

# Flood: Understanding the Risk, Navigating Insurance Options



INSIGHTS

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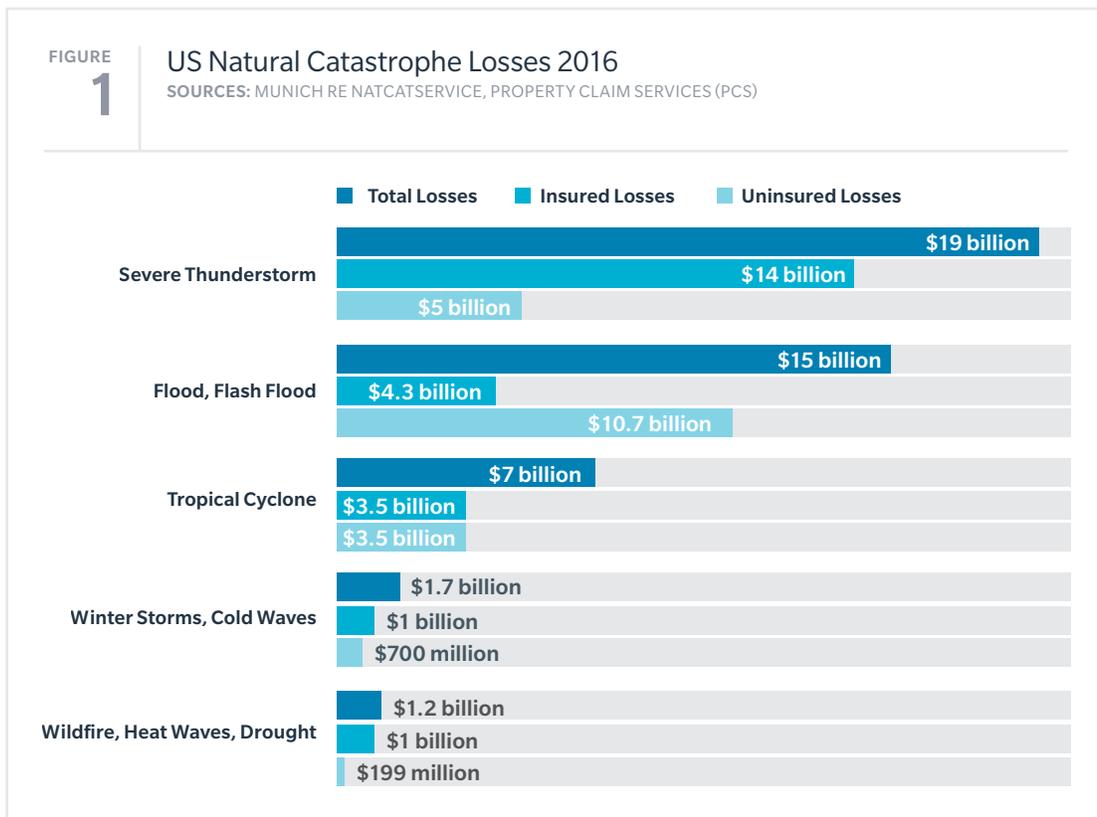
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# Introduction

With three-quarters of the Earth covered in water, it's no surprise that flood is one of the world's most destructive — and most common — natural disasters.

Consider the insured natural catastrophe events that occurred in the US in 2016, which, as is typically the case, shows floods as one of that year's costliest and most frequent events (see Figure 1).



Yet many people underestimate their vulnerability to flooding. That mindset helps make flood one of the world's most underinsured events, for individuals as well as businesses.

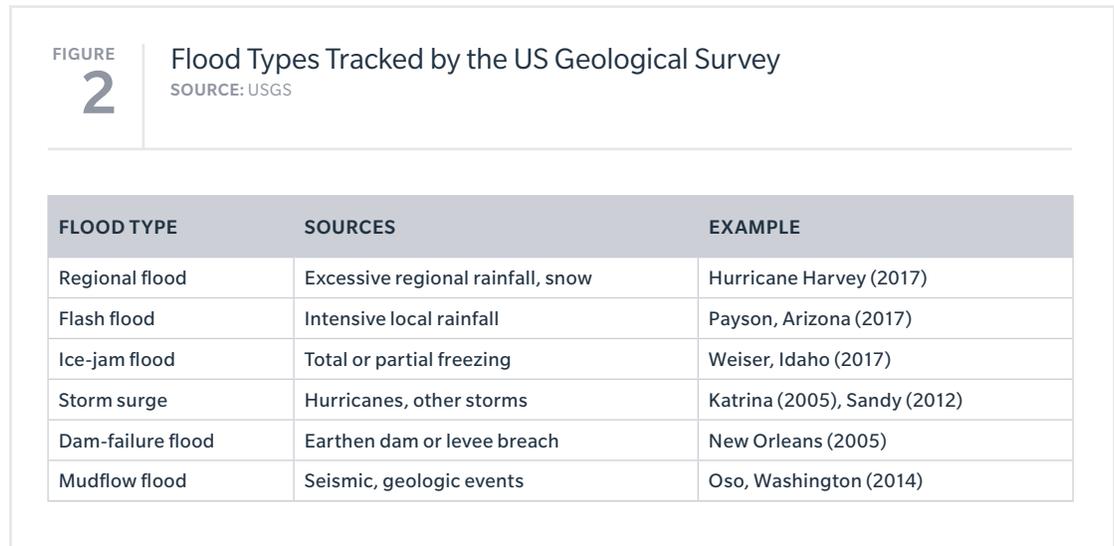
The lack of flood insurance has ramifications beyond those for the individual business or homeowner. Uninsured floods hurt economic growth, prolong the recovery process for affected communities, and place additional burdens on taxpayers, with uninsured victims turning to government sources for assistance.

The reasons that people and businesses go uninsured for flood vary. Some simply don't consider themselves to be at risk or in danger, or they do not understand their risk. Some say they can't afford coverage. Some simply don't know their options or think their homeowners' insurance covers flood.

This report seeks to raise awareness of the solutions available and how people can understand their flood risk.

# Understanding Floods

A common perception of flooding is of a torrent of water brought by heavy rain. In fact, floods have multiple sources beyond isolated weather events (see Figure 2). Melting ice entering a home or business can cause a flood, as can a dam or levee failure.



Intuitively, low-lying areas adjacent to bodies of water, such as coastal communities, have a heightened risk of experiencing a flood event. Counterintuitively to many, however, locations far inland and at high elevations also are exposed to flood.

For example, [Las Vegas](#) sits at an elevation of 2,001 feet above sea level. Throughout most of the year, it enjoys a dry, desert climate. Yet the city and surrounding areas have experienced flood events following intense

thunderstorms, and like most arid locations, are susceptible to flash flooding.<sup>1</sup>

Following intense wildfires in October and November 2017, large areas of Northern California are at greater risk of flash flooding and mudslides. Loss of trees and vegetation have literally smoothed a path for floodwaters. In March 2014, a mudslide devastated the town of Oso, Washington, and claimed 44 lives. A scientific study cited logging and removal of timber as a contributing factor in the mudslide.<sup>2</sup>



# No Region Is Spared From Catastrophic Flooding

All 50 US states have experienced presidentially declared flood disasters, and 90% of states have had multiple flood disasters since 2000. Data from the US Geological Survey (USGS) on major flooding events since 1900 show that significant floods have occurred in every state (see Figure 3). The USGS called floods the number one natural disaster in terms of lives lost and property damage. The Federal Emergency

Management Agency (FEMA), which maintains flood risk maps for more than 20,000 communities as part of its role in overseeing the National Flood Insurance Program (NFIP), estimates that 98% of US counties have experienced a flood event.<sup>3</sup>

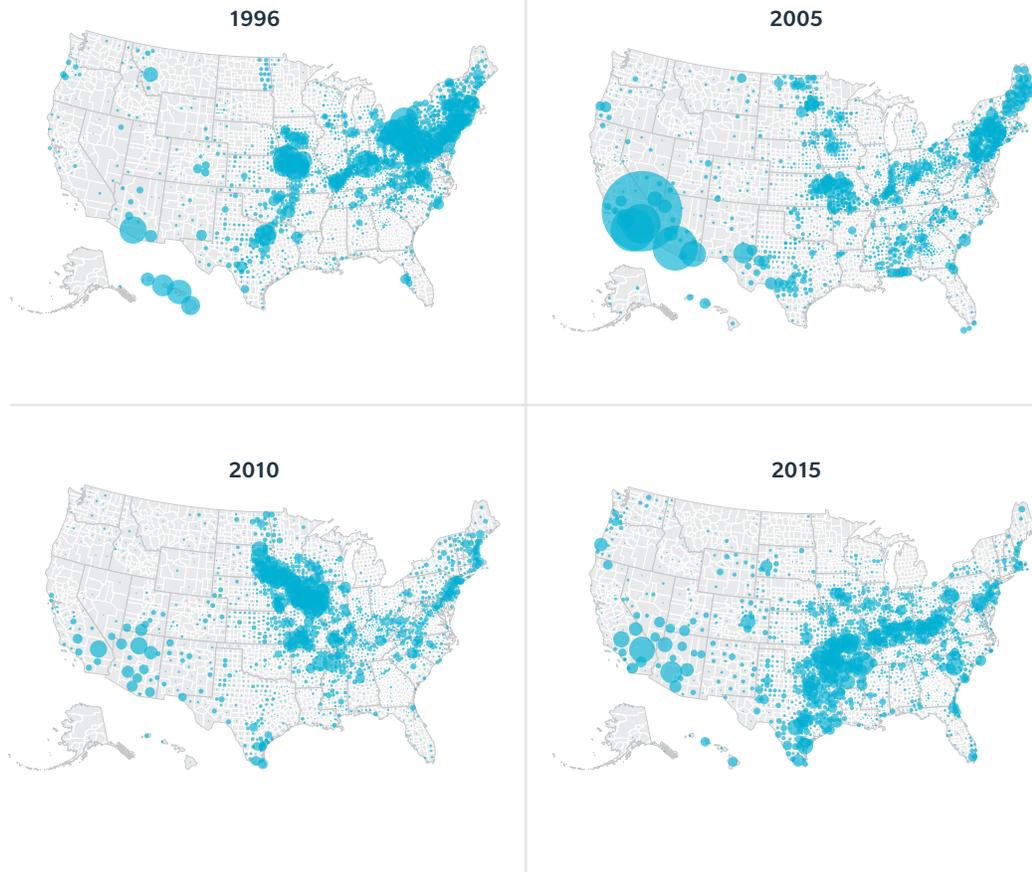
Clearly, individuals and businesses can be exposed to flooding virtually anywhere, at any time of year.

FIGURE  
**3**

Areas of Significant Flooding Frequency

SOURCE: FEMA

● Circle size represents number of flood events





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# Flood Insurance

Federal data suggest most flood damage, whether insured or uninsured, occurs inside areas designated by the FEMA as Special Flood Hazard Areas (SFHAs). SFHAs are the land areas that FEMA determines have a 1% chance of being covered by floodwaters in any given year. Flood insurance is required for properties in SFHAs whose mortgages are backed by the federal government.

But flood risk outside of SFHAs is not zero. According to research conducted by The Wharton School at the University of Pennsylvania, 30% of NFIP flood claims occur outside of SFHAs.<sup>4</sup> An analysis of the Houston metropolitan area found that more than 50% of homes at high to moderate risk of flooding were not in SFHAs at the time of Hurricane Harvey, according to property analytics firm CoreLogic.<sup>5</sup>

Individuals and businesses have two main options for insuring against flood:

- The government-backed NFIP.
- Private flood insurance.

The two can complement each other. For example, combining NFIP coverage as a first layer and private excess flood for additional coverage can sometimes offer lower premiums and/or additional coverages.

## NFIP coverage

The NFIP provides coverage for direct physical damage to a building and/or its contents caused by flooding for individuals and businesses whose property is in a designated SFHA (see Figure 4). In addition, an NFIP coverage called Increased Cost of Compliance (ICC) provides up to \$30,000 for policyholders to pay for expenses required to comply with mitigation requirements of state or local floodplain management ordinances or laws. ICC is available to NFIP policyholders if a property suffers repetitive flood losses or damage greater than 50% of the property's market value.

**FIGURE 4** Current NFIP Occurrence Limits  
SOURCE: NFIP

TYPE OF COVERAGE	RESIDENTIAL	COMMERCIAL
Building property	\$250,000	\$500,000
Multi-family property	\$500,000	N/A
Contents	\$100,000	\$500,000

The NFIP does not provide coverage for:

- Business interruption or loss of use.
- Loss of access to a property.
- Extra living expenses.
- Property outside of a building, such as swimming pools, decks, and fences.
- Most self-propelled vehicles, such as golf carts.

In addition, coverage is limited for buildings, property, and contents below the lowest elevated floor, for example basements, crawl spaces, and ground-floor enclosures.

## Private flood insurance

Coverage for flood-related losses is generally broader in private flood insurance policies. Types of private flood insurance include:

- **PRIMARY FLOOD.** This type of insurance may replicate the NFIP coverage or provide enhanced coverage for individuals and businesses, including additional living expenses.
- **COMMERCIAL “ALL-RISK.”** A broad form of coverage for businesses that can provide protection for different kinds of property risks, including flood and business interruption.
- **EXCESS FLOOD.** Excess flood policies, which sit atop the underlying primary coverage, are available for both individuals and businesses. These not only can provide higher limits of coverage, but also may cover extra living expenses and business interruption.

## Identifying and covering exposures

The possibility of experiencing a flood is greater than many people realize. Individuals and some businesses opt not to insure against flood because they think it won't happen to them, or they assume that federal disaster assistance will bail them out. In some cases, individuals or businesses that previously purchased flood coverage allow it to lapse. A decision not to buy insurance leaves many Americans fully exposed to losses from a flooding event.

Underinsurance of flood risk is a nationwide phenomenon. According to NFIP data, about 4.9 million flood policies were in effect as of October 2017, with insurance in force — the total value insured by those policies — of \$1.23 trillion.<sup>6</sup> Yet, the amount of flood insurance in force nationally pales in comparison to the total property value that has a flood exposure. For example, the insured value of property in coastal US counties alone is more than \$10.64 trillion.<sup>7</sup>



### FLOODING: WHAT ARE THE CHANCES?

One misperception about flood risk arises from confusion over the statistical probability of certain severe events. High risk flood hazard areas are identified on the Flood Insurance Rate Maps as Special Flood Hazard Areas (SFHA). SFHAs are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. This latter term is often misunderstood as meaning that the area will only experience flooding once every 100 years.

Moderate flood hazard areas are also shown on the FIRMs, and are the areas between the limits of the base flood and the 0.2%-annual-chance (or 500-year) flood. Areas outside the SFHA and higher than the elevation of the 0.2%-annual-chance flood, are considered zones with minimal flood hazard.

According to the Army Corps of Engineers, a homeowner in a SFHA has a 26% chance of experiencing a base flood during any 30-year period, which happens to be the duration of many mortgages.

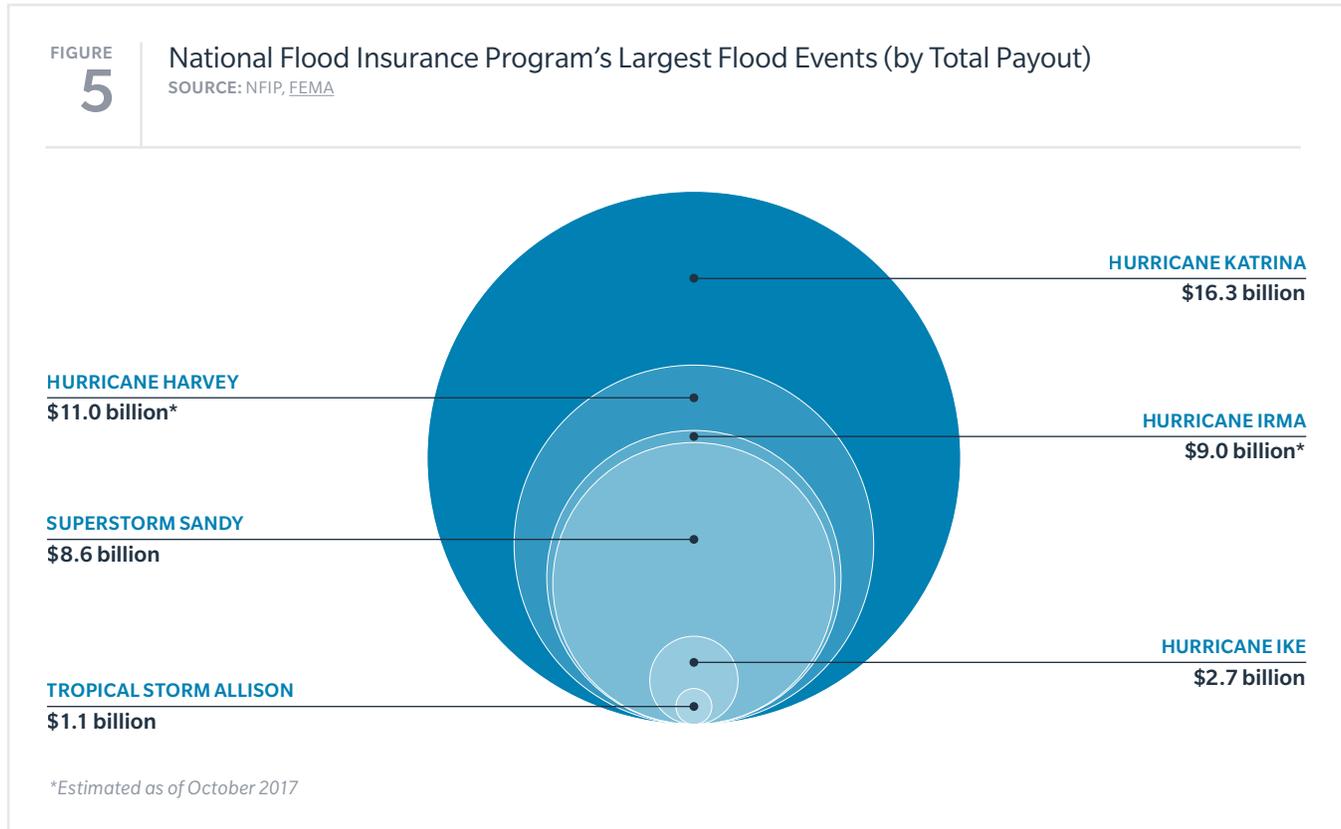
#### Taking Chances: Yearly Likelihoods

SOURCE: US ARMY CORPS OF ENGINEERS



The consequences of experiencing a flood without flood insurance can be severe. Individuals may face tens or hundreds of thousands of dollars in expenses to clean, repair, or rebuild their homes. Until their homes are habitable, they may incur additional thousands of dollars in living expenses, not including the costs of replacing

lost possessions. FEMA disaster assistance is available to NFIP policyholders as well as those that are not insured (see Figure 5). This assistance, however, is not designed to defray all expenses.



For businesses, going through a flood without coverage can mean the difference between staying open and closing permanently. Business interruption from a flood event is a major risk. Even for businesses that do not have direct physical damage from water intrusion, floodwaters can prevent employees and customers from reaching the business.

A lack of flood insurance has consequences for communities, too. It can take months or years to recover from an event that displaces residents and shuts businesses. Government funds may help alleviate community rebuilding pressures, but taxpayers bear the ultimate cost of the flood.

## Flood risk mitigation

It is not possible to prevent all floods from occurring, but individuals and businesses can take steps to reduce their impact. Among the best ways to mitigate the potential damage are:

- **SITE SELECTION.** Building at elevations above the base flood level in SFHAs can help stem losses. However, flood maps are subject to change, so relying on them is no guarantee that a flood will not occur at a particular site.
- **STRUCTURAL DESIGN.** Preventing water from entering a building is key to reducing flood losses. No matter what the building material — wood, steel, concrete, or another substance — ingress of water will cause damage.
- **ELEVATING EXPOSED ASSETS.** Relocating or raising assets off the floor can minimize damage from floodwaters. Superstorm Sandy in 2012, which flooded much of Lower Manhattan, demonstrated the importance of keeping critical operating assets out of basements.
- **FLOOD DEFENSES.** Where more permanent changes are not feasible, temporary flood defenses, such as use of sandbags, berms, drain plugs, and sealing the envelope of a building can mitigate potential losses.

# Insurance for Individuals

## Individuals

The decision to buy flood insurance, for many homeowners, usually comes down to price, with many concluding they can do without. Consider the hypothetical example of a hard-working, middle-class couple:

Bob and Cindy Jones own a home in suburban St. Louis, where they both work full-time jobs. Seven years into their home loan, the Joneses are finally starting to pay off principal and look forward to building equity. Their lender said flood insurance was required because their home is in a SFHA, but a few years after closing their loan the couple thought it was too expensive and they allowed their flood policy to lapse. The Joneses had friends in St. Louis who had experienced floods, but the water never caused a problem in their neighborhood.

Bob and Cindy's homeowners policy protects their home from fire, hail, and wind, complying with their lender's hazard insurance requirement. Federal law requires a mortgagor of a property in a SFHA

to purchase flood insurance if the mortgage is guaranteed by federal agencies such as Fannie Mae or Freddie Mac. Banks and other institutions that issue conventional loans that are not federally guaranteed require mortgagors to have flood insurance at closing, but not all lenders consistently monitor whether borrowers maintain the coverage, particularly after a mortgage is resold. The Joneses' loan, like more than 90% of all new mortgages in the United States, is backed by the federal government.<sup>8</sup>

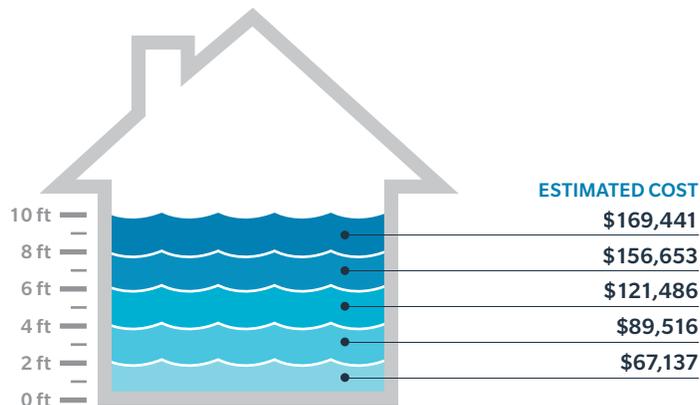
If a flood reduces the value of Bob and Cindy's home by 30%, they have likely lost equity (see Figure 6). Their options are either to rebuild and try to recoup the lost value or walk away. Even if a flood caused 10% impairment to the Joneses' home value, they would lose half their equity because they had a 20% downpayment. The scale of damage from floods is significant when measured in terms of home equity. It can take a long time for home values to recover, not to mention rebuilding areas devastated by flooding.

FIGURE  
6

### High Water, Higher Loss

SOURCES: US ARMY CORPS OF ENGINEERS, US CENSUS BUREAU

**Residential depth-damage functions for 2 or more stories, with basement. Based on 2017 median new home price of \$319,700.**





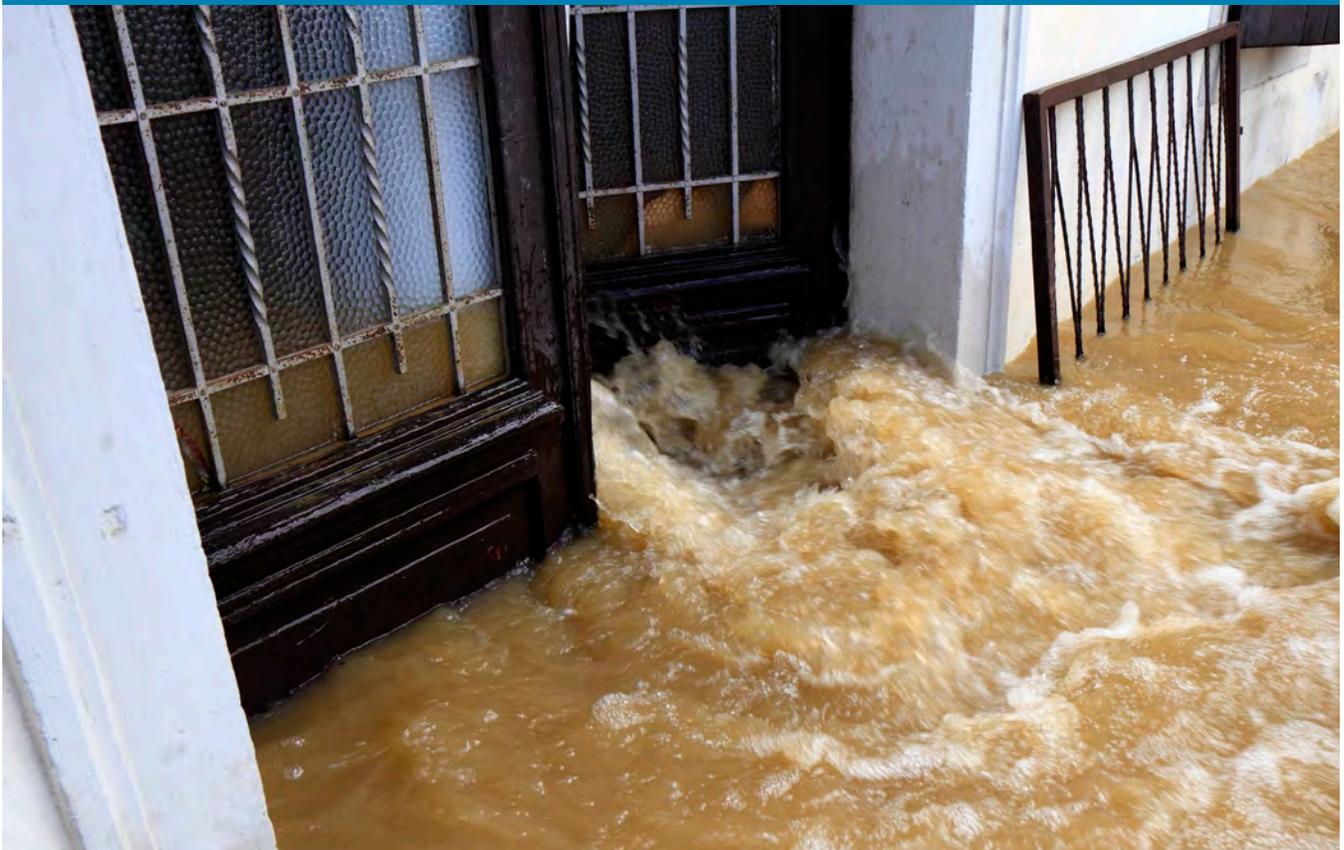
## DOES AID DISCOURAGE INSURANCE BUYING?

Are homeowners and businesses that opt not to buy flood insurance rolling the dice on a bailout, expecting government assistance to make them whole again? Research suggests that may be the case. Hurricane Harvey was declared a federal disaster on August 25, 2017, clearing the way for billions of dollars of assistance to individuals and communities. Is it coincidental that less than 20% of homeowners were insured for flood losses from Harvey?

A presidentially declared disaster authorizes the Federal Emergency Management Agency (FEMA) to issue individual assistance grants and public assistance, which goes to communities. The vast majority of FEMA's grants are in the form of public assistance, meaning that individuals who apply, even if they obtain a grant, are competing for a smaller pool of federal funds that are limited by law. The Small Business Administration also is authorized to extend low-interest rate loans to homeowners following natural

disasters. The intent of all federal disaster assistance is to provide limited, temporary aid, not a means of becoming whole again after a flood or other disaster.

An analysis by The Wharton School at the University of Pennsylvania concluded that post-disaster FEMA grants create what economists call a "moral hazard": researchers found that each \$1,000 increase in the average individual assistance grant per household in a ZIP code reduces the purchase of insurance by \$6,400 in the area in the following year. The Wharton researchers found the decision not to buy flood insurance was significant in large disaster events where the federal government provided assistance grants.<sup>9</sup> Of note, FEMA will provide disaster assistance to insured and uninsured flood victims. However, victims receiving disaster assistance are required to purchase and maintain flood insurance going forward.





## POLICY WORDING MATTERS

An insurance policy is a contract, a promise to pay. The clearer your understanding of what it says, the more prepared you will be in the event of a claim. Nearly every major catastrophe brings questions around coverage in a property policy. For example, if a company has \$100 million of windstorm coverage, what is the policy definition of “windstorm?” Does it include storm surge or is that part of the flood sublimit, which is less than \$100 million?

Storm surge — basically wind-driven water above the predicted tide — is often responsible for much of the damage from a hurricane or other coastal storm. A related area is the potential difference between storm surge and surface water from heavy rainfall.

Clarity is critical in any definition, for example the definition of “windstorm” versus “flood.” Does the flood definition exclude storm surge? The National Flood Insurance Program (NFIP), incidentally, does cover storm surge.

### DRILLING YOUR POLICY

One way to make sure you are familiar with your policy is to run a drill with your agent, broker, insurer and other key stakeholders to understand coverage triggers, deductibles, definitions, information to be collected before and after an event, and more. Yet despite the importance of policy fluency, more than one-third of companies (37%) have never conducted such a test, and only 25% have done so in the past two years, according to a Marsh survey.

Whether the damage is from wind, storm surge, or something else, working with your insurance advisors to review your property policy regularly can help you recover in the wake of disaster.

# Insurance for Business

## Small and midsize

Floods can be devastating for small and midsize businesses, not just in direct property damage, but in the cost of business interruption and loss of revenue, which can threaten their very survival. Consider a hypothetical example:

Murphy Enterprises Inc. owns a pair of successful restaurants in New York: an Italian eatery called Giuseppe’s in Lower Manhattan and Paddy Murphy’s, an Irish brewpub on the Upper West Side. Superstorm Sandy in 2012 shocked many small businesses when it flooded much of Lower Manhattan and caused widespread power outages. Giuseppe’s was elevated enough to avoid getting a basement full of water. But, for a restaurant, Sandy was a double serving of bad news: the power outage spoiled a lot of food, and the floodwaters kept customers and employees away. Even though the company’s Upper West Side restaurant remained open, Giuseppe’s was a major source of Murphy Enterprises’ profits.

Business interruption is a serious threat to any enterprise. Most businesses, especially smaller ones like Murphy Enterprises, cannot afford to shut down their operations for days or, in the case of Giuseppe’s, weeks. Having business interruption coverage can be vital to staying in business.

Even though the NFIP offers commercial building and contents coverage to businesses that are within SFHAs, like Murphy Enterprises, business interruption is not covered. Superstorm Sandy affected many small businesses, but many of those with flood policies lacked business interruption coverage, and many did not recover.

Murphy Enterprises was both fortunate and wise. It had purchased time-element coverage for business interruption through an “all-risk” property policy. The company was able to replace its supplies, reopen its Lower Manhattan location within a month, and begin serving customers again. Weather forecasters suggest that New York will experience another Sandy type of storm in the future, and businesses like Murphy that have business interruption coverage will be better prepared than those that rely on luck.

# Conclusion

Misperceptions about flood risk have kept many people from buying protection from the NFIP or the private insurance market. Better understanding of flood exposures, the potential risks, and their impact can help businesses and individuals make informed decisions.

It's important to remember that floods have multiple causes. They occur frequently, in almost every area of the United States, and they generate significant losses. Coverage is available to both individuals and businesses.

Buyers need to consider their coverage decisions carefully, including their exposure, the appropriate limits, comfort with deductibles, and all details of policy wording. It is important to discuss needs and concerns with an insurance agent or broker to find appropriate coverage. Recovery after a flood may depend on it.



# Appendix

## Flood Insurance Purchase Options

Under state insurance laws, flood insurance must be written by a properly licensed insurance agent and/or company. Most flood insurance policies issued today are backed by the National Flood Insurance Program (NFIP) but are administered through insurance companies and the insurers' agents or producers. Only insurance companies that have entered into a special arrangement with the Federal Emergency Management Association (FEMA), known as the Write Your Own (WYO) Program, are authorized to issue flood insurance policies backed by the NFIP. More than 60 insurance companies are part of the WYO Program. A list of these companies can be found at: [https://www.fema.gov/wyo\\_company](https://www.fema.gov/wyo_company)

The NFIP also has a facility, known as the NFIP Direct, that allows insurance agents that are not affiliated with a WYO insurance company to write flood insurance directly through the NFIP.

Individuals or businesses that wish to purchase a flood insurance policy or to receive a quote, should first contact their current insurance agent. Agents may be able to provide a quote or policy through one of the authorized WYO insurance companies or through the NFIP Direct. Agents also may be able to procure flood insurance through the private market, which includes policies not backed by the NFIP. If your agent does not write flood insurance, please refer to the list of authorized WYO insurers to find a company that offers flood insurance in the state where your property is located.

## Endnotes

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- 6 NFIP Policy Statistics, Federal Emergency Management Agency 2017. <https://bsa.nfipstat.fema.gov/reports/1011.htm>
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- 8 "Fannie Mae, Freddie Mac, and the Federal Role in the Secondary Mortgage Market," Congressional Budget Office, 2010. <https://www.cbo.gov/sites/default/files/111th-congress-2009-2010/reports/12-23-fanniefreddie.pdf>
- 9 "Does Federal Disaster Relief Create Moral Hazard?" C. Kousky, E. Michel-Kerjan and P. Raschky, The Wharton School, University of Pennsylvania, 2015. <https://www.wharton.upenn.edu/search/?q=rethinking+disaster+relief>

## Selected links

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US Geological Survey, "The 100-Year Flood," Robert R. Holmes Jr. <https://water.usgs.gov/edu/100yearflood-basic.html>

US Geological Survey, "Significant Floods in the United States During the 20th Century," Charles A. Perry. <https://ks.water.usgs.gov/pubs/fact-sheets/fs.024-00.html>

National Oceanic and Atmospheric Administration, National Weather Service, "Interactive Flood Information Map." <http://www.floodsafety.noaa.gov/map.shtml>



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