Bridging the Flood Insurance Gap:

Addressing the Underinsurance Crisis in the United States

Issue 7 - July 2025

NEPTUNE

Contents

NEPTUNE

Executive Summary

Flood risk is rising rapidly across the United States due to the increasing frequency and intensity of climate-driven weather events. Yet, millions of American homeowners remain financially exposed due to insufficient or non-existent flood insurance coverage. Research from the Federal Reserve Bank of Philadelphia exposes the staggering scale of this problem: of the **$24.4 billion expected annual flood losses** to single-family homes, approximately **70% (or $17.1 billion) are uninsured**.

This report by Neptune Research Group explores the extent of the nation's flood underinsurance crisis. The findings are clear: underinsurance is not limited to those without a policy. Nearly **85% of all at-risk single-family homes in the U.S. lack sufficient coverage**, facing thousands of dollars of uninsured loss annually, underscoring the financial risk homeowners carry.

Coverage gaps are widespread and persistent:

77% of at-risk single-family homes outside FEMA high-risk flood zones, or Special Flood Hazard Areas (SFHAs), have no flood insurance

52% of total expected flood losses inside SFHAs are uninsured

>90% of low-income households are underinsured, with uninsured expected losses often exceeding 20% of annual income

Behavioral, economic, and informational barriers (including limited awareness, affordability concerns, and skepticism about climate impacts) contribute significantly to this shortfall. Critically, **nearly 90% of homes that would financially benefit from purchasing flood insurance remain underinsured.**

However, the solution is within reach. With 95% of National Flood Insurance Program (NFIP) policyholders meeting private market underwriting standards and up to 60% eligible for lower premiums, the private market has the tools, technology, and flexibility to close this gap, offering higher limits, broader coverages, and faster service.

> "*The U.S. is facing a hidden flood insurance crisis,*" said Trevor Burgess, CEO of Neptune Flood. "*At Neptune, we believe that closing the coverage gap is not just achievable, it's our responsibility. The private sector has the tools and technology to protect millions of American families from the devastating financial impact of flooding.*"

Flood underinsurance is no longer a marginal issue. It is a national economic vulnerability that demands urgent action. To reduce financial vulnerability and build national flood resilience, Neptune recommends a coordinated strategy:

- Expand risk education and flood awareness, especially outside SFHAs
- Facilitate NFIP-to-private transitions by removing regulatory and lender friction
- Enforce compliance in high-risk zones and modernize flood maps

Introduction

Floods are the most common and destructive natural disaster in the United States, with 90% of all natural disasters involving flooding. As the effects of climate change intensify (through rising sea levels, increased coastal storm activity, and more frequent heavy rainfall events), the financial risk to American homeowners continues to grow. Once considered "safe" inland areas are now increasingly vulnerable. Despite this escalating threat, millions of U.S. households remain inadequately protected, either lacking flood insurance entirely or holding policies with insufficient coverage.

The National Flood Insurance Program (NFIP), created in 1968 and existing under FEMA, has historically served as the primary source of flood coverage, offering federally backed policies to homeowners nationwide. However, FEMA and the NFIP face well-documented challenges that limit their effectiveness:

- Outdated flood maps
- Limited coverage options
- Rising premiums due to 2021's NFIP Risk Rating 2.0
- A $22.5 billion NFIP debt burden

In contrast, the private flood insurance market (driven by advancements in data analytics, risk modeling, and digital underwriting) has emerged as a flexible and scalable alternative, offering higher limits and more tailored coverage.

In light of this evolving landscape, in December 2024, the Federal Reserve Bank of Philadelphia (FRBP) published a comprehensive study quantifying the extent of flood underinsurance in the U.S. housing market. The findings are striking: of the estimated $24.4 billion in annual flood-related damage to single-family homes, only about 30% is insured. This leaves roughly $17.1 billion in losses absorbed annually by uninsured or underinsured households, often with devastating financial consequences.

This report by the Neptune Research Group distills the key insights from that study and places them in the broader context of U.S. flood insurance reform. It also examines the behavioral, economic, and regulatory barriers contributing to the flood coverage gap and outlines the private sector's role in closing it.

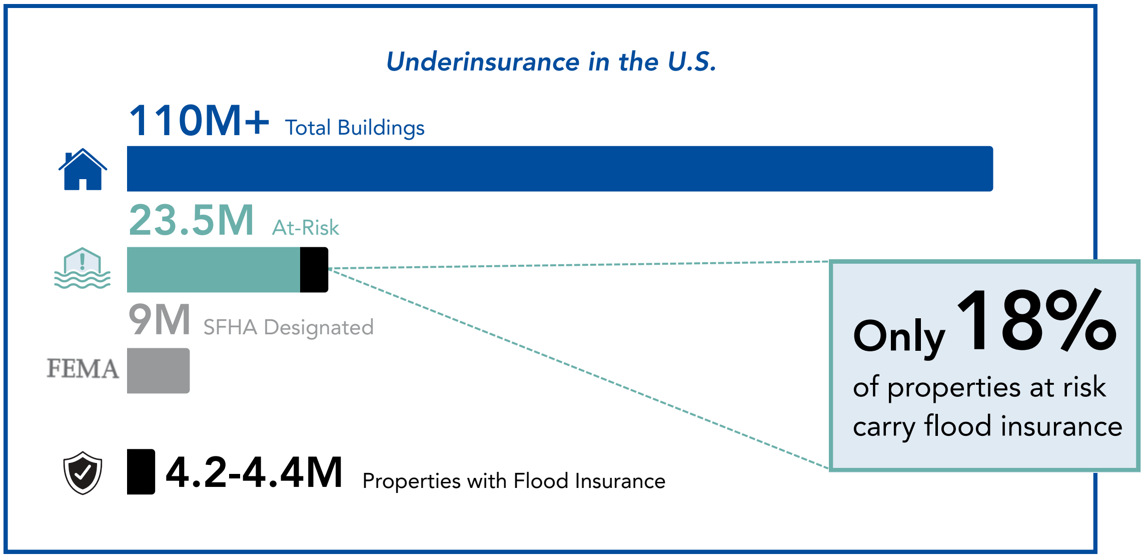
The Current State of Flood Insurance

Flood insurance in the United States is largely administered through the NFIP, a federal initiative established in 1968 to provide flood coverage in communities that adopt and enforce floodplain management regulations. While the NFIP has been foundational in expanding access to flood insurance (particularly in high-risk zones), its structural limitations and financial instability have come under increasing scrutiny.

National Exposure

According to the FRBP's research, the NFIP currently services approximately 4.7 million (down from 5.7 million in 2009) flood insurance policies nationwide. However, the number of contracts in force (representing the actual buildings covered) is approximately 3.7 million (down from 4.7 million), underscoring the difference between individual units (such as condominium policies) and actual total insured properties.

Of the approximately 110+ million buildings across the United States, at least 9 million properties fall within FEMA-designated Special Flood Hazard Areas (SFHAs), zones with at least a 1% annual chance of flooding. Yet broader modeling efforts, such as those from the First Street Foundation, estimate that more than 23.5 million properties are at risk of flooding over the next 30 years. Despite this exposure, only 4.2-4.4 million properties nationwide carry active flood insurance, covering just 18% of properties at risk.



NFIP's Limitations and Financial Strain

Compounding underinsurance is the NFIP's outdated coverage caps. The maximum coverage limits available for one to four family residential properties ($250,000 for structural damage and $100,000 for contents) have failed to keep pace with inflation and construction costs. These caps were introduced in 1994 and have not been increased since. As a result, many homeowners remain underinsured even with active NFIP policies in place.

NEPTUNE

Financially, the NFIP remains burdened by profound deficits. The NFIP is currently $22.5 billion in debt to the U.S. Treasury and is projected to require an additional $27 billion in federal subsidies through 2037, highlighting concerns about its long-term sustainability and cost to taxpayers. Moreover, a significant portion of this strain stems from Severe Repetitive Loss properties, which comprise just 2.5% of all policies but have accounted for nearly 50% of the NFIP's claims by dollar value. These properties flood repeatedly and are often rebuilt using public funds, creating a costly cycle of repeated losses.

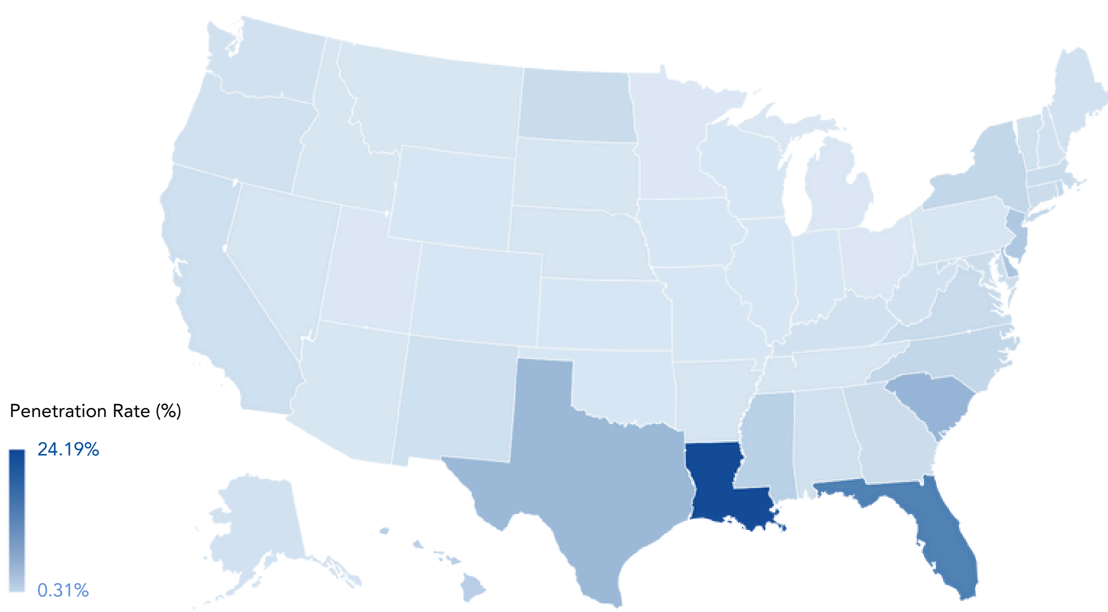
Despite mandatory insurance requirements for homes in SFHAs with federally backed mortgages, compliance is far from universal. Outside SFHAs (where no mandate exists), insurance take-up rates are significantly lower, despite historical evidence that flooding is not confined to high-risk zones. In addition, FEMA's flood maps fail to account for pluvial flooding and intense rainfall, leaving many inland areas with significant exposure improperly mapped and unrecognized as high-risk zones.

Rise of the Private Market

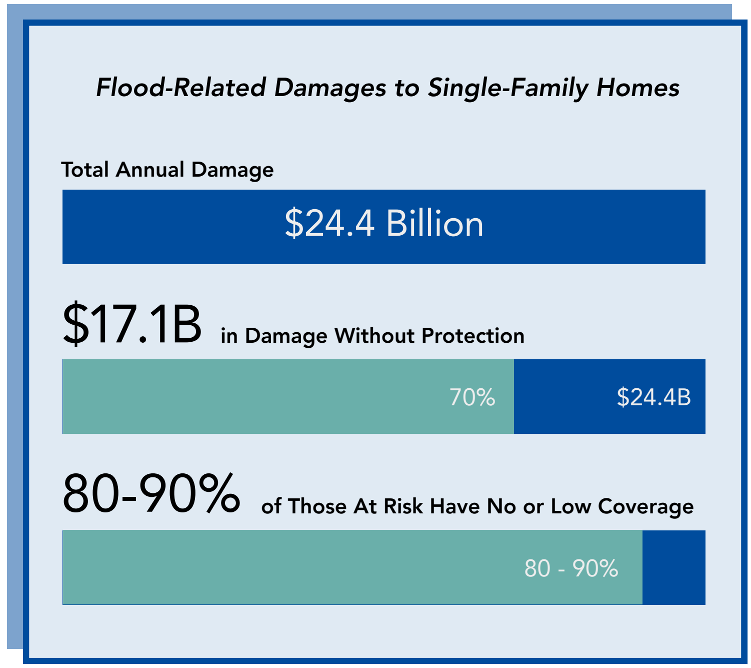
In recent years, the private flood insurance market has emerged as a credible alternative to the NFIP. Enabled by technological advances, risk modeling, and more granular data, private carriers offer customizable coverage with higher limits, broader coverage, and often more competitive pricing. However, growth has been limited by regulatory hurdles, low consumer awareness, and longstanding preferences among lenders and agents.

The result is a fragmented system in which millions of American homes remain underinsured or entirely unprotected (as shown in the map below) against a rising tide of flood risk.

NFIP Residential Flood Insurance Penetration by State (Q4 2024)
Contracts in Force Over Total Structures



Extent of Underinsurance



While flood insurance access and affordability challenges are well known, the full scope of underinsurance has been less thoroughly quantified. The FRBP brings new clarity to this issue, revealing that underinsurance is not just common but the dominant condition for households facing flood risk in the United States.

Flood-related damages to single-family homes total an estimated $24.4 billion annually, yet only 30% of these losses are insured. This leaves a staggering $17.1 billion yearly damage absorbed by households and communities without sufficient protection. Among homes with flood risk (flood-related loss is expected), approximately 80-90% are underinsured or have no coverage.

How Big Are the Coverage Gaps?

Homeowners with flood insurance still face a substantial coverage gap, the difference between their expected flood losses and the amount covered by insurance. On average, single-family homes in the U.S. face thousands of dollars of uninsured losses annually.

During extreme weather events, coverage gaps balloon:

- In SFHAs, the average coverage shortfall during a 1-in-100-year flood event exceeds $103,000.
- Outside SFHAs, where insurance take-up is far lower, the average shortfall jumps to $136,000.

Additional data further highlights the extent of underinsurance:

- In SFHAs, 52% of expected flood losses go uninsured. Many who have insurance carry only the minimum required by lenders, often not enough to cover the home's full value or its contents.
- By law, homes in SFHAs with federally backed mortgages must carry flood insurance. However, a growing share of homes are bought with cash, bypassing this requirement entirely. In 2023, 38% of all single-family home and condo sales were all-cash (the highest level in over a decade), leaving many homes at risk and uninsured.
- Outside SFHAs (where flood insurance is voluntary), coverage rates are lower, with 77% of dwellings at risk having no coverage at all. Most of the protection gap comes from these zones, revealing a blind spot in flood zone designations.
- According to the Congressional Research Service, only ~1–2% of residents in inland counties and ~21% in coastal counties affected by Hurricane Helene had flood insurance.

Even households with insurance can find themselves overwhelmed by out-of-pocket recovery costs, highlighting the urgent need for broader, deeper, and more flexible coverage options.

Behavioral Barriers

The FRBP study focuses on homes with flood risk and a financial incentive to purchase full coverage, meaning the expected payout from insurance exceeds the premium cost. Even in these economically rational cases, coverage gaps remain the norm. This suggests that underinsurance is not just a matter of affordability but also a result of behavioral and informational barriers, including risk misperception, distrust of insurance products, or confusion about what flood insurance covers.

The report also underscores a broader point: having a flood insurance policy does not always guarantee financial resilience. While the NFIP's maximum building coverage is capped at $250,000, FEMA data shows that the average replacement cost of a single-family home with an NFIP policy and a premium under $1,000 is approximately $400,000. For homes with higher premiums (typically reflecting greater value or risk), the replacement cost is likely even higher, yet the coverage limit remains the same. This coverage gap can create a false sense of security, exposing homeowners to significant out-of-pocket costs. Without supplemental private coverage, many policyholders may find themselves underinsured when disaster strikes.

Factors Contributing to Underinsurance

Underinsurance in the U.S. flood market is not solely due to affordability. It's the result of a complex mix of behavioral, informational, and market-based factors.

1. Risk Perception and Awareness Gaps

Many homeowners underestimate their flood risk, particularly those outside SFHAs. This misperception is reinforced by outdated or incomplete flood maps, which fail to account for changing climate conditions, urban development patterns, and localized flooding risks.

The SFHA boundary often creates a false sense of safety, leading some to believe that properties just outside the zone are not at risk, **even though roughly 40% of NFIP claims come from outside SFHAs.**

The FRBP's research finds that homeowners' beliefs about climate risks strongly correlate with their likelihood of purchasing adequate flood insurance. Those who dismiss climate change as a long-term threat or believe their home is "safe" from flooding are significantly less likely to secure full coverage. As shown by Neptune's annual consumer survey, most homeowners underestimate their flood risk, with nearly 70% of non-policyholders citing a lack of perceived risk as their primary reason for abstaining.

Additionally, many homeowners mistakenly assume that their standard homeowners insurance policy covers flood damage, only to discover their vulnerability after a flooding disaster.

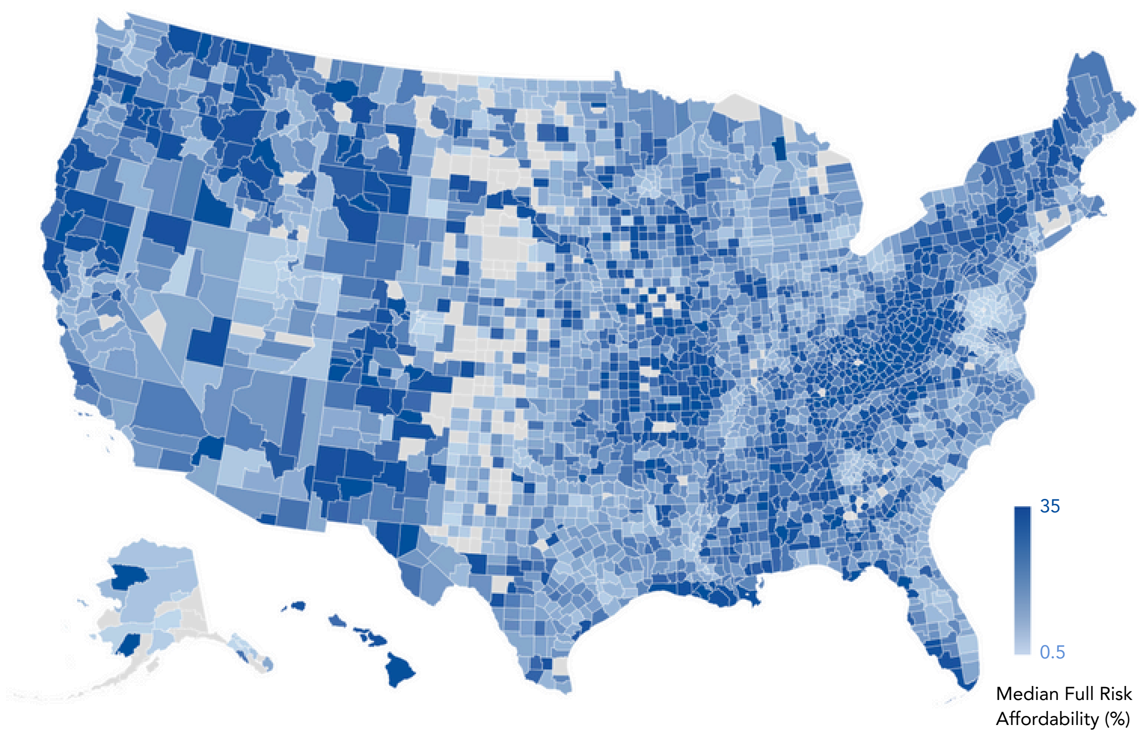
2. Affordability and Premium Sensitivity

The data reveals stark disparities in flood insurance coverage across income and demographic lines. In low income neighborhoods, over 90% of households are underinsured, with average uninsured flood losses exceeding 20% of annual income, making affordability a critical barrier.

NFIP premiums have been rising in recent years, particularly with the introduction of Risk Rating 2.0, which aims to align premiums more closely with actual risk. While this approach improves pricing fairness, it has led to substantial rate increases for homeowners with historically subsidized rates, often making flood insurance seem financially out of reach. Under Risk Rating 2.0, Florida has seen an average premium increase of 50% as it moves toward risk-based pricing. Many policies (particularly those previously subsidized) are still on a gradual glide path and won't reach full-risk rates until 2047. As illustrated by the Government Accountability Office data in the map below, more than half of U.S. counties will face full-risk premiums that would take up 2% or more of a household's income.

However, the Federal Reserve study found that under Risk Rating 2.0, the net benefit of purchasing flood insurance is estimated to be between $6,905 and $8,590, yet many remain uninsured due to upfront cost perception. This estimate reflects the financial value of flood insurance coverage relative to its cost.

Median NFIP Full-Risk Flood Insurance Premiums as a Share of Household Income by County



3. Market Frictions and Availability

Even for homeowners seeking comprehensive coverage, the NFIP may not provide adequate protection for high-value homes, forcing homeowners to seek additional coverage through private insurers. However, lender reluctance and lack of familiarity with private flood insurance can discourage homeowners from transitioning away from NFIP policies, even with private options that offer better terms.

The Biggert-Waters Flood Insurance Reform Act of 2012 established that lenders must accept qualifying private flood policies, but it wasn't until 2019 that federal agencies issued a final rule clarifying lender obligations, commonly referred to as the "mandatory acceptance" rule. Despite this regulatory clarity, some lenders remain cautious, limiting broader adoption and private market growth nationwide.

Another barrier to flood insurance adoption is the inability to return to the NFIP's original pricing path once a policyholder exits. Under FEMA's Risk Rating 2.0, premiums follow a gradual glide path toward actuarial rates. However, homeowners who switch to a private insurer forfeit their position on that path. If they attempt to return to the NFIP later, they must do so at the full risk-based rate (often substantially higher). This loss of pricing continuity discourages policyholders from exploring potentially better or more affordable private options, reinforcing underinsurance nationwide.

4. Lender Non-Compliance with Flood Insurance Requirements

Another structural contributor to flood underinsurance is the persistent non-compliance by lenders with mandatory flood insurance purchase requirements. According to the U.S. Government Accountability Office (GAO), violations of federal flood insurance regulations remain common among federally regulated lenders. Over 40% of violations cited involved either insufficient flood coverage or complete failure to ensure flood insurance for properties in SFHAs.

This issue increases the financial exposure of banks, homeowners, and the federal government. Without stronger oversight and enforcement, these gaps in lender compliance continue to undermine the effectiveness of flood insurance mandates and contribute to widespread underinsurance.

5. Psychological and Behavioral Barriers

In cases when homeowners recognize their flood risk and can afford insurance, behavioral biases can still prevent them from acting. Common psychological factors include:

- **Optimism bias:** Homeowners may believe severe flooding "won't happen to them" despite statistical evidence.
- **Status quo bias:** Many policyholders renew their existing insurance without reassessing whether they need additional coverage.
- **Mistrust of insurers:** Concerns about claim denials or slow payouts discourage some homeowners from purchasing full coverage.
- **Reliance on government support:** Some homeowners assume federal disaster aid will cover their losses.

The Role of the Private Market in Addressing Underinsurance

The growing gap between flood risk and insurance coverage presents a unique opportunity for private insurers to strengthen national resilience. While the NFIP remains the primary provider of flood coverage, private insurers account for roughly 20% of the residential premiums today, a share poised to grow.

The passage of the Biggert-Waters Flood Insurance Reform Act and subsequent legislative updates have required lenders to accept private flood insurance in lieu of NFIP policies, clearing a path for broader market participation. These regulatory shifts have laid the groundwork for a more competitive, efficient, and inclusive flood insurance landscape.

1. Expanding Access Through Competitive Pricing and Tailored Coverage

Unlike NFIP policies, which are standardized with a maximum dwelling coverage limit of $250,000, private insurers can offer higher limits that align more closely with actual rebuilding costs and individual property needs. According to the Federal Reserve study, 23% of underinsured homes already carry the maximum allowable NFIP coverage, yet still face substantial financial gaps. This highlights a key structural limitation of the NFIP, which prevents complete protection even for insured, compliant homeowners.

Private insurers offer a wider range of coverage options and policy features, providing consumers greater flexibility and choice:

- Temporary living expenses (coverage for hotel stays and rentals during home repairs)
- Higher coverage limits for structures and contents (as well as replacement cost value on structures and contents)
- Business interruption coverage for commercial properties
- Additional coverage for pools, basements, and unattached structures
- Building betterments and improvements

This wider scope doesn't necessarily come at a higher cost. In fact, 35–45% of current NFIP policyholders could find lower premiums in the private market today. As NFIP rates continue adjusting under Risk Rating 2.0, this number could reach 50–60%, reinforcing the private sector's role in providing value and protection.

2. Leveraging Technology and Data for More Accurate Risk Pricing

Private insurers are leading the change in modernizing flood risk assessment through advanced data science and AI-powered modeling. While FEMA's flood maps are updated infrequently and often fail to reflect micro-level or future-oriented risks, private models integrate:

- Real-time flood data
- Machine learning models
- Geospatial analytics
- Climate change projections

3. Opportunity for NFIP Depopulation and Market Transition

The NFIP has faced mounting financial and operational challenges, creating a growing opportunity for the private flood insurance market. In 2024, the NFIP borrowed an additional $2 billion to cover claims from Hurricanes Helene and Milton. Amid federal efficiency efforts, FEMA has also suspended planned catastrophe bond issuances and reduced the number of key training programs.

Meanwhile, private insurers like Neptune Flood could underwrite up to 95% of NFIP policies. A structured "takeout" model (similar to the depopulation strategy of Citizens in Florida) could accelerate the shift to a private market (as detailed here), expand coverage access nationwide, and reduce the NFIP's burden on taxpayers.

Conclusion: Closing the Flood Insurance Gap

The increasing frequency and severity of flood events in the United States underscore the urgent need to address the widespread issue of underinsurance. The findings from the FRBP reveal a troubling reality: 70% of annual flood losses remain uninsured, amounting to $17.1 billion in financial exposure each year. Worse still, during a 1-in-100-year flood event, the average uninsured household faces a coverage shortfall of over $100,000 to $136,000, depending on location. Even among homes with a positive flood risk, 85% remain underinsured, leaving millions of homeowners vulnerable to significant financial distress when disaster strikes.

This report has examined the structural, behavioral, and economic factors contributing to the flood insurance gap. From risk misperception and affordability concerns to outdated flood mapping and limitations in NFIP policy structures, the challenges are multifaceted. However, the private insurance market has the potential to transform flood coverage in the U.S., offering more affordable pricing, higher coverage limits, and enhanced risk assessment models driven by AI and predictive analytics.

To close the underinsurance gap, action is required across multiple levels:

> - Educating homeowners about their true flood risk and the benefits of adequate coverage.
> - Encouraging NFIP-to-private transitions where private policies offer better terms.
> - Strengthening regulatory support to facilitate a more seamless integration of private flood insurance into the broader market.

The insurance industry has a unique opportunity to reshape the flood market for the better.