gee & Handford, 2012).

Moreover, each text is part of a larger context, and thus related to more texts. Paltridge (2012) discusses the importance of intertextuality in understanding a certain text within the consideration of other texts that have preceded and will follow it. Texts link through reference to a topic, actors, events, or reappearance of the same arguments (Wodak, 2012). Blackledge (2012) notes that texts are not produced by one person and as such often have multiple competing

discourses within them. Wodak (2012) also explains that moving text to a new context will assign it new meaning. In relation to resilience, many resilience-related issues have been discussed in different contexts, such as solely environmental, social, or economic problems; however, framing these issues within discourses of resilience assigns these issues new meaning.

Critical discourse analysis is especially concerned with how language is used to assert power. Discourse is produced by and reflected in ideology, which may be hidden within the text (Paltridge, 2012). This hidden ideology then becomes a means of establishing and maintaining power relations (Weiss & Wodak, 2003). Weiss and Wodak (2003) argue that powerful people use language and assign power to that language. Language can then be used either to reproduce or challenge these unequal power relations (Blackledge, 2012). Fairclough (2012) explains that the ideology behind these social wrongs can be examined through critical discourse analysis to discover what is preventing social wrongs from being adequately addressed.

As with many qualitative methods, the researcher's perspective is always present in discourse analysis. Fairclough (2012) explains that the analysis of text is normative in that the researcher analyzes how the descriptions of social reality within texts match values of a just society. It is this critiquing of representations of society within discourses and texts that Paltridge (2012) notes as socially significant. However, some argue that critical discourse analysis can be biased. Researchers often start from a certain ideological position and thus must not only analyze texts that support their position or interpret texts in ways that supports their position (Blackledge, 2012). Paltridge (2012) suggests that since critical discourse analysis only involves the researchers' interpretation, it should be supplemented with discussion with the producers and consumers of texts. Additionally, Blackledge (2012) argues that the top-down approach ignores

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the voices of those subject to the inequalities it addresses, whereas a more ethnographic approach can give voice to social actors.

Critical discourse analysis has been used to evaluate issues of social justice in sustainability and climate change adaptation plans. For example, Finn and McCormick (2011) study holistic sustainability in the climate change plans of New York City, Chicago, and Los Angeles, however they take a more quantitative approach by counting the number of pages that discuss each pillar of holistic sustainability. Similarly, MacCallum et al. (2014) use a more qualitative approach to understand the reproduction of ideology through social institutions and power relations in Australian climate change plans by analyzing how plans feature social equity, relationships between climate change and local people, and inclusivity of local knowledge and agency. My approach builds off the approaches in these two studies to analyze how the 100 Resilient Cities plans reproduce or challenge social inequities.

3.4 Plan Selection

The plans considered in this study are selected based on their location and date of release. The analysis includes cities in the United States with a resilience plan supported by the 100 Resilient Cities network. The network is global, but is led by an American organization. Of the four Canadian cities in the network, none have completed their plan to date. Similarly, of the five Mexican cities, only one had a complete plan in the considered timeframe. Of the 98 cities currently listed as members, 23 cities are in the United States. Because of the large contextual differences, the thesis does not compare plans internationally.

The time frame includes the start of the 100 Resilient Cities network in 2013 (or the date of the release of the first plan in 2015) until the end of February 2018 when the analysis for this

thesis was concluded. Table 2 shows the eleven cities in the United States that released their

resilience plan within this timeframe and are thus included in this analysis as well as the plan

name and date of release.

Table 2: Selected cities with name and date of release of plan

City	Plan Name	Date of Release
Atlanta	Resilient Atlanta: Actions to Build an Equitable Future	November 2, 2017
Berkeley	Berkeley Resilience Strategy: A Strategic Preparedness Plan for Berkeley, a community known for inclusiveness and innovation	April 1, 2016
Boston	Resilient Boston: An Equitable and Connected City	July 13, 2017
Boulder	City of Boulder Resilience Strategy	April 28, 2016
El Paso	Resilient El Paso	February 1, 2018
New Orleans	Resilient New Orleans: Strategic Actions to Shape Our Future City	August 28, 2015
New York	One New York: The Plan for a Strong and Just City	April 22, 2015
Norfolk	Norfolk Resilient City	October 28, 2015
Oakland	Resilient Oakland: It Takes a Town to Thrive	October 10, 2016
Pittsburgh	One PGH: Resilient Pittsburgh	March 8, 2017
San Francisco	Resilient San Francisco: Stronger Today, Stronger Tomorrow	April 18, 2016

Notably, the Los Angeles plan was released during the course of this study, but after the analysis

for this thesis had already been conducted.

3.5 City Background and Context

To better understand how well each city addresses equity and justice in their plans, it is

important to understand some of the issues within each city. The different context of each city

means that different issues will and should be highlighted in each plan. As such, how well a city

addresses issues of equity and justice is relative to the context of that city. Although each hazard is largely discussed independently, it is important to note that each hazard and social stress discussed is linked and they are interdependent.

Each city is vulnerable to certain natural hazards. While a certain hazard may happen in any location, Table 3 summarizes the hazards that pose the greatest risk in each city. Table 4 provides a timeline of natural disasters in these cities since 2000. All these cities are vulnerable to flooding and extreme temperatures. Most cities are located on a large body of water. Although Atlanta is not located in close proximity to a large body of water, the city is still vulnerable to flooding in the event of a storm. With the combination of extreme storms, sea level rise, and/or degrading and aging infrastructure, many of these cities do not have the stormwater management capacity to mitigate flooding. Climate change is increasing the frequency of temperature extremes, including record breaking heatwaves. Additionally, the urban heat island effect magnifies the issue.

Table 3: Common natural hazards

	Atlanta	Berkeley	Boston	Boulder	El Paso	New Orleans	New York	Norfolk	Oakland	Pitts-burgh	San Francisco
Blizzard			✔				✔			✔	
Drought	✔	✔		✔	✔		✔		✔		✔
Earthquake		✔							✔		✔
Flood	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Extreme temperature	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Hurricane						✔	✔	✔			
Sea level rise		✔	✔			✔	✔	✔	✔		✔
Subsidence						✔		✔		✔	
Wildfire		✔		✔					✔		✔

Drought is an issue in many cities, however it is especially pressing in cities in the South and West. Atlanta is at risk due to the lack of a large body of water, El Paso due to the city's location in a desert, and Boulder due to the dependence on melting snowpack. Furthermore, the San Francisco Bay Area cities are currently suffering from the California drought. Additionally, Berkeley, Oakland, and San Francisco, as well as Boulder are vulnerable to wildfires.

The cities in close proximity to an ocean, including Berkeley, Boston, New Orleans, New York, Norfolk, Oakland, and San Francisco are vulnerable to sea level rise. Furthermore, the cities on the east coast (Boston, New York, New Orleans, and Norfolk) are vulnerable to hurricanes. The cities in the northeast (Boston, New York, and Pittsburgh) are vulnerable to blizzards. Land subsidence and coastal erosion threatens New Orleans and Norfolk. Landslides threaten Pittsburgh, largely due to erosion and coal extraction of fragile hillsides. Berkeley, Oakland, and San Francisco are located on the San Andreas fault, thus making these cities vulnerable to earthquakes and liquefaction.

Table 4: Timeline of extreme events

Year	Cities Impacted	Event
2003	Norfolk	Hurricane Isabel
2005	New Orleans	Hurricane Katrina
2006	El Paso	Extreme rainfall and flooding
2006	Norfolk	Nor'easter
2008	New Orleans	Hurricanes Ike and Gustav
2009	Atlanta	Flash flooding
2009	Norfolk	Nor'easter
2010	Boulder	Four Mile Canyon Fire
2011	El Paso	Severe freeze
2012	Boulder	Flagstaff Fire
2011	Norfolk	Hurricane Irene
2011	Boulder	Record snowpack
2012	Berkeley, Oakland	California drought

2012	New Orleans	Hurricane Isaac
2012	Boston, New York, Norfolk	Superstorm Sandy
2013	Boston, New York	North American blizzard
2013	Berkeley	Rim Fire
2013	Boulder	Flooding of all waterways
2014	Boston, New York, Pittsburgh	Cold wave
2014	Berkeley	Flooding
2014	Berkeley	Napa Earthquake
2015	Boston	Record snowfall
2015	Norfolk	Hurricane Joaquin
2016	Boston, New York, Norfolk, Pittsburgh	Blizzard
2016	El Paso	Extreme heat

In addition to these hazards, each city also faces various equity issues. Appendix A outlines relevant demographic and statistical data. An aging population poses a challenge in some cities, as caring for this population can use valuable city resources. Pittsburgh, San Francisco, and New York have the largest populations over 65, whereas Boulder, Norfolk, and El Paso have the most youthful populations.

Racial inequity is a persistent problem in many cities. New Orleans, Atlanta, and Norfolk have the highest percentage of African-Americans of these selected cities. A history of discrimination and segregation has led to disparate outcomes for African-Americans in these cities and others. There is a large Hispanic population in El Paso, where more than 80 percent of the population identifies as Hispanic. In contrast, cities such as San Francisco and Oakland have large visible minority populations that represent a variety of racial and ethnic groups.

San Francisco, New York, and Boston have the highest percentages of foreign-born population, whereas New Orleans, Norfolk, and Atlanta have the lowest. El Paso, New York, and Oakland have the highest percentage of people who speak English less than very well. Although El Paso does not have the highest percentage of immigrants, a large percentage of the population

is foreign-born. The city's location on the Mexican border influences migration rates, including undocumented migrants who are not captured by this statistic.

Poverty rates range from a low of 12.5 percent in San Francisco to a high of 26.2 percent in New Orleans (U.S. Census Bureau, 2016a). Berkeley is the only other city to have a poverty rate less than 20 percent. Economic inequality and the concentration of poverty is a problem in all cities, especially when considering the disparities among certain populations, communities, and neighbourhoods. San Francisco, Berkeley, and Boulder have the highest median incomes, whereas New Orleans, Pittsburgh, and El Paso have the lowest. Unemployment rates are highest in Atlanta and New Orleans and lowest in Boulder and San Francisco.

Affordable housing presents an issue in many cities. Many of the largest cities in the United States are experiencing increasing rents and the development of high-end real estate instead of affordable housing. As such, many large cities have a high percentage of renters compared to home-owners. In Boston, New York, Oakland, and San Francisco, more than half the population rents their housing, whereas home-ownership is more common in El Paso, New Orleans, and Pittsburgh.

3.6 Data Analysis

This study takes an exclusively qualitative approach to understand how the 100 Resilient Cities plans of cities in the United States use resilience as an opportunity to incorporate social equity and justice. This approach is different from studies, such as Finn and McCormick (2011), that quantify the number of times a search term is mentioned. To begin, I developed an equity indicator list based on the literature relating to plan evaluation of sustainability, climate change adaptation, sea level rise adaptation, disaster risk reduction or recovery, and social inclusion

plans. I also included the indicators in the Social Vulnerability Index (Agency for Toxic

Substances & Disease Registry, 2018, January 24) due to their relevance to equity, justice, and

resilience issues. I developed the list based on criteria, often in the form of indicators, until I

reached theoretical saturation and no new indicators were appearing. The final list includes 20

articles published between 2000 to 2017. The scale of the plans included in these studies ranged

from international comparisons to local municipalities. Some involved a detailed analysis of a

single plan, whereas others analyzed up to 350 plans. The studies with a large number of plans

take a more quantitative approach with less detail about each.

Many of the studies examined do not directly deal with social equity nor justice and

instead evaluate plans based on principles of plan quality. Many of the indicators within these

studies were irrelevant for this thesis, however some of the indicators about participation were

related to procedural equity. For example, Woodruff (2017) lists the involvement of stakeholders

as one measure of plan quality, which is also related to procedural equity. The plan process,

sector of government responsible for implementation, and the type of impacts were also not

included. The stage of plan process and sector for implementation were irrelevant, as this study

only includes completed plans that are being implemented and these plans are largely

implemented by the newly formed Resilience Department in each city. The impacts were not

evaluated, as they are largely dependent on the context of each city and the range of impacts is

extensive due to the interdisciplinary nature of resilience.

The final list of qualitative indicators is related to conceptions of equity, justice, and

social vulnerability. In terms of types of equity and justice, Pearsall and Pierce (2010) analyze

sustainability plans of United States cities in terms of distributive and procedural justice using

environmental justice indicators. Similarly, Schrock et al. (2015) examine sustainability and

climate change adaptation plans of large cities in the United States in terms of social, geographic, and procedural equity. Finn and McCormick (2011)'s holistic sustainability form the framework for this study, as the more detailed equity indicators fit within procedural equity, social equity, geographic equity, and equitable economic development. As with Finn and McCormick (2011), I exclude environmental protection, as it is not directly related to issues of equity. I also combine green economic development into equitable economic development to create a new category of 'resilient economic development'. Many of the indicators used in this study come from Labonté et al. (2012) who developed a conceptual framework of social exclusion based on a comprehensive literature review of indicators of social exclusion and social inclusion. The final compiled qualitative equity and justice indicator list can be viewed in Appendix B.

Fairclough (2012) explains one step in critical discourse analysis as selecting texts and categories for their analysis. In order to analyze these plans, I copied the relevant text according to the categories presented in Appendix B. Having a large amount of text allowed me to have more information to avoid interpreting the information out of context. I organized the text into discussions of the current situation and vulnerabilities as well as goals/objectives and actions. Creswell (2014) suggests coding data based on emerging information, predetermined codes, or a combination. I use a combination, determining codes based on the literature and then further developing themes based on the content of the plans. From this coding, the common and rare discourses among cities became evident.

I compare procedural equity among plans based on timelines, stakeholders involved in plan creation, methods of participation, and the number of community members involved. Social equity, geographic equity, and economic equity are coded based on the extent that differential vulnerability is discussed. At one end, the plan may report on statistics and on the other, it may

recognize the disparities in vulnerability and opportunity due to systemic injustices. I further

analyze the actions included in each plan to examine how the strategy discusses these different

indicators of equity to get a sense of what type of equity may be addressed.

To better understand who each plan is meant to benefit, I examine who or what each

strategy targets. These targeted populations include general residents of the city, populations

considered vulnerable, organizations, geographies, and urban systems. Table 5 presents a more

detailed list of these populations. The list of vulnerable populations started with those often

considered vulnerable in the literature, however other categories were added as they appeared in

the plans. For example, veterans are rarely mentioned in the literature, however many of the 100

Resilient Cities recognize their vulnerability. Each strategy could target more than one

vulnerable group. This analysis helps to determine whether the action addresses equity by

targeting a population considered vulnerable, is generally beneficial, or may have unintended

consequences by promoting a certain agenda.

Lastly, I examine the implementation of the plans in terms of funding, partners,

timeframes, and impact, to determine how successful they may be in addressing equity. The

funding source and amount is not provided by all plans. When this information is provided, it is

often included as an appendix; however, I also scanned the text for additional information. I

group the actions by their funding status and dollar amount when provided. Furthermore, I group

the actions by the funding source into City, City agency, state/federal government, non-

profit/community-based organization, 100 Resilient Cities/Rockefeller Foundation, philanthropy,

and private sector. Similarly, the project lead is sometimes listed in the appendices. These leads

are largely the same as funding sources with the exception of philanthropy and the addition of

professionals/experts and generic partners. Timelines are rarely included. When provided, I

group timelines into short-, mid-, long-term, by launch year, and by their progress status. I make

no attempt to combine these categories and instead only compare where the information is

available.

Table 5: Targeted populations considered in plan analysis

Vulnerable Populations	General Residents	Organizations	Geographies	Urban Systems
- Vulnerable - physical - Vulnerable - social - Race/ethnicity - Language learners/ immigrant - Low-income/ poverty - Women/gender - LGBTQ+ - Disabled/ill - Seniors - Children/youth/ young adults/ students - Homeless - Recently incarcerated/at-risk - Victims of crime - Veterans/military - Residents of subsidized/ public housing - Underserved/ disadvantaged people/ communities	- Residents - Citizens - Households/ homeowners - Tenants - Employees/ workforce (general) - Volunteers - Community - Neighbourhood - Participants	- Public sector/corporate - Private sector - Businesses - Local businesses - Small businesses - Entrepreneurs - M/WBEs - Non-profit/CBOs - Serving underserved - Faith groups	- Geographic areas - Geographic areas - underserved, vulnerable, EJ	- Infrastructure - Buildings - Environment - Economy

I compare the impact of each action using a modified resilience typology based on

Handmer and Dover (1996) and Matyas and Pelling (2015). My categorization prioritizes equity

considerations, and not other changes, such as environmental impact. In this modified version,

resistance or maintenance means not only that the action preserves the status quo, but makes no attempt to address inequities. These actions include strategies that generally benefit all residents or solely address the physical environment. Incremental adjustments acknowledge inequities and make minor changes to treat the symptoms, but not underlying systemic challenges. Incremental adjustments encompass the widest range of actions. The most basic actions are those that promote procedural equity simply by engaging the public, no matter who is targeted. Other incremental strategies target a specific marginalized population or at least recognize the vulnerability of that population to certain a shock or stress. Transformative changes go further to address the underlying root causes of systemic injustices that limit opportunity. To be considered transformative change, an action must discuss how it opens opportunities for traditionally disadvantaged residents and/or goes beyond participation and engagement to partnerships in implementation. A framework for analysis can be seen in Figure 1, depicting how the implementation of a resilience plan can either reproduce or remedy injustices.

Figure 1: Framework for analysis
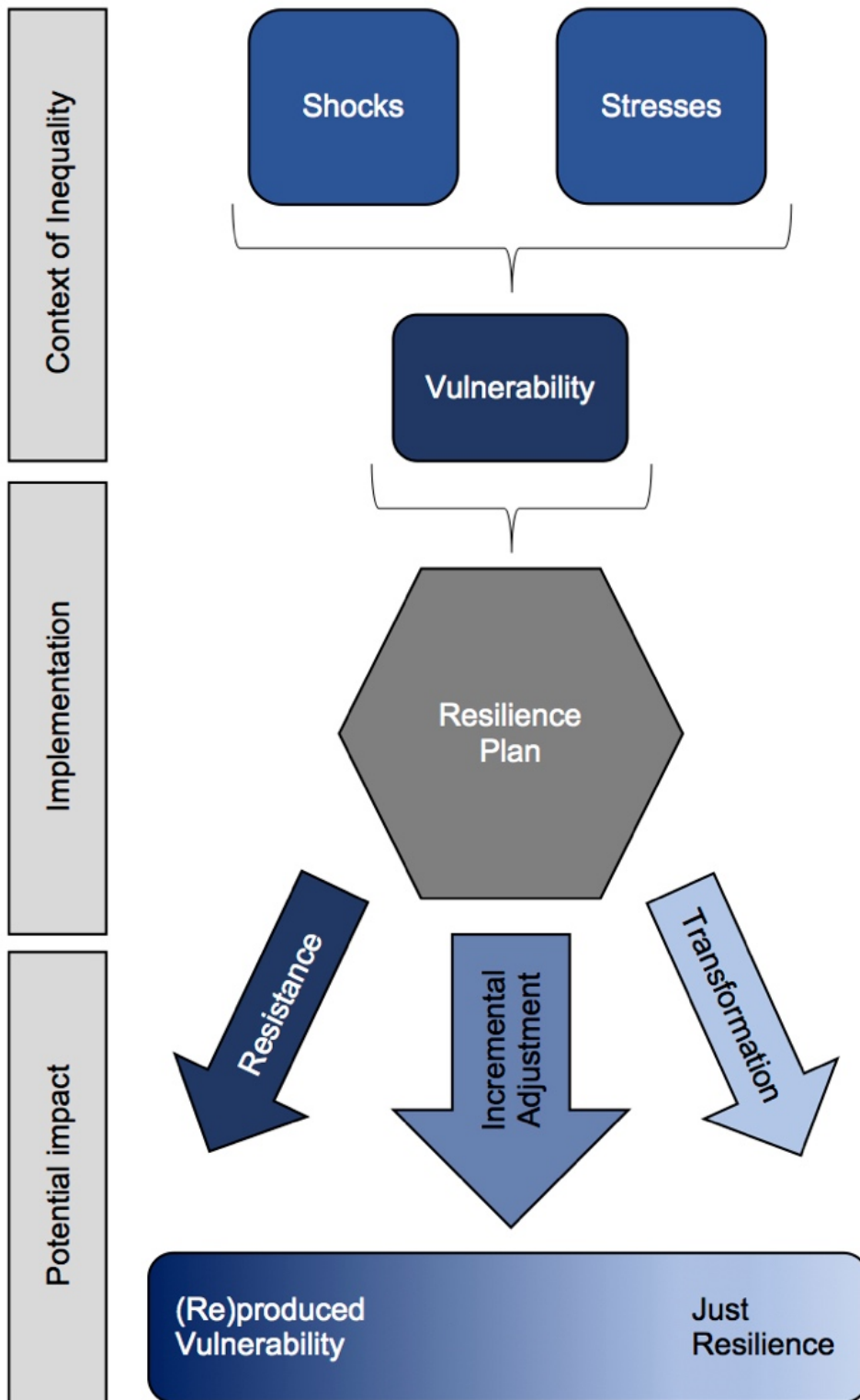
3.7 Study Limitations

Every study has its limitations. Subjectivity and the validity of the researcher's interpretation is a common criticism of qualitative methods (Robson, 2011), and especially critical discourse analysis. The researcher must therefore be reflexive to understand how their personal background and role in the study can bias their perspective and shape their interpretation (Creswell, 2014). Reflexivity allows a researcher to check their personal biases, although each researcher will inevitably interpret issues differently.

My personal background inevitably impacts how I analyze the selected plans. In this study, I examine how the plans portray many categories of difference, such as socioeconomic status, race, gender, sexuality, and age, in terms of vulnerability. As such, my own position in the social structure influences how I see these issues. I approach this topic as a White, young female. I am a Canadian citizen who has never lived in the United States. I have an academic background in environmental politics and planning, which shapes my understanding of resilience and justice issues. I analyze power structures throughout this study from a privileged perspective without lived experience dealing with many of the power struggles I discuss.

As a result of the different backgrounds and interpretations of various researchers, qualitative approaches are not replicable nor generalizable to the same extent as quantitative studies. This study examines the equity and justice discourses of eleven plans, however if my methods were to be reproduced in another context, the results would differ. My results would vary if different cities from another country or different types of plans from these same cities were chosen. As discussed, even the inclusion of the recently completed Los Angeles plan would add an additional context and thus alter the results. The results are based on my interpretations of

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the issues and not how others may interpret these issues. A different researcher is likely to interpret the results differently even if using the same list of equity indicators.

Furthermore, it is difficult to generalize the results. Although there are common themes among plans, the different context of each city makes it difficult to generalize across all. Each city faces different risks and equity issues and thus has different priorities and address these different issues within their plans. Gee and Handford (2012, p. 4) explain that context is "indefinitely large" and "[n]o matter how much of the context we have considered in offering an interpretation, there is always the possibility of considering other and additional aspects of the context, and these new considerations may change how we interpret the utterance". The context cannot be entirely captured within a single study.

My study is limited by only examining these resilience plans and not additional sources to better understand the context. Although these plans do provide an overview of the current situation and vulnerabilities within each city, additional context could be discovered from sources, such as news or other plans developed by each city. This limitation relates to intertextuality, as the resilience plans are situated in the larger planning processes of each city. As resilience is interdisciplinary, there is likely replication among the plans produced by a city. I am only able to make conclusions from the plans themselves and not additional sources that may further represent the overall context. My study therefore does not address which issues are duplicated across texts or missing altogether and thus whether equity and justice are considered in another context.

A criticism of critical discourse analysis is that it does not adequately address history. Blackledge (2012) argues that critical discourse analysis should move beyond the present to include historical analysis. It is this historical context that has led to certain power structures and

the production of vulnerabilities. My research is limited in discussion of historical analysis other than what is included in each plan. Therefore, I cannot make conclusions as to how historical injustices have led to certain outcomes and whether or not a plan accurately portrays and adequately addresses these injustices. Instead, I can only comment on whether or not and how the plans address certain vulnerabilities despite what may be the most relevant issues for each city.

The demographic data provided in Appendix A does not fully capture the context of each city. The current situation of each city is dependent on historical processes that contribute to these demographics and the larger context of the city. Since I do not include a historical analysis of each city, I cannot make associations between the characteristics of a city and the quality of the plan. For instance, I cannot correlate demographic characteristics to how well the plan targets a certain population without further analysis. I can simply state whether or not the plan addresses that population.

As such, Chapters 4 and 5 make no attempt to rank plans based on a numeric system. Instead, I review how the plans discuss equity and justice issues and vulnerable populations. The model plan figures presented in Chapter 6 rank plans based on the modified resilience typology discussed above (see Appendix C). This is the only instance where I use a numeric system, which is based on how many actions within each plan fall into the categories of resistance, incremental adjustments, and transformative change.

The use of solely critical discourse analysis as a method means I am unable to triangulate my results. As such, my results are based on my own interpretations and not those who produced the plan nor those who are impacted by the plan. This concern relates to Paltridge (2012)'s discussion of including the producers of the plan to better understand the context behind the plan.

Interviews with city and planning staff could have improved this study by providing additional context on the intentions behind the plan and the planning processes and existing initiatives within each city. This information would lead to a better understanding of the inclusion and exclusion of certain issues and actions from each plan.

Similarly, this concern relates to Blackledge (2012)'s criticism of critical discourse analysis for its lack of consideration of the voices of marginalized populations who are subject to inequities. Blackledge (2012) suggests an ethnographic approach that represents the perspectives and voices of social actors. These perspectives could provide a greater understanding of the social context by those who actually live in the city and will be impacted by the actions in these plans. My study is therefore missing the voices and perspectives of those more directly involved in these issues. A further analysis of voice and historical concepts could provide a better understanding of the complexity of these issues based on the experiences of each city.

4. Discourses of Equity and Justice

The 100 Resilient Cities plans intend to recognize equity concerns as part of a determination to better address the resilience challenges of vulnerable populations. However, many references to equity are vague, claiming to use an equity lens without detailing how or what that entails. This section discusses how the plans represent both procedural and substantive equity. In terms of procedural equity, public involvement in the plan-making process rarely extends beyond residents in general with the exception of claims to engage underrepresented populations. In terms of substantive equity, the discussion largely centres around the prioritization of disadvantaged communities and neighbourhoods instead of addressing the root causes of disparities. Equity considerations are present in all plans, however each city represents issues differently and to varying extents. Table 6 details which plans can be considered models for the types of equity discussed in this section. This section does not list plans in any particular order and instead lists plans alphabetically within groupings.

Table 6: Sample model plans in addressing equity and justice

Type of Equity		Sample Model Plans	Example
Procedural Equity		Atlanta Boston El Paso	Diversity of stakeholders and inclusion of underrepresented populations Continuous involvement of the public throughout plan implementation High number of participants in plan development
Social Equity	**Socioeconomic status**	Atlanta Boston New York and Oakland	Recognition of lost opportunity due to discriminatory policies Connects low-income status to vulnerability to disasters Skill development for marginalized populations
	Discrimination	Atlanta, Boston, Oakland, and Pittsburgh	Equity for people of colour (African-Americans)
	Housing	Oakland and San Francisco Atlanta and New York	Provision of housing during/post-disaster Recognition of overrepresentation of certain demographics in the homeless population
	Health disparities	Boston and Oakland New York	Impacts of internalized racial trauma on mental health Recognition of the social determinants of health
	Social capital	Boston and New York Boulder San Francisco	Recognition of the importance of community Use of citizen data collection and citizen science Education (climate change) and use of volunteers
Geographic Equity	**Neighourhood quality and safety**	Atlanta and Pittsburgh New Orleans	Recognition of the impacts of revitalization versus disinvestment Recognition of geographic differences in low-income/African-American communities
	Accessibility to amenities	Oakland Boston New York	Prioritization using an equity framework Prioritization of vulnerable communities Prioritization of high-need communities
	Concentration of hazards	Atlanta, New York, and Oakland Boston and San Francisco	Recognition of the concentration of hazards in environmental justice communities Minimize risk of disasters in vulnerable communities
Economic Equity		New York Oakland and Pittsburgh	Economic benefits of promoting equity Equitable economic development

4.1 Procedural Equity

Procedural equity is examined here in two ways. The first is the examination of public involvement in the creation of the resilience plan itself. The second is how the actions within the strategy address procedural equity. Each city includes a section dedicated to public participation in the plan-making process, which includes timelines, stakeholder involvement, and participation methods. However, not every city includes public participation in the implementation of the actions within the plan.

4.1.1 The Plan-Making Process

Each city varies in the level of detail about the plan-making process. Only about half the plans include a timeline for public involvement in plan creation. The Atlanta (City of Atlanta, 2017), El Paso (El Paso, 2018), Norfolk (City of Norfolk, 2015), Oakland (City of Oakland, 2016), Pittsburgh (City of Pittsburgh, 2017), and San Francisco (City of San Francisco, 2016) plans each describe a timeline that ranges from "a six month conversation" in Norfolk to a "two year process" in Oakland. Most other cities had a participation period of around one and a half years.

The number of stakeholders involved in plan creation are usually within the thousands, however the Boulder (City of Boulder, 2016), Oakland, and San Francisco plans do not provide this information. The Norfolk plan is vague about the number of participants, stating "hundreds" of community members were involved. The New Orleans plan reports the fewest number of participants with 350 (City of New Orleans, 2015), followed by the Pittsburgh plan with around 600. The El Paso plan far exceeds the other cities in the number of involved community members, as they report 12,000 attending face to face meetings and an additional 70,000 commenting online. Boston's plan is very focused on outreach and public input, and as such

Boston involves the second most residents with 11,000 community members involved (City of Boston, 2017).

While involving as many stakeholders as possible is a step toward procedural equity, procedural equity can only be achieved by ensuring the involvement of a diverse range of community members and specifically underrepresented and disadvantaged groups. All plans provide some detail about who was involved in plan creation. The most frequently referenced stakeholders are City staff and Council members. The private sector and businesses were also frequently involved. The New York (City of New York, 2015) and Pittsburgh plans specifically listed the largest businesses or emerging sectors, such as the banking and technology sectors, in plan creation. In Norfolk, the military was targeted due to the sector's economic importance for the city. Another common group was community-based and non-profit organizations as well as experts, including academic and educational institutions. New Orleans focuses their attention on stakeholders with "relevant knowledge and expertise" (p. 20). Although the Boulder plan describes little of their participation process, they are the only city to specifically target youth. Atlanta is insistent on ensuring that diverse stakeholders are involved in plan creation to reflect the city's diversity. The El Paso plan also reflects on the importance of diversity by varying the location of meetings to enable different participants. Aside from these reflections on diversity, there is little mention of the involvement of underrepresented groups.

The most common methods of public participation were workshops and steering committees and working groups composed of community experts. Public meetings, often in the form of Council meetings and roundtables, were also common. Many of these methods follow traditional approaches, where residents can comment on the content, but are not necessarily meaningfully involved in the creation of the plan. The workshops, forums, and roundtables held

by cities such as Oakland and Pittsburgh go a little further in engagement. The Boston, Atlanta, and Pittsburgh plans recognize the importance of the continuous involvement of stakeholders in plan implementation by involving the community in tracking targets.

4.1.2 Political Engagement throughout Implementation

In addition to involvement in plan creation, many cities recognize the importance of political engagement in the implementation of the actions listed within these plans. Some actions are solely focused on process, whereas in others public engagement is a means to achieve another outcome. The Berkeley (City of Berkeley, 2016), New York, and San Francisco plans explain intentions to increase engagement of the community as a whole, whereas the Atlanta and Boston plans focus their efforts on traditionally underrepresented populations. Specifically, Boston intends to engage communities of colour and low-income residents in city processes. Sometimes engagement and collaboration are not targeted to residents specifically, but to the private sector, including community-based and non-profit organizations.

Some cities are expanding past the traditional methods of participation. Atlanta and San Francisco are creating new spaces for public engagement by transforming libraries into community spaces, whereas Boulder is using art. In Atlanta, improving community engagement is important due to the number of residents that feel they do not have an influence on city processes, which has created a lack of trust in government. As a result, the City is setting aside a budget for public input as well as creating criteria for public evaluation. The El Paso plan also recognizes the importance of residents influencing decision-making to empower residents to "achieve meaningful change reflective of community need" (p. 84). New York's is the only plan to recognize the barriers that prevent people from participating, including inaccessible or inconvenient locations, lack of information, timing constraints, immobility, lack of language

options, and lack of broadband access. As such, many of New York's actions address these challenges, although not directly reflecting the outcomes for procedural equity. Although procedural equity is considered by each city, little effort is made in any of the plans to include community members that have traditionally been neglected in plan-making processes.

4.2 Social equity

Social equity is the most frequently discussed type of equity. All plans discuss social equity in terms of socioeconomic characteristics, race and ethnicity, health, housing, and/or access to social networks. The discussion often focuses on disparities between groups, largely by income and race, but sometimes goes further to explain how these disparities result in lost opportunities. While the impact of systemic stresses is discussed, discussions of how these stresses contribute to vulnerability to shocks is rarer.

4.2.1 Socioeconomic Status

All cities address socioeconomic inequities. Most plans report statistics about average income and percentage of residents in poverty as well as citywide education status and unemployment rates. Every plan has at least one initiative intended to address socioeconomic status. Actions that target low-income populations are common, ranging from affordable housing development, to banking programs, to access to education, to assistance with renewable energy installations. Initiatives that are intended to address what may cause a household to be low-income in the first place are less common.

A few plans explain this relationship between lost opportunities and poverty. The Boston and New York plans frame these lost opportunities as outcomes due to individual problems. New York's plan states that families are likely to stay in poverty "without the qualifications to

advance to mid-wage jobs" (p. 58). This statement does not recognize the systemic injustices that may have placed these families in poverty in the first place. Atlanta's plan, however, recognizes that lost opportunities are the "result of discriminatory systems and policies" (p. 48) that have limited economic mobility and continue to have intergenerational impacts, making it difficult to break the cycle of poverty.

In addition to poverty, some plans recognize the consequences of a lack of access to early childhood education and quality child care programs on life outcomes. Pittsburgh's plan recognizes that "unequal access to pre-K education, result[s] in disparities in education outcomes later in life". (p. 46). Yet, many plans, such as Atlanta's, state that many children are not enrolled in quality programs, thus potentially limiting opportunities. Furthermore, access to these programs is often stratified by income, as the cost is out of reach for many low-income families.

Strategies to improve education largely focus on pre-K and college. While the Berkeley and Oakland plans encourage accessible pre-K for all, plans in Atlanta, Boston, New York, and Pittsburgh prioritize low-income families. Although not targeting any socioeconomic group in particular, Boston's plan is encouraging high school students to attend higher-education institutions through dual-enrollment programs that offer tuition-free college credits. Plans in New York and Pittsburgh are taking their education initiatives further by developing Community Schools, which integrate additional programs and services to better serve youth overall.

Almost all plans contain strategies to address skill development by incorporating it into school programs, such as in El Paso and Pittsburgh, or by connecting employers to students through internships, such as in Boston, Oakland and Norfolk. Most cities generally apply these strategies to job-seekers or to young adults and students in particular, however the New York and Oakland plans explicitly state the intention to prioritize underrepresented groups in these

initiatives. Specifically, Oakland's Classrooms2Careers Program provides opportunities for youth of colour to develop work related skills and gain relevant experience.

Socioeconomic status is rarely connected to vulnerability to disasters, although the Berkeley and Boulder plans do mention that low-income households are more vulnerable to disasters due to their lower adaptive capacity. Similarly, the New Orleans plan recognizes the vulnerability created by a lack of savings in the event of a disaster. Although material resources are rarely mentioned in these plans, access to air conditioning is presented as an issue in Atlanta, El Paso, and New York. These cities connect that low-income populations are less likely to have access to air conditioning and thereby are more likely to be impacted by increasing heat events due to climate change.

Only the Atlanta and Boston plans connect quality of employment to vulnerability to stresses and shocks. The Atlanta plan recognizes that "[a]s long as significant swathes of Atlantans lack access to quality jobs and stable incomes, the city and its residents remain vulnerable to systemic stress" (p. 22). Similarly, Boston's plan recognizes that without quality employment, individuals are more vulnerable to disasters due to a loss of income when places of employment close or the transit system shuts down.

Social security, debt, and retirement status are missing from the discussion on socioeconomic status. Although some plans address the financial capacity and literacy of households, there are few plans that recognize the vulnerability of households in debt and instead only reflect the importance of savings. Similarly, there is little discussion of households depending on social security. Although there is discussion about the needs of older adults, little of this discussion relates to the (lack of) income of retired individuals that can make them more vulnerable to stresses and shocks.

4.2.2 Race, Ethnicity, and Language

Race is a focal point of many cities' plans, including Boston's that centres the plan around racial equity. Racial and ethnic diversity is discussed in many ways. Most plans provide statistics about the diversity of the population, listing the racial and/or ethnic composition. Only the New York and El Paso plans state the number of residents that are foreign-born and English-language learners. El Paso's location as a border city also limits its discussion to Hispanic ethnicity and not race more generally. The Boulder and Norfolk plans avoid the topic of race other than in discussions of overall diversity. This is unsurprising in Boulder, where only one percent of the population identifies as Black or African-American (U.S. Census Bureau, 2010), however in Norfolk 43 percent of the population identifies as Black or African-American (U.S. Census Bureau, 2010).

The Atlanta, New York, Norfolk, and San Francisco plans portray diversity and racial integration as something to celebrate. At the same time, the plans in Atlanta, Berkeley, Boston, New Orleans, Norfolk, and Pittsburgh view racial segregation and other racial disparities as one of, it not the largest, stresses facing their cities. New Orleans' plan recognizes, "we cannot ignore past injustice. Racial inequity is present in every facet of our society – employment and income, education and health, violence and justice, housing and social mobility". (p. 11). Discussions of racial disparities are abundant in many plans, especially in Atlanta, Boston, Oakland, and Pittsburgh. These plans note the drastic disparities in income and wealth, education, and employment. Race is often tied to systemic stresses such as these, but hardly ever tied to disproportionate vulnerability to disasters, except in the Boston and Pittsburgh plans.

Due to these drastic racial disparities, many initiatives target or prioritize people of colour. Although the term "people of color" is often used, it is evident that most strategies are

targeted toward African-Americans and not other racial and ethnic groups. Notably, discussions of indigeneity are missing from these plans. The Atlanta and Boston plans both use a racial equity lens and thus often cite racial elements of their actions. New York, Berkeley, and Boston have corporate affirmative action policies that intend to increase diversity within the City's workforce. These cities hope that leading by example will cause other organizations to make efforts to include racial equity in their programs and policies. The Boston plan specifically intends to engage the private sector in racial equity initiatives, whereas Berkeley's plan makes no mention of racial equity outside of city government.

Strategies such as these do not address the discrimination that has led to these systemic injustices. One of the few strategies that do so are racial reconciliation programs. Atlanta's IMAGINE 50/50, Boston's #IAmBoston, and New Orleans's Welcome Table are events that address structural racism by building relationships and shedding light on past injustices that have led to current outcomes. Despite the extent of racial disparities expressed by many of these cities, most actions simply aim to improve to current conditions without necessarily considering the historic injustices that have led to lost opportunity.

4.2.3 Health

Discussions of health often relate to environmental justice communities where geographic inequalities have placed marginalized populations in neighbourhoods with higher rates of environmental hazards. Berkeley, Boston, New Orleans, New York, and Pittsburgh all address the racial disparities in health regarding hospitalizations, disease incidence, infant mortality, and life expectancy in their plans. In contrast, El Paso's plan notes the lack of disparity between ethnic groups or geographies in incidence of overweight and obese adults. The New York plan places a large focus on public health, especially focusing on children with asthma

related to air pollution. The plan in Boston, and especially Pittsburgh's plan, discuss the opioid crisis and substance abuse. Pittsburgh's plan furthermore recognizes that systemic roots of this problem relate to the "breakdown of social services, sense of isolation, and dislocation from the economy" (p. 32).

Mental health is discussed by plans in Atlanta, Boston, New Orleans, New York, Oakland, Pittsburgh, and San Francisco. New York's discussion is similar to its discussion of physical health, with a focus on the uneven distribution of mental illness among low-income and wealthy neighbourhoods. The focus in Boston's plan and Oakland's plan is largely on the internalized trauma of vulnerable residents, with a particular focus on racial trauma. Atlanta has one of the few plans to recognize the vulnerabilities of LGBTQ+ youth, largely focusing on mental health struggles.

Disparities do not only exist in health status, but also access to health services. New York's plan recognizes a lack of access in the poorest neighbourhoods who often have the highest need, as well as residents with low health literacy, limited English-proficiency, limited mobility, mental or behavioural conditions, or who were previously incarcerated. The plans in Atlanta and New Orleans furthermore recognize that not everyone is covered by health insurance and in New Orleans those not covered are more likely to be African-Americans.

To reduce health disparities, many plans address accessibility to facilities, whether by a certain population or geographic area. New York's plan proposes multiple actions to create new health centres in underserved areas with the greatest burden of disease. New Orleans has one of the few plans to focus on the affordability of health care by trying to increase enrollment in health insurance programs through their plan. New York's plan also addresses this issue by providing service regardless of ability to pay or documentation status. These affordability

strategies address the barriers to accessing health services by differentiating between the existence of services and the use of services. However, there is little discussion of other barriers to accessing health care.

Few plans address the social determinants of health and the root causes of health disparities. The New York and Oakland plans explicitly state the importance of the social determinants of health, whereas plans, such as Berkeley's, only vaguely state intentions to work toward race-based health equity. New York's plan also aims to address the source of health issues, such as asthma, by improving air quality through programs to reduce particulate matter and second-hand smoke.

Some plans recognize that climate change and extreme events are likely to increase the health burden, both physically and mentally. Many cities are already experiencing increasing temperatures and as such in their plans Atlanta, Boston, El Paso, New Orleans, New York, Oakland, and Pittsburgh recognize that extreme heat is affecting the health of residents, especially more vulnerable populations, including seniors, infants, children, people with disabilities, and low-income communities. Many of Boston's health strategies centre on the impacts of climate change, such as volunteers checking in on disabled residents who lack cooling in heat events. Boston as well as San Francisco recognize the post-disaster effects on mental health in their plans.

4.2.4 Housing

Three main issues appear related to housing: quality of housing, affordability of housing and displacement, and vulnerability to homelessness. In terms of housing quality, housing age and type can increase vulnerability of the shelter itself and the residents within. The plans in Oakland and Pittsburgh discuss concerns regarding the aging housing stock. Furthermore, these

plans, as well as Berkeley's and San Francisco's, note that the housing stock is vulnerable to shocks. The Berkeley, Oakland, and San Francisco plans note the vulnerability of soft-story buildings to earthquakes in particular. The buildings represent a significant proportion of rent-controlled housing and as a consequence, many low-income residents in the San Francisco Bay Area are more vulnerable to earthquakes.

As a result, the Berkeley, Oakland, and San Francisco plans have actions for seismic retrofits through incentive programs. Protecting the rent-controlled and affordable housing located within these vulnerable buildings is particularly important. The Cities of Oakland and San Francisco are prioritizing soft-story apartments and blighted properties for the purpose of preserving affordable housing. In contrast, Berkeley's by-law requires property owners themselves to retrofit the building, although the City offers a tax rebate. San Francisco also has programs for repairs post-disaster to allow residents to recover in place. Similarly, the Norfolk plan aims to strengthen post-disaster resilience through a rapid housing recovery model despite providing few actions for disaster preparedness.

At the household scale, New Orleans and Pittsburgh are developing programs and incentives for energy efficiency. New Orleans explains in their plan that residents benefit from lowered insurance premiums, however neither city provides incentives for low-income populations who may not be able to afford these improvements. New York is addressing these affordability concerns by evaluating recent changes to insurance premiums by the Federal Emergency Management Agency (FEMA) as well as creating financing programs for retrofits for building owners that cannot currently participate in programs. The El Paso plan also considers low-income populations by providing loans of up to $65,000 for home improvements.

Some of the focus on improving housing quality is directed to public housing, whether through neighbourhood revitalization or upgrades to individual buildings. New Orleans and San Francisco plan to redevelop public housing developments. With over $3 billion in funding from FEMA, New York intends to improve the physical resilience of public housing to withstand climate change risks and create policies for maximum allowable temperatures. In addition to public housing, the Atlanta, New Orleans, New York, and Pittsburgh plans state their intention to create or expand access to supportive housing for aging residents and residents with disabilities.

Housing affordability presents a major issue in all cities. Many plans discuss the extent of cost-burdened households and rising rents, and Atlanta, Boulder, Boston, and Oakland further recognize in their plans that affordability is compounded by other issues. Atlanta's plan relates housing affordability to an inability to access secure employment, limited transportation networks, and workforce development. The Boston and Oakland plans relate these issues to race, as Black renters disproportionately represent severely rent-burdened households and are more likely to be denied a home-purchase loan than White residents.

The extent of affordability issues is well reflected in the number of actions that promote affordable housing. Affordable housing strategies are among the most common initiatives reported throughout these plans. Many cities therefore intend to create new and preserve existing affordable housing, some with a particular focus on vulnerable residents. Inclusionary zoning is a common action item, proposed by Boston, Boulder, New Orleans, New York, and San Francisco in their plans. The City of Norfolk is instead relying on the private sector with a program that allows housing specialists to "reach out to landlords, identify housing available to low-income families, and build relationships to further expand rental opportunities for safe, affordable, and accessible housing". (p. 43).

While San Francisco's plan has multiple actions relating to affordable housing, affordable housing is not limited to low-income residents, but also targets middle-income households. This inclusion of middle-income households is an approach taken by many cities that are developing mixed-income communities. Atlanta, New Orleans, and New York all mention their intention to promote mixed-income communities in their plans; New Orleans specifically through its public housing redevelopment.

Without consideration of affordable housing, rising rents increase the possibility of displacement and gentrification. Atlanta, New Orleans, Oakland, and Pittsburgh recognize in their plans that increasing prices are placing stress on many residents and businesses and thus leading to foreclosures. Atlanta's plan explicitly recognizes the impact of development of the BeltLine, a former railway line being converted to a park and trail system, on office rents in adjacent neighbourhoods. New Orleans' plan does not use the term gentrification, but notes that lack of affordable housing is causing residents to move to more affordable and less accessible areas. Atlanta and Boston are attempting to minimize the impacts of gentrification through anti-displacement packages that include tax credits for below market housing, notice of eviction to the City, and allowing tenants and non-profits to purchase properties subject to foreclosure before they are placed on the market. Oakland is also encouraging the latter of these strategies in its plan so that non-profits can create affordable housing.

Housing unaffordability combined with other vulnerabilities is creating issues of homelessness in many cities. Atlanta, New York, and Oakland recognize in their plans that their homeless population is comprised of a certain demographic, notably Black youth, youth transitioning out of foster care, veterans, seniors, formerly incarcerated people, and/or LGBTQ+ residents. The most basic approaches to addressing homelessness are to support the current

population through various interventions and subsidies. For example, Atlanta intends to create a program that encourages landlords to accept permanent housing subsidies from homeless families and individuals. Interventions in Boulder take a unique approach that trains homeless community members to "turn trees impacted by Emerald Ash Borer into beautiful products" (p. 42). The El Paso, New York, and San Francisco plans make more bold statements that they intend to end homelessness.

El Paso, New York, Norfolk, Pittsburgh, and San Francisco have plans to provide emergency services and shelter in the event of a disaster. Norfolk and San Francisco are largely relying on the faith-based community to support emergency preparedness. San Francisco is creating plans for interim and transitional housing with a focus on vulnerable populations to address a sudden homeless population in the event of an earthquake. New York's plan is unique in its discussion of shelter need outside times of disaster, specifically recognizing the need for shelter space for victims of domestic violence. San Francisco also recognizes issues of domestic violence, especially in rehousing after a disaster, in its plan. Housing issues largely revolve around issues of affordability, but sometimes further discuss the compounding inequities and injustices that makes residents vulnerable to systemic stresses as well as shocks.

4.2.5 Social Capital

Social networks are important to increase an individual's adaptive capacity and therefore resilience. However, few plans discuss social networks at all and even fewer discuss their importance to a resilient city. El Paso's plan as well as Pittsburgh's plan note the importance of cultural and neighbourhood pride that connects residents to their communities. However, the New York and El Paso plans reflect on the lack of volunteerism in their communities.

A lack of access to information, and especially authoritative data, also poses a problem in many cities. All cities except El Paso have actions in their plans to promote data sharing, open data, and/or the accessibility of information. Atlanta, Boston, New York, and Norfolk intend to improve their 311 systems. Boston's approach is to crowdsource data so that City responses are not concentrated in areas with high 311 use. The Boulder plan also has multiple strategies that involve crowdsourcing data, such as citizen science programs to help the city track certain metrics. Norfolk is using mobile technologies to promote volunteer opportunities. The New York and Oakland plans discuss increasing access to information for use by community-based organizations and local government agencies.

Climate change education is an action item in the Berkeley, Boulder, Norfolk, Oakland, and San Francisco plans. Oakland intends to communicate about sea level rise to residents who may be most vulnerable, which are communities of colour and low-income communities. These same cities are working on emergency alert systems for flooding, tsunami warnings, and traffic. Boston has one of the few plans that makes the connection between a lack of social networks and social vulnerability during shocks by recognizing the importance of climate change information in preparing for risk. Boston's plan recognizes

> [c]losely knit communities are able to bounce back more quickly during times of crisis… Individual and community social networks can provide access to various resources in disaster situations, including information, aid, financial resources, and child care along with emotional and psychological support. (p. 126).

Boulder's plan also recognizes the importance of communities for support, especially for vulnerable and isolated individuals. Not only are communities important for support, but New York's plan explains the importance of social institutions, such as parks. For instance, in a major storm or hurricane, parks can act as protection, due to their role in stormwater management, and in recovery as a central gathering space for impacted residents.

Discussion about the importance of social contact with friends and families, including the diversity of social contacts and the frequency of social interactions, is missing from all plans. There is little discussion around isolated individuals, except for the rare mention of emergency preparedness for seniors and people with disabilities; although the literature extensively addresses the importance of social networks in adaptive capacity and resilience.

4.3 Geographic equity

Geographic equity revolves around the spatial distribution of benefits and risks. This section discusses geographic equity in these plans in three ways. The first is how the plan addresses issues of neighbourhood quality and safety, often referring to neighbourhoods in general and the quality of life for all residents residing within. The second is improving accessibility to facilities, infrastructure, transportation, and environmental amenities, especially for those who lack access. Last is an inequitable concentration of negatives, such as crime and environmental hazards in certain neighbourhoods.

4.3.1 Neighbourhood Quality and Safety

Discussions of neighbourhood quality are often focused on quality of life for residents. Boulder is the most positive city in its plan, discussing the high quality of life in the city overall. However, Boulder's plan does recognize that the "vibrant economy and high quality of life often

mask latent stresses that strain the community and make it less resilient overall" (p. 4). In contrast, the Atlanta, New York, Norfolk, Oakland, and Pittsburgh plans discuss the low quality of life within certain areas of the city, namely in communities of colour and low-income communities.

Atlanta, Boston, New Orleans, Norfolk, Oakland, and Pittsburgh recognize in their plans that these differences in quality of life are the result of differences in sharing of prosperity. Certain neighbourhoods have benefited from revitalization, whereas others have suffered from disinvestment, as discussed in the Atlanta and New Orleans plans. Pittsburgh recognizes in its plan that economic recovery has not occurred at the same rate in every neighbourhood, where "[s]ome communities are negatively impacted by the city's development, as housing prices rise and employment growth among historically disadvantaged populations remains relatively stagnant" (p. 28). Similarly, in the Oakland plan, it is stated: "particularly among low-income neighborhoods and communities of color, Oakland faces rapidly rising income inequality and housing displacement, disparate unemployment and education rates, and chronic violence" (p. 10).

Most plans make some claim to improve neighbourhood quality and quality of life. Often, these claims are for quality of life overall or everywhere, without specifically addressing which neighbourhoods or people are most in need. The Boston plan emphasizes funding for community leaders and grassroots organizations to prioritize underserved communities and make neighbourhoods "safer, green, more livable, and more connected" (p. 77). Plans such as Pittsburgh's similarly focus on Complete Streets policies, whereas San Francisco's encourages liveable streets. These same terms appear throughout these plans in an effort to improve

neighbourhood quality and create resilient communities, often without providing more substance on how to achieve these goals.

The El Paso, Norfolk, and San Francisco plans have actions for revitalization that take different approaches. El Paso's plan encourages adaptive reuse, focusing on the downtown area and specifically the Cohen Stadium neighbourhood. Norfolk's plan encourages revitalization, especially in high poverty areas, through water management, the creation of affordable housing and businesses, and community leadership. Meanwhile, San Francisco's revitalization is limited to public housing. In order to make these neighbourhood changes more equitable, some cities have strategies for equitable development. The Atlanta plan states that they will "develop an equitable built environment that enables all Metro Atlantans to live in vibrant neighborhoods with mixed-income housing, multiple modes of transportation, healthy food options, and access to public greenspace". (p. 68). Strategies like these intend to improve accessibility and quality of life for everyone and while this includes disadvantaged groups, they are not necessarily prioritized.

On a citywide level, New York's plan details the problems with street safety and specifically pedestrian fatalities. Despite a lack of discussion on issues regarding street safety in other cities, New York as well as New Orleans and San Francisco have Vision Zero strategies, aiming to eliminate pedestrian fatalities by improving pedestrian and bicycle safety. Other plans more generally aim to improve neighbourhood safety. Safe neighbourhoods are one of the three main goals of Oakland's plan, which includes a vision to be one the of healthiest and safest cities in the United States. New York's plan has a similar goal to be the safest city among large cities in the United States. These discussions of safety may improve neighbourhood quality, however there is little discussion in which neighbourhoods they will be implemented.

4.3.2 Accessibility to Facilities, Infrastructure, Transportation, and Environmental Amenities

Facilities, infrastructure, transportation, and environmental amenities are important to neighbourhood quality, yet these are lacking in many cities. Some plans, including Atlanta, Boulder, El Paso, and Pittsburgh, discuss the inadequacy of current infrastructure and transit systems due to a lack of investment, aging, damage, and stress from extreme events. El Paso has the only plan that recognizes a lack of critical infrastructure due to the establishment of informal settlements.

Infrastructure and facilities are often unevenly distributed, following familiar patterns of lack of access in marginalized neighbourhoods. Atlanta's plan discusses how some neighbourhoods have benefitted from redevelopment, whereas others lack infrastructure as basic as sidewalks. Not only is the physical infrastructure unevenly distributed, but public transit services in Atlanta, Boston, New Orleans, and New York are limited in underserved communities, as acknowledged in their plans. In New Orleans, budget cuts after Hurricane Katrina have resulted in service reductions in low-income neighbourhoods and communities of colour. New York's plan recognizes the impact that a lack of reliable and convenient transit can have for seniors and people with disabilities, many of whom depend on transit for their daily activities. The plans in New Orleans, New York, and Pittsburgh discuss the large population that relies on public transit, particularly in under-resourced communities, despite the inadequacy of the system. In comparison, the plans in Atlanta and El Paso recognize that the cities are largely car dependent, which is creating difficulties in shifting to multi-modal transit in the first place.

Most strategies regarding accessibility are about improvements to and the development of new facilities and infrastructure without mentioning the prioritization of vulnerable and/or underserved areas in order to address inequities. Many plans recognize the need to update and

transform current infrastructure systems, often through the development of green infrastructure in order to achieve co-benefits. For instance, flooding in the Norfolk plan is portrayed as an issue of economic development, thus upgrading the seawall will also improve the economy. The Atlanta, Boston, El Paso, New York, Norfolk, Pittsburgh, and San Francisco plans all intend to expand transit, often favouring multi-mode transit and transit-oriented development. The Norfolk, New York, and San Francisco plans note the value of public transit for economic development, as the connection of homes and employment centres can reduce commute times. New York's plan extensively details potential transit improvements and expansions, including subway routes, bike-lane network expansions, and increased bridge and ferry resiliency.

Targeting underserved areas and vulnerable populations is rarer. The focus is on an equitable distribution of green infrastructure development across underserved areas. New York's plan intends to ensure equitable distribution across all neighbourhoods, whereas Boston's plan specifically prioritizes vulnerable communities. The plans in El Paso and Oakland reflect on the equity benefits of green infrastructure due to its ability to address climatic and social stressors, such as air quality and urban heat island effects. Equitable access to transportation in underserved areas is another goal of many cities. Boston plans to reform its sidewalk repair system that currently relies on 311 complaints for more equitable prioritization. The San Francisco and Oakland plans move beyond accessibility to recognize the impacts that development of new amenities can have on affordability (ie. gentrification), and thus address affordable housing and displacement within their transportation actions.

Access to facilities and resources can also be unevenly distributed. Few plans, including Boulder, El Paso, and Pittsburgh, discuss the importance of environmental amenities other than in the context of co-benefits of green infrastructure. Boulder's plan does so through noting their

pride in the undeveloped landscape that is the result of "decades of progressive land use planning" (p. 7). Atlanta's plan and New York's plan are rare in their acknowledgement of the uneven distribution of these resources. The New York plan notes both a lack of clean, safe, and attractive places to be physically active and cultural resources in low-income and minority neighbourhoods. The Atlanta, El Paso, New York, and Pittsburgh plans comment on a lack of access to healthy food in many neighbourhoods, resulting in food deserts in under-resourced communities. Atlanta's discussion focuses on the many food deserts throughout the city, whereas Pittsburgh's plan acknowledges their prominence in primarily Black neighbourhoods. The Pittsburgh and El Paso plans also further connect the issue to larger issues of food insecurity of vulnerable populations.

In response, most plans make some attempt to increase investment in environmental amenities, such as the development of and improvements to green space, parks, open space, and community gardens. Pittsburgh's plan even states the intention to gain a Biophilic City designation, which designates the City as one that connects residents to nature. The language used in accessing fresh and healthy food is similar, promoting access for all, and also focusing on improving the food sector economy.

The Atlanta, Boston, New York, Norfolk, Oakland, and Pittsburgh plans go further to ensure equitable distribution and investment in environmental amenities. Oakland and New York are using an equity framework for the prioritization of parks improvements and investment. New York's approach prioritizes high-need neighbourhoods, defined by high poverty, high density, and recent population growth. New York's plan also addresses issues of use by providing funding to community-based organizations to increase use of these spaces. New Orleans and New York are rare in the plans' targeting of food strategies to food deserts by attracting grocery

stores to underserved neighbourhoods. New York is also more directly serving vulnerable

populations by giving vouchers for fresh fruits and vegetables to low-income residents.

4.3.3 Concentration of Discrimination, Crime, and Environmental Hazards

The same neighbourhoods that often face a lack of amenities also face a concentration of

negatives, including poverty, crime, and environmental hazards. Plans, such as Atlanta, Boston,

and New York, present many maps to show the concentration of certain vulnerabilities, including

income, race and ethnicity, health outcomes, unaffordable housing, and the urban heat island

effect. These maps demonstrate how disparities are concentrated in certain neighbourhoods and

how these disparities often overlap to create higher vulnerability.

As a result of these trends, Atlanta's plan recognizes that the city is "at risk of becoming

an increasingly divided region – racially, socially, and geographically". (p. 21). The Boston,

New Orleans, and Pittsburgh plans acknowledge the significance of the history of residential

segregation laws on spatial distributions and the lasting impact of these injustices on the

outcomes of African-American residents. Atlanta, Boston, and Pittsburgh all make claims in

their plans that their cities are among the list of the most racially segregated cities in the United

States. Boston's plan additionally recognizes discrimination on an individual level, as survey

results demonstrate higher levels of perceived discrimination in Black and Hispanic residents

than White residents.

The Atlanta, Boston, New York, Oakland, and Pittsburgh plans provide statistics about

crime and incarceration, often linking high crime rates to the systemic racism that has placed

African-American neighbourhoods at high risk. For example, in Pittsburgh majority-Black

neighbourhoods far exceed majority-White neighbourhoods in homicide rates despite geographic

proximity. The Atlanta plan recognizes that lack of economic opportunities, disinvestment,

exploitation, and neglect has resulted in increases in crime. Oakland's plan makes the connection among crime incidence, food stamp participation, youth incarceration and probation rates, violent suspensions, and chronic student absences. Boston's plan offers a unique example of lack of attention to this chronic violence. Being the only plan to mention terrorism, Boston's plan comments that the slogan "One Boston" after the Boston marathon attack disconnected residents of colour in neighbourhoods with high rates of violence who frequently experience community violence that is not afforded the same attention.

Hardly any strategies are devoted to discrimination, other than attention to racial disparities through a racial equity lens. Strategies against crime and violence often do not address the systemic roots of violence. Instead, New York's plan recognizes violence as a root cause of inequity, thus attempting to reduce crime. New Orleans, through NOLA FOR LIFE, has the only plan to mention a murder reduction strategy. In addition to New Orleans and New York, the plans in Boston and Oakland propose changes to the criminal justice system and support for victims, however only New York's plan places a specific emphasis on achieving these goals in distressed neighbourhoods. The Atlanta, Berkeley, New York, Norfolk, Oakland, Pittsburgh, and San Francisco plans acknowledge the strained relationships among residents and law enforcement and thus provide actions to build trust through communication.

A concentration of environmental stressors can compound social stressors in distressed neighbourhoods. The conversation in the plans is often about the vulnerability of populations at risk of these hazards. Plans in Berkeley, Boston, New Orleans, New York, Norfolk, and Oakland recognize that some of the most vulnerable populations are located in hazardous areas, notably in the 100-year floodplain and seismically active areas. Norfolk's plan states that "[w]hile all residents of Norfolk are increasingly threatened by frequent and more intense storms, as well as

routine nuisance flooding, some of Norfolk's more socially and economically at-risk neighborhoods are disproportionately vulnerable to flooding and storms". (p. 18). New Orleans' plan recognizes the systemic racism of racial segregation laws that have placed African-American residents at low elevations at greater risk of flooding and subsidence. Similarly, low-income residents in Oakland are more likely to be located in areas at risk of sea level rise, seismic instability, and liquefaction, as discussed in the plan.

These communities facing multiple stresses may find preparing for shocks especially difficult due to a lack of adaptive capacity. The Boston plan recognizes "communities facing chronic stresses – such as poverty, or regular incidents of neighborhood violence – may find preparing for emergencies to be particularly difficult" (p. 112). Oakland's plan also recognizes social factors, including a lack of access to preparedness information, transportation options, and healthcare and insurance, that increase vulnerability. Without any further explanation beyond the benefits of social cohesion, El Paso's plan takes a more positive view, stating that "[i]t's often the poorest among us that are classified as the most vulnerable. However, neighborhoods with the highest level of poverty can exemplify the highest levels of resilience". (p. 48).

Due to these vulnerabilities, most plans have actions dedicated to reducing risk. Flooding is the most common risk discussed among all plans, however earthquakes and wildfires are also mentioned in the plans of the San Francisco Bay Area cities. Only some plans move beyond physical vulnerability to social vulnerability by prioritizing under-resourced and vulnerable communities in their strategies. Oakland again uses an equity checklist for prioritization, whereas Boulder and New Orleans are providing assistance to low-income populations through insurance instead of the City implementing flood protection itself. The Boston, New Orleans, and New York plans also recognize the importance of equitable climate change adaptation in order to

protect socially vulnerable communities. One such action in Boston is the development of micro-grids in underserved areas. The neighbourhood of Roxbury is the focus of this action due to its high social vulnerability, high energy-use buildings, affordable housing, and location of critical facilities.

Other plans also provide actions for critical facilities located in hazardous areas. Current infrastructure is likely unable to withstand shocks, especially with climate change increasing the frequency and intensity of extreme events. New Orleans' approach is reactive, only repairing and improving infrastructure after an event has occurred. However, Berkeley is taking a proactive approach to ensure sea level rise is incorporated into plans for public infrastructure, land use planning, and site development standards. The New Orleans and Norfolk plans discuss also changing their approaches to development to recognize the risks of climate change. Norfolk's plan simply intends to consider sea level rise in development, whereas the New Orleans plan emphasizes a shift in mentality from fighting against water to living with water.

Brownfields also pose an environmental risk to surrounding communities, thus the Atlanta, Boston, New York, Oakland, and Pittsburgh plans propose the transformation of vacant properties and brownfields to benefit vulnerable populations and the community as a whole to achieve other resilience goals, such as recreation, stormwater management, and/or affordable housing. Pittsburgh's plan states, "[v]acant and underutilized land has the potential to become a community asset" (p. 58). New York's plan intends to engage the adjacent community in brownfield planning, especially in neighbourhoods heavily impacted by Hurricane Sandy. New York's focus in the plan is largely to "reclaim land for development in the city" (p. 194) and create millions in tax revenue, using brownfield redevelopment not only to benefit vulnerable communities, but also as an economic development strategy for underutilized land.

Neighbourhoods surrounding brownfields are often considered environmental justice communities due to a combination of social stresses, physical hazards, and lack of amenities. Atlanta's plan specifies the neighbourhood around Proctor Creek as an "environmental justice hot zone" due to the presence of brownfields, limited greenspace, food deserts, and public health threats from frequent flooding. Brownfields in New York are also particularly vulnerable to flooding, as the location of many in low-lying waterfront areas means that floodwaters spread contaminants to surrounding neighbourhoods.

The Boston and Oakland plans furthermore recognize environmental justice as part of the climate change adaptation agenda. Boston will "develop neighborhood-based climate resilience plans that benefit households citywide and promote environmental justice". (p. 116). Oakland's plan claims to ensure environmental justice through the 2016 update to the Energy and Climate Action Plan. Recognizing that the prioritization of protection has equity impacts, Oakland's plan claims to assess the equity impacts of the transition to 100 percent renewable energy, including the siting of facilities, cost implications for low-income households, and workforce implications. These plans that consider the compounding stresses of environmental justice communities go the furthest in addressing geographic equity and spatial justice.

4.4 Economic Equity

Economic development does not necessarily have to follow traditional patterns. Instead, these resilience plans can promote equitable economic development that addresses disparities and their systemic roots. Many plans discuss income inequality and poverty and sometimes recognize resilience as an opportunity to address these inequities. Although the conversation is

still largely based on traditional economic development, many actions consider more resilient

forms of economic development through sustainable and equitable growth.

4.4.1 Disparities in Income and Poverty

Every plan at least mentions income inequality and poverty, but not every plan goes into

detail about the consequences. Many plans provide statistics about high income inequality that

continues to grow as the middle class shrinks and luxury real estate is developed. Many plans

also acknowledge high poverty rates and how this poverty is not evenly distributed. The Atlanta,

New Orleans, and New York plans state the disparities by race and/or ethnicity, noting the high

rates of children of colour in poverty. New Orleans, Oakland, and Pittsburgh further recognize in

their plans that not everyone is sharing equally in economic prosperity. Specifically, the African-

American population in New Orleans has not shared in growth post-Katrina. Oakland's plan sees

this problem as a "tale of two cities, one of hyper-prosperity and the other of deep poverty" (p.

20).

The El Paso, New York, and Oakland plans connect the lack of opportunity related to

poverty to a lack of adaptive capacity that makes recovery after extreme events more difficult,

thereby inhibiting resilience. Due to the impacts of one extreme event, the El Paso plan states, "it

becomes evident that the severity of these events was a direct function of the chronic stresses

present in our community rather than a function of the actual severity of the climatic event". (p.

33). However, poverty not only influences vulnerability to shocks but also everyday stresses.

New Orleans' plan states, "[t]he unequal distribution of wealth that has plagued New Orleans for

decades has produced communities with high concentrations of poverty and little access to

avenues of economic and social mobility". (p. 55).

4.4.2 Economic Strength and Risk

Despite the uneven distribution of wealth, many plans proclaim to have a strong economy. Plans in Atlanta, Boulder, El Paso, New Orleans, New York, Norfolk, and Oakland discuss their economic growth in terms of economic output and the success of certain economic sectors. Norfolk's plan attributes the city's success to the port and military, El Paso's to international trade, and New York's to the traditional sectors of finance, insurance, and real estate.

Despite these economic strengths, many cities are also facing economic risks. New York, Norfolk, Oakland, and Pittsburgh comment on recent economic decline in their plans. Economic decline is a main focus of Pittsburgh's plan, stating that the economy has not fully recovered since the collapse of the steel industry in the mid 20th century. Although noted as a strength, the dependence on certain economic sectors can also pose a risk. Norfolk's plan acknowledges the job loss resulting from the decline of the military sector, whereas the El Paso and New Orleans plans recognize the vulnerability of relying on natural resources given economic and climatic shifts.

Many individual businesses and start-ups are struggling due to issues such as high commercial real estate prices in Atlanta, Boulder, and New York and difficulty attracting and retaining a workforce in El Paso. The Boston and New York plans acknowledge the threat of emergencies and disasters, especially for small businesses. For example, after Hurricane Sandy, many businesses in New York suffered from lost earning, displaced jobs, and reduced access to goods and services. All these struggles disproportionately affect minority- and women-owned business enterprises. Atlanta's plan recognizes the systemic barriers affecting racialized business owners, whereas Pittsburgh's plan notes disparities in women-owned businesses. The Oakland

plan instead recognizes disproportionate challenges in low-income and minority neighbourhoods, considering the protection of small businesses from rising rents and gentrification is "a matter of equity and justice" (p. 58).

4.4.3 Traditional Economic Development

Many actions continue to follow traditional forms of economic development, which prioritize economic growth. The El Paso, New York, Norfolk, and Pittsburgh plans mention the opportunities for economic growth. These plans, along with the plans in Atlanta, Boston, and Oakland, have action items to create new jobs. Atlanta aims to create 10,000 new jobs by 2020 and New York ambitiously aims for 4.9 million jobs by 2040. Boulder and Norfolk are preparing for economic risk in their plans by understanding the vulnerability of their economy in the face of economic and/or environmental disasters.

Along with the strengthening of existing sectors, El Paso, New York, Norfolk, and Pittsburgh are working toward economic diversification to protect against economic shocks through their plans. The focus is largely placed on emerging industries, namely technology and innovation; a particular emphasis in Pittsburgh to assist with economic recovery. New York's plan and New Orleans' plan furthermore recognize the importance of diversification for protection against climatic shocks. The New York plan states that due to the dangers posed by climate change, "[a] diversified economy… is vital to maintaining the city's economic resiliency, and enables those impacted by emergencies to recover more quickly". (p. 127). New Orleans is directly addressing the risk of flooding in their plan by expanding employment in the water management sector.

Almost all plans have at least one action dedicated to promoting local businesses, small businesses, and/or start-ups and entrepreneurs. Atlanta and Norfolk are reducing barriers by

addressing the cost of space for start-ups in their plans. However, these plans note their intention to revitalize districts, such as Atlanta's BeltLine Tax Allocation District, which is already noted as undergoing gentrification. In their plans, both Boulder and New Orleans focus on hiring local to keep wealth within the economy. The Boulder, New Orleans, New York, Norfolk, and San Francisco plans have actions to financially and technically assist small businesses in disaster preparedness and recovery to reduce the overall economic losses from disasters and use small businesses as a tool for recovery within the community.

4.4.4 Resilient Economic Development

These traditional economic development strategies, while potentially improving economic resilience, are unlikely to promote equity and justice. Instead, economic development can take more sustainable or equitable forms to promote resilience. The Berkeley, Boston, El Paso, New Orleans, and New York plans all encourage green economic growth, while the Boston, New Orleans, New York, Oakland, and Pittsburgh plans discuss equitable economic growth and development that benefits all and particularly disadvantaged populations. Oakland's plan refers to equitable growth as a "model of responsible economic growth" (p. 60). New Orleans' plan points out the overall benefits, arguing that "[i]nvesting in resilience can save money, save lives, and build a more equitable and prosperous city". (p. 25). New York's plan also calls on the budget implications of equity, as inequity burdens the criminal justice and healthcare systems. Through its plan, El Paso plans to integrate resilience into economic development, thus ingraining resilience into economic decision-making. However, the plan does not provide additional information on what exactly this entails.

Recognizing disparities in the success of businesses, Atlanta, Boston, New York, and Oakland have programs in their plans for minority- and women-owned business enterprises.

Atlanta's plan intends to provide technical assistance to Black-owned firms, Oakland's plan to provide loans to lower-income and minority entrepreneurs, and Boston's plan to provide loans to businesses owned by immigrants, women, and minorities. Much more attention is given to small businesses and the economy in general than to these traditionally disadvantaged businesses.

More of the focus is on individual jobs. Workforce development is often attached to other actions and not toward a more sustainable or resilient economy. The Atlanta, Berkeley, Boston, New York, Oakland, and Pittsburgh plans focus their job growth initiatives on green industries, such as the development and construction of green infrastructure for stormwater management. Additionally, New York's plan targets employment opportunities to populations who have historically experienced high rates of unemployment, New York City Housing Authority residents, and residents impacted by Hurricane Sandy. Moreover, through their plans, Atlanta, Boston, and Oakland are working to reduce barriers to accessing jobs, with a particular focus on racialized populations.

In pursuit of a resilient economy, the plan must attempt to mitigate disparities. Given the number of plans that discuss income inequality and poverty, relatively few plans have actions that address the source of these disparities. The Boston, Norfolk, New Orleans, and New York plans attempt to reduce income inequality and poverty by increasing access to living-wage jobs, increasing financial security, and increasing homeownership. The Boston, New Orleans, and Pittsburgh plans explicitly state their intention to move beyond reducing poverty to addressing the root causes of systemic challenges within their communities. Notably, New Orleans and Pittsburgh are two of the cities with the largest percentage of the population living below the poverty line included in this sample (U.S. Census Bureau, 2016a; see Appendix A).

Furthermore, the Atlanta, Boston, New York, Norfolk, Oakland, and Pittsburgh plans recognize that resilience is not possible without tackling inequalities. Pittsburgh's plan states that Pittsburgh "will be a resilient city when the entire community shares the same opportunities for prosperity, and when all residents are well cared for and prepared to face potential risks and adversities" (p. 3). Pittsburgh's plan therefore considers equity as integral to resilience. Other plans, such as El Paso and Norfolk, see a move toward resilience as an opportunity to build strength. The language of opportunity is common throughout these plans, however it does not necessarily imply a move toward justice unless justice is considered integral to resilience.

5. Target Populations

To further question how the 100 Resilient Cities plans address equity and justice, this section examines who or what the strategy intends to target. An action might target residents of the city in general, vulnerable populations, organizations, geographic areas, urban systems, or any combination of these. While many, if not all, actions benefit the city, not all actions address equity. Those that do address equity are limited to strategies targeted to disadvantaged or vulnerable residents or geographies.

5.1 General City Residents

Many initiatives in these plans do not directly intend to address inequalities, but are instead targeted toward residents or the community as a whole. They intend to improve quality of life for everyone, without specific focus on vulnerable populations. Every city targets residents, citizens, and communities and does so frequently. Neighbourhoods are also often mentioned by all plans except Berkeley. Neighbourhoods are often targeted for quality of life improvements

based on physical improvements to the environment. Actions that target residents and communities are often outreach strategies, attempting to engage the public and/or make connections. This engagement is often presented as a traditional consultation process, where the City receives comments from residents. However, sometimes residents are more meaningfully engaged so that the City learns from residents. For example, through their plans Boston, Norfolk, and San Francisco are engaging residents to map community assets and vulnerabilities to understand what matters to the neighbourhood. Although strategies such as these do not target any particular population, they do contribute to procedural equity by involving the community in the planning process.

All plans except Boulder's frame residents in their role as employees. Actions that target the workforce are often strategies for economic growth or infrastructure development intended to promote job creation. Homeowners and tenants are less frequently targeted. Residents are framed as homeowners for actions to upgrade and retrofit property, as in San Francisco's retrofit programs. Less frequently, residents as tenants benefit from actions. For example, Boston's Anti-Displacement Legislative Package and Oakland's Rent Adjustment Programs target tenants by addressing rising rents that make renters more vulnerable than homeowners. Although most actions that target residents are not equity-based, the recognition of the reasons behind vulnerabilities addresses inequities.

5.2 Vulnerable Populations

Vulnerable populations may be referred to by their general physical or social vulnerability or by a more specific disadvantage. All plans address vulnerable populations in general at least once. However, it is often not specified whether vulnerable populations are

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vulnerable physically, socially, or both. Boston and San Francisco frequently mention vulnerable populations in their plans in terms of climate change and disasters. These plans discuss the physical vulnerability of residents due to proximity to hazards as well as social vulnerability related to social inequities and injustices. Disadvantaged groups and communities are almost as frequently mentioned. A plan may target an action toward populations who are disadvantaged, underserved, and/or under-represented without discussing the cause of that disadvantage. The Boston and Oakland plans frequently use these terms, detailing an action and then prioritizing its implementation in disadvantaged or underserved communities. Use of under-represented communities is more common in discussions of procedural justice to recognize groups that have not traditionally been involved in decision-making processes.

5.2.1 Income

Low-income individuals, households, and communities are the most commonly targeted "vulnerable" groups in these plans, recognized by all plans. As discussed, some strategies explicitly target low-income groups as a vulnerable population, whereas others address affordability issues. The New York, Norfolk, and San Francisco plans largely address issues of income by prioritizing low-income populations in many actions. Low-income groups are often targeted for actions regarding housing, such as housing affordability. Redevelopment strategies also target low-income populations at the neighbourhood scale, such as in the New York and Oakland plans where low-income communities are targeted for brownfield development.

Strategies for infrastructure, especially energy infrastructure, often target low-income populations. The Berkeley, Boulder, and Oakland plans all acknowledge the affordability implications of a switch to renewable energy for low-income households. Atlanta's plan and New York's plan address a lack of purchasing power of low-income households through

assistance in installing solar panels in Atlanta and assistance with air conditioning purchasing, installation, and utility fees in New York. These are two of the rare actions that address the material aspects of being low-income, allowing households themselves to become more resilient.

Some plans move past assistance to increasing the adaptive capacity of low-income households by improving wealth. The New Orleans and New York plans discuss working to increase minimum wage, whereas the Boston, El Paso, and Oakland plans discuss programs for savings and financial literacy. Boston is starting a children's savings account program, New Orleans an emergency savings account program for unbanked and under-banked individuals, and El Paso and Oakland are expanding access to financial education.

5.2.2 Race and Ethnicity

Race and ethnicity are mentioned in these plans in many ways whether by targeting racialized populations, minority-owned businesses, or using a racial equity lens. African-Americans are almost exclusively the target for race-based initiatives. Boston has embedded racial equity into resilience by naming their resilience office the Mayor's Office of Resilience and Racial Equity. As such, many of the actions in Boston's plan either exclusively target racialized groups or they are included as a prioritized population. While Boston's plan, as well as the Atlanta and Pittsburgh plans, use racial equity as a main framing for the whole plan, Boulder, Berkeley, and Norfolk largely ignore issues of racial inequity altogether in their plans. Plans such as New Orleans' and New York's, discuss the racial inequity in their cities, but provide few actions to address these injustices.

When racial groups are a targeted or prioritized population, race is often tied to other inequities. The Atlanta, Boston, Oakland, and Pittsburgh plans explicitly state their intention to target Black populations, especially youth, students, and businesses, due to lost opportunities

related to systemic injustices. For example, Atlanta's plan and Pittsburgh's plan recognize the disparities in unemployment by race and thus list actions to assist Black youth with finding employment opportunities.

5.2.3 Immigrant Status and Language Proficiency

Immigrant status and limited language proficiency are rarely mentioned. New York's plan addresses limited language proficiency through an education strategy encouraging bilingual learning environments and through health service delivery. Immigrant communities in New York are only targeted as one of many populations in an environmental initiative to minimize waste. The New York and Oakland plans also intend to provide information in languages other than English, or at least use simple language so that information is easily readable and translatable. Pittsburgh does not address language in its plan, but targets immigrants through the Welcome Pittsburgh initiative and as one of the targeted populations for equitable development.

5.2.4 Gender

Gender is very rarely mentioned in these plans. Any mention of gender almost exclusively refers to women in the role of mother. Only the plans in Atlanta, Boston, and New York recognize the potential vulnerability of women. The one action provided by Atlanta's plan is to improve access to childcare for safety personnel so that women are encouraged to take on non-traditional gendered jobs. Boston's inclusion of women in its plan is even more limited, simply listing single mothers as a small but vulnerable population in a strategy for an economic mobility lab. Two of the health strategies in New York's plan prioritize women's health so that women are able to care for infants. The only action to move beyond motherhood is New York's plan's target of women as one of many underrepresented populations in the construction field, again encouraging breaking traditional gender roles in employment.

5.2.5 Children, Youth, Young Adults, and Students

Children, youth, and young adults are one of the most frequently targeted populations, with all plans except Boulder's targeting them in at least one strategy. However, Boulder's plan does discuss youth more generally. Targeting youth does not necessarily address inequities. However, many of the actions that target youth focus on the importance of opportunity at a young age in life outcomes or the vulnerability of children and youth to environmental hazards and climate change. For example, many of the actions in New York's plan are to improve health by addressing the risk of asthma for children.

Throughout their plans, Atlanta, Boston, and Oakland emphasize young adults. Youth are often discussed as students, thus many actions are education initiatives, whether for universal pre-K or free tuition in college. Additionally, plans such as Atlanta's and New York's, recognize the affordability challenges in accessing childcare. These initiatives all address the affordability of education, thus specifically targeting low-income households to improve outcomes for low-income youth. Additional actions targeted to youth include reducing the vulnerability of at-risk youth in Oakland's plan and Norfolk's plan and environmental education and disaster preparedness in Oakland's plan and New Orleans' plan.

5.2.6 Seniors

Many strategies for seniors and older adults consist of social programs and the provision of services. For example, El Paso's Senior Corps program encourages the involvement of seniors in community service projects. Seniors are included in these plans among lists of vulnerable populations along with people with disabilities for support in climate-related events and disasters, health care access, supportive housing, and accessible transportation. For example,

Boston's plan lists seniors as a vulnerable population requiring assistance in extreme heat events. The New York plan has relatively more actions targeting seniors than other plans.

5.2.7 People with Disabilities and Chronic Illness

The actions that address people with disabilities in these plans often also list seniors as one of the targeted populations. Many actions regard disaster preparedness and recovery, as in the plans in New York, Berkeley, and San Francisco. San Francisco's plan specifically prioritizes children with disabilities for rebuilding homes after a disaster. Boston's plan focuses more on the vulnerabilities related to climate change and extreme heat, especially in terms of isolation and mobility. The New York plan's strategies for people with disabilities largely centre on improving accessibility. New York's plan acknowledges that many people with disabilities rely on public transit, thus actions include improving sidewalk maintenance and bus access. The Pittsburgh plan also aims to promote mobility, whereas San Francisco's plan addresses the accessibility of storefronts for people with disabilities. There is little mention of people with chronic illness, aside from discussions in the New York and Pittsburgh plans of respiratory illness due to air pollution.

5.2.8 Homeless Residents

Homeless individuals are commonly targeted throughout these plans, mostly through housing strategies that aim to provide shelter space or more permanent forms of housing. The Atlanta and San Francisco plans target homeless residents more than other plans. The focus of Atlanta's plan is on homeless or at-risk youth, particularly LGBTQ+ youth and young adults exiting foster care, through outreach centres. Consistent with the San Francisco plan's focus on disasters, the risk of homelessness is associated with disasters. Actions include a post-disaster centre to provide space for the difficult to serve homeless population and improvements to

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accessing health facilities. These actions in the Atlanta and San Francisco plans stress the importance of assisting homeless populations in accessing services and safe spaces.

5.2.9 Veterans

The El Paso, New York, and Pittsburgh plans discuss veterans as a vulnerable population. Surprisingly, Norfolk's plan is not one of these plans despite the discussion of the importance of the military within the plan. Many of the actions that target veterans are to house veterans who are vulnerable to homelessness or are already homeless. Pittsburgh's plan simply states they will support homeless veterans, whereas New York's plan proposes to end veteran homelessness by streamlining the process for this population. The El Paso plan takes a different approach and instead includes veterans as one of many factors to consider in economic development criteria.

5.2.10 Previously Incarcerated

The Atlanta, Boston, New York, Norfolk, and Oakland plans include previously incarcerated and/or at-risk individuals as a vulnerable population. Oakland's plan retains its focus on youth by promoting trauma-informed health support for high-risk young adults. Action in the New York and Atlanta plans address barriers to re-entering the workforce through employment opportunities. The approach in Atlanta's plan is for vocational training and access to GEDs, whereas New York's plan takes a policy driven approach to remove upfront disclosure requirements in hiring decisions. Atlanta's plan notes that the disproportionate number of African-Americans within the criminal justice system means that Black residents are overrepresented in these programs.

5.2.11 Victims

In addition to perpetrators of crime, the New York, Norfolk, Oakland, and San Francisco plans address the victims of crime. The focus in Oakland's plan and Norfolk's plan is on children

and youth, where the latter provides interventions for families at risk to reduce the numbers of abused or neglected children. The San Francisco and New York plans prioritize victims of domestic violence in their actions. San Francisco's plan does so in rehousing after a disaster, whereas New York's plan focuses on everyday shelter needs.

5.2.12 LGBTQ+

People who identify as LGBTQ+ are one of the least mentioned groups, only targeted by Atlanta's and New York's plans with one strategy each. Both of these strategies are to create outreach centres. New York's plan discusses the need for support and shelter space for victims of violence, including the LGBTQ+ community. Furthermore, Atlanta's plan addresses the mental health struggles and risk of homelessness of LGBTQ+ youth through community centres. In their limited discussion of LGBTQ+ people, both these cities frame them as victims in need of protection and services.

5.2.13 Residents of Subsidized Housing

Lastly, the Boston, New York, and San Francisco plans recognize the struggles of residents of subsidized housing. Actions in San Francisco's plan simply aim to improve the circumstances of residents by providing assistance and reviving the neighbourhood through the HOPE SF initiative, which will transform public housing into sustainable affordable housing communities. Boston's plan also aims to improve circumstances by targeting subsidized housing as a location for public internet. The approach in New York's plan is also to improve circumstances by reducing the risk of asthma as well as ensuring that the physical structures are able to withstand the risk of climate change, given the disproportionate effect of Hurricane Sandy on New York City Housing Authority residents. New York's is the only one of these plans to address a lack of opportunity by targeting residents as an under-represented population

for workforce development. Other than these actions, these plans aim to improve the physical

environment and do not target the residents themselves.

5.2.14 Intersectionality

While there is some discussion of the multiple vulnerabilities a person may face,

discussion on intersectionality is limited. Discussions of systemic injustices address

intersectionality by noting the multiple stresses that produce vulnerability. However, few actions

consider systemic injustices and instead list targeted populations that can be considered

vulnerable. Simply listing vulnerable populations assumes that anyone with that characteristic is

vulnerable when there are many factors that contribute to vulnerability and it is often the

interaction of these stresses that make an individual vulnerable. Without noting the reasons for

this vulnerability, assumptions are made as to why a certain population may be vulnerable. For

instance, African-Americans would not be vulnerable without the interaction of systemic

disparities in income, education, and physical proximity to hazards. The same assumptions are

made of children from low-income families, women as mothers, and LGBTQ+ people as victims.

It is the systemic mistreatment of these groups that has produced their vulnerabilities.

5.3 Organizations

Organizations of various types are often targeted within these plans. The actions that

target organizations may benefit the organization itself or the wider community via those

organizations. The City and public sector is targeted by every plan. Sometimes the action

benefits the City itself through corporate policies, such as reducing emissions from vehicle fleets

in New York's plan, and sometimes it benefits the whole community, such as enhancing racial

diversity in Boston's plans. Many plans discuss general resilience monitoring without necessarily

mentioning the community, but instead the progress for the City. The New Orleans and San Francisco plans include the creation of their resilience office as one their actions, and while this ultimately affects the community, the discussion is left solely as an action of the City. Similarly, the El Paso, Oakland, and Pittsburgh plans discuss how a resilience lens will be embedded into City decision-making and monitoring. Generally, it can be assumed that residents will also benefit.

The private sector and businesses are often targeted. All plans except Boulder's have strategies for businesses in general, mostly focusing on economic development strategies. Notably, in the New Orleans plan, the private sector is assigned a large role. One action item is for the private sector to finance infrastructure in order to transfer risk from the public sector to the private, thereby privatizing infrastructure within the city.

Small businesses, local businesses, start-ups, and entrepreneurs are often the targeted businesses. These actions can potentially focus on equity, especially when recognizing the challenges in establishing a business. For example, El Paso's plan prioritizes assisting small businesses that are not normally assisted by the private sector through the creation of public co-work spaces. Strategies in Boulder's plan exclusively focus on local businesses, consistent with other strategies that promote local production. The New York and Boston plans recognize the role small businesses can play in neighbourhood improvement. New York's plan uses small businesses in its redevelopment strategies to promote mixed-use neighbourhoods, however without consideration of equity, strategies such as these can promote gentrification. Boston's plan includes small businesses in neighbourhood response plans for disasters as a way to build social capital.

There is no guarantee that assisting small businesses in general will promote equity if attention is not paid to further disparities. Although New York's plan is the only plan to use the term M/WBEs (minority- and women-owned business enterprises), the Atlanta, Boston, New Orleans, and Oakland plans all have actions that recognize the systemic barriers faced by these organizations. New Orleans' plan does not explicitly mention race or gender, instead targeting disadvantaged businesses in general. Similarly, one action in of New York's plan is to expand the use of these businesses corporately as developers of affordable housing, as well as promote their use in the private sector. The Oakland and Atlanta plans only address the challenges of low-income and minority business owners, whereas Boston's plan also mentions women.

Non-profit and community-based organizations are often targeted, however the inclusion of equity in these actions depends on the type of organizations and actions. The City often encourages these organization to fill in gaps and take the leading role in implementation, such as in disaster response. Faith-based groups are one of the few types of organizations specifically mentioned by plans such as the plans in Atlanta, Berkeley, Norfolk, and San Francisco. While it is the mission of many community-based organizations to promote equity, only the Berkeley, New York, and San Francisco plans specifically include non-profit organizations that serve underserved populations and/or geographies. Many plans intend to increase the capacity of community-based organizations and volunteers, however these organizations only sometimes target vulnerable populations.

5.4 Geographic Areas

Many strategies are geographically based, claiming to improve the surrounding area. A geographically based strategy only addresses equity if there is consideration of who lives there.

However, discussions are often general without considering distribution and who benefits. Infrastructure is a common example. For instance, Norfolk's plan generally discusses the development of infrastructure without detailing priority areas, whereas New York's plan lists the specific geographic locations of infrastructure development and improvement.

To address disparities, some plans explicitly mention that certain actions are targeted for certain underserved or vulnerable areas. These actions cover a wide variety of strategy types, but are commonly about infrastructure and transportation systems. Recognizing the inadequacy of these systems, many plans intend to improve the infrastructure itself as well as accessibility in underserved neighbourhoods. These plans recognize that underserved neighbourhoods are home to disadvantaged populations. The Boston, New York, and Oakland plans acknowledge the vulnerability of certain areas, especially waterfront areas, to climate change and that the people living there are often physically and socially vulnerable. Strategies such as these that recognize the disproportionate distribution of environmental hazards in socially vulnerable neighbourhoods address equity by promoting environmental justice.

5.5 Urban Systems

Some actions do not mention benefits to humans at all and instead refer to benefits to the environment, infrastructure, buildings, and the economy. The environment may be a direct target for an action, such as actions about energy efficiency or reducing greenhouse gas emissions, or may secondarily benefit, such as through parks investment that improve neighbourhoods and also biodiversity.

All plans list the benefits to infrastructure and the built environment. These actions are often improvements to systems, which are likely to benefit residents and neighbourhoods, but

these benefits are not always explained. For instance, many of the actions in New York's plan focus on infrastructure improvements, but do not discuss who these improvements will benefit. Similarly, San Francisco's plan has multiple actions to retrofit buildings for earthquake preparedness, but rarely discuss the human benefits of these improvements.

All plans except Berkeley's explicitly discuss the benefits to the economy through these actions. The El Paso, New York, and Norfolk plans are largely economically focused, often reflecting on the economic benefits of the included actions. For example, multiple actions in El Paso's plan relate to incorporating resilience into economic development and expanding new and emerging industries. Similarly, the focus of Norfolk's plan is largely on local economic growth as a form of resilience. While strategies that target urban systems may improve resilience, without discussing the implications for disadvantaged populations they do not address equity.

6 Implementation

Even the plans that consider equity and justice the most comprehensively will have no impact if they do not have good implementation structures. This section details the implementation of each of the considered 100 Resilient City plans. While not all plans provide complete information, the project lead and partners, funding, and timelines can provide information about how and when the strategy will be implemented. This section also looks at which types of shocks and stresses are addressed to examine the comprehensiveness of the plan and also overlap with other related plans already in place. Lastly, a modified version of Handmer and Dovers (1996)'s and Matyas and Pelling (2015)'s resilience typology is applied to the actions within the plans to assess how much of an impact they can have toward achieving equity and justice.

6.1 Project Lead and Partners

Almost all plans include a list of project leads and partners, except Boulder's plan. However, the Norfolk plan does not include this information for many of the listed actions. The actions included in these plans are largely led by the City. The San Francisco Bay Area cities have many actions within their plans with the City as a lead. Governmental agencies, including development agencies, housing authorities, and public library and school boards, are also involved in many actions. The Berkeley and El Paso plans largely note their involvement. Notably, many actions within Berkeley's plan involve the Association of Bay Area Governments, yet the Oakland and San Francisco plans do not list this association. In fact, along with the Boston and Pittsburgh plans, the other San Francisco Bay Area plans are among the least likely to list the involvement of governmental agencies. El Paso's plan, due to its location

along the Mexico border and Ciudad Juarez's participation in 100 Resilient Cities, and the Bay

Area cities are unique in their emphasis on partnering with neighbouring cities. The state and

federal governments are often not involved as partners but provide funding. However, the El

Paso and New Orleans plans commonly include these higher levels of government.

The involvement of non-profit organizations and private entities is dependent on the city.

The New York and San Francisco plans state low involvement of non-governmental

organizations. The El Paso, Atlanta, and Berkeley plans list high involvement of not-for-profits

and community-based organizations, who often take a leading role in implementation.

Additionally, New Orleans' plan and El Paso's plan note high involvement of for-profit

organizations. El Paso's actions have notably higher involvement of the private sector, with the

plan listing a large number of partners for each action.

6.2 Funding

There is little about funding in these plans. Only the Atlanta and New York plans

consistently include funding information for each action. Most of Atlanta's actions are currently

unfunded, whereas New York's actions are largely funded or budget neutral. Oakland's plan also

provides limited funding information. Most proposed actions in the Oakland plan are either

unfunded or partially funded. Other plans sometimes note that funding is needed and thus it can

be assumed those actions are unfunded.

Even for the plans that do provide funding information, the funding amount is rarely

mentioned. New York's plan provides the most information, noting the amounts for

infrastructure-related projects and grant amounts for minority- and women-owned business

enterprises. San Francisco's plan also provides limited funding information, noting the amounts

for actions regarding infrastructure and rent adjustment programs. The Atlanta, Boston, El Paso, Oakland, and Pittsburgh plans also provide funding amounts for at least one action.

The funding sources are more consistently listed. All plans list the City and city agencies as funding sources. The City's budget is the most common funding source. Private investment and/or philanthropy is also common. Only Boulder's plan does not list privately funded actions, but only provides sources for two actions. The state and federal governments are often funding sources for most plans. Most notable are the Federal Emergency Management Agency for disaster related actions and the United States Department of Housing and Urban Development for housing strategies. While it is hard to determine which cities rely on which founding sources due to inadequate information, the New Orleans, Berkeley, and Oakland plans list philanthropic and private sector sources more than other cities, which is consistent with their project leads. Similarly, Berkeley appears to be more reliant on state and federal funding.

6.3 Timelines

The plans are not consistent in the way they present their timelines, making comparison difficult. Atlanta's plan and Boston's plan present a short-term, mid-term, and long-term system. While about half of Boston's action are short-term, almost half of Atlanta's actions are long-term. Some plans present their timelines in terms of the launch date of the action. Only the Atlanta, Berkeley, and Norfolk plan are consistent for each strategy, however the New Orleans, New York, Oakland, and San Francisco plans provide details for select actions. Many of the dates in Atlanta's plan are set for 2018, whereas Berkeley's are for 2016, both of which immediately follow the release of their respective plans. New Orleans' plan only lists the launch dates of actions that have already been implemented, providing little indication of when new

actions will actually be implemented. New York's plan provides launch dates for actions past 2020, which is five years past the release of the plan. Overall, most listed actions have launch dates between 2015 and 2018 and thus many will be implemented almost immediately after the release of the plan.

The Boston, New Orleans, and Pittsburgh plans provide an action status to indicate whether or not an action has been implemented. Many of these actions are already in place, whether they are complete or the program is being expanded. Boulder's plan only lists three completely new actions, whereas the rest build off existing strategies and programs. Across all plans, a large number of actions are in the planning or development phase. No matter which timeline method is used, many actions are already in place and thus their inclusion in this plan can be considered to tie together multiple plans or can be considered redundant.

6.4 Issues Addressed

Using the list of shocks and stresses by 100 Resilient Cities, it can be determined which cities address which issues throughout their plans. The most commonly recognized problems within these plans are storms, followed by climate change, flooding, and poverty. Only Norfolk's plan does not explicitly acknowledge climate change, although it does recognize the city's vulnerability to climate-related issues, such as storms and sea level rise. The least recognized problems that are still discussed within the plans are disease outbreak, hazardous material accidents, and lack of biodiversity.

It is common for the vulnerabilities and actions not to correspond. Boston's plan and San Francisco's plan in some way address all of the vulnerabilities they discuss, whereas the Boulder, Norfolk, and Pittsburgh plans do not have actions that correspond to many of the vulnerabilities

they list. There is commonly no solution for income inequality and poverty. However, by targeting low-income populations every plan somewhat addresses the issue. Storms are also often not directly addressed, however this issue is addressed in other ways, such as flood control and stormwater management.

Some plans discuss a variety of shocks and stresses, whereas others only discuss a few issues. The New York and San Francisco plans discuss a wide variety of issues as well as provide actions to target those vulnerabilities. New Orleans' plan recognizes many vulnerabilities, but few actions directly address these. The Berkeley, Boulder, El Paso, and Norfolk plans demonstrate a lack of diversity in issues. While a more focused approach could mean more comprehensive coverage of an issue, this is not necessarily evident.

6.5 Resilience-Related Plans

The 100 Resilient City plans are interdisciplinary, each addressing a multitude of issues and recognizing that other plans and strategies may address similar issues. As such, there may be repetition among these plans. Some strategies may be redundant; however 100 Resilient Cities defines redundancy as a part of resilience. Within the 100 Resilient City plans, the Atlanta, Berkeley, Boston, New Orleans, New York, Norfolk, Oakland, and Pittsburgh plans include a section with the path to resilience, including relevant plans.

The listed economic plans are similar to the economic issues presented within the plans. For example, Pittsburgh's Roadmap for Inclusive Innovation aligns with this focus in the resilience plan and Norfolk's Plan to Reduce Poverty corresponds with poverty reduction. New York even uses the same One City motto for the Career Pathways: One City Working Together economic strategy and One New York resilience plan.

The Cities of Atlanta, Boston, New Orleans, New York, and Oakland have additional housing strategies and also discuss affordable housing and/or homelessness. However, Norfolk does not have an additional housing strategy, nor does the City have actions to address homelessness. In terms of infrastructure, the Atlanta, New Orleans, and New York plans list a capital improvement plan or budget. However, there is no guarantee that these capital improvement plans and budgets include the same types of infrastructure development that are included in the resilience plan.

Although many cities have hazard mitigation plans, only Berkeley, New Orleans, Oakland, and Pittsburgh list these within the resilience plan. Each city does address disaster management, thus the plans may be redundant or have a different focus such as on preparedness versus recovery. The Atlanta, Berkeley, Boston, and Oakland plans also list their climate action plans. Although most cities do include climate change in their resilience plans, these issues are likely more extensively covered in other documents.

Sustainability plans are likely to have the most potential for overlap. The Boston, New Orleans, and New York plans list the city's existing sustainability plans. However, as discussed in the literature, sustainability plans often lack an equity or social policy focus. The resilience plans thus have the potential to address this gap. However, cities such as New York are likely to have redundant actions, as New York has an additional resilience plan that focuses on rebuilding after Hurricane Sandy. Although the focus is different, many of the same issues are likely to be addressed in the 100 Resilient Cities plan.

Age-friendly, education, and health plans are less commonly listed within these plans. Boston is the only plan to list an age-friendly plan within their resilience plan. Atlanta's plan and New York's plan both reference pre-K strategies. Atlanta's is in development, whereas New

York's has already been implemented. Despite implementation status, both these plans provide actions for pre-K.

6.6 Resilience Typology

Based on the modified version of Handmer and Dover (1996)'s and Matyas and Pelling (2015)'s resilience typology to prioritize equity and justice considerations, each action can be assessed to determine its impact. As discussed in the methods, resistance actions maintain the status quo, incremental adjustments treat the symptoms, and transformation meaningfully addresses the root causes of systemic inequities. Appendix C outlines how many strategies and the percentage of strategies that can be considered resistance, incremental adjustment and transformative for each city. The last two columns represent the number and percentage of strategies that can be considered to address equity and justice respectively (incremental adjustments and transformative change). Figure 2 illustrates the plans that include the most actions that address equity overall. Notably, this ranking largely corresponds with the length of the plan and number of actions included. Figure 3 illustrates the plans that have the highest percentage of actions that address equity overall. There is no distinction in this ranking between incremental adjustments and transformative change or the range within these categories. For instance, although Norfolk is ranked as a satisfactory plan, many incremental adjustments within the plan simply involve the public at large rather than specific vulnerable populations and furthermore the plan does not include any transformative actions.

About half of the actions within these plans can be considered resistance or maintenance, whereas the other half are incremental adjustments or transformative change. Overall, about half of the proposed actions consider equity. However, there are far more incremental actions than

transformative, which are very rare. New York's plan has the most actions in total that address

equity, which is largely related to the length of the plan, as about half of New York's actions do

not address equity. Boston dedicates the largest proportion of its plan to discussing inequities.

The Boston, Oakland, and Atlanta plans are the only three to have more actions that discuss

equity than ones that do not. These are also the three plans with the highest total number of

actions that address equity after New York's plans. The New Orleans, El Paso, Berkeley, and

Boulder plans have the fewest equity-based actions.

Figure 2: Ranking of plans by total number of equity-based strategies

Model Plans
- New York
- Boston
- Atlanta

Satisfactory Plans
- Oakland
- Pittsbugh
- San Francisco
- Norfolk

Weaker Plans
- El Paso
- New Orleans
- Berkeley
- Boulder

Figure 3: Ranking of plans by percentage of equity-based strategies

Model Plans
- Boston
- Oakland
- Atlanta

Satisfactory Plans
- Norfolk
- Pittsburgh
- El Paso
- New York

Weaker Plans
- San Francisco
- Berkeley
- Boulder
- New Orleans
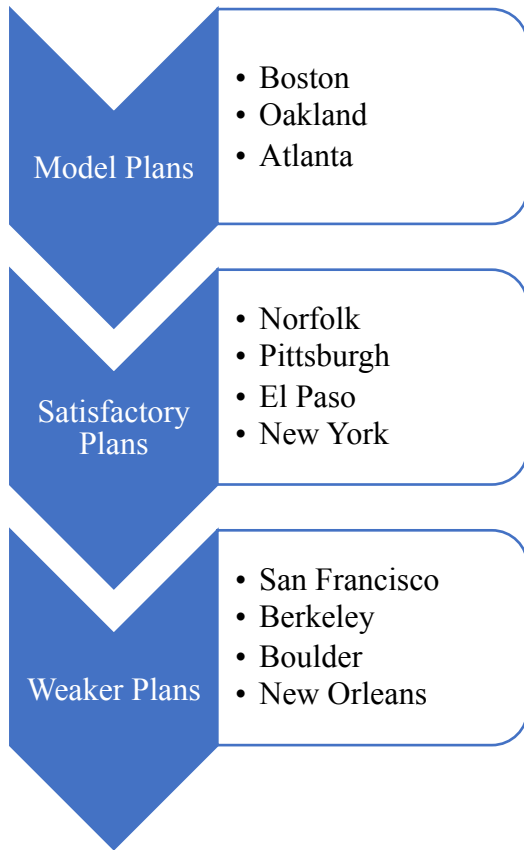
The actions that can be considered resistance or maintenance largely refer to benefits for the entire community or urban systems, such as the environment or infrastructure. In plans such as New Orleans', New York's, and San Francisco's, many of the resistance actions regard the development of infrastructure and environmental benefits. In plans such as Berkeley's and El Paso's, many resistance actions involve coordination and the formation of partnerships with other municipalities and organizations.

Incremental adjustments cover the widest range of actions and thus comprise many actions in total. Incremental adjustments that address procedural equity may simply engage the public in traditional planning processes or they may target underrepresented groups in the process. More substantively, many actions either exclusively target or prioritize a vulnerable population in actions to improve accessibility to infrastructure and transportation and

affordability of education, housing, and healthcare. The actions that go further in addressing equity aim to reduce disparities and opportunity barriers, such as by targeting environmental justice communities. However, if the action does not address the systemic causes of those disparities, it cannot be considered transformative.

The lack of addressing systemic causes means there are very few transformative actions. Figure 4 summarizes which plans are the most transformative. Pittsburgh's plan has the most strategies that can be considered transformative, whereas the Berkeley and Norfolk plans do not have any. Both Boston's plan and Pittsburgh's plan include actions to promote equitable and inclusive development. The idea behind these actions is transformative, as it intends to address the patterns of development that have contributed to lost opportunity. Boston's action is to "develop a guide to help the City and private entities pursue the equitable development of housing, commercial buildings, and other elements of the built environment". (p. 52). This action thus only applies to the physical environment and not necessarily the systems that contribute to inequitable development. Pittsburgh's plan recommends "eliminating racial inequities and ensuring that all Pittsburghers have the opportunity to live in healthy and safe neighborhoods, to connect to economic opportunity and wealth generation, and to participate in decision-making". (p. 40). The Pittsburgh plan notes additional recommendations in a separate report that is already in use. Both plans do not limit equitable development to the public sector, but encourage the private sector to include equity as well.

Figure 4: Ranking of plans by percentage of transformative actions

Model Plans
- Pittsburgh
- Oakland
- Atlanta

Satisfactory Plans
- Boston
- Boulder
- New Orleans
- San Francisco

Weaker Plans
- El Paso
- New York
- Berkeley
- Norfolk
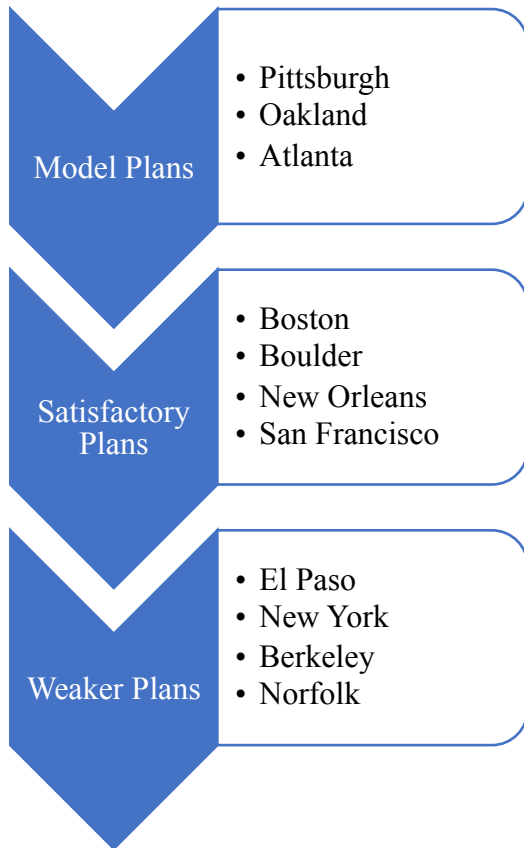
New Orleans, New York, Pittsburgh, and Oakland have actions in their plans that explicitly state the intention to address structural racism. The Pittsburgh and New Orleans plans have actions to work toward racial reconciliation through conversations that shed light on inequities and racism, however the current scale of these programs limits the benefits to participants of the program. Transformative actions against racism within New York's plan are also limited, only addressing the limited opportunity of minority and women owned business enterprises by ensuring the use of these businesses by the City and private sector.

The Atlanta, New York, Oakland, and Pittsburgh plans all have transformative actions that address the limited opportunities for many youth and young adults that affect outcomes later in life. The New York and Pittsburgh plans propose Community Schools to improve access to quality education and social services targeted toward the needs of the community. Pittsburgh's

plan recognizes that these services "connect more students to the resources they want and need when they want and need them so they can succeed in school and after graduation". (p. 46). Recognizing the opportunity gaps in Black communities, Pittsburgh is also part of the My Brother's Keeper program and is working on a similar program for Black girls and women. Oakland's plan focuses on the financial aspect with the Oakland Promise College Savings Initiative. The actions in Atlanta's plan focus more on workforce opportunities for at-risk or previously incarcerated youth due to a recognition that "[l]ack of economic opportunity is a common challenge for many urban communities which have been affected by decades of disinvestment, exploitation, and neglect often resulting in increases in crime". (p. 56). While the other actions recognize the lasting impacts of lack of opportunity early in life, Atlanta's plan further recognizes the systemic barriers that have led to this lack of opportunity. The issue is that Atlanta's "Gangstas to Growers" program can be considered maladaptive, as it places formerly incarcerated youth, who are largely African-American, in internships on farms, which is reminiscent of historical injustices.

Some housing and redevelopment actions also can be potentially maladaptive if they promote gentrification. For example, San Francisco's intention to revive their public housing can address systemic inequities if the revitalization is targeted toward the residents of the public housing. However, San Francisco's plan does not specify whether the residents involved in the project are actually the residents who will be directly impacted. To avoid these issues, the anti-displacement actions in Atlanta's plan and Boston's plan intend to reduce the impacts of gentrification. In terms of homelessness, the Boulder, El Paso, and San Francisco plans go beyond reduction to an attempt to prevent homelessness by addressing the root causes. Boulder's plan states the intention to improve the social safety net to provide services, whereas El Paso's

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plan intends to increase permanent housing and not just temporary shelter space. San Francisco's actions are limited to disaster recovery, however they attempt to prevent homelessness by securing stable employment, public benefits, and permanent housing, with a specific focus on difficult-to-serve homeless residents.

Less common transformative actions include access to health services and community relationships. In terms of health services, New York's health strategy within the plan addresses the "root causes of health inequities—such as violence, low income, and low educational attainment—in communities with the greatest burden of disease, while building the wealth of existing assets in those neighborhoods" (p. 128). Addressing the root causes of inequities is what makes this strategy transformative. In terms of community relationships, Boston's resilience plan is interactive so that the community, government, and business partners can assist in updating the plan after its release. This action can be considered transformative, as it includes the constant involvement of citizens throughout implementation, thereby working toward partnerships with the community.

Most of these transformative actions have focused on stresses and not shocks. It is rare that transformative actions are focused on environmental shocks. Neighbourhood partnerships where residents are directly involved in the development of their neighbourhood can be considered transformative. Boston's Neighborhood Water Management program "partner[s] with prioritized neighborhoods to codesign targeted upgrades to infrastructure facing high risk of stormwater flooding". (p. 125). Similarly, the New Orleans neighbourhood resilience program provides "technical assistance and planning support to neighborhoods to assess their resilience and devise strategies and projects that address their challenges and risks" (p. 70). The partnerships with local communities move beyond traditional processes toward procedural

justice. Both plans mention that neighbourhoods are specially selected, however they do not explain by which criteria. Without consideration of both physical and social vulnerability, these plans cannot adequately consider the neighbourhoods most in need.

7. Conclusions

7.1 Summary

The 100 Resilient Cities initiative has stated their intention to address a multitude of issues through a resilience lens. This thesis has examined whether 100 Resilient Cities plans in the United States use resilience as an opportunity to redress social inequity or whether resilience is simply portrayed as a return to normal. To address the question of how resilience can be presented as an opportunity to address inequity and injustice, I used critical discourse analysis to analyze the meanings within the plans. As discussed, depending on the understanding and interpretation of the term "resilience", equity and justice can be considered as inherent to resilience. Furthermore, critical discourse analysis goes beyond the text to explore the context surrounding the creation of the text. Each text may be used to assert power and as such without careful consideration, these plans could reproduce the same injustices.

Each plan differs in its focus and thus how it addresses equity and justice. Overall, the Atlanta, Boston, and Oakland plans can serve as models to address inequities. The New York plan serves as a model in the actions that address equity, however much of the plan is not dedicated to addressing inequities. The Pittsburgh plan can also serve as a model due to the inclusion of transformative actions that meaningfully address inequities. These plans go the furthest in addressing lost opportunities as a result of injustices. These same plans also target vulnerable populations most comprehensively. In contrast, the Berkeley, Boulder, New Orleans, and Norfolk are less comprehensive in addressing inequities.

All plans discuss social equity more than other types of equity. However, each plan focuses on a different aspect of inequity. The Atlanta, Boston, and Oakland plans best address discrimination, the New York and San Francisco plans best address housing issues, the Atlanta,

New York, and Pittsburgh plans best address health disparities, and the Boston and San Francisco plans best address lack of social capital. Furthermore, the Atlanta, Pittsburgh, and San Francisco address spatial justice more comprehensively than other plans. Although rarer, the New Orleans, New York, and Oakland plans best consider economic equity.

This research has demonstrated that this selection of 100 Resilient Cities plans do consider social equity, however, the extent differs by plan and by topic. First, I examined how the plans discuss issues of holistic sustainability, including procedural equity; social equity in terms of socioeconomic status, race, ethnicity, and language, health, housing, and social capital; geographic equity; and economic equity. Next, I addressed who is the intended beneficiary of the actions included in the plans, finding that many plans generically aim to improve circumstances or improve the environment or economy and only sometimes directly aim to reduce vulnerability. Lastly, I summarized the implementation structure of the plans, including the project lead, funding, relevant plans, and impact of the action in terms of equity based on a resilience typology. Many actions do not directly address inequities and very few meaningfully address systemic barriers and justice.

7.2 Bouncing Back or Bouncing Forward?

There are many benefits to being part of the 100 Resilient Cities network that can help a city overcome persistent barriers in plan-making. As Coaffee and Lee (2016) explain, resilience presents an opportunity to move beyond organizational silos, thus incorporating a variety of urban challenges into a single resilience plan. However, the selection criteria for this network makes the chosen cities less likely to face these barriers in the first place. Jon and Purcell (2018) explain that cities are selected based on their existing capacity to deal with shocks and stresses.

For instance, choosing cities that have innovative mayors and a demonstrated ability to form partnerships and work with stakeholders (100 RC, 2018b) is likely to select cities that are more capable of producing change.

100 Resilient Cities provides the funding for a Chief Resilience Officer, but not for further implementation of policies (100 RC, 2018b), thereby partially addressing the barrier of a lack of resources described by Measham et al. (2011). As a result, many of these large cities use their own funds or acquire funds through private sources. In these selected cities, the municipal government and private sector partners are largely taking the lead as a funding source and also in project implementation. Despite the reliance of the private sector, the municipal government is still the lead in implementation, thereby alleviating Bauer and Steurer (2014)'s concerns of the private sector's lack of accountability.

Throughout these plans, resilience is largely viewed as "bouncing back". This approach to resilience can be viewed as equilibrium resilience, as described by Meerow et al. (2016). Path dependency largely influences this interpretation of resilience as simply a return to normal. This approach corresponds with what Matyas and Pelling (2015) describe as maintenance, as the current social structure is maintained and as Anguelovski et al. (2016) explain, the same injustices are reproduced. In terms of procedural equity, the literature demonstrates that past plans have discussed the inclusion of the public in the process but rarely meaningfully include residents, especially traditionally underrepresented residents. The 100 Resilient Cities plans of cities in the United States similarly claim to extensively engage the public in the process, however with the exception of the Atlanta and Boston plans, there are few mentions of efforts to engage underrepresented populations or to engage a diverse population. Instead, many of the consulted stakeholders are "experts" and not the locals that directly experience the impacts of the

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plans. Community-based solutions are rare and when they are mentioned by the plan, it is uncertain whether impacted residents will be involved in the process. For instance, San Francisco's plan is unclear whether it is public housing residents themselves or citizens who attend the public meeting who will be involved in public housing redevelopment.

In terms of distributive equity, consistent with the sustainability, disaster recovery, and climate change adaptation literature (e.g. Berke, Cooper, Aminto, Grabich, & Horney, 2014; Finn & McCormick, 2011; Pearsall & Pierce, 2010; Schrock et al., 2015), much of the focus has been on quality of life improvements for residents in general. Much of the discussion of geographic equity is about the creation of new amenities and not necessarily the distribution of those amenities. Notably, much of the discussion regards economic benefits. Coaffee and Lee (2016) argue that the 100 Resilient Cities initiative takes a business perspective, aiming to maximize the potential for business development. Consequently, many actions within these plans are targeted toward businesses or improving the economy, such as in Norfolk's plan. These types of actions fit within the consumer-driven ecological modernization paradigm described by MacCallum et al. (2014).

As discussed, without consideration of who benefits from the listed actions, the wealthy or creative class is more likely to benefit than vulnerable populations. In fact, vulnerability may actually be increased for some populations. Béné et al. explain,

> [w]ithout asking tough questions concerning whose and what resilience are being
>
> sustained or strengthened (Béné et al., 2012), the urban resilience literature risks
>
> promoting approaches that, not only, do not challenge the status quo, but may even

reinforce it when the latter generates situations that are arguably socially and/or

environmentally harmful. (2018, p. 129).

Gotham and Greenberg (2014) discuss how post-disaster revitalization can have this

impact by branding a city as "resilient" or "sustainable", thus the implications of this

revitalization may be assumed universally beneficial. Even the branding as one the "100

Resilient Cities" can mean that the pursuit of resilience does not consider who this resilience is

for, especially given a lack of consideration of policy implications that can in fact increase

vulnerability.

However, these plans do recognize the importance of prioritizing disadvantaged groups

by targeting certain actions toward various vulnerable populations. These types of actions can be

considered incremental adjustments by Matyas and Pelling (2016). The issue is that vulnerable

populations are often an afterthought, listed as a certain population that requires prioritization.

For example, the Pittsburgh plan aims to increase access to Pre-K for all, but especially children

from low-income households. Some plans may not explicitly target a vulnerable population in an

action, however that vulnerable population may still be impacted by or even be the recipient of

that action. For instance, the New Orleans plan rarely targets an action toward a specific group,

however the fact that more than 60 percent of the population is Black (U.S. Census Bureau,

2010) means that those who are Black may benefit.

The explicit mention of the need to reduce vulnerability is common. Hughes (2015)

found that climate adaptation plans in the United States discuss the need to reduce vulnerability,

however Rumbach and Kudva (2011) note that American plans do not reflect how vulnerability

is experienced differentially, instead assuming vulnerability applies equally to all. These 100

Resilient Cities plans do address the social structures that may make a person vulnerable. Most of the discussion regards class and race, framing low-income residents and African-Americans as vulnerable. The portrayal of vulnerable groups often assumes their vulnerability. The discussion of systemic injustices is necessary to understand the reasons why vulnerable groups may be at a disadvantage. However, the discussion is lacking on why the Atlanta plan only portrays women as mothers, the New York plan portrays LGBTQ+ people as victims, and the El Paso plan portrays veterans as vulnerable to homelessness. There are certainly systemic reasons behind these vulnerabilities, however if that discussion is missing, vulnerability can be assigned as an inherent characteristic. Furthermore, the discussion on the compounding of these disparities is largely missing.

Approaches that do address the root causes of systemic issues are less common. Actions that address systemic injustices move toward what Coaffee and Lee (2016) would call evolutionary resilience. Matyas and Pelling (2016) would call these transformative actions. These approaches would use fair procedures to achieve fair outcomes (Steele et al., 2012), be holistically sustainable (Finn & McCormick, 2011), and address the intersectionality that produces vulnerability (Osborne, 2015). Curran and Hamilton (2012) may call these approaches "just resilient enough", as opposed to "just green enough", as they would involve the local residents to transform their communities for their own needs, thereby minimizing the risk of challenges, such as gentrification. The plans that go the furthest to meaningful address equity and justice recognize the lost opportunities that result from systemic injustices. Most often these discussions are about race, or sometimes poverty. However, it remains unclear how to go about addressing these issues. Ultimately, these actions would not consider resilience as "bouncing back", but "bouncing forward". By bouncing forward, "[*j*]*ust resilience* would be a set of

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practices and relationships characterized by deeper commitments to equity, social, and environmental justice" (Pellow, 2016, p. 25).

7.3 Implications for Planning Theory and Practice

The 100 Resilient Cities plans included in this thesis provide an example of resilience planning in practice. Through its focus on shocks, disturbance, and crisis, the 100 Resilient Cities conception of urban resilience offers an opportunity to address change and uncertainty and challenge notions of stability, which is increasingly important in a time of global change (Wilkinson, 2011). The ability to address change offers potential to overcome path dependency, which can result in planning for the status quo instead of planning for the future.

Wilkinson (2011) suggests that due to the lack of change from sustainability discourses, planning theorists should focus on resilience. The mainstreaming of resilience through the 100 Resilient Cities plans allows for a wide range of environmental, social, and economic issues to be addressed within a single plan. As Shaw and Maythorne (2013) discuss, using resilience as an overarching framework is appealing to a wide audience. Furthermore, these sample plans demonstrate that resilience plans do consider equity and justice, such as through the creation of the Office of Resilience and Racial Equity in Boston and the use of an equity lens in Oakland, relatively more than sustainability, disaster management, and climate change plans. As such, the use of resilience has potential to move toward considerations of equity and justice in planning practice.

However, this thesis has explored how apolitical representations of resilience can be misleading by portraying resilience as "for everyone" without recognizing the differences in how resilience may be experienced. Wilkinson (2011) describes a political ecology approach to

resilience, which considers the political aspects of human-nature relationships, to politicize

resilience discourses. For instance, Faber (2015, p. 365) takes a political ecology approach "by

identifying vulnerable populations and how vulnerability is manifested differently across

groups". Using a political ecology lens can result in resilience planning as having a more radical

agenda. Fainstein (2015) argues that resilience planning can be considered radical when the

prioritization shifts from economic growth to this focus on vulnerable populations and equity.

Although these resilience plans consider who is vulnerable, they often do not consider

why someone may be vulnerable. Considering why someone may be vulnerable (e.g.

disinvestment, systemic racism, unequal distribution of infrastructure) is a more transformative

approach that recognizes the historical production of vulnerability. Tscharkert et al. (2013) thus

argue that this radical change is necessary to reduce vulnerability. For instance, the New Orleans

plan recognizes that systemic racism in housing policy has contributed to an inequitable

distribution of low-income and African-American households in floodplains. However, the plan

does not connect this distribution to any action that reduces the vulnerability of this population

and thus does not produce transformative change. It could be recognized that this omission from

this specific plan does not necessarily mean that no action of this sort will occur. This issue leads

to questions of resilience for whom and by whom. In terms of resilience for whom, general

statements to improve the resilience of the city as a whole are common throughout these plans,

instead of directing resilience to a specific population or geographic area. In terms of resilience

by whom, few actions directly engage the oppressed and marginalized who have been left out of

plan-making.

Handmer and Dovers (1996, p. 505) explain that transformation is "most typically

advocated by more radical elements of society, and/or ones who are disadvantaged by the current

situation". As such, Jon and Purcell (2018, p. 238) explain that transformative approaches must be bottom-up processes where marginalized populations can themselves "take [disasters] as an opportunity to invent alternative ways of life" and be the agents of change. Thus, radical resilience fits within anarchist theories of planning, which supports planning by the people who will be impacted by the plan. Disadvantaged populations have the agency to create their own resilience, and thus cannot be considered inherently vulnerable. Furthermore, Anguelovski et al. (2016, p. 12) argue that "[p]lanners have an obligation to advocate for transformative actions that place justice front and center, and avoid marketing "resilient" projects that merely re-package development-as-usual". Matyas and Pelling (2015) do not consider vulnerability and resilience as opposites, as an individual or city may be both vulnerable and resilient or neither. For instance, the El Paso plan states that low-income populations have the potential to be the most resilient.

These and future 100 Resilient Cities plans have the potential to move beyond a return to normal and address systemic inequities. To do so, planners can firstly more directly consider vulnerability and the spatial distribution of hazards, vulnerabilities, and policy outcomes. Secondly, planners can move beyond community participation and engagement to community empowerment by addressing barriers to participation and encouraging partnerships with the community. Thirdly, monitoring and evaluation tools can be in place to track progress toward equity and justice goals.

As discussed, many actions within these plans consist of generic statements that apply to the whole city without necessarily considering who or where may be more vulnerable. Other cities within the 100 Resilient Cities network can consider and target specific populations and geographies throughout their plan development and implementation. Considerations of vulnerability can move beyond class and race to explicitly consider the multiple axes of

difference that influence an individual's vulnerability, as recommended by MacCallum et al. (2014) for climate change policy. For instance, these plans largely neglect to address how gender and indigeneity may affect an individual's vulnerability. Similarly, Kuhl, Kirshen, and Douglas (2014) recommend that disaster recovery plans focus on the needs of vulnerable populations and the underlying drivers of vulnerability. MacCallum et al. (2014) also recommend paying attention to the spatial distribution of the impacts of climate change. These same ideas can be applied to these resilience plans to ensure that those who are most affected by resilience challenges, whether the impact of flooding and sea level rise or the concentration of poverty in certain neighbourhoods, are benefitting from policy actions.

Shi et al. (2016) explain that procedural justice includes the involvement of non-traditional partners, such as low-income and ethnic minority groups and social and environmental justice advocacy groups. Plan-making can involve the public with a specific focus on ensuring that those who are not traditionally represented in decision-making are involved and heard. Harris (2015) argues that public participation is necessary to avoid top-down decision-making and specifically involve the communities most affected by a policy decision.

The accessibility of information is important through the process. The public can be informed and engaged in decision-making processes to make residents aware of the long-term plans for their community and by doing so the public can make informed personal decisions (Kuhl et al., 2014). Information can be made publicly accessible through websites, newspapers, radio, and public forums (Harris, 2015). Accessible information is a goal in many, if not all, the plans included in this study. However, as discussed, the barriers to accessing this information and participation more generally are rarely considered. For instance, language barriers are only considered in the New York and Oakland plans. Harris (2015) recommends providing

information in multiple languages that reflect the demographics of the community. Additionally, the time and location of public meetings can be taken into consideration.

Participation can move beyond input to empowerment. Ortiz Escalante and Gutiérrez Valdivia (2015, p. 116) explain participation as "a tool of empowerment". Empowerment acknowledges the power that traditionally underrepresented populations have (Ortiz Escalante & Gutiérrez Valdivia, 2015). A community has the capacity to realize and develop their own resilience (Jon & Purcell, 2018; Torabi et al., 2017). By involving and engaging a community, the community can state their needs in terms of services, benefits, and assistance and then policy and development can act on the specific needs of that community (Harris, 2015). Ortiz Escalante and Gutiérrez Valdivia (2015) discuss the use of workshops, exploratory walks, and community mapping as tools to incorporate a gender perspective into planning. These same tools can be used with a focus on traditionally underrepresented groups to understand and learn from the lived experiences of community members and therefore what concerns can be addressed.

Importantly, empowerment means that the ideas of the community are in fact implemented. Harris (2015) explains that discussions with the community are important to get ideas about appropriate approaches and strategies for that community and to incorporate this feedback. Ortiz Escalante and Gutiérrez Valdivia (2015) further recommend that the community participates in the changes themselves, such as by developing a proposal. These strategies move beyond participation to partnerships, as community members are empowered to plan for themselves. The planner "adopt[s] the role of facilitator instead of the expert" (Ortiz Escalante & Gutiérrez Valdivia, 2015, p. 122). Although community partnerships are a less common strategy within this sample of plans, the cities included in this study can still involve vulnerable and disadvantaged residents in the implementation of the actions listed within these plans.

Community-based actors, such as non-government organizations, religious groups, small businesses, volunteers, and friendship networks offer an important opportunity to address resilience challenges. Community organizations can link stakeholders to tools and thereby involve marginalized people (Faber, 2015). These organizations support the social infrastructure by providing resources for traditionally underrepresented populations (Faber, 2015; MacCallum et al., 2014). Within these plans, many cities already recognize the importance of partnering with community-based organizations for the implementation of their strategies. For instance, the San Francisco plan includes an action to use volunteers in neighbourhood responses to emergencies. This type of work can continue along with the use of networks to coordinate among partners within the city and among cities.

Progress toward equity and justice goals cannot be monitored and evaluated without adequate tools. Shi et al. (2016) encourage measuring and assessing outcomes related to the justice and equity of planning efforts to avoid maladaptive and inequitable outcomes for marginalized groups. Berke et al. (2015) recommend a resilience scorecard to specifically assess how resilience plans are reducing vulnerability to hazards. Pearsall and Pierce (2010) further recommend environmental justice indicators to ensure that plans are addressing equity and justice and not simply quality of life. One such example regarding project evaluation is Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This order requires that federal government actions protect minority and low-income populations from facing a disproportionate burden of environmental and human health effects (U.S. Environmental Protection Agency, 2016). Additionally, plan evaluation can involve the community. By doing so, public feedback can be incorporated into planning processes.

One tool that combines all these recommendations is Community Benefit Agreements (CBAs), which are legally enforceable contracts signed by community groups and developers to incorporate community benefits as part of a development project. Harris (2015) recommends CBAs to ensure that development meets its equity goals. These same ideas can be applied to other policy actions. CBAs can guarantee community benefits, particularly to the most affected communities. This approach acknowledges differential vulnerability and ensures an equitable distribution of benefits. Through participation and input from the most affected communities and by promoting transparency in the dissemination of information, CBAs can give voice to certain communities. Furthermore, the community can be empowered through the implementation of their ideas. These agreements produce measurable goals, as the developer, or implementer of a policy, is accountable for implementing the agreement.

7.4 Concluding Thoughts and Recommendations for Future Research

While it is evident that these 100 Resilient Cities plans have gone further to address inequities and injustices than the climate change adaptation, disaster recovery, and sustainability literature discusses, they still do not always meaningfully address the systemic issues that produce vulnerability. These plans do move beyond the engineering and bouncing back conception of resilience, as they include efforts to minimize existing disparities, thus moving toward a different "normal" in which equity is considered. This conception of resilience recognizes that cities must take action and importantly must change in order to be able to address stresses and shocks.

100 Resilient Cities recognizes resilience as being able to withstand stresses and shocks, however stresses and shocks are often presented as a false dichotomy. The connection is rarely

made as to how long-standing social inequities and injustices produce vulnerability to shocks and efforts to address this issue are even less common. Bené et al. (2018) and others discuss how vulnerability is comprised of physical hazards and social structures and Gotham and Greenberg (2014) explain how crisis is produced by a physical hazard and social inequity. In order to be resilient, these interactions among the multiple stressors of all types must be considered. Resilience discourses offer an opportunity to address this gap through its interdisciplinarity and comprehensiveness. Solutions that offer co-benefits environmentally, socially, and economically are therefore not only the most appealing to a wide audience, but can also be the most impactful and meaningful. If resilience is to do better than sustainability has for planning, these concerns should be addressed.

Further research could address these interactions among multiple stressors. In particular, more research can be done with the 100 Resilient Cities plans. While this study exclusively examined the plans themselves, it could have greatly benefited from the examination of outside sources that provide additional context. For example, the inclusion of other relevant plans would provide additional context as to whether and how equity or other issues are represented in those plans. Further studies could examine the plans on a larger scale or more in depth for one or a couple of cities. Additional studies could also examine individual issues in more depth, such as procedures and decision-making, housing, or transportation. These same approaches could be applied to the plans within other countries or to different types of plans. Additionally, this thesis examined how resilience is being used to address equity and justice and does not look into whether the plans can be considered resilient in other ways, such as their environmental impact.

Overall, the opportunity to create a resilient city is taken to improve the circumstances within a city. While resilience is a commonly accepted concept, the question of who this

resilience is for remains. Not everyone will benefit equally from quality of life or economic improvements, especially without consideration of *why* quality of life and economic circumstance differs among residents. As such, discussions of how opportunity differs move toward redressing injustices. In order to bounce forward, each city can prioritize closing systemic gaps in opportunities by paying attention to vulnerabilities, empowering residents, and measuring progress.

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Appendix A: Select Demographic Data

Population and Age

City	Total Population	Youth (age under 24)	% Youth (age under 24)	Seniors (age over 65)	% Seniors (age over 65)
Atlanta	420003	141610	33.7	41339	9.8
Berkeley	112580	44167	39.2	13176	11.7
Boston	617594	223721	36.2	62237	10.1
Boulder	97385	41869	43.0	8704	8.9
El Paso	649121	258995	39.9	72617	11.2
New Orleans	343829	117105	34.1	37639	10.9
New York	8175133	2637455	32.3	993158	12.1
Norfolk	242803	98723	40.7	22796	9.4
Oakland	390724	119392	30.6	43559	11.1
Pittsburgh	305704	107544	35.2	42151	13.8
San Francisco	805235	185188	23.0	109842	13.6

Source: U.S. Census Bureau (2010)

Race and Ethnicity

City	Race - White	% Race - White	% Race - Visible Minority	Race - Black/ African- American	% Race - Black/ African- American	Race - American- Indian	% Race - American- Indian	Race - Asian	% Race - Asian	Race - Native Hawaiian/ Pacific Islander	% Race - Native Hawaiian/ Pacific Islander	Ethnicity - Hispanic/ Latino	% Ethnicity - Hispanic/ Latino
Atlanta	161115	38.4	61.6	226894	54	988	0.2	13188	3.1	132	0.0	21815	5.2
Berkeley	66996	59.5	40.5	11241	10	479	0.4	21690	19.3	186	0.2	12209	10.8
Boston	333033	53.9	46.1	150437	24.4	2399	0.4	55235	8.9	265	0	107917	17.5
Boulder	85702	88	12	876	0.9	431	0.4	4605	4.7	74	0.1	8507	8.7
El Paso	524764	80.8	19.2	22006	3.4	4757	0.7	7723	1.2	909	0.1	523721	80.7
New Orleans	113428	33	67	206871	60.2	1047	0.3	9970	2.9	134	0	18051	5.2
New York	3597341	44	56	2088510	25.5	57512	0.7	1038388	12.7	5147	0.1	2336076	28.6
Norfolk	114304	47.1	52.9	104672	43.1	1200	0.5	7999	3.3	396	0.2	16144	6.6
Oakland	134925	34.5	65.5	109471	28	3040	0.8	65811	16.8	2222	0.6	99068	25.4
Pittsburgh	201766	66	34	79710	26.1	584	0.2	13465	4.4	86	0	6964	2.3
San Francisco	390387	48.5	51.5	48870	6.1	4024	0.5	267915	33.3	3359	0.4	121774	15.1

Source: U.S. Census Bureau (2010)

Housing

City	Group quarters	% of population group quarters	Population in owner-occupied housing	% of population in owner-occupied housing	Population in renter-occupied housing	% of population in renter-occupied housing
Atlanta	29484	7	181286	43.2	209233	49.8
Berkeley	12849	11.4	45096	40.1	54635	48.5
Boston	46214	7.5	204363	33.1	367017	59.4
Boulder	8105	8.3	45300	46.5	43980	45.2
El Paso	9414	1.5	403138	62.1	236569	36.4
New Orleans	13165	3.8	165805	48.2	164859	47.9
New York	185530	2.3	2648617	32.4	5340986	65.3
Norfolk	32780	13.5	97870	40.3	112153	46.2
Oakland	8138	2.1	166662	42.7	215924	55.3
Pittsburgh	24329	8	144437	47.2	136938	44.8
San Francisco	24264	3	327985	40.7	452986	56.3

Source: U.S. Census Bureau (2010)

Select Economic and Social Characteristics

City	Unemploy-ment rate (%)*	Median household income ($)*	% below poverty level - population for whom poverty status is determined**	Educational attainment - % high school graduate or higher***	Veteran status***	% veteran status***	With a disability**	% with a disability**	Foreign born population**	% of population foreign born***	Speak English less than very well***	% speaks English less than very well***	Speak language other than English***	% speaks language other than English***
Atlanta	10.4	49398	24	89.5	20642	5.6	53343	11.9	31937	7.6	11833	2.8	42158	9.8
Berkeley	7.3	70393	19.9	95.5	3558	3.4	10248	8.7	24418	21.7	7500	6.6	31927	28
Boston	8	58516	21.1	85.7	17023	3.1	79946	12.3	181652	29.4	106588	17.1	231454	37.1
Boulder	6.1	60569	22	96.4	3402	3.7	6941	6.7	11573	11.9	4467	4.4	15641	15.4
El Paso	7.7	43322	21	78.6	44580	9.3	90306	13.7	165195	25.4	178262	28.5	439915	70.3
New Orleans	9.8	37488	26.2	85.7	17894	5.9	51594	13.7	22552	6.6	12322	3.4	31894	8.9
New York	8.6	55191	20.3	80.8	167591	2.5	885542	10.5	3146112	38.5	1818264	23	3870978	49
Norfolk	9.7	45268	21	87.5	28122	16.3	27027	12.3	17480	7.2	7862	3.4	23770	10.4
Oakland	9.3	57778	20	80.5	13262	4	51489	12.6	112305	28.7	82047	21.3	155321	40.3
Pittsburgh	7.7	42450	22.3	92	17435	6.8	40435	13.6	25979	8.5	10859	3.7	31244	10.8
San Francisco	6.2	87701	12.5	87.4	25791	3.5	89464	10.6	296849	36.9	171758	21.2	356884	44

*Source: U.S. Census Bureau (2016b)

** Source: U.S. Census Bureau (2016a)

*** Source: U.S. Census Bureau (2016c)

Appendix B: Indicators of Equity and Justice

- Procedural Equity (Finn & McCormick, 2011; Pearsall & Pierce, 2010; Schrock et al., 2015)
    - Public participation
        - Plan process (Woodruff, 2017)
        - Plan preparation involvement (Woodruff, 2017)
        - Public participation maintenance (Woodruff, 2017)
        - Past organizing of CBOs (Schrock et al., 2015; Woodruff, 2017)
    - Stakeholders
        - Engaging with stakeholders (Araos et al., 2016; Preston et al., 2011)
        - Representative stakeholders (Woodruff, 2017)
        - Businesses (Woodruff, 2017)
        - Grassroots organizations/groundwork responses (Araos et al., 2016; Schrock et al., 2015)
        - Local knowledge (Woodruff, 2017)
        - Vulnerable populations (Woodruff, 2017)
        - Other stakeholders
    - Participation techniques
        - Communication and outreach (Preston et al., 2011)
        - Public meetings (Woodruff, 2017)
        - Planning or steering committee (Woodruff, 2017)
        - Task force or work group (Berke et al., 2014)
    - Political engagement
        - Political/social participation/social capital (Frazier et al., 2013; Labonté et al., 2012; Pearsall & Pierce, 2010)
        - Barriers to participation (Labonté et al., 2012)
- Social Equity (Finn & McCormick, 2011; Schrock et al., 2015)
    - Income/wealth
        - Income (individual/family/household) (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015; Frazier et al., 2013; Labonté et al., 2012; Schrock et al., 2015;)
        - Persistence of low-income (Labonté et al., 2012)
        - Participation in social security schemes (Labonté et al., 2012)
        - Consumption (Labonté et al., 2012)
        - Savings (emergency) (Labonté et al., 2012)
        - Material resources (Labonté et al., 2012)
        - Debt (Labonté et al., 2012)
        - Access to credit facilities (Labonté et al., 2012)
        - Had to sell something/borrow money (Labonté et al., 2012)
    - Skills/education
        - Basic skills (Labonté et al., 2012)
        - Vocational skills (Labonté et al., 2012)

- Educational attainment (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015; Frazier et al., 2013; Labonté et al., 2012)
  - Education enrolment (Labonté et al., 2012)
  - Access to education (Labonté et al., 2012)
  - Exclusion from school/not able to pay fees (Labonté et al., 2012)
- Employment
  - Employment/unemployment (Agency for Toxic Substances & Disease Registry, 2018; Frazier et al., 2013; Labonté et al., 2012; Pearsall & Pierce, 2010)
  - Long-term unemployment (Labonté et al., 2012)
  - Access to job/labour market (Labonté et al., 2012)
  - Security of job/quality of employment (Labonté et al., 2012)
  - Retired status (Labonté et al., 2012)
- Minority status
  - Non-white minority status (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015; Schrock et al., 2015)
  - Language capacity/competency (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015; Frazier et al., 2013; Labonté et al., 2012)
- Household composition
  - Single-parent household (Agency for Toxic Substances & Disease Registry, 2018; Burton, 2000)
  - Jobless household (Labonté et al., 2012)
  - Children living in households below average income (Labonté et al., 2012)
- Housing
  - Housing (access to good) (Berke et al., 2015; Frazier et al., 2013; Labonté et al., 2012)
  - Housing condition/quality (Labonté et al., 2012)
  - Housing type (multi-unit, mobile home) (Agency for Toxic Substances & Disease Registry, 2018; Frazier et al., 2013)
  - Housing age (Frazier et al., 2013)
  - Overcrowding (Agency for Toxic Substances & Disease Registry, 2018; Burton, 2000)
  - Affordable/below market housing (Burton, 2000)
  - Ability to pay rent (Labonté et al., 2012)
  - Owner-occupier (Burton, 2000; Labonté et al., 2012)
  - Local authority/subsidized rent (Burton, 2000)
  - Homelessness/core housing need (Burton, 2000; Labonté et al., 2012)
  - Shelter need/capacity (Frazier et al., 2013)
- Health
  - Health service access (Frazier et al., 2013; Labonté et al., 2012; Pearsall & Pierce, 2010)
  - Use of health services (Labonté et al., 2012)
  - Health coverage/insurance (Frazier et al., 2013)

- Child care services (Labonté et al., 2012)
- Medical capacity/life expectancy (Frazier et al., 2013; Labonté et al., 2012)
- Self-reported health (Labonté et al., 2012)
- Dental treatment (Labonté et al., 2012)
- Adequacy of diet (Labonté et al., 2012)
- Senior (65+) (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015)
- Children/youth/young adult/student (Agency for Toxic Substances & Disease Registry, 2018; Berke et al., 2015)
- Disability/ special needs (Agency for Toxic Substances & Disease Registry, 2018; Frazier et al., 2013; Labonté et al., 2012)
- Physical health, morbidity, mortality (Labonté et al., 2012)
- Long-term illness (Labonté et al., 2012)
- Mental distress (Labonté et al., 2012)
- Experiencing depressing and anxiety (Labonté et al., 2012)
- Social capital
    - Social networks (Labonté et al., 2012)
    - Communication capacity (Frazier et al., 2013)
    - Regular social contact (Labonté et al., 2012)
    - Diversity in social contacts (Labonté et al., 2012)
    - Separation from family (Labonté et al., 2012)
    - Friends to discuss intimate matters (Labonté et al., 2012)
    - Access to social institutions (Labonté et al., 2012)
    - Access to information (Labonté et al., 2012)
    - Volunteerism (Frazier et al., 2013)
    - Membership in club or society (Labonté et al., 2012)
    - (Denial of) social justice/rights and freedoms (Labonté et al., 2012)
    - Place attachment (Frazier et al., 2013)
- Geographic Equity (Finn & McCormick, 2011)
    - Physical environment
        - Quality of neighbourhood (Labonté et al., 2012)
        - Environmental amenities (green space, biodiversity, tree canopy) (Burton, 2000; Pearsall & Pierce, 2010)
        - Environmental hazards (Pearsall & Pierce, 2010)
    - Accessibility
        - Geographic isolation (Labonté et al., 2012)
        - Access to facilities (stores, leisure) (Burton, 2000)
        - Infrastructure and utilities (Pearsall & Pierce, 2010)
        - Job accessibility (Burton, 2000)
    - Transportation
        - Transportation access (Berke et al., 2015; Frazier et al., 2013; Labonté et al., 2012; Pearsall & Pierce, 2010)
        - Public transit use (Burton, 2000)

- Active transportation (walking, cycling) (Burton, 2000)
- Carless households/access to car (Agency for Toxic Substances & Disease Registry, 2018; Burton, 2000; Labonté et al., 2012)
- Access/evacuation potential (Frazier et al., 2013)
  - Safety
    - Neighbourhood safety (Labonté et al., 2012; Pearsall & Pierce, 2010)
    - Crime (Burton, 2000; Labonté et al., 2012)
    - Discrimination (Labonté et al., 2012)
    - Subjective safety/fears of personal attack, burglary, vandalism (Labonté et al., 2012)
- Economic Equity (Finn & McCormick, 2011)
  - Inequality
    - Potential to exacerbate disparities (Schrock et al., 2015)
    - Inequality of income distribution (Labonté et al., 2012)
    - Poverty rate/below poverty (Agency for Toxic Substances & Disease Registry, 2018; Labonté et al.., 2012; Schrock et al., 2015)
    - Differential development (Frazier et al., 2013)
  - Economic development
    - Traditional economic development (growth) (Finn & McCormick, 2011)
    - Green economic development (Finn & McCormick, 2011)
    - Single-sector dependence (Frazier et al., 2013)
    - Business size (Frazier et al., 2013)
    - Female/minority employment (Frazier et al., 2013)
    - Post-disaster opportunities (Frazier et al., 2013)

Appendix C: Plan Rankings Based on the Resilience Typology

Number and Percentage of Strategies by Resilience Typology

City	Total Number of Resistance Strategies	% of Resistance Strategies	Total Number of Incremental Adjustment Strategies	% of Incremental Adjustment Strategies	Total Number of Transformation Strategies	% of Transformation Strategies	Total Number of Strategies	Equity-Based Strategies	% of Equity Based Strategies
Atlanta	18	31.0%	36	62.1%	4	6.9%	58	40	69%
Berkeley	18	66.7%	9	33.3%	0	0.0%	27	9	33.3%
Boston	15	21.4%	51	72.9%	4	5.7%	70	55	78.6%
Boulder	12	66.7%	5	27.8%	1	5.6%	18	6	33.4%
El Paso	22	59.5%	14	37.8%	1	2.7%	37	15	40.5%
New Orleans	27	67.5%	11	27.5%	2	5.0%	40	13	32.5%
New York	105	60.3%	65	37.4%	4	2.3%	174	69	39.7%
Norfolk	24	57.1%	18	42.9%	0	0.0%	42	18	42.9%
Oakland	9	24.3%	25	67.6%	3	8.1%	37	28	75.7%
Pittsburgh	30	57.7%	17	32.7%	5	9.6%	52	22	42.3%
San Francisco	35	64.8%	17	31.5%	2	3.7%	54	19	35.2%