Climate Change, Disaster Risk, and Homeowner’s Insurance

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Background

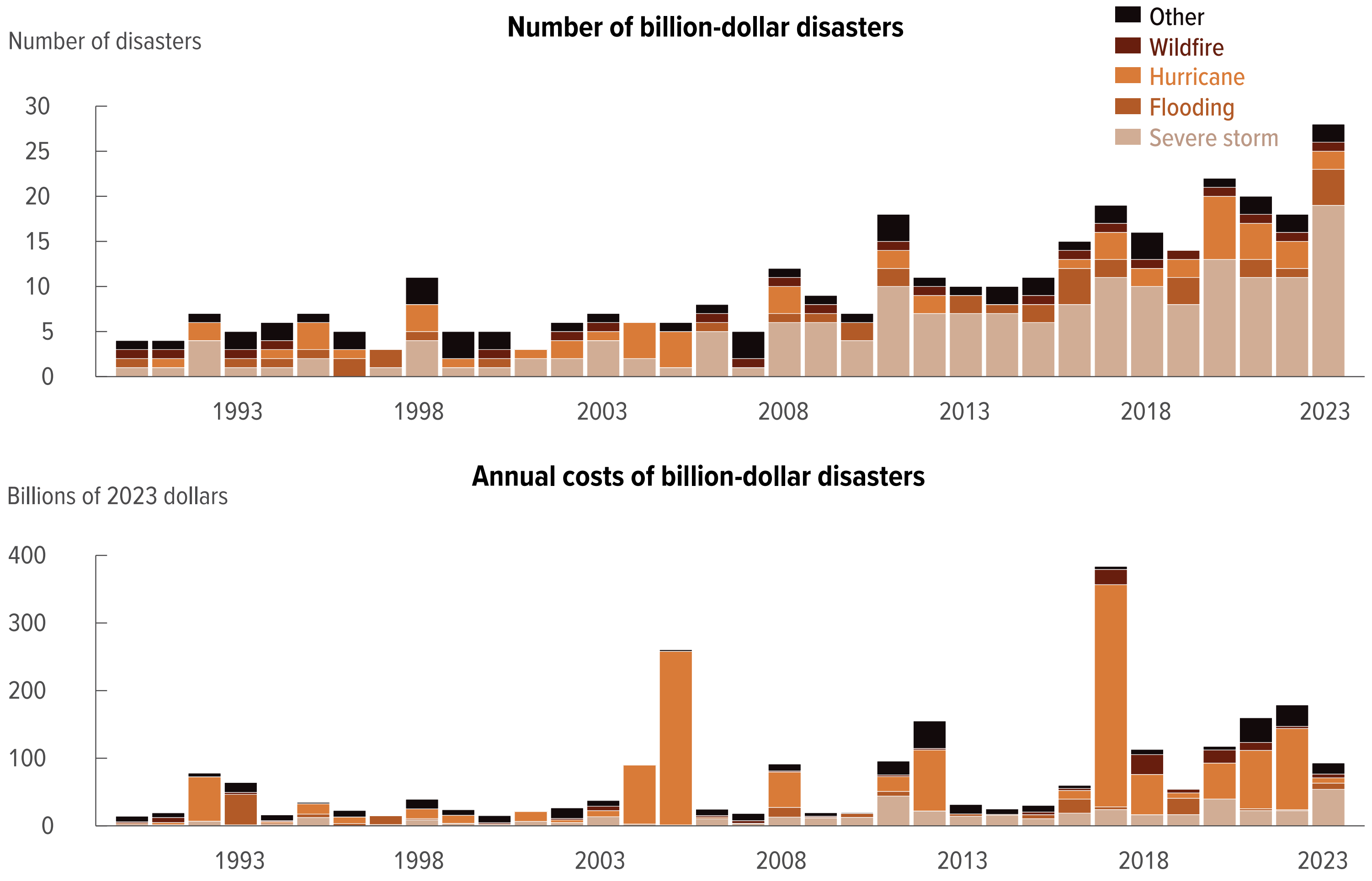
Climate change is increasing the severity of natural disasters, including hurricanes, floods, and wildfires. Losses are likely to continue to rise.

Climate change is also increasing the uncertainty about projected losses from natural disasters.

That uncertainty is one factor causing private insurers to reduce the availability and affordability of insurance.

Climate Change and Natural Disasters

Billion-Dollar Natural Disasters

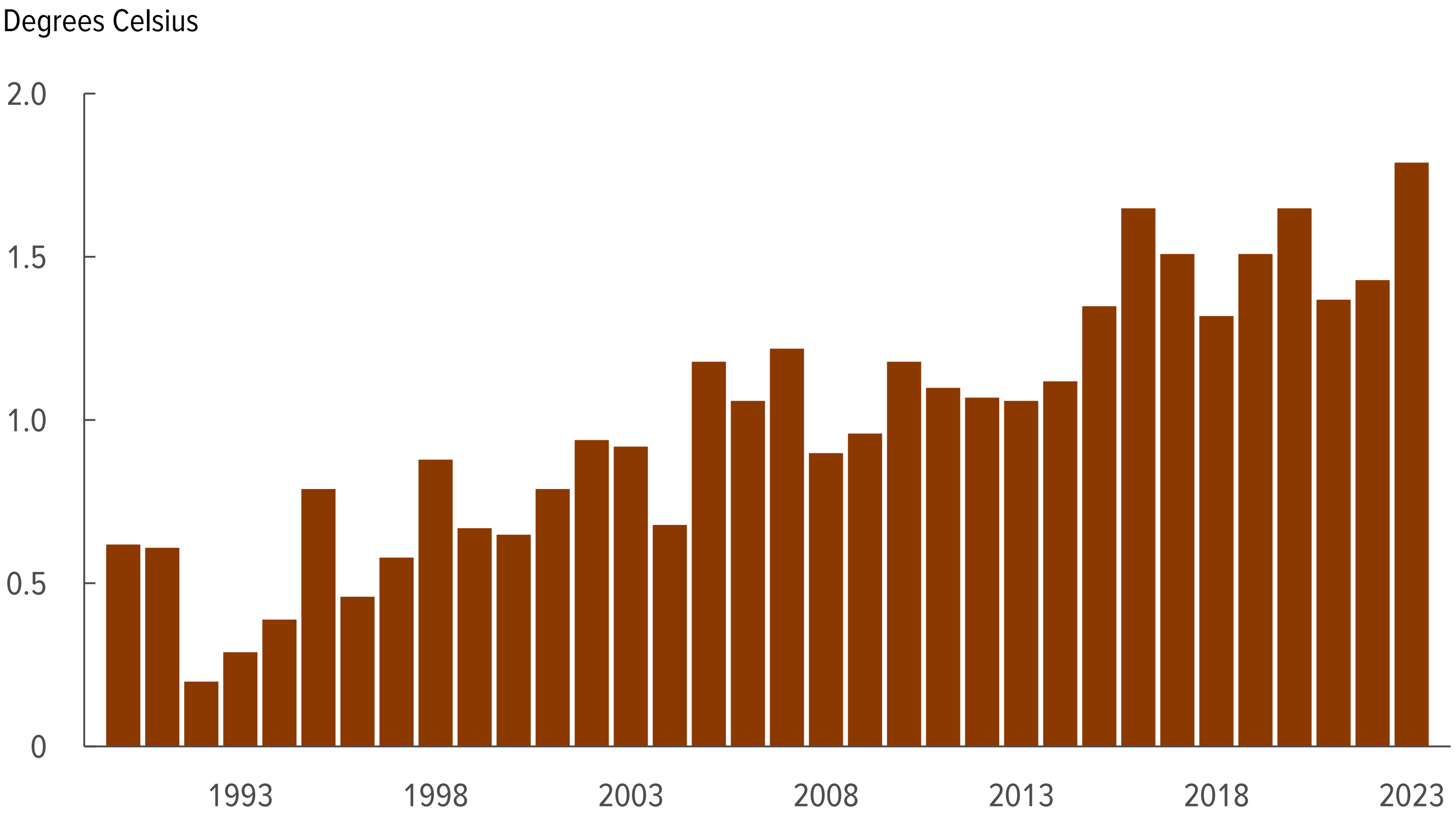


The number of natural disasters that have caused at least $1 billion in damages has increased significantly since the early 1990s. In most years, hurricanes are the costliest type of billion-dollar disaster, even if they account for relatively few of the year's billion-dollar disasters. By contrast, billion-dollar severe storms occur most frequently but cause less annual damage than other types of natural disaster.

Data source: Congressional Budget Office, using data from the National Oceanic and Atmospheric Administration, National Centers for Environmental Information. See www.cbo.gov/publication/59918#data.

Other consists of droughts, freezes, and winter storms. Severe storms are hailstorms, derechos, high winds, and tornadoes.

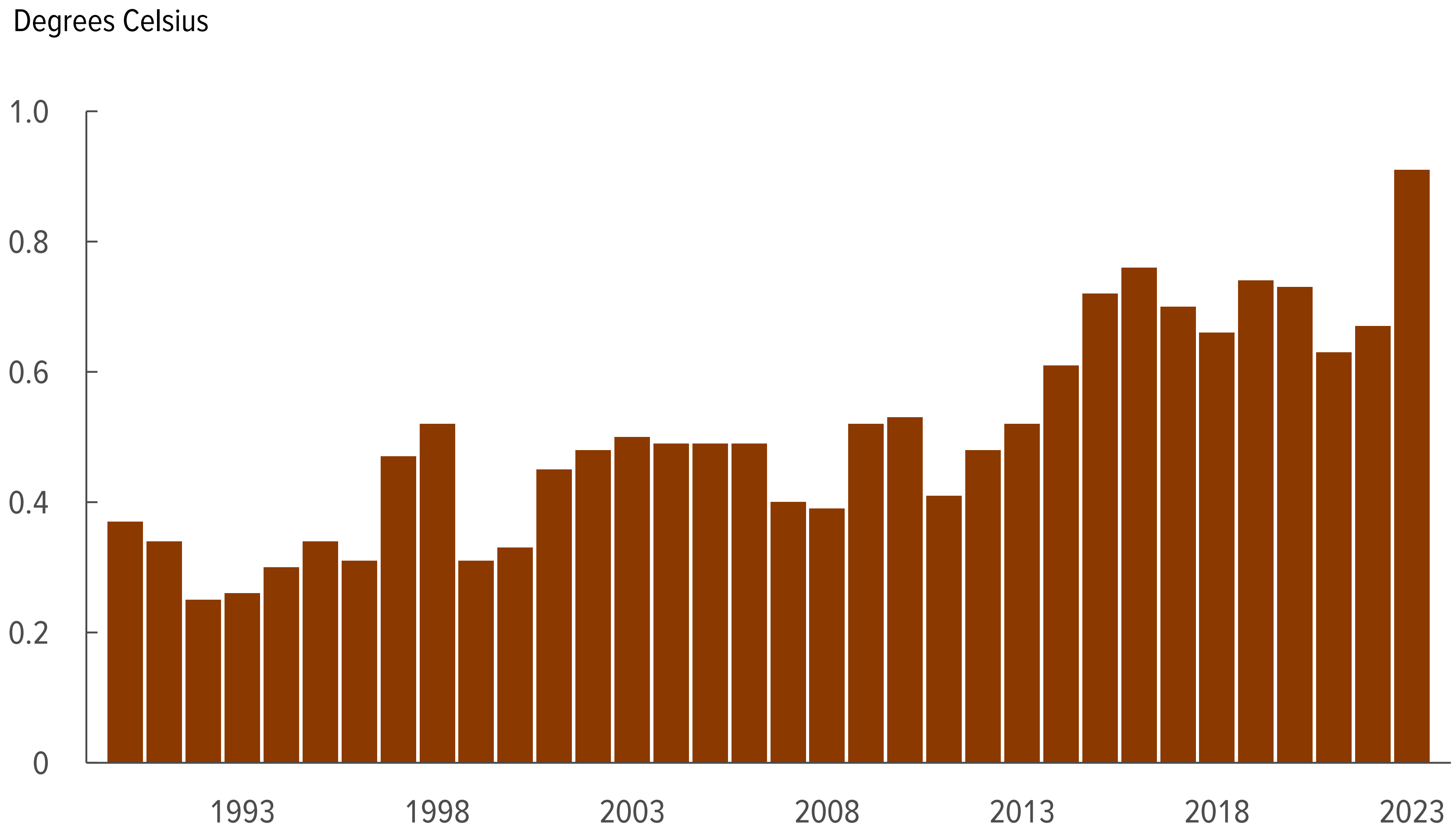
Amount by Which the Average Global Land Temperature Exceeded the 20th-Century Average



Hotter temperatures can leave vegetation and plant debris drier and more susceptible to fire. In every year since 2010, global average annual land temperatures have exceeded the average over the 1901–2000 period by more than 1 degree Celsius (or about 1.8 degrees Fahrenheit).

Data source: Congressional Budget Office, using data from the National Oceanic and Atmospheric Administration, National Centers for Environmental Information. See www.cbo.gov/publication/59918#data.

Amount by Which the Average Global Ocean Temperature Exceeded the 20th-Century Average

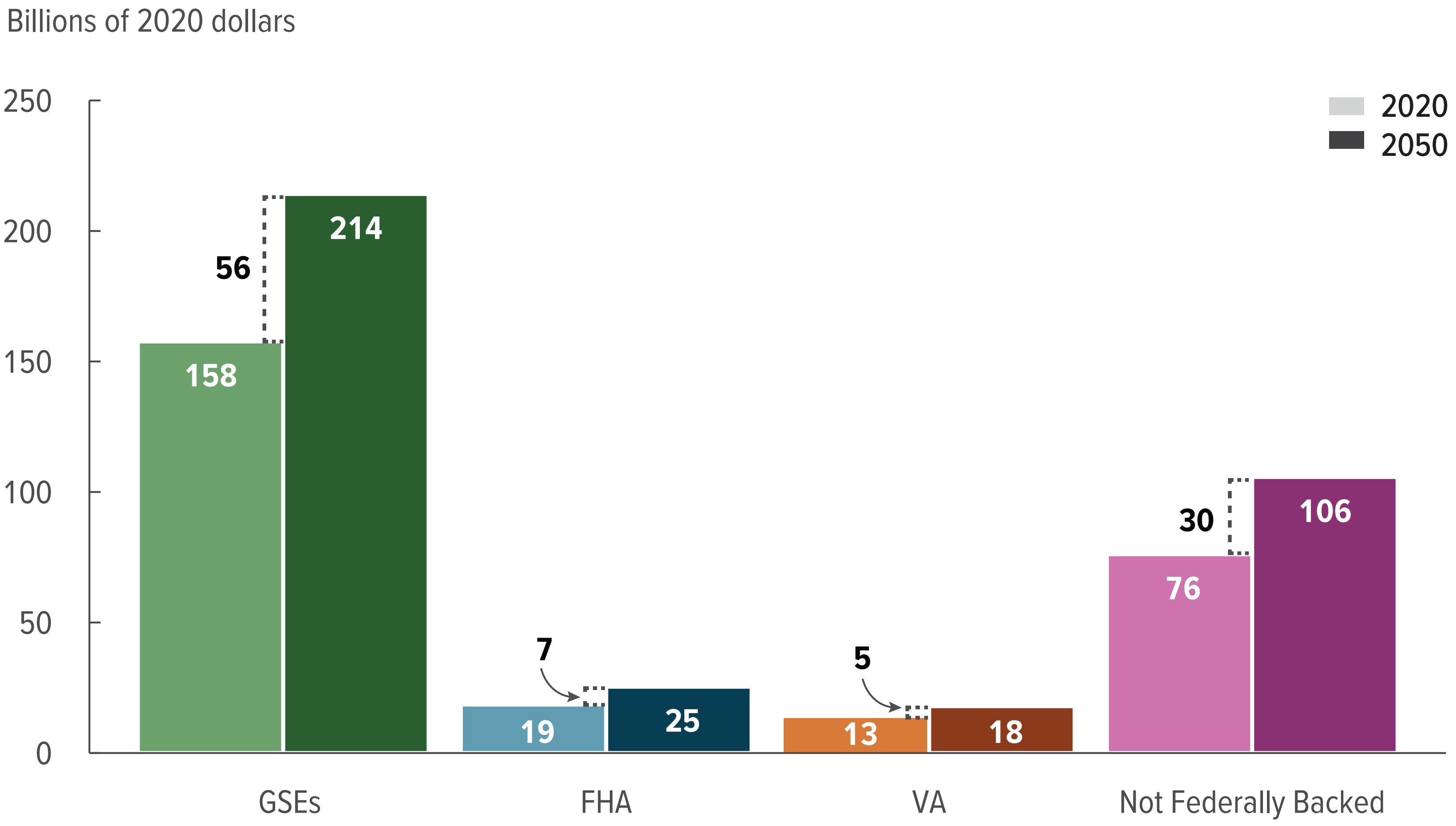


Warmer ocean temperatures contribute to higher sea levels and increase the amount of moisture a storm can hold. In 2023, ocean temperatures were nearly 1 degree Celsius (or 1.6 degrees Fahrenheit) above the 20th-century average.

Data source: Congressional Budget Office, using data from the National Oceanic and Atmospheric Administration, National Centers for Environmental Information. See www.cbo.gov/publication/59918#data.

Natural Disaster Risk and Federal Programs

Present Value of Expected Flood Damage to Homes With Mortgages



The present value of 30 years of expected flood damage for homes with mortgages backed by the GSEs, FHA, or VA totals $190 billion in the 2020 period. That value increases by 36 percent, to $258 billion, in the 2050 period.

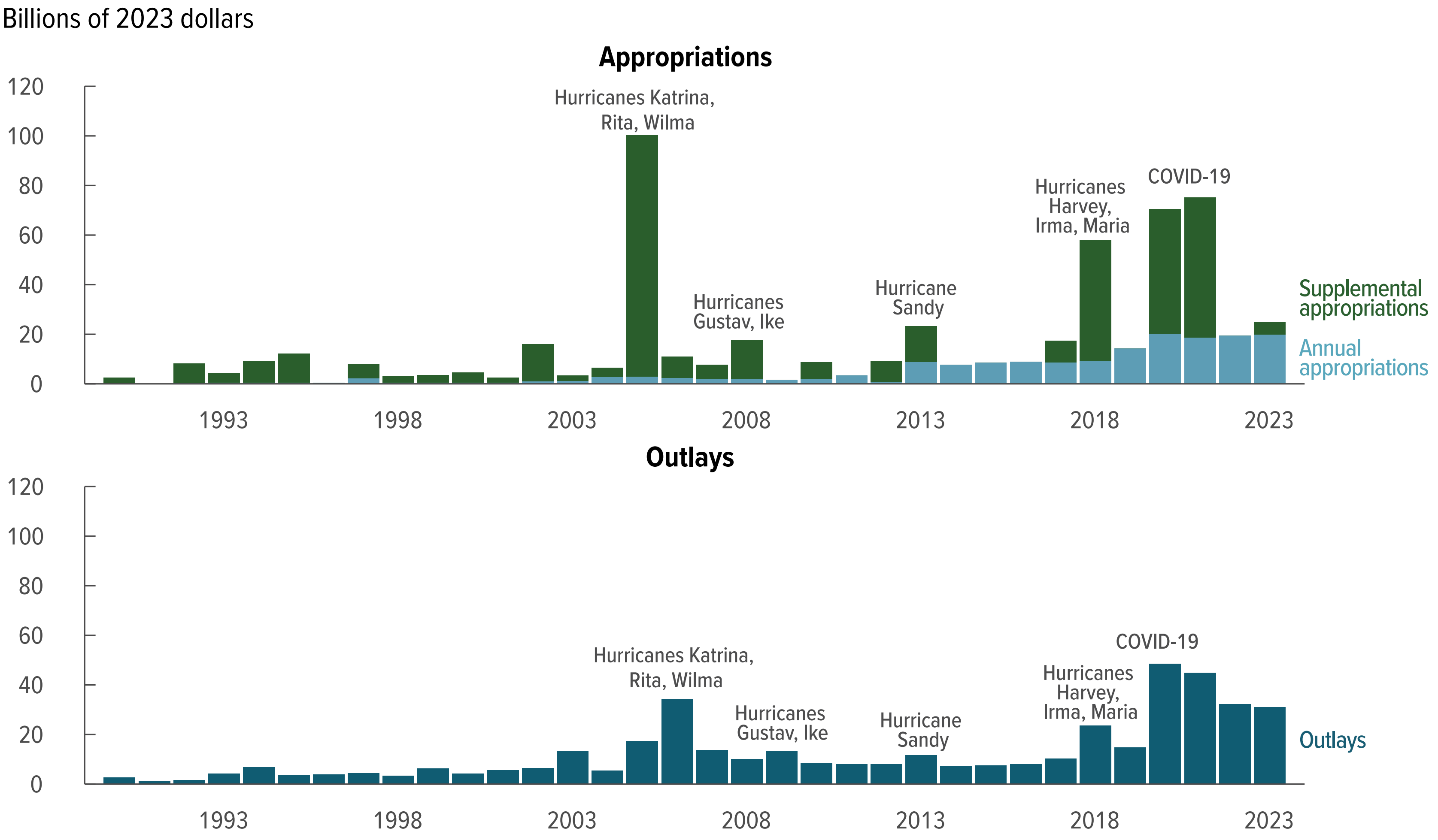
Most of the present value of expected damage in both periods is attributable to homes with mortgages backed by the GSEs.

Congressional Budget Office, *Flood Damage and Federally Backed Mortgages in a Changing Climate* (November 2023), p. 7, www.cbo.gov/publication/59379.

A present value is a single number that expresses a flow of current and future income or payments in terms of an equivalent lump sum received or paid at a specific time.

FHA = Federal Housing Administration; GSE = government-sponsored enterprise; VA = Department of Veterans Affairs.

FEMA’s Supplemental Appropriations for Disasters, 1990 to 2023



Supplemental appropriations for a handful of disasters have been the main driver of the increased amounts of funding for the Disaster Relief Fund over the past 30 years. That funding is spent over multiple years, leading to increased outlays from the fund for several years after a disaster.

Data source: Congressional Budget Office. See www.cbo.gov/publication/59918#data.

FEMA = Federal Emergency Management Agency.

How Is FEMA's Disaster Assistance Spent?

The Disaster Relief Fund provided $260 billion of funding (obligations) for disasters declared from August 1, 2017, to September 20, 2024.

- About 62 percent was allocated to public assistance for the repair and replacement of damaged infrastructure.
- About 23 percent was allocated to individual assistance.
- Nearly 14 percent was for operations and administration.
- Less than 2 percent was for mitigation of risks.

Federal assistance is not a substitute for insurance. In 2024, grants to households for housing assistance and other needs were each capped at $42,500. The average amounts were about $7,000 for housing and less for other needs.

FAIR = Fair Access to Insurance Requirements.

Small Business Administration Disaster Loans

The SBA offers loans to help renters and homeowners recover from natural disasters:

- Home disaster loans of up to $500,000 to repair or replace damaged or destroyed residences;
- Loans of up to $100,000 to repair or replace furniture, cars, or clothing (available to renters and homeowners); and
- Other loans to cover certain adaptation expenses to reduce the cost of future disasters.

The SBA estimates that the average loan is $35,000; in fiscal year 2025, those loans are estimated to have a subsidy rate of 22 percent, a borrower rate of 3 percent, and a default rate of 29 percent.

At the end of fiscal year 2024, the disaster fund had $128 million of unobligated funds to cover subsidy costs. In CBO's projections, subsidies for coverage of damages from Hurricanes Helene and Milton exceed that amount.

SBA = Small Business Administration.

Homeowner’s Insurance: Affordability, Protection Gaps, and Approaches to Expanding Supply

Affordability, Availability, and the Financial Soundness of Homeowner's Insurance

Some state regulators have held premiums down to increase affordability and required insurers to continue to renew certain policies for a specified period.

That has prompted insurers to reduce availability of insurance over time in areas with the most natural disaster risk.

States have established residual markets (often called FAIR plans) to ensure availability, but those plans are not financially sound.

FAIR = Fair Access to Insurance Requirements.

Approaches to Improving Affordability of Natural Disaster Insurance to Homeowners

Means-tested (that is, income-based) subsidies could target low- and moderate-income households but at a cost to taxpayers.

Other approaches could lower the costs to policyholders but are designed to work with traditional insurance policies rather than replace them:

- **Parametric insurance**, in which predetermined payouts are triggered by meeting an objective parameter, such as wind speed.

- **Community-based insurance**, in which a local government or community group works with insurers to provide some coverage to multiple properties in a community.

Governments and communities could work to reduce risk and future losses through adaptation efforts. Those efforts could decrease premiums.

The Insurance Protection Gap

If natural disasters stemming from climate change increase the volatility and uncertainty of losses beyond modeling capabilities, private markets might not close the protection gap.

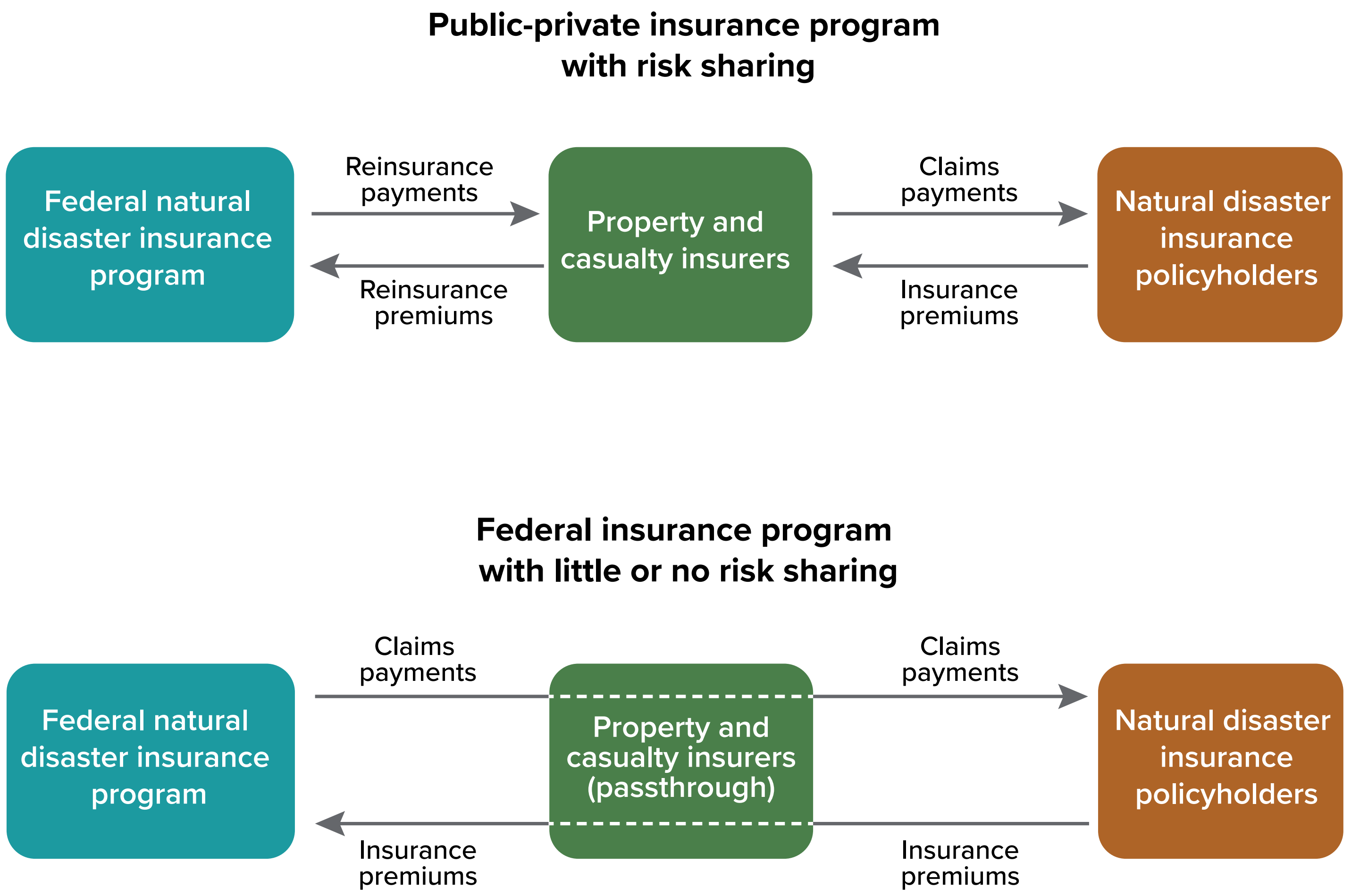
- The protection gap is the difference between total economic losses and insured losses.
- In 2023, insurance covered about 70 percent of the more than $100 billion of losses in the United States from natural disasters.
- Lack of insurance coverage weakens recovery from disasters, imposes losses on federally backed mortgages, and increases demand for federal assistance.

Approaches to Increasing the Availability of Natural Disaster Insurance for Homeowners

Two general approaches could increase the availability of disaster insurance:

- A public-private risk-sharing program, modeled along the lines of the terrorism risk insurance program, that would reinsure private insurers.
- A program with little or no risk sharing that would resemble the National Flood Insurance Program.

Approaches to Expanding the Supply of Disaster Insurance



Under a risk-sharing approach, the federal government acts as a reinsurer, or insurer for insurers. Property and casualty insurers assume losses up to a certain threshold; after that, the government bears losses.

Under an approach with no risk sharing, the property and casualty insurers bear no risk: They collect the premiums and pass them through, retaining a portion to cover their administrative and operating costs. The insurers are responsible for claims payments but are reimbursed by the federal program.

Data source: Congressional Budget Office.

Alternative Policy Approaches to Providing Disaster Insurance

	Current policy	Public-private insurance program with risk sharing	Federal insurance program with little or no risk sharing
Availability	Limited availability in some high-risk areas	Greater availability	Greatest availability
Risk to the federal government	Limited explicit risk but highest implicit risk	Higher explicit risk but lower implicit risk	Highest explicit risk but limited implicit risk
Potential budgetary costs	Net cost of the NFIP as well as the cost of federal assistance after a disaster	Higher costs in most cases, depending on how premiums were set	Highest costs, depending on how premiums were set
Incentives to take preventive measures to reduce losses	Strong incentives	Weaker incentives	Weakest incentives
Demand for federal assistance after a disaster	High demand	Lower demand	Lowest demand
Economic effects	Coverage gaps lessen resiliency	Greater resiliency	Greatest resiliency

Data source: Congressional Budget Office.

NFIP = National Flood Insurance Program.

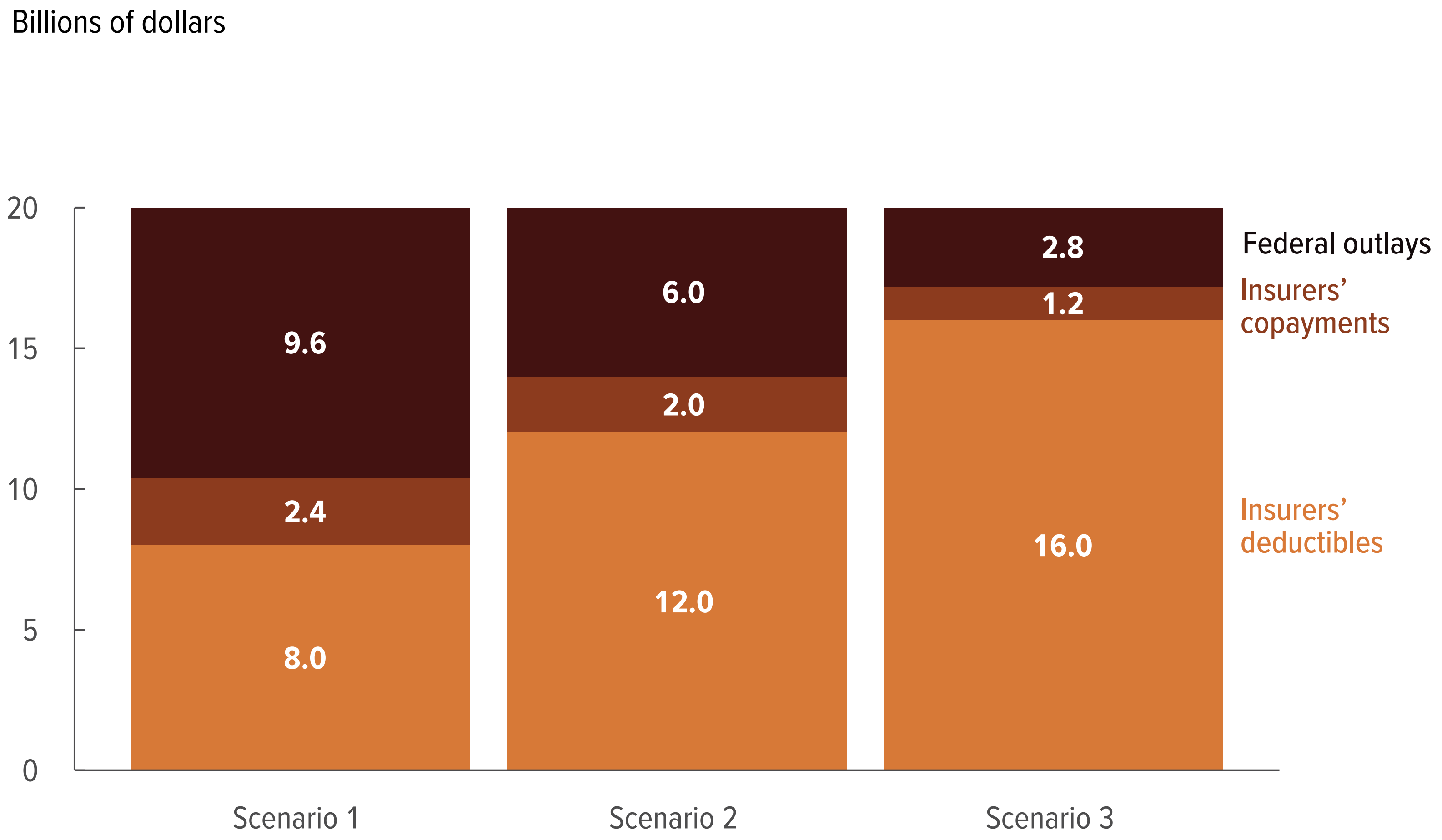
Key Takeaways

Both approaches (public-private insurance program with risk sharing and federal insurance program with little or no risk sharing) would probably have budget costs; how closely premiums matched risks would affect the size of the costs.

Both approaches would allow faster recovery, reduce demands for supplemental federal disaster assistance, and decrease losses on federally backed mortgages.

If premiums understated risks, either approach would subsidize development in risky areas and reduce incentives for property owners to take cost-effective preventive measures to reduce risk, which would increase overall losses.

Allocation of Potential Insured Losses of $20 Billion for Wildfire Risk Insurance: Three Scenarios

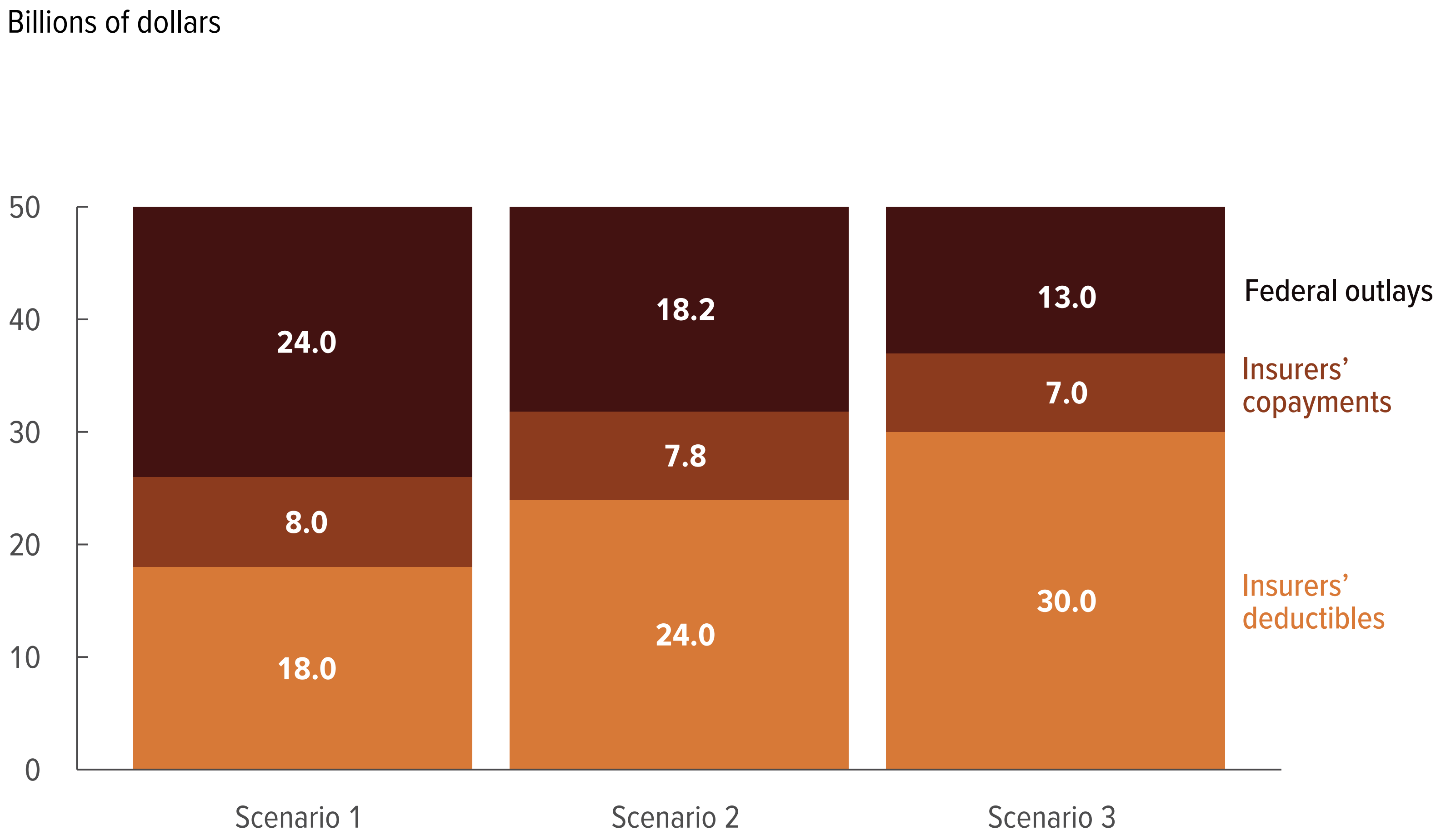


These scenarios illustrate how potential insured losses could be shared between insurance companies and the federal government. As insurers' deductibles and copayments increase, federal outlays decrease. To the extent that an insurance company had private reinsurance coverage, some portion of its deductible and copayments would be paid by the reinsurer.

Data source: Congressional Budget Office. See www.cbo.gov/publication/59918#data.

In all three scenarios, insured losses are $20 billion and prior year property and casualty premiums total $40 billion. In the first scenario, insurers' deductibles are set to 20 percent of the prior year's premiums and insurers' copayments amount to 20 percent of insured losses above that amount. In the second scenario, the deductible is 30 percent and copayments 25 percent. In the third scenario, deductibles are 40 percent and copayments are 30 percent.

Allocation of Potential Insured Losses of $50 Billion for Natural Disaster Risk Insurance: Three Scenarios



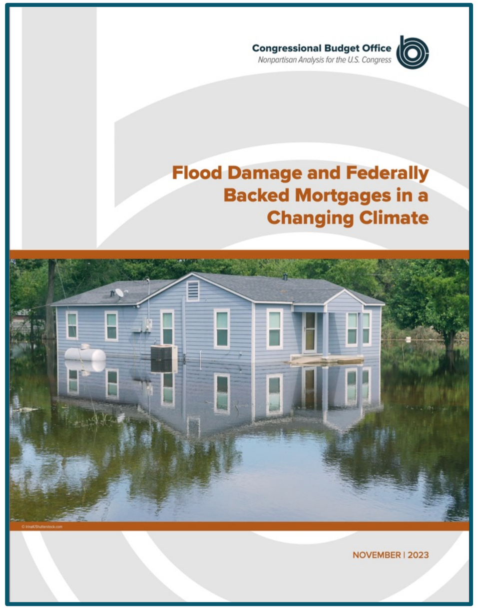
Natural disaster risks such as hurricanes, for which the cost of damages tends to be higher than for wildfires, could also be covered in a public-private risk-sharing program. In these scenarios, the federal government's reinsurance coverage starts when losses hit a higher trigger point to reflect the larger cost of damages, so private insurers would be responsible for a larger share of the damages.

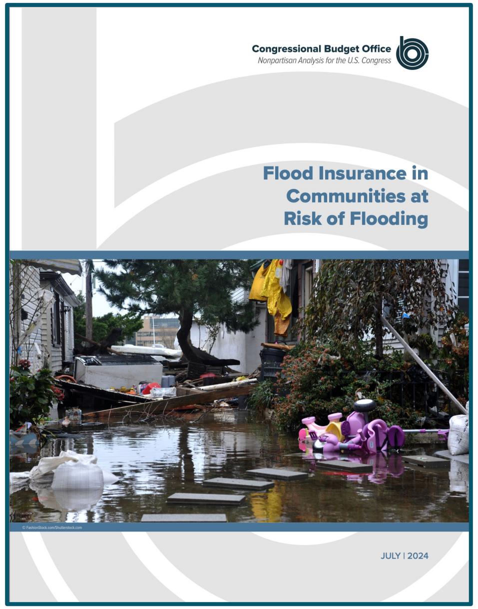
Data source: Congressional Budget Office. See www.cbo.gov/publication/59918#data.

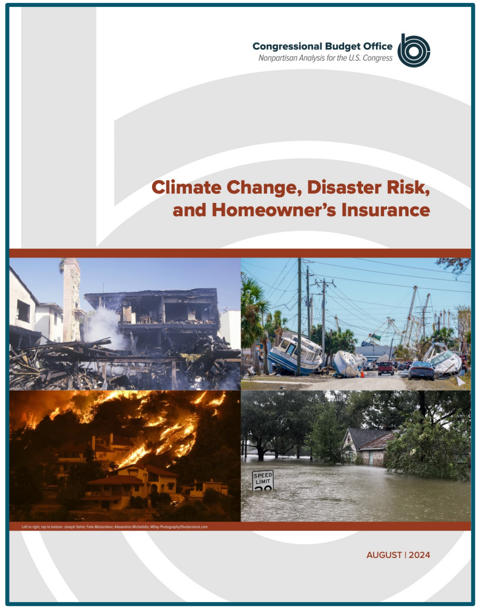
In all three scenarios, insured losses are $50 billion and prior year property and casualty premiums total $60 billion. In the first scenario, insurers' deductibles are set to 30 percent of the prior year's premiums and insurers' copayments amount to 25 percent of insured losses above that amount. In the second scenario, the deductible is 40 percent and copayments 30 percent. In the third scenario, deductibles are 50 percent and copayments are 35 percent.

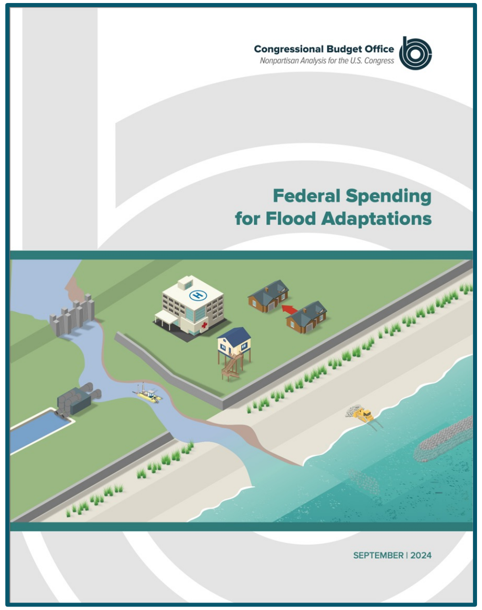
CBO’s Recent Work on Natural Disasters


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
Communities at Risk of Flooding
SEPTEMBER | 2023


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
Flood Damage and Federally Backed Mortgages in a Changing Climate
NOVEMBER | 2023


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
Flood Insurance in Communities at Risk of Flooding
JULY | 2024


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
Climate Change, Disaster Risk, and Homeowner’s Insurance
AUGUST | 2024


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
Federal Spending for Flood Adaptations
SEPTEMBER | 2024

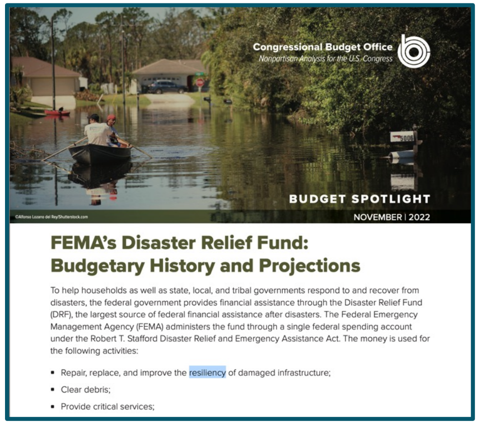

Wildfires
JUNE | 2022


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
BUDGET SPOTLIGHT
NOVEMBER | 2022
Army Corps of Engineers: Budgetary History and Projections

The Army Corps of Engineers participates in the development and management of the nation’s water resources. The Corps has three main objectives:

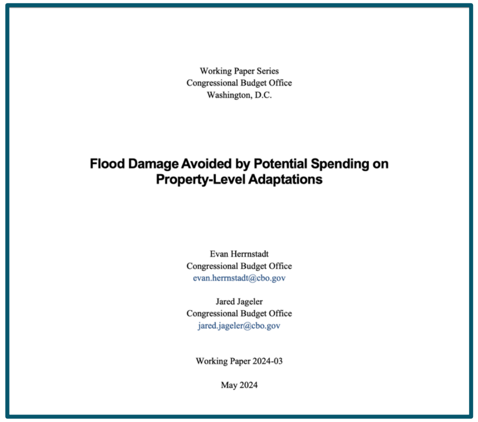
- Supporting commercial navigation by maintaining and regulating commercial ports and waterways,
- Protecting the environment by preserving and restoring aquatic ecosystems, and
- Building and maintaining flood control projects.

Every two years since 2014, lawmakers have enacted the Water Resources Development Act (WRDA), which authorizes new construction and rehabilitation projects and directs the Corps to


Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress
BUDGET SPOTLIGHT
NOVEMBER | 2022
FEMA’s Disaster Relief Fund: Budgetary History and Projections

To help households as well as state, local, and tribal governments respond to and recover from disasters, the federal government provides financial assistance through the Disaster Relief Fund (DRF), the largest source of federal financial assistance after disasters. The Federal Emergency Management Agency (FEMA) administers the fund through a single federal spending account under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The money is used for the following activities:

- Repair, replace, and improve the resiliency of damaged infrastructure;
- Clear debris;
- Provide critical services;


Working Paper Series
Congressional Budget Office
Washington, D.C.

Flood Damage Avoided by Potential Spending on Property-Level Adaptations

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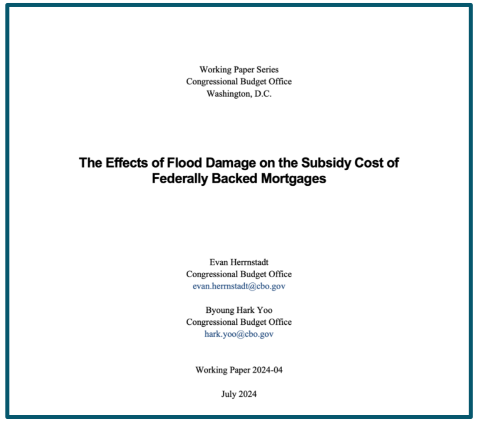
Working Paper 2024-03

May 2024


Working Paper Series
Congressional Budget Office
Washington, D.C.

The Effects of Flood Damage on the Subsidy Cost of Federally Backed Mortgages

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Working Paper 2024-04

July 2024

Recent Related CBO Publications

Congressional Budget Office, *Federal Spending for Flood Adaptations* (September 2024), www.cbo.gov/publication/59971.

- CBO provides information about the amount of damage that could be reduced through spending for flood adaptations—projects aimed at preventing damage from flooding.

Congressional Budget Office, *Climate Change, Disaster Risk, and Homeowner's Insurance* (August 2024), www.cbo.gov/publication/59918.

- CBO analyzes recent changes in property insurance markets and considers alternative insurance products as well as policy approaches to increase the availability and affordability of insurance for homeowners and renters.

Congressional Budget Office, *Flood Insurance in Communities at Risk of Flooding* (July 2024), www.cbo.gov/publication/60042.

- CBO examines how the share of properties at risk of flooding that are covered by policies purchased through the National Flood Insurance Program varies across communities with different economic and demographic characteristics.

Evan Herrnstadt and Byoung Hark Yoo, *The Effects of Flood Damage on the Subsidy Cost of Federally Backed Mortgages*, Working Paper 2024-04 (Congressional Budget Office, July 2024), www.cbo.gov/publication/60167.

- This working paper uses data on mortgages and expected flood damage for each residential property in the United States to examine how much flood damage is expected to increase the cost of federally backed mortgages.

Evan Herrnstadt and Jared Jageler, *Flood Damage Avoided by Potential Spending on Property-Level Adaptations*, Working Paper 2024-03 (Congressional Budget Office, May 2024), www.cbo.gov/publication/58168.

- This working paper provides estimates of the flood damage avoided from property buyouts and elevations and analyzes how the effects of adaptation spending could vary across regions, by area income, and for different subsets of projects.

Recent Related CBO Publications (Continued)

Congressional Budget Office, *Flood Damage and Federally Backed Mortgages in a Changing Climate* (November 2023), www.cbo.gov/publication/59379.

- CBO estimates the flood damage that homes with federally backed mortgages are expected to face in multiyear periods centered on 2020 and 2050 and analyzes where that damage is concentrated.

Congressional Budget Office, *Communities at Risk of Flooding* (September 2023), www.cbo.gov/publication/58953.

- CBO examines the variation in current and future flood risk across communities with different economic and demographic characteristics.

Congressional Budget Office, *Army Corps of Engineers: Budgetary History and Projections* (November 2022), www.cbo.gov/publication/58415.

- CBO examines trends in funding and spending for the Army Corps of Engineers and explains how CBO treats that agency's activities in its baseline and cost estimates.

Congressional Budget Office, *FEMA's Disaster Relief Fund: Budgetary History and Projections* (November 2022), www.cbo.gov/publication/58420.

- CBO examines trends in funding and spending for the Federal Emergency Management Agency's Disaster Relief Fund and provides information about how CBO treats that program in its baseline and cost estimates.

Congressional Budget Office, *Wildfires* (June 2022), www.cbo.gov/publication/57970.

- CBO analyzes trends in wildfire activity; considers the effects of wildfires on the federal budget, the environment, people's health, and the economy; and reviews forest-management practices meant to reduce fire-related disasters.