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Climate Adaptation Investment
and the Community Reinvestment Act

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Credits

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Executive Summary

Climate change is already causing disruption to regional economic activity. Low-to-moderate income populations are highly vulnerable to these impacts, in part, because they often have fewer resources to adapt. The stability and prosperity of local economies in the face of climate change depends on how well the public, private, and civic sectors can come together to respond to the shocks and stresses of climate change. Collaborative efforts to fund climate adaptation not only reduce the burden on highly vulnerable populations, but they also offer the opportunity for co-benefits within a broader portfolio of community development ambitions. This report introduces the field of climate adaptation finance and explains its connection to the Community Reinvestment Act (CRA) within the context of the disaster provisions guiding pre- and post-disaster investments. In a demonstration of need, the report provides evidence of the spatial concentration of disaster declarations in areas with CRA-eligible populations. Existing innovative and hypothetical investments are highlighted within a broader context for stimulating greater pre-disaster planning and investment. Community development practitioners, investors and policymakers will find this report useful for sparking new ideas about how to develop partnerships and funding streams for CRA-eligible activities—in both eligible communities and areas within a federal disaster declaration—that will reduce the vulnerability and increase the adaptive capacity of communities to the impacts of climate change.

Keywords

Climate Change Adaptation; Community Reinvestment Act; Resilience; Risk Mitigation; Hazards

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Introduction

This report explores the emerging logics and models at the intersection of community development and climate adaptation investment. In particular, this report evaluates the proposition that investments made for the advancement of climate adaptation, resilience and hazard mitigation may qualify for credit pursuant to the Community Reinvestment Act of 1977 (CRA). To evaluate this proposition, this report provides an interpretation of potentially applicable existing administrative authority, as well as a survey of recent innovative investments that may be conceptually eligible for CRA consideration. In addition, the report provides a range of normative models that highlight where and how potentially qualifying activities may be advanced. These models seek to align demonstrative metrics for community benefit against a range of investment and service activities ranging from grants to conduit financing mechanisms.

While the evaluation of this proposition does not serve as an official interpretation of the CRA, it is intended to provide understanding to banks and banking regulators who seek to develop additional pathways for investing in communities in the face of climate change.[1] Whether it is shocks from extreme weather or the ongoing stress of environmental exposure, climate change impacts exacerbate existing vulnerabilities associated with affordable housing (Shearer, et al. 2016; Pattison and Kawall 2018); household wealth and savings (Stadelmann, et al. 2015; Park, et al. 2018); economic mobility (Colten, et al. 2018); education attainment (Randell and Gray 2016; Sheffield, et al. 2017); public health (Watts, et al. 2015; Watts, et al. 2018); transportation accessibility (Prillwitz 2017); and, the cohesiveness of social capital (Aldrich and Meyer 2015) and community institutions (Eakin, et al. 2016). The range of impacts in each of these aspects of social welfare reflects the diversity of challenges facing community development.

In this regard, climate change is often understood as one of many factors that lead to the crossing of thresholds that result in negative economic and social welfare outcomes (Rudebusch 2019). For instance, many coastal cities already face affordable housing challenges. But, with phenomena such as climate gentrification, affordability barriers are arguably only going to be more challenging (Keenan, et al. 2018). The subject of this report parallels the ambitions of community development organizations around the country that seek to incorporate aspects of climate adaptation into their existing missions—many of which have historically had little to do with environmental issues. This research provides a basis from which regulated banks, community development organizations and local governments can find common ground in developing models of practice that facilitate society's collective adaptation to climate change.

> *"... this report provides an interpretation of potentially applicable existing administrative authority, as well as a survey of recent innovative investments that may be conceptually eligible for CRA consideration."*

Research Design and Methodology

The exploratory research design of this report is based on three phases of research (Yin 2018). The first phase of research included desk research in evaluating CRA statutory authority, administrative rules, multi-agency guidance and empirical measurements associated with examinations and community assessments (Cane and Kritzer 2010). The second phase of research involved undertaking semi-structured interviews with twenty-three (n=21) interviewees from across the Federal Reserve System, the Office of the Comptroller of the Currency at the U.S. Department of the Treasury (OCC) and private sector experts who have worked in CRA

[1] Banks should consult with their primary regulator to discuss products, programs, or services that may be eligible for CRA consideration.

compliance or are working in community development (Wengraf 2001). The interviewees were selected for their experience in undertaking examinations and/or community development research and/or outreach in parts of the U.S. that have experienced significant disaster events in the past decade, including California, Florida, Hawaii, Louisiana, Mississippi, New York, New Jersey, and Texas. Interviewees were specifically questioned with regard to the underlying validity and normative opportunities associated with the underlying proposition that is the subject of this report. The report attributes data from the interviewees anonymously in order to prevent any potential conflicts that may arise relating to the judgement or opinion of regulators that may not necessarily reflect the official position of their respective regulatory bodies. The next phase of research included the utilization of geospatial analysis to test various hypothesis regarding the relationship between populations living in CRA eligible census tracts and the occurrence of qualifiable disaster declarations (Pine 2017). The hypotheses were developed, in part, from data collected in the first and second phases of research. The final phase of the research design included the development of normative hypothetical investment pathways that could serve to guide and motivate future climate adaptation investments within the community development sphere (Cooper 2005). These models were developed, in part, from data collected in the interview phase. These models were partially validated with a second set of interviewees and reviews by the interviewees. However, no data collected in this final phase should be interpreted as validating the application of the hypothetical models for the purpose of securing future or retroactive CRA credit.

Climate Adaptation and Investment

Key Concepts

For the past several decades, much of the focus in environmental efforts has been on climate mitigation, or reducing greenhouse gas emissions that cause global warming and climate change. These efforts have paralleled the development of a broader cultural shift

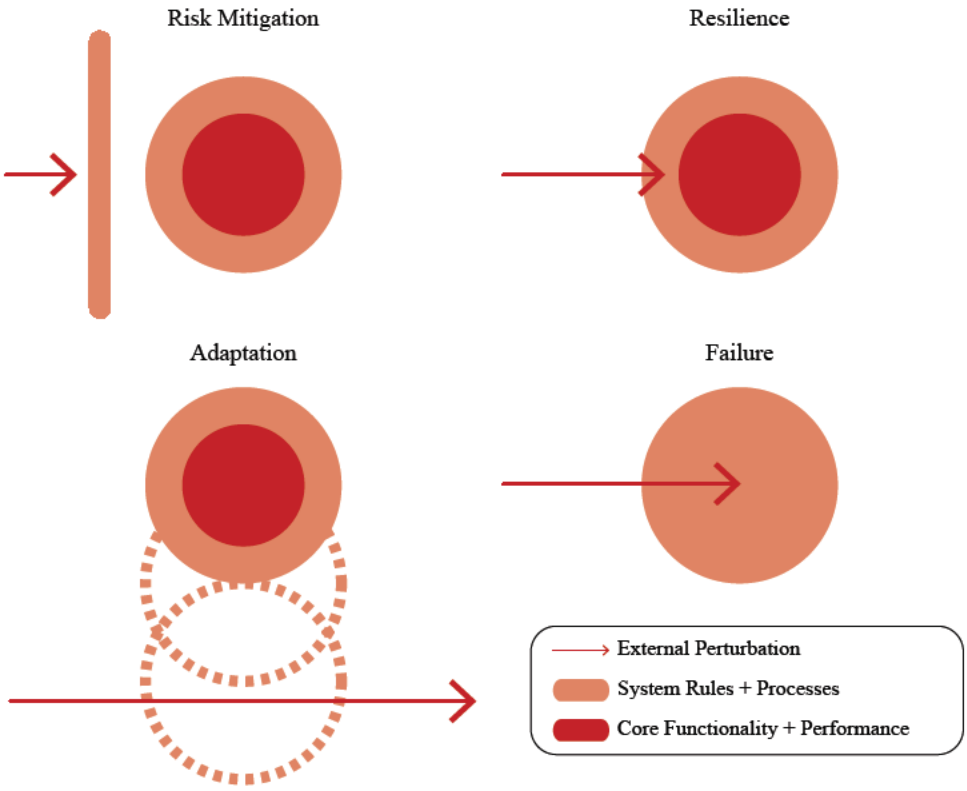
in the name of sustainability. While the applications of sustainability are nearly endless, the fundamental intent is to advance behaviors, actions and strategies that reduce negative environmental impacts and reduce consumption to levels that are commensurate with currently understood notions of stability in managed ecological systems. Although successful in a variety of contexts, and still important to pursue, sustainability and climate mitigation regimes in policy and market economics have been inadequate to stem the advancement of climate change. As confirmed by observational studies, climate change has begun to accelerate in the frequency and/or intensity of its impacts (USGCRP 2018a). As previously cited, the primary and secondary impacts challenge a variety of existing metrics for social welfare.

Climate adaptation is a field of study and practice that seeks to understand how societies and ecologies prepare for and/or respond to climate change impacts. Consistent with the Intergovernmental Panel on Climate Change (IPCC) and the U.S. Global Change Program (USGCRP), the technical definition specifies that adaptation is an "adjustment[s] in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects" (USGCRP 2018b). In this regard, climate adaptation is not primarily concerned with aspects of sustainability that seek to forestall the occurrence or severity of climate change. Rather, the focus is how one responds to either manage the risks and uncertainties or take advantage of opportunities. However, by some measure, climate adaptation is dependent on a sustainable allocation of resources to provide adaptation interventions and to pay for the costs associated with such interventions (Keenan 2016).

Climate adaptation is a very broad field of inquiry that covers everything from conservation biology to complex engineered systems. In practical terms, adaptation—often referred to as transformative adaptation—is understood as leading to a transformation from one domain of operations to another and is often understood in terms of an organization's, an institution's, a system's or even an individual's capacity to (i) identify a problem; (ii) resource a response to or preparation for a stimulus or problem; and (iii) then execute accordingly. This is distinct from other concepts that often focus on immediate reconstruction, recovery or stabilization following a disaster or extreme event. A plain language understanding would suggest that adaptation is about changing the ways that we do things when we understand that they are no longer sustainable or rationally feasible. By making this transformation, we bear the costs of change, but we also open a range of potential opportunities.

Within the fields of climate adaptation and disaster risk reduction there are a number of allied concepts that represent distinct analytic outcomes and contexts. As highlighted in Figure 1, these concepts include resilience and risk mitigation. Resilience can be further broken down into a variety of categorical variants, including engineering resilience and community resilience. Each of these concepts is conceptually and analytically distinct from transformative adaptation. For purposes of analyzing the feasibility, desirability and equity of investments, it is critical to be able to understand that any given investment might be described as serving one or more of these concepts. For instance, an investment in flood infrastructure might directly or indirectly lead to: (i) the transformative adaptation of where people decide to live; (ii) the hazard or risk mitigation of the design of people's homes; and, (iii) the community resilience of the people who benefit from the infrastructure. The key is to utilize these concepts to analyze trade-offs between investment options and strategies.

Figure 1: Conceptual Distinctions between Adaptation, Resilience, Risk Mitigation and Failure



Risk mitigation is about risk reduction interventions that seek to prevent a hazard event from causing damage or otherwise negatively impacting someone or something. Sometimes referred to as hazard mitigation as it relates to specific hazards, risk mitigation is fundamentally about a barrier, layer or intervening material or strategy that operates to mitigate harm to people and things from the physical forces of floods, fires, earthquakes, explosions, land slides and the like. Hazards may be natural, technological or even man-made.

There are a number of categorical variants of resilience (Meerow, et al. 2016). For purposes of simplification, it is best to focus on engineering resilience and community resilience. Engineering resilience is a similar concept to risk or hazard mitigation, except that it speaks to the capacity of an engineered system (e.g., transportation system) to withstand the impact of an event or stress—with or without risk mitigation—and to be able to maintain continuity of performance with as little loss of operational output and costs of repair as possible. Sometimes this can be something as simple has having some measure of systematic redundancy (Haimes 2009). Engineering resilience is utilized in everything from bridge design to software design. From a quantitative point of view, engineering resilience is primarily oriented to the costs and time of the intelligence necessary to understand the impact and to seek recovery operations (Yodo and Wang 2016).

Community resilience is a related concept, except that the responsive object is a community. Community resilience centers on a range of social indicators from psychology to household economics that speaks to a community's capacity to withstand the shocks and stresses associated with social (e.g., violence), demographic (e.g., aging society), labor force (e.g., automation), economic (e.g., rising inequality) or environmental (e.g., extreme heat) change (Bergstrand 2015). All of these aspects of change may be referenced as 'global change.' Within the context of disasters, there is very little correlation, given the complexity of social behavior, between most social welfare indicators and post-disaster recovery—other than wealth and race (Burton 2015). However, robust levels of social capital, positive physical and mental health outcomes and wealth accumulation are generally regarded as positive attributes for community resilience (Ostadtaghizadeh, et al. 2015).

> *"Community investments made in the name of climate adaptation should operate to reduce a community's vulnerability to climate change and its impacts."*

Investment and Impact Analysis

Community investments made in the name of climate adaptation should operate to reduce a community's vulnerability to climate change and its impacts. Vulnerability is understood as a combination of: (i) exposure; (ii) sensitivity; and (iii) adaptive capacity (Weis, et al 2016). Exposure is the extent to which a human or physical geography is subject to impacts or hazards. This is often expressed in probabilistic risk. For instance, when one speaks of a neighborhood being in a one-hundred-year flood zone (i.e., 1% annual occurrence probability), this is a statement concerning exposure. On the other hand, sensitivity relates to the extent that people or things are negatively impacted in the event of a stress or shock—or both. In carrying forward the example above, two neighborhoods within a flood zone may have the same exposure but two different sensitivities if one neighborhood has houses elevated on stilts and another neighborhood does not. The final component of vulnerability speaks to adaptive capacity. As previously mentioned, this speaks to the capacity to identify, mitigate, resource and execute interventions to prepare for or respond to shocks and/or stresses. Adaptive capacities can be framed to apply to people, systems, organizations, institutions and things. Likewise, adaptive capacities may relate to the capacity to undertake transformative adaptation, hazard mitigation, engineering resilience and community resilience.
An assessment of vulnerability before and after an investment must iteratively consider exposure, sensitivity and adaptive capacity. An assessment that focuses on just one element would be incomplete. Whether it is a

community, an ecosystem or an infrastructure system, there are a great number of vulnerability assessment tools that can facilitate data collection and interpretation (NOAA 2019).

When evaluating investments made in the name of climate adaptation, there are several analytical steps that should be advanced. The intent of these steps is to provide transparency as to the nature of who the beneficiaries of the investment are over what time period; who bears the costs, risks or liabilities of such investments; and to what extent trade-offs and conflicts have been identified. Tables 1-4 highlight a variety of analyses that examine the trade-offs and conceptual framing associated with common adaptation investments or strategies. The answers to each of these inquiries are critical for providing the necessary transparency for ensuring informed decision making that can determine the extent to which investments are fair, just and equitable (Keenan 2018c). A thorough analysis is also critical for determining the counter-proposition that an investment made in the name of adaptation may lead to maladaptation—otherwise defined as either a failure to adapt or a process that leads to net-negative outcomes. In this regard, it is critical to define the exact nature of the time horizons, actor orientations and spatial boundaries from which investments may be operating. With this analytical rigor, the subjectivity of these concepts can be mitigated in order to support more objective decision making.

Table 1: Example Analysis | Managed Coastal Retreat of Housing

Actor Orientation	Time Horizon	Adaptation (actor specific)	Maladaptation (actor specific)	Engineering Resilience		Community Resilience	
				Synergy	**Conflict**	**Synergy**	**Conflict**
Household	30 year Mortgage	Less risks and fewer costs	Not all people can afford to move	N/A	Deconstruction of structures & infrastructure	N/A	Looses of social support
Community	Current Generation	Transition to new community & expanded network	Community diffuses & loss of social capital	Other communities can use limited funds	Decline in hazard mitigation investment	Other communities benefit	Community diffuses
Local Government	Annual Tax Assessment & bond term	Consolidates infrastructure	Diminished tax base & local population	Other communities can use limited funds	N/A	Other communities benefit	N/A

Table 2: Example Analysis | Below-Market Recovery Loans

Actor Orientation	Time Horizon	Adaptation (actor specific)	Maladaptation (actor specific)	Engineering Resilience		Community Resilience	
				Synergy	**Conflict**	**Synergy**	**Conflict**
Household	Loan Term	Yes, if can access	Yes, if additional debt burden	Could be used to pay for pubic infrastructure	Debt burden limited economic activity to pay for infrastructure	Stabilizes local economy	Yes, if debt burden
Banking Sector	Loan Terms	Stabilizes local economy	Might loose market share or lower net interest margin	N/A	N/A	Stable customer base	Debt burdened customer base
Local Government	Annual Tax Assessment	Stabilizes tax base	N/A	Public-private resources for infrastructure	N/A	Other communities benefit	N/A

Table 3: Example Analysis | Hazard Mitigation Infrastructure Development

Actor Orientation	Time Horizon	Adaptation (actor specific)	Maladaptation (actor specific)	Engineering Resilience		Community Resilience	
				Synergy	Conflict	Synergy	Conflict
Community	Infrastructure Lifecycle	Enhanced local infrastructure	Yes, if additional debt burden	Enhanced protection	Limited protection, low probability/ high impact failure	Enhanced protection	Yes, if debt burden
Architecture, Engineering & Construction Sector	Infrastructure Lifecycle	Enhanced local infrastructure & economic (enterprise) activity	Short-term gains, long-term uncertainty in capital (enterprise) costs	N/A	N/A	Supports labor force, education & training	Long-term labor uncertainity
Local Government	Annual Tax Assessment & credit rating outlook	Stabilizes tax base	Lifecycle threatened by climate impacts, O&M liabilities, poor investment & opportunity cost	Enhanced protection	Focused limited to certain impacts	Stable community	Yes, if debt burden

Table 4: Example Analysis | Post-Disaster Mortgage Delinquency Waivers & Forbearance

Actor Orientation	Time Horizon	Adaptation (actor specific)	Maladaptation (actor specifc)	Engineering Resilience		Community Resilience	
				Synergy	Conflict	Synergy	Conflict
Household	Short-term to mortgage term	Allows for stabilization of cash & savings	Yes, if long-term housing recovery is maladaptive to short-term hazards	Invest in resilience in rebuilding with savings	N/A	Stabilizes local economy	N/A
Banking Sector	Mortgage term	Stabilized mortgagor less likely to enter foreclosure	Delays inevitable foreclosure, collateral waste or unsustainable business model	N/A	N/A	Stabilizes local home prices	N/A
Local Government	Annual Tax Assessment & bond term	Stabilizes tax base	N/A	Public-private resources for infrastructure	N/A	Other communities benefit	N/A

For instance, if someone proposes to elevate homes in the name of resilience, this may have both positive and negative implications depending from what point of reference someone is evaluating the investment. Yes, the investment may provide some measure of engineering resilience and hazard mitigation relating to functionality of the building. However, it may be maladaptive if the costs of financing the elevation become a debt burden that reduces a household's income and savings. Likewise, elevating the home may expose the structure and the interiors to moisture that may lead to dangerous exposure to mold for occupants. In this situation, it may make more sense to sell the property and move to a location that offers a greater opportunity for wealth accumulation and fewer health risks. Of course, when a household moves, it may undermine community resilience by reducing the availability of social capital. Like all investments, there are always costs and trade-offs. There is not always a clear right answer when evaluating different trade-offs and options.

There are also other examples where promoting adaptation may undermine resilience—often community resilience. For instance, the assets of many water utilities around the country are nearing the end of their useful life or are otherwise accelerated in their deterioration due to their exposure and sensitivity due to climate change. The costs to manage and replace these assets is often beyond the financial capacity of the local utilities. In order to facilitate new investments, these utilities have adapted their investment and project delivery models to contract with third-party private operators. In so advancing this institutional adaptation in the name of water system engineering resilience, the increased costs have become a significant burden on consumers. In some cases, water bills have more than doubled (Ivory et al. 2016). In this case, the institutional adaptation of the utility operates to directly undermine notions of community resilience at least in terms of increasing vulnerability associated with the economic burden. This may be income that people would otherwise have spent on healthy food, healthcare or education. Under this scenario, one may substitute water utilities for any number of other sectors, including housing, that are increasingly passing along costs associated with various aspects of global change.

Most of the time, transformative adaptation, engineering and community resilience and hazard mitigation goals are well aligned conceptually and in terms of execution. However, this is not always the case. Resilience to one person may be maladaptation to another. Adaptation to one person may undermine the resilience of another. The goal is to be precise in describing and evaluating the time horizons, actors, benefits, costs and general parameters of any given investment in order to net-out the proposition in the advancement of 1) a reduction in vulnerability and 2) a net contribution to social welfare. This may involve a combination of both qualitative and quantitative elements that seek not only an optimal outcome but also a robust one.

Community Reinvestment Act (CRA)

CRA Credit and the Exam Process

The CRA was designed to help address credit needs and promote investment in low- to moderate-income (LMI) and underserved rural geographies (*See* Appendix A: CRA Origins). Large banks receive CRA consideration for grants, loans, investments and service contributions made in LMI areas, or census tracts which have median incomes under 50% of the area median income and 50-80% of area median income, respectively.[2] The geography of these activities, or "assessment areas," is approximately delineated as the contiguous counties or metropolitan areas where banks are headquartered or do most of their business (Federal Reserve Bank of Dallas 2005). This definition applies to the physical location of branches and ATMs, a fact that has complicated the application of CRA in an era of online banking and branch closures, especially in rural areas (Quercia et al. 2009). In areas known as "banking deserts," where banks may have lending activity but no branches, the geography or market would not be considered part of a CRA assessment area (Morgan et al. 2016).

In addition to serving the banking and credit needs of individual low-income residents, CRA-eligible activities can serve low-income communities by providing needed services, economic development or neighborhood revitalization. These "community development" investments are those that "revitalize or stabilize" a low-income community, a designated disaster area, or a designated distressed or underserved nonmetropolitan middle-income geography (Board et al. 2016). For example, banks can make direct or in-kind contributions to community organizations serving low-income populations, invest in Community Development Financial Institutions (CDFIs) that make loans to small business owners and farmers, or invest in enterprises that create jobs in low-income areas (Getter 2015). Investing in housing, community services, or

[2] The exam process differs slightly for other types of financial institutions. For example, intermediate-small banks may have a different balance between community development loans, investments, and services (Shepard 2014). We describe the process for large banks for the sake of simplicity, although most of this report has broader applicability. As noted above, financial institutions should consult their primary regulator.

essential infrastructure that primarily serves low-income communities are all potential community development activities (Board et al. 2016). For example, a loan for flood control infrastructure that protects a low-income area or for energy efficiency measures at a community facility in a low-income area would fall under the definition of community development (id.).

Three federal agencies conduct periodic exams of banks' performance under the CRA (*See* Appendix B: CRA Exam Background). Although there is much complexity to banking regulation and supervision, the Federal Reserve System and the Federal Deposit Insurance Corporation (FDIC) primarily conduct CRA exams for state-chartered banks; the Office of the Comptroller of the Currency (OCC), part of the U.S. Treasury, primarily examines nationally-chartered banks (collectively, the "Regulatory Bodies"). These Regulatory Bodies issue joint guidance about what examiners are looking for, such as what types of activities might contribute to community development, known as the Interagency Questions and Answers or "Q&As" (Board et al. 2016).

Ultimately, the individual examiner, applying the guidance adopted by the three Regulatory Agencies in the Q&As, determines whether an investment is responsive to the needs of low-income communities in a bank's assessment area (OCC 1999). This relative subjectivity can cause banks to act conservatively about trying out new investments that fit with their business model but are unproven in terms of receiving CRA credit. To counterbalance the disincentive to be a first mover, the exam process gives extra consideration to innovative activities by banks that might set an example for other banks while still maintaining a bank's safety and soundness.

CRA and Natural Disasters

In 2005, the Regulatory Bodies began considering community development activities that occur in a federally-designated disaster area for CRA credit. The Q&As state that activities that "revitalize and stabilize" a disaster area will receive consideration (Board 2006). We will refer to this provision as the "Disaster Clause" for the purposes of this report. These activities do not need to specifically target LMI individuals or geographies, although those that do receive extra consideration (Board et al. 2016, p. 48546). Disaster response activities must have community development as their primary purpose to be considered for CRA credit (Dancy 2018). Examiners give extra weight to the community development activities of large financial institutions that are "innovative" in responding to the unmet needs of the community while still meeting financial safety and soundness standards (id.). In the event of a disaster, the level of responsiveness to community needs may even outweigh the consideration of the size of a subject loan portfolio, for example (id).[3]

For the purposes of this report, a "declared disaster area" is defined as a county that has received a Major Disaster Declaration (variously referred to as a "major disaster area" or "disaster area"). A governor requests a declaration to be signed by the President, and the Federal Emergency Management Agency (FEMA) administers federal assistance in the area (FEMA 2018). However, an area that has only received FEMA Public Assistance Emergency Work assistance for debris removal or emergency protective measures will not independently qualify for CRA purposes without a Presidential declaration. Examiners will consider activities that revitalize and stabilize a disaster area for up to 36 months after a disaster declaration. In cases where there is continued "demonstrable community need" for revitalization and stabilization activities, the Regulatory Bodies will issue an extension (Federal Reserve Bank

[3] Dancy (2018) provides a how-to guide for financial institutions seeking CRA consideration for disaster-related activities.

of Minneapolis). For example, at the end of the three-year period after Hurricanes Katrina and Rita, the Regulatory Bodies extended the period of consideration for community development activities by an additional three years (Board 2008, Board 2017).

Activities that "revitalize or stabilize" a disaster area can either target a declared disaster area or target residents of that area, particularly LMI residents (Federal Reserve Bank of Minneapolis 2018). Activities that provide jobs, housing, or services that will help individuals and businesses stay in an area after a disaster, or attract new residents or businesses, would be considered (id.). This could include providing financing to new or existing businesses that employ LMI residents (beyond rebuilding-related construction work), financing or otherwise assisting "essential community-wide infrastructure, community services, and rebuilding needs," or "activities that provide housing, financial assistance, and services to individuals in designated disaster areas and to individuals who have been displaced from those areas, including [LMI] individuals" (Board et al. 2016, p. 48527).

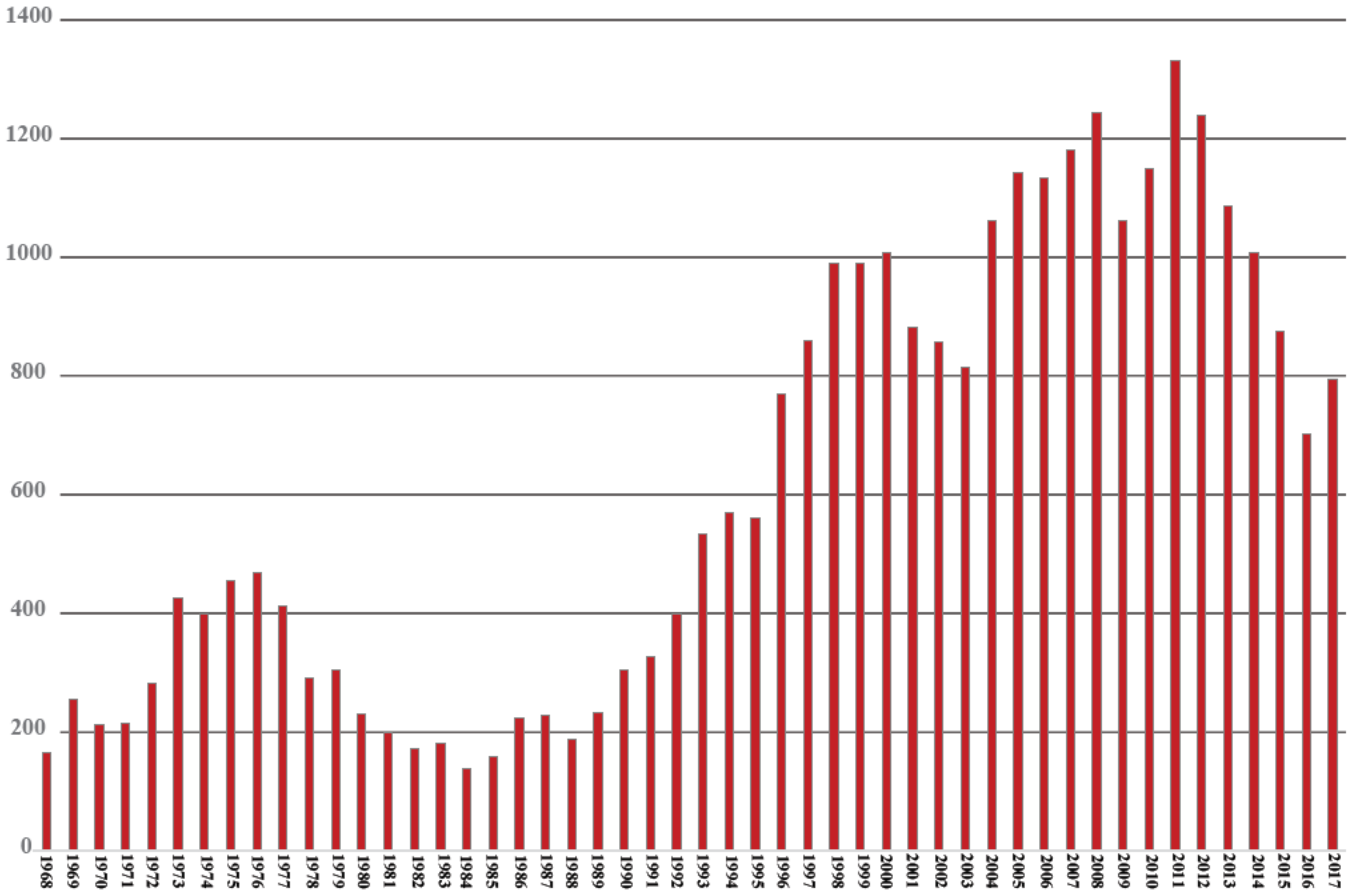
The geography of a disaster area can but does not necessarily have to align with a bank's assessment area. Examiners consider disaster recovery activities in a declared major disaster area that fall in a bank's assessment area for CRA credit (id.). However, if the community development needs of a bank's assessment area are already met, examiners will consider activities that fall outside the assessment area in the region where a bank is located (id., p. 48530). In extreme cases, the Regulatory Bodies have issued specific guidance on CRA consideration in a particular disaster area, regardless of where those financial institutions are located. After the federal disaster declaration for Hurricane Maria in 2017, the Regulatory Bodies called for investment in Puerto Rico and the Virgin Islands by financial institutions from across the country (FDIC et al. 2018). Following Hurricanes Katrina and Rita in 2004, the Federal Reserve System encouraged banks from across the country to invest in recovery efforts, including those that served people displaced to other areas not in the major disaster area (Board 2006).

Community development activities can occur outside of a designated disaster area or LMI area if they revitalize or stabilize that area. One example from the Interagency Q&As is a supermarket on the edge of a low-income area that provides needed retail that is not otherwise available to residents of the low-income area (Board et al. 2016, p. 48525). The Regulatory Bodies will consider all activities that revitalize or stabilize a disaster area, but activities that are most responsive to the needs of LMI individuals or neighborhoods will receive greater weight. As previously referenced, the existence of banking deserts highlights the desirability to consider CRA activities in non-full-scope assessment areas that are also major disaster areas.

Disaster Declarations in CRA Eligible Tracts

Anecdotal evidence from interviews supported the development of a general research question as to whether geographies that are regularly subject to natural disasters are disproportionately also home to communities with significant LMI populations. Specifically, a hypothesis was formulated that among the total number of instances of counties subject to a disaster declaration over the past twenty years, a disproportionate percentage—equal to or greater than 50%—would include at least one CRA eligible census tract (the "First Hypothesis"). A second hypothesis was that the share of counties subject to a disaster declaration that also included at least one CRA eligible tract would be observed to increase over the same time period (the "Second Hypothesis"). The following evidence provides a confirmation of the First Hypothesis and a falsification of the Second Hypothesis.

Figure 2: Annualized Five-year Rolling Average for Disaster Declarations in U.S. Counties (1968-2017)



As represented in Figure 2, there has been a gradual increase in the number of disaster declarations over the past 40 years. For purposes of this research, federal disaster declarations include the following FEMA incident type categories: coastal storm, drought, fire, flood, freezing, hurricane, mud/landslide, severe ice storm, severe storm(s), snow and typhoon. All other non-climate change impact related disasters (e.g., volcanoes, terrorism) and non-declared disasters (e.g., fire management assistance) categories have been excluded from the calculations.

To test the two hypotheses, the modified set of qualifying disaster declarations were geocoded and measured against the coordinates of CRA eligible tracts and counties that contain CRA eligible tracts. For purposes of consistent comparison over time, CRA tracts were based on CRA eligibility as determined from data available in 2018. Counties were utilized as an optimal jurisdictional scale because disaster declarations are made at the county level. Likewise, it was desirable to evaluate the spatial heterogeneity over time of disaster declarations. As such, counties provided an optimal level of resolution for purposes of mapping. In addition, by comparing populations within a county subject to a disaster declaration with those living in CRA eligible tracts within that county, an inference could be made as to the concentration of vulnerable populations. Alaska and Hawaii, as well as U.S. territories, are excluded from the analysis due to uneven and incomplete reporting of data over time.

Table 5: Descriptive Statistics of CRA Eligibility Within and Outside of Counties Covered by Disaster Declarations (1998-2018)

	Total Instances of a DD* in a County	DD in Counties with CRA Eligible Tracts**	% of Counties with DD that include CRA Eligibile Tracts	Total CRA Eligible Population*** / Total Population in Counties with DD	Average CRA Eligible Population per County with a DD
1998-2003	5,737	3,276	57.10%	30.13%	48.94%
2004-2008	6,260	3,830	61.18%	29.81%	48.52%
2009-2013	5,424	2,962	54.61%	27.93%	50.39%
2014-2018	3,900	2,197	56.33%	27.76%	49.16%
Average	**5,330**	**3,066**	**57.31%**	**28.91%**	**49.25%**

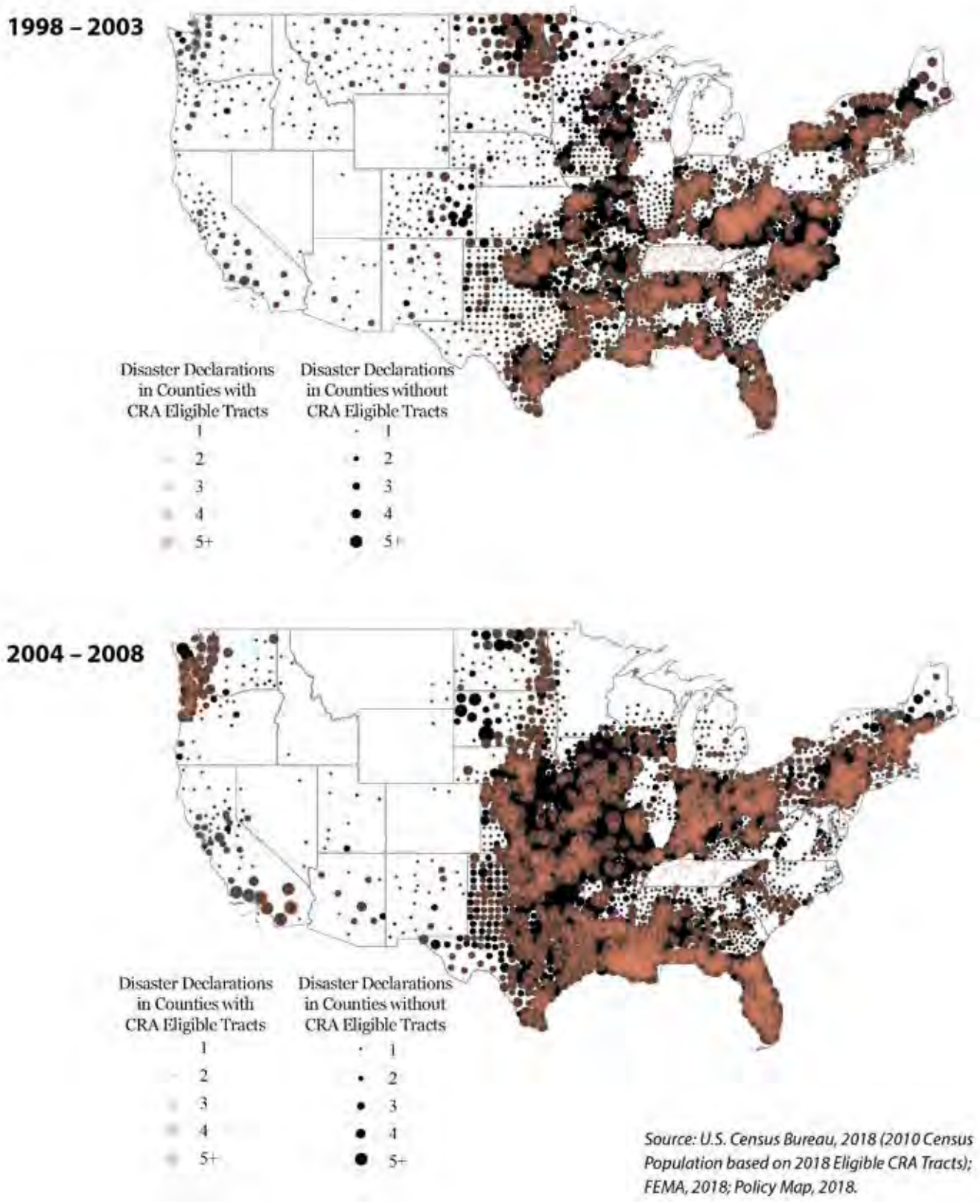
** Disaster Declaration*
*** CRA Eligibility based on 2018 Eligibility*
**** CRA eligible population denotes population living in CRA eligible tracts.*

As highlighted in Table 5, counties that have been subject to individual instances of qualified disaster declarations that also contain CRA eligible tracts make-up on average 57% of all counties subject to such declarations. In each time period, the evidence supports a confirmation of the First Hypothesis. This percentage has been consistently close in any given five-year time period to the average over the last twenty years. However, the percentages in the associated blocks of time have shown a slight decrease in percentage allocation, which is evidence in support of falsification of the Second Hypothesis. The reason that the total number of instances of disaster declarations is so much higher than the average adjusted rolling average in Figure 2 is because many counties are subject to multiple declarations within the same period of analysis. Overall, populations living in CRA-eligible tracts make up on average 28% of all populations subject to a qualified disaster declaration. However, this statistic is skewed by declarations in the Los Angeles and New York City metropolitan regions. Narrowing the focus to disaster-impacted counties that contain CRA-eligile tracts, the population in those tracts in any given disaster declaration averages 49% of the total county population. As such, on average, nearly one in every two people impacted by a disaster in a county with CRA-eligible tracts over the last two decades has lived in a CRA eligible tract.

“Overall, populations living in CRA-eligible tracts make up on average 28% of all populations subject to a qualified disaster declaration.”

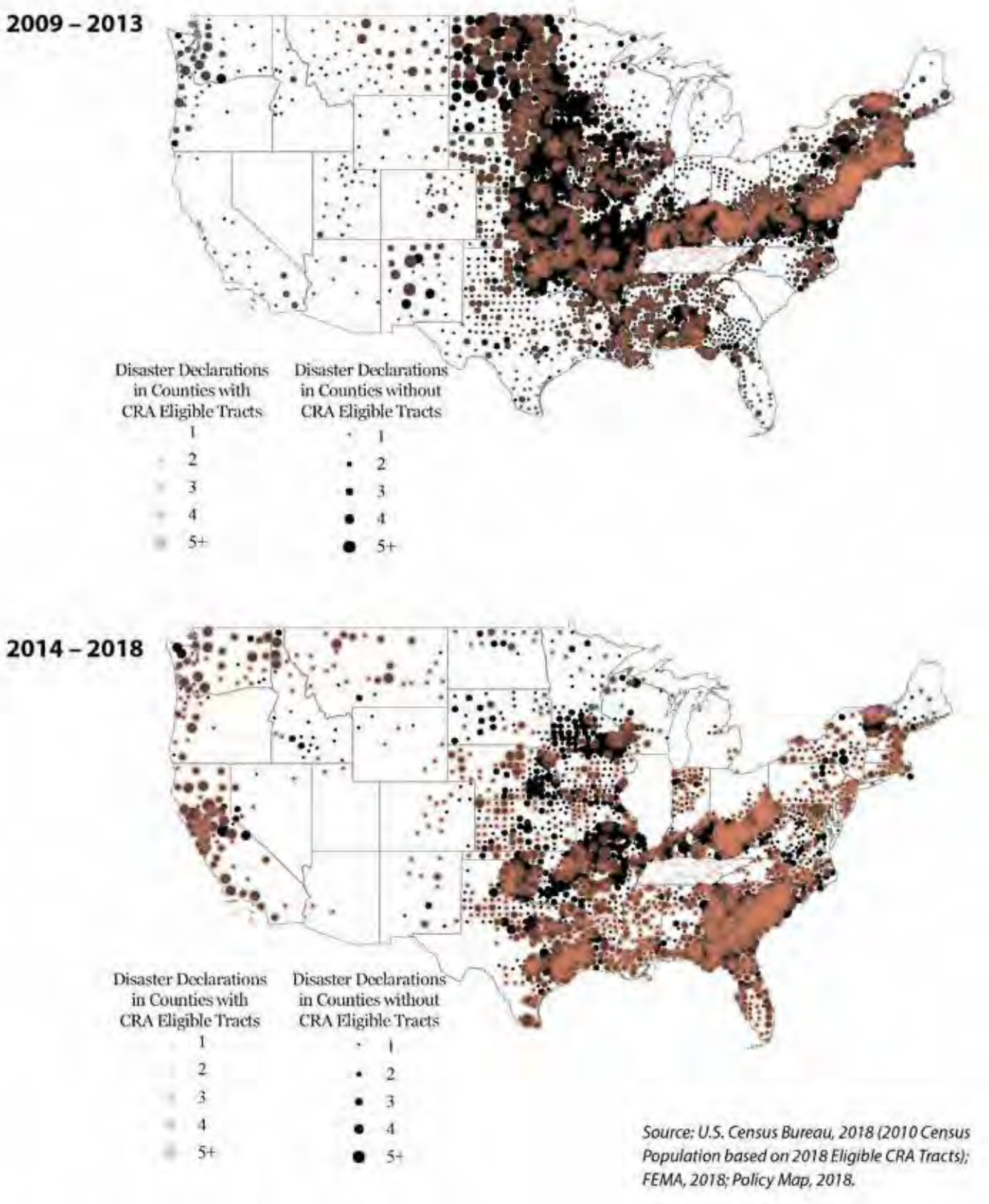
Figure 3 highlights the spatial distribution of disaster declarations over the past twenty years. Assuming that CRA eligibility is an adequate proxy for relative vulnerability, the maps provide inferential evidence of the concentration of coastal hazards and social vulnerability along the Gulf Coast and Southeast Coast. The maps in Figure 3 also highlight the proposition that communities impacted by either fluvial flooding or droughts in the Midwest are much less likely to include populations living in CRA eligible tracts. However, these geographies may otherwise contain distressed or under-served middle-income communities. Although the historic concentration of disaster declarations in counties with CRA populations in these Midwestern communities is not as pronounced as it is in the Southeast, the overall impact and associated inferential vulnerability is consequential in absolute terms. The maps in Figure 3 also highlight a widespread increase in disaster declarations spatially distributed along the entirety of the West Coast. These West Coast declarations appear to be heavily concentrated in counties with at least one CRA eligible tract.

Figure 3: Disaster Declarations in Counties with and without CRA Eligible Tracts (1998-2018)



Source: U.S. Census Bureau, 2018 (2010 Census Population based on 2018 Eligible CRA Tracts); FEMA, 2018; Policy Map, 2018.

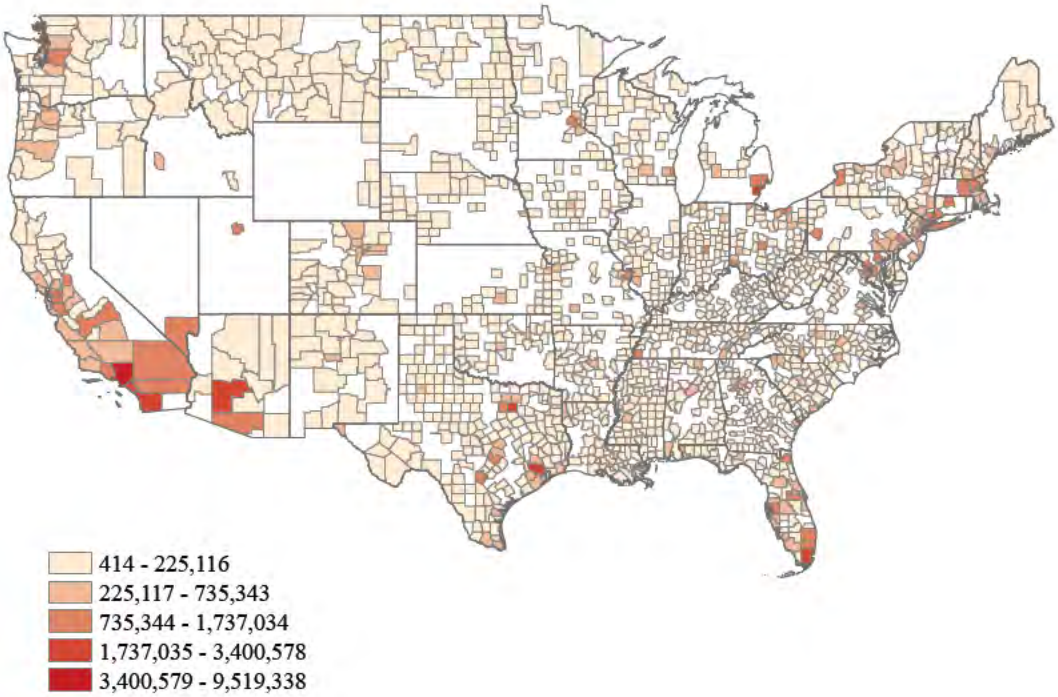
Figure 3 (continued): Disaster Declarations in Counties with and without CRA Eligible Tracts (1998-2018)



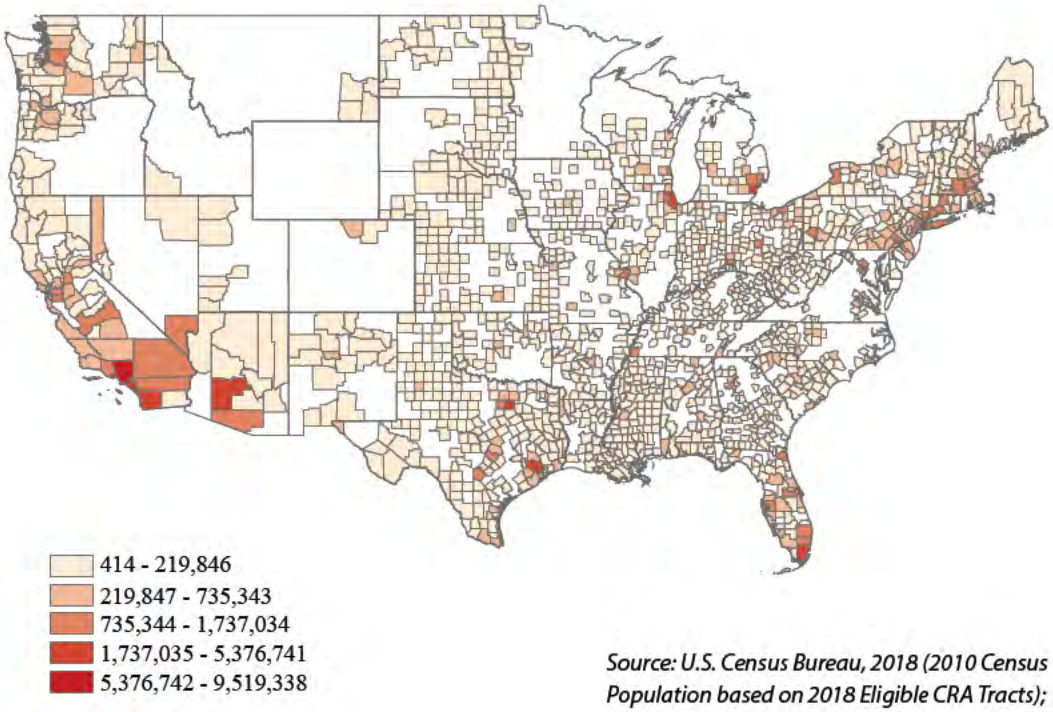
Source: U.S. Census Bureau, 2018 (2010 Census Population based on 2018 Eligible CRA Tracts); FEMA, 2018; Policy Map, 2018.

Figure 4: CRA Eligible Population in Counties with Disaster Dec arations (1998-2018)

1998 – 2003



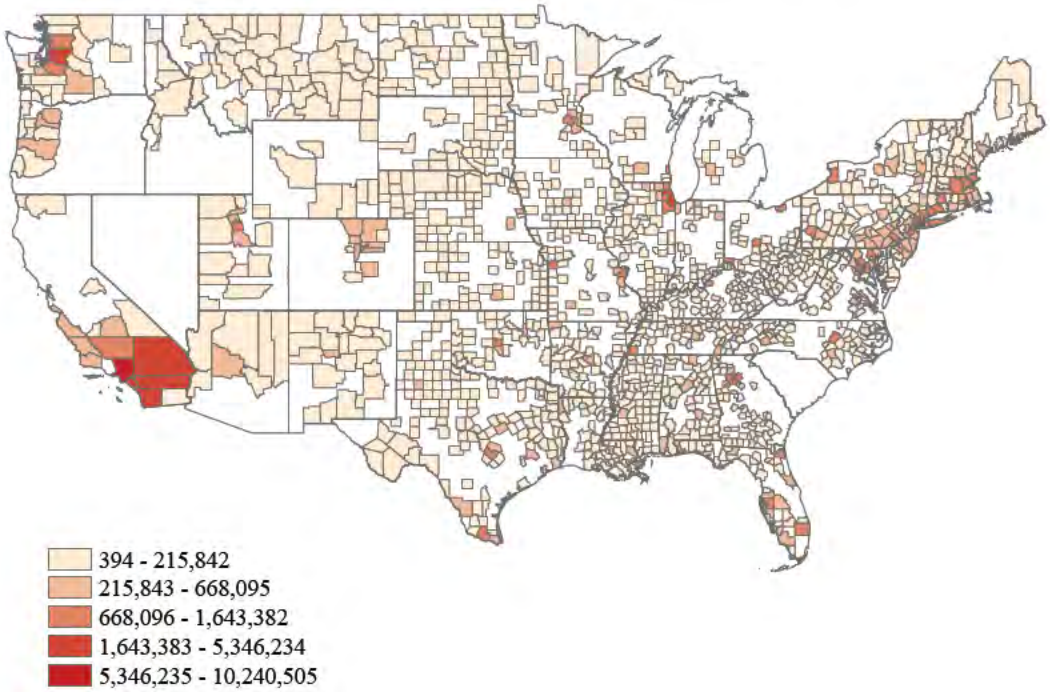
2004 – 2008



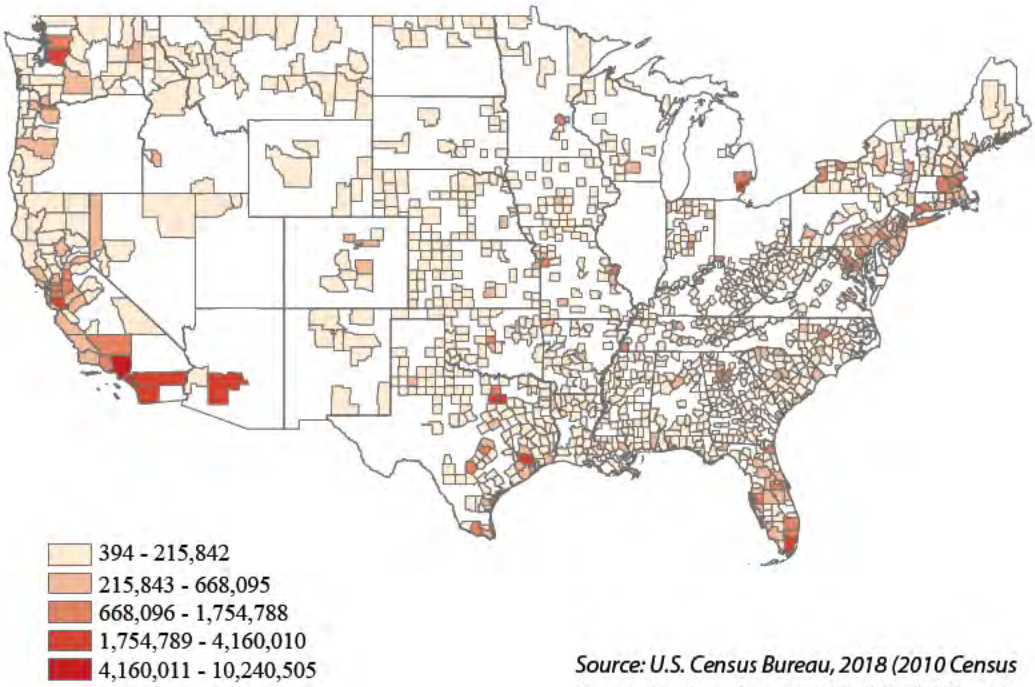
Source: U.S. Census Bureau, 2018 (2010 Census Population based on 2018 Eligible CRA Tracts); FEMA, 2018; Policy Map, 2018.

Figure 4 (continued): CRA Eligible Population in Counties with Disaster Declarations (1998-2018)

2009 – 2013



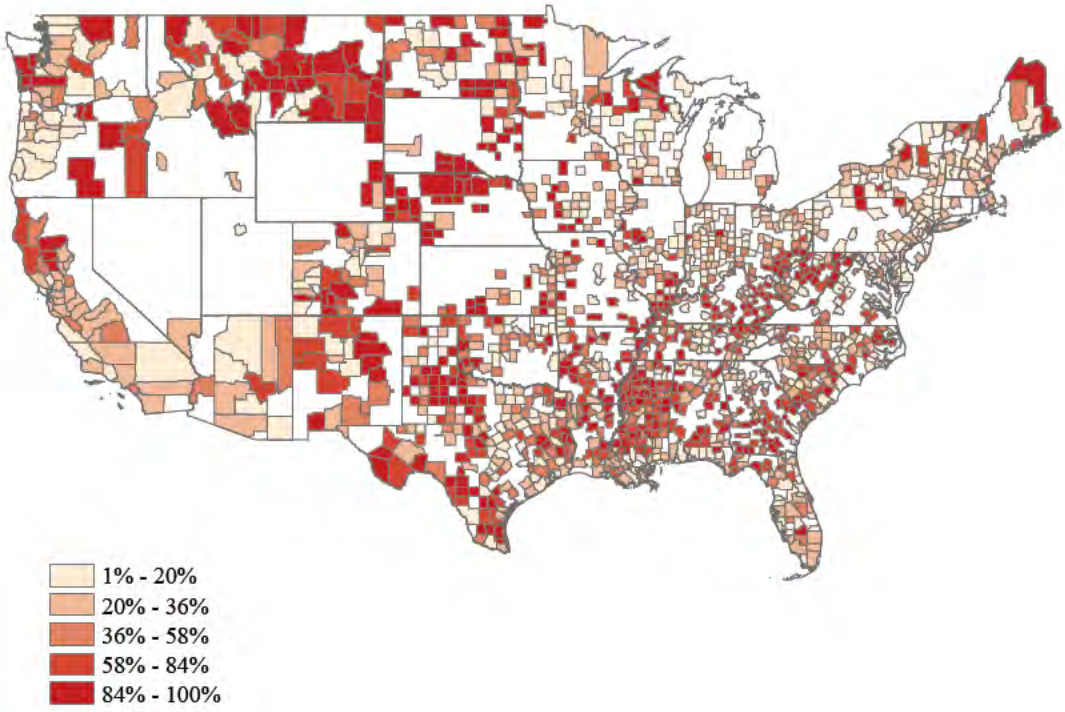
2014 – 2018



Source: U.S. Census Bureau, 2018 (2010 Census Population based on 2018 Eligible CRA Tracts); FEMA, 2018; Policy Map, 2018.

Figure 5: Percentage of CRA Eligible Population in Counties with Disaster Declarations (1998-2018)

1998 – 2003



2004 – 2008

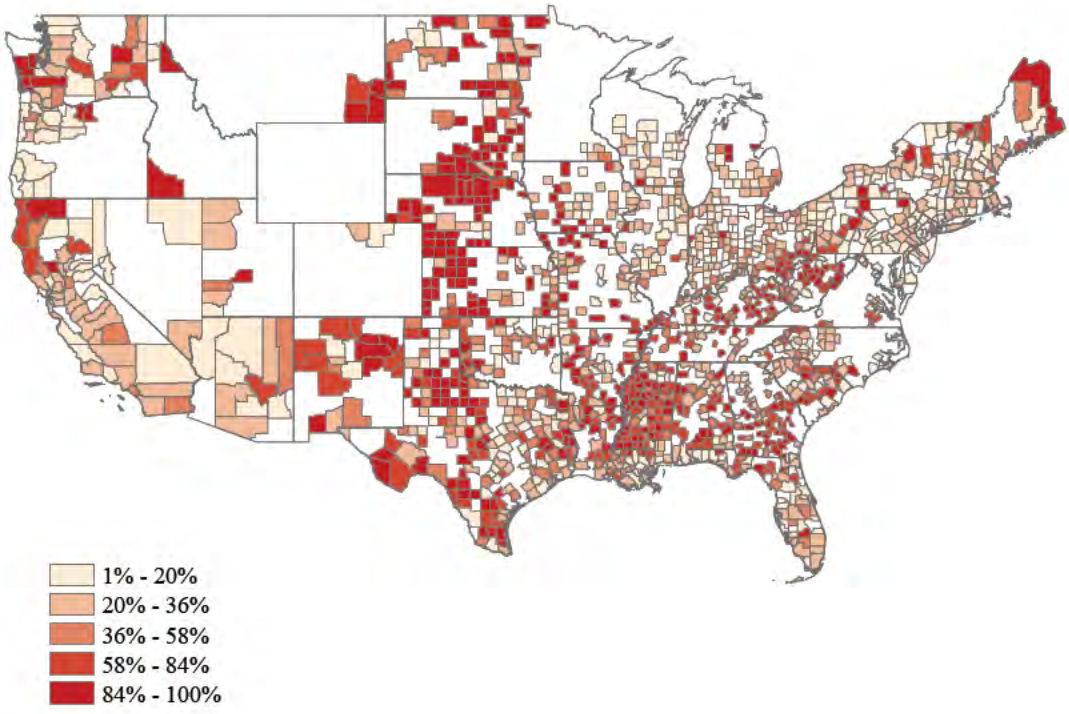
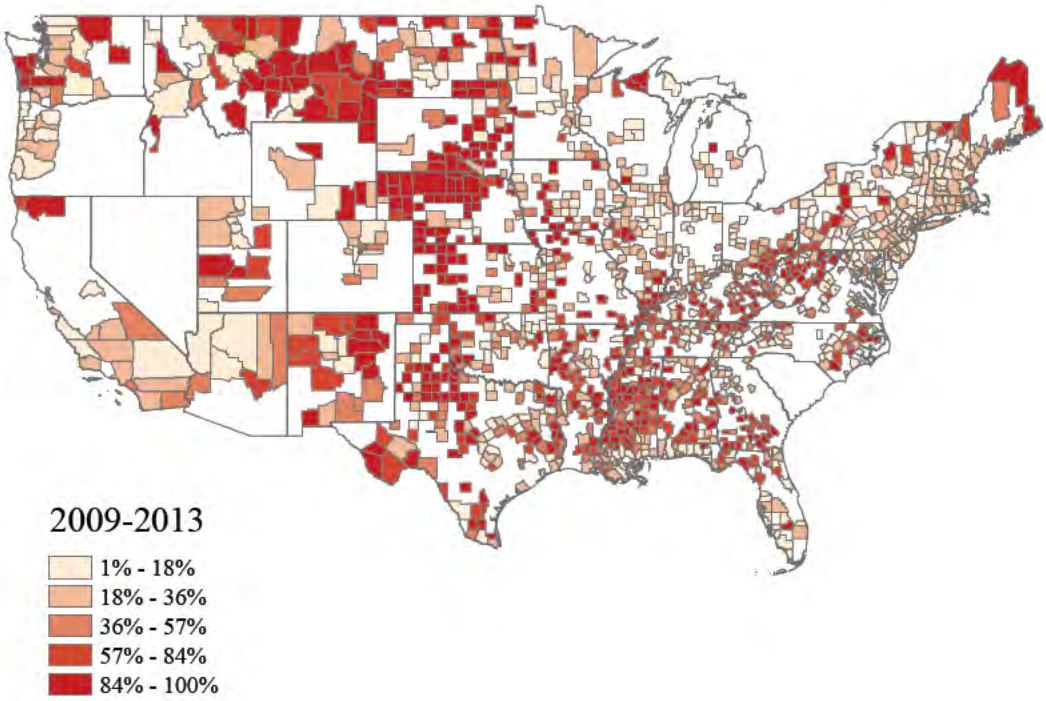
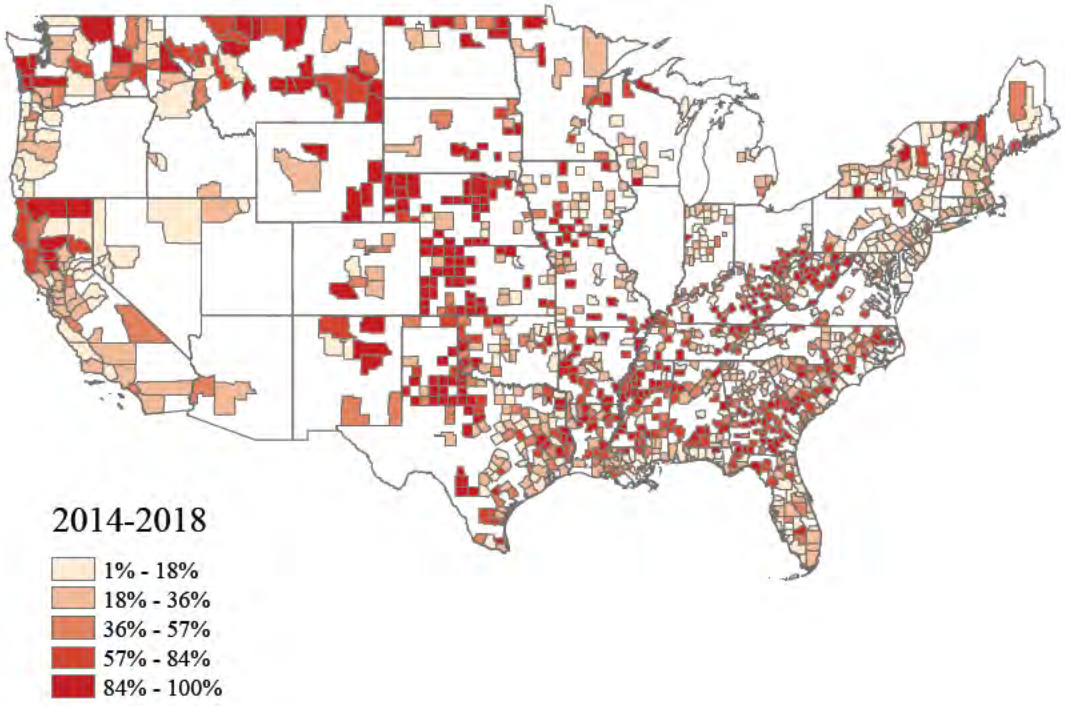


Figure 5 (continued): Percentage of CRA Eligible Population in Counties with Disaster Declarations (1998-2018)

2009 – 2013



2014 – 2018



Finally, the maps in Figures 4 and 5 highlight the previously-stated proposition that, while the spatial distribution of most of disasters encompasses comparatively rural parts of the country, a high percentage of disaster-impacted counties (57%) have CRA-eligible tracts. Arguably, this concentration highlights the extent to which concentrations of poverty make it difficult for jurisdictions to aggregate the internal resources (e.g., tax base) necessary to cover the unrecoverable costs of disaster recovery—never mind the costs associated with resilience and adaptation investments. With high concentrations of LMI populations, it may be more difficult for disaster-affected counties to be able to afford recovery and adaptation investments. The maps in Figures 4 and 5 also highlight the challenge of utilizing CRA investment as a tool for reaching more rural areas of the country. Together, these maps provide insight into the concentrations of disasters, vulnerability, and the extent to which there are widespread opportunities for CRA investment in both pre- and post-disaster investment.

CRA: From Post-Disaster Recovery to Pre-Disaster Resilience

The "Planning Presumption Clause," a term we are using for the purposes of this report, is arguably the most important and underutilized provision of the aforereferenced Disaster Clause in the Interagency Q&As. It states that an activity "will be presumed to revitalize or stabilize such a geography or area if the activity is consistent with a bona fide government revitalization or stabilization plan or disaster recovery plan" (Board et al. 2016, p. 48527). Local and state governments are increasingly undertaking a synthetic integration of adaptation, resilience, hazard mitigation and emergency management plans in preparation for climate change and natural disasters (Woodruff, et al. 2018; Keenan 2018a). As a general proposition relating to disasters, these plans can be divided into two major sections: post-event recovery and pre-event investments. As a matter of public policy, pre-event investments—often referenced in terms of hazard or risk mitigation and resilience—have been memorialized to take increasing prominence in

"With high concentrations of LMI populations, it may be more difficult for disaster-affected counties to be able to afford recovery and adaptation investments."

everything from FEMA's 2018-2022 Strategic Plan to recent congressional disaster appropriations (Painter 2018). Much of this public policy is motivated by empirical research that has found that every $1 in hazard mitigation and resilience can yield up to $6 in benefits (Multihazard Mitigation Council 2017). Participation in local planning efforts would fall under the service test (e.g., for large banks). Loans and investments that help implement pre-event plans in LMI areas or benefiting LMI populations would similarly be considered for general CRA credit. Post-event efforts that are consistent with a local plan would be considered under the Disaster Clause.

Under the Planning Presumption Clause, state and local governments have the opportunity to organize a suite of investments, including those that help prepare for the next disaster, that could qualify for CRA consideration and that would arguably benefit from some measure of coordination associated with the regulatory presumption. Governments could work with banks in advance to identify optimal mechanisms and conduits for participation and could then integrate those outcomes into existing planning regimes. At the point in time when a disaster declaration is made, the respective parties could execute in a manner that is not only coordinated to maximize public benefits but is also internally consistent with banking protocols and externally consistent with regulatory expectations. Part of the negotiated integration would be the development of assessment methodologies and investment impact models that may be applied to a yet-to-be-determined area that is subject to a future unknown event. This allows local governments oversight and an opportunity to coordinate activities and experiment with models that neither the public or private sector is independently motivated to experiment with given regulatory uncertainties.

Not only does thinking ahead for future disasters (and stresses) in the face of climate change promote consistency and planning concurrency, it also cuts down on the lag in time between planning, implementation and execution that can often last many years. As a general proposition, the faster a government responds, the greater the likelihood of effective recovery for vulnerable populations who cannot afford the extended carrying costs of temporary accommodations (Olshansky, et al. 2012). Assessment methodologies and impact models can be developed in advance to weight priority for historical marginalized populations (Keenan 2018c). In addition, the suite of predetermined post-disaster CRA investment options could be integrated into other housing, infrastructural and programmatic investments that seek to advance not only short-term recovery but the long-term adaptive capacity for the community resilience of impacted communities. Because the Planning Presumption Clause and the Disaster Clause have broader geographic applicability, vulnerable populations that are shifting in response to chronic climate change stresses (e.g., drought) and event-driven shocks (e.g., forest fires) might benefit from CRA investments in areas that might otherwise be classified informally as a banking desert (e.g. rural areas). In either event, the socio-economic fluidity of post-event conditions and geographies may not always be well represented in any given temporal determination of CRA eligibility. In this sense, the lag between measurement and on-the-ground conditions can be stark (Finch, et al. 2010). Conversely, eligibility criteria may not necessarily adequately account for shifting populations and households that have been displaced by extreme events and/or climate change that may not otherwise be captured in a timely manner by the Census Bureau. As such, these clauses may offer an opportunity to flexibly guide CRA investments in emerging geographies of concern.

Innovative Activities Under the Disaster Clause

Banks and state and local governments have the opportunity to think creatively about what activities may offer reciprocal benefit under the Planning Presumption Clause. Part of that reciprocal value is that banks make investments that serve the public interest but also reduce the vulnerability of their customers and the exposure of their assets and portfolios. Historically, such co-benefits have been elusive in the face of more immediate humanitarian needs. Typical community development activities by banks in disaster areas include making grants to organizations such as the Red Cross that provide immediate emergency services and giving people extensions on existing loans and mortgage payments (Dancy 2018).

After Hurricane Harvey, banks in Houston invested in a fund that provided microloans and technical assistance to small businesses. The Texas Small Business Rebuild Initiative provided no interest loans up to $25,000 through a $7 million fund operated by LiftFund, a nonprofit CDFI. The fund supported microloans, community outreach, and technical assistance. A 2017 Federal Reserve System national survey of disaster-affected small businesses found that the majority of these firms experienced asset losses of $25,000 or less (Battisto et al., 2018). On the Road Lending is a Dallas-based CDFI that provides transportation options to LMI communities in Texas. After Hurricane Harvey hit Houston in 2017, their Disaster Mobility Program helped get people back to work through low-cost vehicle loans for LMI individuals with grants from several banks.

A bank in Texas provided free office space to a nonprofit organization in a vacant commercial space after Hurricane Harvey. The bank had closed a branch but still retained possession of the premises subject to an existing lease. They sub-leased the space to Avenue CDC, a nonprofit community development corporation, who converted it into a Housing Recovery Center, with additional private funding and support from the Hurricane Harvey Relief Fund. Grant funding supported improvements to the space for offices and classrooms and enabled Avenue CDC to provide hurricane recovery counseling. Avenue CDC helped individuals apply for FEMA assistance, provided extended child care services, and taught classes on do-it-yourself home repairs.

This investment provides an important example of the provision of facilities that advance community resilience. In addition, there is potential for applying this model to supporting 'mom and pop' retail or other

critical retail establishments, such as grocery stores and pharmacies, after a disaster. A local government may designate certain businesses as 'critical' for recovery and this designation may help banks take advantage of the Planning Presumption Clause. These critical enterprises may benefit from non-capitalized principal and interest forbearance waivers, or simply interest forbearance, on mortgage or small business loans. These waivers may also apply to landlords who offer rent concessions to their tenants that have parity with the concessions made by mortgagees—although this might very well be difficult to administer and audit. In either event, coordination may provide a methodology and selection for those who may otherwise be prequalified to benefit from the types of conduit lending that occurred in the Texas CDFI example.

Another retail example comes from Florida where community redevelopment agencies can utilize tax increment financing to revitalize specific LMI areas. The Tampa Heights Riverfront community redevelopment area has a 20% poverty rate and a 17% unemployment rate. The Florida Community Loan Fund (a CDFI) and a community bank used the new market tax credit program (NMTC) to redevelop an old armory into a food hall for 'mom and pop' restaurants and a co-working space. This is a positive example of how public infrastructure may be utilized for supporting critical commercial interests that support a community. In this case, the support comes not only in terms of accessibility but also in terms of job creation.

A fund under development in the Fort Meyers area of southwest Florida would provide small residential rebuilding loans so that people can meet their insurance deductibles in order to make necessary repairs. The local Habitat for Humanity chapter is developing a partnership with a CDFI to guide the administration of the program, which is supported by banks who put funds into a loan pool. Banks would then apply for CRA credit for their contribution to the CRA fund. (Of course, CRA consideration would come into play after the loans have been made, not while the funds are sitting in the loan pool.) In theory, a loan pool run by a CDFI for LMI individuals to meet their insurance deductibles through an organization like Habitat for Humanity would fall under general CRA criteria, without the necessity of taking advantage of the Disaster Clause. For those banks that serve as local mortgagees, they have the added co-benefit of stabilizing property values and preventing additional collateral waste. In fact, pooled funds to support housing repair have been widely utilized (OCC 2008). The fundamental challenge is to integrate procurement and other recovery support programs operated by state governments.

To take advantage of the Planning Presumption Clause, banks and local government could develop underwriting criteria for prioritizing LMI applicants in the event of a large disaster (e.g., hurricane) with widespread regional impacts that extend outside of currently eligible CRA assessment areas. The insurance deductible loan program could also be integrated into direct subsidy

Table 6: Potential Investments Utilizing Planning Presumption Clause

People	Housing & Infrastructure	Small Business
• Savings Accounts for Emergencies • Funds for Rent Deposits • Labor force training & education • Financial Literacy as Preparedness • Childcare • Transportation Assistance • Foodbanks	• Pooled Construction Financing • Retrofit Financing • PV Installation • Finance 25% Federal Cost-share	• Integrated Government Procurement & Credit • Business Continuity Insurance

programs funded by the Community Development Block Grant Disaster Recovery program that seek to streamline grants, procurements requirements (e.g., liability coverage) and payments to pre-certified general contractors (USHUD 2017). While local governments have little agency and standing in the extenuated nature of the claims-adjudication process after disasters, this type of integrated program could provide critical repairs that ensure minimal legal habitability standards pending the claims and appeals process.

Potential Activities Under the Planning Presumption Clause

With climate change and the occurrence of more regular and more severe extreme events, conventional resources allocated to affordable housing, transportation, education and healthcare accessibility have begun to bear the consequences of chronic stress. In this regard, conventional models and pathways for community development, such as affordable housing, may be utilized in coordination with state and local governments to address vulnerabilities and opportunities driven by climate change impacts. For instance, the recent emergence of Opportunity Zones (OZs) has catalyzed a conversation concerning the opportunity to integrate spatial, economic, disaster and climate planning goals that may otherwise intersect along well-defined spatial boundaries (Coes and Loh 2018). Collectively, short-term and mid-term disaster oriented (pre- or post-) investments should be contextualized with long-term recovery and transformation of communities, municipalities and regions that are being shaped by policies such as OZs. In states such as Florida and California, multi-sector governance structures for long-term recovery exist, but they have not benefited from active coordination and engagement with the banking sector. By connecting these sectors and timescales, there is an opportunity to build the adaptive capacity of communities—rural and urban—to risks and uncertainties associated with climate change.

The Disaster Clause and the Planning Presumption Clause offer an opportunity to bridge short-term response with long-term investment and planning. While

“After disasters, one major challenge for displaced persons is having enough money for rental housing deposits.”

there are many potential avenues of investment, Table 6 highlights some potential investment categories where coordination and application have been determined to have immediate utility according to interviews with regulators, bankers and community development practitioners. Under the People category, there are some simple opportunities to advance community resilience. First, people simply don’t have enough personal savings to cover the costs of evacuation, temporary relocation and the loss of income (Rose 2004; Cutter, et al. 2008; Sapat and Esnard 2016). Interviewees suggested that a minimum savings of $2,000 is advisable. Adjusted for inflation, as of 2018, 29% of households have less than $1,000 in savings (Board 2016). In coordination with initiatives such as BankOn, banks and local governments can work together to market low-to-no-cost financial accounts for underserved households (CFE Fund 2018). In some cases, banks might be able to offer matching funds for disaster accounts. These efforts could be part of a broader more comprehensive effort to incorporate financial capability into preparedness and community resilience planning activities.

After disasters, one major challenge for displaced persons is having enough money for rental housing deposits. Such persons are often tracked into substandard housing and subject to a variety of financial and logistical challenges. There is an opportunity to develop a rental deposit fund in coordination with local government officials who can pre-certify landlords and properties in advance—not only locally but across a region. Firms such as Airbnb have filled some of this coordination gap with matching housing but there is no formal mechanism for deposit matching. Deposits themselves could be paid back directly from landlords after satisfactory conditions or upon like-kind contributions of tenants to maintain and upkeep the property.

Post-disaster recovery is complicated by transportation logistics and access to childcare. The On the Road Lending CDFI in Texas is an example of the role that a fund can play in providing accessible financing for the purchase of cars. Particularly following large floods, underinsured casualty losses can make car replacement cost prohibitive. This is further complicated by less than optimal credit scores that may be declining because of event-driven financial stress. State governments, banks, foundations and auto dealerships can develop similar revolving loan funds that can be mobilized or scaled-up in the event of a major disaster (Battisto et al. 2018). State and local governments can play a role in managing debris clearance of flooded cars, providing access to facilitates for storing new cars and providing marketing and consumer outreach about the available financing and product options.

Pooled funds can also provide financing for consumer access to childcare and for the temporary or permanent expansion of childcare facilities and the expansion of a workforce. In previous disasters, such as Hurricane Sandy, the two leading causes of losing one's job—other than the place of employment being damaged—stemmed from a lack of transportation and a lack of alternative childcare options (USHHS 2015). In particular, the expansion of licensed temporary staff and certified facilities is extremely capital intensive. Banks and local governments could work together to coordinate public procurement of select facilities wherein the public contract is utilized as a basis for the credit underwriting of a new line of credit. Banks could also provide resources for the training and qualification of licensed daycare workers and teachers.

Training and education for a legacy, transitional and future workforce is a major opportunity for coordination and investment. Following disasters, there is often a tremendous shortage among general contractors and skilled and semi-skilled trades working in the construction industry (Kumar et al. 2015). For instance, following Hurricane Irma in 2017, the State of Florida dedicated $20 million from the Community Development Block Grant Disaster Recovery allocations to a Workforce Recovery Training Program to train Florida residents in the construction trades (FDEO 2019). This comes within the context of labor challenges filling positions for building and code inspectors (Devon 2014). These labor constraints add costs and time to the recovery process (Opdyke 2018). Recent experiences in Puerto Rico highlight the absolute need to train both current future generations to contribute to rebuilding efforts that are presently being planned. As such, there is an opportunity to coordinate local government building inspection units, state licensing agencies, local technical colleges, unions and trade associations, and banks to develop programs that streamline tuition, training apprenticeship and job placement.

The Local Initiatives Support Corporation (LISC) developed early stage proto-types of this model with the Harvey Home Repair Collaborative and the Harvey Jobs Initiative (LISC 2018). However, it remains to be seen whether this can develop into an organizational foundation that can be incorporated formally into disaster and community resilience planning. In the interim, there is an opportunity to advance similar models not only for home repair but also for home hazard mitigation retrofits or distributive energy retrofits, including the addition of photovoltaic (PV) panels that advance energy reliability and reduce energy costs for LMI households. Fixed-income elderly households must sometimes choose between spending money on groceries or on the power bill to use air conditioning. In this sense, a simple PV installation serves to advance household adaptive capacity, community resilience through advances in public health (Nordio, et al. 2015) and the engineering resilience of any grid system that is vulnerable to climate change impacts (Ghasemieh, et al. 2015). Even in jurisdictions where PV is difficult to install, simply painting roofs white can have a positive effect in terms of ambient temperature and energy use (Cubi, et al. 2016).

An additional category of potential investments relates to the financing of housing and infrastructure. This category represents some measure of novelty relative to the historic humanitarian-focused applications

of the Disaster Clause. The general proposition for potential investment relates to multi-bank pooled funds that operate through a CDFI fund or other lending conduit. This is consistent with some of the other potential objects of investment. The opportunity rests in the capacity to work in tandem with local governments to pre-select land—that is often excess public inventory or otherwise land banked—and to develop entitlements and rapid procurement models for the pre-certification of fee developers (i.e., developers who are paid in full at or near the end of construction). In some cases, this may also mean pre-selecting private property that may not be redeveloped because of the inherent risks associated with the site. In this case, exchange and transfer programs can be set up to support this transition away from high-risk zones.

Banks can play a critical role in developing funds for construction financing that provide ready capital for pre-development activities, as well as for hard construction costs. In the event of a disaster, housing can be quickly mobilized in locations that have the supportive capacity in terms of a low risk profile but also in terms of transit and other infrastructure that can facilitate long-term recovery. The politics of recovery suggest that this is easier said than done, particularly as it relates to aspects of procedural justice in the planning engagement of LMI and historically marginalized communities (Sovacool 2017). These politics are often shaped by real estate markets and stakeholders (e.g., appraisers) who seek to optimize market value extraction from transit-accessible and infrastructure supported land, as well as local governments who seek to maximize a property tax base. However, given probabilistic sea level rise and forest fire burn patterns, the expected value, insurability and availability of private market mortgage finance may dictate few other alternatives but planned resettlement (Song, et al. 2017; Schwartz 2018). Banks can play a critical role in working with local governments to transition mortgages and offer other financial services that can facilitate this process in favor of not only community benefits but also in the advancement of sound climate-risk-adjusted banking practices.

In terms of more conventional engineering resilience and hazard mitigation infrastructure investments, pooled funds, grants and other service contributions offer a potentially valuable opportunity to support state cost-share obligations (25% contribution) for the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) program, and the Flood Mitigation Assistance (FMA) program (FEMA 2016). The challenge is that infrastructure needs to be built across multi-jurisdictional boundaries, and the regional governance structures do not yet exist to support multi-jurisdictional engagement absent direct state direction. The apportionment of risk, credit and distributional benefits raises a significant collective action problem. One avenue moving forward is to development pooled trust funds that work in tandem with regional governance to facilitate deployment of the scaled capital necessary to fill cost-share obligations (Keenan 2018b).

The final category of potential investment relates to the opportunity to support small businesses who often struggle to maintain continuity after disasters or to take advantage of economic activity generated by post-disaster recovery efforts. Local governments and banks can work together to communicate the value of business continuity insurance, particularly those products that cover hourly workers. Adequate uptake can offer the co-benefits of advancing the economic security of a local customer base. Banks, insurance companies and local government economic development units could work together to develop risk pools where coverage is supplemented with co-insurance for those firms where business continuity insurance premiums are beyond their financial capacity.

As previously referenced, pre-certification of qualified small businesses for post-recovery procurement is a simple but critical necessity. Banks can play a role by having alternative credit underwriting procedures in place to utilize government contracts as a basis for the extension of credit. By linking reserve purchasing capacity and local credit availability, there is an opportunity to better utilize federal dollars to impact local economies. Fully realizing an expansion of credit to

local business requires detailed knowledge of requisite capital expenditures, pricing elasticities and contract requirements. With pre-certified procurement, banks and local businesses can be better prepared for mobilization. Time is not only money—it is lives and the livelihood of communities.

Conclusions

While many of the innovations and potential models presented in this report vary in their degree of scaled application, they represent a critical starting point for mobilizing constructive planning and coordination between state and local governments and banks. The Disaster Clause and the Planning Presumption Clause open the door to diversify engagement in favor of long-term vulnerability and risk reduction in the name of advancing the adaptive capacity of communities and financial services markets. With disciplined analysis, these investments will not only manage risk and uncertainty, but they will offer opportunities for promoting community resilience through advances in social welfare and economic stability. Understanding the trade-offs and conflicts of any given investment will help banks and governments to development strategies that balance optimal and robust outcomes with social and environmental values that are inclusive of the diversity of constituents reflected in LMI communities. From short-term recovery to long-term adaptation, the challenge is centered on understanding and communicating the impacts and distributional costs and benefits associated with investments.

The Planning Presumption Clause allows banks an opportunity to work together with the public, private and civic sectors to shape emergency, capital, infrastructure, resilience and adaptation planning in a manner that serves not only public interests but also those commercial interests that are central to equitable and sustainable economic prosperity. Climate change is already imposing costs and impacts that are driving market behavior. While not every disaster is scientifically attributable to climate change, there is no doubt that those extreme events driven by climate change are imposing severe monetary and non-monetary costs of governments, markets and society. The CRA was designed to mobilize collective action in the advancement of the social welfare of LMI communities. The Planning Presumption Clause allows for proactive investments in disaster areas that benefit from public governance and private capital allocation. Whether it is replacing a flooded car or turning on the air conditioner on a hot day, these small investments offer tremendous societal benefits that will only increase in value with climate change.

The opportunity to diffuse the innovations represented in this report can be further shaped by the Regulatory Bodies and banks. Because banks often look to emulate CRA activity of other banks, it would be valuable to have a platform from which methodologies, experiments and models can be shared and validated. This requires ongoing education as to the nature of climate change impacts, climate adaptation practices and market interactions. This report has focused on climate adaptation activities through a CRA lens, but financial institutions are also engaging with this work from the perspectives of their own internal corporate responsibility and external market reputation. Together, communities and banks can share in the collective promise to not only manage risk but to take advantage of the many opportunities for a more equitable and sustainable climate future.

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Appendix A: CRA Origins

Congress passed the Community Reinvestment Act of 1977 (CRA) to address the lack of mortgage lending and investment in low- to moderate-income (LMI) neighborhoods, which have historically been home to a large share of minority residents. Although the statute itself is race-neutral, a key motivation for the CRA's passage was to increase mortgage lending in low-income communities of color (Schwartz 2015), The federal government, banks, the real estate industry, and individual home sellers all bore some responsibility for this market failure (Sugrue 1996). New Deal agencies greatly expanded home lending for the middle class by helping create the 30-year, fixed-rate, federally-insured mortgage. Along with this expanded, more stable housing market, federal agencies created maps indicating what they considered to be risky areas in which to loan, primarily based on race and income, which banks and realtors applied and institutionalized (Jackson 1985). This practice of "redlining" created a self-fulfilling cycle of disinvestment in minority and mixed-race neighborhoods from the 1930s until the 1970s, when the CRA came into effect. The ripple effects of redlining for intergenerational wealth-building, and in turn for access to higher education and the ability to start a small business, extend to the present day (Chetty 2018, Rothstein 2017).

In addition to mortgage lending, the CRA addresses capital needs in low-income communities more broadly, including those of small businesses and community organizations in LMI areas. Distressed or underserved rural areas also benefit from the CRA (Housing Assistance Council 2015). By tackling one aspect of historic lending discrimination, the CRA, in tandem with the Home Mortgage Disclosure Act (HMDA), helps improve access to capital across a wide range of communities.

The CRA arose partly from concerns that banks were not making loans to low-income communities from which they accepted deposits. The CRA addresses this market failure by encouraging lending in the areas where banks are chartered and have branches (Lindsey 2009). The enforcement mechanism for the CRA centers on the ability of community groups and local governments to challenge bank mergers and acquisitions. As such, regulators can potentially block those merger and acquisitions actions if banks' exam ratings are too low (Schwartz 2015). The CRA conceptualized serving the financial needs of people and geographic areas from which banks took deposits as a public good and an obligation that arises from receiving a bank charter, having federal deposit insurance and having access to the Federal Reserve System's Discount Window (Avery et al. 2009; Getter 2015).

Appendix B: CRA Exam Background

CRA exams are tailored to the context of each individual bank. Examiners consider quantitative and qualitative data on a bank's "performance context," or "economic, demographic, and institution- and community-specific information" about bank's assessment area (Board et al. 2016). The Regulatory Agencies conduct their own research and will consider information provided by banks, although banks are not required to submit performance context data (Choi and Dowling 2014). Examiners take a bank's size and business model into account when determining what community credit needs it could reasonably serve. Quantitative data include demographic information on the area and its residents, such as housing stock and unemployment rates, as well as information on the bank, such as the products it offers, its past CRA performance, and how these compare to its competition (Federal Reserve Bank of Dallas 2005). Community context interviews with local "community, civic, and government leaders" provide qualitative data about "the local community, its economic base, and community development initiatives (Board et al. 2016)."

Examiners focus on a subset of the geography where a bank does business during each exam cycle. For example, a bank may have several "assessment areas" based on where its headquarters and branches are located. Some of those areas may receive a "full scope" review and the rest would receive a "limited scope" review depending on the size of the bank and the regulatory agency (FFIEC 2014; FDIC 2017). Examiners choose where to conduct a full scope review in a given

cycle according to a set of criteria, such as where the need is greatest. Examiners also consider whether a bank has most of the market share in an area, especially if few other financial institutions have a presence in an area (FFIEC 2014). However, examiners also endeavor to cover different geographies over time by rotating where they conduct full scope exams. For example, if examiners choose to conduct a full scope exam in an area that has recently been examined for reasons such as increased activity or need, they may also conduct a second exam in a second assessment area that has not been reviewed recently (id.). Limited scope assessment areas still receive analysis for consistency and anomalies, but not the same depth on performance context.

In 1989, banking regulators made exam ratings public, streamlining them to include four levels of evaluation—Outstanding, Satisfactory, Needs to Improve, and Substantial Noncompliance (Joint Center for Housing Studies 2002). In 1995, regulators further refined the exam process so that it applies differently to small and large banks, with their size indexed to inflation (id.). The focus shifted away from more subjective areas such as banks' involvement in community groups towards an increased emphasis on the size and volume of loans and investments. Of the three tests—lending, investment, and banking services—lending receives the greatest weight in a large bank's overall CRA rating, although the law does not dictate specific lending thresholds (Getter 2015).


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