



# Inclusive Insurance for Climate-Related Disasters

A Roadmap for the United States

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**Ceres**

**Ceres Accelerator**  
for Sustainable Capital Markets



**Wharton**  
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# Interviewees

Interviews with stakeholders representing a wide range of sectors served as a primary source for this report. These individuals shared their perspectives and expertise in interviews over the course of several months in 2022. The opinions provided were wholly their own. Their willingness to serve as interviewees does not represent a personal or institutional endorsement of this report.

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# Executive Summary

**Climate change is increasing the frequency and severity of natural disasters in many parts of the United States**, driving up the risk of damage from coastal storms and hurricanes, extreme rainfall, wildfires, and other hazards. Climate-driven disasters cause serious financial shocks to households, imposing a range of costs, such as:

- Direct damage to property, including homes, contents, and vehicles;
- Expenses for evacuation and temporary living accommodations during repairs;
- Expenses for generators, fuel, or other items when utilities or transportation are disrupted; *and*
- Loss of income from business interruption.

Research shows that these unexpected economic impacts disproportionately harm people with low- and moderate-incomes and people of color and can cause long-term financial harm to households with little financial safety net available to them. **Equitable climate adaptation must include improvements in the financial resilience of all households to climate-related financial shocks.**

Recovering from disasters requires access to substantial and timely funding. Unfortunately, many households in the U.S. struggle to access the post-disaster resources they need. Households generally fund their recovery using personal savings, loans, and/or direct aid from government or charitable groups. However, research shows that low- and moderate-income households face barriers to accessing sufficient funds for recovery from all of these sources. Insurance is designed to provide financial protection against unexpected financial shocks and research has found those with insurance have improved economic recoveries from disasters. **Yet, disaster insurance is often inaccessible, unaffordable, or does not meet the needs of certain populations.** Disaster insurance can be expensive, putting it out of reach of those who need it most. Pricing or claims handling may, perhaps unintentionally, discriminate against certain groups. Current policies are largely designed for property losses, failing to provide financial protection for the wider range of costs many populations face post-disaster, including those of renters. Standard policies may also have

confusing policy limitations that leave households more financially exposed to disasters than they realize.

**This report provides a framework for how insurance for climate-related disasters can be made more inclusive in the U.S.** The report is informed by interviews with disaster recovery and climate justice organizations, insurance law experts, state and federal insurance regulators, and insurers. It reviews the current research on household financial exposure to climate disasters, the challenges of insuring climate disasters, and historical and current limitations within existing disaster insurance markets. The report provides a vision of an inclusive insurance system, and proposes a suite of public programs, regulatory reforms, and private market innovations to achieve that vision.

**We define an inclusive disaster insurance system as the policies, programs, and products that make appropriate and affordable insurance available to those currently unserved or underserved by the market.** To date, discussion of “inclusive insurance” for climate-related disasters has largely focused on emerging and developing economies and has often been targeted at rural populations. While the U.S. has a well-developed property and casualty insurance market, there are still many without access to the disaster insurance coverage they need for financial protection.

In the U.S., we document several existing challenges preventing a more inclusive disaster insurance system:

- **Disaster insurance can be unaffordable.** Insurance for natural disasters is fundamentally more costly than insurance for non-disaster risks, and low- and moderate-income households have far less ability to pay the required premiums. For the lowest income households, even a small additional monthly cost for disaster insurance could be unaffordable given other, more immediate needs.
- **Indirect discrimination and differential impacts may persist in certain markets.** Historically, actuarial science used race and income explicitly in insurance risk assessment; while many legal protections exist today to prevent direct discrimination in insurance pricing, some evidence points to differential treatment by race, income, or gender in certain cases when it comes to underwriting or claims processing. There is also concern that climate-related disaster risk is correlated in many places with income and race, creating differential impacts in pricing. Some populations perceive poor post-disaster treatment by insurance, lowering trust in the market.
- **Insurance is typically limited to property damage and the needs of larger and more profitable market segments.** Disaster insurance products are typically designed to protect the value of private property; this excludes many financial recovery needs post-disaster, such as higher rents, increased commuting costs, temporary living expenses, utility outages, debris clean up, and loss of income. Purely private insurance also focuses on market segments that are seen as larger or more profitable, leaving a coverage gap in policies that are designed for lower-income households or for smaller market segments. Addressing these unmet needs may require public-private partnerships.



This report proposes a core set of principles to help guide the development of a more inclusive disaster insurance system. An inclusive insurance system should strive to be:

1. **Affordable,**
2. **Accessible,**
3. **Transparent,**
4. **People-centered, and**
5. **Just.**

To move towards a disaster insurance system that embodies these five principles, actions can be taken at every level of government, as well as by private insurers. This report outlines the policies, programs, regulatory changes, and products that can move our disaster insurance toward greater inclusivity.

**Federal and state governments** can redirect resources to directly support the financial resilience of low-income households to disasters through subsidies, incentives, and pilots, and demand greater data transparency from private insurers to evaluate market functioning and impacts. This report recommends that federal and state policymakers:

- **Subsidize** disaster insurance for low-income households,
- Mandate **data disclosures** from insurers to evaluate disproportionate impacts,
- Create a **Community Reinvestment Act** for insurance, *and*
- Provide grants to support **inclusive insurance pilot programs**.

**State insurance regulators** also have tools to enable and encourage private insurance markets to meet recovery needs post-disaster more effectively. Regulators can also provide consumer protections and resources that would increase trust in the market. This report recommends that state regulators:

- Develop **enabling regulations** for innovative inclusive insurance models,
- Establish inclusive disaster insurance **regulatory sandboxes**,
- **Reform claims contestation** procedures,
- Establish **baseline coverage standards, and**
- **Support research** on potential **direct and indirect discrimination** in insurance markets.

**Local governments**, such as city and county governments, can expand the accessibility of insurance through household programs, such as targeted subsidies or tailored consultations. Local governments could also partner with the private sector on pilot insurance programs to address unmet needs. This report recommends local governments:

- **Subsidize** disaster insurance for low-income households,
- Provide **insurance consultations** to households, *and*
- Develop **community-based models** for inclusive insurance.

Finally, the **private sector** can invest in new products and offerings that serve populations that are currently left out of the market and develop solutions that better meet people's needs. This report recommends that insurers:

- **Expand offerings** to include accessible insurance products for unmet needs *and*
- Provide **transparent** discounts for **disaster mitigation**.



# Introduction

The risk of weather-related extremes is escalating due to climate change.<sup>1</sup> Climate scientists predict continued intensification of hurricanes, growing numbers of extreme downpours, more heatwaves, expanded drought, and higher wildfire risk. Climate change is also leading to sea-level rise, threatening coastal communities with chronic flooding even before property is permanently lost to inundation. These changes, combined with continued building in high-risk locations, are driving up disaster losses. The economic costs of large natural disasters, as measured by the National Oceanic and Atmospheric Administration (NOAA), have grown steadily over the last half century; in the last five years, large disasters on average cost the U.S. close to \$150 billion annually in direct, quantifiable economic impacts—a record amount (see Figure 1). Over the last decade (2012 to 2021), these large disasters cost the U.S. at least \$1 trillion in total.<sup>2</sup>

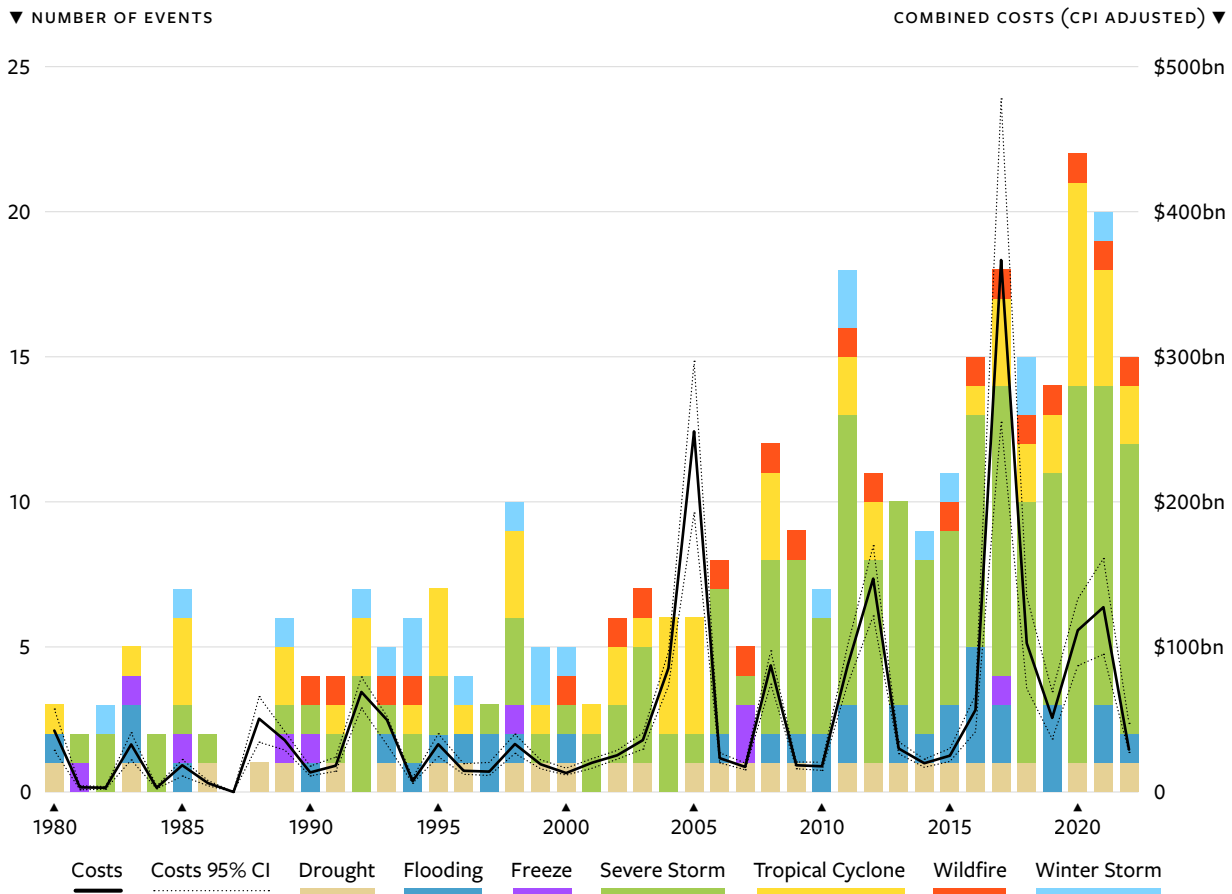
The widespread damage from climate-related disasters creates financial shocks for households. Expenses mount: damage to property, contents, and vehicles; evacuation expenses and emergency supplies; fuel, generators, or other tools to compensate when power or water is lost; higher commuting costs; and debris clean-up. In addition to this long list of expenses, some households will simultaneously experience lost income as a result of the disaster. Without access to sufficient funds, the combined result can be financial crisis for a household. Costs will amplify even further for severe events that damage infrastructure, utilities, local firms, public buildings, or the fiscal position of the local government.

As we discuss below, research has shown that people with low-incomes and people of color are disproportionately harmed by disasters. This is driven by many factors: they may live in areas with higher climate risk, in housing stock less resilient to disasters, or may face barriers receiving the necessary information and resources for preparedness and evacuation. In addition, low-income communities and people of color have historically had less access to the funds needed for recovery, driven by a long history of discrimination in lending, racial wage gaps, and wealth gaps. Many households lack emergency savings and access to post-disaster credit and find that disaster aid is slow to disperse and insufficient for recovery. Without adequate financial resources,



disasters can become tipping points into a downward financial spiral that can set back hard-earned gains made in financial advancement. Without the needed funds to cover disaster costs, households can be forced into financial coping mechanisms that can have long-term negative consequences. They may have to divert funds away from critical spending, such as healthcare, or turn to predatory lenders. They can exhaust any savings for retirement, medical needs, or education, leaving them more financially precarious. When households do not have enough resources to re-establish safe and affordable housing, it can cause severe stress and anxiety, health impacts, and compounding financial costs.

**Figure 1 · Costs and Frequency of U.S. Billion-Dollar Climate Disasters**



DATA SOURCE: NOAA National Center for Environmental Information.  
 NOTE: Costs are a summary of government expenditures, insurance claims, and economic losses. For more detail, see <https://www.ncei.noaa.gov/access/billions>.

Insurance, however, can provide the needed financial protection to a household after a disaster. Insurance is a tool to help minimize the costs of severe economic shocks by smoothing them over time. By making annual premium payments, households can then secure claims payments to cover disaster costs. In this way, insurance provides financial resilience, which not only improves economic recovery but is foundational to other aspects of recovery. The benefits of insurance on recovery have been long recognized. As we summarize in this report, research finds that those with insurance tend to have better recovery outcomes than those without insurance. Unfortunately, too many people find

they cannot afford disaster insurance, the products offered do not fit their needs, or the insurance claims process has delays and inequities. Far too often, those who need insurance the most are the least likely to have it.

Inclusive insurance efforts attempt to overcome these problems to create an insurance system that serves everyone and promotes equity in disaster recoveries. We define an inclusive disaster insurance system as *policies, programs, and products that make appropriate and affordable insurance available to those unserved or underserved by the market*. In some cases, inclusivity efforts could be practical changes to the type and design of insurance products offered, changes in regulation, or the adoption of new public sector programs; in other cases, inclusivity may require a shift in a governing paradigm of how economic risk is spread among a society. Creating an inclusive insurance system is not limited to one sector, one scale, one geographic region, one demographic, or one agency. It will require work from both the public and private sectors, from legislators and regulators, from communities, states, the federal government, and insurance firms. There is no single approach to creating an inclusive insurance market, but rather a growing patchwork of complementary efforts by all stakeholders. We suggest that an inclusive insurance system across these sectors and scales should strive to be affordable, accessible, transparent, people-centered, and just.

The focus of this report is on inclusivity specifically related to disaster insurance, but the concept is much broader and could apply to many lines of insurance. By “disaster insurance” we include all property and casualty policies that are for specific disaster perils, such as flood insurance, or broader property insurance policies that include natural hazards in the coverage. Emerging parametric products designed to cover a wider range of non-property related disaster costs are also included under our disaster insurance umbrella. We do not discuss health and life insurance in this report.

This report provides a framework for inclusive disaster insurance in a U.S. context. We first discuss the state of research on financial resilience to climate-related disasters and explore why disaster insurance is not—in its current form—fully inclusive. We present five principles to define and guide efforts to secure an inclusive insurance system in the face of escalating climate-related disasters. We conclude with a toolkit of interventions across sectors and scales to improve the inclusivity of disaster insurance in the United States. We discuss a range of policies, regulations, and products for both public and private sector stakeholders; these approaches are complementary, and many can and should be adopted simultaneously. Our findings are informed by literature reviews of academic publications and reports from government, non-profits, and private-sector firms; case studies of pilots and programs aiming to improve inclusivity; and dozens of interviews with key stakeholders.

There are many pathways to filling documented needs in financial recovery from disasters; insurance is only one of them. As other scholars and stakeholders have described, reforms are also needed to federal disaster aid programs and greater and more equitable investment is needed in pre-disaster risk reduction, particularly in communities that have historically experienced underinvestment. Improved management of climate-related disasters will also necessitate better risk communication for all households about weather-related extremes and their impact, and resources for building widespread financial literacy and education on risk transfer. As such, making insurance more inclusive is only one piece of ensuring inclusivity in disaster risk management. Our report focuses on the role of insurance in recovery, but with recognition that it needs to be addressed in conjunction with other aspects of managing increasing risks from climate change.



# 2

## Financial Resilience and Climate Disasters

Climate disasters—extreme weather-related events that are increasing in frequency or severity in some regions as the planet warms—can impose large economic costs on households. These costs are only projected to increase in the coming years, becoming quite severe if global warming is not limited to 1.5°C.<sup>3</sup> Increasing resilience to weather-related extreme events has become a framework for helping reduce negative impacts, though definitions of resilience vary across disciplines and applications. The National Academy of Sciences has defined resilience as “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.”<sup>4</sup> In practice, applying the theory of resilience requires defining resilience of what, for whom, and to what.<sup>5</sup> In this report, we are focused on the financial and economic resilience of households to escalating climate-related disasters. We first discuss financial resilience broadly and then what this means in the case of dealing with the costs of weather extremes.

### 2.1 What Is Financial Resilience?

Financial resilience refers to the ability to withstand a negative shock to one’s income, wealth, or expenditures. For households, financial resilience is a function of many factors, including income, wealth, liquid savings, debt obligations, money management practices, financial literacy, and insurance coverage.<sup>6</sup> Financial shocks could occur for myriad reasons, from adverse health events to loss of a job to accidents that involve significant property damage. Those with sufficient liquid funds fare better after a shock, since a lack of resources to cover a spike in expenditures or interrupted income can cause lasting negative financial impacts, with potential spillovers to other aspects of life. A common measure for examining financial resilience, then, is whether a household has sufficient access to funds to cover a financial shock of a certain magnitude.

Studies in the United States find that a sizeable portion of the population are not well-positioned to cope with a financial shock. Data from the Consumer Federal Protection Bureau’s Making Ends Meet survey shows that nearly a quarter of consumers have zero savings to draw on for emergencies and



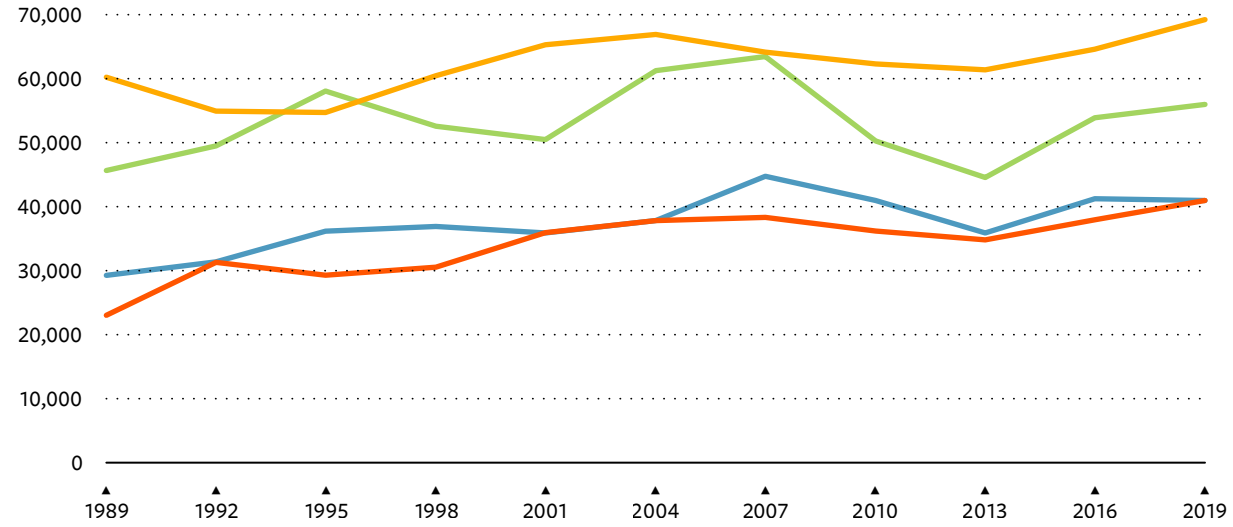
close to 40% have less than one month of income saved for emergencies.<sup>7</sup> The Federal Reserve finds that 27% of adults could not cover three months of emergency expenses.<sup>8</sup> These findings are fairly consistent across studies; a 2019 survey found that slightly more than a quarter of Americans could not pay for an unexpected expense of \$2,000.<sup>9</sup> When unexpected expenses coincide with a reduction in income, the effect is more severe: an estimated 65% of families lack the necessary amount of savings to weather a simultaneous income dip and expenditure spike.<sup>10</sup>

This economic precarity increases after hazard events, such as hurricanes and wildfires, and is more severe for some communities; people with lower incomes, people of color, and those with limited education have lower levels of emergency savings.<sup>7</sup> Half of very low-income households are one \$400 emergency away from having difficulty paying monthly bills, and 40% of Black and 35% of Hispanic adults are one small emergency expense away from having difficulty paying bills.<sup>8</sup> Pew's *Survey of American Family Finances* finds that younger adults, people with lower income, and people of color are more likely to report that a given shock was financially destabilizing.<sup>11</sup> Of note, while financial resilience generally increases with higher income, research has found that even households that would typically be seen as "middle class" are vulnerable to negative impacts from financial shocks.<sup>12,13</sup>

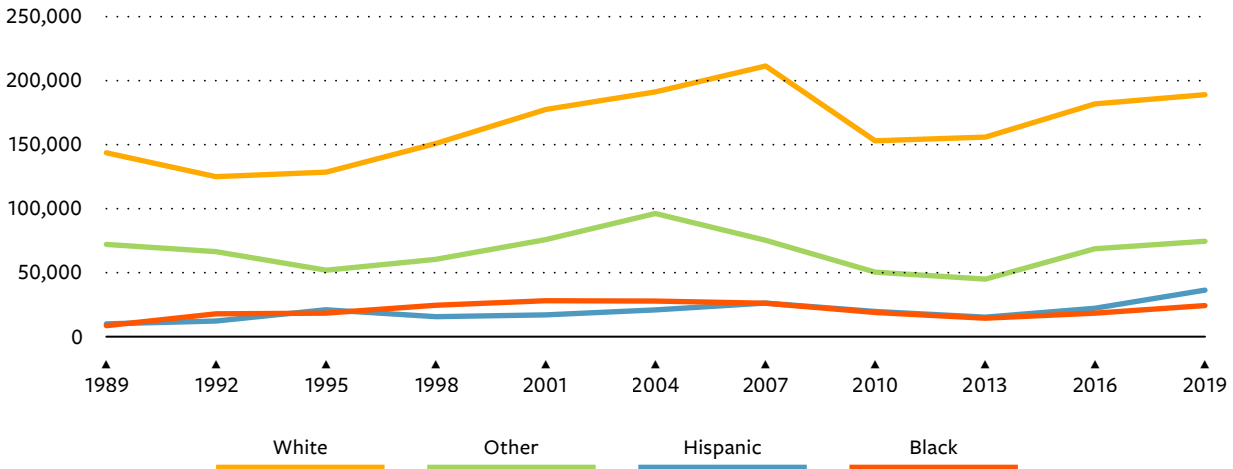
While financial resilience is a distinct concept from financial hardship or poverty—it is determined, not just by wealth or income, but also by financial management, financial literacy, indebtedness, insurance coverages, the resources of one's social network, and social safety net programs—the two concepts are clearly related. Unexpected expenses represent a larger percentage of a lower-income household's available resources and research has shown that low- to moderate-income households are more likely to experience financial shocks and are less likely to have sufficient reserves to cover them.<sup>14</sup> The persistent and growing racial wealth gap (see Figure 2) contributes to these dynamics: the median net worth of white households in the US grew to over \$160,000 by 2016, but for Black and Hispanic households, it remained relatively constant at less than \$20,000.<sup>15</sup> The disparity in wealth across households is driven not just by income, but also assets, and crosses income levels; among households who have the same cash flow from income, white households still have on average greater financial assets to protect against economic shocks.<sup>16</sup>

**Figure 2 · U.S. Family Income and Wealth by Race (in \$2019)**

*Median Income*



*Median Wealth (assets minus debt)*



DATA SOURCE: Survey of Consumer Finances, Federal Reserve.

## 2.2 Climate Disasters: Financial Shocks with Inequitable Recoveries

Climate change is already causing widespread economic costs for households and communities due to more frequent and intense extreme events. As the frequency of these events increases, so does the population impacted. The Federal Reserve found that in 2021, one in six adults were directly affected by a natural disaster.<sup>8</sup> These disasters can cause direct damage to people’s homes, contents, and vehicles, but also impose broader costs, such as:

- Temporary housing if the home was made uninhabitable by the disaster,
- Evacuation expenses,

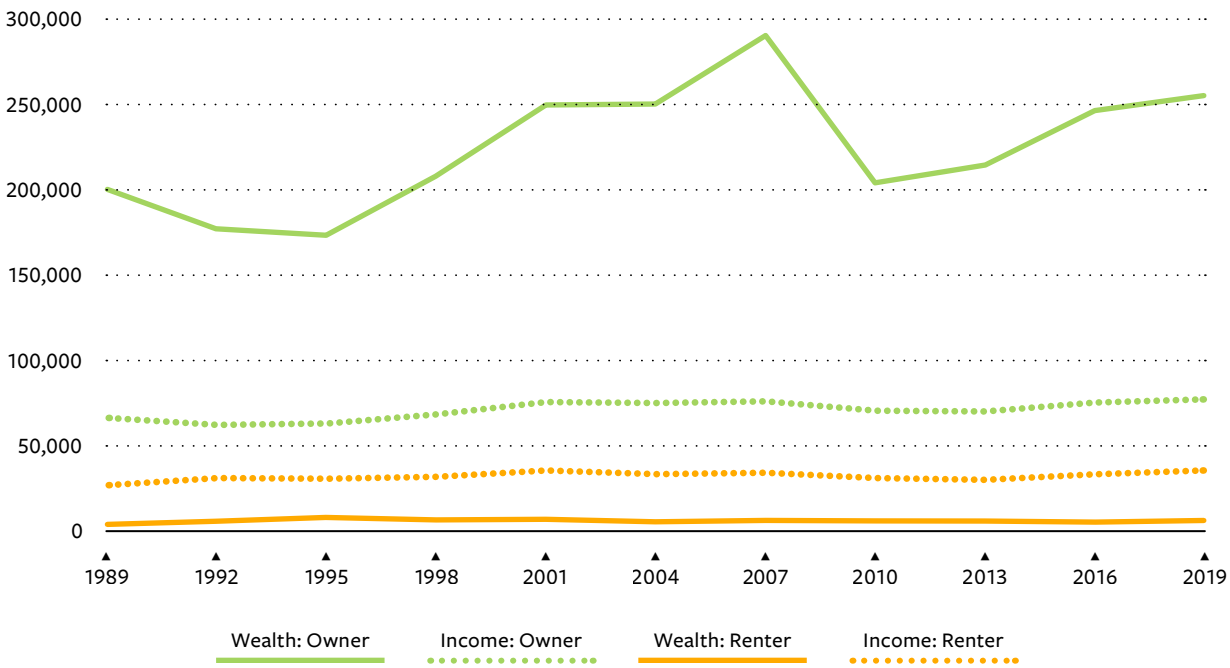
- Debris clean-up,
- Higher commuting costs when transportation networks are disrupted or vehicles are damaged,
- The costs of generators and fuel when power is out for extended periods, *and*
- Lost income when work is disrupted.<sup>17</sup>

These economic costs are accompanied by non-financial costs as well, such as injury and mortality, mental and physical health impacts, and decreases in quality of life.

The negative financial shocks of climate disasters disproportionately harm people with lower incomes and people of color.<sup>18,19</sup> Research has found that low-income households in the US have longer and more difficult post-disaster recoveries with longer-term negative financial impacts.<sup>20,21</sup> Black or Hispanic adults are more likely to be affected by natural disasters than white or Asian adults (both overall and within income and education categories).<sup>8</sup> These findings were echoed in our stakeholder interviews of community leaders dealing with disaster recovery: for low-income households with very few available resources, recovery is slow and the long recovery time greatly increases the cost and emotional burden on those impacted. As one stakeholder described, “So many people think that [Hurricane Harvey] is a thing five years ago, but so many people are still living in disrepair.”

These financial and non-financial costs are particularly acute when households cannot secure safe housing post-disaster. As most lower-income households rent (an estimated 69% of low income and 47% of moderate-income households are renters, explaining the observed income and wealth gap between renters and owners—see Figure 3), they are more economically vulnerable to sudden changes in housing costs.<sup>22,23</sup>

**Figure 3 · U.S. Family Income and Wealth by Housing Tenure (in \$2019)**



DATA SOURCE: Survey of Consumer Finances, Federal Reserve.

In stakeholder interviews, we heard that the instability and cost of post-disaster housing is a key cause of financial and emotional stress for low-income households; the most frequently cited recovery challenges from stakeholders were reductions in affordable housing stock, increases in rental prices, and displacement from housing due to rent increases. Increases in rent could be driven by a simultaneous decrease in supply and surge in demand, or by landlords using the rebuilding process to upgrade units and then pricing out previous residents. Research shows, for example, that flooding events in the U.S. have reduced the stock and affordability of HUD subsidized housing, including public housing, Section 8, and housing choice vouchers, while increasing wait time for units and tenants' rent cost burden.<sup>24</sup> Loss of affordable housing, particularly in areas already facing affordable housing shortages due to long-standing declines in supply,<sup>i</sup> can create unexpected long-term economic burdens post-disaster.

Without financial safety nets, hazard events can create downward financial spirals, as households default on loans, accumulate debt, and exhaust savings.<sup>25,26</sup> Disasters can also exacerbate overall wealth inequality.<sup>27,28</sup> After suffering flood or disaster damage, credit scores decline, mortgage delinquencies increase, and bankruptcies are much more likely for households that are financially constrained and in communities of color.<sup>28,29</sup> Negative financial impacts decrease considerably with financial protection.

Recovering from such a financial shock requires access to substantial liquid resources. Generally, households have four main sources of funding or financing for recovery: savings, loans, aid, and insurance. Low-income households struggle to access all of these. As described in Section 2.1, few households have cash savings available to cover the costs of adverse financial shocks, and low-income, Black, and Hispanic households have on average far less emergency savings accessible for a financial shock. Additionally, most studies of savings are limited to those who participate in banking systems; for very low income households (income less than \$15,000), an estimated 23% of households are unbanked entirely.<sup>30</sup> These households are even more susceptible to financial shocks.

Some households can make use of loans to cover unexpected financial shocks. In this way, access to affordable credit can at times be an important strategy for financial resilience, but primarily for middle and upper-income households. For lower-income households, additional debt is more likely to make their financial situation more precarious, as they may not have sufficient income to easily repay more debt, and a higher debt burden would make them more financially vulnerable to future shocks. Limited repayment ability will mean some lower-income households will be completely locked out of access to credit altogether.<sup>ii</sup> An examination of household disaster loans made by the Small Business Administration finds that as income declines, loan denials increase as households cannot meet credit score and debt-to-income requirements.<sup>31</sup> This explains why neighborhoods with lower average incomes and credit scores receive fewer disaster loans, regardless of property damage.<sup>29</sup> Since lower income households would have limited ability to service additional debt, post-disaster loans are typically not a sound recovery strategy for them. It is also the case that those with limited emergency savings are very often also the ones with poor credit scores, more delinquent debt, and no other credit options,<sup>7</sup> so other post-disaster solutions are needed for these households.

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i For state-level measures of affordable housing shortages, see <https://nlihc.org/gap>.

ii Beyond disaster loans, a lack of access to mortgage credit can have a particular impact on low-income households' ability to weather financial shocks, as homeowners can apply for mortgage payment deferments that are unavailable to renters.



Without savings or loans, many households will turn to federal aid programs for post-disaster funds. However, federal disaster aid tends to be limited and delayed, making it an inadequate recovery resource.<sup>32,33</sup> Confusing application and appeals processes, limited eligibility, problematic damage assessments and property valuation, and delayed delivery have all created inconsistent recovery experiences from well-meaning public sector assistance.<sup>34</sup> Short-term federal assistance from the Federal Emergency Management Agency's (FEMA) Individual Assistance program is only provided following disasters that receive a presidential disaster declaration, and even then, help may not be forthcoming for households.<sup>iii</sup> From 2010 to 2022, FEMA grants to households were authorized in only just under 43% of major disaster declarations, while assistance to local governments was authorized in 97% of declarations.<sup>iv</sup>

Even when provided, FEMA grants are capped and awards are typically small; between 2017 and October, 2022, the average grant from FEMA's Individuals and Households program for natural disasters was only \$2,860 in 2022 dollars.<sup>v</sup> Recent research has also found that these grants can be regressive, with fewer resources going to the most socially vulnerable groups and some neighborhoods with lower average income seeing both a lower average amount and a lower probability of receiving assistance.<sup>29,35,36</sup> Other potential sources of longer-term aid, such as programs financed by Congressional appropriations to the Department of Housing and Urban Development's (HUD) Community Development Block Grant–Disaster Relief (CDBG-DR) program, are uncertain, and when funded, take many months, or more typically years, to get funds to households. Recent research found that on average, housing activity from CDBG-DR funds after Hurricane Sandy began 2.3 years after the disaster declaration.<sup>37</sup> Overall, the body of research on federal aid shows that our current system of disaster assistance does not meet the needs of the populations that are most vulnerable to disaster impacts, including renters and low-income populations.<sup>38</sup>

In interviews, community stakeholders described these limitations and inequities of disaster aid for low-income communities as a major challenge in recovering from disasters. Recovery is often stymied by the wait time it takes for disaster aid to be dispersed. In the meantime, many low-income households face sub-standard housing and struggle to cover all expenses. Interviewees noted that the process for individuals to apply for assistance can be time consuming and difficult, with significant documentation needed to verify home ownership, income eligibility, and damage amounts. These documents may be difficult to secure post-disaster or may not even exist for certain households, such as those with heirs' property, which has been passed down informally through generations without formal title. Following years of stakeholder concern, FEMA has recently taken steps to broaden the types of allowable documentation to open up assistance to these groups. In addition, the entire process holds challenges for individuals for whom English is not their first language, when translated documentation and assistance is not available. Households that are undocumented are ineligible for disaster aid entirely.

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iii Recipients of federal disaster assistance whose property is located in the FEMA mapped Special Flood Hazard Area are required to purchase flood insurance or they will be denied federal aid for future floods. While this requirement attempts to cover more households at risk from flooding with insurance, for lower-income households with no financial support for the premium payments, this can create an immediate additional financial burden (sometimes federal aid will cover the premium for a short period). More research is needed on the impacts and functioning of this requirement.

iv Calculated by the authors using publicly available disaster declaration data available on OpenFEMA.

v Calculated by the authors using IHP award data available from OpenFema.

One community leader described the emotional weight of this administrative process: “For rental assistance, you have to apply every two months. You have to submit how you spent the money, where you’re living, where you’re storing things. People who are living through a disaster and trying to get their lives together — it takes a toll on people.” Stakeholders also stressed that they observe on-the-ground how federal aid dollars tend to flow more towards wealthier communities. They described biased damage assessments, fraught by assumptions that damage was pre-existing, and that state and local governments were incentivized to push dollars to more politically powerful neighborhoods, whose residents tended to be wealthier and whiter.

In the absence of savings, credit, and sufficient pre- and post-disaster aid, insurance can provide financial protection for households from economic shocks such as disasters. By design, insurance can fill some of the gaps of other financial tools—payments may be dispersed more quickly, can be much larger than aid, and premium payments are more manageable on fixed budgets than large recovery costs. However, while low-income households would benefit the most from the income-smoothing aspects of insurance, they are the very households for whom the costs of insurance may be unaffordable. We discuss in the next section why some disaster insurance is typically excluded from standard property policies and can be much more expensive than other lines of insurance. These high costs can exacerbate the research finding that lower income households tend to have less insurance coverage than wealthier households, even though they may need it more.<sup>39</sup>

This presents a challenge and an opportunity: given the potential benefits of insurance, how do we increase the accessibility and affordability of insurance for those who would benefit from it the most, particularly for the unique risks of climate disasters? Research demonstrates that those with insurance recover better and faster and are more likely to rebuild their homes.<sup>13,17,40,41</sup> This financial protection should not be a luxury of the affluent.

Expanding access to insurance is also critical because financial resilience is a necessary condition for other aspects of recovery. Having sufficient resources to rebuild and repair damages has been linked to emotional well-being, physical health, mental health, educational attainment, and the stability of families.<sup>42,43</sup> Without the resources to recover and obtain safe housing again, households can turn to coping mechanisms that have negative long-term impacts, such as deferring medical expenses, eliminating educational opportunities for themselves or their families, or falling behind on bills, which could limit their ability to build wealth, such as draining retirement savings.<sup>17,19,44</sup>

Without access to recovery resources, low-income households are at greater risk of lasting negative impacts. While many tools can support improving equity in post-disaster outcomes, such as reforms to federal disaster aid, broader anti-poverty efforts, and investments in home safety and infrastructure in frontline communities, improving the inclusivity of insurance can play a critical complementary role in supporting these wider efforts by helping improve access to needed resources quickly post-disaster. For the lowest income households, private insurance may never be affordable—any income will always need to go toward more immediate needs. This is the motivation for many existing social insurance programs, such as unemployment insurance, social security, and Medicare. For the populations who have the greatest financial need, making disaster insurance more inclusive will likely require public sector and philanthropic support—concepts we explore in this report.

# 3

## An Overview of Climate Disaster Insurance in the United States

Insurance is the transfer of risk from a person, household, or firm to another entity better able to pool and manage the risk—the insurance company. It is a tool to smooth costs over time: the insured pays a smaller amount, the premium, each year, to be guaranteed funds to cover high costs when a particular negative financial shock occurs. There are many types of insurance, and while concepts of inclusivity are relevant for most of them, this report is focused on insurance specifically for weather-related natural disasters being impacted by climate change. Many households lack coverage against these climate disasters—they are expensive to insure and insurance coverage may not be widely available. Due to breakdowns in disaster insurance markets, we discuss how the public sector plays an outsized role in ensuring the availability and affordability of disaster insurance.

### 3.1 The Challenges of Insuring Climate Disasters

The foundation of insurance is the pooling of independent risks. Independent means that one entity suffering a loss is not correlated with other entities also experiencing a loss. When one person gets in a car accident, their house is robbed, or they fall and break their leg, everyone else in the community does not experience the same loss. In these situations, when losses are pooled in a group, everyone can contribute a modest amount each year and those funds are available to whoever experiences the negative event. Insurance is essentially a formalization of this concept. It is easy to see, though, that pooling risks does not work so well for losses where everyone is hit at the same time, such as natural disasters.

With independent risks, insurers can forecast their losses in a given year with a high degree of accuracy and premiums collected in any year will generally be close to what is needed to pay claims. For disasters, however, losses are not stable year to year. There will be many low-loss years and then insurers could face enormously high losses when a disaster hits—far more than they collect in premiums. To prevent bankruptcy, insurers need access to capital to pay those claims. This can be done through reserves, reinsurance,

and financial risk transfer mechanisms—all of those impose costs on the insurer, often passed on to policyholders, which make disaster insurance expensive. In the extreme, there may be no price at which the insurance company can profitably offer coverage and that households would be willing or able to pay, or the potential catastrophic potential of losses is so severe that insurers refuse to offer any coverage at all.<sup>45</sup>

This extreme type of breakdown in insurance markets occurred almost a century ago for flood and earthquake risk, which is why all standard homeowners policies today exclude both flood and earthquake damage. For disasters that are covered under a standard homeowners property policy, such as wind damage from hurricanes or wildfires, the challenges with insuring disasters may also lead to limitations on the coverage. For example, in hurricane-prone regions, it is standard for a homeowners policy to have a much higher deductible if the damages are from hurricane winds (aptly called hurricane deductibles). This means that in the event of damage from a hurricane, homeowners must pay a larger share of the losses and receive less from their insurance company than for other types of disasters. Policies may also have so-called sublimits, which are lower caps on payouts for certain types of losses.

In response to unavailable or unaffordable disaster insurance, the public sector has often intervened, creating quasi- to fully-public insurance programs. For example, over fifty years ago, Congress created the National Flood Insurance Program (NFIP), now housed in FEMA.<sup>46</sup> To be insured against floods, households must purchase a separate flood policy.<sup>vi</sup> States along the south and east coasts provide hurricane wind coverage to residents unable to find or afford private sector policies through programs referred to as wind pools or beach plans. In California, as insurers pull back from high wildfire risk areas, more households are seeking wildfire coverage through the state Fair Access to Insurance Requirements (FAIR) plan, a program that offers wildfire insurance to those who cannot find coverage in the market. (Although not related to climate change, California also has a state insurance program for earthquakes, the California Earthquake Authority.) These programs vary in how they are structured, with differences in pricing, programs for risk reduction, and involvement of the private sector, but all aim to fill a gap in the market for disaster coverage.

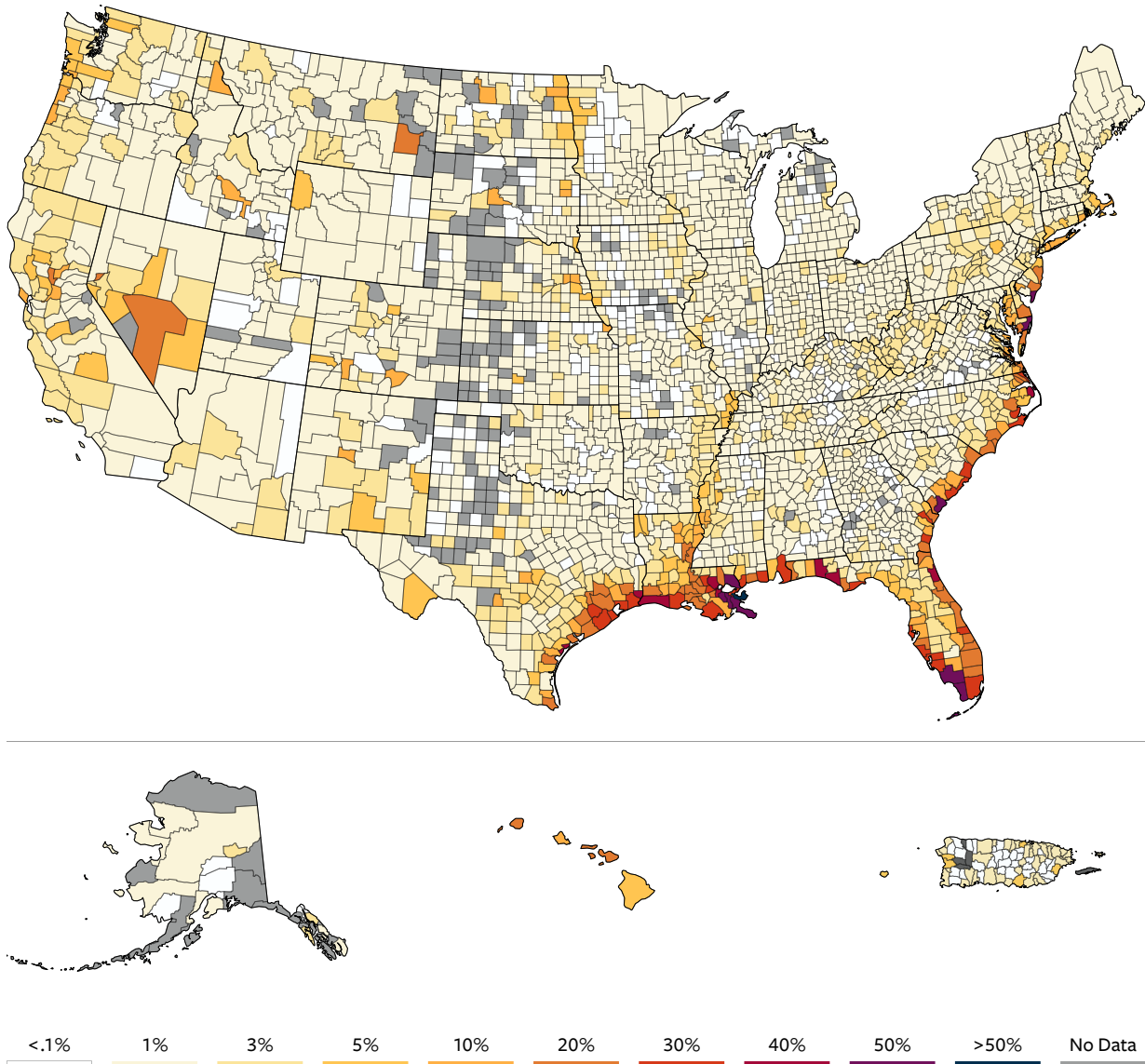
As climate change drives up disaster risk, more risk will likely be transferred from the private sector to the public sector. In areas prone to climate extremes, insurance companies are raising rates, facing bankruptcies, and leaving some high-risk markets altogether, which will put more pressure on public programs.<sup>48-50</sup> For instance, in California, as wildfire risk has grown, insurance companies are pulling back. Milliman, an actuarial consulting firm, estimated that the 2017 and 2018 wildfires in California led to losses for insurance companies that wiped out three decades of profits earned in the state twice over.<sup>51</sup> This can make it not profitable for a private firm to cover wildfire risk in California. Complaints about insurance companies in California not renewing policies in zip codes at high risk of wildfire increased over 570% between 2010 and 2018 and almost three-quarters of all complaints state-wide regarding renewals in this time period were from the high wildfire risk counties.<sup>52</sup> Lenders will still require wildfire insurance for those with a mortgage. As such, while the FAIR plan might be more expensive or less comprehensive coverage, households are increasingly forced to use it. Wind coverage is also required by lenders, forcing those without private options into state wind pools. In Florida, the state wind pool is the largest provider of property coverage in the state and growing rapidly.<sup>53</sup>

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vi There are now a small number of private firms offering flood insurance, but the overwhelming amount is still provided through the NFIP.<sup>47</sup>



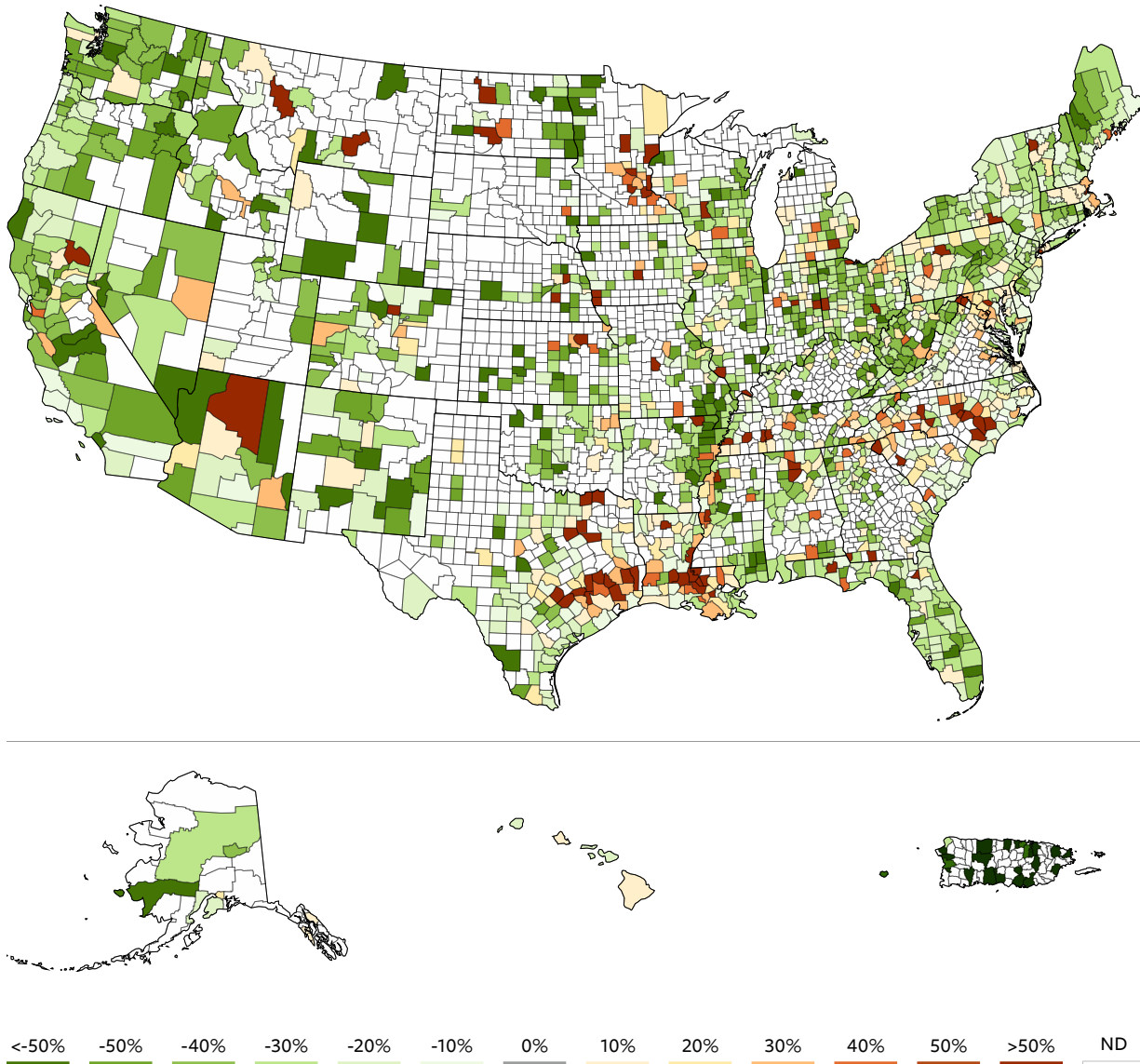
Figure 4 · Overall Residential NFIP Take-up by County (2019)



DATA SOURCE: OpenFEMA NFIP Redacted Policies (v1) and American Community Survey five-year estimates.  
 NOTE: Alaska, Hawai'i, and Puerto Rico are depicted out of their respective scales and locations.

But when disaster insurance is not required, households typically forgo coverage. Flood insurance is required for those with a federally backed mortgage or a loan from a federally regulated lender when located inside the FEMA-mapped 100-year floodplain—areas FEMA estimates to have an annual flood risk of at least 1%. Yet, on average nationwide, only around 30% of residences in this FEMA-defined higher-risk area have flood insurance, and very few outside the floodplain purchase a flood policy, indicating that when not required, most do not insure.<sup>46</sup> Unfortunately, FEMA flood maps are not the best indicator of whether flood insurance is needed; they typically fail to include rainfall-related flooding (which can occur far from coasts and rivers), are often out of date, and have not incorporated climate changes. National estimates hide the wide geographic variation in take-up rates, though, with flood insurance purchases much higher in coastal areas prone to hurricanes and much lower in inland riverine

Figure 5 • Percent Change in Overall Residential NFIP Take-up by County (2009–2019)



DATA SOURCE: OpenFEMA NFIP Redacted Policies (v1) and American Community Survey five-year estimates.  
 NOTE: Data limited to counties with over 50 policies in 2009. Alaska, Hawai'i, and Puerto Rico are depicted out of their respective scales and locations.

floodplains (See Figure 4).<sup>vii</sup> Troublingly, over the last decade, both the total number of NFIP policies and the percent of U.S. households with policies has decreased (see Figure 5 for geographic variation).

Despite a large property and casualty insurance market in the United States, therefore, there is still a sizable disaster insurance gap. This insurance gap refers to the share of economic losses from disasters that are not insured or the number of households at risk without insurance coverage. This gap is not uniform, often higher among lower- and moderate-income households. It also varies by peril and geography, since risk levels vary. Across the country, though, many households lack sufficient insurance coverage against escalating climate extremes.

vii Both maps are based on data before FEMA updated its approach to pricing flood insurance in 2021, referred to as Risk Rating 2.0.

## 3.2 State Insurance Regulation

In the U.S., insurance is regulated at a state level through state insurance offices, overseen by an insurance commissioner. State insurance offices seek to promote insurer solvency, protect consumers, and oversee market conduct. State insurance offices also license agents and brokers to sell insurance. Most states have regulations that rates charged must be adequate (sufficient to cover losses), not excessive (unfairly high for the consumer), and not unfairly discriminatory (similar risks should face similar premiums).

There are two broad groups of insurance firms in any state referred to as admitted insurers and surplus lines insurers. Admitted insurance companies are licensed in that state. These firms must submit their rates and their policy forms to the insurance office for approval. Most well-known homeowners insurance companies are admitted carriers. If they become insolvent, their customers will still receive a claim payment from the state guaranty fund—programs operating in all states and territories and designed to protect consumers from losses due to insolvent insurers. These funds are typically funded by insurer assessments (that may be passed on to policyholders). They often have caps on the maximum payout for property claims and could also be overrun if many insurers became insolvent at the same time. Surplus lines firms, by contrast, are less regulated—they do not need to submit their rates and forms for approval—but they are also not backed by state guaranty funds. They must, however, be licensed in at least one state, which will impose solvency and market conduct regulations. Surplus lines firms tend to focus on complex, emerging, or catastrophic risks. They may often be the first to enter a new market.

If state regulations vary substantially, it's challenging for insurance firms operating in multiple states or across the country. Insurance commissioners coordinate approaches and share best practices through the National Association of Insurance Commissioners (NAIC). The NAIC is a non-profit formed by its members, state insurance regulators, committed to a shared goal to set standards and ensure fair, competitive, and healthy insurance markets to protect consumers. NAIC members work together to maintain a trusted, common baseline standard of accredited state regulation. The NAIC offers a shared platform for members, in addition to data collection and analysis to support state regulators. Additionally, the NAIC provides consumer protection and education, technology, financial assessments and reporting, and licensing and testing.

While insurance is regulated at a state level, there is a Federal Insurance Office (FIO) in the U.S. Department of the Treasury. This office monitors the insurance sector and pays attention to whether underserved communities and consumers have access to affordable insurance. The FIO also represents the U.S. federal government internationally and advises and assists with other insurance related issues and programs. In the last two years, the FIO has begun examining climate-related financial risks and how the insurance sector and regulators can begin to address them.

Insurance companies may protect themselves through reinsurance companies—or firms that offer insurance coverage to insurers. Reinsurance firms allow risks to be diversified globally and so can be particularly important for the disasters discussed in this report. Reinsurance can reduce volatility in losses for insurance firms and increase their capacity to offer coverage. Some public sector insurance programs also make use of private market reinsurance. The state of Florida is the only state with a

public reinsurer, the Florida Hurricane Catastrophe Fund. This program is a tax-exempt state trust to support insurance firms offering residential coverage for hurricanes.





# 4 What Is Inclusive Insurance and Why Do We Need It?

## 4.1 What Is Inclusive Insurance?

We define an inclusive disaster insurance system as policies, programs, and products that make appropriate and affordable insurance available to those unserved or underserved by the market. Promoting inclusive insurance may include the development and offering of new types of insurance products, but it may also include changes in regulation, new public policies and programs, or new types of cross-sector partnerships. “Inclusive insurance” has gained traction as a global strategy to improve financial inclusion, as the world grapples with growing disaster risk and mounting evidence of inequitable recoveries. Access to insurance generally is also seen as a key driver of equitable growth and poverty reduction, further expanding interest in more inclusive insurance models.<sup>54,55</sup>

Inclusive insurance has sometimes been defined narrowly as approaches to bring risk transfer to low-income populations, or to make insurance markets “work for the poor;”<sup>viii</sup> other definitions have limited it to emerging markets or to microinsurance only. We take a broader view in applying this concept to the U.S. context, believing it to be a useful framework beyond just certain countries, populations, or products. While inclusive insurance will always have a focus on lower-income populations, we believe the concept also applies to any other group not served by the private market, which could include people of color, renters, rural residents, owners of microenterprises and small businesses—particularly in lower-income communities or communities of color—or other vulnerable groups.<sup>56</sup>

Most of the discussion around inclusive insurance has focused on countries without well-developed insurance markets of any kind—typically developing and emerging economies with larger lower-income populations. While the United States has a large and robust private insurance market across many product lines, there are still populations that are unserved by those markets. Further, research has found that among developed economies, high income

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viii See <https://microinsurancenet.org/making-markets-work>.

inequality is associated with lower uptake of property and casualty insurance and natural catastrophe coverage in particular.<sup>57</sup> Income inequality continues to rise in the U.S., and it is higher in the U.S. than any other G7 country.<sup>58</sup> As a growing share of households in the U.S. fall to low- and moderate-income levels, more people are excluded from an insurance market designed to serve the more affluent, and there is an increasing need to create financial inclusion within our communities.

## 4.2 Exclusion from Disaster Insurance Markets

There are multiple reasons groups may be under-served or unserved by the current property and casualty disaster insurance system in the U.S. Through stakeholder interviews and background research for this report, we identified three primary challenges:

- Unaffordability,
- Direct and indirect discrimination, *and*
- A lack of coverage options for market segments where private firms do not see substantial profit potential, including lack of options to insure non-property damages.

There are broader issues that may impact overall outcomes in disaster insurance markets, such as the extent of investments in risk reduction and climate adaptation, as well as the risk awareness and understanding of insurance among the population. Equity and inclusivity should be considered in these other aspects of disaster risk management, since risk reduction, risk communication, and risk transfer are three interconnected pieces. For this report, we are narrowly examining disaster insurance.

### 4.2.1 Unaffordability

As discussed in Section 3.1, disaster insurance is fundamentally more expensive than insurance for non-disaster risks. This higher cost for disaster insurance can depress purchase, as demand for disaster insurance (when not mandated by governments or lenders) may be relatively price elastic.<sup>59</sup> The cost of disaster insurance can also simply be unaffordable for some groups. Research in the U.S. has found that low-income households are less likely to have disaster insurance and have a lower ability to pay for it.<sup>25,60-62</sup> Similarly, a survey of small businesses affected by Hurricane Harvey found less than 20% reported using insurance payments to fund disaster-related damages.<sup>63</sup>

In our interviews, unaffordability of disaster insurance was the primary barrier stakeholders cited when discussing reasons for lack of insurance coverage. Many stakeholders emphasized that low-income households cannot afford additional disaster insurance when not included in homeowners policies, such as a flood insurance policy. While renters insurance is less expensive than homeowners coverage, it also does not cover flood damage and may not cover temporary living costs or the higher costs of post-disaster rentals, and insurance coverage for any of these items is often simply unaffordable. Most stakeholders emphasized that low-income households in their communities could not pay nominal premiums for additional disaster insurance, as these households simply cannot

budget for disaster insurance over other necessary costs such as housing or utility and auto payments. These households, though, often need protection against financial shocks the most.

#### 4.2.2 Direct and Indirect Discrimination

Insurance is fundamentally about accurately differentiating variations in the risk of having to make claims payments to policyholders. Defining the factors of a person or property that lead to more frequent or higher claims payments, however, can sometimes be fraught, and run up against bias and ethical values of fair treatment. In the emergence of actuarial science during the twentieth century, race was often used as a variable in pricing risk based on correlations with life and economic outcomes, ignoring the social and political conditions that produced differential outcomes. This led to continued disinvestment from certain communities and reinforced the notion that Black and Hispanic people and neighborhoods were “riskier” to insure. It was the U.S. Federal Housing Administration’s mortgage insurance underwriting manuals that codified into federal policy the redlining of communities of color and reinforced discriminatory risk assessment into early actuarial practices.<sup>64</sup> While our legal protections for discrimination have evolved, this history has led to an ongoing legal, economic, and philosophical debate about what factors should be used for actuarial risk assessment in insurance.<sup>65</sup>

Direct and indirect discrimination in insurance can occur in pricing, underwriting, claim approvals, claim amounts, or processing time. We define direct discrimination in insurance as pricing or underwriting policies or claims practices that are based on an inherent and protected aspect of an individual or household, such as race, income, or gender. Indirect discrimination in insurance occurs when these protected factors are not used directly in insurance decisions, but the outcome still varies across these categories. This is also referred to as disproportionate impact or discriminatory effect.

The use of the word “discriminatory” in insurance, however, is typically used to refer to differentiations based on risk and not social factors. As such, state laws prohibiting insurance rates that are “unfairly discriminatory” are interpreted to prevent against any pricing that does not reasonably correspond to differences in expected insurance costs; they do not prevent differential pricing based on aspects of individuals that society may believe are protected and not to be used in pricing or underwriting, regardless of differentials in risk.

That said, regulators may prevent some direct discrimination in pricing regardless of risk when they determine that the social costs of rating based on certain factors, such as race or gender, outweigh the benefits of their use, even if predictive of insurance costs. Some states prohibit the use of protected classes in determining insurance rates, but surprisingly few have codified that into state law. The most recent published review of anti-discrimination policy in insurance from 2013 found that only 12 states completely prohibited the use of race, national origin, or religion in insurance underwriting, and many more were vague in what constitutes unfair discrimination.<sup>66</sup> The legal protections that do exist are limited to what regulators can see; while state regulators require insurers to submit rate filings, making it possible to monitor the factors used to set insurance prices, regulators do not oversee initial underwriting choices of who insurers choose to cover in the first place, or how claims are processed. Nonetheless, some evidence shows that most insurance companies do not actually collect data on race, religion, or national origin, suggesting they could not directly discriminate on these particular attributes.<sup>67</sup>

While insurers may not be engaging in direct discrimination, indirect discrimination is of growing concern in the pricing of insurance. One form of indirect discrimination is the use of proxy variables in rating—these are variables that are not prohibited by law or regulation but are highly correlated with prohibited factors. In these situations, insurers may use factors for rating or underwriting that appear neutral, but correlate with race, income, or another protected class, such that the effect is discriminatory.<sup>68</sup>

Debate continues about the use of proxy variables, such as credit scores, in setting insurance prices. The NAIC and regulators have long rejected requirements that rating factors be demonstrably causal, rather than just correlated with insurance costs. As data and technology evolve, insurers are increasingly relying on machine learning algorithms that process big datasets of social and physical data to isolate the factors that best correlate with insurance costs. These factors may not have any direct causal relationship with underlying risk, but provide the best predictor of insurance cost while obfuscating the relationship between protected characteristics and pricing decisions. As insurance companies develop more complicated AI pricing algorithms, detecting and regulating proxy discrimination will become increasingly difficult.<sup>69</sup>

Beyond pricing, indirect discrimination could also occur in the procedural aspects of insurance. This is driven, in-part, by the fundamental misalignment of incentives between consumers and insurers in the standard business model of insurance. Consumers rely on insurers for prompt and fair payouts and yet, at the time of claim adjudication, insurers have a strong financial incentive to lowball or deny claims to maintain higher profits.<sup>70</sup> The burden of advocacy falls on the consumer and challenging an insurer's decision can be confusing, time consuming, resource intensive, and ultimately could require legal action. The time, language barriers, and funding required make such appeals for larger claims payments is inherently more difficult for those with lower income, less formal education, who are more time constrained, or generally have fewer resources. Research on the procedural aspects of insurance is thin, as regulators do not collect data to monitor such outcomes, but news reporting suggests people with lower-incomes and people of color frequently face delays and underpayment from insurance companies.<sup>71,72</sup> In stakeholder interviews, we heard that a common barrier to purchasing insurance in many communities of color and low-income neighborhoods is a lack of trust in insurers and the insurance market. This distrust in the insurance industry is based on people's prior experiences of claims being denied, perceived higher prices and lower quality service than other groups, and the lack of transparency when negotiating with insurance companies.

There are few regulatory protections from indirect discrimination in insurance. The Fair Housing Act theoretically provides an avenue for federal protection from direct and indirect discriminatory effects specifically in homeowners insurance. Under this law, since 2013, HUD has defined the parameters and legal burden of proof needed to determine discriminatory effects under the Fair Housing Act through a "Disparate Impact" Rule.<sup>73</sup> The Disparate Impact Rule and its application to insurance companies who impact housing access was confirmed by subsequent HUD rules and court decisions, notably the 2015 U.S. Supreme Court ruling on *Texas Department of Housing and Community Affairs v. The Inclusive Communities Project*.<sup>74</sup> However, this Rule is an issue of ongoing political debate. In 2020, HUD, under the Trump administration, weakened the disparate impact rule by increasing the burden of proof needed to define discriminatory effects and, notably, exempted insurers from federal oversight entirely.<sup>75</sup> In 2021, HUD, under the Biden administration, reinstated the original definitions



and reinstated its oversight over insurance companies; this is expected to be finalized in 2022.<sup>76</sup> This legal protection is only enforced, however, through ex-post legal challenges, which are difficult, expensive, and time intensive to undertake.

Regulating indirect discrimination is especially challenging in disaster insurance when protected characteristics are also highly correlated with physical risk. Disaster insurance is priced based on the underlying risk of the firm having to make claims payments; when the risk of a natural disaster is higher or its occurrence would cause more damage, the result is higher prices. Research has found that some natural disaster risk—today and even more so in the future as the climate changes—is higher in neighborhoods with populations with lower average income, higher proportion of people of color, and/or formerly red-lined communities.<sup>77-79</sup> Those correlations are not consistent everywhere and there are communities where higher hazard risk occurs in wealthier and whiter communities. But in addition to the underlying hazard risk being higher for certain populations, historical disinvestment in neighborhoods' infrastructure, inability to afford protective measures, or deferred maintenance due to lack of funds,<sup>80</sup> could also lead to higher relative damages in certain communities when hazards occur.

In both of these cases, actuarially sound pricing would have a discriminatory effect. That said, not allowing pricing based on aspects of a hazard would essentially eliminate risk-based pricing in disaster insurance and force insurers to introduce large cross subsidies from those with high-risk to those with low-risk, which could make some consumers worse off. In these cases, regulators and policymakers could look to the underlying drivers of variations in disaster risk costs across populations and address those directly, such as targeting mitigation grants to under-resourced households and communities. Other stakeholders, as we will discuss in Section 6, have suggested targeting assistance to vulnerable groups, such as by providing premium support for lower-income households without eliminating risk-based pricing across the board.

It is difficult to confirm how pervasive direct or indirect discrimination is in insurance markets. Qualitative reporting, interviews, and small-scale insurance experiments suggest higher rates, lower claim approvals, and longer wait times in communities of color for flood and property insurance.<sup>71,81-83</sup> A few quantitative studies have shown racial discrimination in property and casualty insurance, in insurance rates, claim payment time, and claim payment amounts.<sup>84-87</sup> Unfortunately, there is insufficient data for empirical analysis on direct bias or discriminatory effect, as insurance data is largely proprietary and social data from the U.S. Census is aggregated by geography, prohibiting a detailed analysis.

### **4.2.3 Unprofitable Market Segments and Non-Property Damage**

While we discussed the challenge on the demand side of unaffordability, the challenge on the supply side is that many private market actors do not see profit potential in inclusive products or approaches. Responses in interviews indicated that low profit margins and unfamiliarity with the needs of the target population make insurers unwilling to invest in new product development. This can be exacerbated when insurers face a regulatory and policy environment that they believe will be at worst hostile and at best indifferent to innovation that could help unlock these markets for groups currently unserved by insurance. Part of this is difficulty in designing purely private sector products for lower income populations, as coverage levels, and thus premiums, will be lower, while service, transaction, and marketing costs are still high. Insurers may also see limited profit potential in small market

segments, which could include, for example, specific groups like microenterprises, or specific niche needs, such as relocation assistance. A large barrier to greater inclusivity in the private market around disaster insurance is finding profitable products to meet all needs.

One very large need currently under-addressed by our disaster insurance system is non-property losses. Disaster insurance products in the U.S. are largely structured around protecting the value of private property—they are designed for reimbursement of damage to a building structure or its contents. In interviews with community stakeholders, we heard that many disaster impacts that households struggle with post-disaster are non-property costs, such as coping mechanisms required during outages in public utilities (such as buying generators, fuel, or bottled water), the clean-up of sewage overflows or broader debris, loss of affordable transportation options when public transit is down, family displacement, or higher rent. The majority of low-income households are renters,<sup>23</sup> and while rental insurance covers personal assets in the rented property, it typically does not protect against displacement, higher costs of living, or the range of other expenses. Additionally, renters are dependent on landlords to insure and mitigate the risk on the building itself, leaving them more vulnerable. As one stakeholder summarized: “There’s a lot more we think about... that insurance isn’t even looking at.” Standard insurance approaches and products are not meeting the needs of some of the most vulnerable. Yet, designing affordable insurance products for those risks is a challenge, and why cross-sectoral partnerships will often be needed.

### 4.3 Insurance Innovations That Support Inclusivity

In response to escalating climate risk and policy pressure to bring the financial benefits of insurance to populations left out of the market, innovations have emerged in the types of insurance offered and in the risk-transfer arrangements for protecting those most in need against disaster-related shocks.<sup>45</sup> In this section, we briefly highlight some of the policies, models, and approaches that have been designed to help improve equity in recovery and which will be referenced again in the specific recommendations presented in Section 6.

Most insurance that consumers are familiar with in the United States is what is called indemnity insurance—it compensates for a loss within the constraints of the policy terms. To that end, insurance companies may send loss adjusters to assess damage and estimate the costs of rebuilding and repairs. Another type of insurance that is fairly new to the U.S. residential market is called parametric. Parametric insurance refers to products that rapidly pay a set amount based on an observable measure of the disaster, referred to as the trigger. For example, the trigger could be the height of flood waters as read on a certain gauge or wind speed in a certain location.<sup>88</sup> Triggers need to be objective measures of a hazard and are typically produced by independent third parties.

While parametric insurance cannot replace standard indemnity policies, where clear payments of damage amounts are needed, three key features make it a useful tool for other aspects of building financial resilience to disasters: speed, flexibility, and neutrality. With a parametric policy, the payout can be made immediately when the designated trigger is reached, without a lengthy process of loss adjustment. This means payouts are made much more rapidly, often in a matter of days. The payouts can also be used for a wide range of disaster expenses. This can be important for providing protection

against non-property related disaster costs, including lost income. Finally, the payout is made based on a fully transparent, independent metric. As such, it eliminates potential bias in loss adjustment procedures and claim processing.

There have also been innovations in the scale at which insurance can be offered, often harnessing parametric designs. There are now programs in many countries around the world offering microinsurance, which the International Association of Insurance Supervisors defines as “insurance coverage that is accessed by low-income population[s], provided by a variety of different entities, but run in accordance with generally accepted insurance practices.”<sup>89</sup> They tend to be low-coverage, low-premium insurance policies designed for lower-income populations. Low-coverage policies would be impossible to provide as indemnity insurance policies as the transaction costs would be too high. Designed as parametric policies, however, the need for loss adjusters is eliminated, underwriting costs are lower, and claims management is simplified, all of which combines to make the economic model of microinsurance more feasible. Microinsurance has been used around the world for a variety of risks from health insurance to life insurance.<sup>90</sup> The most common application related to climate disasters is often referred to as weather index insurance and is typically used to cover agricultural losses.<sup>91,92</sup>

Microinsurance cannot replace standard property insurance and is not a substitute for a full homeowners’ policy as coverage amounts are limited. Being parametric, the policy also contains basis risk: a parametric payout may not match exactly to damages and there could be times when the policyholder suffers a loss, but the policy is not triggered. Still, with careful attention to trigger design, there are niches in the U.S. for which it is especially well-suited. It could be used by renters who would not be responsible for building repairs; by those in mobile homes; or to cover a broader range of disaster costs, such as evacuation expenses, commuting, higher rents, or lost income. Microinsurance may be especially helpful for those who would otherwise have no insurance coverage at all against disasters in order to provide them with immediate financial resources to prevent the negative downward spiral that can occur with vulnerable households facing financial shocks with no resources.

Of note, most existing microinsurance programs outside of the U.S. that target very low-income households with no disposable income to pay for insurance rely on the public sector or philanthropic groups to cover all or part of the premium. Philanthropy has also supported innovation and development of new microinsurance designs, such as the 2007 Gates Foundation \$34 million grant to create the Microinsurance Innovation Facility. Such investments will likely be required for microinsurance programs in the U.S., as well. Beyond funding for start-up costs, there are additional challenges with the adoption of microinsurance in the U.S., including finding a profitable business model, managing the risks that the policy does not fully cover disaster costs, overcoming low demand, and meeting regulatory requirements.<sup>93</sup>

Securing insurance can be burdensome to consumers, especially those with lower financial literacy, and there is typically low demand for insurance, due to lack of awareness of risk levels, poor understanding of the insurance mechanism, behavioral biases that lead to the dismissal of low-probability risks, or simply because no one likes to buy a product they hope to never use.<sup>94</sup> This creates limitations in demand and can make it difficult to close the disaster insurance gap through individual policy purchases. In response, a new model, referred to as an aggregator model or meso-insurance model has emerged. In this model, an institution, referred to as the aggregator, secures insurance on behalf of a group.<sup>91,93</sup> The aggregator could be a community group, a non-profit, or a

government agency.<sup>ix</sup> This institution typically holds the insurance policy and then uses the proceeds to make assistance payments to those it serves. A variation on this model is group insurance, such as when employers secure coverage for all their employees as a benefit of the job. This has often been used for health insurance. Group purchase can lower administrative costs and reduce adverse selection, thus potentially lowering overall costs. Similar models have been used by credit providers to link insurance to their loans. All these models relieve individual households of the burden of finding and applying for coverage and the aggregator institution may pay some or all of the costs as well.

Many recent innovations take advantage of rapid advancements in data and technology, often referred to as “insurtech”. While some new tech-centered approaches, such as AI pricing algorithms, open up risks that insurance would become less available or more expensive for vulnerable groups, others are being harnessed for broader inclusivity. For instance, mobile platforms have been used to manage all aspects of insurance purchase and claims administration.<sup>95</sup> In some mobile models, claims are deposited into a mobile money platform for insurance to reach even the unbanked. This is part of a broader trend toward mobile technologies expanding financing options for the global poor, overcoming challenges in lack of institutional infrastructure or cost constraints in traditional financial services that make it difficult to profitably handle small transactions, opening up pathways into more formal financial markets.<sup>96</sup> In addition, increased observation-based data of natural perils, from satellites to on-the-ground sensors, have opened up new types of parametric products.

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ix See some examples at <https://medium.com/bharatinclusion/meso-level-index-insurance-in-practice-success-stories-learnings-8b6c31b04eff>.



# 5

## Principles of an Inclusive Insurance System

As discussed in Section 4.2, our current insurance system is not meeting the needs of some of the most vulnerable. New models, approaches, and policies are required to make the financial protection of insurance available to everyone. This is the inclusive insurance movement. Expanding inclusivity may necessitate changes in regulation, new public sector programs, expanded private sector offerings, and novel partnerships. There are many approaches that could create a more inclusive insurance market. In exploring them, it is useful to first define the principles of an inclusive insurance market. We suggest five:

- **Affordable:** All people have access to affordable insurance, or risk transfer mechanisms for financial security that match their capacity to pay. This could be achieved through new product designs, business models, public-sector programs, or public-sector or philanthropic support of premiums for those with limited means.
- **Accessible:** People can engage with insurance markets easily and products are designed to deliver payments smoothly. Accessibility also includes having policy information available in multiple formats, such as online, print, and through mobile platforms, as well as in one's native language.
- **Transparent:** Policy terms and the claims processes are transparent for consumers, and market data is available for public and academic research. This includes making sure that products are simple and easy-to-understand without any policy details hidden in fine print.
- **People-centered:** The goal of insurance product design, program development, and market regulation is centered around the specific financial security needs of individuals and households and the goals they set for themselves. This will likely require deeper demand-side research on what type of financial protection would be most valuable to different groups. In addition, the burden of administrative processing does not fall completely on the consumer, and firms' incentive for claims denial is minimized.
- **Just:** Availability, rates, response, and payments are fair. Insurance costs and underwriting do not differ based on federally or locally protected characteristics and minimize unjust differential impact.





# Approaches to Building Inclusive Insurance for Climate Disasters

Creating an inclusive insurance market in the U.S. will require a complementary range of policies, programs, regulations, and products adopted across both the public and private sector. Here, we discuss reform options for building a more inclusive market and group them as to the entity that could adopt the change: (1) federal or state lawmakers, (2) state insurance regulators, (3) local governments, and (4) private insurance firms.

## Actions for a More Inclusive Insurance System

Federal or State Policy	Regulatory Reform	Local Government Programs	Private Sector Offerings
<p>Subsidize disaster insurance for low-income households and/or mandate disaster coverage backed by federal reinsurance</p> <p>Mandate <b>data disclosures</b> from insurers for research</p> <p>Create a <b>Community Reinvestment Act</b> for insurance</p> <p>Provide <b>grants</b> to support inclusive insurance pilot programs</p>	<p>Develop <b>enabling regulations</b> for inclusive insurance models</p> <p>Establish inclusive disaster insurance <b>regulatory sandboxes</b></p> <p>Reform claims <b>contestation procedures</b></p> <p>Establish complexity and baseline <b>coverage standards</b></p> <p><b>Support research</b> on potential direct and indirect discrimination in disaster insurance markets</p>	<p>Subsidize disaster insurance for low-income households</p> <p>Provide insurance <b>consultations</b> to households</p> <p>Develop <b>community-based models</b> for inclusive insurance</p>	<p><b>Expand offerings</b> to include accessible insurance products</p> <p>Provide discounts and transparency for <b>disaster mitigation</b></p>

### 6.1 Federal or State Legislative Changes

This section discusses policy proposals that would require legislation to create new programs. All of these options could be done either at the federal level or by individual states.

### 6.1.1 Subsidize Disaster Insurance for Lower-Income Households

As discussed, a fundamental barrier to making the financial protection of insurance available to lower-income households is price. A direct approach to solving this problem is to provide lower cost disaster insurance for low- and moderate-income households. This would be akin to other social safety net programs provided by the federal government, such as unemployment insurance or targeted assistance with energy bills or food. One such proposal that has gained the most traction in the U.S. is the creation of a public program to provide means-tested assistance to lower-income households for the purchase of disaster insurance. Another approach, used by a few other countries, is to provide cross-subsidies and a federal backstop to make disaster insurance universal and affordable. We discuss both options.

Policy concern about insurance affordability has been most focused on flood insurance. In the last ten years, a policy consensus has emerged around a federal means-tested assistance program for flood coverage from the NFIP. FEMA has investigated the need for such a program and suggested design approaches,<sup>62</sup> as has the National Academy of Sciences<sup>97</sup> and other researchers and stakeholders.<sup>98-101</sup> The general consensus from these investigations is that subsidies should be taxpayer funded, not cross-subsidized within the NFIP, and scaled based on ability to pay, to avoid abrupt thresholds when assistance ends. While the policy proposals have been focused on flood insurance, such an approach could be taken for multiple perils.

For any new federal program, steps should be taken to minimize any “time tax” (the burden of paperwork, time, and energy put on people to access the government subsidies or programs) as well as to reduce administrative costs. For example, to guard against high-wealth households receiving assistance when they have low annual incomes (such as due to retirement), FEMA has proposed simply requiring written attestations that household wealth does not exceed the threshold for eligibility. The administrative burden of this approach should be less excessive than other approaches to verifying wealth. Similarly, enrollment could be made easier by automatically enrolling households that have met eligibility standards for other federal programs. For natural hazards beyond floods, subsidies could be implemented as vouchers or through premium tax credits, like the premium tax credit implemented in the federal Health Insurance Marketplace. In this scenario, households that fall between 100% and 400% of the federal poverty level are eligible for tax credits that help offset the costs of their premiums.

A public, means-tested affordability program, such as subsidies scaled by income, could be adopted, not just at the federal level, but also by states. Although no state has yet done so on a wide scale, some state-level policy conversations are underway. North Carolina’s legislature passed a bill in 2019 to pilot a program to help pay flood insurance costs for two years for lower-income households in areas the most impacted by hurricanes Matthew or Florence.<sup>x</sup> Virginia introduced legislation in 2020 to create a Flood Insurance Fund that would subsidize the purchase of flood insurance for low-income residents, but the bill failed to pass.<sup>xi</sup>

Another approach to make disaster insurance universally affordable, adopted by some other countries, is a so-called “solidarity” model. The few countries where there is widespread natural disaster coverage, such as France, Spain, and New Zealand, coverage for disasters is mandated to be

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x See <https://www.ncleg.gov/Sessions/2019/Bills/House/PDF/H200v4.pdf>.

xi See <https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB794>.

included in all standard property policies.<sup>102</sup> These programs also cross-subsidize premiums through a flat fee on everyone for the coverage (or varying prices only by property type or coverage limit, but not risk). These programs are referred to as “solidarity” programs since all property types are charged the same rate and everyone is enrolled in the program.<sup>103</sup> This creates cross-subsidies across risk groups, making natural disaster coverage more affordable for the highest risks. It also creates a large policy base over which to spread administrative costs. In this way, public sector insurance programs where coverage is universally required tend to have lower average premiums than private voluntary insurance programs.<sup>104</sup> That said, mandating provision of catastrophe coverage while capping prices can threaten the solvency of insurers. As such, these programs are typically tied to a federal backstop or federal reinsurance that protects the solvency of private firms.

The drawback of this approach is that it can mute financial incentives for risk reduction. In the U.S., there tends to be support for insurance pricing that is at least partially risk-based: policyholders at higher risk should pay more than those at lower risk to provide a financial incentive to invest in risk reduction, as well as to reduce moral hazard, where policyholders might engage in overly risky activities knowing they have low-cost insurance. As we have seen, though, this can make insurance exceed what some are willing or able to pay and can depress take-up rates when coverage is not included in standard property policies. One way forward would be for solidarity approaches to be coupled with strong government programs to fund and promote hazard mitigation.<sup>105</sup> This is especially critical since one of the best ways to lower the cost of disaster insurance is to lower the actual risk through changes in building practices.

### **6.1.2 Mandate Data Disclosures from Insurers**

As discussed in Section 4, there is a lack of granular, comprehensive data collected over time for researchers to evaluate any potential disparate impacts of current insurance approaches. As proposed by legal scholar Daniel Schwartz, this could be remedied by required disclosure of insurance policy data to federal regulators modeled off the Home Mortgage Disclosure Act (HMDA) and made available to researchers.<sup>68</sup> Under HMDA, financial institutions that offer federally-backed mortgages are required to report loan-level data, which enables federal regulators and researchers to see where and what types of communities are being served by the housing market. By that logic, a similar approach could be applied to insurers, as property and casualty insurance is a key component of fair access to home ownership. This would bring increased transparency to the market. Such data disclosure requirements could be adopted at a federal or state level, but mandated provision would likely require new legislation. If adopted by states, however, to ensure the data uniformity needed for research, implementation details and reporting guidance should be coordinated by the NAIC and/or the FIO.

### **6.1.3 Create a Community Reinvestment Act for Insurance**

The Community Reinvestment Act (CRA) was adopted in 1977 to address an under-investment and lack of services provided by banks to low-income communities. The CRA is implemented by federal regulators that assess the extent to which each bank is providing services to all segments of the community in which it operates, including lower-income neighborhoods, and awards the bank a CRA rating. Regulators must consider this rating in evaluating applications for charters, bank mergers, acquisitions, and new branch openings.

While having been the subject of much policy debate, research suggests that the CRA has increased access to credit for low-income households and people of color in at least certain places and at relatively low cost.<sup>106,107</sup> Since the CRA was first enacted, the finance system, including banking and insurance, has changed quite substantially and many lessons have been learned about the law's successes and its shortcomings, especially around its exclusion of race as a factor to drive investments.<sup>108</sup> At the time of publication, the three federal banking regulators are considering revisions to CRA regulations to increase its relevance and ability to address the racial wealth gaps that continue to exist today.<sup>xii</sup>

Providing protection from the economic shocks of disasters through insurance can be seen as a form of financial investment in a community. A regulatory approach modeled on the CRA and applied to insurance could encourage greater underwriting and better targeted insurance offerings in low-income neighborhoods and communities of color. Under the CRA, federal regulators create lists of qualifying activities for CRA credit; similar lists tailored to the insurance sector could be developed, addressing availability, affordability, and differential impact of insurance offered. It could also include broader related areas, such as risk communication and activities to improve insurance literacy. Such a policy approach could incorporate lessons learned to date from operation of the CRA. While a federal CRA for insurance firms may be challenging given the dominance of state regulation, several states, including Massachusetts, New York, Connecticut, and Illinois have state-level CRA requirements for state-chartered banks (and, in some states, credit unions and mortgage companies) and these could be a model for state-level approaches for the insurance sector.

Decades ago, some insurance sector representatives opposed an expansion of the CRA to include insurers; taking a quid pro quo view of the CRA, they argued that federal banks enjoy benefits like insured bank deposits that insurers do not receive. At the time, insurance representatives stated that insurance firms did not unfairly discriminate and stressed that insurers did not have a geographic “community” that would create a natural application of the CRA.<sup>109</sup> Other groups disagree with these views and see incorporating insurers into a CRA framework as essential for continued progress in supporting underserved communities.<sup>110</sup> Key to implementing this recommendation would be defining the incentive for insurers' participation. For banks, the CRA score is used as input into decisions about mergers, acquisitions, new branches, and other actions requiring regulatory approval. For insurance, certain federal or state incentives would need to be developed. As an initial step to exploring this concept and the details of implementation, the FIO and/or NAIC could convene a gathering of insurers, regulators, researchers, and NGOs to discuss needs and viable policy designs.

#### **6.1.4 Provide Grants to Support Inclusive Insurance Pilot Programs**

Innovation can be time and resource intensive. Startup costs for a new product or program can involve consumer research, hazard modeling, pricing, and developing new policy terms. It may also require non-traditional partnerships. Harnessing risk transfer for more vulnerable populations or others unserved by the market could require institutions like city climate resilience offices and

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xii Ceres has submitted recommendations for the three federal banking agencies to consider as they update the CRA regulations, including making race an explicit metric, driving investments to make climate vulnerable neighborhoods more resilient, and considering disaster preparedness in lending.

community-based organizations not typically involved in risk transfer markets to learn about and then engage in these markets.

To support innovative new products and partnerships, Congress could enact a grant program, to be administered by FEMA or HUD, to support groups interested in developing inclusive disaster insurance pilots that are structured as public-private partnerships. Alternatively, FEMA and/or HUD could include disaster insurance pilots as a possible use of funds for their existing hazard mitigation grant programs. Individual states could similarly adopt such programs. New York has already done so: in early September of 2022, the governor announced a new program to provide grants to insurance innovations that promote clean energy or climate adaptation.<sup>xiii</sup> While this new program is not specifically focused on inclusivity, it is a model other states could follow and unite climate policy with inclusive disaster recoveries.

## 6.2 State Regulatory Reform

State regulators have multiple tools to help promote greater inclusivity in insurance markets within their jurisdiction. As best practices around these approaches are developed, they can be shared through the NAIC and replicated in other states.

### 6.2.1 Develop Enabling Regulations for Inclusive Insurance Models

Innovations in the structure of insurance hold promise to help meet the risk transfer needs of populations not currently well-served by the market. These approaches, though, such as parametric microinsurance and meso-insurance models (discussed in Section 4.3), need specific regulatory treatment in order to scale and expand. Clear and targeted regulations can facilitate and speed the development of this class of products. In interviews, industry stakeholders indicated that absent regulatory guidance, insurers may be unwilling to innovate, given the long timelines for regulatory approval and the risk of not getting approval even after investing substantial time in research and development. A completely novel insurance product can require a significant up-front investment on the part of an insurer—an investment they will be unwilling to make if there is a risk that it could be denied being brought to market by a regulator.

New products that harness parametric designs for disaster recovery currently face an uncertain regulatory environment in the United States as these coverages often do not fit cleanly into existing categories of insurance products used by state regulators. They often are designed to help cover a large suite of disaster costs, not just property damage, and so do not nicely categorize as property insurance. They will also need requirements to assure payments are not made if there is no economic loss, since insurance requires indemnification, but these must not slow or undermine the benefits of parametric policies. This is why some stakeholders have suggested the need to create a new category of insurance for parametric disaster recovery.

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xiii See <https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-09-01-Governor-Hochul-Announces-Millions-to-Support-Insurance-Innovation>.



Governments around the world have adopted specific definitions of microinsurance—one specific type of parametric coverage—and developed regulations tailored to this product class. In the U.S., there is already precedent for this in Puerto Rico’s recently adopted microinsurance regulations (see policy case study 1). But that regulatory model is still very new; to date, it is the only U.S. state or territory to adopt such regulations. There are not yet specific regulatory approaches adopted for meso-insurance models or broader parametric insurance regulations in any state, although some smaller-payout, disaster parametric products have been approved case-by-case in a few locations. Prioritizing development of a regulatory framework could help spur adoption of potentially beneficial insurance designs that are new to markets and involve novel partnerships (such as many meso-insurance models). In addition, clarified regulatory language on the ability of philanthropists or others to purchase insurance on behalf of lower-income populations could provide the necessary confidence for greater partnerships that involve premium cost-sharing.

## Policy Case Study 1: Puerto Rico's Parametric Microinsurance Market

Hurricane Maria in 2017 was the worst storm to hit Puerto Rico in 80 years; it was the third most costly hurricane in U.S. history and caused the highest mortality in 100 years. It had devastating effects on households in Puerto Rico, many who struggled with slow recoveries in the subsequent years.<sup>111</sup> In 2020, Puerto Rico's insurance commissioner introduced specific regulations to define microinsurance for catastrophic risk and provide it with its own regulatory framework.

**Goal:** To make available smaller coverage insurance products for low- and moderate-income households that have a lower premium, are easy to understand, and deliver claim payments quickly after a catastrophic event.

**Design:** Microinsurance policies received their own regulatory definition and framework. To qualify (if covering one catastrophic risk), premiums cannot exceed 2% of an individual's annual income or the minimum wage. For 2020, then, microinsurance premiums could not exceed \$260 per year or \$21.70 per month. Claims payments must be triggered by a common metric of a catastrophic event, such as a hurricane wind speed category, and claims payouts must be paid within 10 days of the event.

### Key Aspects of Implementation:

- **Defining microinsurance:** Microinsurance could be defined based on coverage levels, premiums, or intended consumers. Regulators in Puerto Rico decided to define microinsurance based on premium amount because it was simpler and easy to understand.
- **Premium thresholds:** The premium threshold was set based on internal research on people's willingness to pay for insurance and targeted to income groups of policy concern. The regulations also noted only the maximum threshold, not the intended price.
- **Proof of loss:** All insurance products in the U.S. must typically have a "proof-of-loss" requirement to show that the claims payment is indeed indemnifying a loss—a key definition of insurance. In Puerto Rico, the new regulations waived proof-of-loss for microinsurance since it was felt that the payouts were small and if a catastrophic disaster hit the island, it was inconceivable that the policyholders would not have at least that much economic loss. This enables faster and easier payments for microinsurance.
- **Attracting insurers:** For other insurance in Puerto Rico, there is a requirement that insurers must retain some risk locally. This was removed for microinsurance, enabling global risk transfer to support the emerging market.
- **Consumer understanding:** Microinsurance policy documents must be written concisely and plainly, no more than four pages long, to aid transparency.

## 6.2.2 Establish Inclusive Insurance Regulatory Sandboxes

Innovation and regulation can sometimes be caught in a chicken-and-egg problem, where innovations are slowed due to uncertain regulatory environments, but regulation cannot be developed until innovations and their impacts are understood. Regulatory sandboxes, first adopted in the United Kingdom, can help in this situation.<sup>112</sup> They are a designated space to test new products or models, allowing new risk transfer products to come to market, while simultaneously allowing the regulator to observe, learn, and apply an evidence-based approach to crafting future regulations. The specific design of a regulatory sandbox will vary, but generally they temporarily waive or modify regulations for new insurance products that meet certain criteria for a pre-determined amount of time. Regulatory sandboxes have demonstrated promise in promoting new approaches to financial inclusion around the world, but they can also be time and resource intensive for regulators and are, therefore, not always the best tool.<sup>113</sup>

Sandboxes are most useful when the most appropriate regulatory approach is uncertain and regulators need to learn from actual marketplace responses. This could be the case for new insurance models not tested yet in any state, such as meso- or aggregator models, where the impact and need for special regulations is still unknown. A regulatory sandbox could also allow for more detailed studies of consumer understanding, market demand, and to evaluate how such products work in practice. That said, care must be taken that the sandbox does not create unintentional market distortions, create an uneven playing field, or substitute for a preferred regulatory approach—existing sandboxes do this by limiting the testing time or number of consumers products can engage.

Several states already have regulatory sandboxes that could be adapted to focus on inclusive insurance innovations: Kentucky, South Dakota, and Vermont have all adopted insurance-specific sandboxes that waive regulations for insurers to test out new products for specified time periods and to a limited number of customers, but with certain consumer protections.<sup>xiv</sup>

## 6.2.3 Reform Claims Contestation Procedures

As discussed above, the claims contestation process can sometimes be difficult for under-resourced households to navigate. More affluent households can pay for legal help in negotiating with their insurer, which may result in higher settlements. In the extreme, these wealthier households have the resources to turn to litigation. While lacking policyholder level racial data for a robust empirical analysis, findings from insurance claims and payments resulting from earthquakes suggest racial differences in the insurance claims process, as well.<sup>87</sup> One regulatory approach designed to help level the playing field with respect to claims disputes would be to make consumer claim advocacy resources a publicly available resource. Inspired by the Financial Ombudsman Service in the United Kingdom, states could create an independent, government office to assist with consumer complaints and resolution of consumer disputes with their insurers.<sup>70</sup> Such services would need to be easily accessible, recognize cultural customs and language barriers, and be available to everyone.

Some new insurance models can also reduce differential outcomes in the claims process. Parametric policies pay a set amount based on an observable metric issued by an independent third party. This eliminates the loss adjustment process which might at times be biased. Such models are

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xiv See <https://www.thezebra.com/resources/news/insurance-regulatory-sandboxes-by-state>.

not a substitute for a full indemnity policy when full loss compensation would be required, but they are one more tool to help improve inclusivity in payouts. They can also be harnessed to create hybrid models. For example, after a disaster, a policy could have a parametric layer of a smaller amount that was provided quickly based on an independent metric and then coupled to a higher indemnity payout when damages exceed a certain threshold.

#### **6.2.4 Establish Contract Complexity and Baseline Coverage Standards**

Transparency and comprehension of insurance contracts are important for a fair marketplace and consumer protections, but often consumers are not well-informed. Property and casualty insurance typically has limited transparency requirements, with consumers not able to compare products and develop fair expectations of claims payment practices. Fully understanding exclusions, sub-limits, and other aspects of a policy can require knowledge of technical jargon, reading of fine print, and sometimes even having to call your insurance company and request the information in the first place as exclusions and other details may not be sent at renewals to consumers. This leads to consumers being more likely to have incorrect perceptions of their insurance.

Discovering these errors only in the aftermath of serious disaster damage can leave households struggling financially. A MetLife-commissioned study<sup>xv</sup> found that many consumers believed their homeowner insurance coverage was more comprehensive than it actually was (suggesting they had not read or understood the fine print in their contract), leading them to believe, incorrectly, that they would be fully reimbursed for all costs when there were actually payment caps and deductibles, that they would receive the replacement cost for contents when it was actually the depreciated cash value of damaged items, and that they had law and ordinance and water back-up coverage when those protections were not included.

There are several transparency-oriented regulatory tools that could be applied to insurance to help consumers better understand their coverage, with varying evidence of success.<sup>114</sup> Clear statements about limits to coverage are sometimes required by regulators. For instance, homeowners' policies sometimes must include clear print stating that the policy does not cover flood damage. Some states require insurance contracts to meet a certain level of readability, based on the Flesch Reading-Ease Test or other similar tests. The Flesch Reading-Ease algorithm, created in the 1950s, measures the basic complexity of words and sentences and attributes that to an approximate reading level. While it has been found to be outdated and unreliable, there are few alternative measures to use for contract readability requirements and many states do not measure it at all.<sup>115</sup> States that do require that contracts meet a certain score usually require a score of 40 or 45, which equates to college-level reading. Some states also regulate the basic formatting of the contract, such as font size and length.

These existing regulatory rules could be improved upon and expanded to increase transparency. As insurance providers transition to online interfaces for shopping and contracting, there is vast potential to improve readability with data visualizations, scenario testing, and comparisons across policy terms and contracts so that consumers better understand what they are purchasing.<sup>116</sup> However, there will always be struggles to minimize fine print and guarantee consumers have complete

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xv Online at <https://www.metlife.com/about-us/newsroom/2007/july/insurance-surprises--survey-finds-many-americans-dramatically-ov>.

information on their policies, and price-sensitive consumers may dismiss policy limitations and always choose the cheapest coverage, even if it leaves them struggling after a disaster.

An alternative approach is to make the insurance product itself more transparent and standardized. State regulators could require minimum coverage levels that all homeowners or disaster policies are required to include. Despite conventional understanding that most insurance policies are similarly structured, evidence shows that contracts are increasingly heterogeneous in structure and coverage, especially in homeowners insurance.<sup>117</sup> The effect of this heterogeneity is that insurance products are too complex to effectively compare. A baseline level of insurance or a state-wide standard insurance package, would allow consumers to be guaranteed certain minimum amounts of coverage, while maintaining the option for companies to offer products that are more expansive.

Finally, new types of insurance, such a parametric, microinsurance, or meso-insurance models, might need their own guidelines to ensure consumer understanding. For instance, we heard in stakeholder interviews that consumers may only examine price and payouts of a parametric product, while ignoring the probability of payouts—they may not realize that some may pay smaller amounts but for much more frequent events, while others pay larger amounts but only for rare events. If the probability of payout is not disclosed, consumers may not be able to evaluate policy choices properly. This is again where new technology can assist, enabling data visualizations and narrative scenarios about policy structure that help consumers with probabilistic decision making. Requirements on what should be disclosed and how could be part of a broader regulatory treatment of parametric models for disasters.

### **6.2.5 Support Research on Direct and Indirect Discrimination in Disaster Insurance Markets**

We do not yet have a robust body of research on either the extent of direct and indirect discrimination by insurers or what regulatory mechanisms are most effective in preventing socially undesirable outcomes in disaster insurance markets. As discussed above, a first order challenge is access to sufficient data for adequate analysis. Once data is available, however, state insurance offices can lead in filling gaps in research, both internally and through partnerships with external researchers. We highlight four priority areas for investigation.

First, specifically related to climate disasters, deeper research is needed on pricing regulation in situations where the specific hazard or the damage potential is correlated with personal or household characteristics that society deems inappropriate for use in pricing. This occurs, for instance, if neighborhoods with high rates of poverty are concentrated in areas at high risk of flooding. Risk-based pricing could lead to higher rates for the least advantaged who do not have the financial mobility to avoid risk, yet choosing to charge households in higher hazard risk areas less for their insurance would increase relative insurance costs for households in lower hazard risk areas. While the underlying correlation between physical risk and social vulnerabilities cannot be solved through insurance alone, the design and impact of possible regulatory and policy interventions, including those aimed at reducing the drivers of higher risk, merit closer study.

Second, more research is needed on the efficacy of regulatory approaches generally aimed at reducing or eliminating discrimination based on protected factors in insurance pricing. States have designed regulations in several different ways, and these approaches may vary in efficacy and market impact. One regulatory approach has been to ban pricing on specified protected characteristics. For



example, more than half a dozen states have now banned the use of gender in the auto insurance market, in response to evidence showing women facing higher auto insurance prices in some states even when they were lower risks.<sup>118</sup> While these laws are easy for regulators to monitor in rate filings, and provide a first-order level of protection, they cannot control for insurers using alternative variables that correlate with protected classes. Additionally, it is unclear if these laws reduce direct discrimination in underwriting choices, as insurers are not mandated to submit those criteria to state regulators.<sup>69</sup>

Another regulatory approach has been to explicitly define the factors that are allowable in pricing. There are a few examples of this type of market regulation. California's Proposition 103 established this regulatory structure in California's auto insurance market: prices must be set primarily by three "mandatory" factors: driving record, annual mileage, and years of driving experience. Insurers are also allowed to price based on fifteen pre-defined "optional" factors as long as they do not carry more weight than the mandatory factors; these largely include vehicle information.<sup>xvi</sup> This is similar to the model of the federal Affordable Care Act, where health insurers can develop ratings based on only four factors: geography, age, smoking status, and size of family insured.<sup>xvii</sup> This regulatory approach helps eliminate the potential of indirect discrimination from proxy indicators, but also greatly limits insurers' agency in pricing. In the markets where this type of regulatory structure has been applied, regulators have reported significant savings and protections to consumers, but faced pushback from insurance companies who report lost profit.<sup>119,120</sup> It therefore remains unclear if this approach could be sustainably applied more broadly, as it raises concerns that if profits are cut too much, insurers might choose to leave the state's insurance market. It also may not be dynamic enough to address changing risks and conditions under climate change.

Third, research attention is needed on the impact of new and evolving technologies on indirect discrimination in insurance markets, such as the use of artificial intelligence algorithms in pricing and their role in influencing the nature and extent of proxy and indirect discrimination. As AI technologies evolve, states should support rigorous research on how to design appropriate regulations for fair pricing and treatment in a world where pricing and underwriting are governed by machine learning algorithms. Deeper investigation of this topic is needed, building upon the existing NAIC principles on artificial intelligence regulation that demands it to be fair, ethical, and non-discriminatory. This research could be coordinated by the NAIC and supported by data calls by state insurance offices. Collaborations with researchers could help establish priority areas in need of reform and best practice for continued fair treatment as both disaster risks escalate and technologies rapidly advance.

Finally, investigation is needed to better understand the extent and nature of differential treatment in claims handling, including payout amounts and timing. There have been a small number of studies that found higher claim denial and lower claim payments in neighborhoods with lower incomes and higher concentration of people of color around specific disasters, and there has been anecdotal evidence and reporting that some communities of color perceive unfair claims treatment, both in amount and in time to receive payment. However, broader empirical investigation is needed

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xvi Cal. Code Regs. tit. 10 §2632.5

xvii See Market Rating Reforms from ACA: <https://www.cms.gov/CCIIO/Programs-and-Initiatives/Health-Insurance-Market-Reforms/Market-Rating-Reforms>.

to determine if this is a consistent pattern of substantial concern and if so, what part of the insurance transaction these dynamics stem from.

## 6.3 Local Government Programs

While local governments do not have any regulatory authority over insurance and cannot mandate new nationwide or state programs, they can develop local programs to expand inclusivity of insurance in their jurisdictions. We discuss three such approaches.

### 6.3.1 Provide Insurance Consultations to Households

Several local governments, often in collaboration with NGOs, have found household consultations to be effective for broadening access to insurance, ensuring appropriate and affordable coverage, and motivating investments in risk mitigation. While high touch and, therefore, time and resource intensive, these programs also tend to be high impact. For example, in 2017 and 2018, Portland, Oregon ran a pilot program that provided households in a low- and moderate-income neighborhood exposed to flood risk with free consultations from both an expert insurance agent and an NGO that offered suggestions on home improvements; combined, these reduced overall insurance costs and made households safer (see policy case study 2). In another example, since 2014, Boulder County, Colorado, has run a consultation program for wildfire risk: the Wildfire Partners program. Local, state, and federal government funding helps subsidize the program, but homeowners are responsible for paying most of the costs. The program gives homeowners access to individualized wildfire risk assessments of their property, tailored mitigation activities, and access to subsidized forestry work suggested for their property. Originally motivated by homeowners facing challenges getting insurance coverage in high wildfire-risk areas, the County engaged the insurance industry and the Insurance Institute for Business and Home Safety to establish a robust assessment and certification system that helps homeowners retain coverage.<sup>xviii</sup> While scaling household consultation programs up is challenging given the intensive staff time needed for one-on-one support, these programs can be incredibly impactful and also improve risk understanding among residents.

### 6.3.2 Develop Community-Based Models for Inclusive Insurance

Local governments and community organizations can play a larger role in creating inclusive insurance by helping to expand coverage to many households. While none are yet fully operational, there have been emerging design concepts for aggregator models or meso-insurance, as discussed earlier, in which a local government or community organization provides insurance for a group of households or a specific neighborhood or community.<sup>121</sup> There are two general structures for community insurance. In the first, the local government or community group secures disaster insurance policies for certain households. This would function similarly to an employer providing healthcare: the public entity or community group would arrange disaster insurance policies, which would be individual contracts between households and the insurance firm. The public sector entity or community group may help

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xviii Based on interviews with program staff.

## Policy Case Study 2: Portland, Oregon's Flood Insurance Savings Program (FISP)

In response to complaints from residents of a low- and moderate-income neighborhood about the rising costs of flood insurance, the Portland Housing Bureau adopted an innovative pilot program in 2017 and 2018 called the Flood Insurance Savings Program (FISP).

**Goal:** To lower the costs of flood insurance for residents, ensure their flood insurance was tailored to their needs, and support home improvements for flood mitigation and broader safety.

**Design:** FISP worked directly with households to do three things: (1) potentially lower their flood insurance premiums through application of an elevation certificate, (2) improve their insurance policies through one-on-one insurance consultations with a flood insurance expert to help “right-size” insurance and fix errors in policies that led many residents to be paying more than they needed to for flood coverage, and (3) provide home assessments that identified health, safety, and flood mitigation measures that could stabilize someone in their home and help link them to funding for mitigation measures. The program helped 91% of participating residents save money on flood insurance at an average amount of \$720 annually.<sup>122</sup>

### Key Aspects of Implementation:

- **Helping residents reduce NFIP costs:** The prior approach to setting prices in the National Flood Insurance Program relied on elevation certificates, but these could cost homeowners up to \$1,000. Without one, homeowners could end up paying far too much for their flood insurance. The city was able to work with a local non-profit and arrange for bulk certificates to bring down costs. They fully covered the cost for the lowest-income houses and offered the reduced rate to households with greater income.
- **Educating flood insurance agents:** The city hired a deeply knowledgeable insurance agent to work with consumers. She found that roughly half of policies she reviewed had errors or could have received a lower rate through an elevation certificate, adopting cost-effective mitigation, or by switching to a private provider.<sup>123</sup> This led the city to advocate for greater continuing education requirements for flood insurance agents, which the state of Oregon adopted.

collect premium payments and pass them to the insurance company, perhaps partially subsidizing them. An alternative structure is for the local government or community organization to be the holder of a much larger policy and use the payout to help residents. This latter approach is now being piloted in New York City (see policy case study 3).

### 6.3.3 Subsidize Disaster Insurance

It is not just the federal government or states that could subsidize disaster insurance. Local governments could also choose to implement programs to help cover the costs of disaster insurance policies for their low-income residents. For example, the city of Syracuse, New York, has established a subsidy for low-income homeowners' flood insurance costs. For certain census tracts within the city, households that meet the eligibility requirements can receive a reduction on their property taxes. The program in Syracuse is highly localized—only about 800 properties are eligible—but a similar approach could be expanded in other jurisdictions. Many eligible residents in Syracuse, however, are not taking advantage of the program, which should be investigated to improve design in any replication or expansion.<sup>xix</sup> This approach, however, did require state legislation to enable Syracuse to adopt the program.<sup>xx</sup> Absent external grant funding to support a program like this, local governments that would struggle with the lost revenue from a tax subsidy would likely need to secure additional revenue from other revenue streams. This could be done through small assessments on higher-valued properties, for example.

Local governments could also help preserve housing affordability and prevent displacement of renters by providing landlords with insurance subsidies that are paired with anti-displacement or anti-rent gouging stipulations for disasters. A few stakeholders described how small-scale building owners who operate as small businesses are often priced out of disaster insurance, such as additional flood coverage when not included in a standard property policy. This subsidy structure could provide those housing providers needed financial protection, speeding repairs, while also taking regulatory steps to protect their tenants. The program could be targeted to businesses below a certain size threshold who struggle most with affording insurance. Many stakeholders described the lack of affordable housing and potential rent increases as a major challenge for low-income renters. While some states do institute limits to rent increases during states of emergency (e.g., California), the time frame is limited (e.g., 30 days). A coupled policy of an insurance subsidy contingent on anti-rent gouging would allow renters to trust that they will be able to return to their home.

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xix Based on interviews with program staff.

xx See [https://www.nysenate.gov/legislation/laws/RPT/467-K\\*2](https://www.nysenate.gov/legislation/laws/RPT/467-K*2).

## Policy Case Study 3: Center for NYC Neighborhoods Parametric Meso-Insurance Pilot

New York City is experiencing increased flood risk from extreme precipitation events as the climate warms. A pilot project, funded by the National Science Foundation's Civic Innovations program, is testing a new approach to risk transfer that would help provide immediate cash assistance to low-income households in need post-flood. This represents a unique public-private partnership between the Environmental Defense Fund, the New York City Mayor's Office of Climate and Environmental Justice, the Center for NYC Neighborhoods, SBP, and Guy Carpenter.

**Goal:** To increase the financial resilience of low- and moderate-income residents to flooding from extreme precipitation.

**Design:** In the pilot, the Center for NYC Neighborhoods will purchase a novel parametric product, designed to pay when rainfall related flooding exceeds certain inundation thresholds in high-risk areas with a large share of low- and moderate-income households. The Center will then use those funds to finance grants to meet household emergency needs.

### **Key Aspects of Implementation:**

- **Defining need:** There are many unmet financial needs after a large flood and this one pilot could not solve them all. The project team decided to focus on the challenges low-income households face when their immediate post-disaster financial needs are not met.
- **Trigger choice:** Rainfall-related flood triggers are new to the market. The team evaluated many technology and data options, ultimately settling on a trigger related to a modeled footprint of the flood based on a combination of satellite data and on-the-ground sensors installed by FloodNet. Payouts will increase as a greater share of residents in pilot neighborhoods fall into the flood footprint.

Read more at <https://www.edf.org/inclusive-insurance>.

## 6.4 Private Sector Offerings

Finally, the private sector also has an essential role to play in creating, supporting, and advocating for an inclusive insurance system. We note two potential roles here.

### 6.4.1 Expand Offerings to Include Inclusive Insurance Products

In addition to public sector interventions, private insurance companies must also expand their offerings to address unmet needs. To broaden inclusivity in markets, the private sector needs to innovate on product types and business models to address the needs of those currently underserved or unserved by traditional products. Some possible approaches we have already discussed earlier in the report. For example, microinsurance could be a tool to expand access to financial protection, possibly helping lower-income households, renters, and others with broader post-disaster financial needs. For example, Raincoat is a new firm that has begun offering such policies in Puerto Rico and has also developed a digital platform to enable greater development of microinsurance in other markets. The company's founder experienced the challenges with standard insurance in the aftermath of Hurricane Maria and drew on that experience to design a product to better meet needs.

This suggests that an important path forward for more inclusive approaches is for insurers to engage more deeply with households, communities, NGOs, and researchers, who may have insight on the current unmet needs of various populations. The private sector then can be better equipped to develop new products that match those needs. For instance, we heard in our interviews that there is a need for greater financial protection for renters facing higher costs post-disaster. A parametric policy could be designed to offer additional support for higher rents, potentially even offering an extra monthly payment for a certain number of months post-disaster. This could also be an endorsement on a rental policy. The challenge with all such innovation is affordability. This is where the private sector should build partnerships with philanthropic groups and the public sector to offer such protection. In the developing world, inclusive insurance models have often been heavily supported by foundations and governments, as noted above, but such partnerships are far less common in the U.S.

### 6.4.2 Provide Discounts and Transparency for Mitigation

As noted earlier, lower insurance prices can best be secured by lowering risk. To date, however, there is often little transparency on which specific disaster mitigation measures will be financially rewarded by insurance companies and by how much. While insurance companies want to maintain their flexibility in pricing, this has made it difficult for public sector and non-profit organizations to design programs that seek to improve affordability of disaster insurance through mitigation investments: it is unclear what investments will receive what, if any, savings. Several stakeholders noted that those operating mitigation programs had to guess and hope that the households they assisted with mitigation also received insurance benefits.

This lack of commitment and transparency also makes it difficult to develop any financing model whereby risk reduction investments would be financed through premium savings over time, a potentially promising idea that has yet to work at scale. Transparency about how mitigation and resilience investments will translate into lower premiums is also needed, not just for household level investments, but also for municipal and regional investments in disaster mitigation and climate



adaptation. Local officials may wish to design such investments to help their constituents with insurance costs or to develop new financing models but need the commitments from insurance firms.



# Conclusion

The increasing frequency and severity of natural disasters due to climate change poses a real economic threat to households, businesses, and communities in the U.S. Our existing tools for covering financial shocks from climate disasters are limited and largely inadequate to protect certain populations. There remain many groups with unmet financial needs post-disaster and little or no access to insurance tools that could help improve their financial resilience.

The two groups most impacted by financial recovery barriers are low-income communities and communities of color; a large body of research documents the disproportionate impacts disasters have on these households. In addition, renters, microenterprises, and others may lack access to needed insurance coverage. Beyond affordability, there are myriad financial impacts that can cause severe hardship and for which our property-based insurance is ill-suited. While insurance can provide support to households quickly and is associated with better recovery outcomes post-disaster, it remains inaccessible or unavailable for too many populations and post-disaster needs.

Making our disaster insurance system more inclusive is a critical component of protecting the economic and overall well-being of at-risk residents. This requires new policies, programs, regulations, offerings, and partnerships that address the challenges endemic to disaster insurance markets, especially with increasing climate risk, as well as the barriers to insurance markets that have historically excluded many populations that would benefit from insurance. Inclusive insurance is a broad approach across sectors to improve access to insurance for groups currently under-served or not served at all by insurance.

In this report, we have outlined principles and a framework for an inclusive insurance system in the U.S. We propose a broad suite of efforts that aim to make insurance affordable, accessible, transparent, people-centered, and just. Based on interviews with community, policy, and industry stakeholders, we offer a toolkit of policy interventions that can help move the disaster insurance system toward greater equity in outcomes. No insurance solution can prevent the risk of disasters, but many policies can help give more groups the economic protection needed to better weather the increasing financial stress of climate disasters.

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