FIRST STREET
FOUNDATION

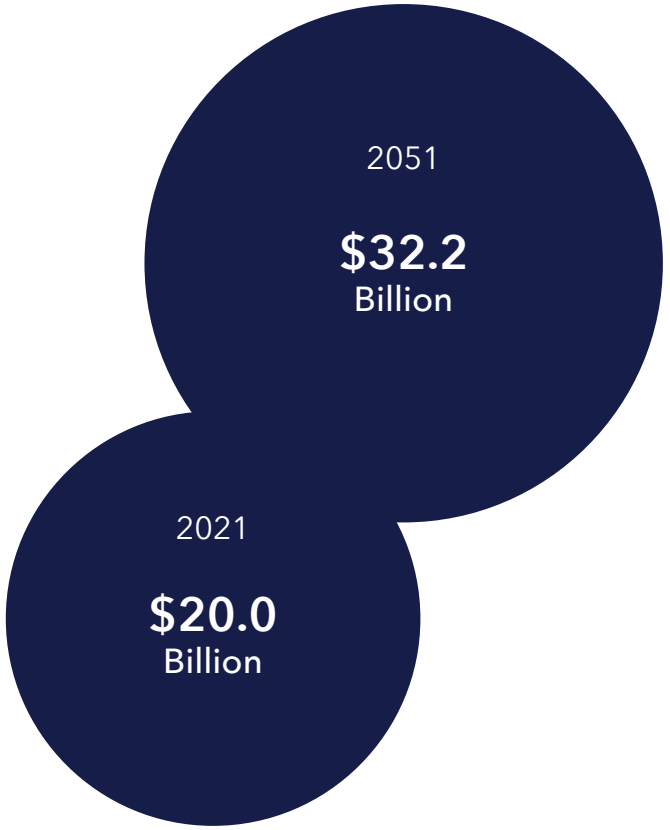
The Cost of Climate

America's Growing Flood Risk

Contents

Abstract

New research from First Street Foundation quantifies the financial impact of flood risk carried by American homeowners and how those dangers are growing as flood risks worsen due to a rapidly changing climate. First Street Foundation found that there are nearly 4.3 million residential homes (1–4 units) across the country with *substantial flood risk* (1% annual) that would result in economic damage. The research allows for the calculation of an average annual loss (AAL) statistic for each residential property in the contiguous United States, a key metric used to estimate the dollar value of damage associated with flood risk on an annualized basis. The Foundation found that while total expected annual loss for these properties across the U.S. is $20.0 billion this year, it grows to nearly $32.2 billion a year in 30 years—an increase of 61%—due to the impact of a changing climate. Furthermore, the analysis demonstrates that if all of these homes were to insure against flood risk through the National Flood Insurance Program (NFIP) current pricing structure, those rates would need to increase 4.5 times to cover the risk. These patterns vary across the country, but consistently show an underestimation of economic flood risk in both coastal and inland regions.



Click here to access the data presented in this report.

Introduction

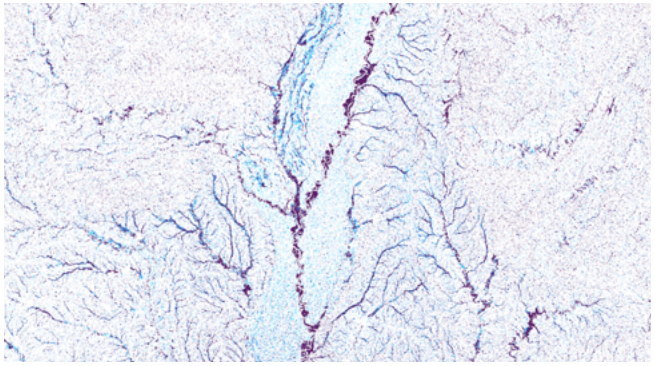
Assessing flood risk in financial terms by estimating average annual loss for residential properties

This research from First Street Foundation quantifies the potential financial impact to residential homes due to their property-level flood risk. More generally, the study takes a deep dive into properties with expected financial loss due to *substantial flood risk*, and reveals the extent of financial risk exposed throughout the United States. It highlights the increase in financial risk over time due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to buildings. As flood insurance coverage is typically represented by the National Flood Insurance Program (NFIP), this report also breaks apart the financial impact to homeowners by comparing properties with loss within Special Flood Hazards Areas (SFHA) to those with loss whose flood risks have been historically underestimated, and are situated outside of SFHAs. It then compares the estimated average NFIP premium to the average estimated annual loss for these properties with financial risk. The study also looks at risk against First Street Foundation's Flood Factor® categories and found that the financial implications are most pronounced for properties carrying extreme flood risk, or a Flood Factor® of 9 or 10 on a 10-point scale.

Flood risk brings with it real and potentially devastating financial impacts that are not presently factored into credit, insurance, or real estate markets, nor are they considered by most potential buyers. This report addresses this gap in the data and knowledge used to asses mortgage, insurance, reinsurance, and disaster risk by creating the first publicly available, accurate, and comprehensive estimate of annual flood damages, or average annual losses (AAL), and how those estimates might change as a result of a changing climate and its impact on flood risk. The results enable improved risk management and more cost-effective hazard mitigation planning at every level.

First Street Foundation is a non-profit research and technology group committed to defining America's flood risk and communicating how that risk changes over time with a changing climate. The Foundation provides this information for every property in the contiguous United States in a format that is publicly and freely accessible via Flood Factor®, an online database and visualization tool. The new feature provides homeowners with annual flood damage estimates based on the property's flood projections, demonstrates how these costs will change from today to 30 years from now (due to a changing climate), and offers a cumulative projection of costs as potential loss to building structure over the typical life of home ownership, or a 30-year mortgage.

The addition of AAL functions alongside Flood Factor®'s flood risk assessment provides an unparalleled comprehensive understanding of the extent of the flood risk carried by a property and allows for a financial understanding of how those risks will change over time due to changing climate realities. Understanding flood risk in nominal dollar terms allows for effective financial management, as homeowners and buyers plan for and mitigate against the financial costs associated with flood risk. The figures provided by the Foundation's AAL estimates cover only potential structural damage to homes and do not include additional costs to homeowners such as replacing the contents of



their home, potential overhead costs associated with storage of property, finding temporary shelter, and other interim costs that may be included in premium calculations by the NFIP.

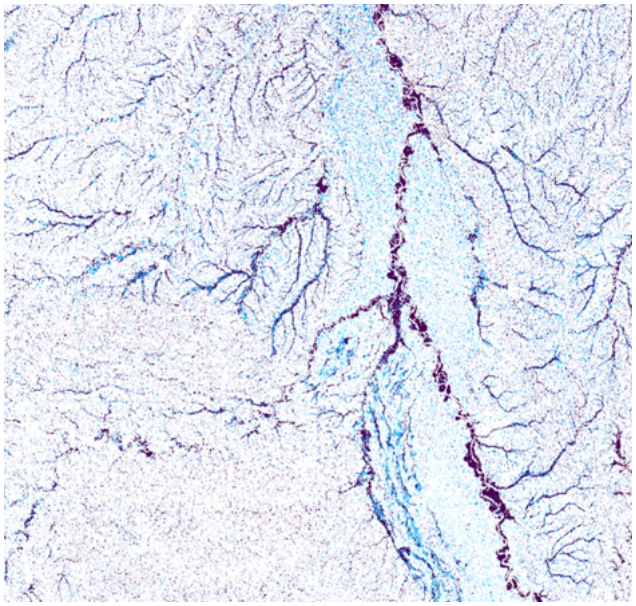
The democratization of this data is of great value to the public, but also of benefit to government officials looking to develop adaptation/mitigation efforts, as well as researchers looking for high-resolution data on which to layer their research agenda.

Quantifying flood risk in concrete dollar terms creates a new context for homeowners, home buyers, financial markets, and government agents to understand the risks associated with flooding, and how those risks change with the climate. By demonstrating how the economic impacts of flood risk change and grow over time, this analysis provides key insights into how flooding can impact the financial bottom line of property owners, while providing information that may be used to protect investments and communities.

Methodological Overview

Applying the First Street Foundation Flood Model to depth damage functions to derive AAL estimates

The methodology[1] employed by researchers at First Street Foundation to derive AAL estimates uses data from a combination of public and non-public sources, including property-level building characteristics originally sourced from county assessor offices and the Microsoft/Mapbox building footprint database.[2] Property data were standardized and made available through a third party provider to ensure attributes are consistent and meaningful across counties. Where those data are not available, publicly available block-level data from the National Structures Inventory (NSI) database, provided by the United States Army Corps of Engineers (USACE), were used to estimate local building codes and dwelling types at the Census block level to approximate the "likely" building characteristics of each residence, defined as a residential dwelling with 1–4 units.



A combination of USACE and Federal Insurance Administration (FIA) depth-damage functions were then applied to the First Street Foundation Flood Model to compare deterministic flood hazard layers created at two different time periods (the years 2021 and 2051) and six different return periods (2-year, 5-year, 20-year, 100-year, 250-year, and 500-year).

Flood Hazard Layer data

The First Street Foundation Flood Model[3] was developed in partnership with Fathom and provides the hazard layers with 3m horizontal resolution at various return period intervals, including 2-year, 5-year, 20-year, 100-year, 250-year, and 500-year flood events in 2021 and 2051. The maximum flooding depth for each property is sampled at the perimeter of the building footprint boundary, or at the property parcel centroid where building footprint data does not exist. This study is focused on the properties that have a non-zero depth value at the median of an iterative simulation under the CMIP5 climate models under the Representative Concentration Pathway (RCP) 4.5 scenario[4] to estimate flood risk in current (2021) and future (2051) environmental conditions. The flood model takes into account changing environmental factors including sea-level rise, increasing cyclonic intensity, higher probabilities of cyclone landfall locations at more northern latitudes, shifting precipitation patterns, and changes in river discharge.

Property Characteristics

The standardized property assessor data provides the general information for the more than 25.5 million properties with identified flood risk today, or into the future (in 30 years). This dataset contains more than 300 property attributes. Of primary importance to this report is the geographic location of the property, its market value,[5] automated valuation model (AVM) value,[6] number of stories and units, structure data, and the foundation type. Additionally, where data were missing or out of date, they were substituted with NSI data, which provides a series of attributes required for flood hazard estimates down to the Census Block level. The Census Block is the smallest geographic enumeration area in the U.S. Census geography catalogue and generally captures sub-neighborhood spatial geographies in which building codes, housing characteristics, and population demographics are homogeneous. These properties were then used in aggregation to identify the most likely characteristics of

1 Average Annual Loss Methodology Article, 2021 (Armal et al 2020)
2 This dataset contains 125,192,184 computer-generated building footprints in all 50 U.S. states. Full Microsoft details are available on Github.
3 The model's methodology has been published by the Water Resources Research journal (Bates et al 2020). Results were also published in a national report by First Street Foundation (First Street Foundation, 2020).
4 RCP curves show a general alignment for the next 30 years, given the uncertainties of the climate models. The 4.5 curve was selected as a median, conservative estimate for the models. A special issue on the RCPs (Springer 2011).
5 Market value is defined as the amount a typical, well-informed purchaser would be willing to pay for a property.
6 AVM value is a statistical calculation model to estimate the current value of a property derived from ComeHome's Automated Valuation Model.

buildings in that block with regard to the presence of a basement (foundation type) and the structure information. In instances where this information was missing from the property assessor data, the Foundation imputed the most likely foundation type and structure information via the block level NSI database.

Depth-Damage Functions

The depth damage analysis is based on the HAZUS-MH methodology,[1] a national GIS-based model developed for the U.S. Federal Emergency Management Agency (FEMA) to estimate the physical, economic, and social impacts of natural disasters (e.g. earthquake, hurricane, flood, and tsunami). To calculate depth-damage estimates, the HAZUS application relies on a set of depth-damage curves collected from a variety of sources including FEMA's Federal Insurance and Mitigation Administration (FIMA) and the USACE Institute for Water Resources (USACE-IWR). They supply a range of damage functions for different occupancy classes at Riverine, Coastal-A, and Coastal-V zones.[2] In the current application, HAZUS depth-damage functions are applied to pre-defined flood depths for each property based on structural characteristics; the structural value of properties; depth-damage functions; and aggregate annualized loss. The expected annualized loss (AL) in each year is the sum of the probabilities that relate to each flood magnitude of flooding multiplied by the damage estimation from the loss probability curve (see Equation 1 below).

The loss probability curve is described in Equation 1, where L and P show the loss and probability respectively, and i is the numerator

$$AL = \sum Avg(L_i, L_{i+1}) * (P_{i+1} - P_i)$$

Equation 1

for different return period scenarios. These annualized losses (AL) are visually represented by the development of the loss-probability curve, which is represented by the triangular probability distribution formed by the specific probability layers included in this analysis.

Loss Probability Curve

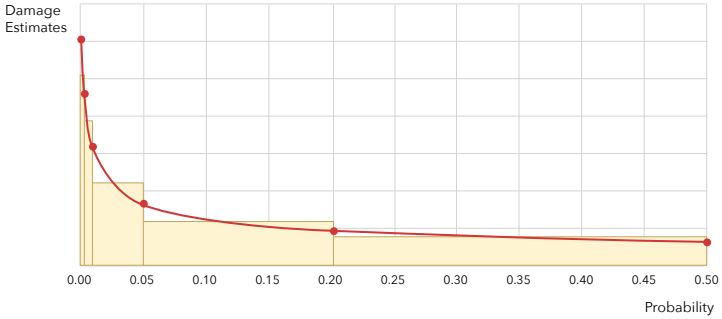


Figure 1. Loss Probability Curve

Calculating NFIP Premiums

To compare the Foundation's economic risk estimates to the current insured protections against those losses, this project directly compares the Foundation's estimated AALs to projected property level NFIP premiums. The NFIP premiums were calculated using the procedures outlined in the NFIP ratings manual,[3] with a direct application of the rating tables in Appendix J. [4] Using the rating tables, NFIP premiums were estimated based on building characteristics (both observed and estimated) and a series of conditions outlined in the rating manual. The NFIP Rating Assumptions used were:

- Residential 1–4 unit properties
- No below Finished Floor Elevation (FFE) enclosures
- No Property Floodproofing discounts
- No wave-height adjustments that are not already taken into consideration on the Base Flood Elevation (BFE)
- No Contents coverage (building only)
- $250k coverage for every property
- $1k deductible (with 0% reduction in rate)
- CRS Premium Discounts were applied
- No Severe Repetitive Loss Properties
- No ICC premium
- No Special Rate premiums
- No elevation rated homes
- FFE estimated from Foundation Height Type in the Parcel Database/block level NSI structure DB

In order to rate all properties in the database, properties were broken into three groups: Non-SFHA, SFHA Pre-FIRM (built before FIRM implementation), and SFHA Post-FIRM (built after FIRM implementation). Properties not in the FEMA Special Flood Hazard Area (SFHA) were priced at a flat $488 rate using the NFIP Preferred Risk Policy (PRP) pricing structure. Pre-FIRM properties were rated based on the criteria required by the Pre-FIRM rate tables, including the number of units, the existence of a basement, and the FEMA Flood Zone category. Post-FIRM properties were rated based on the criteria required by the Post-FIRM rate tables, including number of units, the existence of a basement, the foundation height relative to the FIRM's Base Flood Elevation (BFE), and the FEMA Flood Zone category. In rating the properties, no deductible discount was included given that the comparison group, with estimated AALs, did not include a deductible-like discount. However, a discount was included for Community Rating System (CRS) scores[5] based on the discounts contained in FEMA's current eligible communities table.[6]

1 The HAZUS-MH methodology can be found on fema.gov (FEMA, 2013).
2 Defined on fema.gov as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year (FEMA).
3 NFIP Premium calculations used the Oct 2020 ratings manual found on fema.gov (FEMA, 2020).
4 Ratings Table in Appendix J from April 2020 found on fema.gov (FEMA 2020).
5 FEMA CRS Rating system information found on fema.gov (FEMA, 2018).
6 Oct 2020 CRS eligible communities found on fema.gov (FEMA, 2020).

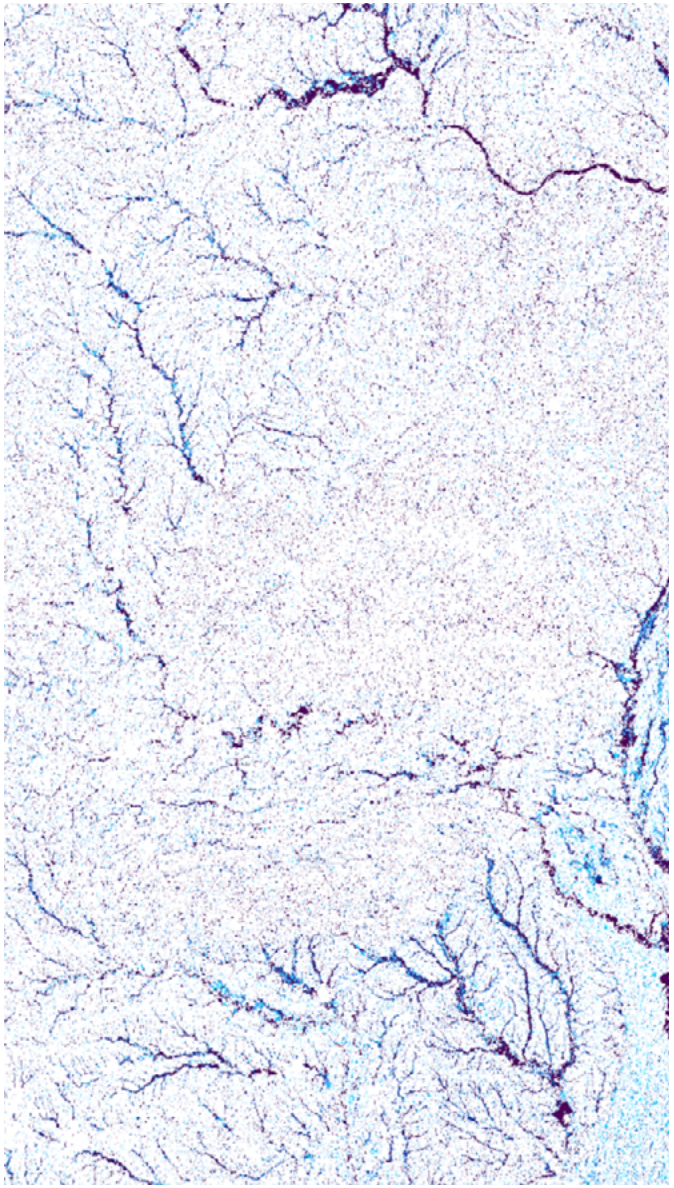
Policy Implications

Accurate, comprehensive, and publicly available estimates of annual flood damages enable improved risk management and more cost-effective hazard mitigation planning at every level. Making this data open to individual property owners and communities provides actionable information to homeowners and renters about the flood damage a property is likely to experience and allows them to make more informed decisions about risk reduction investments and flood insurance coverage.

Nationally, such estimates may inform Congressional allocations of funds for hazard mitigation programs and major infrastructure projects aimed at reducing flood risk. At the state and local level, they enable more accurate cost-benefit analyses, which help determine whether these projects receive public funding. Annual flood damage estimates are often used in cost-benefit analyses that help determine how billions of federal, state, and local dollars are spent every year. First Street Foundation has signed agreements with several agencies and government sponsored enterprises to provide access to these flood risk data.

The public availability of these data also gives state and local governments, as well as homeowners, advance insight into possible forthcoming changes in future risk-based prices insurance premiums. FEMA's Risk Rating 2.0 will reportedly use a probabilistic flood risk model to estimate the risk to individual homeowners, and may change how the NFIP prices insurance premiums. Currently, those outside designated SHFAs can receive coverage at a substantially discounted rate, while flat rates apply to properties within the SFHA, irrespective of the specific flood risk carried by individual properties. Risk Rating 2.0 may price risk both in and outside of SFHAs based on property-specific risk factors, employing the best actuarial math to derive premiums.[1] First Street Foundation's AAL functions provide users with an understanding of how and why their premiums may change as a result of their properties' flood risk, and how their risk and premiums could change over time with climate.

Such data, derived using an open methodology, have not previously existed at the property level and allow for new insights in the area of AAL analysis. These data are based upon higher resolution and detail of flood risk information than that typically derived from other open sources. Informed by more comprehensive estimates of expected flood damages and greater knowledge of the impact of risk-reduction measures, decision-makers at every level of government can better identify the locations and measures that would be most beneficial in reducing flood risk. Communities and individual property owners may use the same information to more effectively manage negative externalities associated with flood risk through insurance and other risk transfer mechanisms.

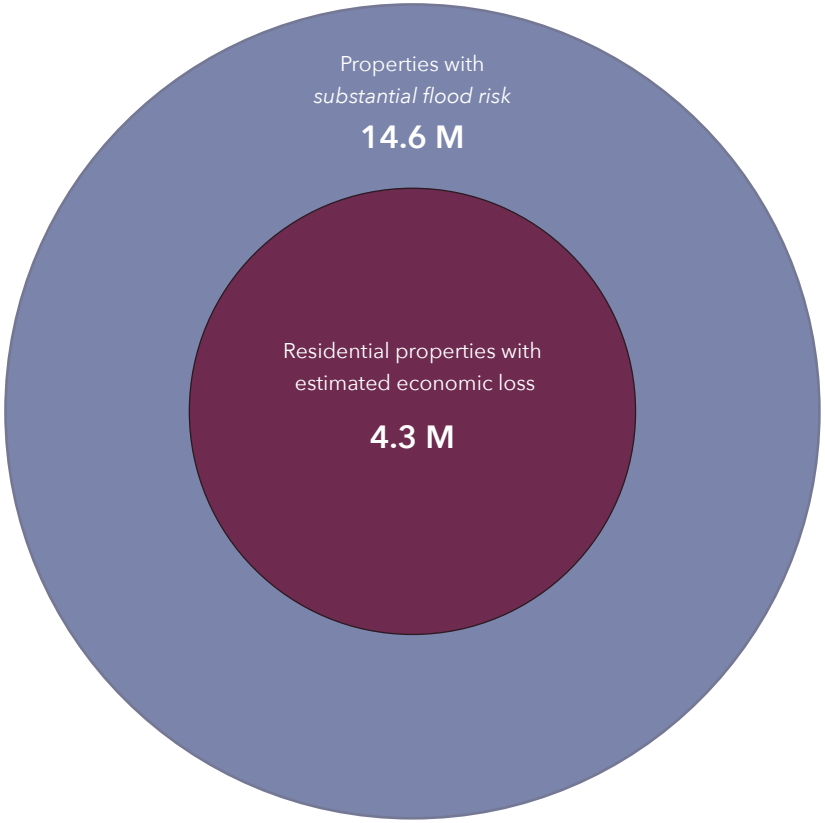


1 National Flood Insurance Program: The Current Rating Structure and Risk Rating 2.0 (FEMA, Jan 2021).

National Overview

The previous research developed by First Street Foundation, Defining America's Growing Risk, highlighted 14.6 million properties across the country at *substantial flood risk* (1% annually) of flooding. Millions of these properties and property owners were previously either underestimating or entirely unaware of the risk they face because they are not located within a FEMA designated SFHA.

Some property owners with *substantial flood risk*, or their larger communities, may have taken steps to mitigate against flood damage, but an estimated 4.3 million residential properties remain at risk of economic loss due to damage from unmitigated flood risk.



Notes and Definitions

All results displayed throughout this report are applicable to residential properties with 1–4 units, within the contiguous United States, and with a probable financial loss due to flood risk. Average risk per property is reported to the nearest whole dollar for consistency across the study, but this does not imply a precision to the nearest dollar for any one property's assessment of risk. [1]

The following First Street Foundation definitions of risk are used in this report, and are used to compare to risk defined by FEMA's designated SFHA.

Flood Risks:
Any flood risk is calculated as inundation of 1cm or more to the building in the 500 year return period (0.2% annual risk or 1/500), now or in the future.

Substantial flood risk is calculated as inundation of 1cm or more to the building in the 100 year return period (1% annual risk or 1/100).

Extreme flood risk considers all residential properties with a Flood Factor® of 9 or 10, which are highly likely to experience frequent floods, severe floods, or both over a 30 year period. See the First Street Foundation Flood Model methodology[2] for full details.

Estimated Average Annual Losses (AAL):
AAL estimates are determined by using the established USACE depth damage functions for riverine and storm surge flooding, and a newly derived, conservative depth damage function of precipitation-induced flooding developed by First Street Foundation. Averages of AAL are determined across properties with structural flood damage risk. In any comparison of the Foundation's AAL to NFIP premiums, AAL is capped at $250,000 annually to match the NFIP coverage limit. In areas where it is not specifically compared to NFIP premiums, annual costs are not capped in any way. These figures do not include damage to the contents, commission, interest, or overhead of policies and do not discount deductibles.

Estimated Average Annual NFIP Premiums:
Estimates are determined using the NFIP's Flood Insurance Manual and Rate Tables[3] based on FEMA flood zone, relevant property characteristics, and the height of the first floor relative to base flood elevation. To compare NFIP premiums to AAL, AAL is capped at $250,000 annually to match the NFIP coverage limit. Whenever used, FEMA zones are estimated by MassiveCert Inc, and include any publicly available map amendments. These figures do not include damage to the building contents, nor commission, interest, or overhead of policies and excludes discount deductibles.

Averages are for residential properties (1–4 units) with economic loss per First Street Foundation's methods.

1 Damage estimates are derived from historic insurance payouts against damage to the structure. As such, these are estimated damages and may vary at the property level. (Wing et.al., 2020).
2 First Street Foundation Flood Model 2020 Methodology located on firststreet.org (First Street Foundation, 2020).
3 NFIP Premium calculations used the Oct 2020 ratings manual found on fema.gov (FEMA, 2020) and the Ratings Table in Appendix J from April 2020 found on fema.gov (FEMA 2020).

Summary of Findings

First Street Foundation's analysis found that across the country, the average estimated annual loss for the 5.7 million properties that have *any flood risk* and an expected loss is $3,548, which totals to $20.3 billion in annualized expected losses in today's environment. Using climate projections for 30 years into the future yields a 67% increase in the average estimated annual loss, or $5,913 per property at risk of economic damage, and an estimated $34.0 billion loss across the contiguous United States.

When limiting the sample only to the 4.3 million properties with *substantial* (1% annual) flood risk, the average estimated annual loss increases to $4,694 per property with risk, and totals to $20.0 billion in annualized damage across the country today. Those economic damage estimates are expected to grow due to climate change over the next 30 years by 61%, to an average estimated annual loss of $7,563 per property, for an estimated total loss of $32.3 billion.

The Foundation's economic damage estimates are a probabilistic set of expectations centered around the probability of flooding events, as expressed through the multiple return periods in the model, and the expected damage from inundation depths for those events. The probabilistic approach is consistent with actuarial methods used in understanding and setting insurance rates to properly assess expectations of economic risk in an annualized form. As such, the average estimated annual loss indicators can be compared directly to current NFIP risk premiums as a way of better understanding and quantifying any potential over- or under-estimation of flood risk in economic terms. However, the NFIP rating manuals and associated tables incorporate a series of payout limits, deductibles, surcharges, fees, and overhead that must be taken into account in order to realistically compare expected economic damage from the First Street Foundation models to estimated NFIP premiums. In order to meet those requirements, NFIP premiums were estimated directly from the rate tables with coverage rate equal to the building value, and with a $1,000 deductible (with no discount on the premium). For this comparison only, the average estimated annual loss was recalculated to be capped at $250,000 per property.

For the 5.7 million properties with *any flood risk*, the capped average estimated annual loss is $3,343 and the average NFIP premium for those properties is $902. This per-property average difference of $2,441 accounts for the current underestimation of the economic impact of flood risk among properties in this analysis and indicates that the current economic risk is 3.7 times higher than the level at which the NFIP is currently pricing insurance.

By limiting the sample again to only the 4.3 million properties with *substantial flood risk*, there is a capped average estimated annual loss of $4,419 and an average NFIP premium of $981, which results in 4.5 times more economic risk than in estimated premiums within the NFIP.

Breaking down the 4.3 million properties further to compare those within versus those outside the SFHAs shows significant differences in economic risk. Within the SFHAs, the difference in the capped average estimated annual loss of $7,895 and the $1,884 average estimated NFIP premium results in an underestimate of economic damage of 4.2 times. Outside of the SFHAs, that underestimate grows to 5.2 times with a capped average estimated annual loss of $2,484 compared to an average estimated NFIP premium of just $478. This latter category is specifically vulnerable to flood risk, as these properties have not been mapped by FEMA into a SFHA and therefore property owners are likely unaware of the scale of risk they carry and are more unlikely to have flood insurance from the NFIP. NFIP insurance is not mandated at any time outside of a SFHA.

	FSF Model Used	Total Properties at Risk of Structural Damage Today	FSF Est. Avg. Annual Loss Today		Est. Avg. Annual NFIP Premium Today
			No cap	*$250K cap*	
With *Any* Flood Risk	1/500 layer	**5.71 million**	**$3,548**	**$3,343**	**$902**
With *Substantial* Flood Risk	1/100 layer	**4.26 million**	**$4,694**	**$4,419**	**$981**
Inside SFHAs With *Substantial* Flood Risk	1/100 layer	**1.52 million**	**$8,415**	**$7,895**	**$1,884**
Outside SFHAs With *Substantial* Flood Risk	1/100 layer	**2.74 million**	**$2,622**	**$2,484**	**$478**

Residential Properties With *Any Flood Risk* and Structural Damage

Areas With the Highest Economic Risk

For all properties with *any flood risk* in the First Street Foundation analysis, there is a total of $20.3 billion in annualized expected economic damage in today's environment. The heaviest concentration of those economic losses are centered in the states of Florida and California. Florida alone accounts for nearly $8.0 billion in potential losses, while California contributes over $1.7 billion. Other states significantly contributing to the potential loss totals are South Carolina ($1.2 billion), Texas ($1.2 billion), and Louisiana ($888 million). When examining the average estimated annual loss for properties with *any flood risk* on a per-property basis, Delaware has the highest value at $21,361 per property at risk of economic loss in the model. South Carolina ($11,634), Florida ($7,481), Washington ($6,450), and California ($4,394) round out the top five. Of these five states, Delaware and South Carolina tend to have the combination of high probability flooding risk and high property values in the areas that flood often, which together drive higher average economic loss estimates. Florida, in contrast, has much more risk across the entire state which affects both high- and low-value homes, leading to a lower relative estimated average annual loss.

Somewhat surprising is the degree to which this risk is concentrated within each of these states. Specifically, 9 of the top 10 counties in terms of total estimated annual economic damage across the entire U.S. are in the state of Florida. At the top of this list is Broward County, FL, with an estimated annual loss of $1.3 billion, which accounts for roughly 16% of Florida's overall economic risk. Pinellas County, FL, is next on the list with a $1.0 billion estimated annual loss, followed closely by Miami-Dade County, FL ($1.0 billion). Charleston County, SC ($744 million), falls along the southeastern coast in the state of South Carolina and accounts for a majority of the state's economic risk from flooding (62%). Charlotte County, FL ($708 million), Lee County, FL ($620 million), Brevard County, FL ($512 million), Sarasota County, FL ($485 million), Hillsborough County, FL ($456 million), and Palm Beach County, FL ($397 million), round out the top 10 counties across the U.S. In contrast, there are a total of 187 counties with less than $1,000 in annualized economic risk, mostly situated in the Great Plains region.

Areas With the Lowest Economic Risk

There are four states that have aggregate economic loss totals below $10 million; North Dakota ($3.8 million), Washington DC ($6.1 million), Kansas ($4.8 million), and Nebraska ($8.6 million). This low number is driven by the combination of a small number of properties at risk and very low risk of flooding in the higher probability flood events. There are a total of 7 states with average estimated annual losses of less than $1,000 per property, including Kansas ($399), Nebraska ($508), and Nevada ($531) which are the three lowest across the U.S. In these areas, the combination of low risk of flooding, potential community adaptation for flood protection, and structures being built to standards that are able to withstand any potential flooding is directly responsible for the low levels of economic risk.

Notes and Definitions

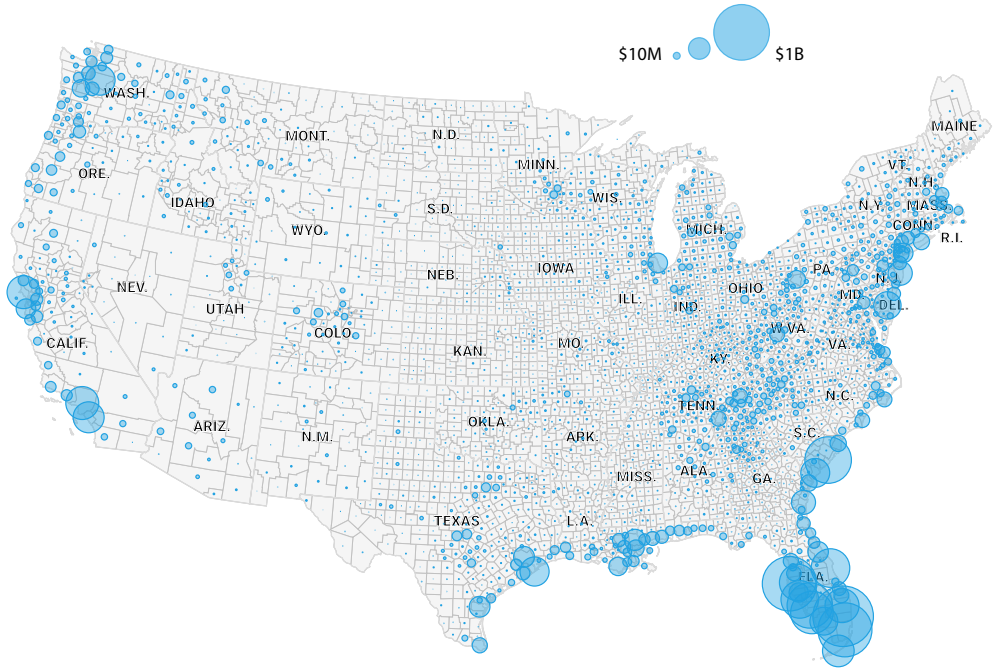
All results displayed throughout this report are applicable to residential properties with 1–4 units, within the contiguous United States, and with a probable financial loss due to flood risk.

Any flood risk is calculated as inundation of 1cm or more to the building in the 500 year return period (0.2% annual risk or 1/500), now or in the future.

Estimated Average Annual Losses (AAL)

Estimates are determined by using the established USACE depth damage functions for riverine and storm surge flooding, and a newly derived, conservative depth damage function of precipitation-induced flooding developed by First Street Foundation. Averages of AAL are determined across properties with structural flood damage risk. In this section, annual costs are not capped in any way. These figures do not include damage to the contents, commission, interest, or overhead of policies and do not discount deductibles.

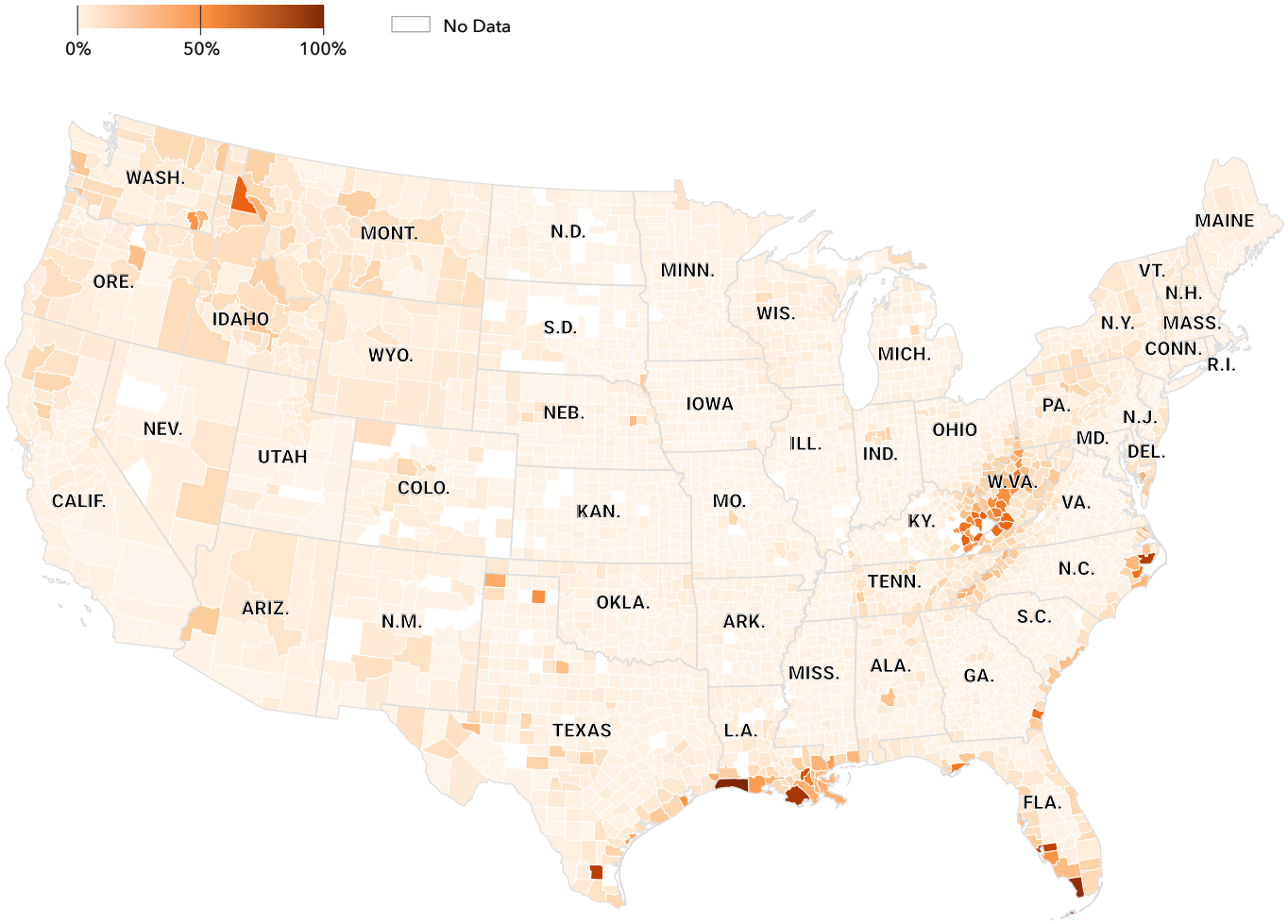
Total estimated residential structural flood damage by county, 2021



Proportion of Total Residential Properties With Economic Risk

There is an imbalance in risk as it pertains to the proportion of residential properties within any given state at risk of economic damage from flooding. Louisiana has the highest proportion of properties at risk of economic damage, at 36%. West Virginia (22%), Florida (17%), and Texas (10%) round out the only four states with 10% or more of their properties at risk of economic damage from flooding. In contrast, Kansas (1%), Missouri (2%), Maryland (2%), Colorado (3%), and Minnesota (3%) are the states with the lowest proportion of their residential properties at risk of economic damage from their flood risk. Major trends associated with this phenomenon show the coastal southeastern section of the country along the Atlantic and Gulf coasts as having the highest economic risk proportion and the Great Plains states in the middle of the country having the lowest economic risk proportion. Notably, there is also a significant amount of risk in the Appalachian region of West Virginia, Kentucky, and Ohio driven by heavy precipitation and small waterway flooding.

Percentage of residential properties with estimated structural flood damage, 2021



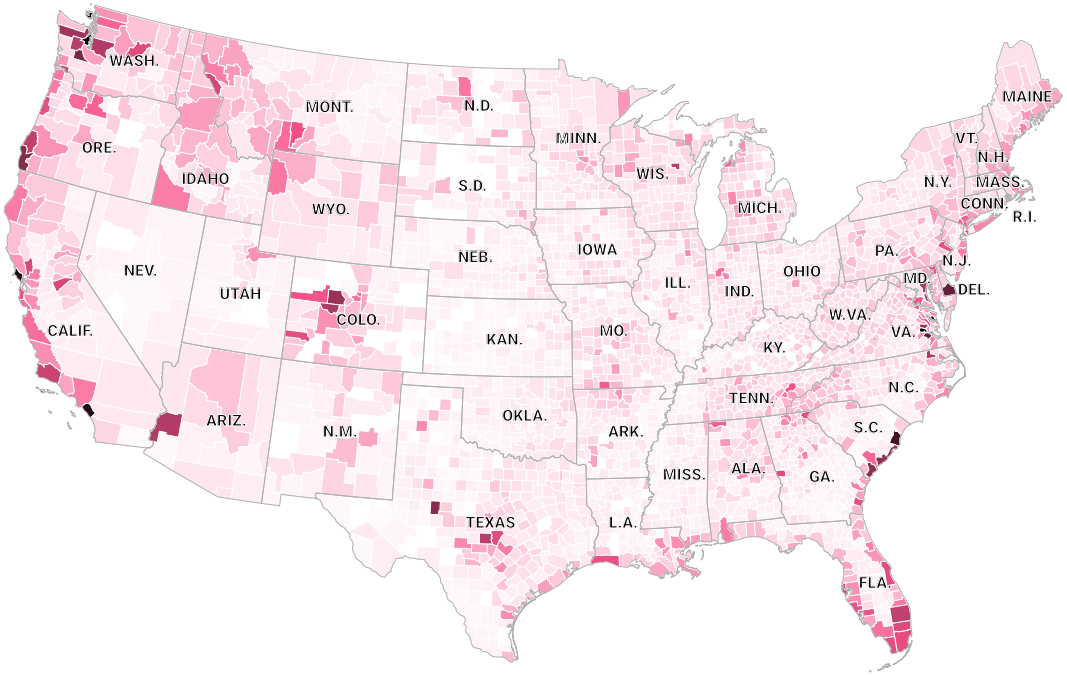
Residential Properties With *Substantial Flood Risk* and Structural Damage

Areas With *Substantial Flood Risk* at Highest Economic Risk

When limiting the sample of the First Street Foundation analysis only to properties with *substantial flood risk*, the top counties by average estimated annual loss per property are distributed across the country in areas that have a high probability of flooding and tend to have a wealthy housing stock. At the top of the list is San Juan County, WA, which has a value of $86k per property in estimated structural damage annually. The relationship to expensive housing stock is evidenced here by the nearly $1.1 million average property value and $571,000 average building value. Other counties with a similar combination of high-risk flooding and high-priced real estate include Charles City County, VA, with an average estimated annual loss of $49,306, Kitsap County, WA ($40,904), Lancaster County, VA ($36,614), and Marin County, CA ($34,319). The heavy concentration of risk in highly vulnerable counties is further highlighted by the fact that nearly half of all counties in the U.S. (1,583 counties in total) have less than $1,200 in estimated structural damage per property from *substantial flood risk* in 2021.

Flood risk further concentrates at lower levels in cities. In fact, the top eight cities in total economic losses are also located in the states of Florida and South Carolina, led by Fort Lauderdale, FL, which annually has nearly $570 million in economic risk. Miami Beach, FL, is second on the list with an annual loss estimation of $509 million, followed by St. Petersburg, FL ($357 million), Tampa, FL ($333 million), Charleston, SC ($300 million), Port Charlotte, FL ($284 million), Cape Coral, FL ($245 million), and Hollywood, FL ($241 million). Of note, New York City, NY ($234 million), Chicago, IL ($90 million), and Los Angeles, CA ($91 million), are all among the top 35 cities in the U.S. based on total annualized economic risk in 2021.

Average expected annual loss per residential property with substantial flood risk, 2021



Cities with the greatest loss in 2021

City	2021	2051	Change
Fort Lauderdale, FL	$569.99 M	$967.29 M	+69.7%
Miami Beach, FL	$509.11 M	$838.85 M	+64.8%
St. Petersburg, Fl	$356.75 M	$737.01 M	+106.6%
Tampa, FL	$332.98 M	$528.03 M	+58.6%
Charleston, SC	$300.03 M	$834.91 M	+178.3%
Port Charlotte, FL	$283.63 M	$475.87 M	+67.8%
Cape Coral, FL	$245.30 M	$626.01 M	+155.2%
Hollywood, FL	$240.97 M	$429.67 M	+78.3%
Malibu, CA	$237.07 M	$245.30 M	+3.5%
New York, NY	$234.40 M	$351.85 M	+50.1%

Notes and Definitions

All results displayed throughout this report are applicable to residential properties with 1–4 units, within the contiguous United States, and with a probable financial loss due to flood risk.

Substantial flood risk is calculated as inundation of 1cm or more to the building in the 100 year return period (1% annual risk or 1/100).

Estimated Average Annual Losses (AAL)

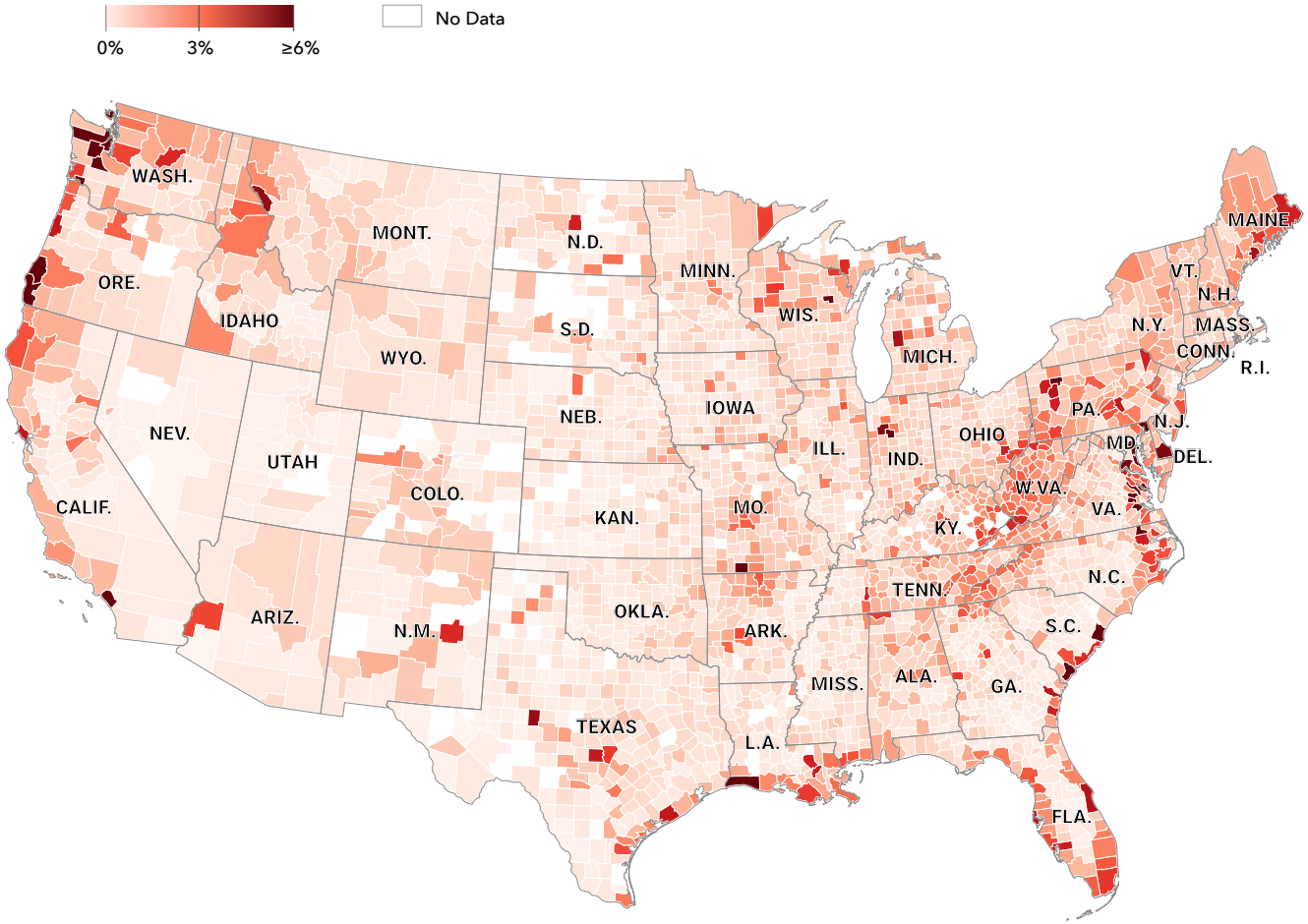
Estimates are determined by using the established USACE depth damage functions for riverine and storm surge flooding, and a newly derived, conservative depth damage function of precipitation-induced flooding developed by First Street Foundation.[1] Averages of AAL are determined across properties with structural flood damage risk. In this section, annual costs are not capped in any way. These figures do not include damage to the contents, commission, interest,

1 The methods used to derive the pluvial damage functions for this lager project are outlined in research currently under review for publication in a peer-reviewed scientific journal. A preprint of that work is available here: Marston et.al. (under review).

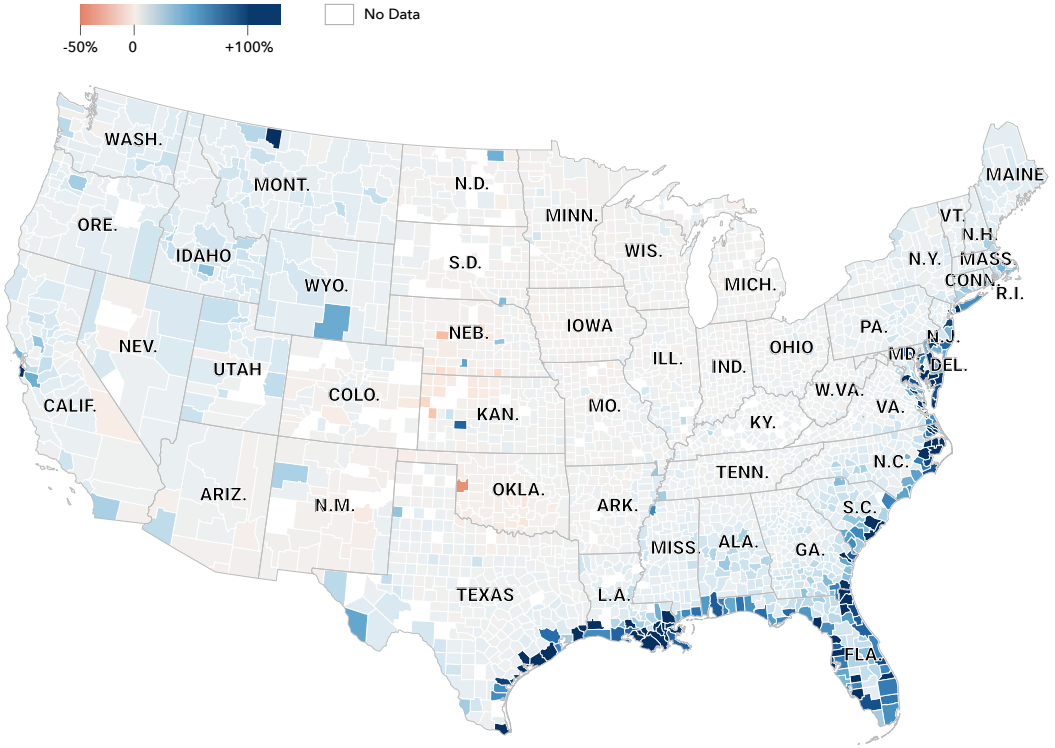
Areas with Highest Proportion of Structure Value Loss

As an alternative to focusing on high probability flood risk in high-value areas, the ratio of average estimated annual loss per property to building or structure value for these properties with *substantial flood risk* gives us a perspective of risk as a proportion of property value in economic terms. This is particularly important as it gives us an idea of where the housing stock in the U.S. is most at risk relative to the current real estate market. At the state level, Delaware and South Carolina report the highest proportion of property value at risk, each with a loss ratio of 2.9%. Next, West Virginia (2.1%) and Florida (2.0%) reflect a housing market more vulnerable to economic damage from *substantial flood risk*. West Virginia, in particular, reports an average structure value of less than $100,000, but an average estimated annual loss of over $2,368. In fact, the total aggregate building value in the state of West Virginia is around $9.7 billion for the residential properties with *substantial flood risk*, with an aggregate expectation of annualized loss at $206.0 million. This means that over a 45 year period, there is more economic risk to this housing stock in the state than its current value.

Percent loss of structure value for residential properties with substantial flood risk, 2021



Change from 2021 to 2051 in estimated economic loss for residential properties with substantial flood risk



Areas With Highest AAL Increase Over Time

The First Street Foundation Flood Model was developed in order to provide an understanding of flood risk today and into the future based on the latest science available. When examining change in annualized economic risk over the next 30 years, the highest increases are estimated to occur along the Gulf Coast, the Southeastern Atlantic Coast, and the Mid-Atlantic Coast. Focusing on state totals, an additional $6.1 billion in economic risk is projected to be added to the current $8.0 billion in the state of Florida, bringing the total annual loss in 2051 to a projected $14.1 billion. Louisiana is projected to see a $1.8 billion increase in it's annual economic risk by 2051, followed by South Carolina (+$1 billion), Texas (+$887 million), and California (+$690 million) which are all projected to see significant increases in total annual economic risk over the next 30 years based on a changing environment.

At the county level, the greatest increases in economic risk are projected to take place in locales that are already heavily adapted to flooding in the current environment, but which are not yet prepared for the future environment. Leading the list is Washington County, NC, with a projected increase in estimated annualized risk of 1,541%. Next on this list are five counties from the state of Louisiana. Leading the state projections is Assumption Parish, LA, with an expected increase of 1,478%, followed by St. Martin Parish, LA (1,397%), Terrebonne Parish, LA (664%), Lafourche Parish, LA (549%), and Calcasieu Parish, LA (497%). These increases are directly attributable to increasing sea levels, the increasing intensity of hurricanes, and the erosion of land at the mouth of the Mississippi River Delta. Those changing climate conditions, along with the fact that Louisiana is heavily adapted specifically to today's climate, intersect to produce conditions in which many parishes in the state will need to continue to adapt to keep up with future flood estimates. Other locations of high projected growth in annual economic risk include most of the counties of coastal Florida and the Mid-Atlantic regions of North Carolina, which are most directly impacted by the forecasted increasing strength and expanding range of cyclonic events in coming years.

Cities with the greatest growing loss from 2021 to 2051

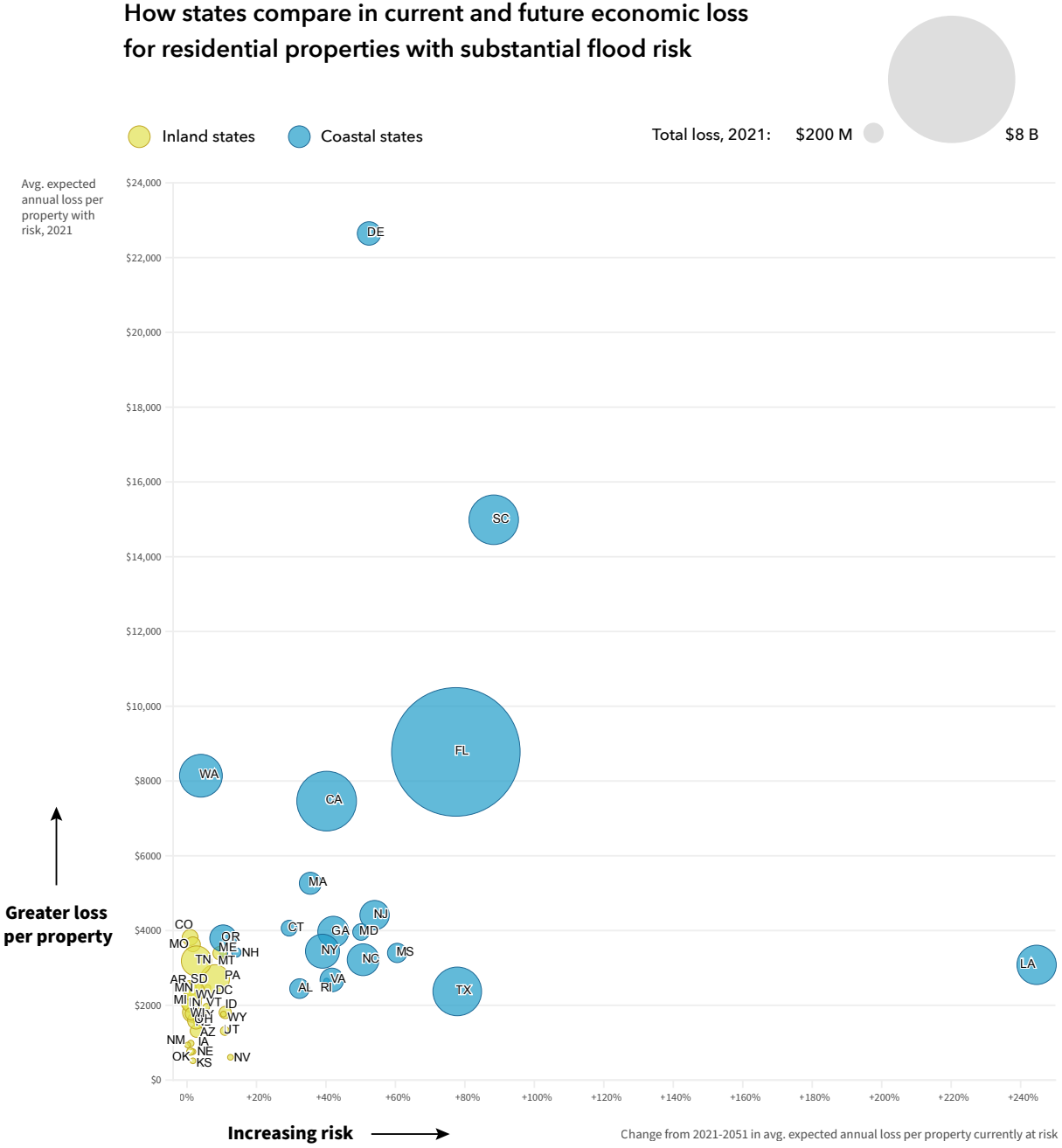
City	2021	2051	Change
Prien, LA	$1.54 M	$27.05 M	+1,660.5%
Bayou Cane, LA	$6.00 M	$105.12 M	+1,651.4%
Raceland, LA	$2.36 M	$27.49 M	+1,063.2%
Bayou Blue, LA	$2.87 M	$33.33 M	+1,061.8%
Lake Charles, LA	$6.61 M	$75.43 M	+1,040.5%
Houma, LA	$41.06 M	$456.92 M	+1,012.7%
Redwood City, CA	$22.51 M	$180.14 M	+700.2%
Oakley, CA	$0.19 M	$1.25 M	+566.1%
Orange, CA	$0.61 M	$3.91 M	+543.3%
Shady Side, MD	$0.20 M	$1.28 M	+541.8%

Regional Variations in Current Economic Risk and Change Over the Next 30 Years

There is a dramatic regional concentration of risk today and projected risk into the future throughout the U.S. Coastal states in general have more annualized economic risk on a per property basis. Looking at current risk, the top five states for highest per property potential economic loss estimates are all led by coastal communities. This is highest in Delaware where the 11,665 residential properties projected to incur economic damage have an average estimated annual loss of $22,646 per property. Delaware is followed by South Carolina with $14,988 in estimated potential structural damage per property, Florida ($8,778), Washington ($8,141), and California ($7,462).

Even more pronounced is the concentration of future risk in coastal states with changing climate conditions. Louisiana is projected to increase its total expected annualized economic risk by 245% over the next 30 years. This large increase is primarily due to the fact that while Louisiana is heavily adapted to today's environment, it will still require significant economic investment in future adaptations to continue to be a viable place to live into the future. It is also consistent with the larger narrative of the top 17 states in this metric all being coastal. South Carolina (88%), Texas (78%), Florida (77%), and Mississippi (61%) round out the top five in this measure and highlight the extreme vulnerability of risk that currently exists on the coasts, and is only expected to continue to grow. A similar narrative appears when looking at the top cities in regard to the projected growth of damage from today into the future environmental context. Specifically, the top 6 cities in terms of growth over this time period are all in the state of Louisiana.

How states compare in current and future economic loss for residential properties with substantial flood risk



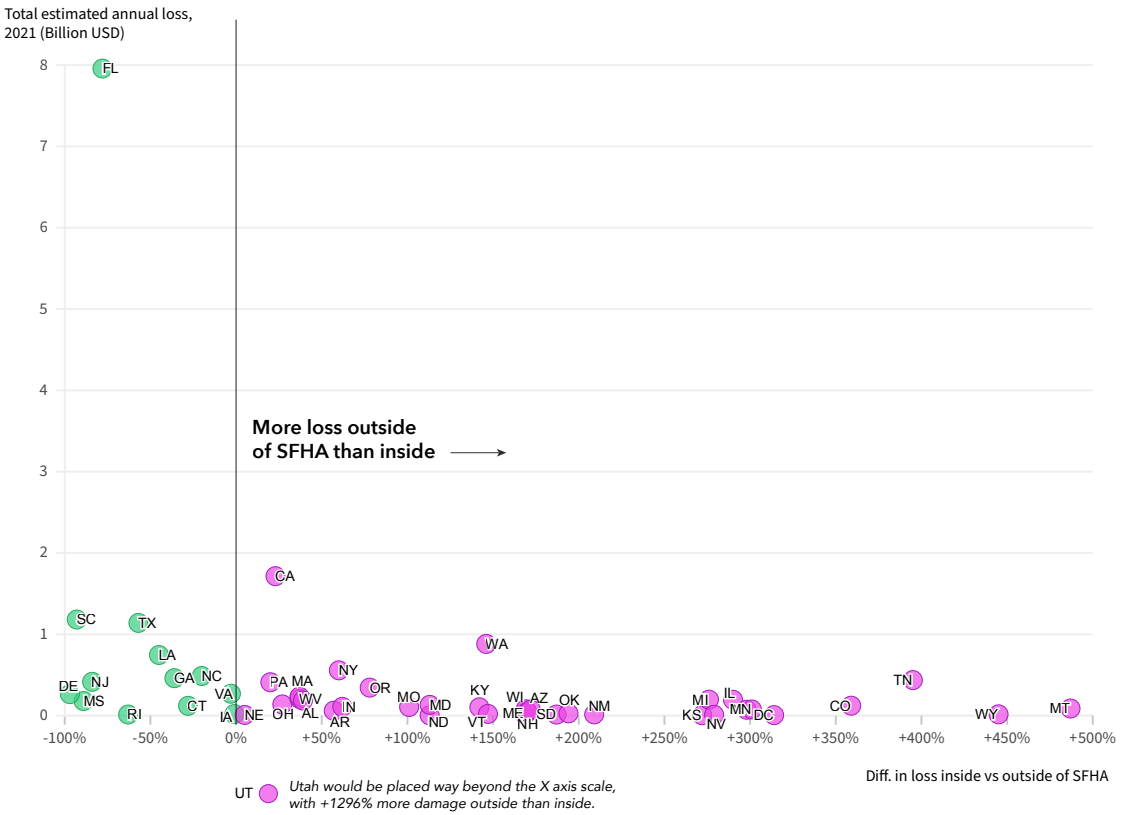
Economic Risk Inside and Outside of Special Flood Hazard Areas

Summary for Comparing Economic Risk With SFHA Designations

When examining annualized loss estimations and projections, it is important to locate those findings within the context of the Federal Government's current approach to measuring risk, allocating resources to protect from that risk, and subsidizing insurance for populations that live in those risk zones. Currently, the standard for identifying those risk zones are the FEMA SFHAs. As such, we have focused these results only on properties we find to have *substantial* risk, or a 1 in a 100 year (1%) risk of flooding chance or higher (more frequent).

When looking at the residential properties where the First Street Foundation Flood Model shows *substantial* risk, the ratio of damage inside and outside of the SFHAs varies significantly. Only 14 of the 49 (29%) states (CONUS + DC) included in this analysis are estimated to have larger losses inside of the SFHA than outside. The results show that Florida, South Carolina, Texas, Louisiana, and New Jersey are the top 5 in this area and all have higher losses inside SFHA's, indicating that the majority of annualized economic risk is accounted for and understood in these states. In contrast, 71% of states (35 in total) actually have more annualized economic risk outside of SFHAs, indicating that much of their current risk is not being adequately quantified or protected against. Of the states with over $400 million in annualized economic risk for residential properties with *substantial flood risk*, California, Washington, New York, Tennessee, and Pennsylvania all have more risk outside of SFHA's than inside, per the results of the analysis. This indicates that these states have a large proportion of their population that are particularly vulnerable to flood risk, as these states may be inadequately mapped or there are insufficient regulations, mandates, or requirements to protect against flooding in the areas that are outside of formal SFHA boundaries.

Estimated economic loss compared inside vs. outside of Special Flood Hazard Areas (SFHA), 2021



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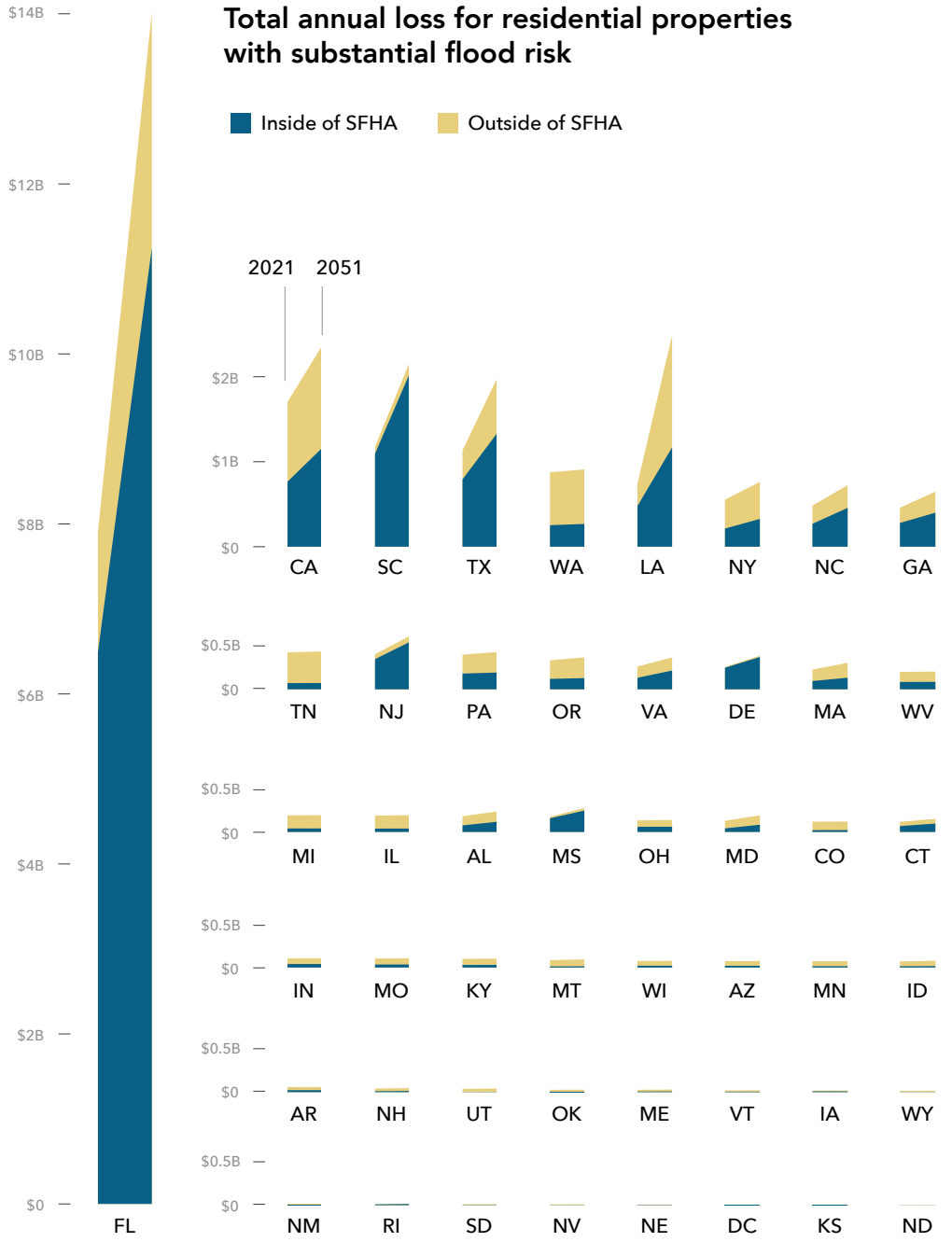
AAL Change Over Time by SFHA Delineation

In order to further understand the vulnerability associated with risk by SFHA designation, this report quantifies the extent to which that risk will change over the next 30 years for residential properties with *substantial flood risk*. The largest absolute growth in total dollar amounts of risk is projected to occur in Florida over the next 30 years. In the state, there is expected to be a total of $6.2 billion in additional annualized economic risk in 30 years, with $4.8 billion (77%) of that projected to occur inside SFHAs. The additional $1.4 billion (23%) is projected to occur in areas that are currently not classified as SFHAs by FEMA. Similarly, South Carolina is projected to see the largest increases inside high-risk zones in 30 years with 95% ($984 million) of its projected increase in annualized economic risk ($1.0 billion) to occur inside SFHAs. In contrast, Louisiana is projected to see the largest increases in annualized economic risk in areas that are currently not classified as SFHAs by the Federal Government. In Louisiana, 61% of its $1.8 billion in projected additional losses are likely to take place outside of the SFHAs, totalling to around $1.1 billion in additional potential losses in areas not currently classified as having significant flood risk per FEMA. Other coastal states that will see a disproportionate amount of increased economic risk outside of SFHAs include Massachusetts, Oregon, and Washington.

Most of the increase in coastal states can be attributed to sea level rise in combination with the changing characteristics of cyclonic activity in the area. Further inland, states like Tennessee, West Virginia, and Pennsylvania are projected to see significant increases outside of SFHAs due to the projected increases in extreme precipitation in those areas that are currently not captured by the Federal Government's mapping and risk assessment methodology.



NFIP Insurance Premiums Compared to Risk

Largest Disparities With Estimated NFIP Premiums

Arguably, the importance of the SFHA to property owners is its connection to the NFIP program and the concomitant ability to access affordable insurance relative to the higher levels of economic risk that exist inside flood zones. However, according to the U.S. Government Accountability Office's (GAO) 2019 report on the National Flood Insurance Program, the NFIP was in debt as much as $36.5 billion as recently as 2018. Of that, $16.5 billion was directly forgiven by Congress, indicating an inability of the program to adequately fund itself as it is currently structured. In recent years, FEMA has begun to invest in reinsurance to begin mitigating this disparity.[1] Additionally, FEMA and the NFIP program have been under review for significant adjustments to help combat these known issues.[2]

In order to quantify the level of under-funding at the NFIP, First Street Foundation priced all residential properties with *substantial flood risk* in the U.S. based on the current NFIP pricing structure and rate tables (for more information, see NFIP pricing process in the Methodology section). Using a property level estimate of the NFIP premium for every property with risk of structural damage in the model, annualized risk estimates were compared as a way to understand the gap between property risk estimates to the NFIP and potential premium intake from the program. For this process, the average estimated annual loss was capped at $250,000 per property in order to align with the maximum payout from the NFIP program. Furthermore, the NFIP premium estimates were calculated with no deductible discount in order to most directly compare with the average estimated annual loss figures.

At a state level, Delaware has the biggest AAL-NFIP premium disparity with 11.4 times more annualized economic risk in the state than the current NFIP pricing structure is designed to insure. Washington state reports a 11.2 times higher rate of economic risk versus premium insurance and South Carolina reports a 7.7 times higher rate of risk than premiums per the current pricing structure. Conversely, the research also found that Kansas (0.8 times), Nebraska (1.05 times), and North Dakota (1.13 times) all have annualized economic risk that is adequately priced relative to the current NFIP pricing structure.

When drilling down to the county level, even more disparities in the risk versus premium relationships become apparent. In general, the overall pattern indicates that places along the coast, where risk is high and property values are also generally high, are likely paying less in NFIP premiums than their current risk profiles would call for. Additionally, there are large areas inland around the Appalachian region, the Pacific Northwest, and the Continental Divide where properties are not currently mapped into SFHAs and therefore have very low NFIP premiums per the current pricing structure (~$488). For various reasons, all of these areas have more annualized economic risk than is being accounted for by their premiums in the current NFIP pricing structure. However in the non-coastal counties in the southeastern U.S., the Great Lakes Region, and the Great Plains, there are many areas where risk is adequately priced, or underpriced per the NFIP pricing structure, given their current annualized economic risk. Homeowners in these areas of lower risk, along with the general taxpayer, are effectively subsidizing the risk of high-risk areas, which currently pay premiums far below their actual risk.

The counties where this disparity is most pronounced, Charles City County, VA (+74 times), Kitsap County, WA (+50 times), San Juan County, WA (+48 times), Sterling County, TX (+48 times), and Eagle County, CO (+38 times), all have significantly more risk than current NFIP pricing structure is set up to protect against. In contrast, Steele County, ND, Pipestone County, MN, Imperial County, CA, Sharkey County, MS, and Grant County, NE, all incur far less annualized economic damage than they are currently protected against per the current NFIP pricing structure.

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Estimated Average Annual Losses (AAL)

Estimates are determined by using the established USACE depth damage functions for riverine and storm surge flooding, and a newly derived, conservative depth damage function of precipitation-induced flooding developed by First Street Foundation.[1] Averages of AAL are determined across properties with structural flood damage risk. In this section, annual costs are not capped in any way. These figures do not include damage to the contents, commission, interest, or overhead of policies and do not discount deductibles.

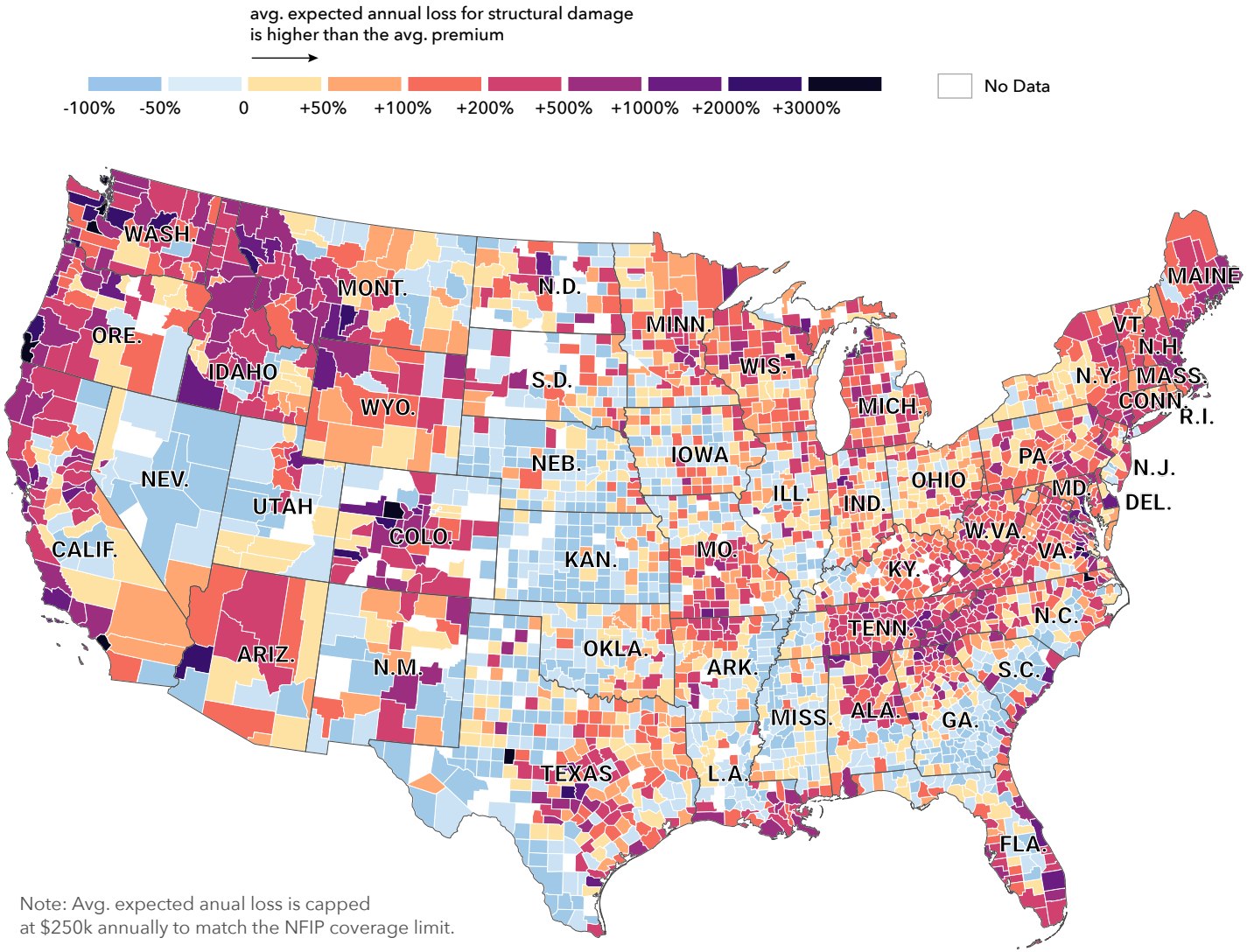
Estimated Average Annual NFIP Premiums

Estimates are determined using the NFIP's Flood Insurance Manual and Rate Tables[2] based on FEMA flood zone, relevant property characteristics, and the height of the first floor relative to base flood elevation. To compare NFIP premiums to AAL, AAL is capped at $250,000 annually to match the NFIP coverage limit. Whenever used, FEMA zones are estimated by MassiveCert Inc, and include any publicly available map amendments. These figures do not include damage to the building contents, nor commission, interest, or overhead of policies and excludes discount deductibles.

1 The methods used to derive the pluvial damage functions for this lager project are outlined in research currently under review for publication in a peer-reviewed scientific journal. A preprint of that work is available here: Marston et.al. (under review).
2 NFIP Premium calculations used the Oct 2020 ratings manual found on fema.gov (FEMA, 2020) and the Ratings Table in Appendix J from April 2020 found on fema.gov (FEMA 2020).

1 Public Notice of FEMA's Intended Procurement of Reinsurance, January 2021.
2 As of the date of this release, the most comprehensive treatment of the current NFIP pricing structure, relative to the forthcoming adjustments in "risk-based pricing," are available here: Congressional Research Service Report, 2021.

NFIP insurance premiums compared to economic risk for residential properties with substantial flood risk, 2021

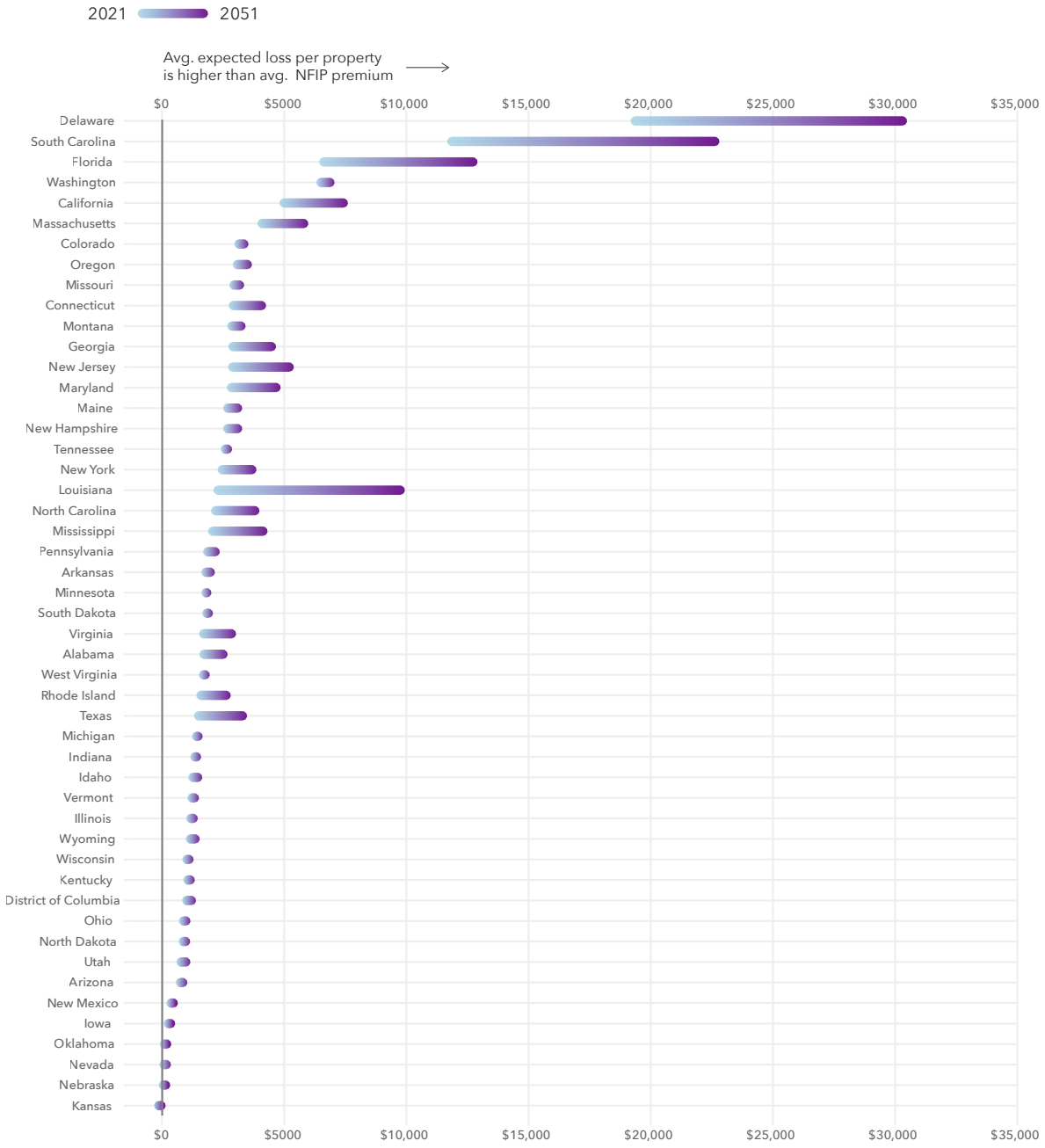


Note: Avg. expected anual loss is capped at $250k annually to match the NFIP coverage limit.

Cities With the Greatest Difference Between Avg. Expected Loss and Avg. NFIP Premium, 2021

City	Avg. Expected Loss 2021	Avg. NFIP Premium 2021	Difference
Bainbridge Island, WA	$74,170	$793	+9,253%
Parole, MD	$44,816	$528	+8,390%
Pleasure Point, CA	$39,432	$470	+8,294%
Vashon, WA	$72,226	$864	+8,263%
Bryn Mawr-Skyway, WA	$39,353	$488	+7,964%
Malibu, CA	$121,975	$1,534	+7,851%
Huntington Beach, CA	$79,900	$1,012	+7,796%
Kirkland, WA	$37,043	$488	+7,491%
Normandy Park, WA	$39,964	$563	+6,997%
Tiburon, CA	$100,827	$1,541	+6,442%

Difference between average NFIP insurance premium and average expected annual loss per residential property with substantial flood risk



Change Disparity Over Time

The difference in today's economic risk and the average NFIP premiums are most pronounced in the states of Delaware and South Carolina. In Delaware, the current difference in today's average annualized economic risk per property that is estimated to see structural damage ($22,646) and the average estimated NFIP premium of those properties ($1,858) is nearly $21,000. In South Carolina, that difference is over $13,000. In both states, the difference in the projected annual losses in 30 years are expected to grow significantly and when comparing those to today's premiums. It is projected that the difference in annualized economic risk and today's estimated NFIP premiums will be around $32,000 and $26,000 per property for Delaware and South Carolina, respectively, in 2051. Of course, it is understood that changes to the NFIP pricing structure, development patterns, and adaptation to increased risk will all impact these values, but nonetheless, these numbers do indicate that there is both a current underestimation of economic risk in the U.S. and a compounding environmental effect that will need to be taken into account moving forward.

Difference in avg. expected annual loss vs. avg. NFIP premium, 2021

	Avg. structural value (all prop.)	Extreme Flood Factor	Inside SFHA	Outisde SFHA	With 1/100 risk	All properties
Washington	$203,000	+2,384.7%	+713.7%	+1,243.4%	+1,021.9%	+826.5%
Montana	$218,000	+1,964.2%	+606.5%	+609.3%	+608.9%	+526.0%
District of Columbia	$329,000	+1,903.7%	+476.4%	+147.5%	+193.6%	+133.8%
California	$302,000	+1,637.0%	+639.5%	+700.8%	+672.2%	+350.0%
Colorado	$241,000	+1,568.7%	+260.4%	+656.5%	+540.9%	+485.4%
South Carolina	$150,000	+1,528.6%	+702.0%	+438.3%	+675.5%	+539.0%
Delaware	$234,000	+1,274.0%	+1,089.4%	+451.6%	+1,043.7%	+999.1%
Oregon	$227,000	+1,175.0%	+357.2%	+591.6%	+483.8%	+423.0%
Wyoming	$195,000	+1,004.1%	+63.5%	+257.1%	+201.4%	+145.3%
Massachusetts	$241,000	+903.3%	+311.8%	+734.1%	+478.9%	+350.7%
Idaho	$180,000	+897.3%	+180.2%	+252.6%	+235.3%	+181.9%
Minnesota	$166,000	+830.8%	+175.7%	+358.2%	+304.8%	+195.5%
Utah	$204,000	+804.8%	+79.0%	+164.4%	+156.3%	+103.1%
Arizona	$194,000	+799.7%	+227.4%	+118.9%	+140.3%	+90.7%
Missouri	$121,000	+786.6%	+290.5%	+594.6%	+451.8%	+361.6%
Maine	$141,000	+784.4%	+240.9%	+547.1%	+420.1%	+309.3%
Tennessee	$133,000	+781.5%	+257.2%	+532.4%	+459.7%	+394.6%
Michigan	$124,000	+746.5%	+81.0%	+310.9%	+224.4%	+119.7%
Florida	$188,000	+739.5%	+378.9%	+672.6%	+415.4%	+376.9%
Louisiana	$155,000	+732.6%	+296.6%	+309.5%	+301.1%	+178.7%
Texas	$141,000	+666.2%	+177.1%	+133.8%	+162.4%	+93.9%
Arkansas	$118,000	+627.9%	+192.2%	+347.9%	+271.0%	+218.9%
New Hampshire	$172,000	+623.8%	+182.2%	+575.8%	+394.4%	+317.7%
Alabama	$132,000	+603.6%	+186.7%	+310.6%	+248.3%	+217.3%
New York	$249,000	+596.7%	+175.6%	+452.8%	+301.2%	+227.4%
Georgia	$135,000	+583.7%	+303.8%	+336.0%	+315.7%	+284.9%
Indiana	$115,000	+574.5%	+133.8%	+272.0%	+203.6%	+84.3%
South Dakota	$161,000	+568.5%	+113.4%	+393.5%	+268.6%	+205.9%
Nevada	$183,000	+558.3%	3.7%	+21.0%	+14.9%	+0.9%
Illinois	$170,000	+514.3%	+59.4%	+258.1%	+185.5%	+95.2%
Connecticut	$224,000	+501.4%	+195.7%	+459.0%	+268.4%	+215.6%
New Mexico	$165,000	+468.7%	+25.1%	+82.6%	+64.2%	+47.8%
Mississippi	$105,000	+458.2%	+171.4%	+85.3%	+159.6%	+135.8%
Pennsylvania	$147,000	+451.9%	+220.4%	+324.5%	+269.9%	+209.9%
Wisconsin	$140,000	+425.1%	+49.9%	+248.9%	+156.6%	+89.7%
North Dakota	$180,000	+398.0%	+54.1%	+203.2%	+131.7%	6.9%
Maryland	$190,000	+381.1%	+73.2%	+771.8%	+280.0%	+263.3%
North Carolina	$136,000	+366.5%	+161.7%	+353.7%	+222.8%	+194.8%
Virginia	$204,000	+356.9%	+123.9%	+312.6%	+188.4%	+143.0%
West Virginia	$101,000	+351.5%	+213.3%	+294.0%	+255.3%	+219.5%
Rhode Island	$175,000	+347.5%	+149.7%	+156.2%	+151.4%	+89.6%
New Jersey	$214,000	+325.0%	+181.5%	+274.2%	+191.4%	+131.3%
Ohio	$108,000	+313.6%	+106.4%	+159.0%	+132.8%	+71.7%
Kentucky	$122,000	+288.0%	+80.2%	+232.5%	+166.7%	+146.2%
Vermont	$157,000	+250.8%	+47.7%	+286.5%	+163.6%	+147.8%
Nebraska	$126,000	+242.0%	11.7%	+30.0%	+5.7%	26.7%
Oklahoma	$112,000	+228.3%	37.9%	+56.7%	+13.0%	+1.1%
Iowa	$120,000	+194.7%	+19.2%	+51.3%	+33.3%	+0.0%
Kansas	$121,000	+95.6%	63.3%	+12.8%	21.6%	37.8%

Percent loss of structure value for residential properties, and change from 2021 to 2051

	EXTREME FLOOD FACTOR		INSIDE SFHA		With 1/100 FSF RISK		OUTSIDE SFHA		ALL PROPERTIES	
	structure loss	30y change	structure loss	30y change	structure loss	30y change	structure loss	30y change	structure loss	30y change
South Carolina	6.9%	+78.3%	4.5%	+89.5%	2.9%	+88.3%	0.5%	+71.9%	0.5%	+91.6%
Delaware	5.3%	+49.7%	4.5%	+51.2%	2.9%	+52.4%	0.3%	+87.5%	0.4%	+53.7%
Washington	5.0%	+3.1%	2.8%	+6.3%	1.5%	+4.0%	1.2%	+3.0%	0.2%	+4.3%
Florida	4.9%	+72.5%	3.0%	+73.2%	2.0%	+77.4%	0.8%	+96.6%	0.7%	+79.6%
Louisiana	4.5%	+307.9%	2.7%	+149.7%	1.7%	+244.6%	1.1%	+418.1%	0.5%	+290.3%
Mississippi	4.2%	+43.3%	2.9%	+58.9%	1.6%	+60.5%	0.3%	+75.0%	0.2%	+69.0%
Texas	4.0%	+89.8%	2.1%	+71.4%	0.9%	+77.8%	0.4%	+92.8%	0.1%	+96.8%
West Virginia	3.3%	+1.8%	4.1%	+1.1%	2.1%	+2.1%	1.6%	+2.8%	0.5%	+2.1%
California	2.9%	+43.2%	1.9%	+53.9%	0.5%	+40.2%	0.3%	+29.1%	0.1%	+43.8%
District of Columbia	2.9%	+2.3%	2.7%	+3.2%	0.3%	+6.0%	0.3%	+6.7%	0.0%	+9.3%
Georgia	2.4%	+31.5%	2.7%	+43.8%	0.9%	+42.1%	0.5%	+39.5%	0.1%	+43.6%
Tennessee	2.4%	+2.2%	1.6%	+2.1%	1.1%	+2.7%	1.0%	+2.8%	0.1%	+2.8%
Pennsylvania	2.3%	+6.5%	2.7%	+6.9%	1.0%	+8.1%	0.6%	+9.0%	0.1%	+8.4%
North Carolina	2.2%	+45.5%	2.1%	+71.0%	1.0%	+50.7%	0.6%	+25.2%	0.1%	+55.4%
Oregon	2.2%	+9.0%	1.4%	+7.4%	0.7%	+10.4%	0.5%	+12.0%	0.1%	+10.7%
Maine	2.2%	+8.5%	1.4%	+14.2%	1.0%	+10.6%	0.9%	+9.3%	0.1%	+11.5%
Montana	2.2%	+7.2%	0.9%	+9.9%	0.7%	+9.4%	0.6%	+9.3%	0.1%	+9.6%
Indiana	2.2%	+0.6%	1.5%	+0.9%	0.6%	+0.8%	0.5%	+0.7%	0.0%	+0.9%
Virginia	2.1%	+32.0%	1.6%	+64.6%	0.8%	+41.7%	0.5%	+18.0%	0.1%	+48.7%
Michigan	2.1%	+0.9%	1.2%	+0.9%	0.5%	+1.3%	0.5%	+1.3%	0.0%	+1.5%
Arkansas	2.0%	+0.6%	1.5%	+1.2%	0.8%	+0.9%	0.6%	+0.6%	0.1%	+0.9%
Colorado	2.0%	+0.1%	0.9%	+1.1%	0.5%	+0.9%	0.5%	+0.8%	0.0%	+1.0%
New Jersey	1.9%	+48.2%	1.2%	+58.9%	0.9%	+54.0%	0.3%	+24.0%	0.1%	+57.5%
Maryland	1.9%	+47.3%	1.1%	+105.6%	0.7%	+50.1%	0.7%	+24.0%	0.0%	+51.4%
Alabama	1.9%	+27.9%	1.4%	+57.3%	0.8%	+32.5%	0.6%	+14.6%	0.1%	+33.6%
Massachusetts	1.9%	+27.6%	1.1%	+40.5%	0.6%	+35.5%	0.5%	+31.9%	0.1%	+41.9%
Idaho	1.9%	+7.4%	0.7%	+9.7%	0.4%	+11.0%	0.4%	+11.3%	0.1%	+11.5%
Minnesota	1.9%	+0.7%	1.3%	+0.6%	0.4%	+1.0%	0.3%	+1.0%	0.0%	+1.1%
Kentucky	1.7%	+3.0%	1.3%	+2.9%	0.7%	+3.5%	0.6%	+3.7%	0.1%	+3.6%
Wyoming	1.6%	+8.4%	0.5%	+6.5%	0.3%	+10.5%	0.3%	+11.2%	0.0%	+11.1%
Missouri	1.6%	+1.4%	1.6%	+1.8%	0.6%	+1.7%	0.5%	+1.6%	0.0%	+1.8%
Illinois	1.6%	+1.2%	0.9%	+1.6%	0.4%	+1.6%	0.3%	+1.6%	0.0%	+1.9%
New York	1.5%	+37.6%	1.0%	+55.1%	0.5%	+39.0%	0.4%	+29.0%	0.1%	+41.8%
Connecticut	1.5%	+26.3%	1.0%	+43.0%	0.6%	+29.4%	0.4%	+10.6%	0.1%	+30.8%
Ohio	1.5%	+2.1%	1.8%	+2.0%	0.6%	+2.7%	0.4%	+3.2%	0.0%	+2.9%
Wisconsin	1.5%	+1.1%	1.1%	+0.9%	0.4%	+1.3%	0.3%	+1.4%	0.0%	+1.4%
New Hampshire	1.4%	+12.2%	1.0%	+21.2%	0.7%	+14.2%	0.6%	+11.7%	0.1%	+15.0%
Arizona	1.4%	+2.2%	0.8%	+0.9%	0.3%	+2.7%	0.2%	+3.4%	0.0%	+2.8%
Rhode Island	1.3%	+32.5%	0.9%	+50.3%	0.4%	+40.2%	0.2%	+12.9%	0.0%	+43.4%
Oklahoma	1.3%	+0.8%	0.6%	+0.5%	0.3%	+1.1%	0.3%	+1.3%	0.0%	+1.1%
New Mexico	1.3%	+0.3%	0.3%	+0.1%	0.2%	+0.3%	0.2%	+0.4%	0.0%	+0.4%
Vermont	1.2%	+4.9%	1.2%	+7.5%	0.6%	+5.6%	0.5%	+4.8%	0.1%	+5.7%
Nevada	1.2%	+2.8%	0.2%	+11.6%	0.1%	+12.4%	0.1%	+12.6%	0.0%	+13.4%
South Dakota	1.1%	+3.0%	0.8%	+3.6%	0.4%	+3.4%	0.3%	+3.3%	0.0%	+3.4%
Utah	1.0%	+9.6%	0.4%	+12.7%	0.2%	+10.9%	0.2%	+10.7%	0.0%	+11.7%
North Dakota	0.9%	+2.3%	0.3%	+3.3%	0.2%	+2.7%	0.2%	+2.5%	0.0%	+3.3%
Nebraska	0.9%	+1.4%	0.4%	+2.3%	0.2%	+1.7%	0.1%	+1.1%	0.0%	+2.1%
Iowa	0.9%	+1.0%	0.6%	+1.7%	0.2%	+1.1%	0.1%	+0.5%	0.0%	+1.2%
Kansas	0.3%	+1.3%	0.1%	+2.8%	0.1%	+1.7%	0.1%	+1.4%	0.0%	+1.8%

State Overview
Alabama

In Alabama there are 75,751 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $185.4 million this year.

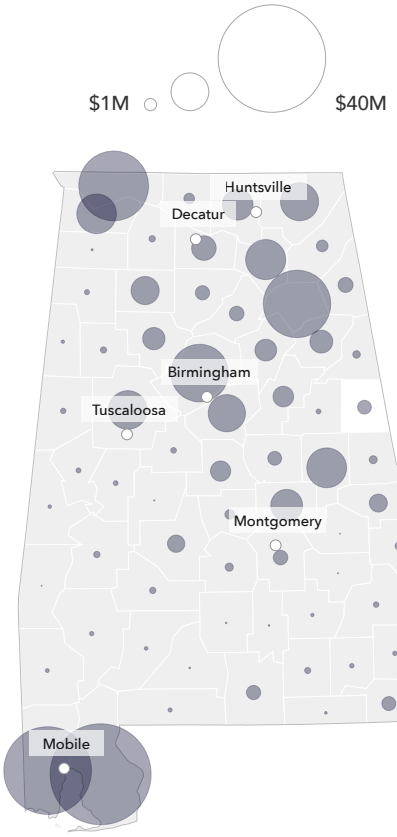
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

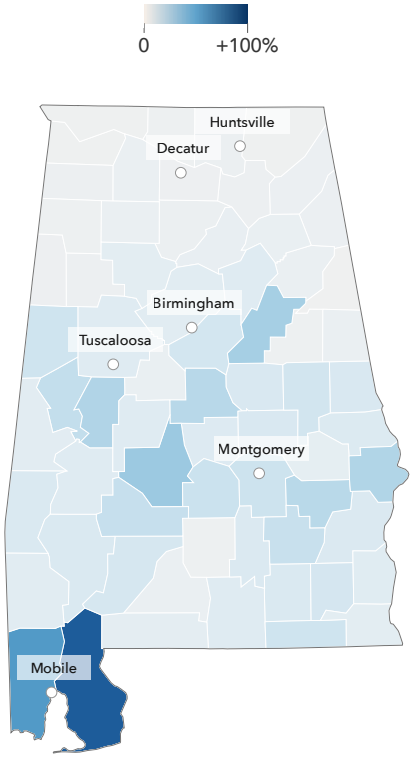
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,447 in 2021. This will grow to $3,235 for these same properties in 2051. This additional 32% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 4,175 properties are expected to experience financial loss from flood damage.

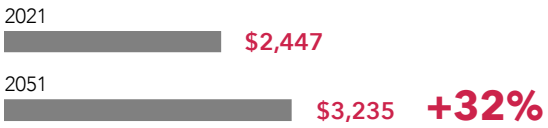
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Mobile	$14.56 M	$21.52 M	+47.8%
Orange Beach	$7.23 M	$10.90 M	+50.8%
Southside	$5.80 M	$6.14 M	+5.9%
Gulf Shores	$4.97 M	$11.86 M	+138.6%
Rainbow City	$4.03 M	$4.40 M	+9.3%
Scottsboro	$3.41 M	$3.50 M	+2.7%
Tuscaloosa	$2.79 M	$3.20 M	+14.8%
Birmingham	$2.71 M	$2.94 M	+8.3%
Huntsville	$2.55 M	$2.68 M	+5.2%
Gadsden	$2.28 M	$2.41 M	+6.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Gulf Shores	$4.97 M	$11.86 M	+138.6%
Saraland	$1.04 M	$2.30 M	+121.7%
Chickasaw	$1.33 M	$2.89 M	+117.1%
Satsuma	$1.06 M	$2.18 M	+105.1%
Fairhope	$1.25 M	$2.20 M	+75.8%
Daphne	$0.72 M	$1.23 M	+70.9%
Orange Beach	$7.23 M	$10.90 M	+50.8%
Selma	$0.37 M	$0.56 M	+50.6%
Mobile	$14.56 M	$21.52 M	+47.8%
Prichard	$0.11 M	$0.16 M	+43.7%

State Overview
Alabama

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 22,104 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,438 while the average NFIP insurance premium** for these properties is calculated to be $1,199. If premiums were adjusted to cover current risk they would have to increase by 2.9 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 53,647 properties outside the SFHA have an average expected annual loss of $2,003 per property and are estimated to have an average NFIP insurance premium of $488. To account for this difference in risk, premiums would have to increase by 4.1 times for these homes.

If all of these 75,751 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.58 billion vs an expected payout risk of $6.38 billion in structural damage, leaving a total deficit of $4.8 billion over 30 years.†

If insurance prices in Alabama were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

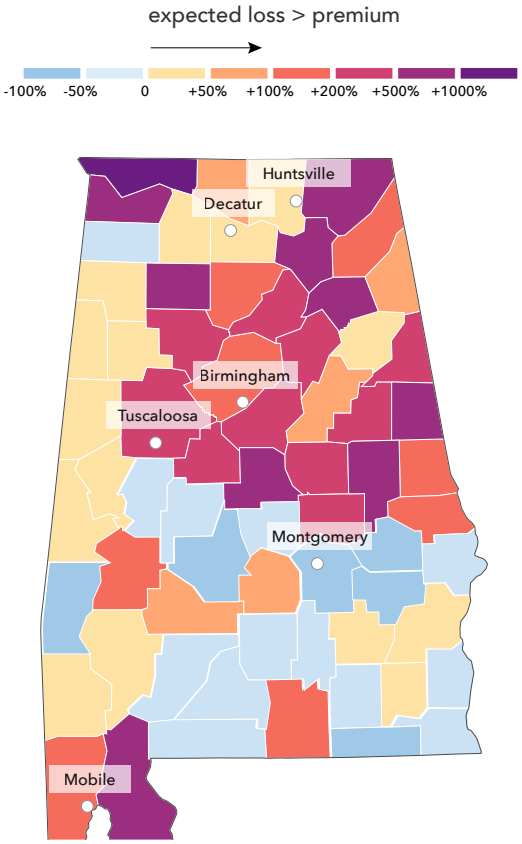
The financial implications are most pronounced for 25,639 properties with extreme risk‡ and structural damage, which have a $4,504 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,199

Avg. expected loss per property inside SFHA, 2021
$3,438

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,250

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Southside	$7,357	$505	+1,356.0%
Orange Beach	$11,896	$1,129	+953.9%
Spanish Fort	$8,041	$799	+906.1%
Rainbow City	$4,666	$558	+736.6%
Mountain Brook	$4,430	$535	+727.8%
Alexander City	$3,821	$502	+660.6%
Fairhope	$4,929	$715	+589.1%
Scottsboro	$3,720	$549	+577.6%
Vestavia Hills	$2,850	$539	+428.6%
Satsuma	$3,368	$644	+422.9%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Arizona

In Arizona there are 57,438 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $75.3 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,311 in 2021. This will grow to $1,346 for these same properties in 2051. This additional 3% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

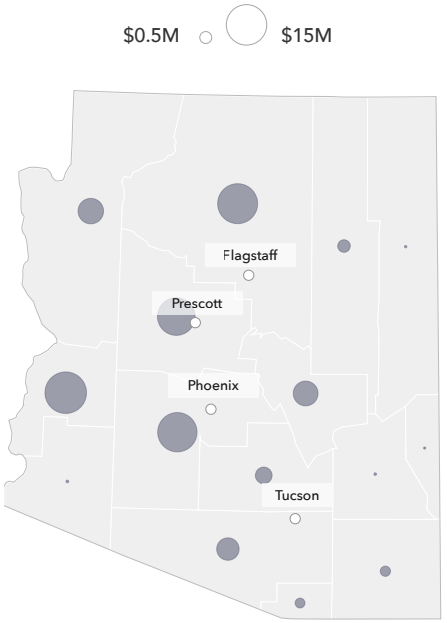
Over the next 30 years, an additional 781 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

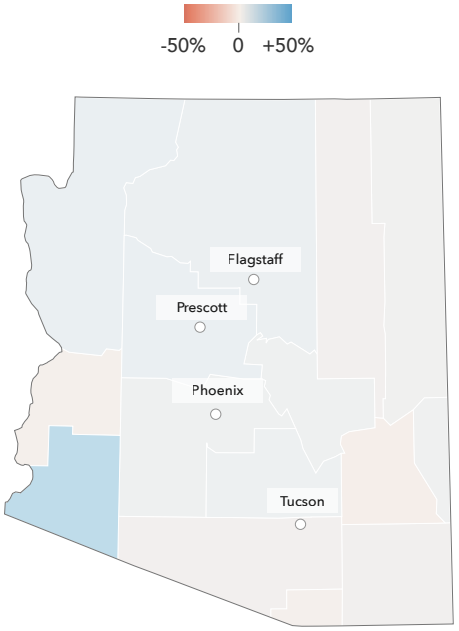
2021 **$1,311**

2051 **$1,346** **+3%**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Flagstaff	$5.05 M	$5.49 M	+8.7%
Munds Park	$4.43 M	$4.37 M	-1.4%
Prescott	$3.85 M	$4.22 M	+9.4%
Scottsdale	$3.64 M	$3.82 M	+5.0%
Bullhead City	$3.44 M	$3.77 M	+9.5%
Phoenix	$3.16 M	$3.22 M	+1.7%
Fountain Hills	$1.83 M	$1.98 M	+8.2%
Catalina Foothills	$1.76 M	$1.74 M	-0.8%
Sedona	$1.22 M	$1.26 M	+2.8%
Lake Havasu City	$1.06 M	$1.08 M	+1.3%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Yuma	$8,000	$14,000	+84.4%
New Kingman-Butler	$38,000	$45,000	+16.7%
Winslow	$6,000	$7,000	+13.7%
Apache Junction	$35,000	$39,000	+13.3%
Wickenburg	$75,000	$85,000	+13.1%
Village of Oak Creek	$558,000	$621,000	+11.4%
Fortuna Foothills	$34,000	$37,000	+9.8%
Bullhead City	$3,439,000	$3,767,000	+9.5%
Prescott	$3,854,000	$4,216,000	+9.4%
Golden Valley	$10,000	$11,000	+9.1%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Arizona

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 5,869 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,447 while the average NFIP insurance premium** for these properties is calculated to be $1,053. If premiums were adjusted to cover current risk they would have to increase by 3.3 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 51,569 properties outside the SFHA have an average expected annual loss of $1,065 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 2.2 times for these homes.

If all of these 57,438 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.94 billion vs an expected payout risk of $2.28 billion in structural damage, leaving a total deficit of $1.35 billion over 30 years.†

If insurance prices in Arizona were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

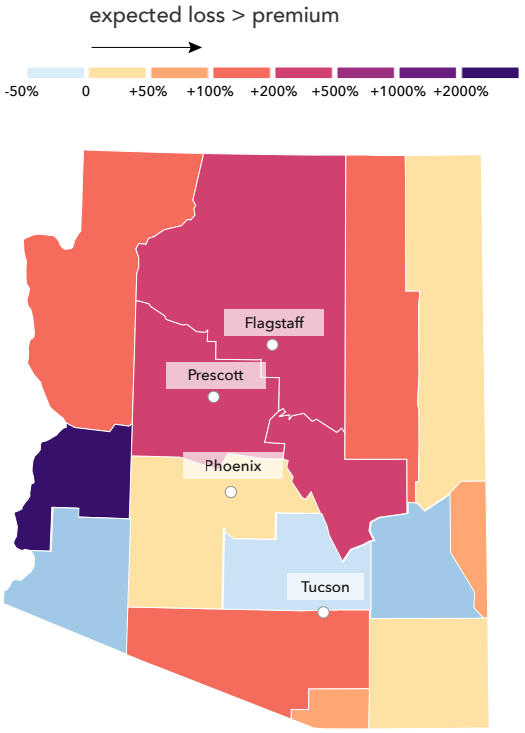
The financial implications are most pronounced for 10,805 properties with extreme risk‡ and structural damage, which have a $4,777 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,053

Avg. expected loss per property inside SFHA, 2021
$3,447

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,374

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Munds Park	$11,103	$628	+1,668.0%
Sedona	$5,283	$646	+717.6%
Catalina Foothills	$2,688	$555	+384.4%
Flagstaff	$2,666	$588	+353.2%
Fountain Hills	$2,025	$498	+306.5%
Prescott	$2,286	$599	+281.4%
Oro Valley	$1,868	$492	+279.3%
Payson	$1,822	$500	+264.6%
Cave Creek	$1,898	$564	+236.2%
Show Low	$2,142	$674	+217.9%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Arkansas

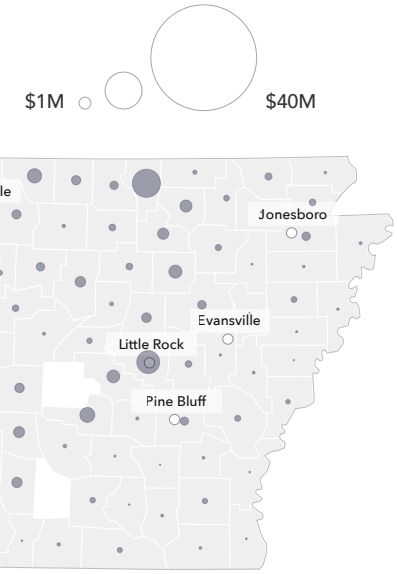
In Arkansas there are 23,904 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $60.1 million this year.

The growing cost from flooding

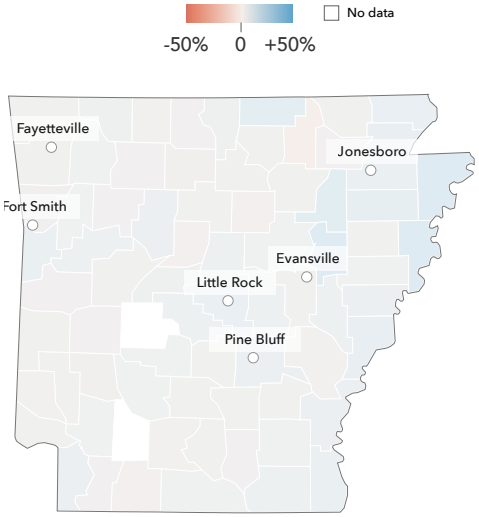
In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Arkansas is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,513 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Little Rock	$485,000	$515,000	+6.3%
North Little Rock	$432,000	$467,000	+8.1%
Fort Smith	$227,000	$246,000	+8.4%
Hot Springs Village	$189,000	$191,000	+1.2%
Russellville	$144,000	$151,000	+5.0%
Paragould	$137,000	$147,000	+7.5%
Maumelle	$134,000	$149,000	+11.2%
Jonesboro	$134,000	$142,000	+6.4%
Fayetteville	$114,000	$118,000	+2.9%
Bentonville	$101,000	$103,000	+1.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
West Memphis	$1,000	$2,000	+42.1%
Cabot	$14,000	$17,000	+19.9%
Newport	$2,000	$3,000	+16.8%
Blytheville	$5,000	$6,000	+16.1%
Marion	$10,000	$12,000	+16.1%
Searcy	$12,000	$14,000	+14.2%
Maumelle	$134,000	$149,000	+11.2%
Bryant	$12,000	$13,000	+11.1%
Springdale	$67,000	$74,000	+10.3%
Benton	$73,000	$80,000	+9.4%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Arkansas

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 7,080 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,297 while the average NFIP insurance premium** for these properties is calculated to be $1,128. If premiums were adjusted to cover current risk they would have to increase by 2.9 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 16,824 properties outside the SFHA have an average expected annual loss of $2,183 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 4.5 times for these homes.

If all of these 23,904 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.49 billion vs an expected payout risk of $1.81 billion in structural damage, leaving a total deficit of $1.32 billion over 30 years.†

If insurance prices in Arkansas were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

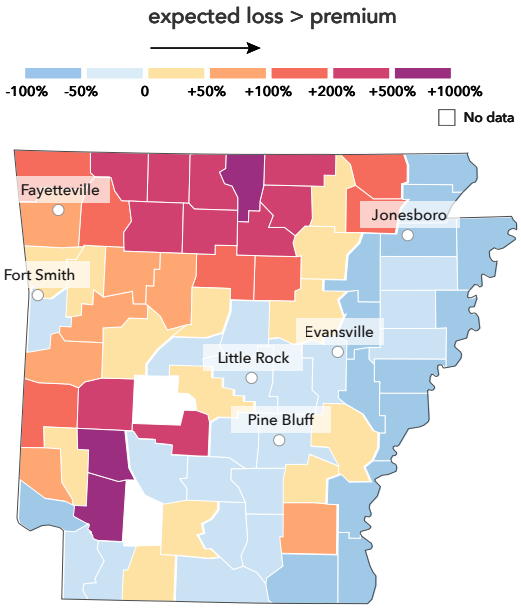
The financial implications are most pronounced for 10,926 properties with extreme risk‡ and structural damage, which have a $4,163 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,128

Avg. expected loss per property inside SFHA, 2021
$3,297

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,826

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Centerton	$1,680	$710	+136.6%
Malvern	$1,294	$636	+103.4%
Camden	$1,307	$686	+90.6%
Hot Springs Village	$1,112	$601	+84.9%
Bentonville	$1,053	$612	+72.0%
Russellville	$1,048	$694	+50.9%
Monticello	$897	$658	+36.5%
Fort Smith	$732	$658	+11.3%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
California

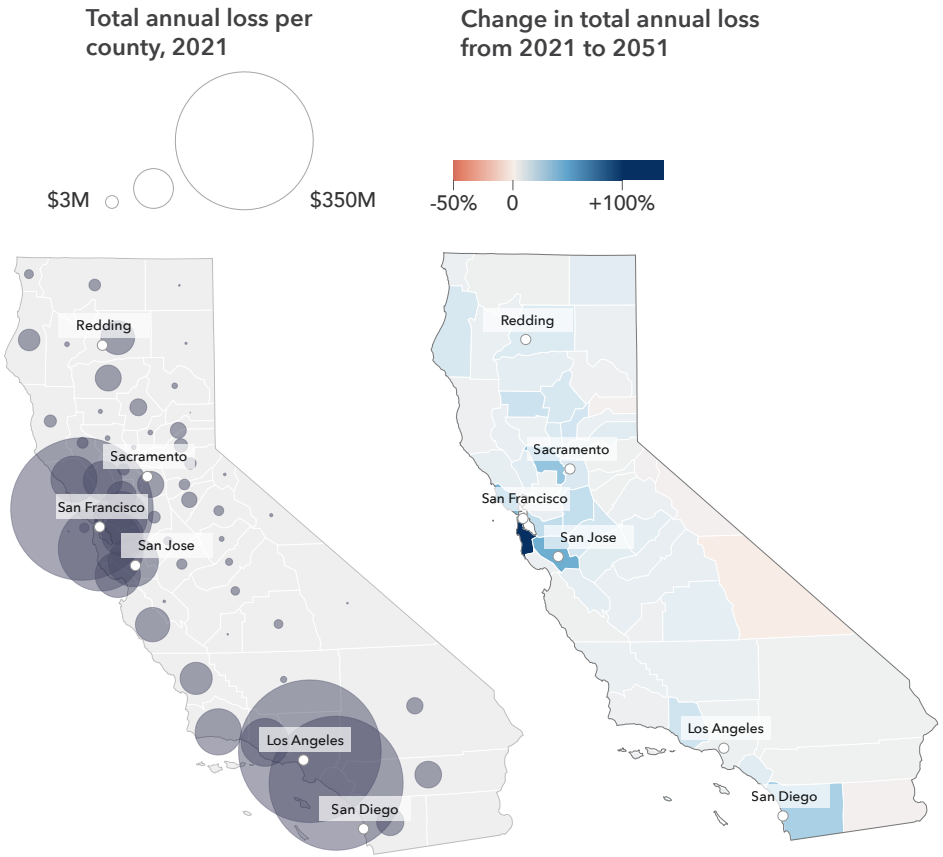
In California there are 229,806 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $1.7 billion this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $7,462 in 2021. This will grow to $10,444 for these same properties in 2051. This additional 40% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 12,363 properties are expected to experience financial loss from flood damage.



Average expected annual loss per property

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Malibu	$237.07 M	$245.30 M	+3.5%
Huntington Beach	$159.24 M	$181.45 M	+14.0%
Newport Beach	$118.56 M	$132.81 M	+12.0%
Los Angeles	$90.55 M	$92.90 M	+2.6%
San Mateo	$71.17 M	$297.97 M	+318.7%
Corte Madera	$57.30 M	$70.13 M	+22.4%
Laguna Beach	$36.81 M	$37.40 M	+1.6%
Richmond	$30.86 M	$31.80 M	+3.0%
San Rafael	$29.24 M	$58.06 M	+98.6%
Palo Alto	$28.23 M	$51.31 M	+81.7%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Redwood City	$22.51 M	$180.14 M	+700.2%
Oakley	$0.19 M	$1.25 M	+566.1%
San Mateo	$71.17 M	$297.97 M	+318.7%
Port Hueneme	$0.01 M	$0.01 M	+146.4%
Seal Beach	$0.64 M	$1.44 M	+125.4%
Eureka	$0.14 M	$0.31 M	+114.9%
Suisun City	$0.01 M	$0.02 M	+101.3%
San Rafael	$29.24 M	$58.06 M	+98.6%
Millbrae	$0.30 M	$0.56 M	+87.1%
Palo Alto	$28.23 M	$51.31 M	+81.7%

State Overview
California

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 40,577 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $14,502 while the average NFIP insurance premium** for these properties is calculated to be $1,961. If premiums were adjusted to cover current risk they would have to increase by 7.4 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 189,229 properties outside the SFHA have an average expected annual loss of $3,839 per property and are estimated to have an average NFIP insurance premium of $479. To account for this difference in risk, premiums would have to increase by 8 times for these homes.

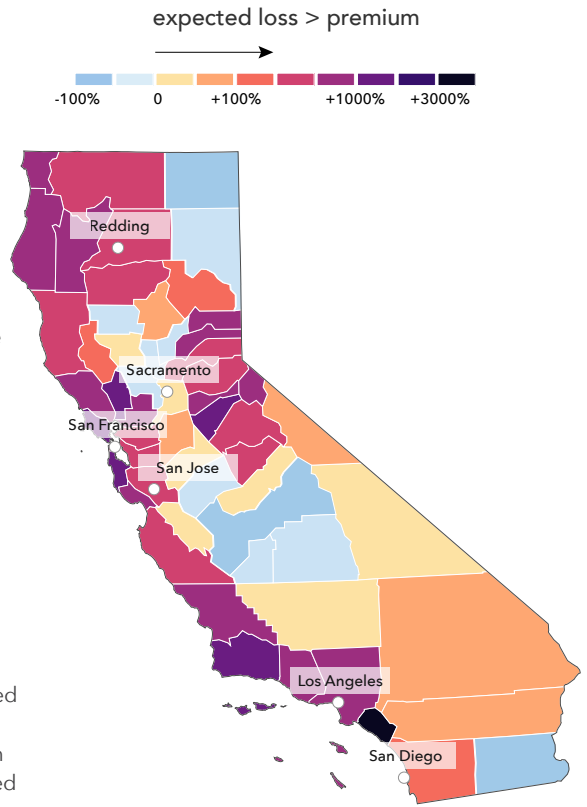
If all of these 229,806 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $5.11 billion vs an expected payout risk of $47.86 billion in structural damage, leaving a total deficit of $42.75 billion over 30 years.†

If insurance prices in California were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 71,395 properties with extreme risk‡ and structural damage, which have a $14,957 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Avg. state premium inside SFHA, 2021
$1,961

Avg. expected loss per property inside SFHA, 2021
$14,502

Avg. expected loss per property with an Extreme Flood Factor, 2021
$15,871

Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Pleasure Point	$39,432	$470	+8,294.3%
Malibu	$121,975	$1,534	+7,851.1%
Huntington Beach	$79,900	$1,012	+7,796.1%
Tiburon	$100,827	$1,541	+6,441.5%
Pismo Beach	$34,270	$532	+6,335.7%
Laguna Beach	$50,020	$879	+5,589.5%
Los Osos	$27,153	$499	+5,345.7%
Newport Beach	$54,144	$1,013	+5,245.3%
Hillsborough	$25,179	$578	+4,259.2%
Copperopolis	$23,920	$684	+3,397.3%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Colorado

In Colorado there are 31,973 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $122 million this year.

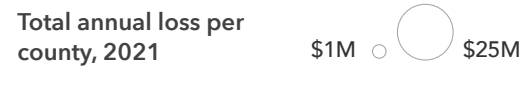
The growing cost from flooding

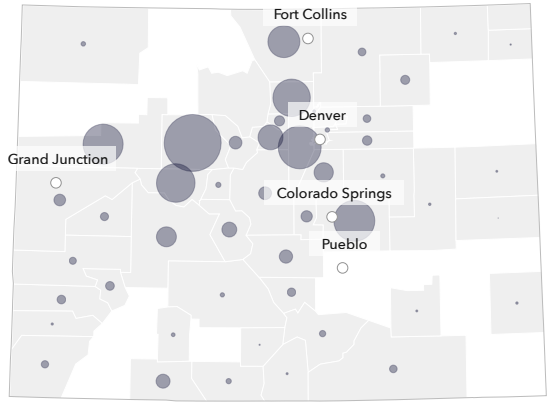
In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Colorado is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,815 in 2021.

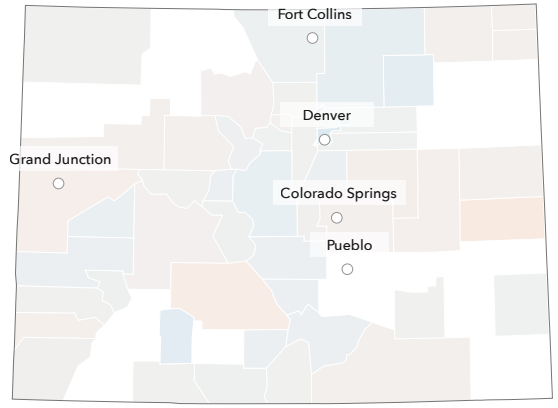
Average expected annual loss per property

Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Vail	$10.01 M	$10.33 M	+3.2%
Colorado Springs	$6.71 M	$6.64 M	-1.1%
Glenwood Springs	$4.75 M	$4.73 M	-0.3%
Aspen	$2.17 M	$2.20 M	+1.4%
Evergreen	$1.81 M	$1.82 M	+0.4%
Estes Park	$1.68 M	$1.74 M	+3.5%
Boulder	$1.32 M	$1.36 M	+2.4%
Black Forest	$0.52 M	$0.52 M	-0.2%
Roxborough Park	$0.38 M	$0.39 M	+2.5%
Golden	$0.31 M	$0.33 M	+6.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Firestone	$23,000	$45,000	+98.1%
Broomfield	$62,000	$76,000	+23.1%
Lakewood	$90,000	$107,000	+19.2%
Wheat Ridge	$37,000	$44,000	+19.0%
Denver	$154,000	$175,000	+13.9%
Gunbarrel	$10,000	$11,000	+12.3%
Ken Caryl	$83,000	$92,000	+11.7%
Wellington	$13,000	$15,000	+11.4%
Westminster	$15,000	$17,000	+9.1%
Berthoud	$20,000	$22,000	+9.0%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Colorado

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 4,379 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,472 while the average NFIP insurance premium** for these properties is calculated to be $1,241. If premiums were adjusted to cover current risk they would have to increase by 3.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 27,594 properties outside the SFHA have an average expected annual loss of $3,617 per property and are estimated to have an average NFIP insurance premium of $478. To account for this difference in risk, premiums would have to increase by 7.6 times for these homes.

If all of these 31,973 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.56 billion vs an expected payout risk of $3.6 billion in structural damage, leaving a total deficit of $3.04 billion over 30 years.†

If insurance prices in Colorado were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

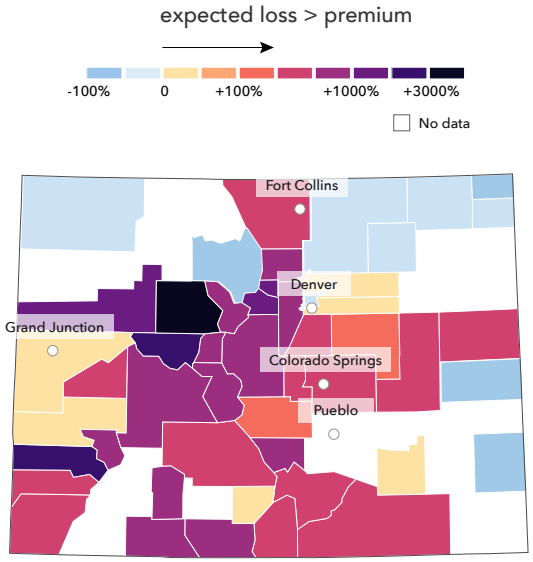
The financial implications are most pronounced for 10,279 properties with extreme risk‡ and structural damage, which have a $9,486 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,241

Avg. expected loss per property inside SFHA, 2021
$4,472

Avg. expected loss per property with an Extreme Flood Factor, 2021
$10,091

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Vail	$18,984	$522	+3,535.0%
Glenwood Springs	$17,660	$505	+3,397.8%
Aspen	$10,828	$624	+1,636.5%
Evergreen	$8,156	$680	+1,099.7%
Estes Park	$4,230	$566	+647.5%
Roxborough Park	$3,165	$439	+620.2%
Woodland Park	$3,217	$502	+541.4%
Salida	$3,251	$508	+539.6%
Black Forest	$3,016	$490	+515.3%
Greenwood Village	$3,303	$566	+483.7%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Connecticut

In Connecticut there are 29,554 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $120.1 million this year.

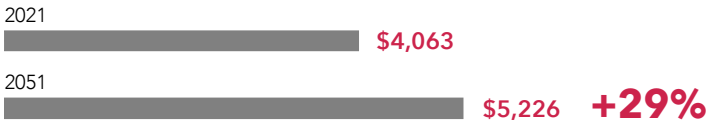
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

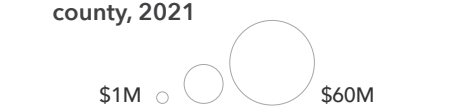
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $4,063 in 2021. This will grow to $5,226 for these same properties in 2051. This additional 29% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

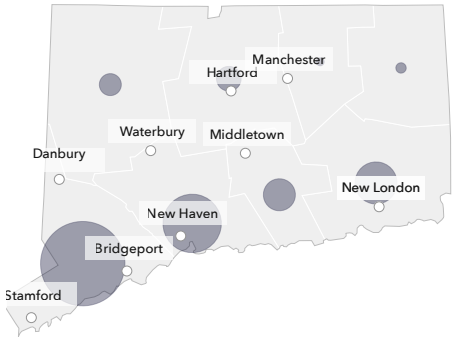
Over the next 30 years, an additional 3,160 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

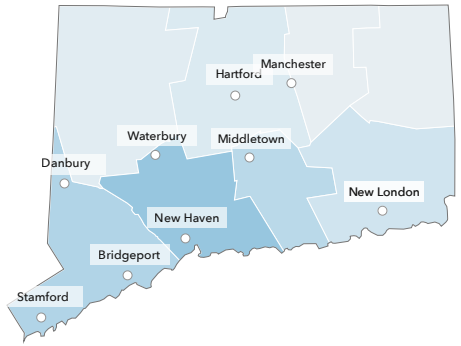


Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Westport	$8.38 M	$11.34 M	+35.4%
East Haven	$6.85 M	$9.29 M	+35.7%
Darien	$5.55 M	$7.34 M	+32.1%
Norwalk	$4.08 M	$6.40 M	+56.8%
Riverside	$3.38 M	$4.33 M	+28.2%
Stamford	$2.49 M	$3.66 M	+47.0%
Milford	$2.45 M	$5.75 M	+134.4%
Shelton	$1.68 M	$1.85 M	+10.0%
Greenwich	$1.48 M	$2.07 M	+39.7%
Stratford	$1.25 M	$2.28 M	+83.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Milford	$2.45 M	$5.75 M	+134.4%
Stratford	$1.25 M	$2.28 M	+83.0%
Norwalk	$4.08 M	$6.40 M	+56.8%
New Haven	$0.32 M	$0.48 M	+51.5%
Stamford	$2.49 M	$3.66 M	+47.0%
West Haven	$0.16 M	$0.22 M	+41.7%
Greenwich	$1.48 M	$2.07 M	+39.7%
Bridgeport	$0.30 M	$0.41 M	+36.8%
East Haven	$6.85 M	$9.29 M	+35.7%
Westport	$8.38 M	$11.34 M	+35.4%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Connecticut

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 11,154 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $6,189 while the average NFIP insurance premium** for these properties is calculated to be $2,093. If premiums were adjusted to cover current risk they would have to increase by 3.0 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 18,400 properties outside the SFHA have an average expected annual loss of $2,704 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 5.6 times for these homes.

If all of these 29,554 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.97 billion vs an expected payout risk of $4.07 billion in structural damage, leaving a total deficit of $3.1 billion over 30 years.†

If insurance prices in Connecticut were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

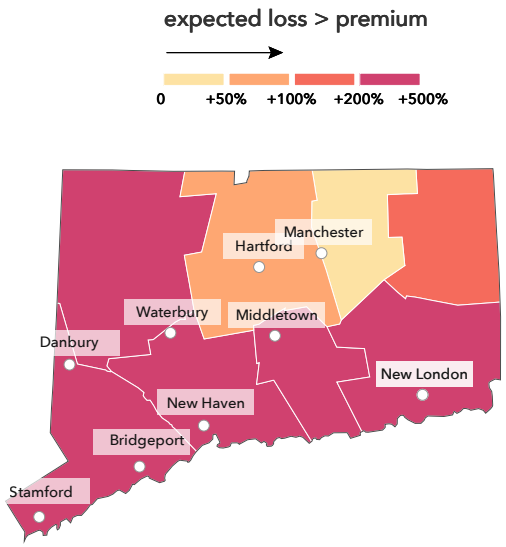
The financial implications are most pronounced for 13,046 properties with extreme risk‡ and structural damage, which have a $6,570 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$2,093

Avg. expected loss per property inside SFHA, 2021
$6,189

Avg. expected loss per property with an Extreme Flood Factor, 2021
$7,880

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Derby	$4,943	$590	+738.2%
Riverside	$11,898	$1,579	+653.4%
Shelton	$6,633	$908	+630.6%
Darien	$8,826	$1,349	+554.5%
Westport	$9,367	$1,577	+494.1%
New Milford	$3,691	$668	+452.6%
Greenwich	$4,820	$894	+439.1%
Norwich	$2,869	$627	+357.3%
East Haven	$6,257	$1,388	+350.6%
Ridgefield	$1,860	$504	+269.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Delaware

In Delaware there are 11,665 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $264.2 million this year.

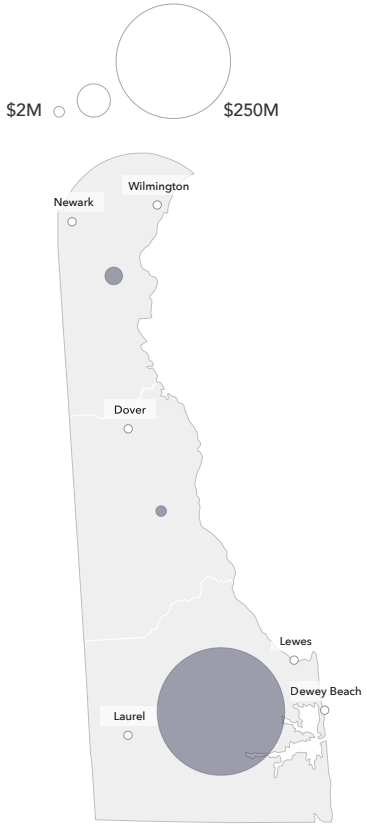
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

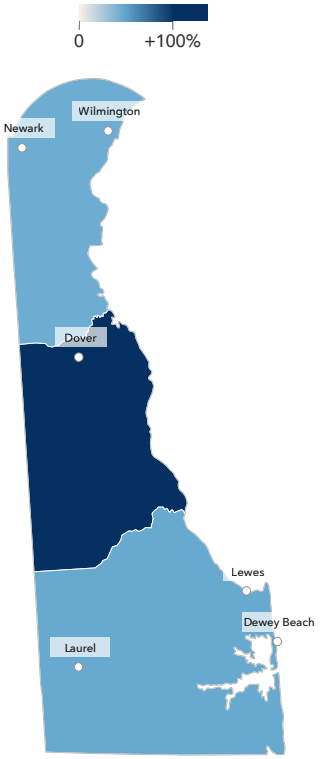
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $22,646 in 2021. This will grow to $34,317 for these same properties in 2051. This additional 52% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 2,758 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Lewes	$14.90 M	$24.63 M	+65.3%
Wilmington	$0.41 M	$0.98 M	+137.6%
Hockessin	$0.10 M	$0.11 M	+5.6%
Milford	$0.10 M	$0.20 M	+109.2%
Dover	$0.09 M	$0.11 M	+12.0%
Newark	$0.09 M	$0.10 M	+8.3%
Bear	$0.02 M	$0.02 M	+6.6%
Smyrna	$0.01 M	$0.02 M	+20.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Wilmington	$0.41 M	$0.98 M	+137.6%
Milford	$0.10 M	$0.20 M	+109.2%
Lewes	$14.90 M	$24.63 M	+65.3%
Smyrna	$0.01 M	$0.02 M	+20.5%
Dover	$0.09 M	$0.11 M	+12.0%
Newark	$0.09 M	$0.10 M	+8.3%
Bear	$0.02 M	$0.02 M	+6.6%
Hockessin	$0.10 M	$0.11 M	+5.6%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Delaware

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 8,430 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $28,380 while the average NFIP insurance premium** for these properties is calculated to be $2,386. If premiums were adjusted to cover current risk they would have to increase by 11.9 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 3,235 properties outside the SFHA have an average expected annual loss of $2,649 per property and are estimated to have an average NFIP insurance premium of $480. To account for this difference in risk, premiums would have to increase by 5.5 times for these homes.

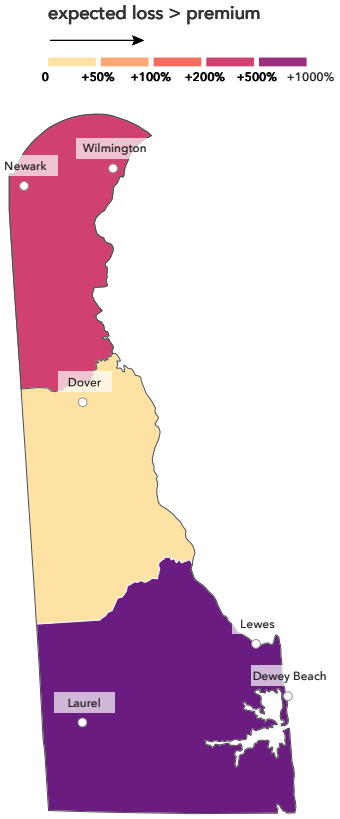
If all of these 11,665 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.65 billion vs an expected payout risk of $9.34 billion in structural damage, leaving a total deficit of $8.69 billion over 30 years.†

If insurance prices in Delaware were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 8,301 properties with extreme risk‡ and structural damage, which have a $27,327 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Lewes	$37,713	$2,533	+1,388.9%
Hockessin	$1,984	$649	+205.9%
Milford	$2,541	$1,048	+142.6%
Wilmington	$1,736	$940	+84.8%
Newark	$1,449	$933	+55.4%
Dover	$783	$749	+4.5%
Bear	$491	$487	+0.7%

Avg. state premium inside SFHA, 2021
$2,386

Avg. expected loss per property inside SFHA, 2021
$28,380

Avg. expected loss per property with an Extreme Flood Factor, 2021
$29,472

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Florida

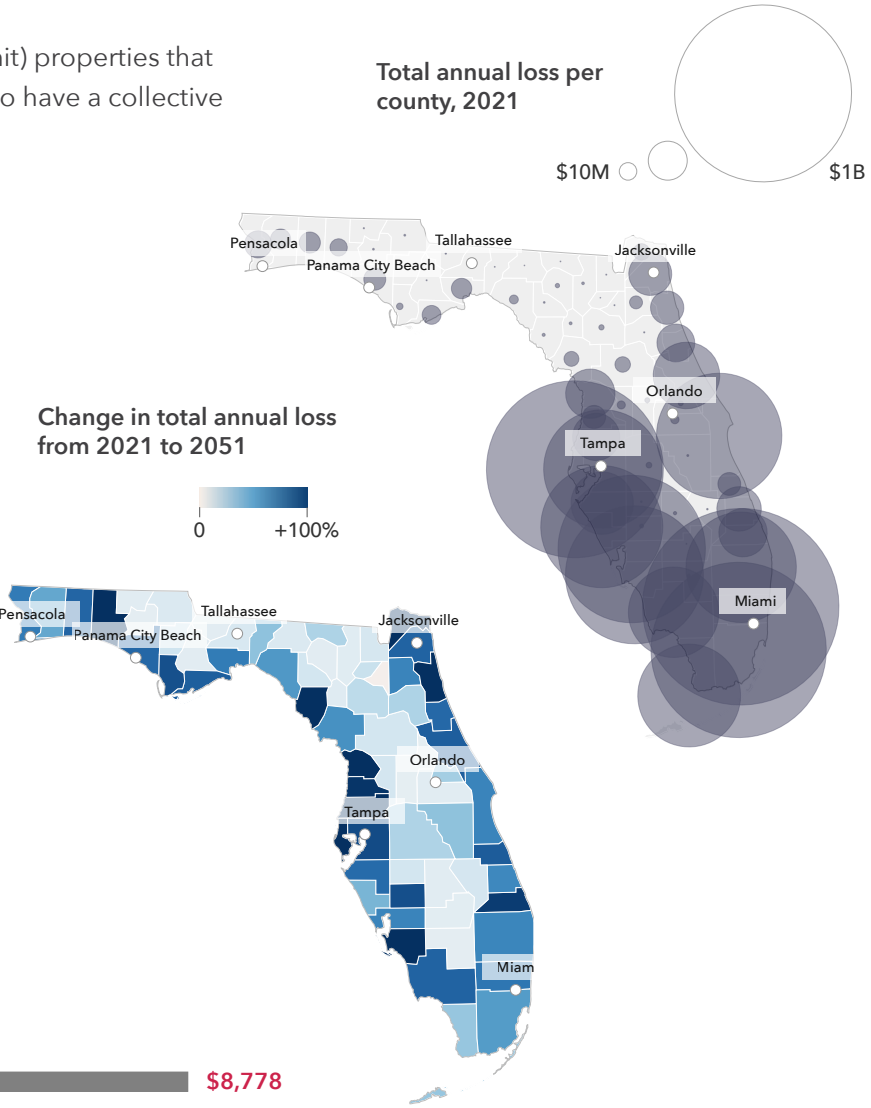
In Florida there are 906,465 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $7,957.3 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $8,778 in 2021. This will grow to $15,557 for these same properties in 2051. This additional 77% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 67,069 properties are expected to experience financial loss from flood damage.



Average expected annual loss per property

2021 $8,778

2051 $15,557

+77%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Fort Lauderdale	$569.99 M	$967.29 M	+69.7%
Miami Beach	$509.11 M	$838.85 M	+64.8%
St. Petersburg	$356.75 M	$737.01 M	+106.6%
Tampa	$332.98 M	$528.03 M	+58.6%
Port Charlotte	$283.63 M	$475.87 M	+67.8%
Cape Coral	$245.30 M	$626.01 M	+155.2%
Hollywood	$240.97 M	$429.67 M	+78.3%
Palm Beach	$216.43 M	$348.02 M	+60.8%
Key West	$154.27 M	$214.52 M	+39.1%
Merritt Island	$140.92 M	$238.68 M	+69.4%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Memphis	$0.17 M	$0.96 M	+458.2%
Lakeside	$0.10 M	$0.52 M	+445.2%
Laguna Beach	$0.08 M	$0.38 M	+407.9%
Lely Resort	$0.26 M	$1.32 M	+405.5%
Orange Park	$0.64 M	$2.36 M	+269.6%
St. Augustine Shores	$0.04 M	$0.13 M	+239.7%
Jasmine Estates	$0.17 M	$0.54 M	+226.7%
McGregor	$17.16 M	$55.74 M	+224.9%
Homosassa Springs	$2.80 M	$8.88 M	+217.5%
Oakland Park	$13.71 M	$43.47 M	+217.0%

State Overview
Florida

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 514,213 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $11,865 while the average NFIP insurance premium** for these properties is calculated to be $2,478. If premiums were adjusted to cover current risk they would have to increase by 4.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 392,252 properties outside the SFHA have an average expected annual loss of $3,563 per property and are estimated to have an average NFIP insurance premium of $461. To account for this difference in risk, premiums would have to increase by 7.7 times for these homes.

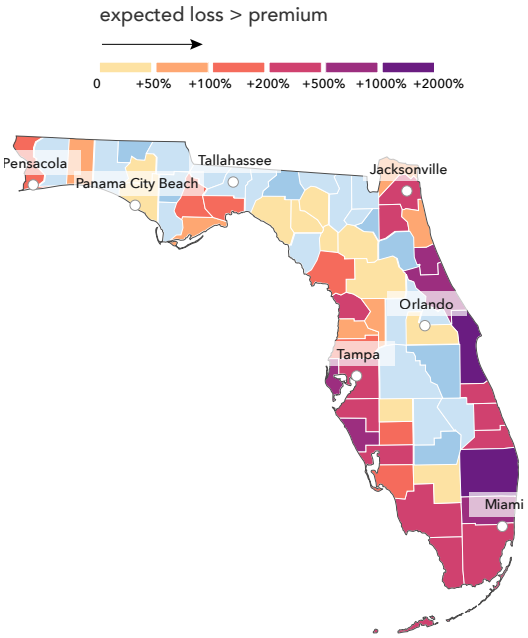
If all of these 906,465 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $43.65 billion vs an expected payout risk of $307.31 billion in structural damage, leaving a total deficit of $263.67 billion over 30 years.†

If insurance prices in Florida were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 348,480 properties with extreme risk‡ and structural damage, which have a $15,965 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Avg. state premium inside SFHA, 2021
$2,478

Avg. expected loss per property inside SFHA, 2021
$11,865

Avg. expected loss per property with an Extreme Flood Factor, 2021
$18,124

Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
South Patrick Shores	$24,724	$491	+4,936.8%
Indian Harbour Beach	$24,522	$493	+4,877.8%
Cocoa Beach	$23,677	$508	+4,565.3%
Palm Beach	$69,830	$1,753	+3,883.3%
Satellite Beach	$15,352	$491	+3,025.5%
Miami Beach	$59,518	$2,153	+2,664.1%
Ormond-by-the-Sea	$15,261	$667	+2,187.7%
Flagler Beach	$16,020	$754	+2,023.9%
Merritt Island	$12,551	$630	+1,893.6%
Dania Beach	$20,908	$1,107	+1,788.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Georgia

In Georgia there are 116,067 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $460.5 million this year.

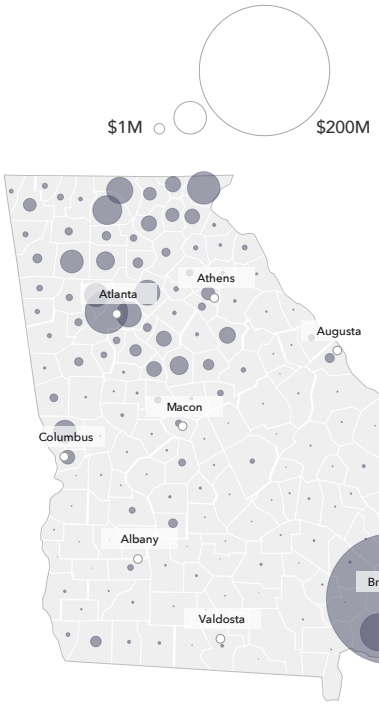
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

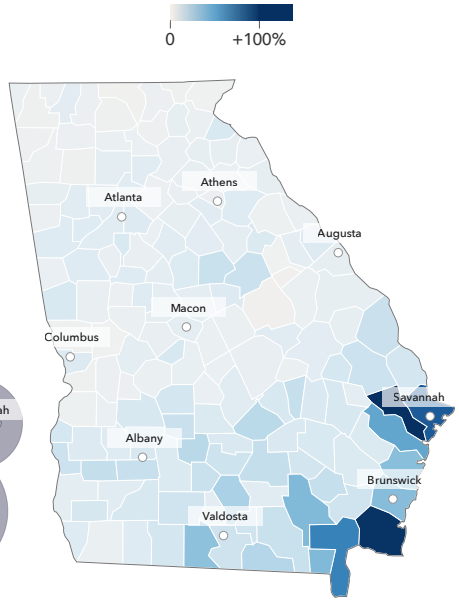
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,968 in 2021. This will grow to $5,637 for these same properties in 2051. This additional 42% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 4,512 properties are expected to experience financial loss from flood damage.

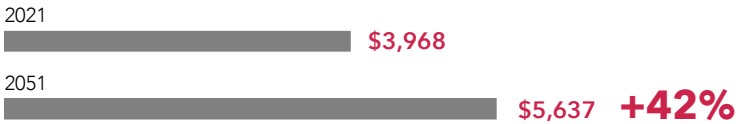
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
St. Simons	$113.91 M	$162.13 M	+42.3%
Skidaway Island	$26.91 M	$48.77 M	+81.2%
Wilmington Island	$19.62 M	$38.20 M	+94.7%
Atlanta	$12.61 M	$14.29 M	+13.3%
Brunswick	$11.74 M	$17.12 M	+45.8%
Whitemarsh Island	$10.42 M	$20.03 M	+92.2%
St. Marys	$9.16 M	$21.34 M	+132.9%
Country Club Estates	$6.54 M	$9.73 M	+48.8%
Savannah	$5.57 M	$10.37 M	+86.2%
Sandy Springs	$5.32 M	$5.79 M	+8.9%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Richmond Hill	$0.08 M	$0.22 M	+189.8%
Georgetown	$0.33 M	$0.85 M	+155.3%
St. Marys	$9.16 M	$21.34 M	+132.9%
Wilmington Island	$19.62 M	$38.20 M	+94.7%
Whitemarsh Island	$10.42 M	$20.03 M	+92.2%
Savannah	$5.57 M	$10.37 M	+86.2%
Skidaway Island	$26.91 M	$48.77 M	+81.2%
Villa Rica	$0.02 M	$0.04 M	+80.6%
Dock Junction	$1.05 M	$1.72 M	+63.1%
Tifton	$0.01 M	$0.01 M	+59.6%

State Overview
Georgia

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 33,247 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $8,129 while the average NFIP insurance premium** for these properties is calculated to be $2,013. If premiums were adjusted to cover current risk they would have to increase by 4.0 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 82,820 properties outside the SFHA have an average expected annual loss of $2,068 per property and are estimated to have an average NFIP insurance premium of $474. To account for this difference in risk, premiums would have to increase by 4.4 times for these homes.

If all of these 116,067 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $3.19 billion vs an expected payout risk of $16.02 billion in structural damage, leaving a total deficit of $12.83 billion over 30 years.†

If insurance prices in Georgia were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

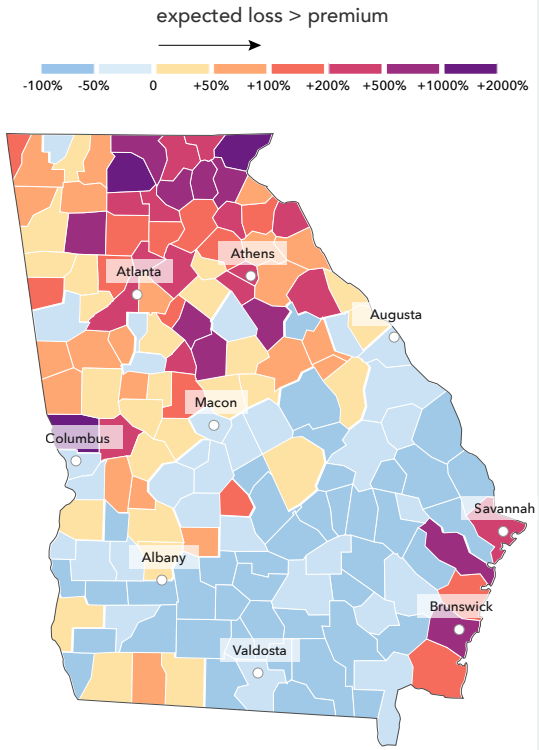
The financial implications are most pronounced for 49,769 properties with extreme risk‡ and structural damage, which have a $6,175 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$2,013

Avg. expected loss per property inside SFHA, 2021
$8,129

Avg. expected loss per property with an Extreme Flood Factor, 2021
$7,233

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Cartersville	$7,861	$549	+1,331.8%
Country Club Estates	$6,855	$743	+822.1%
St. Simons	$18,015	$1,973	+813.0%
Peachtree Corners	$4,021	$480	+737.2%
Duluth	$3,593	$450	+698.4%
Sandy Springs	$4,621	$621	+644.2%
Roswell	$2,734	$519	+426.9%
Port Wentworth	$4,593	$974	+371.5%
Brunswick	$3,046	$657	+363.7%
Whitemarsh Island	$6,493	$1,583	+310.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Idaho

In Idaho there are 40,056 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $72.4 million this year.

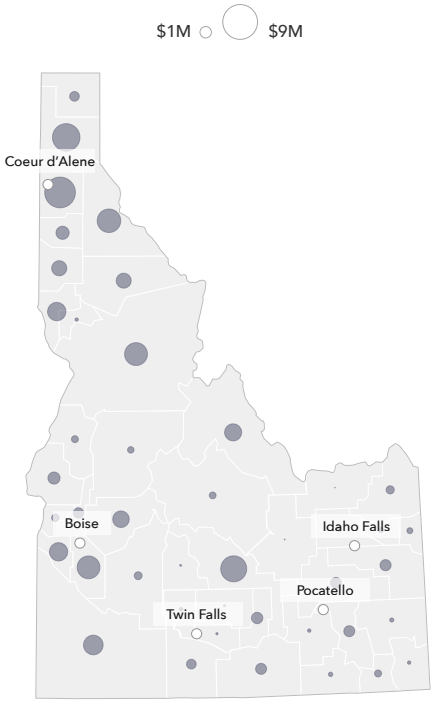
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

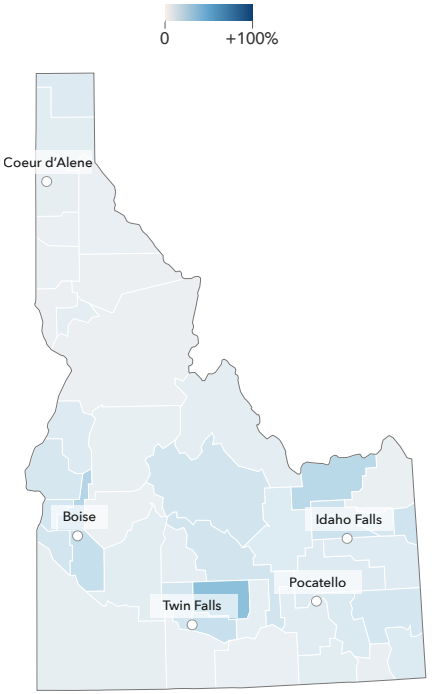
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,808 in 2021. This will grow to $2,005 for these same properties in 2051. This additional 11% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 2,137 properties are expected to experience financial loss from flood damage.

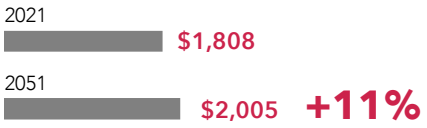
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Boise City	$2.76 M	$3.36 M	+21.7%
Hailey	$1.73 M	$2.13 M	+22.9%
Lewiston	$1.13 M	$1.18 M	+4.3%
Nampa	$0.87 M	$1.12 M	+28.0%
Caldwell	$0.84 M	$0.97 M	+15.8%
Coeur d'Alene	$0.76 M	$0.90 M	+17.9%
Blackfoot	$0.52 M	$0.57 M	+8.8%
Eagle	$0.48 M	$0.58 M	+21.2%
Meridian	$0.45 M	$0.59 M	+32.3%
Rathdrum	$0.43 M	$0.48 M	+12.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Sandpoint	$42,000	$65,000	+53.4%
Kuna	$43,000	$63,000	+46.3%
Emmett	$428,000	$578,000	+35.0%
Star	$57,000	$76,000	+33.9%
Garden City	$102,000	$137,000	+33.8%
Meridian	$446,000	$589,000	+32.3%
Payette	$92,000	$118,000	+28.2%
Nampa	$872,000	$1,116,000	+28.0%
Post Falls	$321,000	$410,000	+27.9%
Mountain Home	$49,000	$63,000	+27.2%

State Overview
Idaho

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 5,809 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,486 while the average NFIP insurance premium** for these properties is calculated to be $887. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 34,247 properties outside the SFHA have an average expected annual loss of $1,688 per property and are estimated to have an average NFIP insurance premium of $479. To account for this difference in risk, premiums would have to increase by 3.5 times for these homes.

If all of these 40,056 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.65 billion vs an expected payout risk of $2.29 billion in structural damage, leaving a total deficit of $1.64 billion over 30 years.†

If insurance prices in Idaho were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

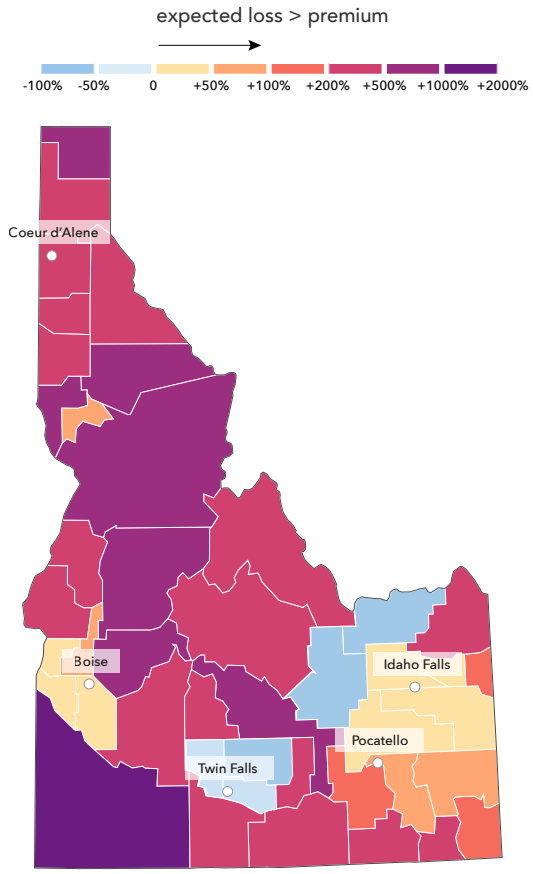
The financial implications are most pronounced for 9,743 properties with extreme risk‡ and structural damage, which have a $5,199 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$887

Avg. expected loss per property inside SFHA, 2021
$2,486

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,778

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Lewiston	$2,863	$503	+469.7%
Hailey	$2,120	$486	+335.9%
Coeur d'Alene	$1,139	$516	+120.8%
Boise City	$1,028	$478	+115.0%
Burley	$984	$497	+97.9%
Rathdrum	$773	$509	+51.9%
Blackfoot	$737	$488	+50.9%
Moscow	$769	$537	+43.1%
Sandpoint	$728	$609	+19.5%
Post Falls	$581	$488	+19.1%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Illinois

In Illinois there are 107,371 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $194.8 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Illinois is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

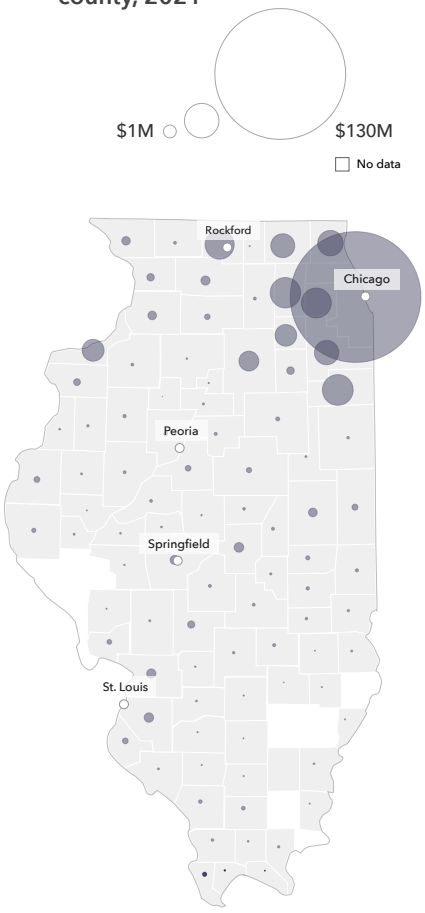
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,814 in 2021.

Average expected annual loss per property

2021 **$1,814**

2051 **$1,843**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Chicago	$89.53 M	$90.83 M	+1.5%
Palos Hills	$4.12 M	$4.10 M	-0.6%
Machesney Park	$2.84 M	$2.88 M	+1.2%
Winnetka	$2.60 M	$2.62 M	+0.6%
Evanston	$2.58 M	$2.66 M	+2.9%
Naperville	$2.34 M	$2.35 M	+0.3%
Skokie	$2.11 M	$2.15 M	+1.5%
Kankakee	$2.04 M	$2.05 M	+0.5%
Cicero	$1.79 M	$1.80 M	+0.4%
River Forest	$1.72 M	$1.73 M	+0.6%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Bloomingdale	$3,000	$6,000	+80.1%
Tinley Park	$8,000	$11,000	+42.7%
Carol Stream	$1,000	$2,000	+41.1%
Country Club Hills	$4,000	$5,000	+24.5%
Mount Vernon	$2,000	$3,000	+22.8%
Park Ridge	$16,000	$20,000	+22.4%
Clarendon Hills	$3,000	$4,000	+21.8%
Orland Park	$13,000	$15,000	+21.3%
Hazel Crest	$4,000	$5,000	+20.3%
Swansea	$22,000	$26,000	+16.3%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Illinois

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 18,015 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,204 while the average NFIP insurance premium** for these properties is calculated to be $1,383. If premiums were adjusted to cover current risk they would have to increase by 1.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 89,356 properties outside the SFHA have an average expected annual loss of $1,735 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 3.6 times for these homes.

If all of these 107,371 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $2.05 billion vs an expected payout risk of $5.89 billion in structural damage, leaving a total deficit of $3.84 billion over 30 years.†

If insurance prices in Illinois were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

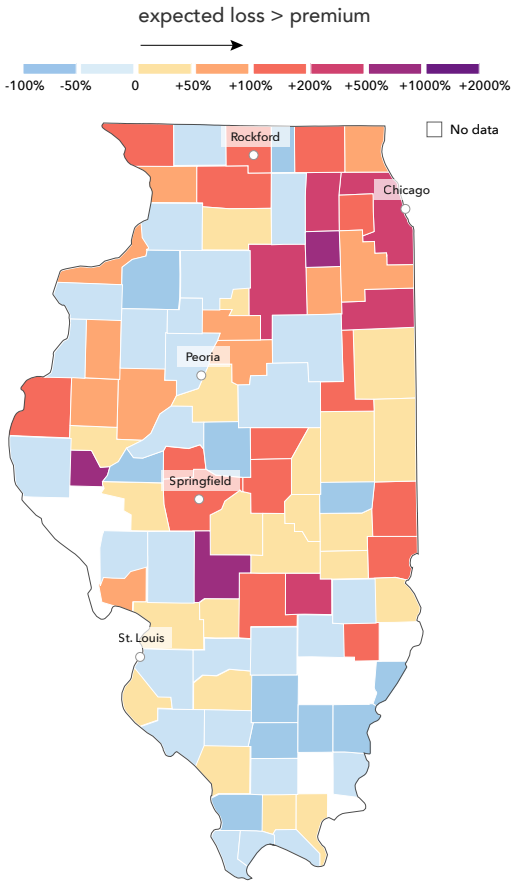
The financial implications are most pronounced for 19,893 properties with extreme risk‡ and structural damage, which have a $3,941 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,383

Avg. expected loss per property inside SFHA, 2021
$2,204

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,707

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Lemont	$9,227	$496	+1,761.6%
North Aurora	$10,138	$602	+1,584.6%
Litchfield	$8,910	$603	+1,376.9%
River Forest	$6,181	$474	+1,203.7%
Montgomery	$6,571	$557	+1,080.4%
Antioch	$5,291	$488	+984.1%
Niles	$5,089	$498	+922.2%
Carpentersville	$5,776	$573	+908.7%
Yorkville	$5,831	$584	+897.8%
Oswego	$5,645	$578	+876.7%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Indiana

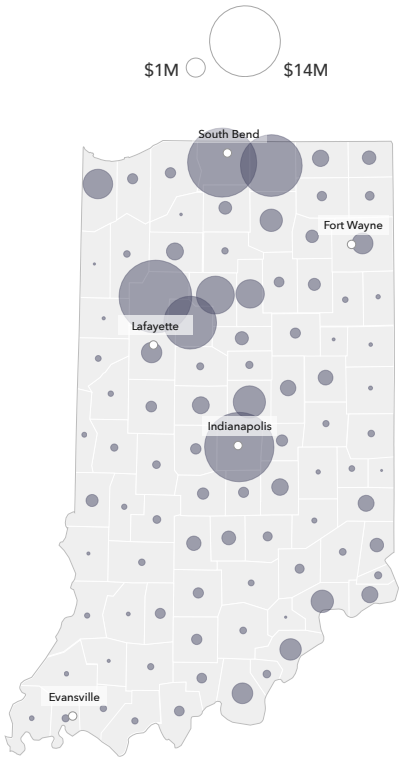
In Indiana there are 52,625 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $107.9 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Indiana is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

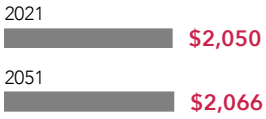
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,050 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051

Average expected annual loss per property



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Indianapolis	$12.85 M	$12.92 M	+0.6%
South Bend	$6.97 M	$7.00 M	+0.5%
Elkhart	$4.33 M	$4.31 M	-0.5%
Mishawaka	$3.88 M	$3.70 M	-4.8%
Logansport	$3.28 M	$3.30 M	+0.6%
Peru	$1.55 M	$1.56 M	+0.9%
Dyer	$1.34 M	$1.36 M	+1.3%
Fishers	$1.04 M	$1.04 M	+0.1%
Fort Wayne	$0.81 M	$0.82 M	+1.2%
Lebanon	$0.68 M	$0.69 M	+0.9%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Greensburg	$3,000	$3,000	+23.4%
New Albany	$33,000	$40,000	+18.5%
Granger	$46,000	$54,000	+18.2%
New Castle	$6,000	$7,000	+16.7%
Vincennes	$7,000	$8,000	+15.2%
Jeffersonville	$152,000	$170,000	+11.4%
Madison	$398,000	$435,000	+9.3%
Bloomington	$6,000	$7,000	+8.5%
Hammond	$215,000	$233,000	+8.4%
Richmond	$24,000	$26,000	+7.1%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Indiana

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 15,837 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,596 while the average NFIP insurance premium** for these properties is calculated to be $1,110. If premiums were adjusted to cover current risk they would have to increase by 2.3 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 36,788 properties outside the SFHA have an average expected annual loss of $1,815 per property and are estimated to have an average NFIP insurance premium of $488. To account for this difference in risk, premiums would have to increase by 3.7 times for these homes.

If all of these 52,625 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.07 billion vs an expected payout risk of $3.25 billion in structural damage, leaving a total deficit of $2.18 billion over 30 years.†

If insurance prices in Indiana were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

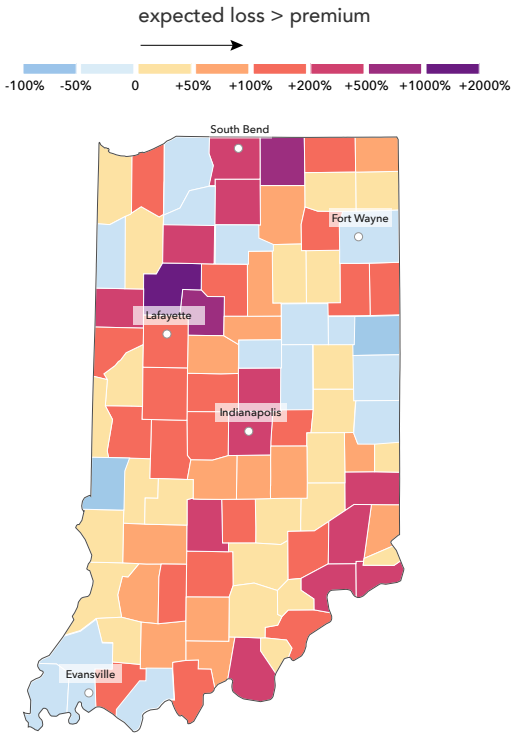
The financial implications are most pronounced for 17,656 properties with extreme risk‡ and structural damage, which have a $4,046 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,110

Avg. expected loss per property inside SFHA, 2021
$2,596

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,750

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Fishers	$4,397	$595	+638.4%
Mishawaka	$2,737	$499	+449.0%
Elkhart	$3,491	$641	+444.4%
Yorktown	$3,672	$763	+381.0%
South Bend	$2,280	$505	+351.3%
Lafayette	$2,174	$578	+275.8%
Zionsville	$2,850	$787	+261.9%
Noblesville	$2,376	$686	+246.4%
Indianapolis	$1,930	$660	+192.3%
Logansport	$1,436	$565	+154.4%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Iowa

In Iowa there are 19,570 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $19.2 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Iowa is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

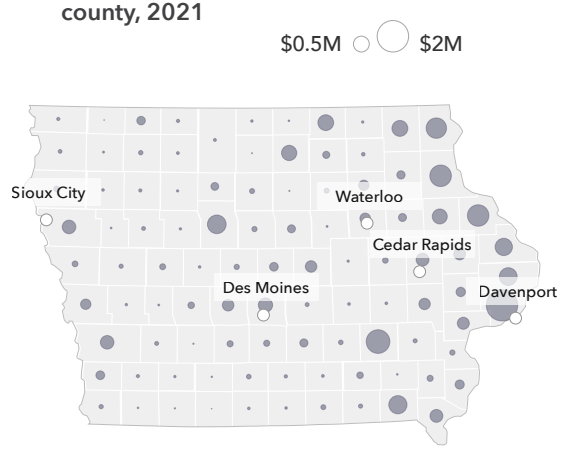
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $981 in 2021.

Average expected annual loss per property

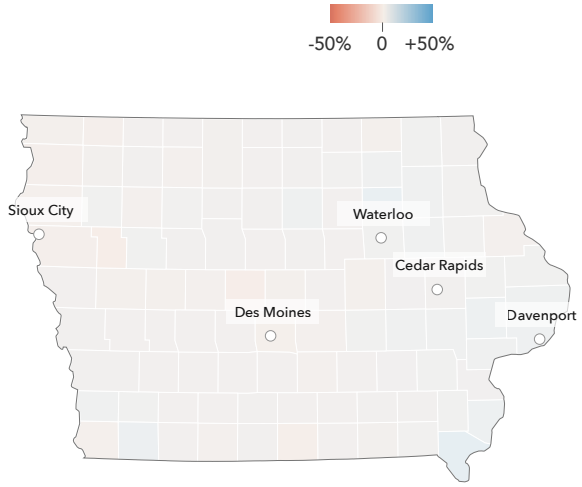
2021 **$981**

2051 **$992**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Bettendorf	$610,000	$623,000	+2.1%
Dubuque	$507,000	$508,000	+0.1%
Mason City	$467,000	$469,000	+0.2%
Sioux City	$338,000	$328,000	-3.0%
Davenport	$325,000	$350,000	+7.6%
Clinton	$264,000	$274,000	+3.8%
Des Moines	$174,000	$166,000	-4.6%
Cedar Falls	$144,000	$146,000	+1.3%
West Des Moines	$111,000	$111,000	+0.0%
Decorah	$108,000	$112,000	+3.4%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Manchester	$10,000	$11,000	+12.7%
Davenport	$325,000	$350,000	+7.6%
Fort Madison	$57,000	$60,000	+5.5%
Burlington	$12,000	$13,000	+4.1%
Oelwein	$24,000	$25,000	+4.0%
Clinton	$264,000	$274,000	+3.8%
Decorah	$108,000	$112,000	+3.4%
Keokuk	$24,000	$25,000	+3.2%
Red Oak	$4,000	$4,000	+3.2%
Mount Pleasant	$20,000	$21,000	+2.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Iowa

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 6,517 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,477 while the average NFIP insurance premium** for these properties is calculated to be $1,239. If premiums were adjusted to cover current risk they would have to increase by 1.2 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 13,053 properties outside the SFHA have an average expected annual loss of $733 per property and are estimated to have an average NFIP insurance premium of $485. To account for this difference in risk, premiums would have to increase by 1.5 times for these homes.

If all of these 19,570 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $432 million vs an expected payout risk of $579 million in structural damage, leaving a total deficit of $147 million over 30 years.†

If insurance prices in Iowa were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

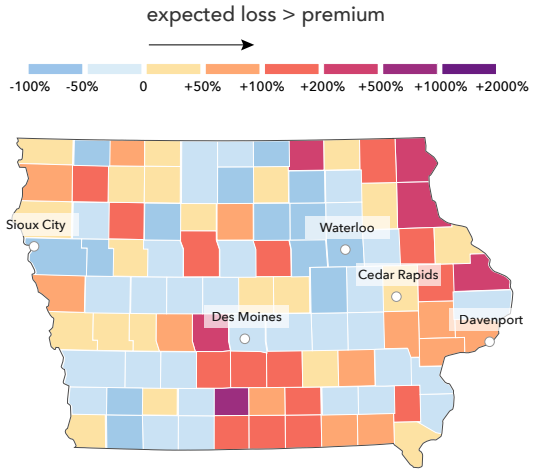
The financial implications are most pronounced for 6,767 properties with extreme risk‡ and structural damage, which have a $1,543 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,239

Avg. expected loss per property inside SFHA, 2021
$1,477

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,336

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Bettendorf	$1,844	$1,094	+68.6%
Mason City	$1,082	$717	+51.0%
Decorah	$651	$487	+33.7%
Urbandale	$807	$642	+25.7%
Mount Pleasant	$612	$488	+25.4%
Fort Dodge	$881	$771	+14.2%
West Des Moines	$980	$971	+0.9%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Kansas

In Kansas there are 9,187 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $4.7 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Kansas is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

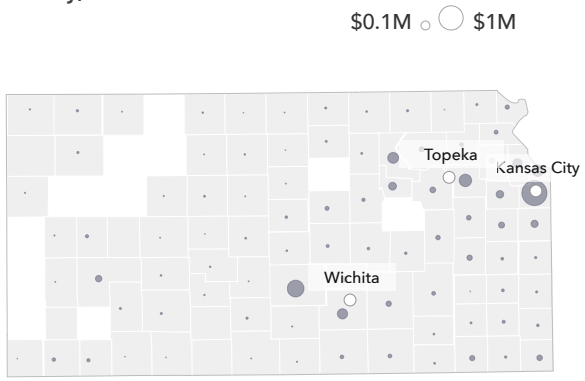
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $515 in 2021.

Average expected annual loss per property

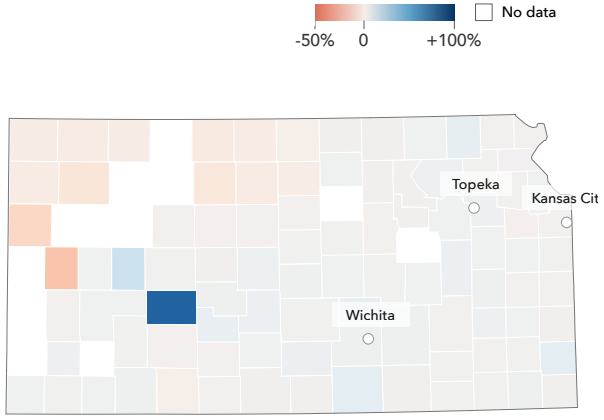
2021 **$515**

2051 **$524**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Hutchinson	$536,000	$542,000	+1.1%
Overland Park	$370,000	$373,000	+0.8%
Leawood	$218,000	$218,000	+0.2%
Kansas City	$180,000	$185,000	+2.6%
Topeka	$153,000	$160,000	+4.7%
Wichita	$112,000	$116,000	+3.8%
Shawnee	$84,000	$85,000	+1.7%
Manhattan	$82,000	$83,000	+0.4%
Bonner Springs	$75,000	$74,000	-0.6%
Lenexa	$74,000	$76,000	+1.8%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Lawrence	$25,000	$30,000	+18.6%
Newton	$28,000	$32,000	+14.1%
Emporia	$12,000	$14,000	+13.6%
Park City	$14,000	$15,000	+5.9%
El Dorado	$4,000	$4,000	+5.6%
Haysville	$1,000	$1,000	+5.1%
Topeka	$153,000	$160,000	+4.7%
Parsons	$3,000	$3,000	+4.6%
Iola	$4,000	$4,000	+4.4%
Pratt	$3,000	$3,000	+4.1%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Kansas

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 2,233 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $450 while the average NFIP insurance premium** for these properties is calculated to be $1,225. This shows that premiums are currently 2.7 times higher than risk in these areas.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 6,954 properties outside the SFHA have an average expected annual loss of $536 per property and are estimated to have an average NFIP insurance premium of $475. To account for this difference in risk, premiums would have to increase by 1.1 times for these homes.

If all of these 9,187 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $181 million vs an expected payout risk of $143 million in structural damage, leaving a total surplus of $38 million over 30 years.†

If insurance prices in Kansas were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

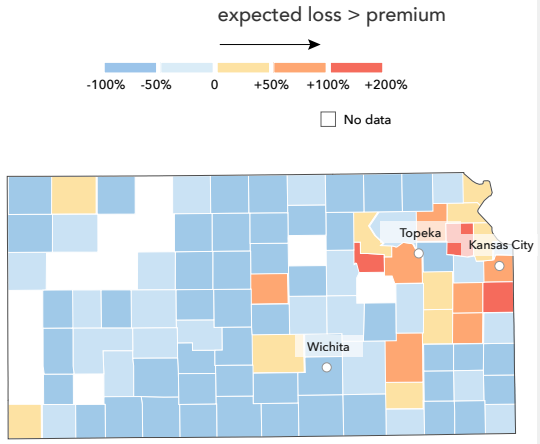
The financial implications are most pronounced for 2,782 properties with extreme risk‡ and structural damage, which have a $617 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,225

Avg. expected loss per property inside SFHA, 2021
$450

Avg. expected loss per property with an Extreme Flood Factor, 2021
$1,261

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Leawood	$1,434	$602	+138.3%
Overland Park	$1,070	$567	+88.7%
Bonner Springs	$1,149	$680	+68.9%
Shawnee	$840	$519	+62.0%
Hutchinson	$665	$488	+36.3%
Lenexa	$554	$464	+19.6%
Prairie Village	$554	$499	+11.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Kentucky

In Kentucky there are 59,855 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $102.1 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,706 in 2021. This will grow to $1,765 for these same properties in 2051. This additional 4% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

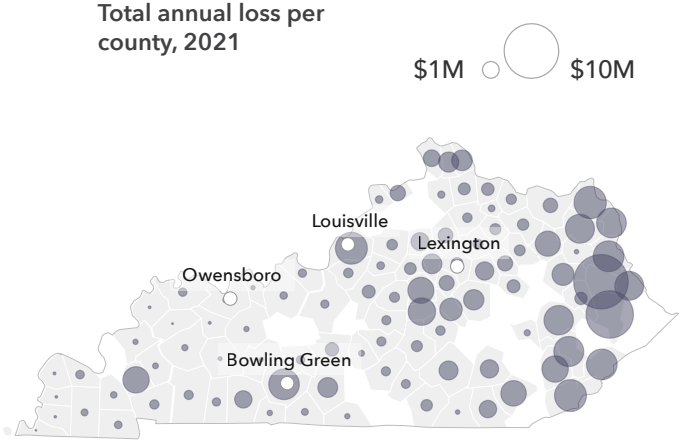
Over the next 30 years, an additional 991 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

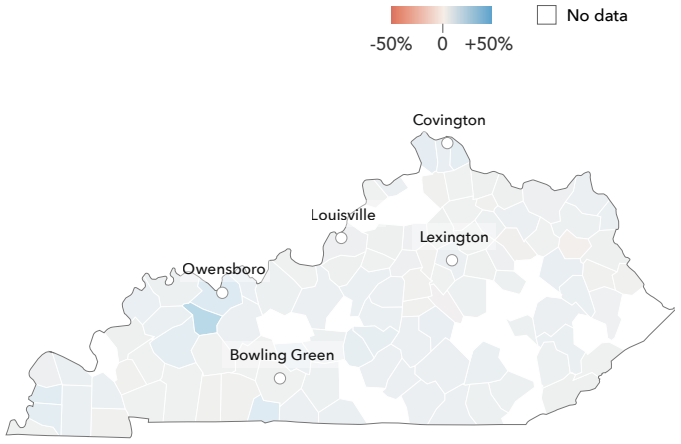
2021 $1,706

2051 $1,765 **+4%**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Louisville	$1.56 M	$1.59 M	+1.9%
Lousiville-Jefferson County	$1.46 M	$1.54 M	+5.3%
Bowling Green	$1.36 M	$1.39 M	+1.9%
Covington	$0.48 M	$0.52 M	+8.8%
Lexington-Fayette	$0.46 M	$0.48 M	+5.3%
Corbin	$0.43 M	$0.43 M	+1.8%
Ashland	$0.27 M	$0.30 M	+12.2%
Georgetown	$0.24 M	$0.24 M	+1.3%
Henderson	$0.18 M	$0.18 M	+2.1%
Bellevue	$0.16 M	$0.20 M	+21.8%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Alexandria	$8,000	$15,000	+99.5%
Mount Sterling	$13,000	$21,000	+62.5%
Union	$10,000	$15,000	+59.2%
Jeffersontown	$7,000	$11,000	+46.3%
Fort Thomas	$13,000	$18,000	+35.6%
Winchester	$31,000	$42,000	+34.6%
Francisville	$8,000	$10,000	+25.0%
Radcliff	$7,000	$9,000	+22.3%
Bellevue	$162,000	$197,000	+21.8%
Newport	$56,000	$68,000	+20.7%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Kentucky

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 15,190 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,965 while the average NFIP insurance premium** for these properties is calculated to be $1,090. If premiums were adjusted to cover current risk they would have to increase by 1.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 44,665 properties outside the SFHA have an average expected annual loss of $1,618 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 3.3 times for these homes.

If all of these 59,855 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.15 billion vs an expected payout risk of $3.12 billion in structural damage, leaving a total deficit of $1.97 billion over 30 years.†

If insurance prices in Kentucky were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

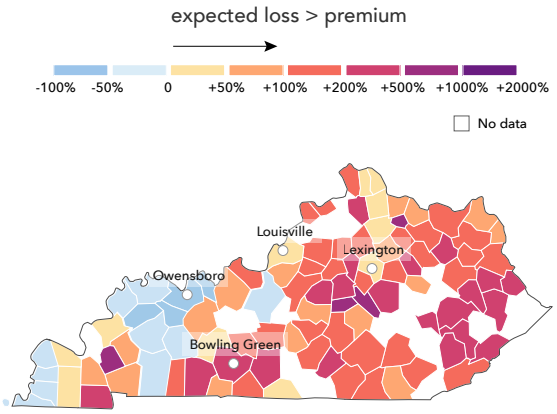
The financial implications are most pronounced for 39,190 properties with extreme risk‡ and structural damage, which have a $1,789 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,090

Avg. expected loss per property inside SFHA, 2021
$1,965

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,410

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
St. Matthews	$2,502	$504	+395.9%
Oakbrook	$2,177	$488	+346.1%
Bowling Green	$2,310	$567	+307.2%
Berea	$1,576	$550	+186.5%
Burlington	$1,354	$534	+153.5%
Independence	$1,295	$565	+129.5%
Corbin	$1,457	$648	+124.8%
Villa Hills	$1,611	$729	+121.1%
Louisville	$1,334	$680	+96.3%
Taylor Mill	$1,114	$590	+89.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Louisiana

In Louisiana there are 241,852 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $745.3 million this year.

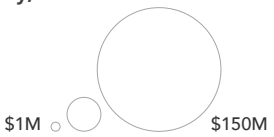
The growing cost from flooding

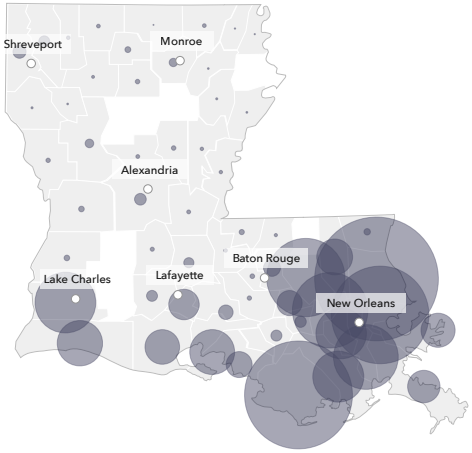
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,082 in 2021. This will grow to $10,617 for these same properties in 2051. This additional 245% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

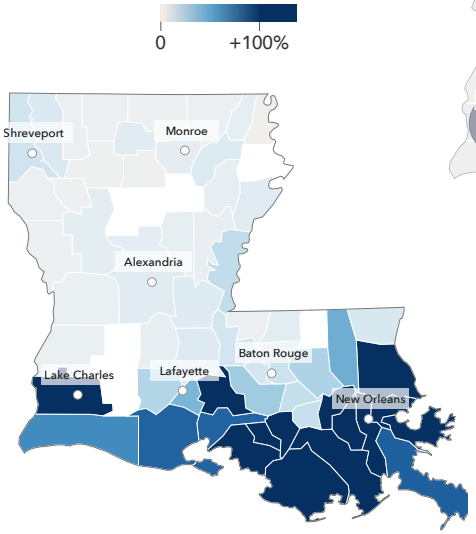
Over the next 30 years, an additional 4,741 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051



Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
New Orleans	$95.45 M	$258.15 M	+170.5%
Laplace	$53.14 M	$146.29 M	+175.3%
Houma	$41.06 M	$456.92 M	+1,012.7%
Eden Isle	$16.19 M	$54.71 M	+237.9%
Luling	$15.74 M	$33.51 M	+112.8%
Metairie	$13.63 M	$46.76 M	+243.1%
Lacombe	$8.78 M	$20.65 M	+135.2%
Covington	$8.25 M	$11.29 M	+36.8%
Mandeville	$7.00 M	$29.25 M	+317.9%
Lake Charles	$6.61 M	$75.43 M	+1,040.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Prien	$1.54 M	$27.05 M	+1,660.5%
Bayou Cane	$6.00 M	$105.12 M	+1,651.4%
Raceland	$2.36 M	$27.49 M	+1,063.2%
Bayou Blue	$2.87 M	$33.33 M	+1,061.8%
Lake Charles	$6.61 M	$75.43 M	+1,040.5%
Houma	$41.06 M	$456.92 M	+1,012.7%
Morgan City	$1.37 M	$7.04 M	+414.2%
Sulphur	$0.88 M	$4.47 M	+406.2%
Kenner	$0.70 M	$3.33 M	+378.7%
Larose	$4.53 M	$21.68 M	+378.3%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Louisiana

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 109,640 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,379 while the average NFIP insurance premium** for these properties is calculated to be $1,104. If premiums were adjusted to cover current risk they would have to increase by 4.0 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 132,212 properties outside the SFHA have an average expected annual loss of $1,994 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 4.1 times for these homes.

If all of these 241,852 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $5.56 billion vs an expected payout risk of $49.31 billion in structural damage, leaving a total deficit of $43.75 billion over 30 years.†

If insurance prices in Louisiana were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

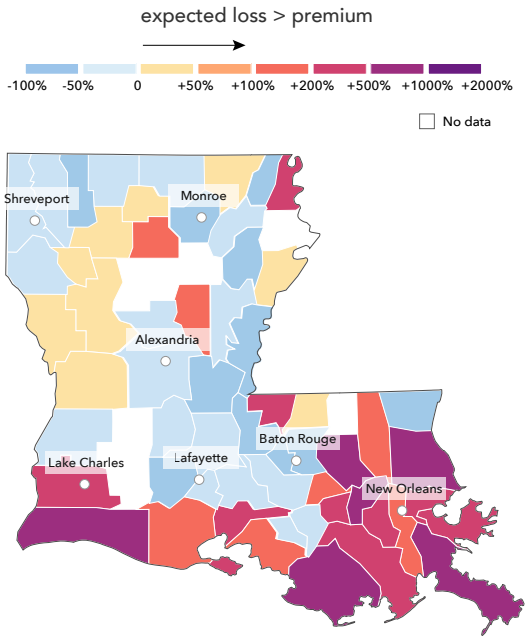
The financial implications are most pronounced for 71,417 properties with extreme risk‡ and structural damage, which have a $6,010 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,104

Avg. expected loss per property inside SFHA, 2021
$4,379

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,831

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Lacombe	$8,538	$853	+901.3%
Covington	$7,745	$781	+891.3%
Laplace	$6,750	$883	+664.4%
Houma	$4,231	$582	+627.1%
Luling	$5,591	$819	+582.7%
Reserve	$3,081	$495	+523.0%
New Orleans	$3,219	$577	+457.5%
Eden Isle	$5,649	$1,087	+419.5%
Belle Chasse	$3,231	$641	+403.9%
Meraux	$2,491	$502	+396.7%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Maine

In Maine there are 8,163 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $27.7 million this year.

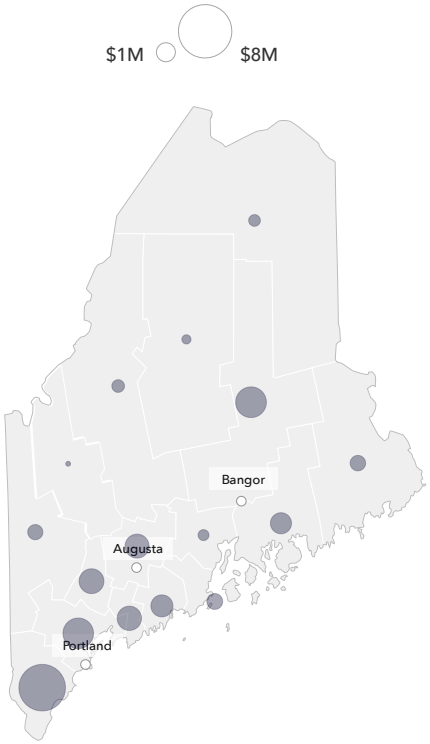
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

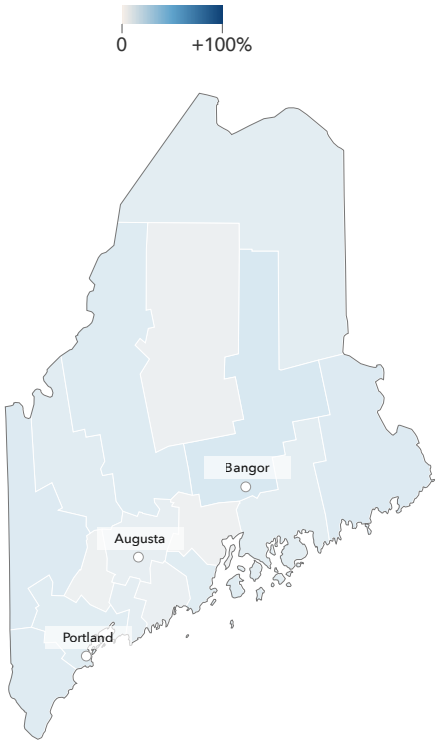
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,398 in 2021. This will grow to $3,755 for these same properties in 2051. This additional 11% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 367 properties are expected to experience financial loss from flood damage.

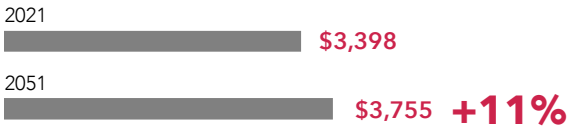
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Auburn	$1.42 M	$1.46 M	+2.8%
Biddeford	$1.05 M	$1.11 M	+5.6%
Brewer	$1.02 M	$1.12 M	+9.8%
Augusta	$0.76 M	$0.81 M	+6.1%
Ellsworth	$0.75 M	$0.76 M	+1.2%
Old Town	$0.62 M	$0.86 M	+39.1%
Bath	$0.55 M	$0.62 M	+13.3%
Lewiston	$0.46 M	$0.48 M	+4.1%
Saco	$0.42 M	$0.46 M	+9.4%
Belfast	$0.35 M	$0.37 M	+3.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Old Town	$0.62 M	$0.86 M	+39.1%
Caribou	$0.04 M	$0.05 M	+16.4%
Presque Isle	$0.01 M	$0.02 M	+15.1%
Bath	$0.55 M	$0.62 M	+13.3%
Portland	$0.15 M	$0.17 M	+12.5%
Kennebunk	$0.13 M	$0.15 M	+12.0%
Brewer	$1.02 M	$1.12 M	+9.8%
Waterville	$0.08 M	$0.09 M	+9.8%
Bangor	$0.16 M	$0.18 M	+9.8%
Saco	$0.42 M	$0.46 M	+9.4%

State Overview
Maine

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 1,719 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,381 while the average NFIP insurance premium** for these properties is calculated to be $1,285. If premiums were adjusted to cover current risk they would have to increase by 3.4 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 6,444 properties outside the SFHA have an average expected annual loss of $3,130 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 6.5 times for these homes.

If all of these 8,163 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $160 million vs an expected payout risk of $874 million in structural damage, leaving a total deficit of $714 million over 30 years.†

If insurance prices in Maine were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

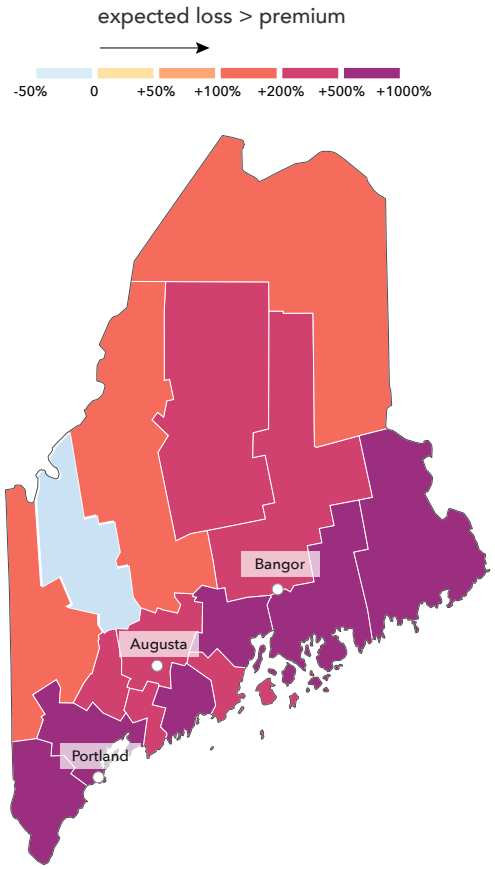
The financial implications are most pronounced for 3,854 properties with extreme risk‡ and structural damage, which have a $5,636 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,285

Avg. expected loss per property inside SFHA, 2021
$4,381

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,354

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Ellsworth	$12,241	$541	+2,161.0%
Belfast	$10,368	$573	+1,709.0%
Biddeford	$4,746	$510	+830.6%
Auburn	$5,310	$809	+556.2%
Winslow	$3,929	$645	+509.6%
Brewer	$3,367	$614	+448.6%
Lewiston	$2,606	$524	+396.9%
Saco	$2,797	$579	+383.2%
Old Town	$2,597	$591	+339.4%
Kennebunk	$1,981	$481	+312.3%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Maryland

In Maryland there are 33,371 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $132.2 million this year.

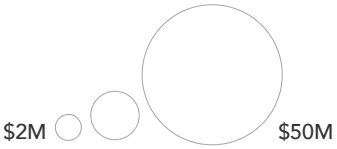
The growing cost from flooding

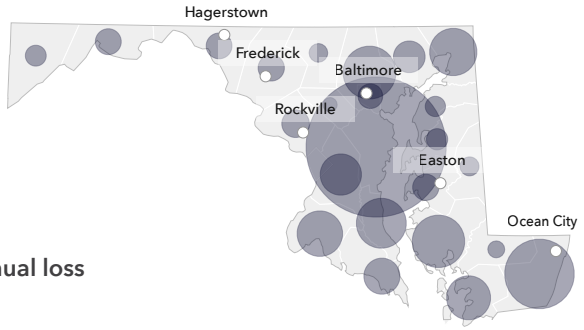
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,961 in 2021. This will grow to $5,849 for these same properties in 2051. This additional 48% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

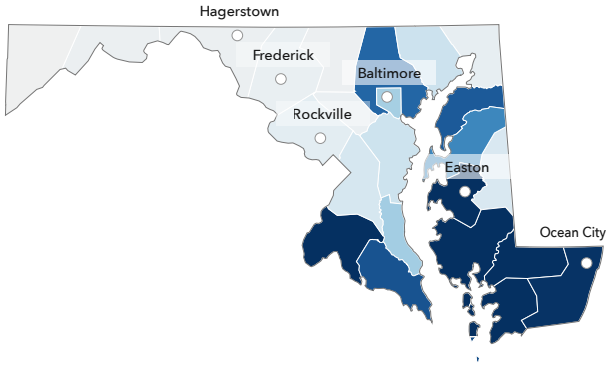
Over the next 30 years, an additional 9,880 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021

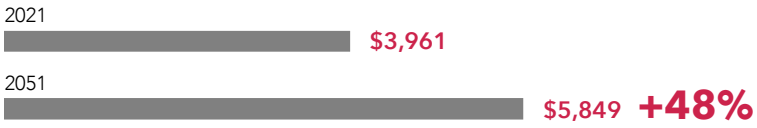




Change in total annual loss from 2021 to 2051



Average expected annual loss per property



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Severna Park	$11.74 M	$13.50 M	+15.0%
Parole	$6.44 M	$6.68 M	+3.7%
Annapolis	$5.70 M	$7.36 M	+29.2%
West Ocean City	$5.63 M	$9.34 M	+65.9%
Ocean City	$2.36 M	$5.32 M	+125.7%
Fort Washington	$2.31 M	$2.53 M	+9.5%
Bowleys Quarters	$2.15 M	$5.31 M	+147.2%
Mayo	$1.88 M	$3.48 M	+84.9%
Edgewater	$1.87 M	$2.02 M	+7.7%
Baltimore	$1.63 M	$2.17 M	+33.6%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Shady Side	$0.20 M	$1.28 M	+541.8%
Ocean Pines	$1.21 M	$4.80 M	+296.0%
Middle River	$0.09 M	$0.26 M	+172.6%
Edgemere	$0.48 M	$1.20 M	+151.8%
Bowleys Quarters	$2.15 M	$5.31 M	+147.2%
East Riverdale	$0.00 M	$0.01 M	+144.0%
Cambridge	$0.17 M	$0.39 M	+130.3%
Ocean City	$2.36 M	$5.32 M	+125.7%
Annapolis Neck	$0.91 M	$1.87 M	+105.8%
Essex	$0.26 M	$0.49 M	+86.6%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Maryland

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 12,650 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,228 while the average NFIP insurance premium** for these properties is calculated to be $1,864. If premiums were adjusted to cover current risk they would have to increase by 1.7 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 20,721 properties outside the SFHA have an average expected annual loss of $4,173 per property and are estimated to have an average NFIP insurance premium of $479. To account for this difference in risk, premiums would have to increase by 8.7 times for these homes.

If all of these 33,371 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1. billion vs an expected payout risk of $4.75 billion in structural damage, leaving a total deficit of $3.74 billion over 30 years.†

If insurance prices in Maryland were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

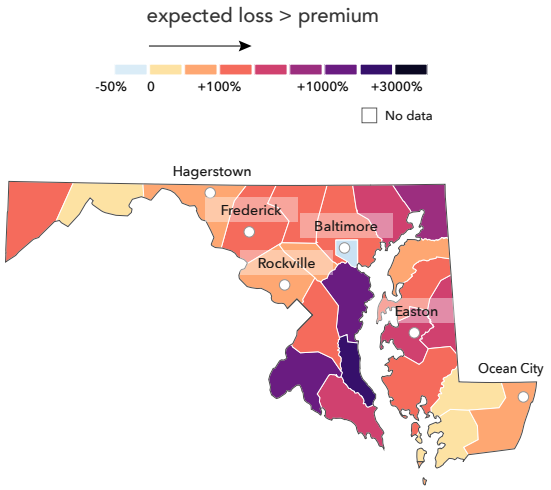
The financial implications are most pronounced for 20,164 properties with extreme risk‡ and structural damage, which have a $4,777 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,864

Avg. expected loss per property inside SFHA, 2021
$3,228

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,030

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Parole	$44,816	$528	+8,389.8%
Annapolis	$23,945	$652	+3,573.6%
Fort Washington	$19,498	$565	+3,354.1%
Severna Park	$25,837	$839	+2,980.4%
Edgewater	$19,103	$679	+2,714.1%
Arnold	$11,033	$716	+1,441.9%
California	$6,369	$510	+1,147.8%
Pasadena	$6,251	$550	+1,036.4%
Annapolis Neck	$8,827	$814	+984.7%
Lake Shore	$13,003	$1,269	+924.9%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Massachusetts

In Massachusetts there are 44,268 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $233.0 million this year.

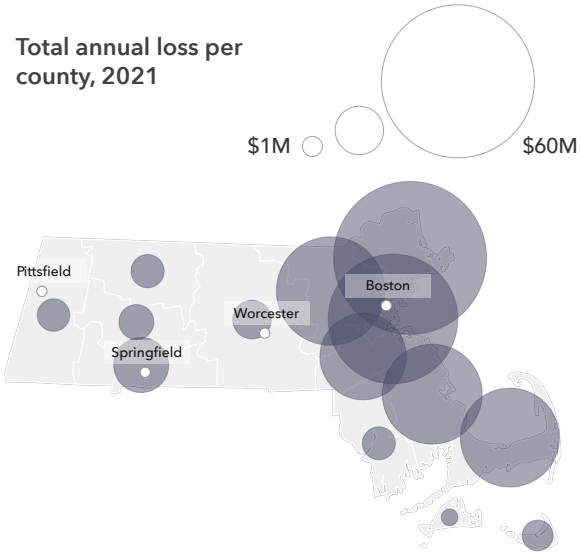
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

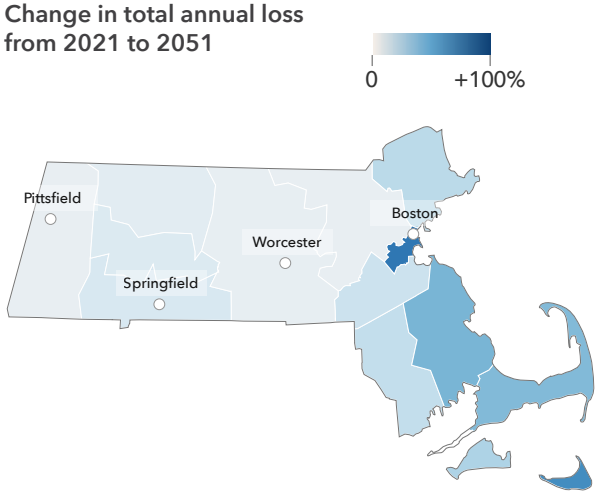
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $5,264 in 2021. This will grow to $7,116 for these same properties in 2051. This additional 35% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 4,807 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Boston	$35.60 M	$62.34 M	+75.1%
Lowell	$14.96 M	$15.99 M	+6.9%
Gloucester	$9.69 M	$11.92 M	+23.0%
Haverhill	$7.83 M	$8.76 M	+11.8%
Lawrence	$6.72 M	$7.44 M	+10.7%
Revere	$6.67 M	$10.50 M	+57.6%
Methuen Town	$5.99 M	$6.71 M	+11.9%
Quincy	$5.71 M	$6.85 M	+19.9%
Agawam Town	$5.21 M	$6.05 M	+16.2%
Saugus	$5.11 M	$8.68 M	+69.8%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
West Yarmouth	$0.57 M	$1.21 M	+114.4%
Salem	$1.94 M	$3.75 M	+93.7%
South Yarmouth	$0.72 M	$1.37 M	+91.2%
Chelsea	$0.46 M	$0.85 M	+83.6%
Newburyport	$0.67 M	$1.21 M	+81.1%
Boston	$35.60 M	$62.34 M	+75.1%
Lynn	$1.43 M	$2.49 M	+74.1%
Nantucket	$1.99 M	$3.41 M	+70.8%
Saugus	$5.11 M	$8.68 M	+69.8%
Winthrop Town	$1.06 M	$1.77 M	+67.5%

State Overview
Massachusetts

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 13,420 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $7,011 while the average NFIP insurance premium** for these properties is calculated to be $1,702. If premiums were adjusted to cover current risk they would have to increase by 4.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 30,848 properties outside the SFHA have an average expected annual loss of $4,043 per property and are estimated to have an average NFIP insurance premium of $485. To account for this difference in risk, premiums would have to increase by 8.3 times for these homes.

If all of these 44,268 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.13 billion vs an expected payout risk of $7.70 billion in structural damage, leaving a total deficit of $6.57 billion over 30 years.†

If insurance prices in Massachusetts were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

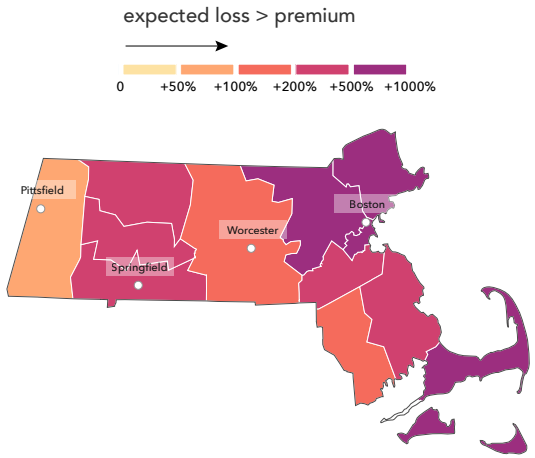
The financial implications are most pronounced for 17,125 properties with extreme risk‡ and structural damage, which have a $9,412 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,702

Avg. expected loss per property inside SFHA, 2021
$7,011

Avg. expected loss per property with an Extreme Flood Factor, 2021
$10,454

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Lowell	$9,583	$583	+1,543.3%
Boston	$9,154	$663	+1,280.9%
Haverhill	$8,923	$676	+1,219.4%
Methuen Town	$6,873	$550	+1,149.0%
Amesbury Town	$7,727	$746	+936.2%
Lawrence	$6,886	$672	+925.4%
Gloucester	$12,490	$1,243	+904.5%
Longmeadow	$9,163	$945	+869.3%
Maynard	$5,751	$619	+829.4%
Arlington	$7,008	$754	+829.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Michigan

In Michigan there are 94,195 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $196.3 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Michigan is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

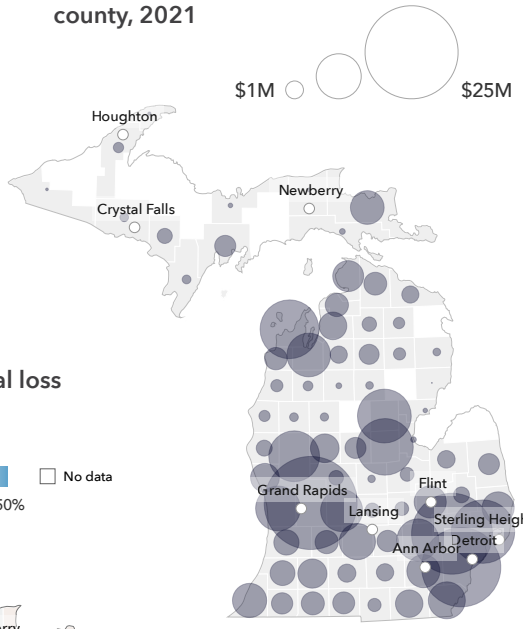
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,084 in 2021.

Average expected annual loss per property

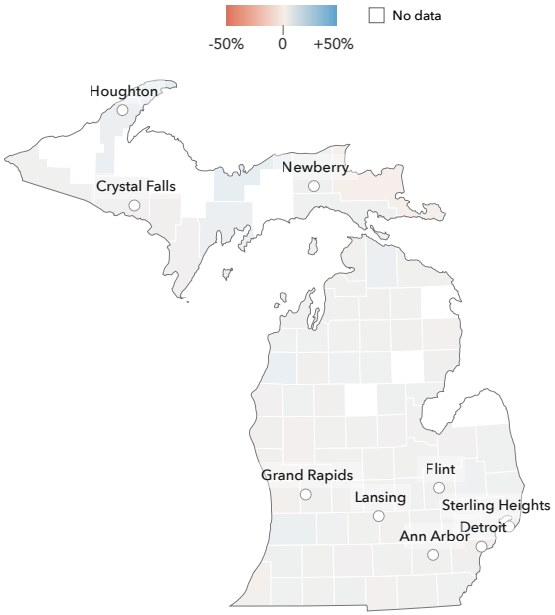
2021 **$2,084**

2051 **$2,110**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Warren	$4.43 M	$4.46 M	+0.6%
Grand Rapids	$3.93 M	$4.05 M	+3.1%
Royal Oak	$3.62 M	$3.65 M	+0.8%
Traverse City	$2.18 M	$2.23 M	+2.3%
Detroit	$1.97 M	$1.92 M	-2.4%
Muskegon	$1.60 M	$1.59 M	-0.7%
Monroe	$1.49 M	$1.51 M	+0.9%
South Haven	$1.43 M	$1.48 M	+3.0%
Port Huron	$1.36 M	$1.38 M	+2.0%
Birmingham	$1.05 M	$1.06 M	+0.4%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Plymouth	$3,000	$9,000	+154.3%
Clawson	$1,000	$1,000	+28.2%
Oak Park	$1,000	$1,000	+28.1%
Portage	$39,000	$46,000	+18.0%
Wyoming	$9,000	$11,000	+15.5%
Eastpointe	$1,000	$1,000	+11.7%
Norton Shores	$129,000	$142,000	+10.4%
Grandville	$198,000	$209,000	+6.0%
Manistee	$23,000	$25,000	+5.1%
Walker	$38,000	$40,000	+4.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Michigan

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 16,243 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,537 while the average NFIP insurance premium** for these properties is calculated to be $1,401. If premiums were adjusted to cover current risk they would have to increase by 1.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 77,952 properties outside the SFHA have an average expected annual loss of $1,990 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 4.1 times for these homes.

If all of these 94,195 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.82 billion vs an expected payout risk of $5.93 billion in structural damage, leaving a total deficit of $4.11 billion over 30 years.†

If insurance prices in Michigan were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

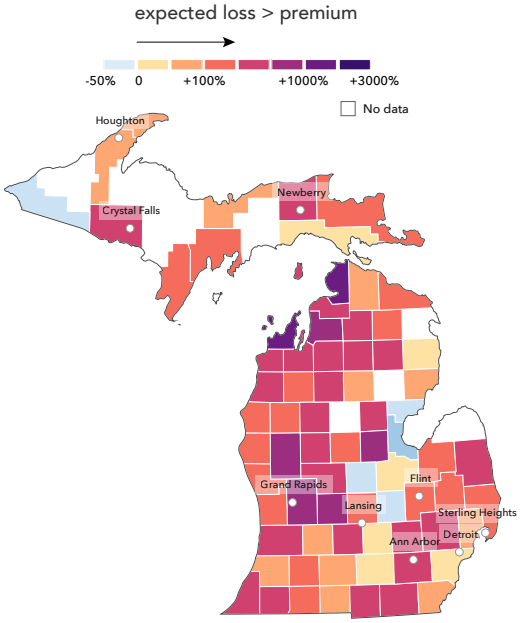
The financial implications are most pronounced for 24,124 properties with extreme risk‡ and structural damage, which have a $5,066 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,401

Avg. expected loss per property inside SFHA, 2021
$2,537

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,744

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Petoskey	$12,314	$488	+2,423.4%
Ypsilanti	$6,260	$517	+1,109.7%
Milford	$5,747	$505	+1,037.5%
Birmingham	$11,303	$1,163	+872.2%
Grand Ledge	$5,840	$694	+741.3%
Huntington Woods	$3,710	$488	+660.2%
Farmington	$4,150	$550	+655.0%
Beverly Hills	$4,896	$690	+609.6%
Brighton	$2,868	$488	+487.7%
Royal Oak	$2,582	$488	+429.1%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Minnesota

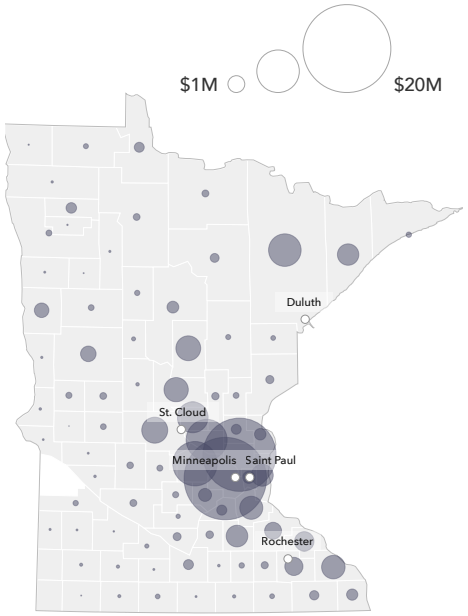
In Minnesota there are 30,878 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $75.2 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Minnesota is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,435 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051

Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Champlin	$9.83 M	$9.91 M	+0.8%
Anoka	$6.35 M	$6.39 M	+0.7%
Monticello	$3.86 M	$3.89 M	+0.6%
Coon Rapids	$3.76 M	$3.79 M	+0.7%
Fridley	$2.48 M	$2.49 M	+0.5%
Edina	$1.91 M	$1.92 M	+0.5%
Brooklyn Park	$1.84 M	$1.87 M	+1.4%
Ramsey	$1.72 M	$1.75 M	+1.8%
Minneapolis	$1.71 M	$1.71 M	+0.6%
Brooklyn Center	$1.13 M	$1.14 M	+1.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Columbia Heights	$4,000	$4,000	+17.3%
Mankato	$48,000	$54,000	+10.6%
Albertville	$15,000	$16,000	+8.8%
Plymouth	$12,000	$12,000	+6.5%
Lake Elmo	$48,000	$51,000	+6.4%
Moorhead	$411,000	$437,000	+6.3%
Detroit Lakes	$4,000	$4,000	+4.7%
Richfield	$3,000	$3,000	+4.0%
Shakopee	$60,000	$62,000	+3.6%
New Brighton	$59,000	$61,000	+3.4%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Minnesota

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 3,905 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,843 while the average NFIP insurance premium** for these properties is calculated to be $1,394. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 26,973 properties outside the SFHA have an average expected annual loss of $2,232 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 4.6 times for these homes.

If all of these 30,878 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.56 billion vs an expected payout risk of $2.27 billion in structural damage, leaving a total deficit of $1.71 billion over 30 years.†

If insurance prices in Minnesota were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

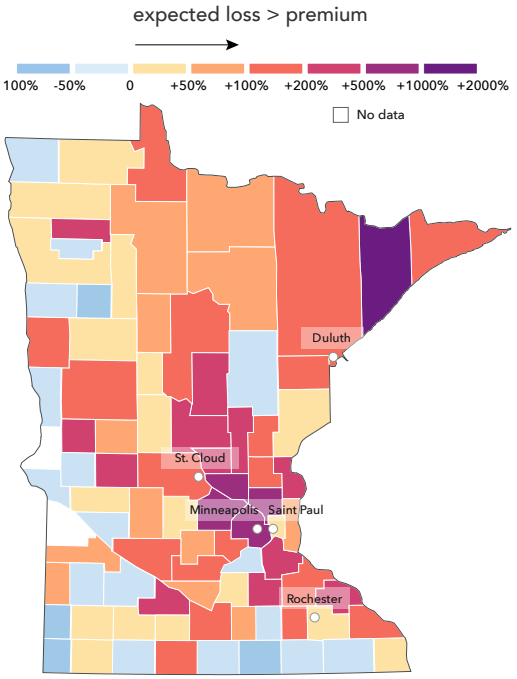
The financial implications are most pronounced for 10,477 properties with extreme risk‡ and structural damage, which have a $5,199 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,394

Avg. expected loss per property inside SFHA, 2021
$3,843

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,825

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Monticello	$8,152	$502	+1,525.0%
Sauk Rapids	$7,705	$490	+1,471.5%
Anoka	$8,395	$630	+1,232.6%
Brooklyn Center	$7,154	$541	+1,222.4%
Champlin	$6,100	$506	+1,105.2%
Hopkins	$5,599	$546	+925.2%
Fridley	$5,495	$607	+805.7%
Coon Rapids	$4,106	$530	+675.4%
Brooklyn Park	$3,882	$559	+594.6%
St. Cloud	$4,511	$693	+551.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Mississippi

In Mississippi there are 52,808 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $179.6 million this year.

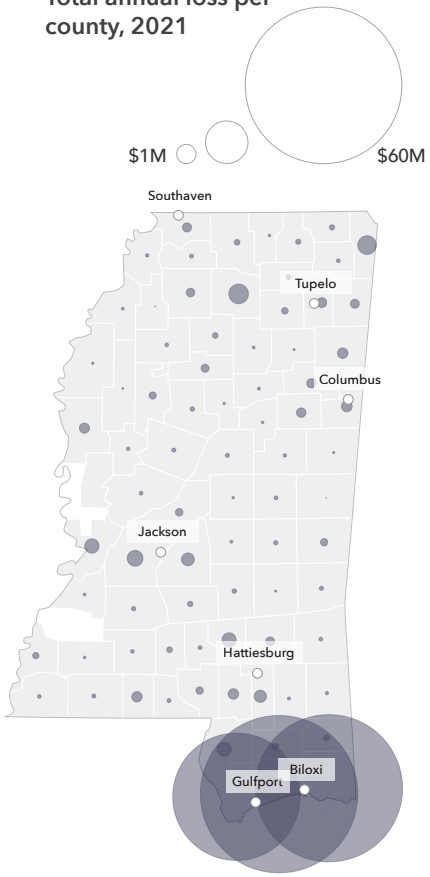
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

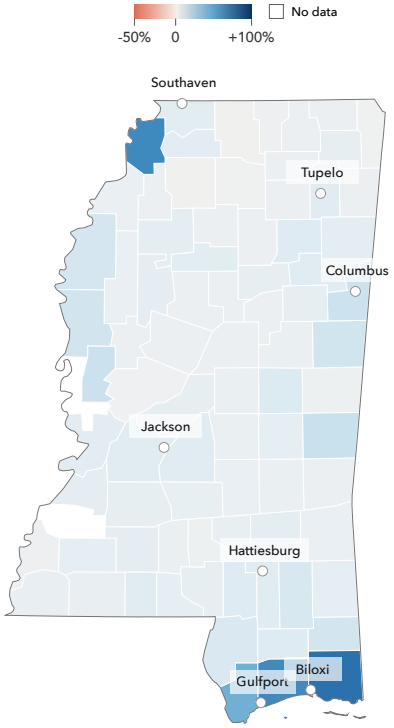
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,401 in 2021. This will grow to $5,451 for these same properties in 2051. This additional 60% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 3,459 properties are expected to experience financial loss from flood damage.

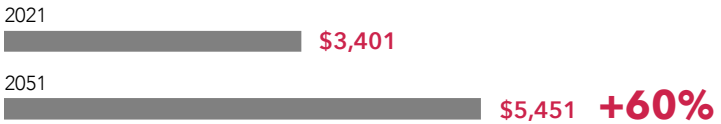
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Bay St. Louis	$24.85 M	$34.48 M	+38.8%
Pass Christian	$21.55 M	$29.97 M	+39.1%
Biloxi	$16.24 M	$31.31 M	+92.8%
Gulfport	$13.21 M	$24.20 M	+83.2%
Pascagoula	$12.13 M	$19.08 M	+57.3%
Gautier	$9.47 M	$15.90 M	+67.8%
Ocean Springs	$7.63 M	$13.45 M	+76.3%
St. Martin	$6.32 M	$11.69 M	+85.0%
Waveland	$4.87 M	$9.42 M	+93.3%
Gulf Park Estates	$4.49 M	$7.76 M	+73.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
D'Iberville	$3.84 M	$7.53 M	+95.9%
Waveland	$4.87 M	$9.42 M	+93.3%
Biloxi	$16.24 M	$31.31 M	+92.8%
Long Beach	$1.30 M	$2.41 M	+85.7%
St. Martin	$6.32 M	$11.69 M	+85.0%
Gulfport	$13.21 M	$24.20 M	+83.2%
Ocean Springs	$7.63 M	$13.45 M	+76.3%
Latimer	$0.07 M	$0.12 M	+73.2%
Gulf Park Estates	$4.49 M	$7.76 M	+73.0%
Gulf Hills	$3.83 M	$6.56 M	+71.2%

State Overview
Mississippi

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 32,844 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,928 while the average NFIP insurance premium** for these properties is calculated to be $1,816. If premiums were adjusted to cover current risk they would have to increase by 2.7 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 19,964 properties outside the SFHA have an average expected annual loss of $879 per property and are estimated to have an average NFIP insurance premium of $475. To account for this difference in risk, premiums would have to increase by 1.9 times for these homes.

If all of these 52,808 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $2.07 billion vs an expected payout risk of $7 billion in structural damage, leaving a total deficit of $4.93 billion over 30 years.†

If insurance prices in Mississippi were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

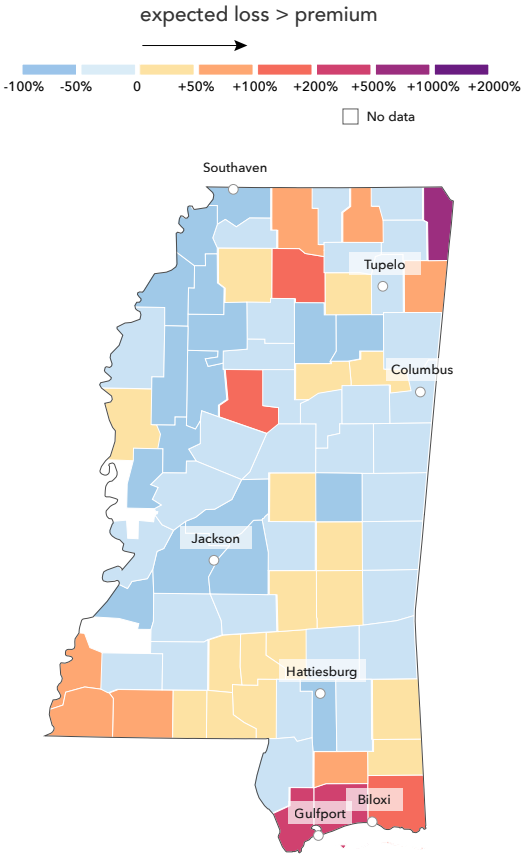
The financial implications are most pronounced for 13,926 properties with extreme risk‡ and structural damage, which have a $7,104 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,816

Avg. expected loss per property inside SFHA, 2021
$4,928

Avg. expected loss per property with an Extreme Flood Factor, 2021
$8,654

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Vancleave	$8,230	$1,128	+629.6%
Pass Christian	$13,640	$2,178	+526.3%
Gulf Hills	$10,328	$1,850	+458.2%
Bay St. Louis	$10,534	$1,972	+434.2%
Ocean Springs	$9,477	$1,977	+379.3%
St. Martin	$7,927	$1,714	+362.4%
Gulf Park Estates	$6,230	$1,906	+226.9%
Biloxi	$4,116	$1,282	+221.0%
Gulfport	$3,796	$1,203	+215.7%
Gautier	$3,373	$1,124	+200.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Missouri

In Missouri there are 29,337 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $106.5 million this year.

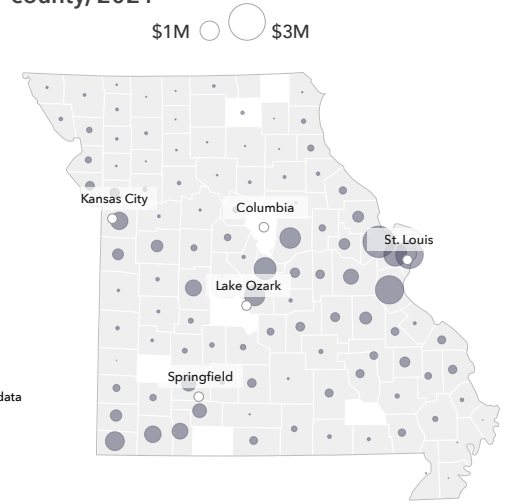
The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Missouri is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

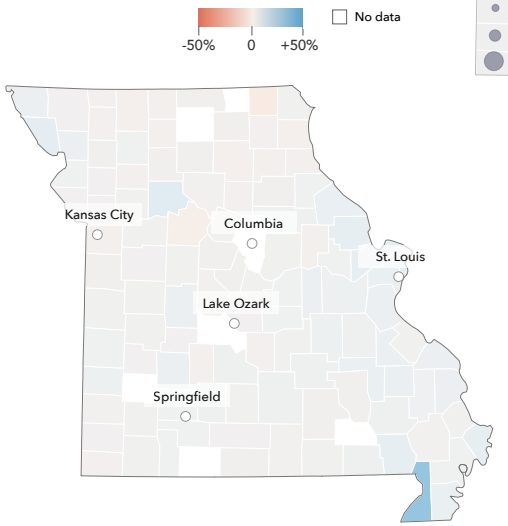
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,632 in 2021.

Average expected annual loss per property

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
St. Louis	$2.04 M	$2.20 M	+7.7%
O'Fallon	$0.61 M	$0.64 M	+5.2%
Dardenne Prairie	$0.54 M	$0.58 M	+7.2%
Kansas City	$0.46 M	$0.46 M	+0.3%
Wildwood	$0.32 M	$0.33 M	+2.6%
Lake St. Louis	$0.23 M	$0.24 M	+2.3%
Lee's Summit	$0.18 M	$0.18 M	-1.0%
Jefferson City	$0.17 M	$0.18 M	+2.1%
Webster Groves	$0.17 M	$0.17 M	+4.2%
St. Charles	$0.12 M	$0.14 M	+15.7%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
University City	$11,000	$16,000	+38.5%
Brentwood	$6,000	$8,000	+34.5%
Maryland Heights	$10,000	$13,000	+34.0%
Park Hills	$18,000	$22,000	+23.3%
Festus	$16,000	$19,000	+23.2%
Oakville	$18,000	$22,000	+20.1%
De Soto	$62,000	$72,000	+16.3%
Concord	$62,000	$72,000	+16.1%
St. Charles	$119,000	$137,000	+15.7%
Troy	$21,000	$24,000	+12.0%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Missouri

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 8,290 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,272 while the average NFIP insurance premium** for these properties is calculated to be $1,094. If premiums were adjusted to cover current risk they would have to increase by 3.9 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 21,047 properties outside the SFHA have an average expected annual loss of $3,380 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 6.9 times for these homes.

If all of these 29,337 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.58 billion vs an expected payout risk of $3.22 billion in structural damage, leaving a total deficit of $2.64 billion over 30 years.†

If insurance prices in Missouri were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

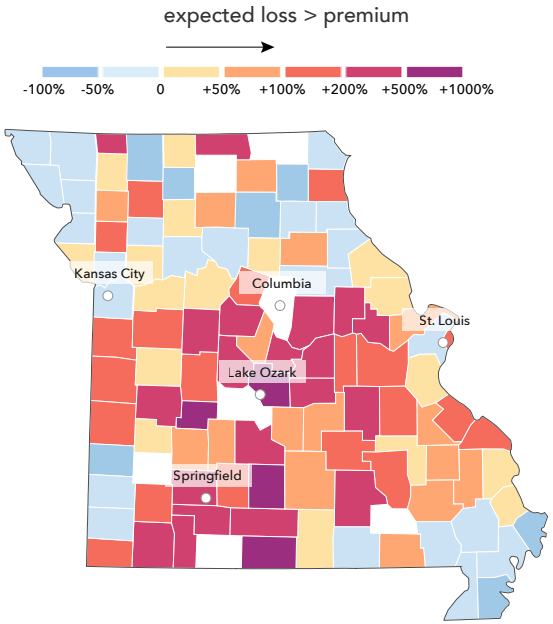
The financial implications are most pronounced for 15,888 properties with extreme risk‡ and structural damage, which have a $5,154 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,094

Avg. expected loss per property inside SFHA, 2021
$4,272

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,809

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Dardenne Prairie	$4,292	$488	+779.6%
Lake St. Louis	$3,515	$520	+576.5%
Wildwood	$2,170	$533	+306.9%
O'Fallon	$1,237	$494	+150.7%
Webster Groves	$1,402	$654	+114.4%
St. Louis	$1,217	$580	+109.9%
Ozark	$1,438	$699	+105.6%
Ladue	$1,566	$765	+104.7%
Lee's Summit	$889	$505	+76.3%
Sunset Hills	$829	$504	+64.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Montana

In Montana there are 25,732 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $87.3 million this year.

The growing cost from flooding

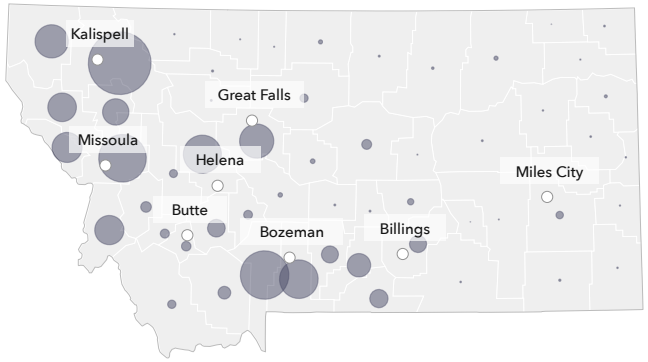
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,394 in 2021. This will grow to $3,713 for these same properties in 2051. This additional 9% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

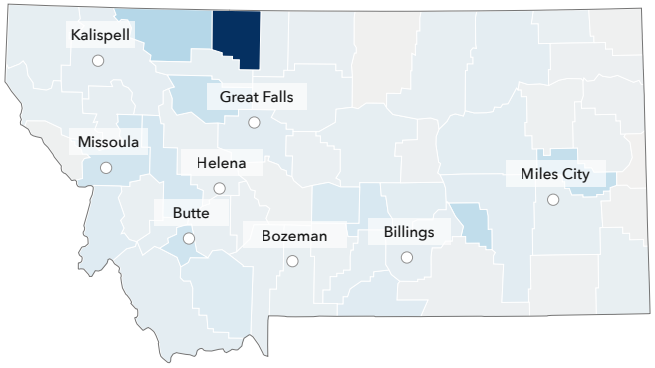
Over the next 30 years, an additional 779 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Missoula	$3.35 M	$4.31 M	+28.8%
Great Falls	$1.57 M	$1.70 M	+8.1%
Whitefish	$1.32 M	$1.65 M	+24.6%
Helena	$0.85 M	$0.97 M	+14.3%
Bozeman	$0.82 M	$0.96 M	+17.2%
Butte	$0.41 M	$0.49 M	+18.9%
Anaconda-Deer Lodge County	$0.36 M	$0.40 M	+9.2%
Billings	$0.36 M	$0.40 M	+10.6%
Livingston	$0.26 M	$0.29 M	+9.6%
Kalispell	$0.17 M	$0.21 M	+24.1%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Missoula	$3.35 M	$4.31 M	+28.8%
Whitefish	$1.32 M	$1.65 M	+24.6%
Kalispell	$0.17 M	$0.21 M	+24.1%
Helena Valley West Central	$0.04 M	$0.05 M	+21.2%
Butte	$0.41 M	$0.49 M	+18.9%
Lewistown	$0.05 M	$0.06 M	+17.6%
Bozeman	$0.82 M	$0.96 M	+17.2%
Helena	$0.85 M	$0.97 M	+14.3%
Helena Valley Southeast	$0.01 M	$0.01 M	+11.3%
Billings	$0.36 M	$0.40 M	+10.6%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Montana

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 3,850 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,304 while the average NFIP insurance premium** for these properties is calculated to be $468. If premiums were adjusted to cover current risk they would have to increase by 7.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 21,882 properties outside the SFHA have an average expected annual loss of $3,409 per property and are estimated to have an average NFIP insurance premium of $481. To account for this difference in risk, premiums would have to increase by 7.1 times for these homes.

If all of these 25,732 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.37 billion vs an expected payout risk of $2.74 billion in structural damage, leaving a total deficit of $2.37 billion over 30 years.†

If insurance prices in Montana were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

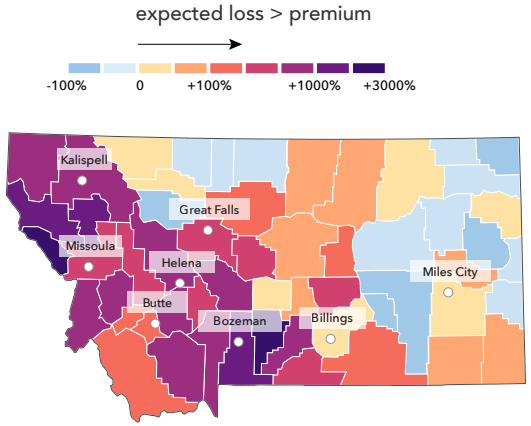
The financial implications are most pronounced for 7,212 properties with extreme risk‡ and structural damage, which have a $9,490 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$468

Avg. expected loss per property inside SFHA, 2021
$3,304

Avg. expected loss per property with an Extreme Flood Factor, 2021
$9,973

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Whitefish	$3,943	$488	+708.1%
Helena	$2,136	$488	+337.7%
Missoula	$1,552	$461	+236.5%
Anaconda-Deer Lodge County	$1,375	$488	+181.8%
Butte	$1,345	$488	+175.6%
Livingston	$1,317	$488	+169.9%
Bozeman	$1,223	$463	+164.3%
Great Falls	$958	$455	+110.4%
Kalispell	$519	$488	+6.3%
Lockwood	$500	$488	+2.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Nebraska

In Nebraska there are 11,059 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $8.4 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Nebraska is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $760 in 2021.

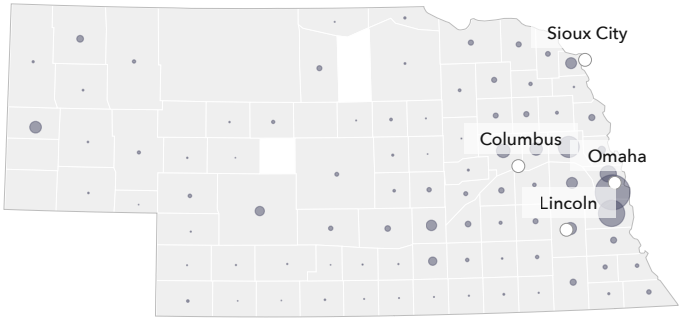
Average expected annual loss per property

2021 **$760**

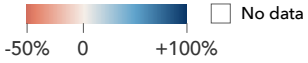
2051 **$773**

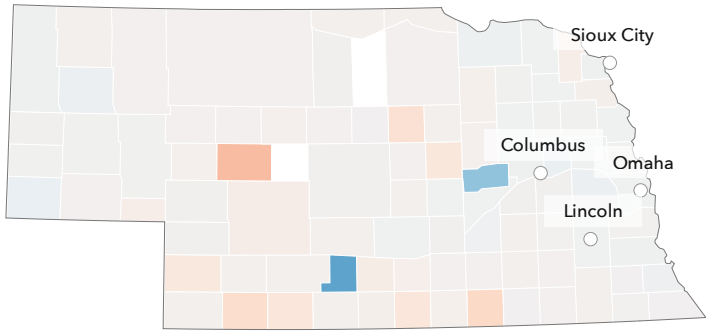
Total annual loss per county, 2021

$0.2M $2M



Change in total annual loss from 2021 to 2051





Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Fremont	$262,000	$266,000	+1.3%
Columbus	$246,000	$251,000	+2.2%
Omaha	$194,000	$193,000	-0.5%
Lincoln	$192,000	$197,000	+2.2%
Grand Island	$93,000	$93,000	+0.6%
South Sioux City	$86,000	$92,000	+6.2%
Plattsmouth	$65,000	$67,000	+3.3%
Scottsbluff	$50,000	$51,000	+0.7%
Bellevue	$45,000	$45,000	-0.3%
Kearney	$7,000	$7,000	-0.4%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
South Sioux City	$86,000	$92,000	+6.2%
Plattsmouth	$65,000	$67,000	+3.3%
Norfolk	$5,000	$5,000	+2.6%
Columbus	$246,000	$251,000	+2.2%
Lincoln	$192,000	$197,000	+2.2%
Fremont	$262,000	$266,000	+1.3%
Scottsbluff	$50,000	$51,000	+0.7%
Grand Island	$93,000	$93,000	+0.6%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Nebraska

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 4,151 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $990 while the average NFIP insurance premium** for these properties is calculated to be $1,120. This shows that premiums are currently 1.1 times higher than risk in these areas.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 6,908 properties outside the SFHA have an average expected annual loss of $623 per property and are estimated to have an average NFIP insurance premium of $479. To account for this difference in risk, premiums would have to increase by 1.3 times for these homes.

If all of these 11,059 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $239 million vs an expected payout risk of $254 million in structural damage, leaving a total deficit of $15 million over 30 years.†

If insurance prices in Nebraska were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

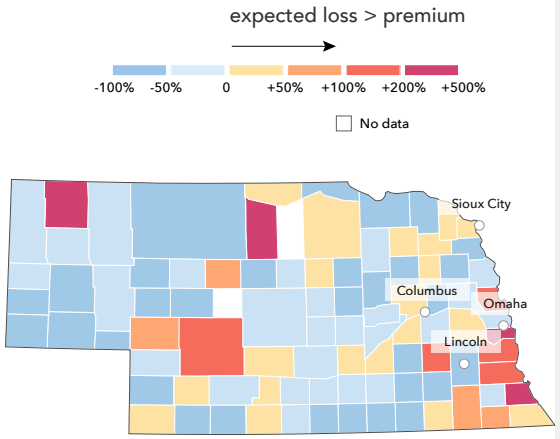
The financial implications are most pronounced for 2,334 properties with extreme risk‡ and structural damage, which have a $1,710 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,120

Avg. expected loss per property inside SFHA, 2021
$990

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,417

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Grand Island	$998	$683	+46.2%
South Sioux City	$644	$497	+29.5%
Columbus	$561	$488	+15.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Nevada

In Nevada there are 16,746 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $10.2 million this year.

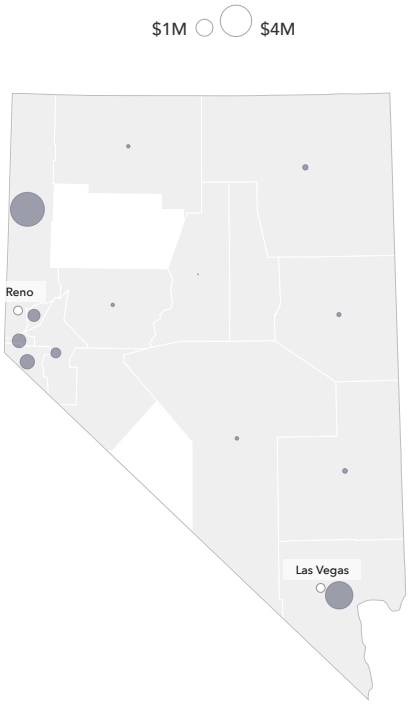
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

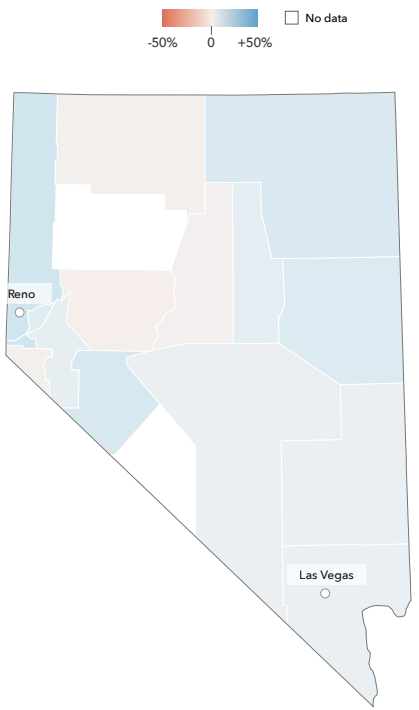
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $610 in 2021. This will grow to $685 for these same properties in 2051. This additional 12% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 664 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

2021 $610

2051 $685 **+12%**

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Reno	$2.72 M	$3.36 M	+23.5%
Las Vegas	$1.86 M	$1.96 M	+5.5%
Carson City	$0.73 M	$0.86 M	+18.5%
Incline Village	$0.41 M	$0.44 M	+7.1%
Sparks	$0.37 M	$0.45 M	+23.3%
Summerlin South	$0.26 M	$0.28 M	+4.3%
Gardnerville	$0.20 M	$0.19 M	-6.7%
Mesquite	$0.18 M	$0.23 M	+26.0%
Dayton	$0.08 M	$0.10 M	+17.2%
Elko	$0.07 M	$0.08 M	+18.3%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Mesquite	$181,000	$228,000	+26.0%
Spanish Springs	$15,000	$18,000	+24.8%
North Las Vegas	$31,000	$38,000	+23.9%
Reno	$2,723,000	$3,363,000	+23.5%
Sparks	$368,000	$454,000	+23.3%
Cold Springs	$3,000	$4,000	+22.1%
Spring Creek	$22,000	$26,000	+19.6%
Carson City	$727,000	$861,000	+18.5%
Fernley	$6,000	$7,000	+18.5%
Elko	$67,000	$79,000	+18.3%

State Overview
Nevada

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 2,648 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $807 while the average NFIP insurance premium** for these properties is calculated to be $837.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 14,098 properties outside the SFHA have an average expected annual loss of $574 per property and are estimated to have an average NFIP insurance premium of $474. To account for this difference in risk, premiums would have to increase by 1.2 times for these homes.

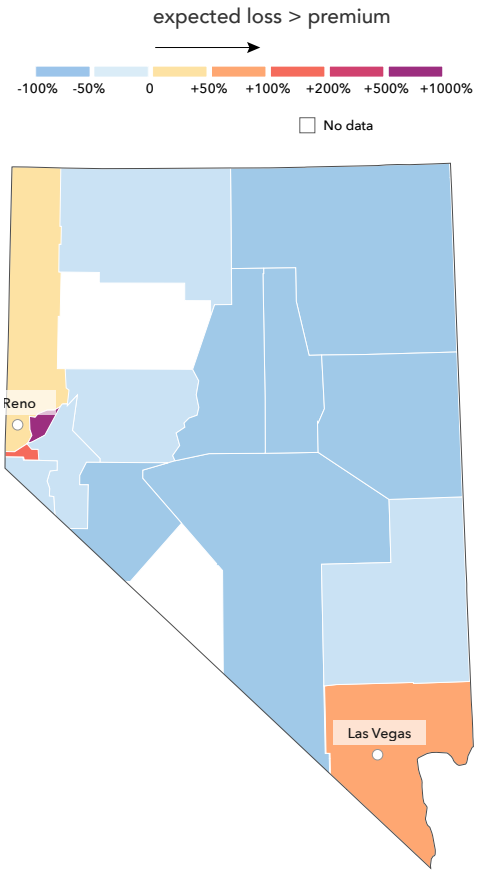
If all of these 16,746 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $267 million vs an expected payout risk of $325 million in structural damage, leaving a total deficit of $58 million over 30 years.†

If insurance prices in Nevada were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 646 properties with extreme risk‡ and structural damage, which have a $3,359 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Avg. state premium inside SFHA, 2021
$837

Avg. expected loss per property inside SFHA, 2021
$807

Avg. expected loss per property with an Extreme Flood Factor, 2021
$3,961

Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Incline Village	$2,828	$679	+316.5%
Carson City	$1,064	$449	+137.2%
Johnson Lane	$1,094	$494	+121.7%
Las Vegas	$775	$439	+76.5%
Summerlin South	$650	$440	+47.9%
Mesquite	$549	$463	+18.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
New Hampshire

In New Hampshire there are 12,427 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $42.4 million this year.

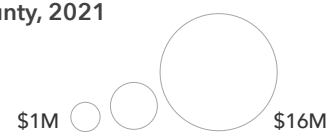
The growing cost from flooding

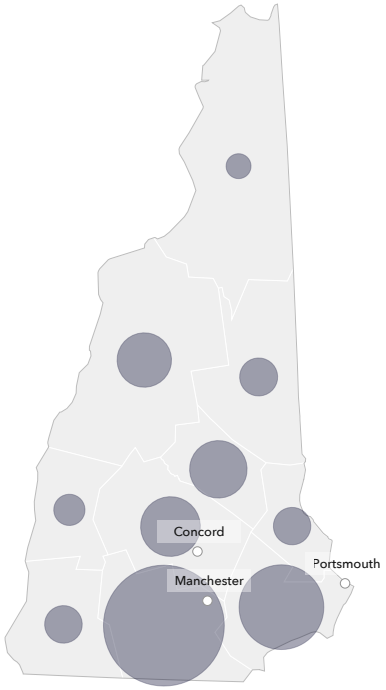
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,415 in 2021. This will grow to $3,894 for these same properties in 2051. This additional 14% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

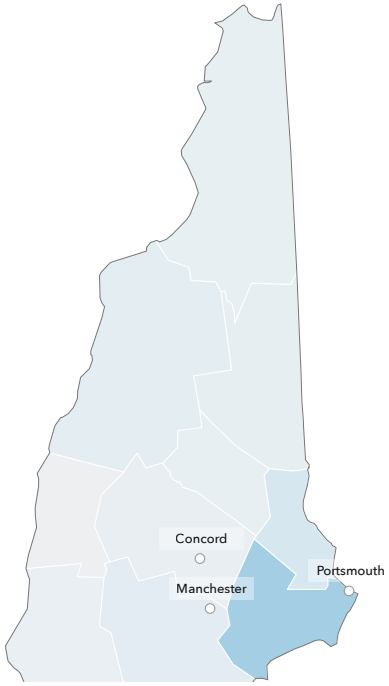
Over the next 30 years, an additional 733 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051



Average expected annual loss per property

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Manchester	$8.39 M	$9.12 M	+8.8%
Portsmouth	$2.90 M	$4.22 M	+45.3%
Nashua	$2.53 M	$2.90 M	+14.4%
Laconia	$2.27 M	$2.42 M	+6.3%
Derry	$0.82 M	$0.84 M	+1.4%
Dover	$0.72 M	$0.93 M	+30.1%
Lebanon	$0.67 M	$0.70 M	+4.2%
Franklin	$0.40 M	$0.47 M	+18.3%
Concord	$0.33 M	$0.39 M	+17.9%
Claremont	$0.19 M	$0.21 M	+8.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Portsmouth	$2.90 M	$4.22 M	+45.3%
Hampton	$0.12 M	$0.16 M	+32.9%
Dover	$0.72 M	$0.93 M	+30.1%
Franklin	$0.40 M	$0.47 M	+18.3%
Concord	$0.33 M	$0.39 M	+17.9%
Nashua	$2.53 M	$2.90 M	+14.4%
Rochester	$0.05 M	$0.05 M	+10.4%
Manchester	$8.39 M	$9.12 M	+8.8%
Keene	$0.19 M	$0.21 M	+8.6%
Claremont	$0.19 M	$0.21 M	+8.5%

State Overview
New Hampshire

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 2,987 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,698 while the average NFIP insurance premium** for these properties is calculated to be $1,310. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 9,440 properties outside the SFHA have an average expected annual loss of $3,279 per property and are estimated to have an average NFIP insurance premium of $485. To account for this difference in risk, premiums would have to increase by 6.8 times for these homes.

If all of these 12,427 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.25 billion vs an expected payout risk of $1.35 billion in structural damage, leaving a total deficit of $1.09 billion over 30 years.†

If insurance prices in New Hampshire were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

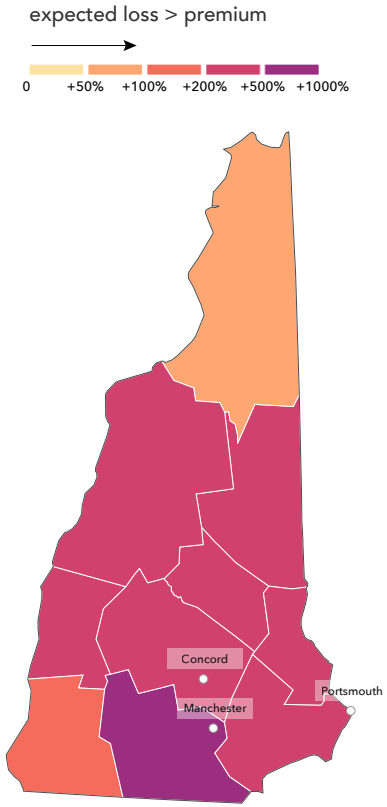
The financial implications are most pronounced for 6,921 properties with extreme risk‡ and structural damage, which have a $4,490 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,310

Avg. expected loss per property inside SFHA, 2021
$3,698

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,210

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Manchester	$6,461	$562	+1,049.7%
Portsmouth	$7,009	$722	+870.5%
Nashua	$4,277	$498	+758.1%
Derry	$4,819	$679	+609.4%
Laconia	$3,858	$570	+576.4%
Dover	$3,797	$692	+448.5%
Franklin	$2,451	$588	+316.8%
Lebanon	$2,996	$786	+281.1%
Concord	$1,683	$736	+128.7%
Claremont	$1,711	$786	+117.6%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
New Jersey

In New Jersey there are 94,146 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $415.4 million this year.

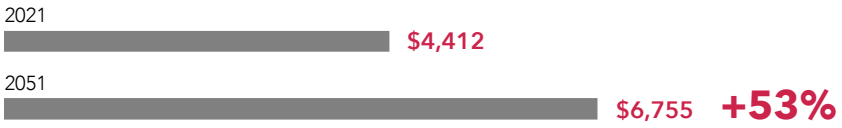
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

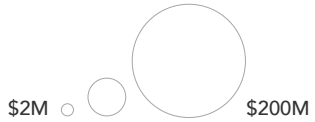
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $4,412 in 2021. This will grow to $6,755 for these same properties in 2051. This additional 53% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

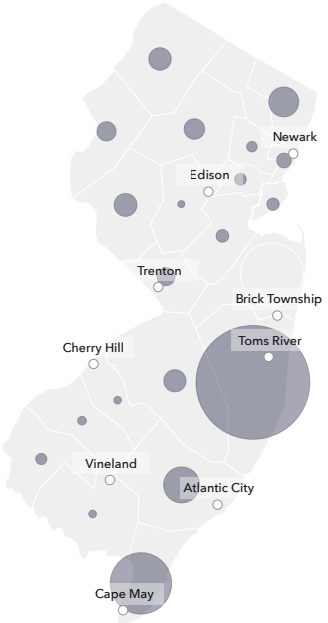
Over the next 30 years, an additional 10,870 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

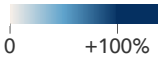


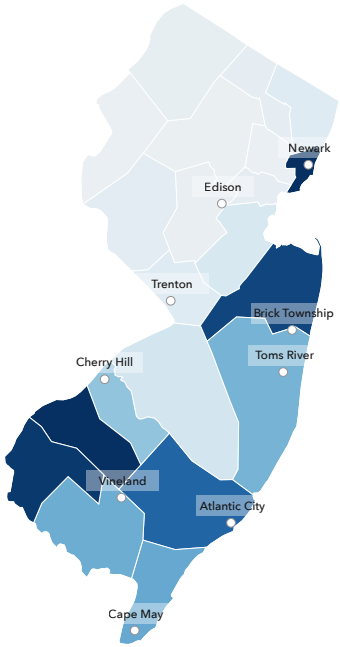
Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051





Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Toms River	$40.56 M	$56.99 M	+40.5%
Beach Haven West	$23.12 M	$37.32 M	+61.4%
Ocean City	$18.98 M	$30.15 M	+58.8%
Point Pleasant	$15.26 M	$23.12 M	+51.6%
North Wildwood	$10.49 M	$15.09 M	+43.8%
Manasquan	$9.29 M	$21.81 M	+134.7%
Avalon	$7.59 M	$11.78 M	+55.2%
Margate City	$5.86 M	$10.76 M	+83.8%
Rumson	$5.02 M	$10.46 M	+108.2%
Mystic Island	$4.84 M	$9.62 M	+99.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Pennsville	$0.45 M	$1.34 M	+200.6%
Long Branch	$1.59 M	$4.61 M	+189.5%
Little Silver	$0.77 M	$2.24 M	+189.3%
Belmar	$0.13 M	$0.37 M	+178.9%
Jersey City	$2.60 M	$7.17 M	+175.9%
Point Pleasant Beach	$0.63 M	$1.72 M	+175.5%
Keansburg	$0.90 M	$2.33 M	+159.9%
Sea Isle City	$0.61 M	$1.55 M	+153.4%
South River	$0.06 M	$0.15 M	+151.3%
Manasquan	$9.29 M	$21.81 M	+134.7%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
New Jersey

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 62,629 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $5,676 while the average NFIP insurance premium** for these properties is calculated to be $2,017. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 31,517 properties outside the SFHA have an average expected annual loss of $1,800 per property and are estimated to have an average NFIP insurance premium of $481. To account for this difference in risk, premiums would have to increase by 3.7 times for these homes.

If all of these 94,146 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $4.24 billion vs an expected payout risk of $15.66 billion in structural damage, leaving a total deficit of $11.42 billion over 30 years.†

If insurance prices in New Jersey were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

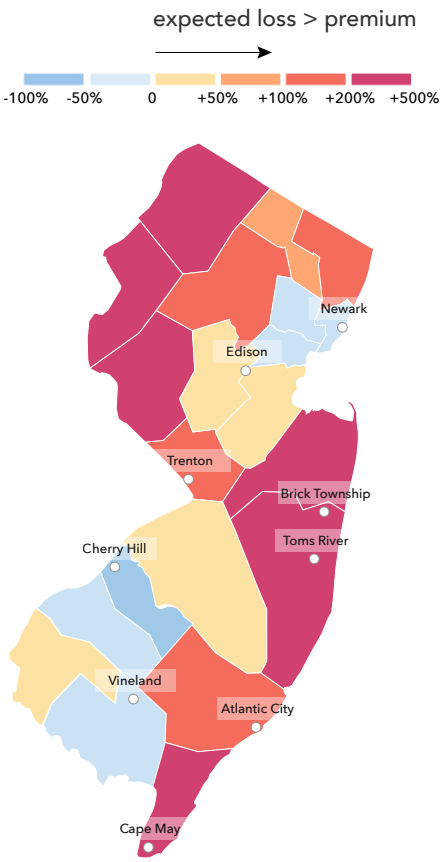
The financial implications are most pronounced for 46,963 properties with extreme risk‡ and structural damage, which have a $6,139 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$2,017

Avg. expected loss per property inside SFHA, 2021
$5,676

Avg. expected loss per property with an Extreme Flood Factor, 2021
$8,028

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Tinton Falls	$12,374	$556	+2,124.4%
Fair Lawn	$8,027	$709	+1,032.1%
Elmwood Park	$4,152	$564	+636.0%
Garfield	$5,403	$816	+561.9%
Princeton	$5,356	$858	+524.3%
Bernardsville	$5,255	$863	+509.1%
Edgewater	$24,844	$4,092	+507.2%
Milltown	$2,729	$492	+455.0%
Rumson	$16,985	$3,508	+384.1%
Avalon	$11,182	$2,334	+379.1%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
New Mexico

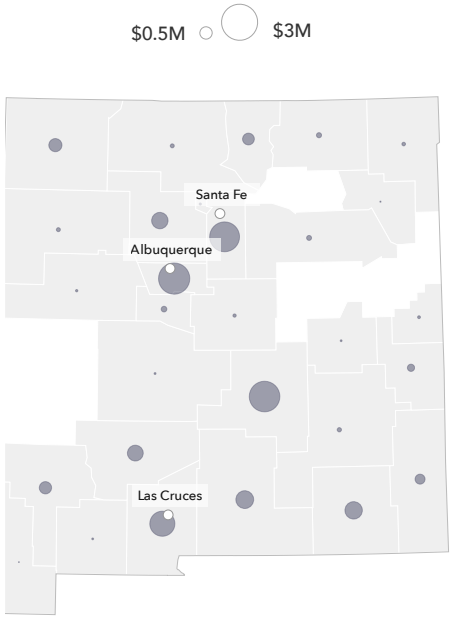
In New Mexico there are 16,256 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $15.2 million this year.

The growing cost from flooding

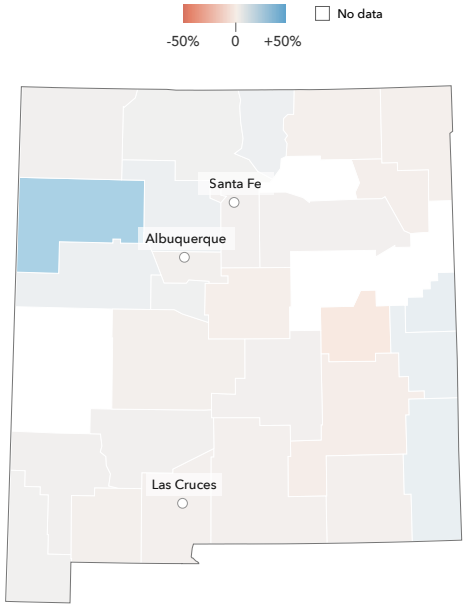
In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because New Mexico is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $937 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

2021 **$937**

2051 **$939**

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Albuquerque	$1.89 M	$1.88 M	-0.6%
Ruidoso	$1.81 M	$1.81 M	-0.2%
Las Cruces	$1.23 M	$1.22 M	-0.7%
Santa Fe	$0.99 M	$0.98 M	-0.4%
Carlsbad	$0.77 M	$0.76 M	-0.9%
Truth or Consequences	$0.67 M	$0.67 M	+0.7%
Rio Rancho	$0.40 M	$0.41 M	+3.9%
Hobbs	$0.14 M	$0.15 M	+6.9%
Farmington	$0.11 M	$0.13 M	+14.8%
Silver City	$0.11 M	$0.11 M	+1.6%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Gallup	$46,000	$61,000	+32.0%
Corrales	$7,000	$9,000	+25.8%
Farmington	$110,000	$126,000	+14.8%
Hobbs	$140,000	$149,000	+6.9%
Lovington	$26,000	$27,000	+6.4%
Clovis	$10,000	$10,000	+5.7%
Placitas	$67,000	$71,000	+5.3%
Grants	$15,000	$16,000	+4.2%
Rio Rancho	$395,000	$410,000	+3.9%
Artesia	$8,000	$9,000	+2.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
New Mexico

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 3,084 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,206 while the average NFIP insurance premium** for these properties is calculated to be $964. If premiums were adjusted to cover current risk they would have to increase by 1.3 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 13,172 properties outside the SFHA have an average expected annual loss of $874 per property and are estimated to have an average NFIP insurance premium of $478. To account for this difference in risk, premiums would have to increase by 1.8 times for these homes.

If all of these 16,256 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $278 million vs an expected payout risk of $457 million in structural damage, leaving a total deficit of $179 million over 30 years.†

If insurance prices in New Mexico were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

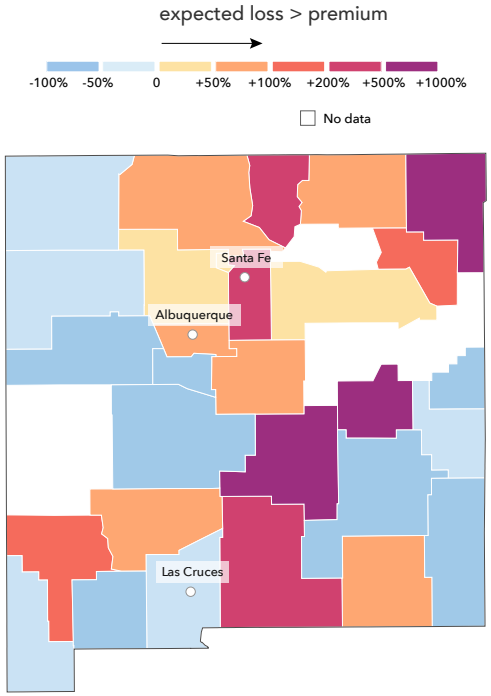
The financial implications are most pronounced for 2,899 properties with extreme risk‡ and structural damage, which have a $2,901 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$964

Avg. expected loss per property inside SFHA, 2021
$1,206

Avg. expected loss per property with an Extreme Flood Factor, 2021
$3,520

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Ruidoso	$3,418	$542	+530.2%
Santa Fe	$2,409	$538	+347.8%
Eldorado at Santa Fe	$1,702	$502	+239.1%
Placitas	$1,064	$551	+92.9%
Carlsbad	$1,833	$957	+91.6%
Truth or Conse-quences	$1,689	$886	+90.7%
Silver City	$896	$587	+52.7%
Bernalillo	$703	$509	+38.3%
Albuquerque	$627	$474	+32.4%
Raton	$776	$592	+31.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
New York

In New York there are 161,489 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $556.7 million this year.

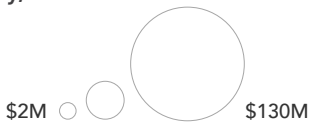
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

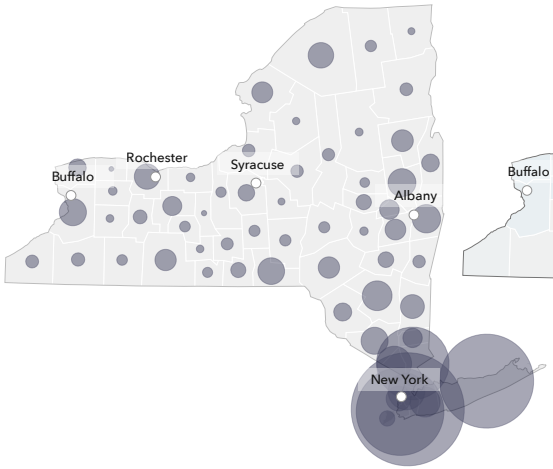
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,447 in 2021. This will grow to $4,756 for these same properties in 2051. This additional 38% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

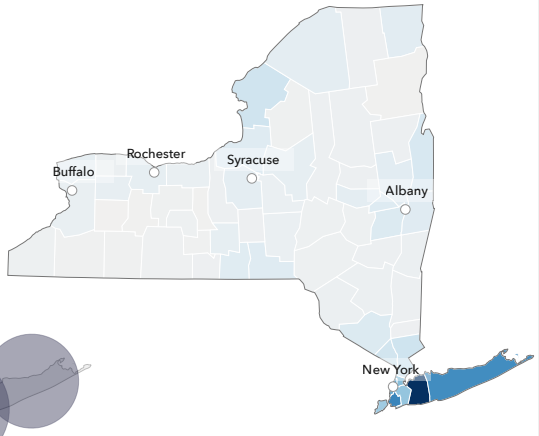
Over the next 30 years, an additional 14,814 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021

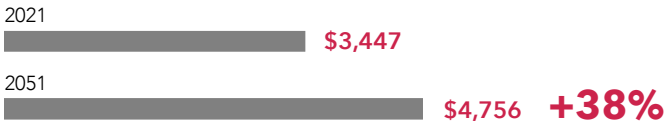


Change in total annual loss from 2021 to 2051





Average expected annual loss per property



* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
New York City	$234.40 M	$351.85 M	+50.1%
Mamaroneck	$17.44 M	$22.73 M	+30.3%
Rye	$7.83 M	$9.55 M	+21.9%
Lindenhurst	$4.35 M	$7.10 M	+63.1%
Troy	$4.17 M	$4.86 M	+16.5%
Croton-on-Hudson	$4.01 M	$4.15 M	+3.6%
Copiague	$3.83 M	$8.20 M	+114.0%
Port Jervis	$3.80 M	$4.62 M	+21.3%
Oakdale	$3.62 M	$7.64 M	+110.9%
Amityville	$3.60 M	$5.70 M	+58.1%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Long Beach	$0.85 M	$5.04 M	+490.2%
East Rockaway	$0.23 M	$0.98 M	+332.5%
Merrick	$0.06 M	$0.19 M	+240.9%
Woodmere	$0.37 M	$1.10 M	+196.7%
Freeport	$1.22 M	$3.62 M	+196.4%
Baldwin Harbor	$0.18 M	$0.53 M	+195.0%
Massapequa	$0.58 M	$1.60 M	+174.7%
East Massapequa	$0.66 M	$1.69 M	+155.6%
Oceanside	$0.31 M	$0.72 M	+128.8%
Bayville	$0.65 M	$1.43 M	+120.0%

State Overview
New York

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 38,744 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $5,126 while the average NFIP insurance premium** for these properties is calculated to be $1,860. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 122,745 properties outside the SFHA have an average expected annual loss of $2,691 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 5.5 times for these homes.

If all of these 161,489 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $3.95 billion vs an expected payout risk of $18.82 billion in structural damage, leaving a total deficit of $14.87 billion over 30 years.†

If insurance prices in New York were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

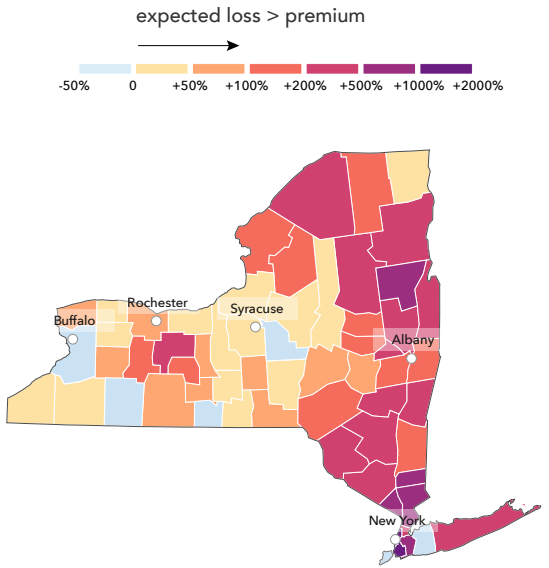
The financial implications are most pronounced for 65,501 properties with extreme risk‡ and structural damage, which have a $5,793 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,860

Avg. expected loss per property inside SFHA, 2021
$5,126

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,764

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Croton-on-Hudson	$13,326	$517	+2,477.3%
Northwest Harbor	$10,599	$569	+1,763.8%
Beacon	$12,650	$849	+1,389.1%
Northport	$9,362	$685	+1,266.5%
Centerport	$14,748	$1,155	+1,177.3%
Mamaroneck	$28,547	$2,309	+1,136.2%
Smithtown	$6,514	$536	+1,115.0%
Kings Park	$5,440	$523	+940.0%
New Rochelle	$7,053	$788	+795.2%
New York	$8,136	$922	+782.7%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
North Carolina

In North Carolina there are 151,331 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $487.1 million this year.

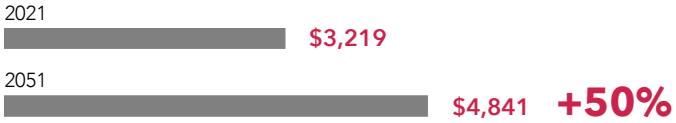
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

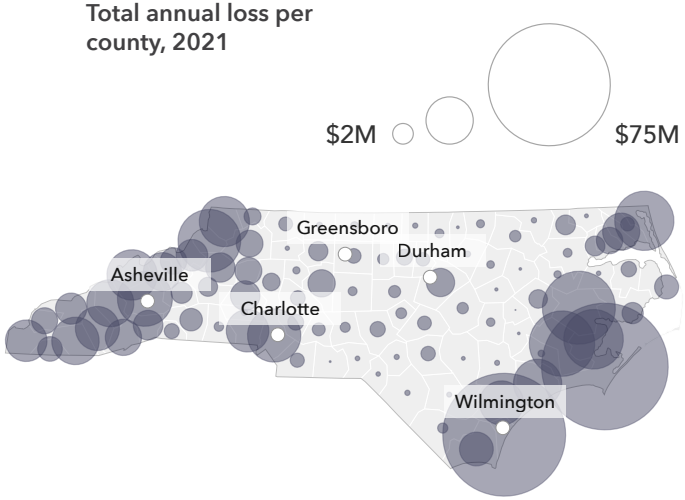
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,219 in 2021. This will grow to $4,841 for these same properties in 2051. This additional 50% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 8,702 properties are expected to experience financial loss from flood damage.

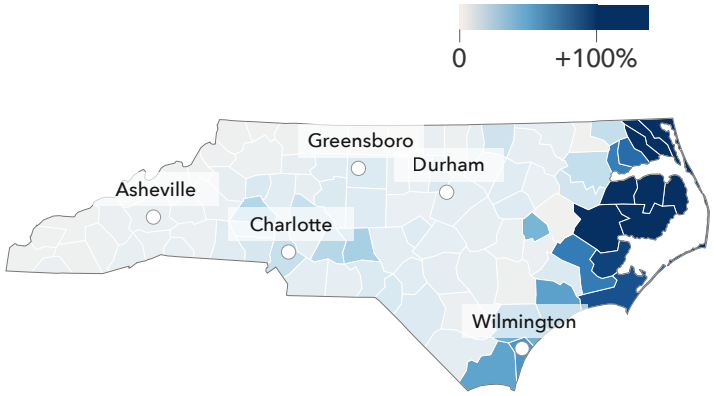
Average expected annual loss per property



Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Wilmington	$24.58 M	$38.40 M	+56.3%
Morehead City	$16.70 M	$29.86 M	+78.8%
Atlantic Beach	$8.36 M	$15.57 M	+86.2%
Carolina Beach	$8.20 M	$13.31 M	+62.3%
Beaufort	$5.90 M	$12.24 M	+107.5%
Charlotte	$5.83 M	$6.68 M	+14.6%
New Bern	$5.38 M	$9.60 M	+78.3%
Emerald Isle	$5.24 M	$8.25 M	+57.5%
Porters Neck	$4.61 M	$6.21 M	+34.6%
Myrtle Grove	$4.53 M	$7.09 M	+56.6%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Kill Devil Hills	$0.11 M	$0.58 M	+423.5%
Silver Lake	$0.50 M	$1.09 M	+119.5%
Beaufort	$5.90 M	$12.24 M	+107.5%
Elizabeth City	$2.27 M	$4.63 M	+103.8%
Sunset Beach	$0.44 M	$0.87 M	+98.3%
Atlantic Beach	$8.36 M	$15.57 M	+86.2%
Surf City	$3.41 M	$6.26 M	+83.6%
Morehead City	$16.70 M	$29.86 M	+78.8%
New Bern	$5.38 M	$9.60 M	+78.3%
Morrisville	$0.05 M	$0.09 M	+64.7%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
North Carolina

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 52,621 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $5,058 while the average NFIP insurance premium** for these properties is calculated to be $1,933. If premiums were adjusted to cover current risk they would have to increase by 2.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 98,710 properties outside the SFHA have an average expected annual loss of $2,182 per property and are estimated to have an average NFIP insurance premium of $481. To account for this difference in risk, premiums would have to increase by 4.5 times for these homes.

If all of these 151,331 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $4.48 billion vs an expected payout risk of $18.09 billion in structural damage, leaving a total deficit of $13.61 billion over 30 years.†

If insurance prices in North Carolina were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

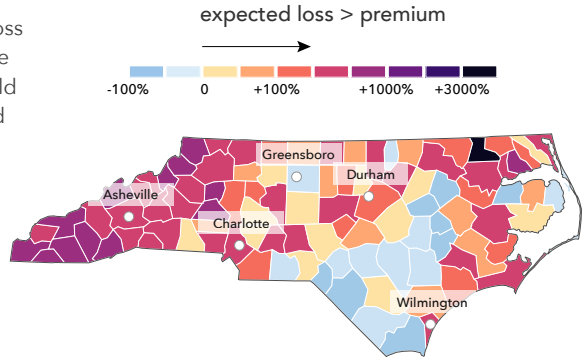
The financial implications are most pronounced for 84,281 properties with extreme risk‡ and structural damage, which have a $4,059 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,933

Avg. expected loss per property inside SFHA, 2021
$5,058

Avg. expected loss per property with an Extreme Flood Factor, 2021
$5,166

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Belmont	$5,564	$528	+953.6%
Porters Neck	$11,076	$1,179	+839.7%
Roanoke Rapids	$5,529	$728	+659.7%
St. Stephens	$3,804	$508	+648.7%
Morehead City	$10,316	$1,440	+616.4%
Atlantic Beach	$9,356	$1,622	+476.8%
Hickory	$2,894	$519	+457.3%
Woodfin	$2,936	$542	+441.4%
Wilmington	$4,849	$903	+437.1%
Lake Norman of Catawba	$2,730	$529	+416.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
North Dakota

In North Dakota there are 2,280 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $3.5 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,538 in 2021. This will grow to $1,580 for these same properties in 2051. This additional 3% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

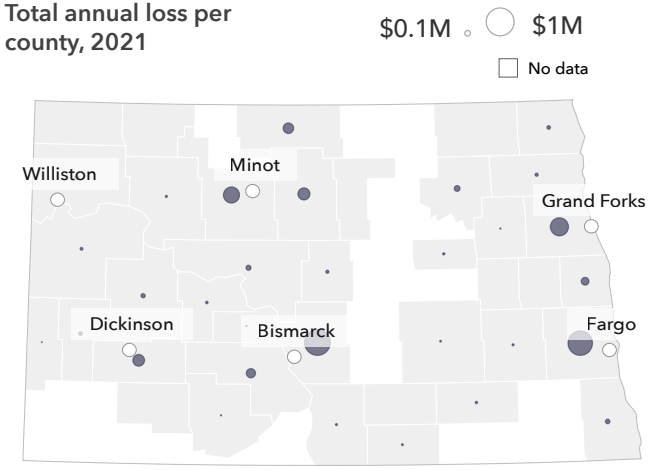
Over the next 30 years, an additional 15 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

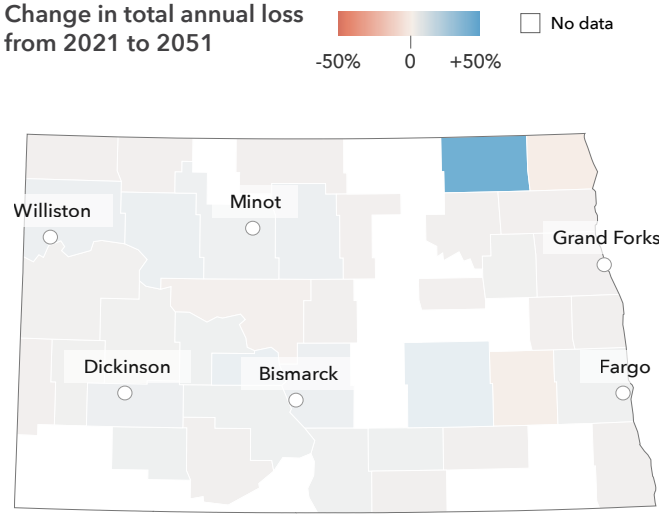
2021 **$1,538**

2051 **$1,580** **+3%**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Bismarck	$548,000	$575,000	+4.8%
West Fargo	$355,000	$361,000	+1.7%
Grand Forks	$220,000	$221,000	+0.7%
Dickinson	$79,000	$83,000	+5.2%
Fargo	$51,000	$51,000	+1.2%
Mandan	$46,000	$47,000	+2.1%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Dickinson	$79,000	$83,000	+5.2%
Bismarck	$548,000	$575,000	+4.8%
Mandan	$46,000	$47,000	+2.1%
West Fargo	$355,000	$361,000	+1.7%
Fargo	$51,000	$51,000	+1.2%
Grand Forks	$220,000	$221,000	+0.7%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
North Dakota

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 664 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,685 while the average NFIP insurance premium** for these properties is calculated to be $1,093. If premiums were adjusted to cover current risk they would have to increase by 1.5 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 1,616 properties outside the SFHA have an average expected annual loss of $1,478 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 3.0 times for these homes.

If all of these 2,280 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $45 million vs an expected payout risk of $106 million in structural damage, leaving a total deficit of $61 million over 30 years.†

If insurance prices in North Dakota were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

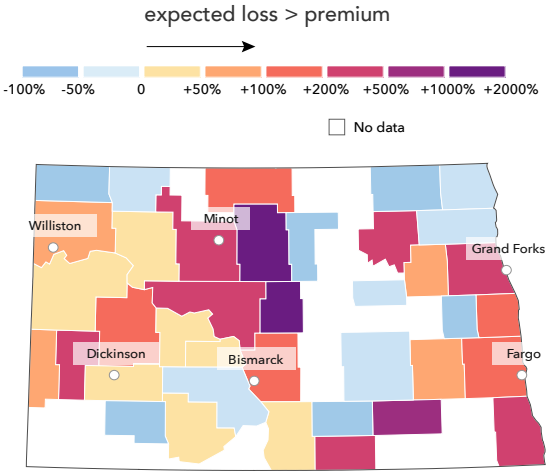
The financial implications are most pronounced for 369 properties with extreme risk‡ and structural damage, which have a $2,668 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,093

Avg. expected loss per property inside SFHA, 2021
$1,685

Avg. expected loss per property with an Extreme Flood Factor, 2021
$3,338

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Grand Forks	$5,367	$622	+762.5%
Bismarck	$1,910	$626	+205.1%
West Fargo	$1,391	$488	+185.1%
Mandan	$871	$712	+22.3%
Fargo	$577	$550	+5.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Ohio

In Ohio there are 86,423 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $137.4 million this year.

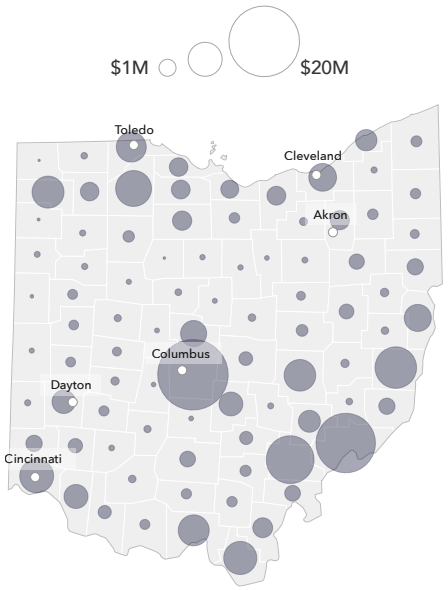
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,590 in 2021. This will grow to $1,632 for these same properties in 2051. This additional 3% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 1,236 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051

Average expected annual loss per property

2021 $1,590

2051 $1,632 **+3%**

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Columbus	$11.90 M	$12.19 M	+2.4%
Athens	$7.14 M	$7.32 M	+2.5%
Marietta	$4.94 M	$5.05 M	+2.3%
Belpre	$4.47 M	$4.58 M	+2.6%
Defiance	$3.34 M	$3.31 M	-0.8%
Perrysburg	$2.59 M	$2.58 M	-0.3%
Dublin	$2.49 M	$2.51 M	+0.8%
Cincinnati	$2.09 M	$2.26 M	+7.9%
Grandview Heights	$2.00 M	$2.03 M	+1.6%
Lancaster	$1.39 M	$1.39 M	+0.2%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Ashland	$2,000	$4,000	+99.1%
Lyndhurst	$26,000	$46,000	+76.7%
Cleveland Heights	$5,000	$8,000	+68.8%
Norwood	$3,000	$4,000	+49.9%
Cleveland	$111,000	$166,000	+49.7%
Brook Park	$3,000	$4,000	+45.6%
Middleburg Heights	$9,000	$13,000	+45.2%
New Philadelphia	$10,000	$13,000	+31.9%
Strongsville	$23,000	$30,000	+31.9%
Chillicothe	$6,000	$8,000	+30.8%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Ohio

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 25,665 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,361 while the average NFIP insurance premium** for these properties is calculated to be $1,144. If premiums were adjusted to cover current risk they would have to increase by 2.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 60,758 properties outside the SFHA have an average expected annual loss of $1,264 per property and are estimated to have an average NFIP insurance premium of $488. To account for this difference in risk, premiums would have to increase by 2.6 times for these homes.

If all of these 86,423 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.77 billion vs an expected payout risk of $4.18 billion in structural damage, leaving a total deficit of $2.41 billion over 30 years.†

If insurance prices in Ohio were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

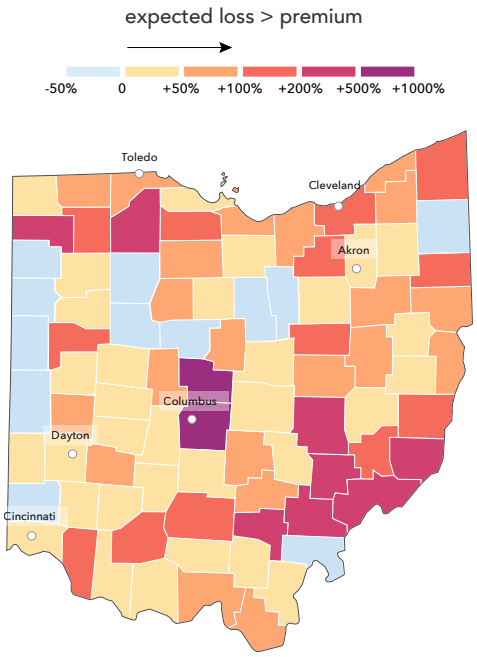
The financial implications are most pronounced for 34,702 properties with extreme risk‡ and structural damage, which have a $2,174 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,144

Avg. expected loss per property inside SFHA, 2021
$2,361

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,868

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Perrysburg	$47,095	$1,130	+4,066.4%
Hilliard	$10,530	$488	+2,057.9%
Dublin	$17,671	$926	+1,808.2%
Grandview Heights	$6,610	$509	+1,199.5%
Rocky River	$7,031	$560	+1,155.3%
Lakewood	$15,050	$1,607	+836.4%
Columbus	$4,788	$538	+790.5%
Rossford	$4,755	$550	+764.5%
Upper Arlington	$5,758	$677	+750.9%
Olmsted Falls	$3,930	$544	+622.5%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Oklahoma

In Oklahoma there are 36,694 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $28 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Oklahoma is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

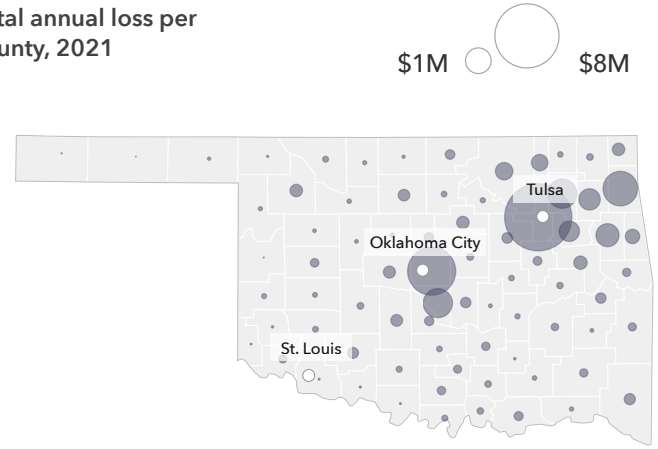
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $764 in 2021.

Average expected annual loss per property

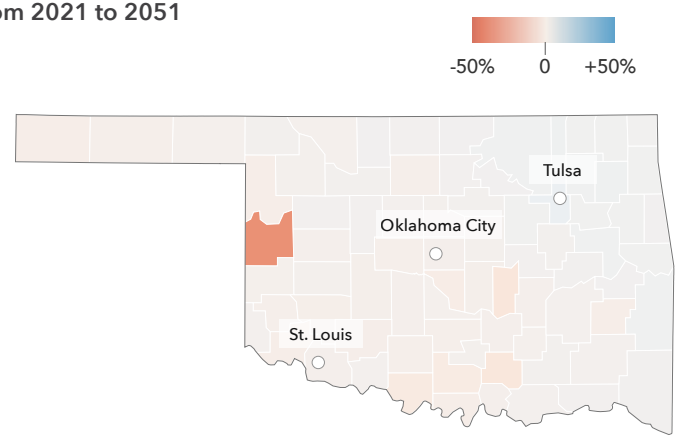
2021 **$764**

2051 **$772**

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Tulsa	$3.90 M	$4.23 M	+8.3%
Oklahoma City	$3.40 M	$3.30 M	-2.9%
Bixby	$1.27 M	$1.31 M	+2.8%
Edmond	$0.76 M	$0.72 M	-4.4%
Norman	$0.71 M	$0.67 M	-4.6%
Broken Arrow	$0.56 M	$0.56 M	+1.2%
Grove	$0.41 M	$0.42 M	+1.8%
Moore	$0.31 M	$0.30 M	-5.5%
Jenks	$0.25 M	$0.25 M	+1.0%
Sand Springs	$0.24 M	$0.25 M	+3.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Tulsa	$3.90 M	$4.23 M	+8.3%
Bartlesville	$0.18 M	$0.18 M	+5.4%
Poteau	$0.01 M	$0.02 M	+4.1%
Pryor Creek	$0.02 M	$0.02 M	+4.0%
Claremore	$0.12 M	$0.13 M	+3.7%
Sand Springs	$0.24 M	$0.25 M	+3.5%
Bixby	$1.27 M	$1.31 M	+2.8%
Skiatook	$0.02 M	$0.02 M	+2.8%
Owasso	$0.12 M	$0.13 M	+2.2%
Grove	$0.41 M	$0.42 M	+1.8%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Oklahoma

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 8,189 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $869 while the average NFIP insurance premium** for these properties is calculated to be $1,399. This shows that premiums are currently 1.6 times higher than risk in these areas.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 28,505 properties outside the SFHA have an average expected annual loss of $734 per property and are estimated to have an average NFIP insurance premium of $468. To account for this difference in risk, premiums would have to increase by 1.6 times for these homes.

If all of these 36,694 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $744 million vs an expected payout risk of $845 million in structural damage, leaving a total deficit of $101 million over 30 years.†

If insurance prices in Oklahoma were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

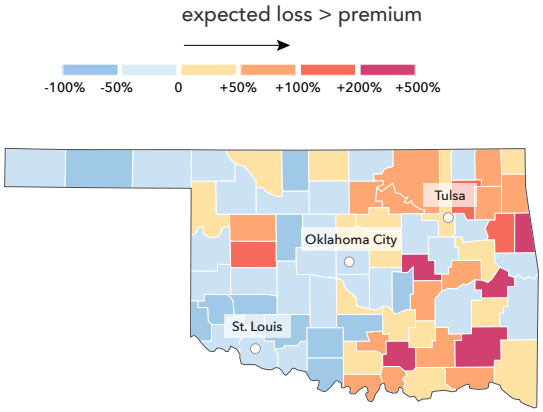
The financial implications are most pronounced for 8,700 properties with extreme risk‡ and structural damage, which have a $1,643 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,399

Avg. expected loss per property inside SFHA, 2021
$869

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,363

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Bixby	$2,136	$712	+200.0%
Grove	$1,399	$608	+130.2%
Newcastle	$1,108	$655	+69.1%
Tuttle	$1,659	$1,210	+37.2%
Tulsa	$603	$487	+23.8%
Edmond	$767	$657	+16.8%
Jenks	$825	$731	+12.9%
Norman	$704	$624	+12.8%
Collinsville	$808	$723	+11.7%
Weatherford	$1,105	$990	+11.6%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Oregon

In Oregon there are 90,725 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $344.1 million this year.

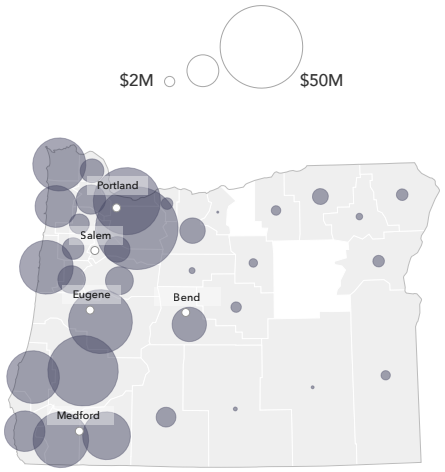
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

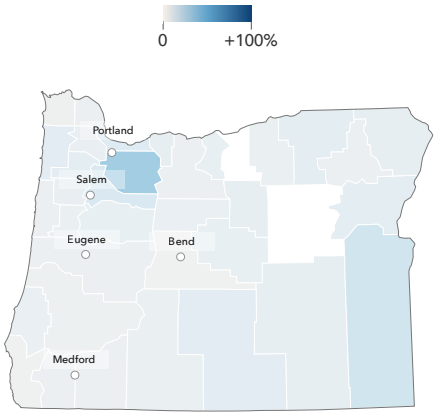
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,793 in 2021. This will grow to $4,186 for these same properties in 2051. This additional 10% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 3,020 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Portland	$28.42 M	$32.43 M	+14.1%
Grants Pass	$10.49 M	$11.03 M	+5.1%
Roseburg	$8.23 M	$8.54 M	+3.8%
Bend	$7.30 M	$7.47 M	+2.3%
Eugene	$3.47 M	$3.89 M	+12.0%
Salem	$2.80 M	$3.00 M	+7.3%
Oak Grove	$2.74 M	$3.18 M	+15.9%
West Linn	$1.93 M	$2.17 M	+12.5%
The Dalles	$1.66 M	$1.72 M	+3.6%
Coos Bay	$1.53 M	$1.71 M	+12.2%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Fairview	$8,000	$12,000	+56.3%
Ontario	$8,000	$11,000	+42.3%
Milton-Freewater	$103,000	$139,000	+34.7%
Newberg	$60,000	$81,000	+33.8%
Keizer	$1,233,000	$1,643,000	+33.2%
Altamont	$44,000	$58,000	+31.8%
Cedar Mill	$92,000	$119,000	+29.9%
McMinnville	$172,000	$223,000	+29.8%
Lebanon	$61,000	$79,000	+29.8%
King City	$6,000	$8,000	+28.5%

State Overview
Oregon

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 24,043 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $5,110 while the average NFIP insurance premium** for these properties is calculated to be $1,117. If premiums were adjusted to cover current risk they would have to increase by 4.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 66,682 properties outside the SFHA have an average expected annual loss of $3,275 per property and are estimated to have an average NFIP insurance premium of $474. To account for this difference in risk, premiums would have to increase by 6.9 times for these homes.

If all of these 90,725 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.75 billion vs an expected payout risk of $10.75 billion in structural damage, leaving a total deficit of $9 billion over 30 years.†

If insurance prices in Oregon were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

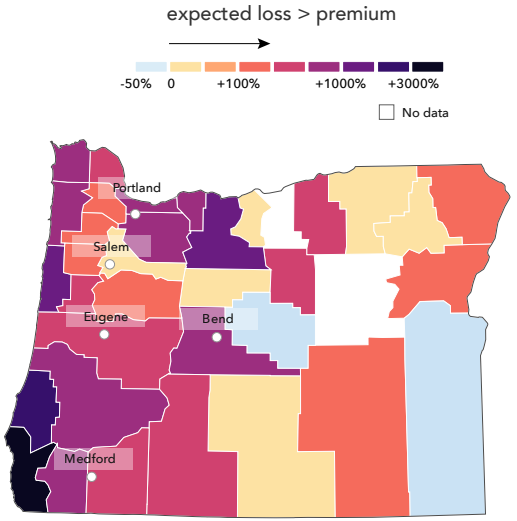
The financial implications are most pronounced for 33,248 properties with extreme risk‡ and structural damage, which have a $8,084 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,117

Avg. expected loss per property inside SFHA, 2021
$5,110

Avg. expected loss per property with an Extreme Flood Factor, 2021
$8,772

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Astoria	$22,281	$897	+2,382.5%
Newport	$11,425	$635	+1,700.1%
Bend	$6,009	$488	+1,131.0%
The Dalles	$8,236	$682	+1,107.7%
Roseburg	$7,331	$660	+1,010.8%
Florence	$5,115	$503	+916.9%
Ashland	$4,442	$497	+794.3%
Gladstone	$5,223	$612	+754.1%
Grants Pass	$4,483	$586	+664.9%
Oak Grove	$8,367	$1,119	+647.7%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Pennsylvania

In Pennsylvania there are 152,151 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $410.1 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,696 in 2021. This will grow to $2,913 for these same properties in 2051. This additional 8% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

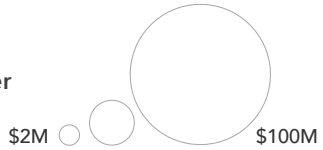
Over the next 30 years, an additional 2,397 properties are expected to experience financial loss from flood damage.

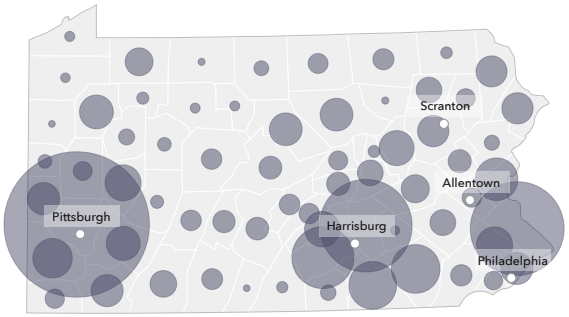
Average expected annual loss per property

2021 $2,696

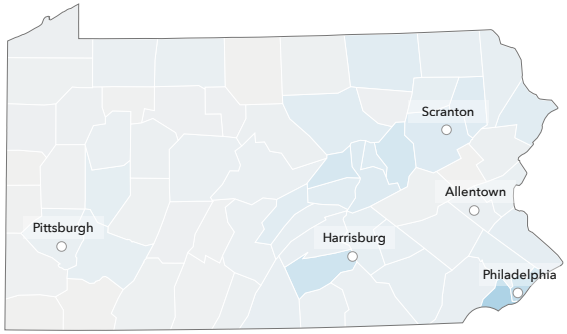
2051 $2,913 **+8%**

Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Pittsburgh	$50.86 M	$54.05 M	+6.3%
Harrisburg	$22.75 M	$24.75 M	+8.8%
Philadelphia	$5.22 M	$6.48 M	+24.3%
Oakmont	$3.63 M	$4.00 M	+10.4%
McKees Rocks	$2.35 M	$2.40 M	+2.1%
Coraopolis	$2.19 M	$2.23 M	+1.8%
Franklin	$1.90 M	$2.01 M	+5.5%
Middletown	$1.73 M	$1.92 M	+11.0%
New Cumberland	$1.47 M	$1.63 M	+11.0%
Bloomsburg	$1.28 M	$1.57 M	+22.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Conshohocken	$79,000	$132,000	+66.0%
Lansdowne	$5,000	$7,000	+52.0%
Bristol	$861,000	$1,231,000	+42.9%
Sunbury	$8,000	$12,000	+39.6%
Whitehall	$21,000	$29,000	+34.4%
Kulpsville	$40,000	$53,000	+33.7%
Carlisle	$9,000	$11,000	+32.4%
Berwick	$320,000	$422,000	+32.1%
Mount Carmel	$9,000	$12,000	+27.9%
Indiana	$4,000	$5,000	+27.5%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Pennsylvania

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 43,959 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,220 while the average NFIP insurance premium** for these properties is calculated to be $1,317. If premiums were adjusted to cover current risk they would have to increase by 3.2 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 108,192 properties outside the SFHA have an average expected annual loss of $2,062 per property and are estimated to have an average NFIP insurance premium of $486. To account for this difference in risk, premiums would have to increase by 4.2 times for these homes.

If all of these 152,151 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $3.31 billion vs an expected payout risk of $12.75 billion in structural damage, leaving a total deficit of $9.44 billion over 30 years.†

If insurance prices in Pennsylvania were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

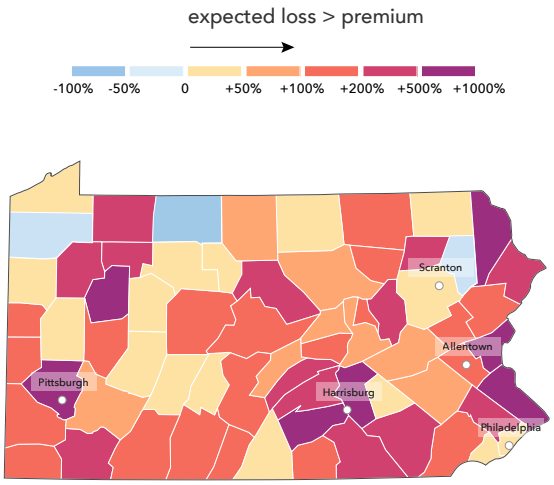
The financial implications are most pronounced for 78,970 properties with extreme risk‡ and structural damage, which have a $3,578 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,317

Avg. expected loss per property inside SFHA, 2021
$4,220

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,370

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Pittsburgh	$6,710	$518	+1,196.2%
King of Prussia	$6,556	$601	+991.4%
Harrisburg	$6,222	$641	+870.7%
Oakmont	$6,084	$703	+766.0%
Camp Hill	$11,031	$1,441	+665.5%
Easton	$5,819	$800	+626.9%
Coraopolis	$4,594	$694	+562.2%
Lower Allen	$4,614	$736	+526.5%
New Cumberland	$3,636	$593	+512.7%
Columbia	$2,864	$511	+460.4%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Rhode Island

In Rhode Island there are 5,028 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $13.3 million this year.

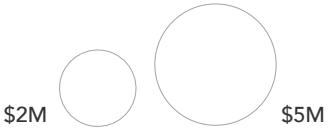
The growing cost from flooding

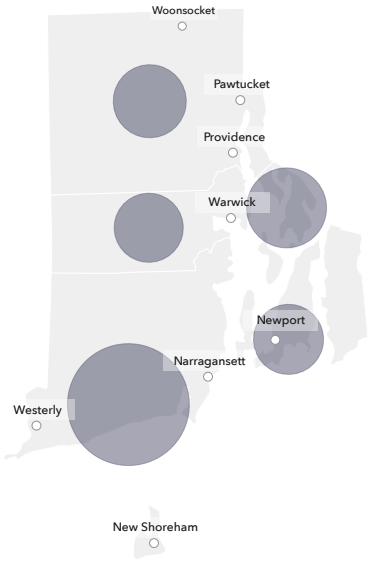
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,647 in 2021. This will grow to $3,680 for these same properties in 2051. This additional 39% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 855 properties are expected to experience financial loss from flood damage.

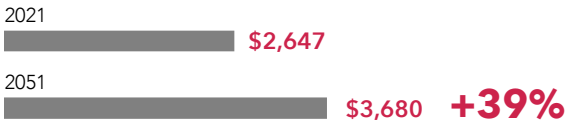
Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051

Average expected annual loss per property



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Newport	$1.14 M	$2.21 M	+94.4%
Warwick	$0.89 M	$1.29 M	+45.6%
East Providence	$0.41 M	$0.53 M	+29.6%
Westerly	$0.25 M	$0.33 M	+32.0%
Providence	$0.20 M	$0.21 M	+3.9%
Wakefield-Peacedale	$0.07 M	$0.10 M	+28.4%
Cranston	$0.06 M	$0.07 M	+15.3%
Woonsocket	$0.05 M	$0.05 M	+8.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Newport	$1.14 M	$2.21 M	+94.4%
Warwick	$0.89 M	$1.29 M	+45.6%
Westerly	$0.25 M	$0.33 M	+32.0%
East Providence	$0.41 M	$0.53 M	+29.6%
Wakefield-Peacedale	$0.07 M	$0.10 M	+28.4%
Cranston	$0.06 M	$0.07 M	+15.3%
Woonsocket	$0.05 M	$0.05 M	+8.0%
Providence	$0.20 M	$0.21 M	+3.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Rhode Island

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 2,108 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,609 while the average NFIP insurance premium** for these properties is calculated to be $1,846. If premiums were adjusted to cover current risk they would have to increase by 2.5 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 2,920 properties outside the SFHA have an average expected annual loss of $1,230 per property and are estimated to have an average NFIP insurance premium of $480. To account for this difference in risk, premiums would have to increase by 2.6 times for these homes.

If all of these 5,028 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.16 billion vs an expected payout risk of $0.48 billion in structural damage, leaving a total deficit of $0.32 billion over 30 years.†

If insurance prices in Rhode Island were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

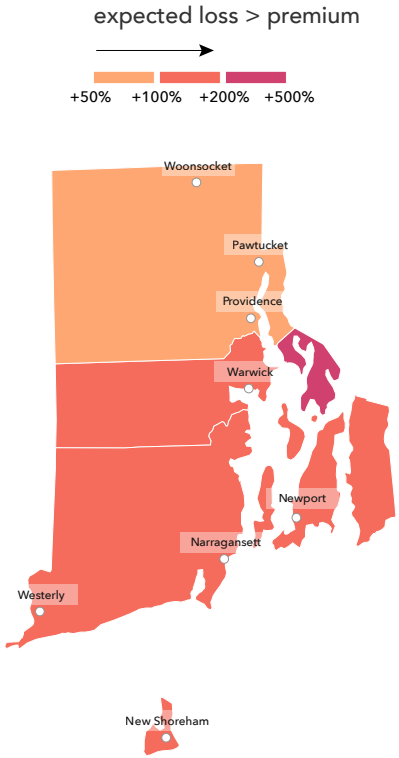
The financial implications are most pronounced for 1,636 properties with extreme risk‡ and structural damage, which have a $5,148 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,846

Avg. expected loss per property inside SFHA, 2021
$4,609

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,629

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Newport	$5,034	$2,082	+141.8%
Warwick	$1,564	$881	+77.5%
Westerly	$1,340	$870	+54.1%
Wakefield-Peacedale	$799	$529	+51.0%
East Providence	$793	$568	+39.6%
Woonsocket	$604	$592	+2.1%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
South Carolina

In South Carolina there are 78,838 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $1.2 billion this year.

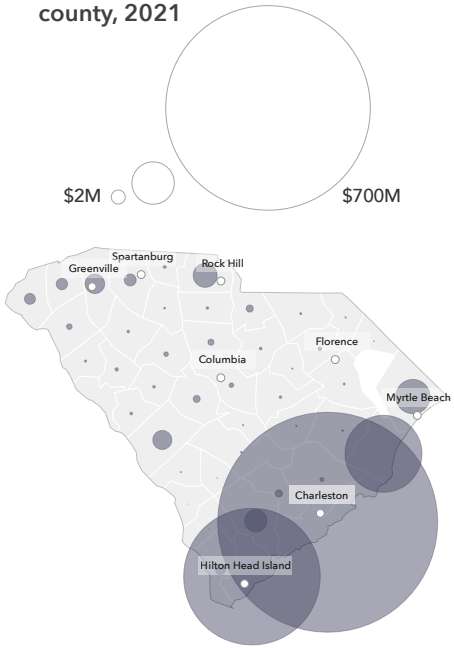
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

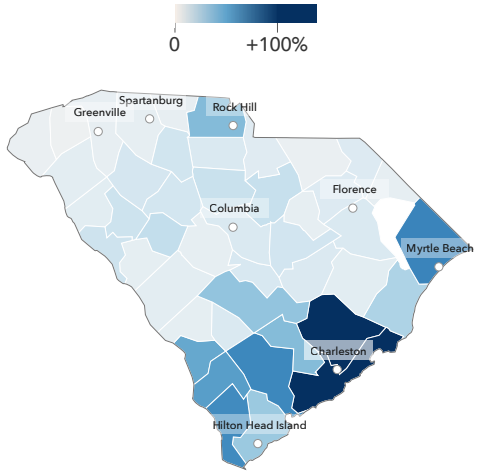
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $14,988 in 2021. This will grow to $28,211 for these same properties in 2051. This additional 88% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 3,665 properties are expected to experience financial loss from flood damage.

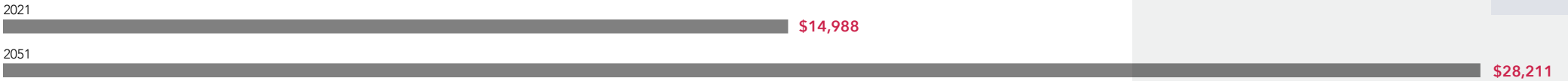
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Charleston	$300.03 M	$834.91 M	+178.3%
Mount Pleasant	$116.02 M	$196.72 M	+69.6%
James Island	$34.06 M	$84.47 M	+148.0%
Port Royal	$5.84 M	$9.78 M	+67.6%
North Augusta	$5.25 M	$5.74 M	+9.4%
Georgetown	$4.02 M	$5.54 M	+37.8%
Socastee	$3.76 M	$5.96 M	+58.3%
Beaufort	$3.25 M	$7.15 M	+120.4%
Myrtle Beach	$3.01 M	$3.65 M	+20.9%
North Charleston	$3.00 M	$8.92 M	+197.3%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
North Charleston	$3.00 M	$8.92 M	+197.3%
Bluffton	$2.77 M	$7.83 M	+182.8%
Charleston	$300.03 M	$834.91 M	+178.3%
James Island	$34.06 M	$84.47 M	+148.0%
North Myrtle Beach	$2.71 M	$6.28 M	+131.8%
Little River	$1.20 M	$2.66 M	+121.2%
Beaufort	$3.25 M	$7.15 M	+120.4%
Forestbrook	$0.30 M	$0.61 M	+105.1%
Surfside Beach	$0.27 M	$0.54 M	+102.3%
Tega Cay	$0.53 M	$1.03 M	+95.0%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
South Carolina

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 48,866 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $20,675 while the average NFIP insurance premium** for these properties is calculated to be $2,578. If premiums were adjusted to cover current risk they would have to increase by 8.0 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 29,972 properties outside the SFHA have an average expected annual loss of $2,527 per property and are estimated to have an average NFIP insurance premium of $469. To account for this difference in risk, premiums would have to increase by 5.4 times for these homes.

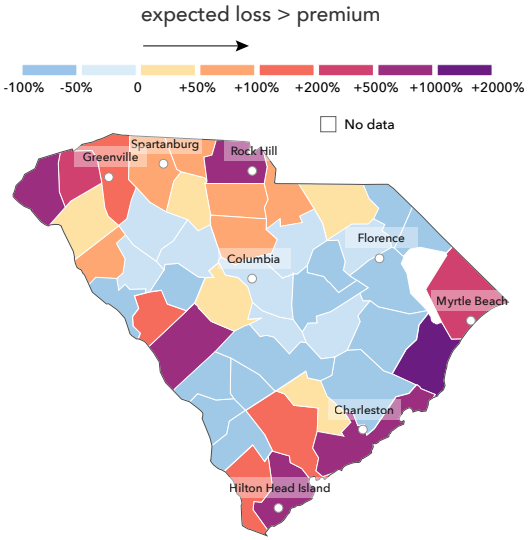
If all of these 78,838 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $4.2 billion vs an expected payout risk of $45.14 billion in structural damage, leaving a total deficit of $40.94 billion over 30 years.†

If insurance prices in South Carolina were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 30,778 properties with extreme risk‡ and structural damage, which have a $29,195 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Avg. state premium inside SFHA, 2021

$2,578

Avg. expected loss per property inside SFHA, 2021

$20,675

Avg. expected loss per property with an Extreme Flood Factor, 2021

$31,105

Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
North Augusta	$9,884	$602	+1,541.8%
Lake Wylie	$4,902	$529	+827.0%
Fort Mill	$4,623	$522	+785.3%
West Columbia	$5,420	$673	+704.7%
Charleston	$18,211	$2,264	+704.5%
James Island	$13,106	$1,912	+585.6%
Mount Pleasant	$17,538	$2,724	+543.8%
Socastee	$2,837	$444	+539.6%
Georgetown	$5,336	$854	+524.8%
Murrells Inlet	$7,597	$1,333	+469.8%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
South Dakota

In South Dakota there are 5,219 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $13 million this year.

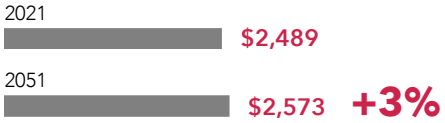
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

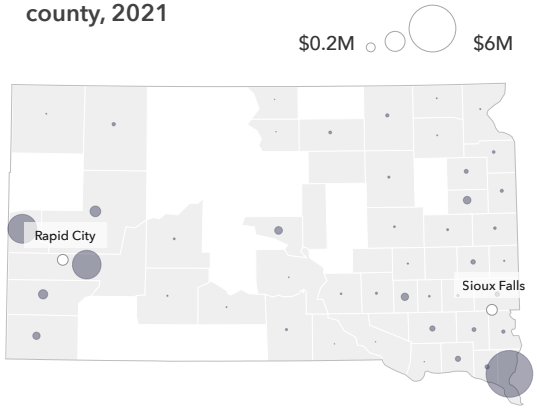
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,489 in 2021. This will grow to $2,573 for these same properties in 2051. This additional 3% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 41 properties are expected to experience financial loss from flood damage.

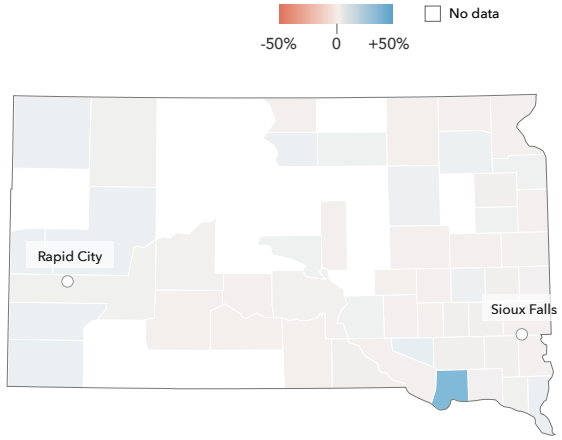
Average expected annual loss per property



Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Rapid City	$278,000	$283,000	+1.7%
Pierre	$156,000	$159,000	+2.3%
Sturgis	$146,000	$162,000	+10.6%
Mitchell	$139,000	$136,000	-1.7%
Spearfish	$56,000	$63,000	+13.0%
Sioux Falls	$50,000	$49,000	-0.3%
Watertown	$38,000	$38,000	+0.3%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Spearfish	$56,000	$63,000	+13.0%
Sturgis	$146,000	$162,000	+10.6%
Pierre	$156,000	$159,000	+2.3%
Rapid City	$278,000	$283,000	+1.7%
Watertown	$38,000	$38,000	+0.3%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
South Dakota

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 1,169 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,869 while the average NFIP insurance premium** for these properties is calculated to be $1,344. If premiums were adjusted to cover current risk they would have to increase by 2.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 4,050 properties outside the SFHA have an average expected annual loss of $2,379 per property and are estimated to have an average NFIP insurance premium of $482. To account for this difference in risk, premiums would have to increase by 4.9 times for these homes.

If all of these 5,219 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $110 million vs an expected payout risk of $400 million in structural damage, leaving a total deficit of $290 million over 30 years.†

If insurance prices in South Dakota were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

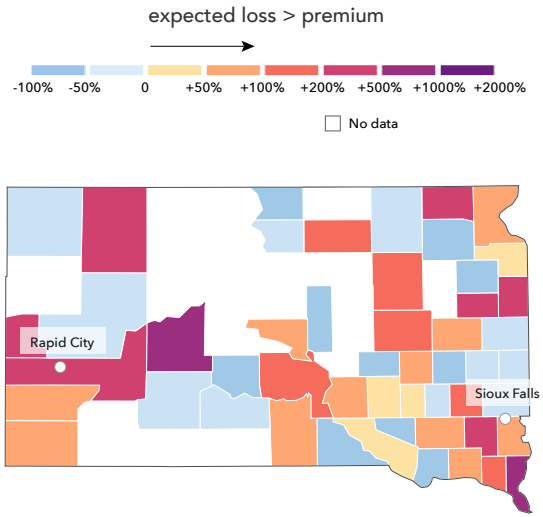
The financial implications are most pronounced for 2,335 properties with extreme risk‡ and structural damage, which have a $3,805 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,344

Avg. expected loss per property inside SFHA, 2021
$2,869

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,474

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Pierre	$806	$495	+62.8%
Mitchell	$1,194	$954	+25.2%
Sioux Falls	$516	$504	+2.4%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Tennessee

In Tennessee there are 137,079 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $436.8 million this year.

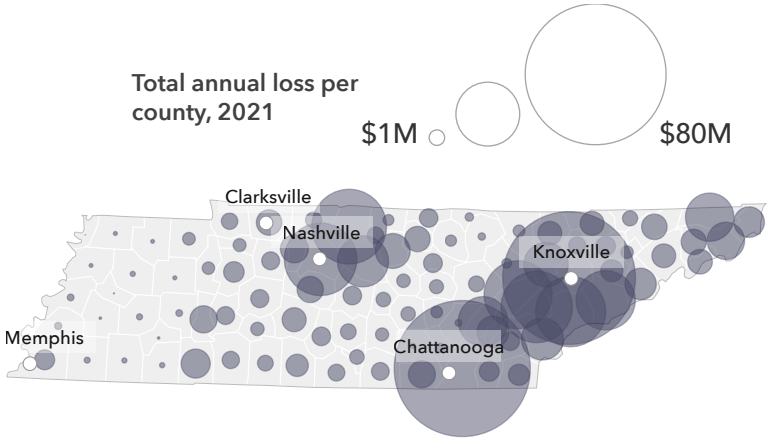
The growing cost from flooding

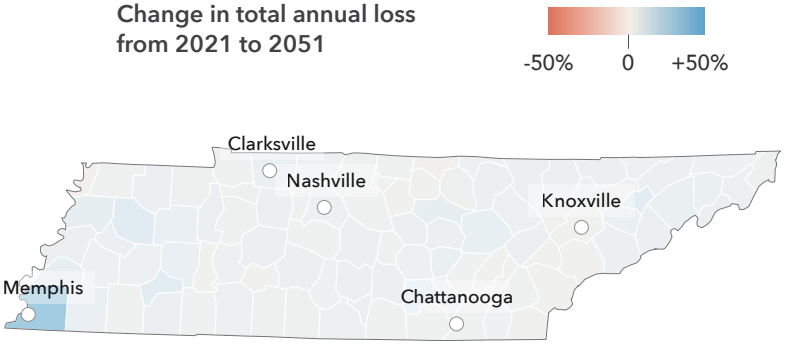
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $3,186 in 2021. This will grow to $3,272 for these same properties in 2051. This additional 3% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 1,915 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property





Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Chattanooga	$70.00 M	$71.35 M	+1.9%
Knoxville	$21.99 M	$22.33 M	+1.5%
Nashville	$21.63 M	$22.40 M	+3.6%
Tellico Village	$10.85 M	$10.97 M	+1.1%
Gallatin	$8.80 M	$8.98 M	+2.0%
Hendersonville	$6.12 M	$6.37 M	+4.2%
Kingston	$4.28 M	$4.76 M	+11.2%
Clinton	$4.10 M	$4.14 M	+1.0%
Kingsport	$1.92 M	$2.02 M	+5.2%
Clarksville	$1.85 M	$1.96 M	+5.9%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Germantown	$0.01 M	$0.02 M	+116.6%
Memphis	$1.55 M	$2.10 M	+35.8%
Morristown	$0.10 M	$0.13 M	+29.3%
Munford	$0.02 M	$0.03 M	+28.8%
Sweetwater	$0.06 M	$0.08 M	+27.1%
Greeneville	$0.08 M	$0.10 M	+24.0%
Erwin	$0.16 M	$0.20 M	+23.2%
Cookeville	$0.28 M	$0.33 M	+18.8%
Dyersburg	$0.02 M	$0.02 M	+17.0%
Maryville	$0.15 M	$0.17 M	+16.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Tennessee

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 19,114 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,825 while the average NFIP insurance premium** for these properties is calculated to be $1,071. If premiums were adjusted to cover current risk they would have to increase by 3.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 117,965 properties outside the SFHA have an average expected annual loss of $3,053 per property and are estimated to have an average NFIP insurance premium of $483. To account for this difference in risk, premiums would have to increase by 6.3 times for these homes.

If all of these 137,079 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $2.32 billion vs an expected payout risk of $13.17 billion in structural damage, leaving a total deficit of $10.85 billion over 30 years.†

If insurance prices in Tennessee were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

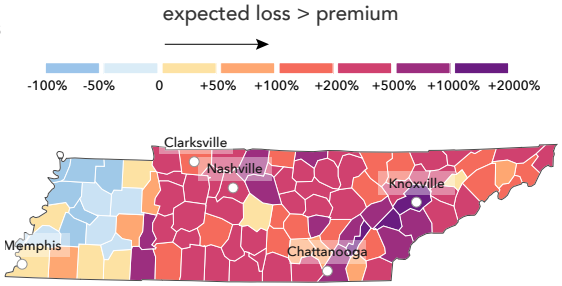
The financial implications are most pronounced for 72,503 properties with extreme risk‡ and structural damage, which have a $4,367 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,071

Avg. expected loss per property inside SFHA, 2021
$3,825

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,926

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Tellico Village	$13,781	$491	+2,704.5%
Gallatin	$10,030	$539	+1,760.7%
Knoxville	$8,136	$492	+1,553.6%
Clinton	$7,004	$489	+1,331.8%
Kingston	$6,790	$490	+1,285.7%
Farragut	$5,627	$509	+1,004.7%
Chattanooga	$4,827	$531	+809.6%
Loudon	$3,517	$531	+562.6%
Lenoir City	$3,231	$516	+526.1%
Hendersonville	$3,271	$536	+510.3%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Texas

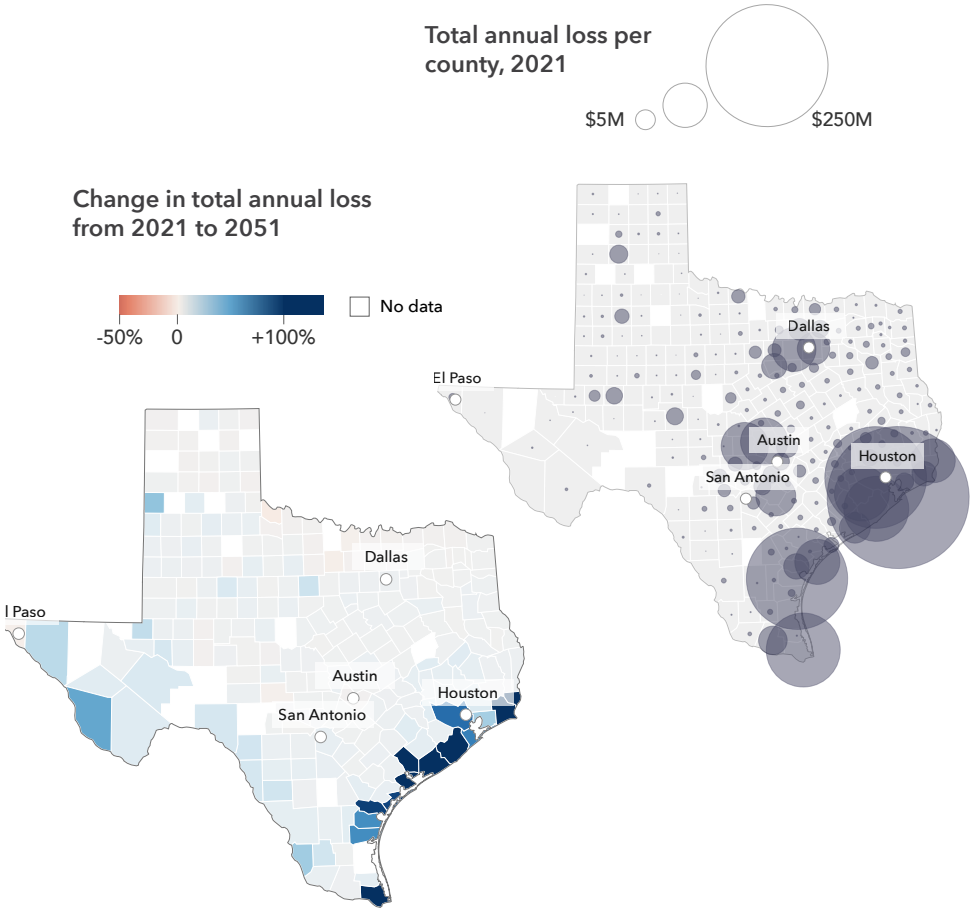
In Texas there are 480,551 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $1.14 billion this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,372 in 2021. This will grow to $4,217 for these same properties in 2051. This additional 78% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 7,856 properties are expected to experience financial loss from flood damage.



Average expected annual loss per property

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Galveston	$164.42 M	$263.95 M	+60.5%
Corpus Christi	$113.16 M	$176.94 M	+56.4%
League City	$40.43 M	$91.56 M	+126.4%
Houston	$33.18 M	$35.74 M	+7.7%
Port Aransas	$32.15 M	$59.85 M	+86.1%
South Padre Island	$31.89 M	$42.93 M	+34.6%
Seabrook	$29.68 M	$61.69 M	+107.9%
Rockport	$18.08 M	$30.92 M	+71.0%
Dickinson	$15.57 M	$27.99 M	+79.7%
Bridge City	$14.92 M	$67.20 M	+350.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Orange	$0.61 M	$3.91 M	+543.3%
Bridge City	$14.92 M	$67.20 M	+350.5%
Lake Jackson	$0.36 M	$1.55 M	+325.8%
Nederland	$0.47 M	$1.96 M	+316.9%
Port Lavaca	$0.23 M	$0.90 M	+288.9%
Port Neches	$0.46 M	$1.62 M	+253.3%
Baytown	$5.62 M	$18.57 M	+230.5%
Groves	$0.69 M	$1.99 M	+188.4%
La Porte	$5.54 M	$13.82 M	+149.5%
Port Arthur	$3.69 M	$8.56 M	+131.8%

State Overview
Texas

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 169,586 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $4,672 while the average NFIP insurance premium** for these properties is calculated to be $1,686. If premiums were adjusted to cover current risk they would have to increase by 2.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 310,965 properties outside the SFHA have an average expected annual loss of $1,104 per property and are estimated to have an average NFIP insurance premium of $472. To account for this difference in risk, premiums would have to increase by 2.3 times for these homes.

If all of these 480,551 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $12.98 billion vs an expected payout risk of $47.27 billion in structural damage, leaving a total deficit of $34.29 billion over 30 years.†

If insurance prices in Texas were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

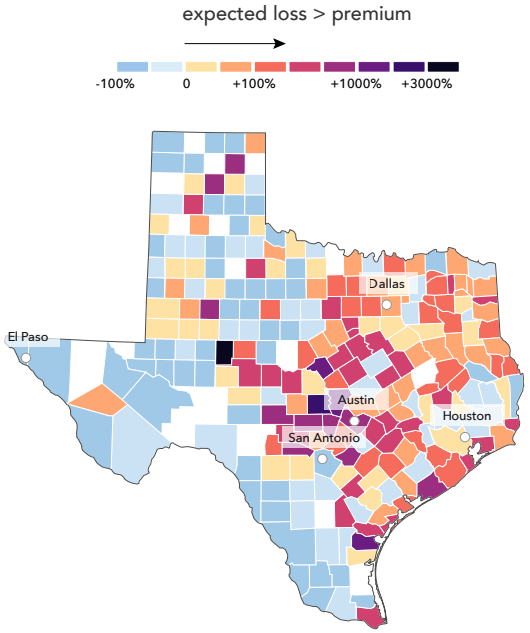
The financial implications are most pronounced for 84,957 properties with extreme risk‡ and structural damage, which have a $7,671 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,686

Avg. expected loss per property inside SFHA, 2021
$4,672

Avg. expected loss per property with an Extreme Flood Factor, 2021
$8,822

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Granite Shoals	$17,351	$637	+2,622.8%
Port Aransas	$15,048	$742	+1,929.0%
Austin	$8,148	$573	+1,322.2%
Corpus Christi	$6,948	$531	+1,208.5%
Kingsland	$7,487	$639	+1,072.1%
Aransas Pass	$10,259	$1,180	+769.4%
Pecan Plantation	$4,515	$552	+717.8%
Bastrop	$4,378	$559	+683.9%
Freeport	$13,619	$1,787	+662.1%
Granbury	$3,175	$488	+550.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Utah

In Utah there are 29,338 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $38.6 million this year.

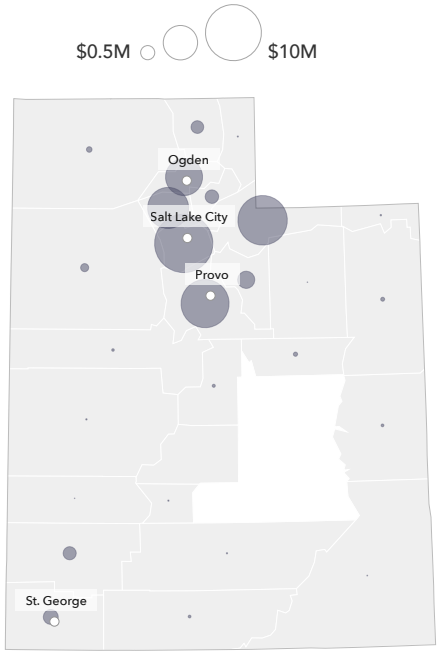
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

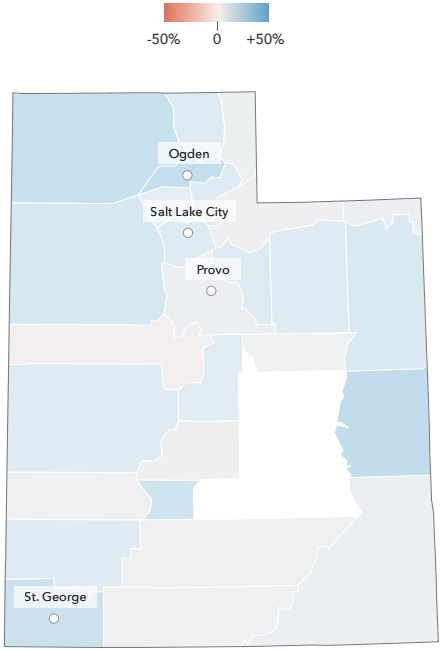
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,314 in 2021. This will grow to $1,456 for these same properties in 2051. This additional 11% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 937 properties are expected to experience financial loss from flood damage.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

2021 $1,314

2051 $1,456 **+11%**

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Summit Park	$2.90 M	$3.02 M	+4.0%
Sandy	$2.15 M	$2.83 M	+32.1%
Salt Lake City	$2.02 M	$2.08 M	+2.9%
Snyderville	$1.66 M	$1.77 M	+6.6%
Layton	$1.62 M	$1.78 M	+9.9%
Pleasant Grove	$1.55 M	$1.55 M	+0.2%
Ogden	$1.36 M	$1.90 M	+39.8%
Cottonwood Heights	$1.03 M	$1.08 M	+4.7%
Herriman	$1.00 M	$1.04 M	+4.2%
Park City	$0.93 M	$0.98 M	+5.9%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Grantsville	$0.02 M	$0.02 M	+63.1%
Brigham City	$0.03 M	$0.04 M	+48.3%
Ogden	$1.36 M	$1.90 M	+39.8%
St. George	$0.23 M	$0.31 M	+35.6%
Sandy	$2.15 M	$2.83 M	+32.1%
Logan	$0.16 M	$0.21 M	+32.1%
Salem	$0.04 M	$0.05 M	+28.0%
North Ogden	$0.52 M	$0.66 M	+27.1%
Bluffdale	$0.12 M	$0.15 M	+26.5%
Kearns	$0.01 M	$0.01 M	+25.1%

State Overview
Utah

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 1,345 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,916 while the average NFIP insurance premium** for these properties is calculated to be $1,071. If premiums were adjusted to cover current risk they would have to increase by 1.8 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 27,993 properties outside the SFHA have an average expected annual loss of $1,285 per property and are estimated to have an average NFIP insurance premium of $486. To account for this difference in risk, premiums would have to increase by 2.6 times for these homes.

If all of these 29,338 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.45 billion vs an expected payout risk of $1.22 billion in structural damage, leaving a total deficit of $0.77 billion over 30 years.†

If insurance prices in Utah were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

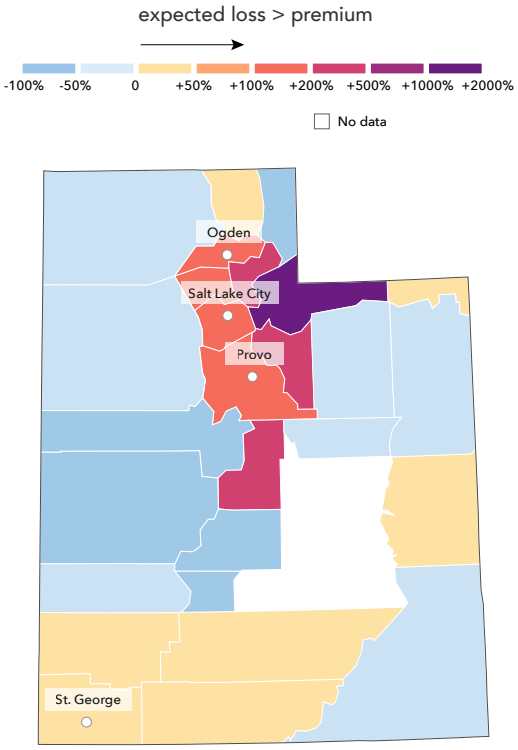
The financial implications are most pronounced for 5,784 properties with extreme risk‡ and structural damage, which have a $4,311 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,071

Avg. expected loss per property inside SFHA, 2021
$1,916

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,847

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Summit Park	$8,316	$490	+1,596.6%
Snyderville	$7,809	$492	+1,488.0%
North Salt Lake	$3,635	$490	+642.2%
Sandy	$3,367	$506	+565.0%
Park City	$3,033	$529	+473.9%
Highland	$2,789	$496	+462.1%
Pleasant Grove	$2,624	$488	+437.8%
Layton	$2,382	$489	+387.4%
Alpine	$2,190	$493	+344.3%
Midway	$2,093	$518	+304.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Vermont

In Vermont there are 10,503 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $20.6 million this year.

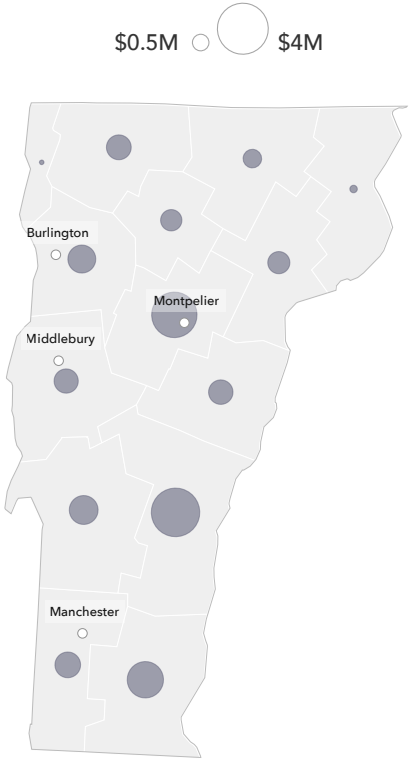
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

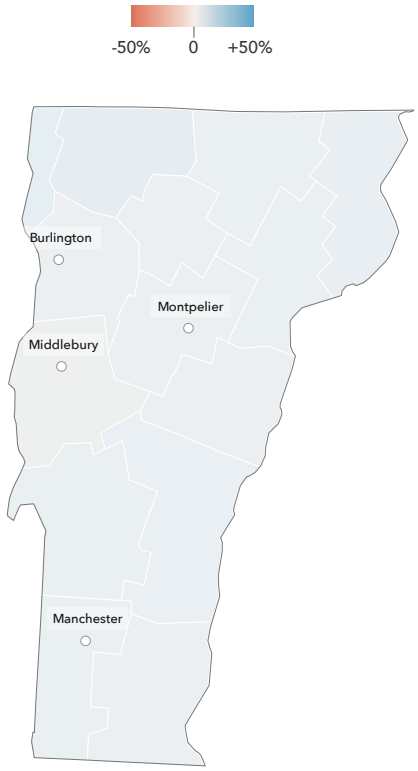
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,961 in 2021. This will grow to $2,071 for these same properties in 2051. This additional 6% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 214 properties are expected to experience financial loss from flood damage.

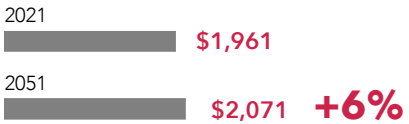
Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Montpelier	$862,000	$939,000	+8.9%
Barre	$261,000	$278,000	+6.5%
Bennington	$147,000	$160,000	+9.1%
Rutland	$84,000	$95,000	+13.0%
Burlington	$11,000	$16,000	+49.1%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Burlington	$11,000	$16,000	+49.1%
Rutland	$84,000	$95,000	+13.0%
Bennington	$147,000	$160,000	+9.1%
Montpelier	$862,000	$939,000	+8.9%
Barre	$261,000	$278,000	+6.5%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Vermont

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 2,689 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,209 while the average NFIP insurance premium** for these properties is calculated to be $1,496. If premiums were adjusted to cover current risk they would have to increase by 1.5 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 7,814 properties outside the SFHA have an average expected annual loss of $1,876 per property and are estimated to have an average NFIP insurance premium of $485. To account for this difference in risk, premiums would have to increase by 3.9 times for these homes.

If all of these 10,503 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $234 million vs an expected payout risk of $635 million in structural damage, leaving a total deficit of $401 million over 30 years.†

If insurance prices in Vermont were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

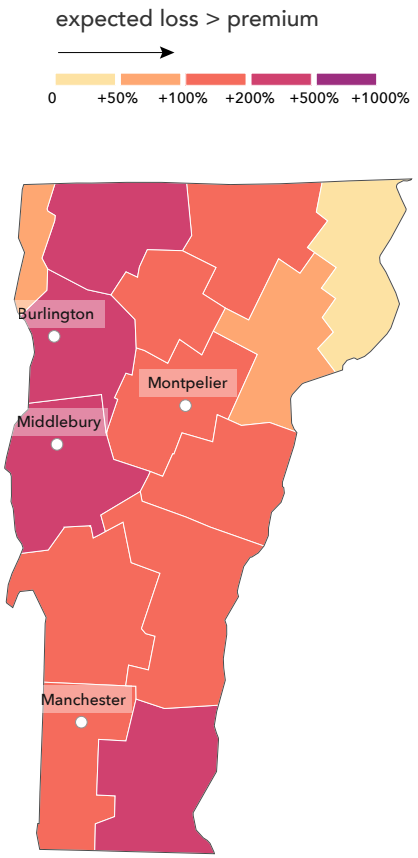
The financial implications are most pronounced for 7,481 properties with extreme risk‡ and structural damage, which have a $1,847 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,496

Avg. expected loss per property inside SFHA, 2021
$2,209

Avg. expected loss per property with an Extreme Flood Factor, 2021
$2,583

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Montpelier	$2,023	$951	+112.8%
Bennington	$698	$786	-11.1%
Barre	$804	$998	-19.5%
Rutland	$383	$795	-51.8%
Burlington	$407	$1,126	-63.9%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Virginia

In Virginia there are 100,587 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $269.4 million this year.

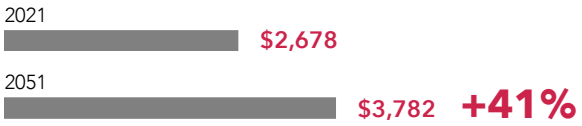
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

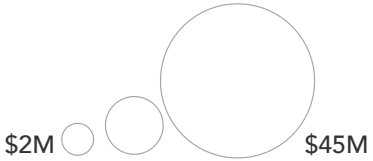
For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,678 in 2021. This will grow to $3,782 for these same properties in 2051. This additional 41% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

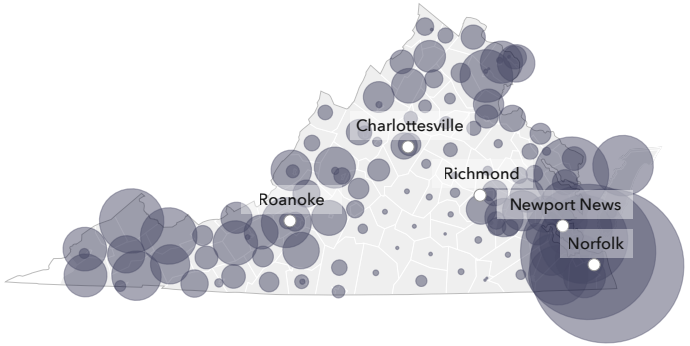
Over the next 30 years, an additional 5,916 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

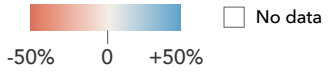


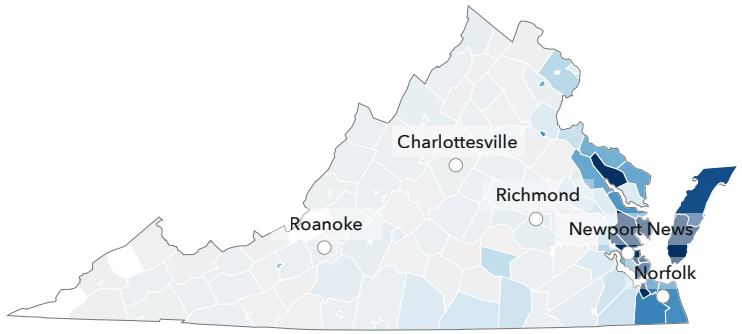
Total annual loss per county, 2021





Change in total annual loss from 2021 to 2051





Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Virginia Beach	$44.95 M	$73.31 M	+63.1%
Norfolk	$34.63 M	$58.70 M	+69.5%
Hampton	$14.68 M	$28.13 M	+91.6%
Suffolk	$6.90 M	$8.20 M	+18.9%
Chincoteague	$6.04 M	$11.02 M	+82.5%
Poquoson	$5.46 M	$15.03 M	+175.1%
Portsmouth	$4.38 M	$9.27 M	+111.5%
Chesapeake	$3.07 M	$5.49 M	+78.7%
Hopewell	$2.79 M	$2.87 M	+3.0%
Alexandria	$2.67 M	$3.36 M	+25.8%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Poquoson	$5.46 M	$15.03 M	+175.1%
Triangle	$0.02 M	$0.04 M	+116.2%
Portsmouth	$4.38 M	$9.27 M	+111.5%
Mount Vernon	$0.11 M	$0.22 M	+95.4%
Hampton	$14.68 M	$28.13 M	+91.6%
Chincoteague	$6.04 M	$11.02 M	+82.5%
Gloucester Point	$0.78 M	$1.40 M	+79.8%
Chesapeake	$3.07 M	$5.49 M	+78.7%
Norfolk	$34.63 M	$58.70 M	+69.5%
Virginia Beach	$44.95 M	$73.31 M	+63.1%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.

** See methodology section for full AAL model details

State Overview
Virginia

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 34,927 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,922 while the average NFIP insurance premium** for these properties is calculated to be $1,751. If premiums were adjusted to cover current risk they would have to increase by 2.2 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 65,660 properties outside the SFHA have an average expected annual loss of $1,995 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 4.1 times for these homes.

If all of these 100,587 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $2.79 billion vs an expected payout risk of $9.71 billion in structural damage, leaving a total deficit of $6.92 billion over 30 years.†

If insurance prices in Virginia were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

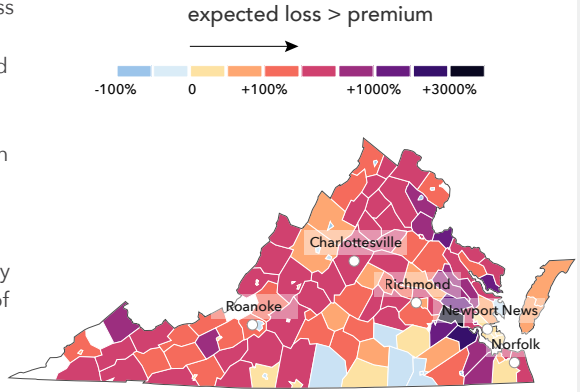
The financial implications are most pronounced for 54,832 properties with extreme risk‡ and structural damage, which have a $3,429 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,751

Avg. expected loss per property inside SFHA, 2021
$3,922

Avg. expected loss per property with an Extreme Flood Factor, 2021
$4,390

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Hopewell	$10,755	$517	+1,979.0%
Smithfield	$9,934	$652	+1,424.3%
Great Falls	$7,940	$557	+1,325.6%
Fort Hunt	$6,293	$543	+1,059.0%
Aquia Harbour	$5,890	$533	+1,005.5%
Lorton	$5,484	$506	+984.1%
Williamsburg	$4,439	$488	+809.7%
Suffolk	$5,844	$670	+772.8%
Carrollton	$5,450	$895	+509.3%
Buckhall	$4,200	$921	+356.0%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Washington

In Washington there are 108,296 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $881.6 million this year.

The growing cost from flooding

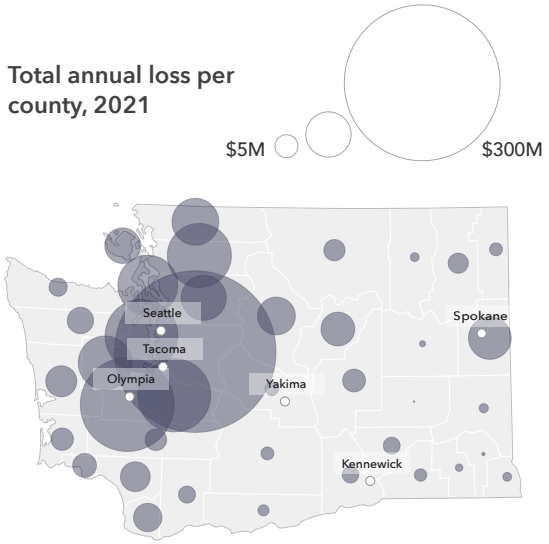
As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $8,141 in 2021. This will grow to $8,457 for these same properties in 2051. This additional 4% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

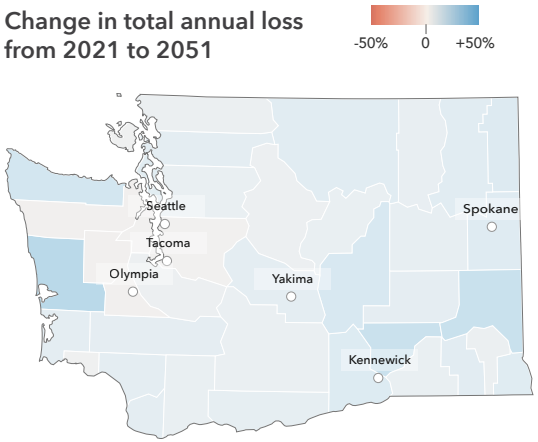
Over the next 30 years, an additional 4,892 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Seattle	$91.82 M	$92.95 M	+1.2%
Bellevue	$42.17 M	$42.33 M	+0.4%
Bainbridge Island	$27.28 M	$27.61 M	+1.2%
Vashon	$25.16 M	$24.51 M	-2.6%
Camano	$19.93 M	$21.21 M	+6.4%
Kirkland	$9.32 M	$9.31 M	-0.1%
Renton	$5.36 M	$5.36 M	+0.0%
Bremerton	$4.70 M	$5.21 M	+10.9%
Bryn Mawr-Skyway	$4.60 M	$4.60 M	-0.2%
Maplewood	$4.50 M	$4.64 M	+3.0%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Port Angeles	$0.09 M	$0.18 M	+94.4%
DuPont	$0.01 M	$0.02 M	+88.2%
Fircrest	$0.01 M	$0.02 M	+72.7%
Hoquiam	$3.08 M	$4.93 M	+60.0%
Picnic Point	$0.04 M	$0.07 M	+57.0%
Orting	$0.02 M	$0.03 M	+49.9%
Ephrata	$0.02 M	$0.02 M	+43.1%
Snoqualmie	$0.02 M	$0.03 M	+42.2%
Walnut Grove	$0.01 M	$0.01 M	+33.6%
Fairwood	$0.05 M	$0.07 M	+32.4%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Washington

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 25,264 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $9,356 while the average NFIP insurance premium** for these properties is calculated to be $1,150. If premiums were adjusted to cover current risk they would have to increase by 8.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 83,032 properties outside the SFHA have an average expected annual loss of $6,540 per property and are estimated to have an average NFIP insurance premium of $487. To account for this difference in risk, premiums would have to increase by 13.4 times for these homes.

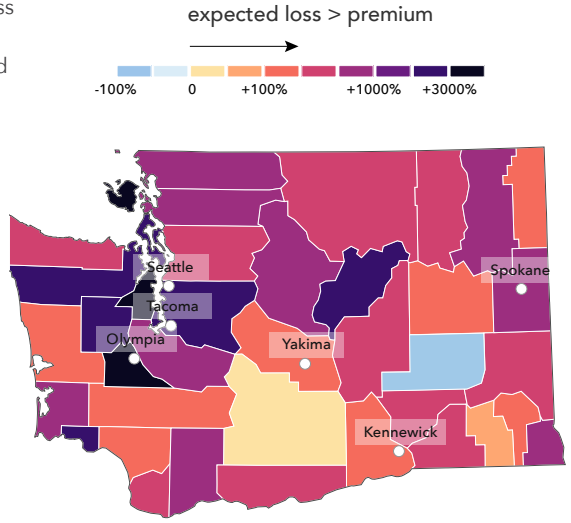
If all of these 108,296 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $2.08 billion vs an expected payout risk of $23.9 billion in structural damage, leaving a total deficit of $21.81 billion over 30 years.†

If insurance prices in Washington were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 41,975 properties with extreme risk‡ and structural damage, which have a $16,377 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. expected loss per property vs avg. premium, all zones, 2021



Avg. state premium inside SFHA, 2021
$1,150

Avg. expected loss per property inside SFHA, 2021
$9,356

Avg. expected loss per property with an Extreme Flood Factor, 2021
$17,064

Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Bainbridge Island	$74,170	$793	+9,253.3%
Vashon	$72,226	$864	+8,263.1%
Bryn Mawr-Skyway	$39,353	$488	+7,964.2%
Kirkland	$37,043	$488	+7,490.8%
Normandy Park	$39,964	$563	+6,996.9%
Bellevue	$33,762	$549	+6,047.8%
Manchester	$41,486	$825	+4,928.4%
Steilacoom	$22,421	$488	+4,494.4%
Bremerton	$38,908	$924	+4,112.8%
Blaine	$20,474	$488	+4,095.6%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Washington, D.C.

In Washington, D.C. there are 2,413 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $6.0 million this year.

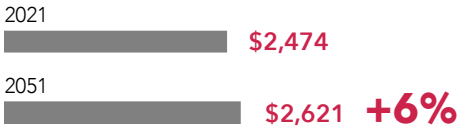
The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,474 in 2021. This will grow to $2,621 for these same properties in 2051. This additional 6% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 52 properties are expected to experience financial loss from flood damage.

Average expected annual loss per property



Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 161 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $6,421 while the average NFIP insurance premium*** for these properties is calculated to be $1,114. If premiums were adjusted to cover current risk they would have to increase by 5.8 times.

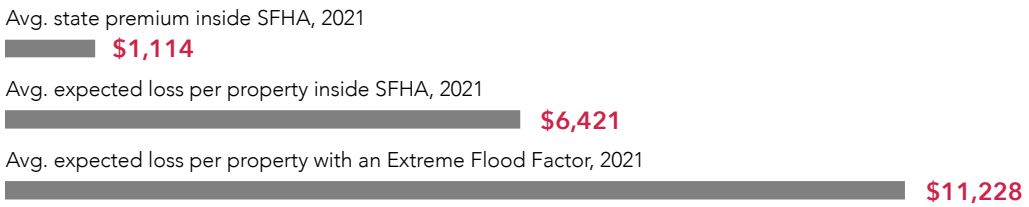
There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.† Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 2,252 properties outside the SFHA have an average expected annual loss of $1,208 per property and are estimated to have an average NFIP insurance premium of $488. To account for this difference in risk, premiums would have to increase by 2.5 times for these homes.

If all of these 2,413 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.04 billion vs an expected payout risk of $0.12 billion in structural damage, leaving a total deficit of $0.08 billion over 30 years.‡

If insurance prices in Washington, D.C. were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

The financial implications are most pronounced for 199 properties with extreme risk§ and structural damage, which have a $10,668 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.



* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit.
** See methodology section for full AAL model details
*** See methodology section for full NFIP premium methodology.
† Source - FEMA.gov blog
‡ For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
§ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
West Virginia

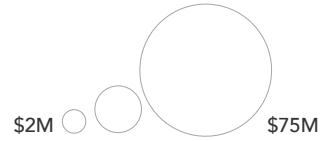
In West Virginia there are 87,073 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $206.2 million this year.

The growing cost from flooding

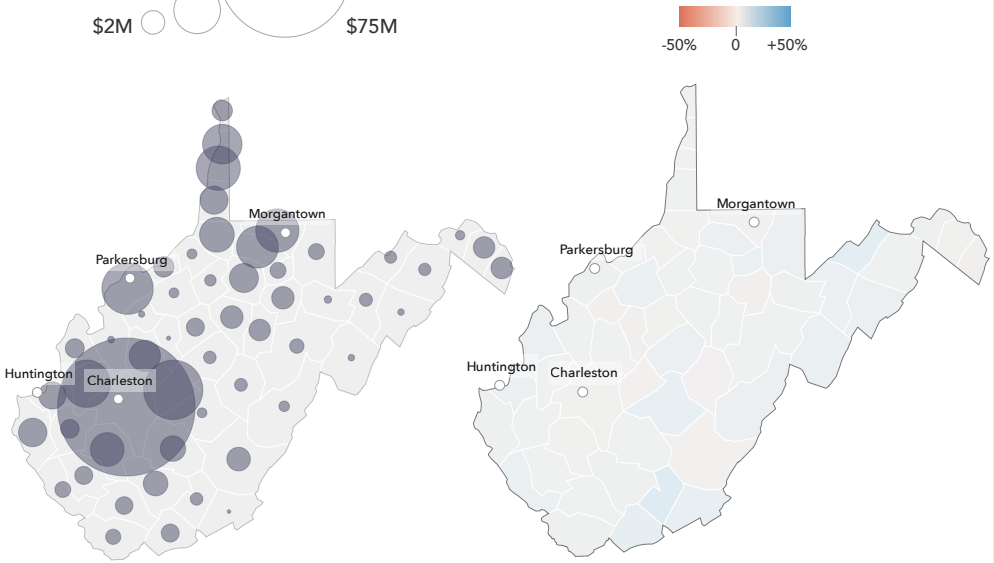
In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because West Virginia is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $2,368 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051



Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Charleston	$16.47 M	$16.81 M	+2.0%
St. Albans	$10.62 M	$10.74 M	+1.1%
Dunbar	$7.55 M	$7.64 M	+1.2%
Wheeling	$6.90 M	$7.01 M	+1.6%
Nitro	$6.28 M	$6.35 M	+1.1%
South Charleston	$4.35 M	$4.42 M	+1.6%
Parkersburg	$1.94 M	$2.00 M	+3.4%
Vienna	$1.91 M	$1.97 M	+3.1%
Moundsville	$1.13 M	$1.15 M	+2.2%
Fairmont	$0.75 M	$0.77 M	+2.5%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Beckley	$0.02 M	$0.03 M	+54.0%
Martinsburg	$0.03 M	$0.04 M	+32.7%
Teays Valley	$0.02 M	$0.02 M	+30.5%
Bluefield	$0.18 M	$0.22 M	+24.4%
Oak Hill	$0.02 M	$0.02 M	+24.4%
Huntington	$0.28 M	$0.30 M	+8.3%
Pea Ridge	$0.11 M	$0.12 M	+5.4%
Cross Lanes	$0.21 M	$0.22 M	+4.1%
Parkersburg	$1.94 M	$2.00 M	+3.4%
Vienna	$1.91 M	$1.97 M	+3.1%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
West Virginia

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 24,629 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $3,536 while the average NFIP insurance premium** for these properties is calculated to be $1,129. If premiums were adjusted to cover current risk they would have to increase by 3.1 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 62,444 properties outside the SFHA have an average expected annual loss of $1,907 per property and are estimated to have an average NFIP insurance premium of $484. To account for this difference in risk, premiums would have to increase by 3.9 times for these homes.

If all of these 87,073 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $1.74 billion vs an expected payout risk of $6.25 billion in structural damage, leaving a total deficit of $4.51 billion over 30 years.†

If insurance prices in West Virginia were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

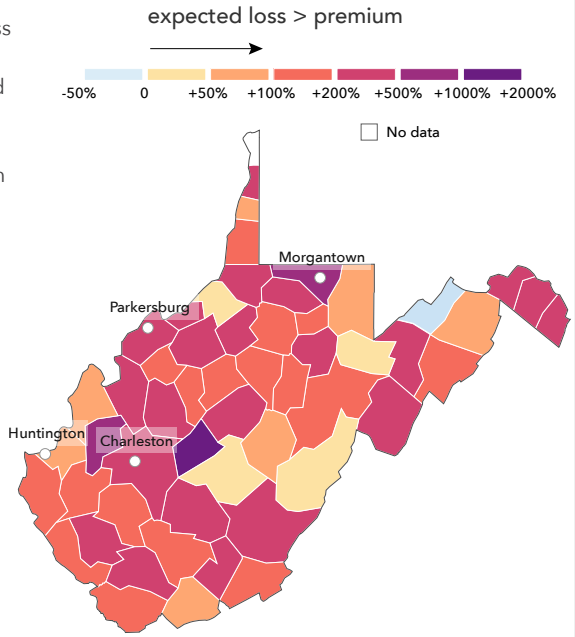
The financial implications are most pronounced for 55,846 properties with extreme risk‡ and structural damage, which have a $2,479 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,129

Avg. expected loss per property inside SFHA, 2021
$3,536

Avg. expected loss per property with an Extreme Flood Factor, 2021
$3,185

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
St. Albans	$4,117	$527	+680.6%
Nitro	$4,453	$685	+549.9%
Fairmont	$3,368	$532	+533.4%
Dunbar	$3,927	$808	+386.1%
Bridgeport	$3,742	$821	+355.8%
South Charleston	$2,859	$640	+346.8%
Charleston	$2,402	$597	+302.5%
Hurricane	$2,032	$523	+288.2%
Vienna	$1,985	$617	+221.6%
Morgantown	$1,701	$644	+164.1%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Wisconsin

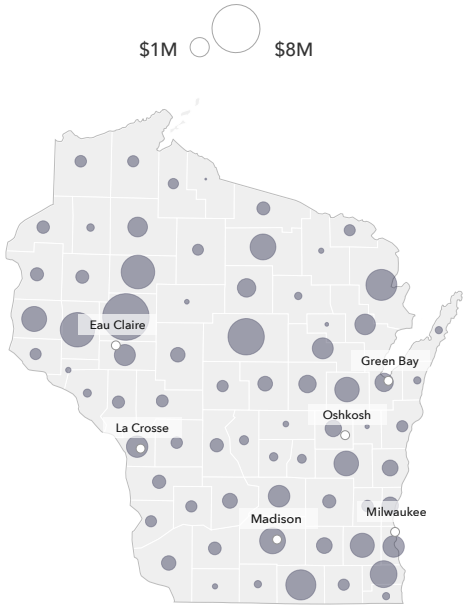
In Wisconsin there are 43,758 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $77.6 million this year.

The growing cost from flooding

In many areas across the country, flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk. However, because Wisconsin is becoming drier in some areas over time, losses will stay relatively consistent in 2051.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,774 in 2021.

Total annual loss per county, 2021



Change in total annual loss from 2021 to 2051

Average expected annual loss per property

Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Wausau	$2.00 M	$2.02 M	+1.0%
Fond du Lac	$1.90 M	$1.93 M	+1.5%
Rhinelander	$1.38 M	$1.41 M	+1.9%
Lake Wisconsin	$1.25 M	$1.27 M	+1.8%
Tichigan	$1.10 M	$1.13 M	+2.5%
Janesville	$1.03 M	$1.04 M	+1.3%
Milwaukee	$0.92 M	$0.94 M	+2.7%
Monona	$0.89 M	$0.89 M	+0.0%
Chippewa Falls	$0.80 M	$0.80 M	+0.2%
Mequon	$0.66 M	$0.68 M	+2.2%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
New Berlin	$4,000	$7,000	+63.1%
West Allis	$1,000	$2,000	+26.7%
Greenfield	$4,000	$5,000	+21.4%
McFarland	$33,000	$38,000	+14.6%
Sturgeon Bay	$3,000	$3,000	+9.4%
Kronenwetter	$20,000	$22,000	+8.7%
Watertown	$24,000	$26,000	+6.4%
Reedsburg	$13,000	$14,000	+6.3%
Kenosha	$28,000	$30,000	+5.0%
Two Rivers	$8,000	$8,000	+5.0%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Wisconsin

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 10,341 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $2,034 while the average NFIP insurance premium** for these properties is calculated to be $1,357. If premiums were adjusted to cover current risk they would have to increase by 1.5 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 33,417 properties outside the SFHA have an average expected annual loss of $1,693 per property and are estimated to have an average NFIP insurance premium of $485. To account for this difference in risk, premiums would have to increase by 3.5 times for these homes.

If all of these 43,758 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $0.91 billion vs an expected payout risk of $2.34 billion in structural damage, leaving a total deficit of $1.44 billion over 30 years.†

If insurance prices in Wisconsin were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

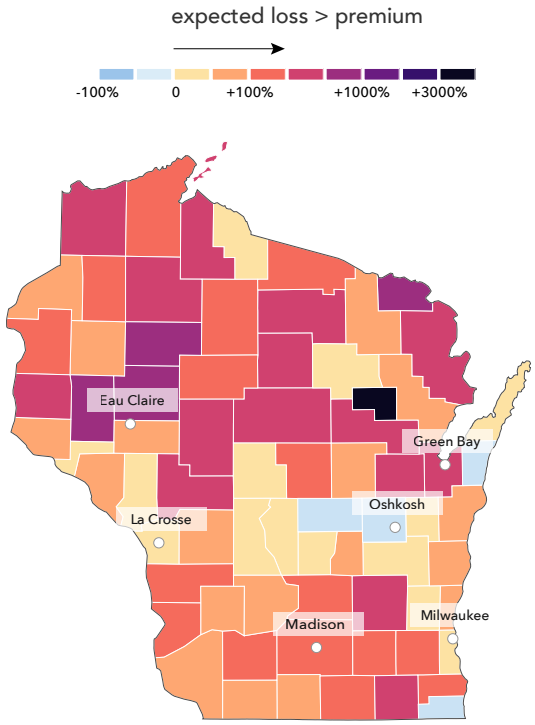
The financial implications are most pronounced for 15,437 properties with extreme risk‡ and structural damage, which have a $3,011 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,357

Avg. expected loss per property inside SFHA, 2021
$2,034

Avg. expected loss per property with an Extreme Flood Factor, 2021
$3,719

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Menomonie	$10,370	$567	+1,727.7%
Little Chute	$7,442	$509	+1,360.8%
Altoona	$5,562	$738	+653.2%
Rib Mountain	$5,164	$696	+642.4%
Kaukauna	$4,621	$657	+603.3%
Appleton	$3,445	$493	+599.0%
Hudson	$4,677	$772	+506.2%
Middleton	$3,444	$586	+487.6%
Wausau	$4,389	$790	+455.7%
Lake Hallie	$6,426	$1,185	+442.2%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

State Overview
Wyoming

In Wyoming there are 8,837 residential (1-4 unit) properties that have *substantial flood risk** that are expected to have a collective loss of $15.6 million this year.

The growing cost from flooding

As flood events become more expansive, more intense, and more frequent due to a changing climate, the overall number of properties at risk will increase, as well as the resulting financial damage to those properties which were already at risk.

For properties currently at risk of financial loss, First Street Foundation projects the average expected annual loss per property** to be $1,765 in 2021. This will grow to $1,948 for these same properties in 2051. This additional 10% increase over time is due to a continually changing climate and the resulting environmental conditions that are increasing flood likelihood and damage to these buildings.

Over the next 30 years, an additional 320 properties are expected to experience financial loss from flood damage.

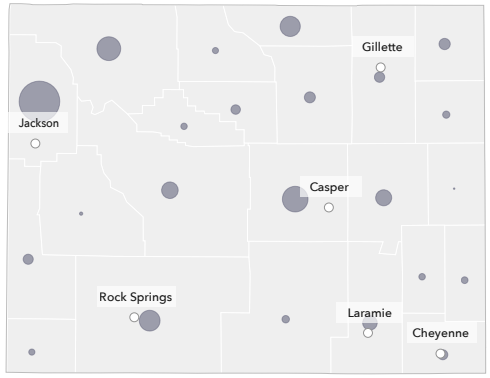
Average expected annual loss per property

2021 $1,765

2051 $1,948 **+10%**

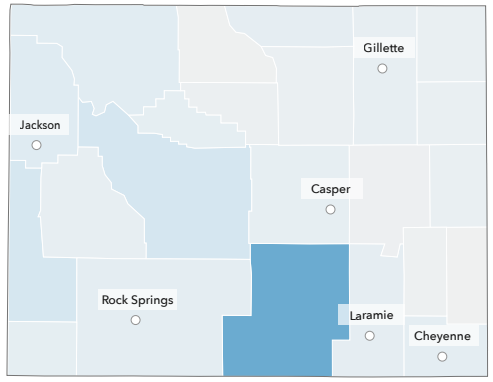
Total annual loss per county, 2021

$1M $5M



Change in total annual loss from 2021 to 2051

-50% 0 +50%



Municipalities with the **greatest loss** in 2021

Municipality	2021	2051	Change
Jackson	$1.34 M	$1.68 M	+25.0%
Rock Springs	$0.55 M	$0.63 M	+13.2%
Green River	$0.46 M	$0.48 M	+4.1%
Casper	$0.37 M	$0.42 M	+15.3%
Laramie	$0.21 M	$0.23 M	+12.2%
Gillette	$0.18 M	$0.20 M	+8.8%
Rawlins	$0.13 M	$0.20 M	+52.2%
Sheridan	$0.12 M	$0.13 M	+14.3%
Douglas	$0.09 M	$0.09 M	+7.9%
Lander	$0.08 M	$0.09 M	+11.3%

Municipalities with the **greatest growing loss** from 2021 to in 2051

Municipality	2021	2051	Change
Rawlins	$129,000	$196,000	+52.2%
Jackson	$1,342,000	$1,678,000	+25.0%
Cheyenne	$71,000	$84,000	+18.7%
Evanston	$18,000	$21,000	+17.1%
Casper	$365,000	$421,000	+15.3%
Sheridan	$117,000	$133,000	+14.3%
Rock Springs	$553,000	$626,000	+13.2%
Laramie	$205,000	$230,000	+12.2%
Lander	$77,000	$85,000	+11.3%
Ranchettes	$51,000	$55,000	+8.9%

* "Substantial risk" is calculated as inundation of 1cm or more to the building in the 100 return period (1% annual risk or 1/100). See methodology for full model details.
Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full AAL model details

State Overview
Wyoming

Insurance premiums compared to risk*

Insurance is one of the best ways to protect against these expected financial losses. Homes inside FEMA's Special Flood Hazard Areas (SFHAs) are mandated to carry flood insurance if they have a federally backed loan. For these 1,297 properties within SFHAs, First Street Foundation calculated the average expected annual loss for structural damage per property to be $1,864 while the average NFIP insurance premium** for these properties is calculated to be $1,140. If premiums were adjusted to cover current risk they would have to increase by 1.6 times.

There is also a great deal of risk outside of FEMA-designated SFHAs. In fact, while these properties account for only 2% of NFIP policies, they account for 20% of all NFIP claims and receive 33% of federal disaster assistance for flooding.*** Homes outside SFHAs receive a preferred rate if they choose to get a policy through the NFIP. The Foundation finds 7,540 properties outside the SFHA have an average expected annual loss of $1,734 per property and are estimated to have an average NFIP insurance premium of $486. To account for this difference in risk, premiums would have to increase by 3.6 times for these homes.

If all of these 8,837 properties that are currently expected to experience financial loss from flood damage were to participate in the NFIP program over the next 30 years, it would collect a total of $154 million vs an expected payout risk of $489 million in structural damage, leaving a total deficit of $335 million over 30 years.†

If insurance prices in Wyoming were increased to reflect the economic risk these homes carry in 2021 and into the future, that added cost of ownership would have a significant negative impact to the homes' value.

Extreme flood risk equates to higher losses

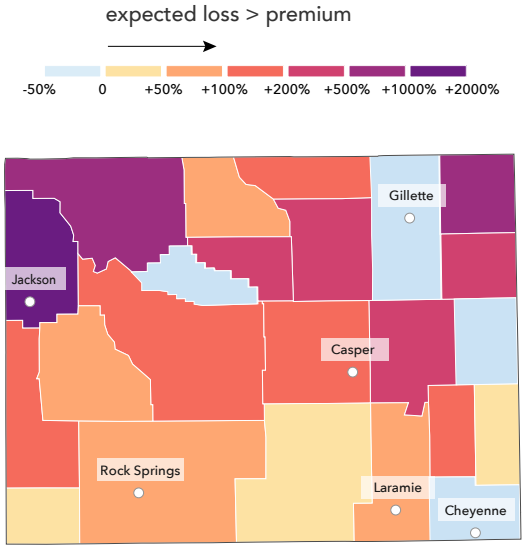
The financial implications are most pronounced for 1,758 properties with extreme risk‡ and structural damage, which have a $6,076 gap between their calculated NFIP premium and expected annual loss per property. This added cost, if reflected in premiums, would have the most pronounced impact to home values.

Avg. state premium inside SFHA, 2021
$1,140

Avg. expected loss per property inside SFHA, 2021
$1,864

Avg. expected loss per property with an Extreme Flood Factor, 2021
$6,681

Avg. expected loss per property vs avg. premium, all zones, 2021



Municipalities with the greatest difference between avg. expected loss and avg. premium, 2021*

Municipality	avg. expected loss	avg. premium	Diff.
Jackson	$3,072	$509	+503.3%
Green River	$1,946	$830	+134.4%
Douglas	$810	$606	+33.6%
Lander	$737	$573	+28.6%
Rawlins	$554	$488	+13.5%
Ranchettes	$540	$501	+7.7%
Rock Springs	$794	$754	+5.4%

* Analysis is focused on properties with substantial risk (1% annual risk or 1/100) using the First Street Foundation Flood Model. To compare NFIP premiums to AAL, AAL is capped at $250k annually to match the NFIP coverage limit. Municipalities with fewer than 2,000 residential properties with 1-4 units and fewer than 25 properties with structural damage are excluded from the tables.
** See methodology section for full NFIP premium methodology.
*** Source - FEMA.gov blog
† For cumulative projections over 30 years, new properties that become at risk after 2021 are not included.
‡ "Extreme risk" is calculated as a Flood Factor score of 9 or 10. See First Street Foundation's Flood Model methodology for full details.

Contributors to the "The Cost of Climate: America's Growing Flood Risk"

The following First Street Foundation current and past personnel contributed to the preparation of this report, data, or First Street Foundation products supporting this report. Our First Street Foundation Flood Model partners, First Street Foundation Flood Lab members, Advisory Board members, and many others also deserve credit for their valuable contributions.

Mike Amodeo
Dr. Saman Armal
Sara Chadwick
Ziyan Chu
Matthew Eby
Colleen Ensor
Neil Freeman
Raphaël Halloran
Ho Hsieh
Angela Jin
Mike Kaminski
Shannon Keane
Dr. Edward J. Kearns
Kelvin Lai
Marguerite Lally
Sharai Lewis-Gruss
Brett Lingle
Mike Lopes
Dr. Michael Marston
David Miller
Natalie Pardy
Dr. Jeremy Porter
Leilani Rose
Nathan Rosler
Daniel Seripap
Miguel Vacas
Ray Yong
Gabriel Zarate
Ralph Zagha

Disclaimers

First Street Foundation's flood and climate change risk and damage estimates are based on one or more models designed to approximate risk and are not intended as precise estimates, or to be a comprehensive analysis of all possible flood-related and climate change risks.

Special Thanks to Our Valuable Data Partners

Without them, our analysis would not be possible.

comehome by HouseCanary

To assess estimates of flood damage, the Foundation derived Average Annual Loss (AAL) values using automated valuation models (AVM) from ComeHome by HouseCanary, a leading source for property values and related data.

LIGHTBOX

To define building characteristics, improvement percentages, and property parcel details, the Foundation leveraged data from LightBox, a leading provider of CRE data and workflow solutions.

mapbox

To calculate flood depths to the building structure, the Foundation leveraged building footprint data supplied by Mapbox. Mapbox also provided geocode lookups and map integrations for the Flood Factor experience.

MassiveCert
Massively Easy Flood Certification

To identify the FEMA flood zones for each property, the Foundation partnered with MassiveCert to derive the FEMA zone estimate from both digitized and non-digitized maps.

State and county boundaries from the U.S. Census TIGER dataset is used on all pages showing maps.

This report is not endorsed or certified by the Census Bureau.

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