coalition for sustainable
flood insurance

An Evaluation of Risk Rating 2.0 Impacts
on National Flood Insurance Program Affordability

Introduction

Flooding is the most common naturally occurring disaster in the United States (Federal Emergency Management Agency, 2020), with 99% of U.S. counties having experienced at least one flood event from 1996 to 2019 (Federal Emergency Management Agency, n.d.). Nationally, flood risk is projected to increase. The Government Accountability Office (GAO), reporting findings of the Fourth National Climate Assessment, noted increasing flood risk is forecast to expose more than $1 trillion in developed domestic coastal infrastructure and property to inundation (Gomez, 2019).
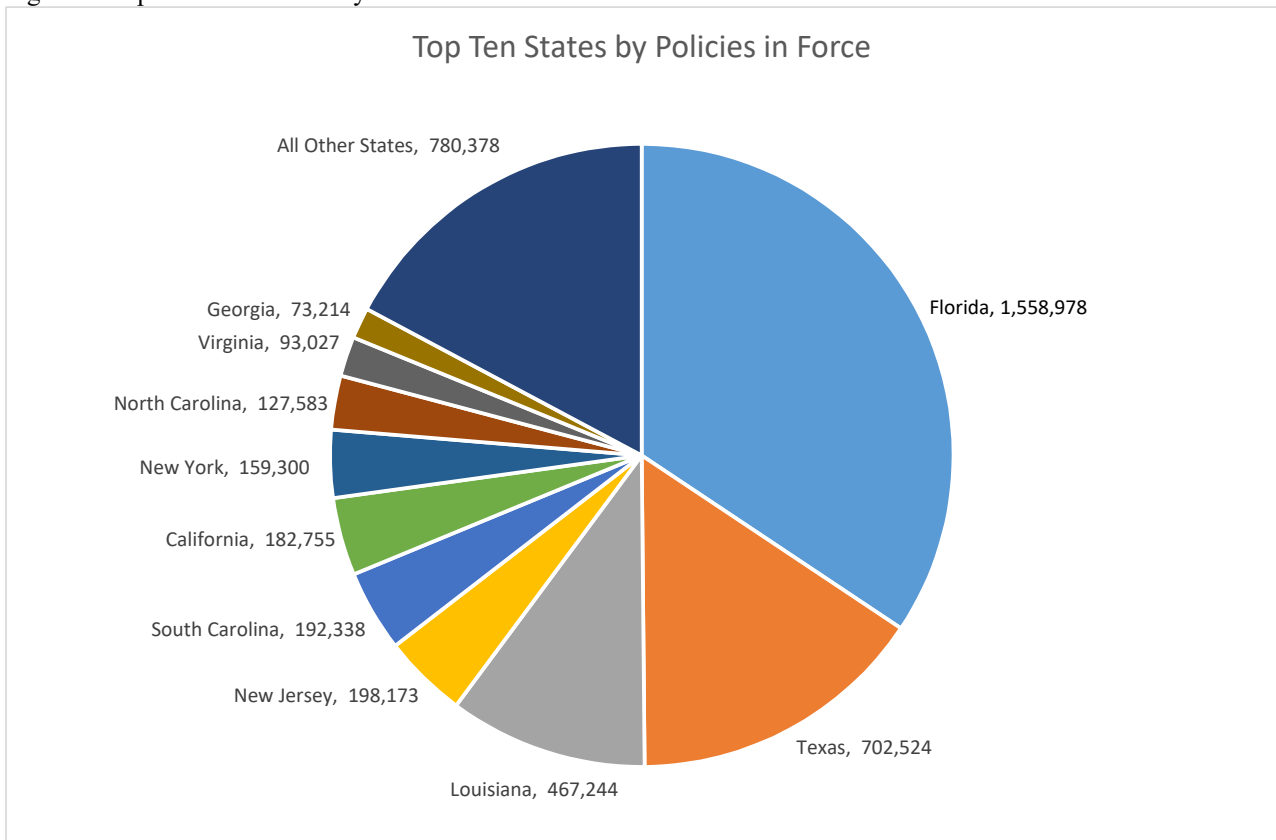
The National Flood Insurance Program (NFIP) is the primary means by which businesses, homeowners, and renters insure flood risk. The Federal Emergency Management Agency (FEMA), an agency of the U.S. Department of Homeland Security, administers the NFIP through the Federal Insurance and Mitigation Administration (Federal Emergency Management Agency, 2021).

A consumer's eligibility to purchase a federal flood insurance policy is contingent on their local jurisdiction's elective participation in the NFIP. More than 22,500 local and tribal governments were accredited to participate in the NFIP as of July 8, 2022, making access to NFIP insurance broadly available to consumers across the nation (Federal Emergency Management Agency(b), n.d., p. 460).

Notwithstanding the broad pool of NFIP-participating jurisdictions, NFIP policies in force are not distributed in a spatially even manner. As of June 2022, FEMA reported 4,535,514 NFIP policies in force with 10 states accounting for 83% of NFIP policies. Florida accounts for 34% of all NFIP policies in force with 1,558,978 policies. Other top 10 states by number of NFIP policies in force are Texas (702,524), Louisiana (467,244), New Jersey (198,173), South Carolina (192,338), California (182,755), New York (159,300), North Carolina (127,583), Virginia (93,027), and Georgia (73,214) (Federal Emergency Management Agency, 2022).

Two local government jurisdictions, Miami-Dade County, Florida, and Harris County, Texas, had 314,560 and 295,108 NFIP policies in force, respectively, as of June 2022. If Miami-Dade County and Harris County were states, the counties would have ranked as 4th and 5th in the top 10 NFIP states list. Figure 1 shows the distribution of NFIP policies among the top 10 NFIP policy states compared to all other states (Federal Emergency Management Agency, 2022).

Figure 1. Top Ten NFIP States by Policies in Force v all other States

Top Ten States by Policies in Force

All Other States, 780,378

Florida, 1,558,978

Georgia, 73,214
Virginia, 93,027
North Carolina, 127,583
New York, 159,300
California, 182,755
South Carolina, 192,338
New Jersey, 198,173
Louisiana, 467,244
Texas, 702,524

The NFIP achieved the highest levels of policy take-up rates in 2009, when FEMA reported 5,700,235 policies in force (Insurance Information Institute, 2021). FEMA reported approximately 4,882,292 NFIP policies in force as of December 30, 2021. The decline in NFIP policies in force has continued in 2022, with NFIP experiencing a loss of 346,778 policies in force from December 31, 2021, through June 30, 2022 (National Flood Insurance Program, 2022). Ongoing declines in NFIP policies in force highlight a mismatch between known flood risks and the purchase flood insurance coverage made available by the national government.

In 2015, an estimated 15 million people lived in Special Flood Hazard Areas (SFHA), which are areas having a 1% annual chance of a flood event (Peri, Rosoff, & Yager, 2017). While SFHAs, also referred to as the 100-year floodplain, are viewed as the primary areas subject to risk of inundation, flooding occurs in areas adjacent to SFHAs and in areas where water drainage patterns have been altered (Congressional Budget Office, 2019).

Combining SFHAs with other areas exposed to flood risk, Peri, Rosoff, & Yager (2017) estimate as many as 30 million individuals, almost 10% of the United States population, live in

areas with elevated risk of flooding. Others estimate 40.8 million people, or 12% of the population, are exposed to elevated flood risk (Wing, et al., 2018). The First Street Foundation (n.d.) examined flood risk at the property level and identified 24.7 million properties at risk of inundation and forecast 26 million properties will be at risk of flooding by 2050.

The increasing gap between the number of individuals and structures residing or located in areas with heightened flood risks and the total number of NFIP policies in force is cause for concern. Businesses, homeowners, and renters are not insured against known flood risks. Uninsured flood losses will be absorbed by businesses and individuals or spread to the general population through direct state and national government financial assistance. A new flood risk rating methodology implemented by NFIP known as Risk Rating 2.0 (RR2.0) may expand this gap.

RR2.0 became effective October 1, 2021, for new policies and April 1, 2022, for policy renewals (Federal Emergency Management Agency(a), 2022). RR2.0 premium projections anticipate most NFIP policyholders will pay higher prices for flood insurance. According to NFIP estimates, under year one of RR2.0, 77% of current policyholders will experience premium increases, with 66% of all policyholders being charged premiums up to $120 more per year for current coverage levels and 11% of policyholders charged annual premium increases ranging from $120 to $240. Some 23% of policyholders are projected to receive, on average, a monthly premium decrease of $86 (Federal Emergency Management Agency(a), 2022).

Increased NFIP policy costs under RR2.0 are a concern as FEMA (2018) has determined NFIP policy cost to be strongly associated with a consumer's decision to obtain or renew NFIP coverage. FEMA (2018, p. 2) notes the agency's "data indicates that when prices of insurance increase, participation in the NFIP will decline, regardless of whether this price change is because of map updates or premium and fee increases."

This paper examines how RR2.0 will affect NFIP participation and policyholders. The paper is structured as follows: (1) a brief overview of flood risk management in the United States, establishment of the NFIP, and major NFIP statutory reforms; (2) a review and synthesis evaluation of literature on consumer reaction to NFIP policy cost increases; (3) an examination of housing affordability based on forecasted RR2.0 premiums; and (4) an evaluation of RR2.0 on housing affordability in select markets.

Flood Risk Management, Establishment of the NFIP, and NFIP Reform

<u>Rising Flood Losses</u>

Flood risk exposure and losses have increased as the built environment in the United States expanded. The first nationally significant catastrophic natural disaster to impact the United States occurred in 1927 when the Mississippi River overflowed its banks, inundating 16 million acres, or 27,000 square miles, of urban and rural lands throughout the Mississippi River Valley (Mississippi River Commission, 2012).

The increased frequency of flood events and growing federal expenditures for flood disaster recovery led President Truman in 1951 to urge that Congress approve legislation establishing a national program to offer flood insurance coverage to property owners at affordable rates. In 1965, prompted by continued flood losses and the scarcity of private flood insurance coverage, Congress approved legislation directing the U.S. Department of Housing and Urban Development (HUD) to study flood insurance markets and make recommendations concerning legislation to authorize the sale of flood insurance by the national government (National Research Council, 2015). The HUD report recommended the national government establish a flood insurance program to facilitate "pooling of risks, minimizing costs and distributing burdens equitably among property owners…and the general taxpayers" (Clawson, 1966, p. 11).

<u>Establishment of NFIP and Program Reforms</u>

In 1968, Congress enacted the National Flood Insurance Act (42 U.S.C. 4001 et seq.), establishing the NFIP. The objectives of policymakers were to reduce federal disaster recovery outlays by sharing flood losses with property owners through national government flood insurance and by limiting future flood losses through floodplain management (Bergsma, 2016).

Congress has enacted four major reform packages to the National Flood Insurance Act. A 1973 statute required all properties in a SFHA securing a mortgage originated by a federally insured financial institution or a mortgage insured or guaranteed by a national government housing agency to be insured against flood risk. In 1994, Congress extended the mandatory purchase requirement to properties securing a mortgage sold to the housing government sponsored enterprises, Fannie Mae and Freddie Mac (Cackley, 2021).

In 2005, catastrophic damage resulting from Hurricane Katrina led to 208,348 flood insurance claims with $16.2 billion in NFIP claims payments (Federal Emergency Management

Agency (e), 2022). Hurricane Katrina losses exceeded the NFIP's capacity to pay claims, leading Congress to authorize higher program borrowing from the U.S. Treasury to meet claim obligations.

The NFIP has been unable to repay debts incurred from Hurricane Katrina and subsequent major loss events notwithstanding forgiveness of a portion of this debt. As of June 30, 2022, NFIP debt to the U.S. Treasury was $20.5 billion. NFIP policyholders have paid $5.6 billion in interest payments alone on this debt since 2005. This amounts to $400 million in annual interest payments to the U.S. Treasury to service debt from prior disaster events and accounts for an estimated 11 cents of each premium dollar paid by current NFIP policyholders (Federal Insurance and Mitigation Administration, 2022).

Deficits incurred by the NFIP resulted from a combination of NFIP policy discounts and catastrophic loss years (Federal Emergency Management Agency, 2018). Congress enacted the Biggert-Waters Flood Insurance Reform Act of 2012 to phase out NFIP policy discounts, reform flood risk mapping, and allow private flood insurance to satisfy mandatory flood insurance purchase requirements, among other changes. The Biggert-Waters Act also established a reserve fund within NFIP and authorized administrators to assess fees to populate the reserve fund. Reserve fund fees constitute a significant portion of total NFIP policy costs. Concern over flood insurance policy affordability and NFIP premium increases following Biggert-Waters Act implementation led Congress to restore certain NFIP policy discounts in 2014 via the Homeowner Flood Insurance Affordability Act (Cackley, 2021).

The Homeowner Flood Insurance Affordability Act (HFIAA) did not eliminate premium increases authorized in the Biggert Waters Act; rather, the Act reduced the velocity of increases. In general, annual premium increases on most NFIP policies covering a primary residence were limited to a range of 5% to 15% of the prior year's premium with an overall annual premium increase cap of no more than 18% (Horn & Webel, 2022).[1] Additionally, Congress directed that FEMA "strive to minimize the number of policies with annual premiums that exceed one percent of the total coverage provided by the policy" (128 STAT. 1023). To offset loss of income from

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[1] The Homeowner Flood Insurance Affordability Act allowed several Biggert Waters Act premium increases to remain in effect, including 25% annual increases for nonprimary residential properties, business properties, and severe repetitive loss properties, among others. Premium subsidies for other risk categories were eliminated.

premium limitations, Congress authorized a new fee to be paid by all NFIP policyholders, referred to as the HFIAA surcharge.

More recently, NFIP has used administrative authority to develop and implement a new property risk rating system for NFIP policies. The new initiative, RR2.0, is a wholesale revision of how NFIP determines and prices a structure's risk of flood loss. Under RR2.0, NFIP uses catastrophic loss modeling that incorporates risks associated with riverine flooding, pluvial flooding, coastal storm surge, Great Lakes region flooding, tsunami, and levee protection to determine NFIP policy premiums at the property level. The RR2.0 rating methodology incorporates individual structure data, including geographic location, individual property characteristics (i.e., first floor elevation), rating territory (i.e., on a barrier island or protected by levees), structure type, and insurance to value ratios, among other data points (National Flood Insurance Program, 2022).

NFIP estimates most policyholders will experience an increase in flood insurance premiums due to the RR2.0 methodology and elimination of premium subsidies. As FEMA has documented, NFIP insurance declines as the price of NFIP insurance increases. With RR2.0 resulting in premium increases for 77% of policyholders while policy subsidies continue to be phased out, it is important for policymakers to understand how NFIP policyholders react to policy costs.

Consumer Reaction to Price and other Variables

The FEMA 2018 NFIP Affordability Study acknowledges the negative relationship between the cost of a NFIP policy and a consumer's decision to purchase or renew coverage. The impact of cost on NFIP purchase and renewal rates has also been evaluated by academics. Collectively, these studies indicate the amount of NFIP premium charged for coverage influences a consumer's decision to insure. While premium is an important factor in a consumer's decision to insure, premium is not the sole basis of a consumer's decision to purchase a NFIP policy. This section reviews literature on the influence of premium and other variables on NFIP insurance purchases.

Effect of Price on Flood Insurance Purchase Decision

Wang, et al., (2017) surveyed North Carolina property owners to examine flood and wind peril insurance decisions. The survey targeted single-family residences and duplexes where the survey respondent typically made the decision to purchase insurance. Respondents were

primarily located in eastern North Carolina, from the Raleigh region to the Atlantic Ocean coast. Based on a logistic regression analysis, Wang, et al., (2017) calculated a price inelasticity of demand for flood insurance of -0.26, meaning that for each 1% increase in flood insurance premium, demand for flood insurance was reduced by 0.26%.

Atreya, et al. (2015) examined data provided by FEMA on flood insurance policies in force from 1978 to 2010 in Georgia. Among variables tested, price, measured as cost per $1,000 of coverage, was determined to have a price inelasticity of -0.302 based on a fixed effects panel regression analysis. For every 1% increase in price, there is an expected -.302% change in demand for flood insurance among the tested population. Atreya, et al. (2015) tested multiple price models in their analysis. Among the models tested, each found a statistically significant price inelasticity with the lowest being -0.156.

Landry & Jahan-Parvar (2011) examined the effect of NFIP premium on flood insurance purchase decisions by 6,074 residents of nine coastal counties located in Deleware, Florida, Georgia, North Carolina, South Carolina, and Texas. Similar to Wang, et al., (2017) and Atreya, et al., (2015) the authors found premium has a statistically significant impact on a consumer's decision to insure against flood risk.

Among the surveyed residents of coastal communities in the selected states, Landry & Jahan-Parvar (2011) assessed the impact of premium through a low premium model and a high premium model. The regression analysis calculated a low premium model price inelasticity of -0.620 and a high premium model price inelasticity of -0.870. The authors assert the high premium model is likely the better estimated effect.

In an important expansion of the literature on premium impacts, Landry & Jahan-Parvar (2011) evaluated the differences in price sensitivity among different categories of NFIP policyholders. A second regression analysis examined differences in price sensitivity between subsidized policyholders and non-subsidized policyholders. The results found that subsidized policyholders are more likely to purchase additional NFIP coverage but had price sensitivities that exceeded those of policyholders who received no risk subsidy. A price inelasticity of -1.550 was calculated for subsidized policyholders and an inelasticity of -0.133 for unsubsidized policyholders. These findings indicate the NFIP policyholder population is not monolithic and different categories of policyholders react differently to price.

Browne & Hoyt (2000) examined the effect of flood insurance premium on the amount of flood insurance in force and the number of policies in force per 1,000 of population over the 1983 to 1994 period. Consistent with Wang, et al. (2017), Atreya, et al. (2015), and Landry & Jahan-Parvar (2011), a logistic regression analysis calculated a price inelasticity of -0.997 for flood insurance in force and -0.109 for policies in force per 1,000 population. An increase in price is associated with a reduction in both total insurance coverage and a reduction in flood insurance policies, with a greater negative effect observed on the amount of coverage purchased.

Browne & Hoyt's (2000) analysis indicates policyholders may reduce the amount of NFIP coverage in response to premium increases as a substitute for declining to purchase or renew a NFIP policy. The expansion of the mandatory purchase requirement implemented in the years following the Browne & Hoyt (2000) data set (study examined policies from 1983 to 1994) may constrain a broader range of current policyholders from taking similar action. This would not be the case for current policyholders located outside of SFHAs who are not subject to the mandatory NFIP purchase requirement and are therefore not constrained in their response to NFIP policy cost increases.

One of the earliest studies finding a negative relationship between flood insurance premium increases and flood insurance policies in force was conducted in 1983 by GAO. In the years prior to the evaluation, flood insurance premium increases were followed by an observed reduction in flood insurance policies and the number of communities participating in the program. A regression analysis by GAO researchers found an inelasticity of -0.38 based on a price variable capturing average premium charged to policyholders that accounted for amount of coverage purchased.

Table 1: Evaluation Price Results

Study	Price Inelasticity	Significance
Wang, et al. (2017)	-0.26	$p < 0.01$
Atreya, Ferreira, & Michel-Kerjan (2015)	-0.302	$p < 0.01$
Landry & Jahan-Parvar (2011)	Low Premium Model: -0.62 High Premium Model: -0.87 (preferred model) Unsubsidized Policyholders: -.133 to -.502 Subsidized Policyholders: -1.550 to -4.478	$P < 0.01$ for measured premium variables
Browne & Hoyt (2000)	Insurance in Force: -0.997 Policies in Force: -0.109	INF, $p < 0.01$ PIF, $p < 0.01$
Government Accountability Office (1983)	-0.38	$p < 0.05$

Evaluations investigating the impact of price on NFIP insurance from 1983 through 2017 consistently find a negative relationship between NFIP policy price and NFIP policy purchases and insurance in force. Price inelasticities within the discussed evaluations, for policies in force, range from -0.109 to -0.87, with Landry & Jahan-Parvar (2011) finding an inelasticity of -1.550 for subsidized policyholders. An insurance in force inelasticity of -0.997 was found by Browne & Hoyt (2000). Table 1 shows the major findings of the covered evaluations.

The literature clearly demonstrates a direct and negative price to purchase relationship. FEMA analyses of NFIP data indicate an increase in policy cost is associated with a decline in NFIP policies in force. Higher premiums and increased policy costs lead to fewer NFIP policies in force and to reductions in the amount of coverage in force.

Using Wang, et al (2017) and the Landry & Jahan-Parvar (2011) high premium model to generate a range of impacts, NFIP participation scenarios can be prepared. The Wang, et al. (2017) price inelasticity is -0.26, indicating a reduction of -0.026 in policies in force for every 1% increase in NFIP premium. Recent calculations of the average annual premium increase under the prior NFIP rate methodology across multiple rating classes was 9% (Horn, 2021). Figure 2 shows the expected NFIP participation outcomes of a 9% annual rate increase and an 18% annual rate increase (maximum permissible under law) using the Wang, et al. (2017) analysis. Using the 9% scenario, there is an expected reduction of 156,615 policies over a 15-

Figure 2. Wang, et al. (2017) Participation Scenarios
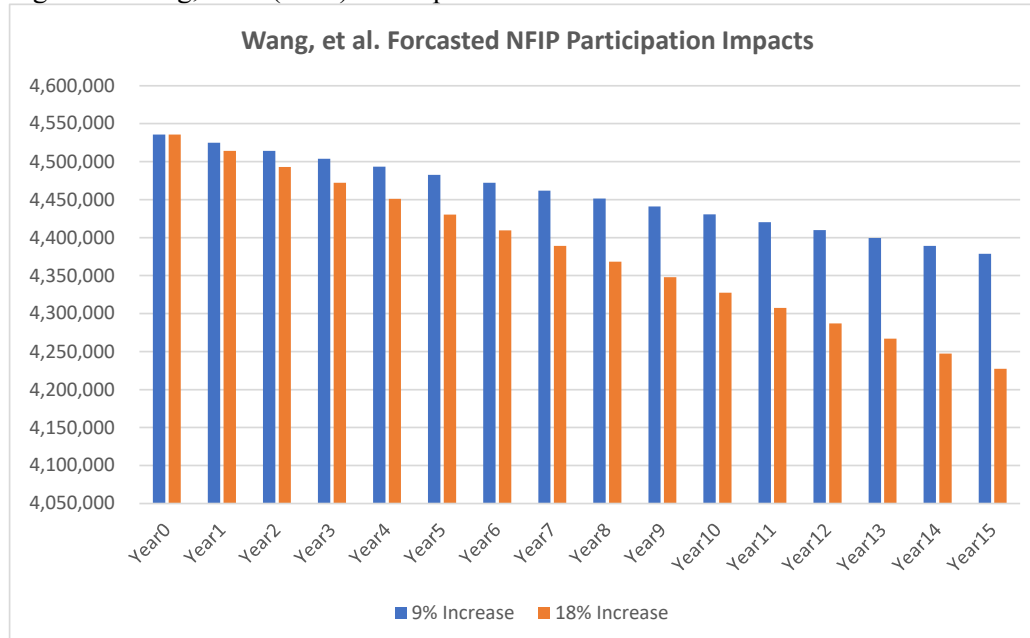
year period, a 3.45% decrease. Under the 18% scenario, NFIP policies in force are expected to fall by 308,171 policies, a 7% reduction.

The Landry & Jahan-Parvar (2011) high premium price inelasticity is -0.87, indicating a reduction of -0.087 in insurance policies in force for every 1% increase in NFIP premium. Figure 3 illustrates expected NFIP participation outcomes under the 9% and 18% rate increase scenarios. Under the 9% scenario, the Landry & Jahan-Parvar (2011) model expects a loss of 504,467 policies and a loss of 956,169 under the 18% scenario over 15 years. Applying the findings of Landry & Jahan-Parvar (2011), implementing an annual increase cap of 9% may reduce the expected increase in the flood insurance risk gap by limiting NFIP policy losses from a forecasted 21% to 11.1%. FEMA has acknowledged that risk of a 20% reduction in NFIP policies was identified in the agency's pre-decisional analyses of potential RR2.0 implementation outcomes (Criswell, 2022). To ensure the insurance gap expansion rate is slowed, policymakers should consider implementing a lower maximum annual premium increase factor until an affordability program is operational.

Figure 3. Landry & Jahan-Parvar (2021) Participation Scenarios

Landry & Jahan-Parvar Forcasted NFIP Participation Outcomes
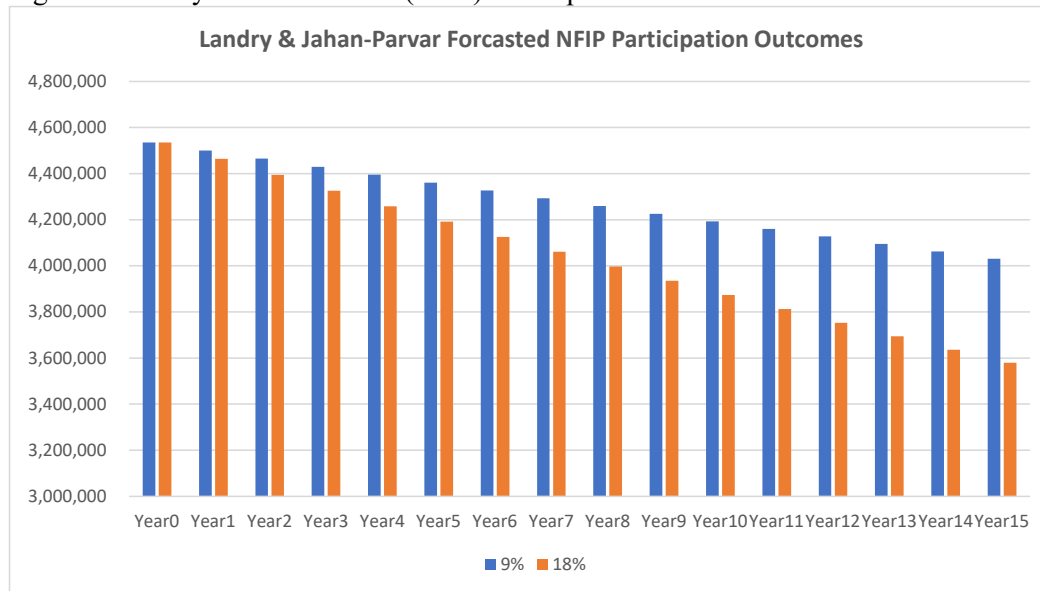
Effects of Other Variables on NFIP Participation

A consumer's decision to purchase or renew flood insurance coverage is complex with the consumer often underestimating the probability and severity of future disasters (Robinson, Botzen, Duijndam, & Molenaar, 2021). Kunreuther (1984) theorized consumers may conclude future disaster costs will be comparable to recent disaster costs or that future disasters are less

likely due to the recent occurrence of a disaster (i.e., a 100-year event has occurred and therefore subsequent comparable or more severe events are less likely in the near-term). Both assumptions are based on logical fallacies, yet consumers allow such mental shortcuts to influence decision making, often leading to a failure to purchase insurance protecting against lower probability, high-cost events like flooding disasters (Browne, Knoller, & Richter, 2015).

Kousky et al., (2020) write extensively on the cognitive psychology behind the consumer decision to purchase flood insurance. The authors note consumers may be myopic and focus financial resources on short-term needs rather than the long-term benefits of flood insurance. Other consumers suffer from disaster loss amnesia, forgetting lessons learned from prior disasters. As also noted by Kunreuther (1984), irrational optimism may lead consumers to assume future disasters will not be as damaging or as frequent. Consumers may suffer from inertia and opt to maintain a status quo of being uninsured or underinsured out of uncertainty or span of control constraints. Oversimplification of complex decisions leads consumers to exclude critical facts from the decision to insure resulting in less coverage. Finally, consumers are subject to herd mentality and may simply follow the decisions of others to forgo purchasing flood insurance.

As the decision to purchase flood insurance is based on consumer psychology, many scholars have attempted to construct predictive models for consumer NFIP purchases. These models test consumer assessment and reaction to risk and other factors by measuring the impact of anticipated or received disaster assistance, expectation of or experience with disaster losses, and proximity to a hazard such as a SFHA or coastal area. As with most consumer purchase models, scholars also evaluate how a consumer's income influences the decision to purchase flood insurance.

Charity hazard, defined as the expectation of disaster recovery assistance from governments or third-parties, has a pronounced negative effect on a consumer's decision to purchase flood insurance. Landry, Turner, & Petrolia (2021) estimate charity hazard depresses demand for flood insurance by 32.6%. Kousky, Michel-Kerjan, & Raschky (2018) found that FEMA Individual Assistance grants reduce demand for NFIP insurance in ZIP codes where such grants have been disbursed following a disaster. A lack of flood insurance based on expectations of external recovery resources is particularly harmful as the provision of extraordinary disaster

recovery resources by the national government is not routine and disaster losses often exceed national disaster recovery grant amounts.

Geographic location and loss expectation or experience variables have a positive influence on the decision to purchase flood insurance. Wang, et al., (2017) determined proximity to a hazard increased the probability a consumer would purchase flood insurance, finding location in a SHFA or a coastal area was positively associated NFIP purchase decisions. Unsurprisingly, Landry, Turner, & Petrolia (2021) found a strong linkage between location in a SFHA and the decision to purchase flood insurance over non-SFHA locations. Landry & Jahan-Parvar (2011) found a consumer's proximity to a coastal area as well as expectation of future losses to positively influence the decision to purchase flood insurance. Atreya et al., (2015) found that recent flood damage has a positive effect on a consumer's decision to purchase flood insurance coverage, but also found the effect dissipates rapidly three years from the loss event. Such studies demonstrate consumers whose risk assessment is based on geographic, actual loss, and anticipated loss are able overcome common cognitive behaviors that impede the purchase of flood insurance coverage.

A final important variable impacting a consumer's decision to purchase flood insurance is income. Michel-Kerjan & Kousky (2010) found NFIP coverage levels were higher in Florida counties with higher median incomes. Atreya et al. (2015) found evidence income is a significant influence in a consumer's NFIP purchase decision, calculating an elasticity of demand of 0.39 per $1,000 of income. Brown & Hoyt (2000) also conclude income is a highly significant factor in a consumer's decision to purchase insurance. The authors found higher income households are more likely to purchase a NFIP policy and to purchase more coverage under such a policy than lower income households. Brown & Hoyt (2000, p. 302) conclude "demand for flood insurance, whether measured by policies purchased or insurance in force, is relatively sensitive to income."

The literature on consumer flood insurance purchases demonstrates how cognitive processes can lead to unrealistic expectations of disaster avoidance or unrealistic expectations of disaster assistance. These cognitive processes can lead consumers to delay or opt against purchasing flood insurance, often with devastating results. Yet, the literature shows consumers may work through these processes to gauge risk of loss and take action to limit future losses by purchasing flood insurance. Consumers who accurately evaluate disaster risks of their location, catalogue prior flood or disaster losses, and have a concern over future losses are more likely to

purchase flood insurance, particularly if these consumers have the income to do so. This underscores the linkage between the price and income variables—consumers evaluate risk on the basis of many variables, but often take purchase and renewal decisions based on an ability to afford the insurance.

The interplay of income and price raises important questions for FEMA and NFIP administrators. Officials within these agencies emphasize the imperative of effectively communicating flood risk to consumers and insureds. According to the literature, this is a sound public policy approach as consumers who accurately assess risk are more likely to purchase flood insurance. However, the variable used by NFIP to communicate risk is price, a key variable identified as depressing flood insurance purchases.

FEMA's April 1, 2021, press statement announcing RR2.0 indicated one of the key benefits of the new pricing methodology was communication of risk to the public and policyholders (FEMA, 2021a). Testifying about RR2.0 to the U.S. Senate Committee on Banking, Housing, & Urban Affairs, David Maurstad of the NFIP said RR2.0 "allows FEMA to set actuarially sound rates and communicate flood risk more comprehensively than ever before, enabling us to…clearly communicate flood risk and allowing policyholders to make more informed decisions about mitigation actions" (Maurstad, 2021).

The literature shows price has a negative influence on a consumer's decision to purchase flood insurance. A flood risk communication strategy relying on price increases for most existing policyholders may lead consumers to engage in cognitive behaviors closely associated with the decision forgo insurance, reduce insurance coverage, or maintain an uninsured or underinsured status quo. These processes are known to result in fewer NFIP policies within the general population and threaten to expose households unable to substitute higher NFIP policy costs for other discretionary household spending to greater flood risk.

To counter the known negative effects of increasing prices on the decision to insure against flood risk, policymakers have proposed a variety of affordability frameworks to lower NFIP costs for targeted groups. In the Biggert-Waters Act and HFIAA, FEMA was directed to develop an affordability framework to allow policymakers to consider how best to structure and deliver NFIP rate subsidies.

In 2018, FEMA published a comprehensive analysis of NFIP affordability among policyholders in the program's 2015 policy population. FEMA collaborated with the U.S. Census Bureau, which granted FEMA access to data and resources far beyond the agency's capacity. NFIP researchers used American Community Survey (ACS) data to compare incomes of households located in SFHAs with households located outside SHFAs, determine if differences in incomes existed, and to determine if any differences in income were statistically significant. FEMA researchers were able to match NFIP policyholders with ACS respondents, enabling precise analysis of policyholder demographic, income, and other characteristics, producing the most comprehensive assessment of NFIP affordability to date. The FEMA 2018 Affordability Study made several important findings.

FEMA found higher income households were more likely to have flood insurance than lower income households. Analysis of the data revealed that 26% of policyholder primary residences located in SFHAs were occupied by low-income households and that 51% of non-NFIP policyholder households in SFHAs are classified as low-income.[2] FEMA found premiums are less expensive and household incomes tend to be higher in non-SFHAs, but noted low-income households also live in non-SFHAs. Using a ratio of monthly mortgage related obligations to total monthly income, FEMA determined 12% of SFHA households with an active NFIP policy in 2015 had mortgage related obligations exceeding 40% of total monthly income.[3]

FEMA's findings validate much of the literature on a consumer's decision to purchase flood insurance. Income is a key variable in the consumer NFIP purchase decision with higher income households purchasing flood insurance at a greater rate than lower income households. Given the price of NFIP insurance in SFHAs is higher than non-SFHAs, it comes as little surprise that many non-NFIP participating households in SFHAs are low-income. The relationship between income and the price of NFIP insurance identified in academic and government literature is confirmed.

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[2] Low-income households are defined as those earning between 50% and 80% area median income.
[3] Mortgage related obligations include monthly mortgage principal, interest, taxes, and insurance (PITI) and other expenses like homeowner association, condominium association, and special taxing district assessments that if unpaid may lead to foreclosure. The FEMA study appears to only have examined PITI and if so, likely underestimated the percentage of SFHA policyholder households with monthly mortgage related obligations exceeding 40% of total monthly income.

The study concludes lower income households will experience greater financial strain due to increasing NFIP policy costs. In a reference to what would become RR2.0, FEMA researchers concluded "[t]he affordability of flood insurance represents a challenge for a greater number of households as FEMA moves closer to risk-based rates for currently discounted policies" (Federal Emergency Management Agency, 2018, p. 13).

The continued elimination of NFIP policy discounts and subsidies has prompted several policymakers to propose NFIP affordability programs. The following section reviews the affordability frameworks proposed to Congress by the 2018 FEMA Affordability Study and three major affordability program proposals by policymakers.

FEMA Affordability Framework & Affordability Proposals

2018 FEMA Affordability Framework

The 2018 FEMA Affordability Study identified three options to address NFIP policyholder affordability challenges: (1) assistance based on household income; (2) assistance based on a threshold percentage of household income spent on flood insurance, and (3) assistance based on the amount of a policyholder's monthly housing payments (i.e., rent, mortgage principal, interest, taxes, and insurance) plus flood insurance costs falling within or exceeding a range of 30% to 40% of total monthly income.

Based on this policyholder assistance framework, the 2018 FEMA study reviewed four affordability program designs: (1) income-based premium sharing with the portion of premium paid by the insured rising until household income exceeds program limitations; (2) a premium burden-based benefit with an insured's premium responsibility based on the percentage of monthly income spent on premium; (3) a housing-burden based benefit where an insured's premium responsibility is based on the ratio of monthly housing costs to total monthly income; and (4) a grant and low-cost loan program to fund property level flood loss mitigation. While the FEMA Affordability Study did not recommend Congress adopt a specific affordability framework, the agency developed cost and impact models for each framework based on multiple program design scenarios. FEMA additionally evaluated various program administration, funding, and implementation strategies.

2022 Biden-Harris Administration Affordability Legislative Proposal

The proposed Fiscal Year 2023 federal budget submitted to Congress by the Biden-Harris administration included a legislative proposal to establish an income-based affordability program

within the NFIP (U.S. Department of Homeland Security, 2022, p. 417). The proposal offers policyholders a policy discount on a needs-based scale, with discount recipients informed of the full-risk premium and the amount of discount received. The Biden-Harris administration's affordability proposal is one component of a package of recommended reforms for the NFIP submitted to Congress through FEMA.[4]

The Biden-Harris administration proposes a two-step income test for an insured to qualify for a discount. The first test requires the insured's household income to be at or lower than 120% of area median income (AMI). A second income test disqualifies insureds where household income exceeds 400% of the relevant annual Federal Poverty Guideline as published by the U.S. Department of Health and Human Services.[5]

A sample of Federal Poverty Guidelines for 2022 finds a poverty guideline of $27,750 for a household of 4; $32,470 for a household of 5; and $37,190 for a household of 6, among others. Under the Biden-Harris administration proposal, total income limitations for residents of the 48 contiguous states and the District of Colombia for 4, 5 and 6 member households are $111,000, $129,880, and $148,760, respectively. Thus, if a 4-member household residing in the 48 contiguous states or District of Columbia met the 120% AMI threshold but has a household income exceeding $111,000, the insured would not qualify for a policy discount.

The Biden-Harris affordability proposal offers income-qualified policyholders a discount on total policy costs, inclusive of premium and all policy fees. The proposal does not specify discounts or an income scale determining the amount of discount but instructs FEMA to consider how a household's income compares to 120% of AMI in providing a NFIP policy discount. The proposal authorizes FEMA to develop and test a pilot program to prior to implementation. The administration proposes to offset affordability program costs and policy discounts through annual appropriations from the U.S. Treasury.

The National Flood Insurance Program Reauthorization and Reform Act of 2021

On November 1, 2021, U.S. Senator Robert Menendez (D-NJ) and U.S. Rep. Frank Pallone (D-NJ) introduced the National Flood Insurance Program Reauthorization and Reform

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[4] Legislative and explanatory text of the Biden-Harris administration NFIP reform and affordability proposal are available at www.fema.gov/sites/default/files/documents/fema_flood-insurance-reform-proposal_5242022.pdf
[5] There are three categories of Federal Poverty Guidelines: one category capturing the 48 contiguous states and the District of Columbia and separate categories each for Alaska and Hawaii. Current Federal Poverty Guidelines may be accessed at https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.

Act of 2021 as S. 3128 in the U.S. Senate and H.R. 5802 in the U.S. House of Representatives. Among various provisions, the legislation authorizes FEMA to design and implement an income-based discount for NFIP policies.[6]

The Menendez-Pallone legislation authorizes FEMA to offer discounts for policyholders with household incomes equal to or lower than 120% AMI of the area in which the insured structure is located. The proposal does not prescribe graduated policy discounts for eligible policyholders, but does require FEMA to consider the following when establishing policy discounts: (1) the percentage of household income compared to 120% AMI; (2) an eligible policyholder's annual housing expenses; (3) the overall number of eligible policyholder households participating in the policy discount program; (4) availability of funding; and, (5) other factors to be determined by FEMA. The legislation authorizes annual appropriations to offset revenue losses related to policy discounts and administrative costs. Additionally, the Menendez-Pallone proposal restricts certain 25% annual premium increases where (1) the policyholder is no longer eligible for a premium discount; (2) the premium discount has been reduced; or (3) the policyholder is unable to receive a discount due to a lack of available appropriations.

Affordability Demonstration Program Proposal by U.S. Rep. Maxine Waters (D-CA)

U.S. Rep. Maxine Waters (D-CA), chair of the U.S. House Committee on Financial Services, released draft NFIP reform legislation in May 2022 authorizing FEMA to undertake an income based NFIP premium discount demonstration program.[7] Chair Waters' proposal differs from the Biden-Harris administration and Menendez-Pallone proposals by adopting an income limitation of 80% AMI. The proposal additionally limits eligibility to (1) existing policyholders; (2) policies covering 1 to 4 family residential properties; and (3) policies covering the insured's primary residence.

The Waters proposal is unique in that it discounts only charged premium and stipulates discount terms in statute. Under the proposal, the maximum premium an eligible insured could be charged is limited to no more than 2% of the AMI for the area in which the insured structure

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[6] The text of S. 3128 is available at https://www.congress.gov/117/bills/s3128/BILLS-117s3128is.pdf.
The text of H.R. 5802 is available at https://www.congress.gov/117/bills/hr5802/BILLS-117hr5802ih.pdf.
[7] Chair Waters' draft legislation is available at https://democrats-financialservices.house.gov/UploadedFiles/BILLS-117pih-NFIP-waters.pdf.

is located. If the discounted premium exceeds the policyholder's current premium, the insured may not be charged a higher premium.

<u>Areas of NFIP Affordability Policy Consensus & Debate</u>

A clear policy consensus has emerged on the need for a NFIP affordability program. Additionally, there is consensus that assistance be targeted based on household income. Importantly, policymakers agree that affordability program discounts and costs will be offset through annual appropriations rather than increased costs on non-qualifying NFIP insureds.

Notwithstanding these areas of consensus, there remains debate among key policymakers over the form and scope of an affordability program. While all three proposals are income-based, the Menendez-Pallone proposal instructs FEMA to consider factors other than income (e.g., household housing cost burdens and program resources) when developing a graduated subsidy. Menendez-Pallone places additional premium increase constraints on NFIP when a policyholder no longer qualifies for a subsidy or when resources to pay the subsidy are unavailable.

The Waters proposal is the most restrictive, authorizing only a demonstration program and limiting eligibility to households with incomes at or below 80% AMI. The Biden-Harris and Menendez-Pallone proposals each allow moderate income families access to affordability assistance by capping household incomes at 120% AMI. Of these two, the Biden-Harris proposal is more restrictive with a secondary income test. Lastly, the Waters proposal advances the debate in one crucial aspect—the proposal stipulates the amount of assistance an eligible insured may receive. The Biden-Harris and Menendez-Pallone proposals defer to FEMA and NFIP on the development of a graduated NFIP affordability policy discount.

FEMA RR2.0 data project most NFIP policyholders will continue to be assessed premium increases until full risk, actuarial premiums are reached. Based on identified consumer sensitivity to NFIP costs and the decision to insure, policymakers should consider the benefits of enacting an affordability program before NFIP policy costs are substantially increased under RR2.0. Enactment and implementation of an affordability program are important actions to close the insurance gap or to reduce rate at which the gap is currently expanding. Examining select markets in four states—Florida, Ohio, South Carolina, and Texas—will contribute to understandings of RR2.0 impacts and the reach of affordability programs.

Risk Rating 2.0 & Impacts in Select State Markets

Methodology

 States were selected based on policymaker interest in NFIP reform and reauthorization legislation. The two counties in each state with the greatest volume of NFIP single-family residence policies were identified using FEMA RR2.0 premium estimates.[8] FEMA RR2.0 premium estimates identify the number of policies in each county, the number of policies expected to receive a premium increase or decrease, and the amount of premium change in $10 monthly cost bands. Mean annual premium charged single-family primary residence policyholders in 2021 were calculated for selected counties using the OPENFEMA FIMA NFIP Redacted Policies Data Set.[9]

 FEMA has not publicly disclosed the deficiencies of current NFIP premiums compared to estimated actuarial rates under RR2.0. This deficiency factor is a necessary component of calculations to project the number of years required to achieve a RR2.0 actuarial rate if annual premium increases are held constant.

 An analysis by the First Street Foundation determined current NFIP premiums require an average increase of 450% (deficiency factor of 4.5) to accurately reflect flood risk at the structure level (First Street Foundation, 2021). Individual structure is the level of risk assessment in both the First Street Foundation and RR2.0 risk assessment methodologies. In addition to the national NFIP premium deficiency estimate, the First Street Foundation estimates NFIP premium deficiencies by state, allowing for a state specific analysis. Finally, FEMA estimates of forecasted actuarial NFIP full-risk premiums under RR2.0 for the state of Louisiana have been obtained by news organizations pursuant to a Freedom of Information Act request. Documents provided to the requesting media organizations indicate, on average, current NFIP premiums in Louisiana require a 122% increase (deficiency factor of 1.22) to accurately reflect risk of flooding (Smith, 2022).

 First Street Foundation rate deficiency estimates and recently disclosed estimated FEMA RR2.0 premium deficiencies for Louisiana serve as the basis of three models projecting mean full risk NFIP premiums in selected counties. The Low Model uses FEMA's RR2.0 deficiency

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[8] Available at https://www.fema.gov/sites/default/files/documents/fema_risk-rating-county-breakdown_2021.xlsx
[9] Available at https://www.fema.gov/about/openfema/data-sets#nfip. File size exceeds 16 gigabytes and specialized software is required to access the data set.

Table 2. Actuarial Rate Model Outcomes: Mean Annual Premium

State	County	FSF State Factor	Low	FSF_ST	FSF_N
FL		6.25			
	Miami-Dade		$ 1,265.04	$ 4,131.34	$ 3,134.12
	Broward		$ 1,146.90	$ 3,745.50	$ 2,841.41
OH		2.35			
	Franklin		$ 2,199.82	$ 3,319.55	$ 5,450.01
	Lucas		$ 2,047.22	$ 3,089.27	$ 5,071.94
SC		6.7			
	Charleston		$ 1,488.95	$ 5,164.39	$ 3,688.85
	Beaufort		$ 1,130.27	$ 3,920.30	$ 2,800.22
TX		2.55			
	Harris		$ 1,200.91	$ 1,920.37	$ 2,975.23
	Ft. Bend		$ 1,009.90	$ 1,614.93	$ 2,502.01

factor for Louisiana (1.22); the FSF_ST Model is the average of First Street Foundation NFIP rate deficiencies for SFHA and non-SFHA properties in the selected states; and the FSF_N Model uses average First Street Foundation estimated NFIP rate deficiencies for SHFA and non-SFHA properties nationally (4.5). Table 2 shows model outcomes estimating full risk mean annual premium for single-family residences by target county in select states.

Premium increase scenarios for each county were prepared to project the length of time in years for mean single-family primary residence NFIP premiums to reach the projected full risk rate mean under each model. Over the 2015 to 2021 period, annual NFIP premiums across various rate classifications under FEMA's prior rating system have increased by an average of 9% per year (Horn, 2021). HFIAA limits NFIP premium increases to a 5% to 15% band for most residential properties, subject to an overall annual premium increase cap of 18%. A constant annual 12% increase (average of 9% and 15%) is assumed in the second premium scenario. A third scenario assumes an annual 18% increase, the maximum permitted by law.
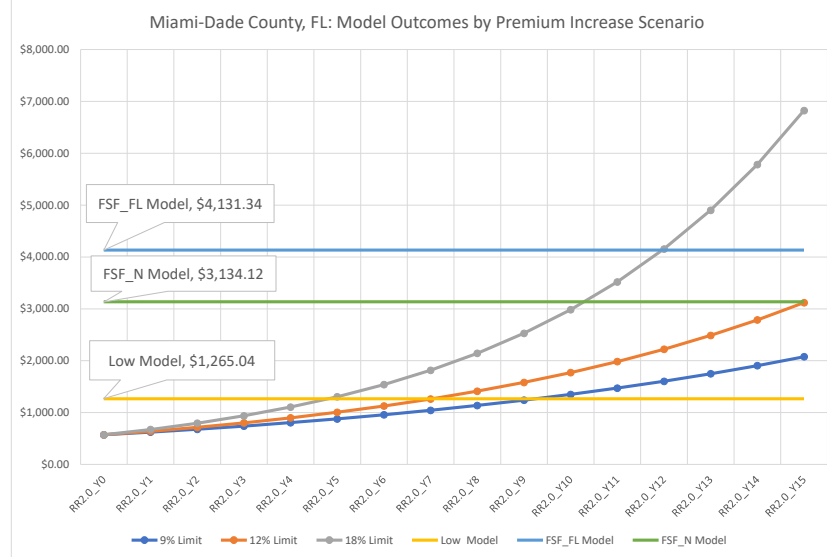
Florida: Miami-Dade County & Broward County

NFIP RR2.0 data show Miami-Dade County and Broward County have the greatest number of NFIP single-family residence policies in force at 147,467 and 92,027, respectively. The NFIP Redacted Policy Data Set mean premium for single-family primary residence policies in Miami-Dade County with a 2021 effective date was $569.84 and mean policy cost was

$745.82. Broward County had a 2021 mean single-family primary residence policy premium of $516.62 and mean policy cost of $673.57.

According to FEMA RR2.0 rating estimates, 13% of single-family residential NFIP policies in Miami-Dade County are expected to have premiums reduced in the first year of RR2.0. The distribution of premium reductions is concentrated within the $1 to $10 and $11 to $20 per month cost bands.

Figure 4. Miami-Dade County Premium Scenarios

An estimated 87% of Miami-Dade County single-family residence policies will experience monthly premium increases, with distribution of increases concentrated in the $1 to $10 per month range.

FEMA data show 76.5% of Miami-Dade single-family residence policies will be assessed premium increases up to $10 per month and 6.1% increases up to $20 per month with the remainder receiving higher monthly increases.

RR2.0 estimated premium increases for Broward County show 85,254 single-family residence policyholders, or 93% of policyholders, will see premium increases. Premium increases are concentrated, with 80,866 policyholders expected to have first year RR2.0 premium increases in the $1 to $10 band. Premium reductions are concentrated in the $1 to $10 band with 2,087 policyholders receiving such a reduction.

Figure 4 shows estimated mean annual premium scenarios for Miami-Dade County and Broward County. Under the 9% annual increase scenario, estimated mean actuarial premiums in Miami-Dade County are achieved on the following timeline: Low Model, 9 years; FSF_FL Model, 23 years; and FSF_N Model, 20 years. Mean actuarial premiums are achieved in the 12% rate scenario in 7 years, 18 years, and 15 years, respectively.
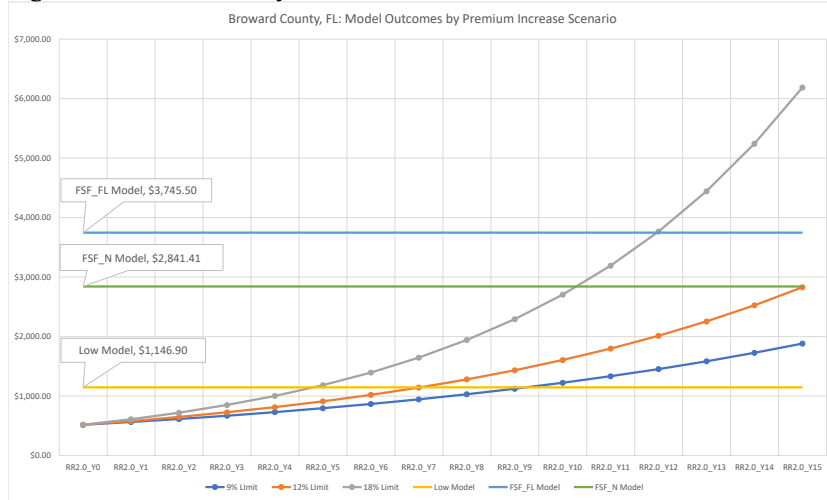
Figure 5. Broward County Premium Scenarios

Broward County, FL: Model Outcomes by Premium Increase Scenario

Figure 5 shows Broward County policyholders achieve projected premiums for each model in line with Miami-Dade County.[10] Under the 18% increase scenario, Miami-Dade County policyholders reach the projected mean premium in year 5 under the Low Model; year 12 under the FSF_FL Model; and year 11 under the FSF_N Model. Broward County follows this pattern except for the Low Model, which achieves the projected actuarial mean premium in year 6.

Ohio: Franklin County & Lucas County

Figure 6. Franklin County Premium Scenarios

Franklin County, OH: Model Outcomes by Premium Increase Scenario
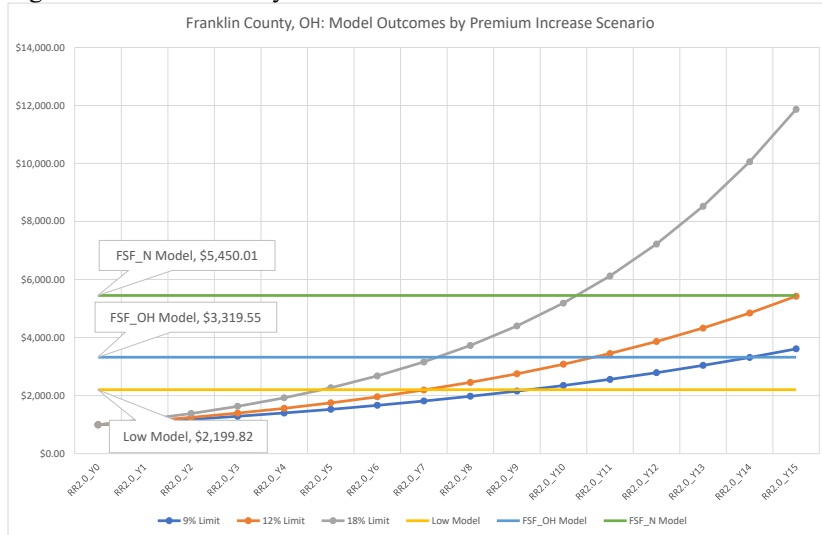
FEMA RR2.0 data indicate Franklin County and Lucas County have the largest concentration of single-family residence NFIP policies in Ohio, with 1,372 and 1,362 policies, respectively. The 2021 mean premium assessed single-family residence policyholders in Franklin County was $990.91 and the mean total policy cost was $1,232.85. In Lucas County, the mean 2021 premium assessed such policyholders was $922.17 and mean total policy cost was $1,158.56.

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[10] Tables published in the paper end at RR2.0 year 15 due to space constraints.

RR2.0 premium estimates indicate an almost even division in the number of policyholders in each county projected to receive a premium increase as the number expected to receive a premium reduction. In Franklin County, 54% of policyholders (747) are forecast to have premiums reduced under RR2.0. Of this number, 200 are forecast to have premiums reduced by up to $100 per month, a significant savings. Premiums will be increased for the remaining 46% (625) of NFIP policyholders in the county. Increases are concentrated in the $1 to $10 monthly band.

Figure 7. Lucas County Premium Scenarios
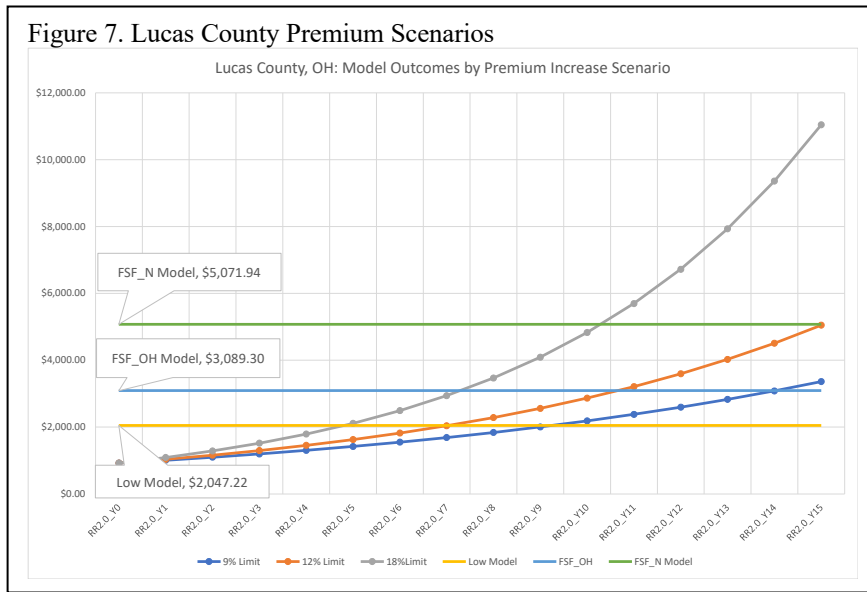
Premium reductions and increases are evenly divided among single-family residence NFIP policyholders in Lucas County with 681 policyholders forecast to receive decreases and 681 to receive increases. As with Franklin County, a large percentage (12%) of Lucas County policyholders are forecast to receive premium reductions of $100 per month while most premium increases are concentrated in the $1 to $10 monthly band.

Figures 6 and 7 show mean annual premium estimate scenario outcomes for Franklin County and Lucas County. Estimated actuarial mean annual premiums are achieved in Franklin County under the 9% scenario as follows: Low Model, 10 years; FSF_OH Model, 14 years; and FSF_N Model, 20 years. Under the 12% scenario, estimated actuarial premiums are achieved in year 7 under the Low Model; year 11 under the FSF_OH Model; and year 15 under the FSF_N model. Scenario outcomes for Lucas County mirror Franklin County outcomes. The maximum rate scenario achieves the actuarial mean premium in both Franklin County and Lucas County by year 5 under the Low Model; year 8 under the FSF_OH Model; and year 11 under the FSF_OH Model.

South Carolina: Charleston County & Beaufort County

Charleston County and Beaufort County have the largest number of reported single-family residence NFIP policies in South Carolina with 54,122 and 33,523 policies, respectively. The mean 2021 premium assessed single-family residence policyholders in Charleston County was $670.70 and the mean total policy cost was $863.90. In Beaufort County, the mean 2021 premium assessed was $509.13 and mean total policy cost was $668.07.

RR2.0 premium data estimates indicate most single-family residence policyholders in Charleston County are forecast to receive premium increases, with 70.5% (38,182) of policyholders in the $1 to $10 monthly increase band and 7.6% (4,109) in the $11 to $20 monthly increase band. Of the 10,754 Charleston County policyholders forecast to have lower premiums, 2,582 will receive a monthly discount in the $1 to $10 band and 3,425 are forecast to save an estimated $100 or more in monthly premium charges.

A majority of Beaufort County single-family policyholders will experience premium increases with 68.4% (22,930) of such policyholders in the $1 to $10 monthly increase band and 10.5% (3,511) in the $11 to $20 increase band. Policyholders receiving lower premiums account for 17.1% (5,743) of all policyholders, with premium reductions concentrated in the $1 to $10 and $11 to $20 bands.

Figures 8 and 9 show mean annual premium outcomes for Charleston and Beaufort Counties under the 9%, 12%, and 18% annual premium increase scenarios. Charleston County

Figure 8. Charleston County Premium Scenarios
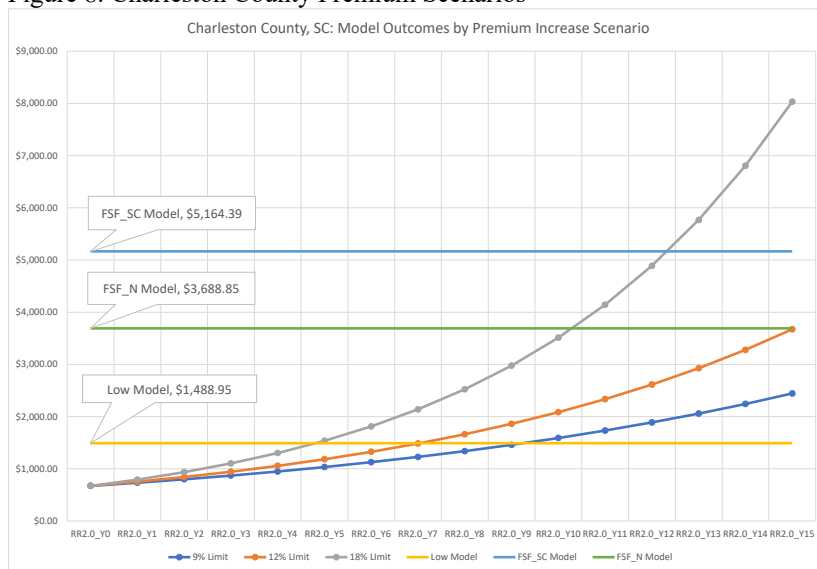
single-family NFIP insureds are projected to reach the estimated full risk mean premium under the 9% scenario by year 10 under the Low Model; year 24 under the FSF_SC Model; and year 20 under the FSF_N model. Estimated actuarial mean premium is achieved under

Figure 9. Beaufort County Premium Scenarios

Beaufort County, SC: Model Outcomes by Premium Scenario
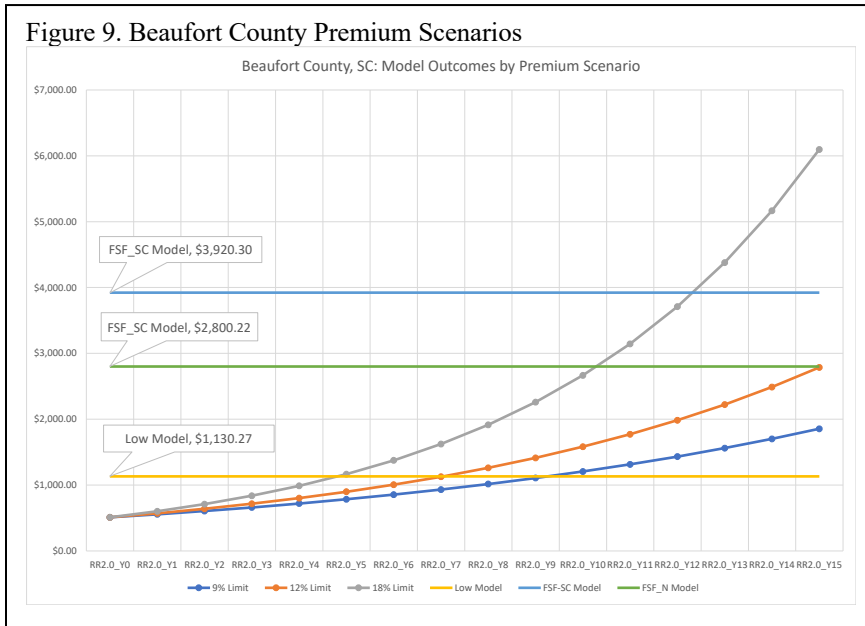
the Low Model in year 8; FSF_SC Model in year 19, and FSF_N Model in year 15. Beaufort County scenario outcomes are the same as Charleston County outcomes with two exceptions. Full risk mean premiums are achieved by year 11 under the 9% Low Model scenario and by year 16 in the FSF_N Model 12% scenario. The maximum increase scenario projects mean premiums will reflect full risk in Charleston County by year 5 under the Low Model; year 13 under the FSF_SC Model; and year 12 under the FSF_N Model. Beaufort County premiums under the maximum rate scenario track those of Charleston County with the exception of the FSF_N Model, which forecasts full risk rates by year 11.

Texas: Harris County & Ft. Bend County

FEMA RR2.0 data show 294,917 single-family residences in Harris County are covered by a NFIP policy and 62,954 in Ft. Bend County. In Harris County, the NFIP Redacted Policies Data Set shows the mean premium for single-family residential policies with a 2021 effective date was $540.95 and mean total policy cost was $694.61. The Ft. Bend County mean single-family residence NFIP annual premium in 2021 was $454.91 and mean annual total policy cost was $588.89.

Distribution of RR2.0 premium adjustments skew heavily to premium increases in Harris County. According to FEMA RR2.0 data, 91% (268,490) of single-family residence policyholders will have premium increases, with 87% (256,592) of policyholders in the $1 to $10 monthly premium increase band and 3% (8,756) in the $11 to $20 increase band. Nine percent (26,427) of Harris County NFIP policyholders will receive a premium decrease under RR2.0. Premium reductions are primarily in the $1 to $10 monthly range with 9,153 policyholders in

Figure 10. Harris County Premium Scenarios

Harris County, TX: Model Outcomes by Premium Increase Scenario
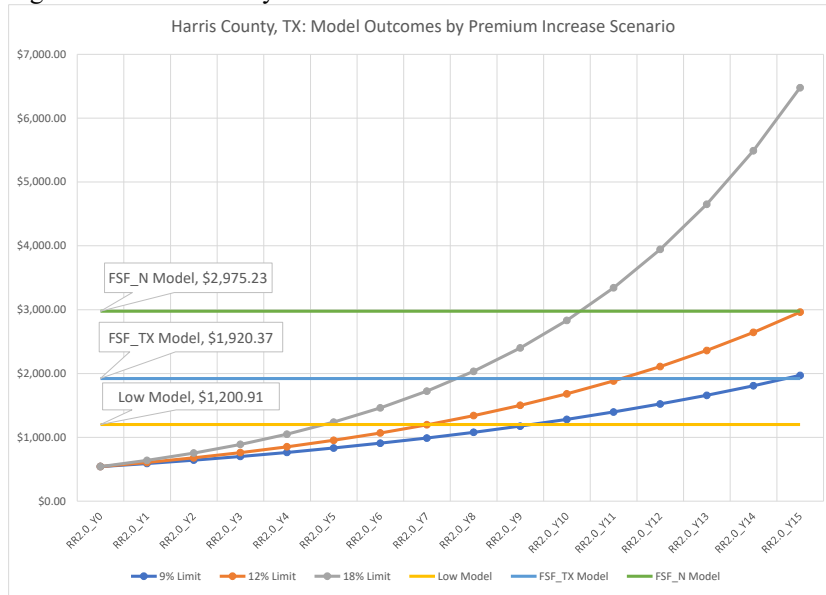
this category. An estimated 3,648 policyholders are expected to receive monthly premium reductions of $100 or more.

Ft. Bend County single-family residence NFIP policyholders have a similar distribution of expected premium increases and decreases as Harris County. In all, 60,183 Ft. Bend policyholders will have increased premiums under RR2.0, with 95.1% of county policyholders in the $1 to $10 monthly increase band. Most of the 2,771 policyholders expected to have reduced premiums are in the $1 to $10 monthly decrease band.

Figures 10 and 11 show mean annual premium outcomes for Harris County and Ft. Bend County under the 9%, 12%, and 18% annual premium increase scenarios. Single-family residence policyholders will achieve projected full risk mean premiums under the Low Model 9% increase scenario in year 10; FSF_TX Model in year 15; and FSF_N Model in year 20.

Figure 11. Ft. Bend County Premium Scenarios

Ft. Bend County, TX Model Outcomes by Premium Increase Scenario
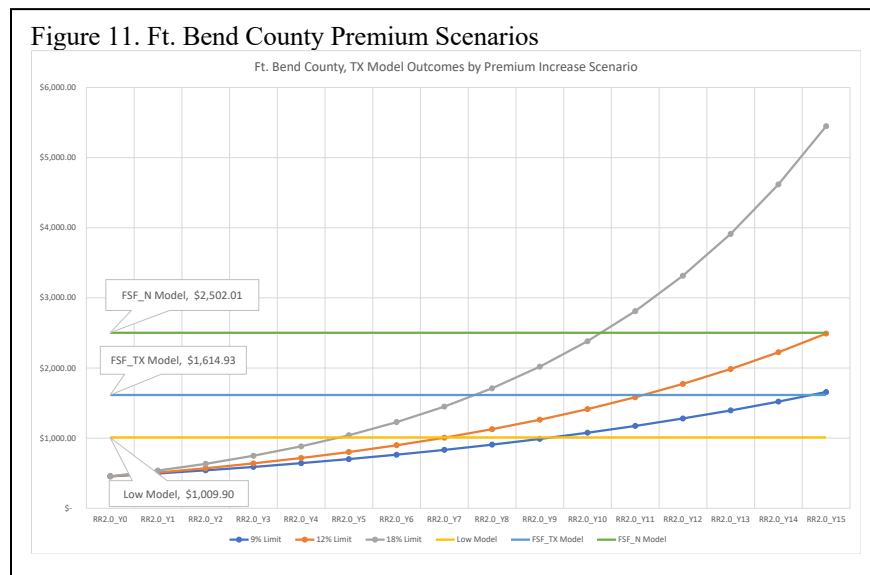
Under the 12% increase scenario, full risk rates are achieved by year 8 under the Low Model; year 12 under the FSF_TX Model; and year 16 under the FSF_N Model. The maximum rate scenario projects policyholders will reach the projected mean full-risk premium by year 5

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under the Low Model; year 8 under the FSF_TX Model; and year 11 under the FSF_N Model.

Ft. Bend scenario outcomes vary modestly from Harris County outcomes. Under the 9% scenario, full risk rates are achieved by year 10 in the Low Model; year 13 in the FSF_TX Model; and year 20 in the FSF_N Model. Outcomes in the 12% scenario are: Low Model, year 6; FSF_TX Model, year 12; and FSF_N Model, year 16. The maximum rate scenario outcomes across all models for Ft. Bend County are the same as those for Harris County.

Limitations

The scenarios assume a constant annual increase of 9%, 12%, or 18% in mean premium for single-family residences. NFIP has not implemented a uniform rate increase in previous years and it is unknown if constant rate increases are anticipated within the policyholder population under RR2.0. NFIP could opt for any combination of rate increases subject to the overall annual premium increase limitation of 18%. Notwithstanding this limitation, the scenarios provide policymakers reasonable estimates and timelines for rate trajectories, indicating an acceleration of annual premium increases over prior practice if RR2.0 actuarial rates are to be achieved in a 10- to 15-year period.

A second area of limitation is the use of the mean to estimate policy premium values. There are meaningful differences in premium between the various categories of NFIP policies and meaningful differences in risk at the individual parcel and structure level. Mean values can disguise the extent of such differences. To account for these limitations, mean annual premium was based on the single-family, primary residence subset of NFIP policies by effective date. The method narrows the scope of properties used to calculate the mean premium and excludes variations from non-residential and condominium NFIP policies. To more closely align with First Street Foundation estimates which included both SFHA and non-SFHA properties, the calculation of mean premium included both SFHA and non-SFHA insureds.

A third limitation is the use of estimated deficiencies in the mean annual premium charged single-family residence policies in the selected counties. The models account for this limitation by including a verified FEMA deficiency rating for Louisiana NFIP policies for the Low Model and rate deficiencies developed by the First Street Foundation for the state and national models. The First Street Foundation rate deficiency estimations are based on a robust methodology and a wide array of parcel and structure-specific data. Short of verified FEMA premium deficiency estimates, the First Street Foundation premium deficiency estimates are

among the best-available data for this evaluation. The limitation of using non-FEMA deficiency estimates can be remedied by public disclosure of all FEMA premium deficiency rates.

Assessing Housing Burdens in Select Counties

RR2.0 will have positive impacts for many policyholders. Among the counties selected for this evaluation, Franklin County and Lucas County policyholders will receive meaningful reductions in premium, making NFIP insurance more affordable in these areas.

Alternately, most counties in the study have a clear majority of policyholders for whom NFIP premiums will continue to rise. According to the model and rate scenario estimates, flood insurance premiums in these communities will increase significantly. If the rate of increase is elevated, policyholders will absorb these new housing costs on a compressed timeline, leading to an increase in the number of NFIP policyholder households with elevated housing cost burdens.

Assessing Housing-Burdened Populations

Various methodologies have been developed to calculate the level at which a household's monthly housing-related costs negatively impact household financial stability (Airgood-Obrycki, Hermann, & Wedeen, 2022). In the United States, government agencies have adopted a ratio methodology, determining that a household is considered housing-burdened when total monthly housing costs are greater than 30% of total monthly household income. Additionally, mortgage originators assess a consumer's ability to pay a mortgage based on ratios ranging from the low 30% levels to the low 40% levels based on total monthly income, total monthly debt costs, and total monthly household financial obligations (Federal Emergency Management Agency, 2018).

The U.S. Census Bureau ACS collects data from respondents on estimated monthly housing costs and monthly income. Monthly housing costs for homeowners include, but are not limited to, first and second mortgage payments; property taxes; insurance (all perils, including flood); utilities; and other monthly costs that if unpaid may result in a lien or place the homeowner at risk of foreclosure (i.e., HOA and condominium assessments; special taxing district assessments, ground rents, etc.). These data allow for estimates of housing-burdened households at the county level. Table 3 shows the percentage of housing-burdened ownership

households at the 30% to 34.9% level and greater than 35% level in the selected counties based on ACS 2016-2020 and 2011-2015 5-year comparison profile estimates.[11]

The ownership housing-burden data indicate that housing burdens for homeowners have improved nationally and in each selected county from 2011 to 2020. The data indicate an across-

Table 3. Monthly Ownership Housing Costs as Percentage of Monthly Income

County	%Burden	2016-2020	2011-2015	County	%Burden	2016-2020	2011-2015
Miami-Dade	30-34.9	8.80%	8.60%	**Beaufort**	30-34.9	8.10%	9.30%
	35+	34.70%	42.10%		35+	27.80%	35.60%
	Total >30%	43.50%	50.70%		Total >30%	35.90%	44.90%
Broward	30-34.9	8.50%	9.10%	**Charleston**	30-34.9	6.90%	8.10%
	35+	31.70%	37.20%		35+	22.30%	28.20%
	Total >30%	40.20%	46.30%		Total >30%	29.20%	36.30%
Franklin	30-34.9	5.60%	7.30%	**Ft. Bend**	30-34.9	6.80%	7.50%
	35+	16.10%	19.60%		35+	19.20%	19.80%
	Total >30%	21.70%	26.90%		Total >30%	26.00%	27.30%
Lucas	30-34.9	6.40%	7.00%	**Harris**	30-34.9	6.40%	7.00%
	35+	16.70%	19.90%		35+	21.10%	22.90%
	Total >30%	23.10%	26.90%		Total >30%	27.50%	29.90%
Beaufort	30-34.9	8.10%	9.30%	**US**	30-34.9	6.80%	7.80%
	35+	27.80%	35.60%		35+	20.60%	24.70%
	Total >30%	35.90%	44.90%		Total >30%	27%	33%

the-board reduction in the percentage of homeowners allocating more than 30% of monthly income to monthly housing costs. Nationally, the percentage of housing-burdened homeowners declined from 33% in the 2011 to 2015 period to 27% in the 2016 to 2020 period.

The percentage of housing-burdened homeowners in 5 of the select counties is below or within 2 percentage points of the national average. Franklin County has the lowest reported percentage of housing-burdened homeowners, with the data indicating 21.7% of homeowners having monthly housing costs exceeding the 30% standard.

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[11] Data table available at
https://data.census.gov/cedsci/table?q=cp04&g=0100000US_0400000US06%24050000,06%24160000_0500000US
12011,12086,39049,39095,45013,45019,48157,48201&tid=ACSCP5Y2020.CP04

Miami-Dade, Broward, and Beaufort Counties have the highest rates of housing-burdened homeowners. In Miami-Dade County, 43.5% of homeowners exceed the 30% threshold with Broward County at 40.2%, and Beaufort County at 35.9%. The data also show a majority of housing-burdened ownership households allocate more than 35% of monthly income to monthly housing costs. The difference between the percentage of housing-burdened homeowners at the 30% to 34.9% rate and households at the 35% or greater rate is substantial across all selected counties.

Overall, ACS data show that from 2011 to 2020, the financial position of ownership households measured in terms of housing burden improved in all select counties. Assuming these benefits were distributed evenly among ownership households in each county, NFIP single-family residence policyholder ownership households are, ceteris paribus, better prepared to absorb RR2.0 premium increases.

As with any survey, a lag exists between conditions at the time of ACS data collection and data release. While this evaluation uses the latest ACS data available, these data do not reflect current economic conditions or inflationary pressures within housing expenses which occurred during the 2021 to 2022 period. Therefore, these data likely understate the percentage of housing-burdened ownership households nationally and in the selected counties.

Housing Burdens in Franklin County & Lucas County

Policyholders in Franklin and Lucas Counties appear best situated to absorb higher NFIP costs based on comparatively lower rates of housing-burdened ownership households and higher percentages of NFIP policyholders estimated to receive a premium reduction under RR2.0. Additionally, the NFIP premium deficiency factor for Ohio calculated by the First Street Foundation was 2.35, the lowest state deficiency factor in this study. While the mean annual premiums charged to single-family policyholders in these counties are the highest among the select counties, the gap between the current premium and the estimated actuarial premium is the smallest. Almost half of covered policyholders will see a significant premium reduction under RR2.0 while policyholders assessed premium increases must close a smaller deficiency compared to other select counties.

Housing Burdens in Beaufort County & Charleston County

Beaufort and Charleston Counties may realize an increase in the percentage of housing-burdened households based on RR2.0 actuarial premium increase estimates. South Carolina was

identified by the First Street Foundation as having the greatest NFIP premium deficiency rate at 6.7, meaning current premiums would need to rise by 670% to cover the full risk rate. According to FEMA RR2.0 premium estimates, 82.9% of policyholders in Beaufort County and 80.1% in Charleston County will see premium increases. Comparing the two counties, Charleston County has a lower rate of housing-burdened ownership households at 29.2% than Beaufort County, which has a housing-burdened ownership rate of 35.9%. The higher rate of housing-burdened households will place greater RR2.0 affordability burdens on Beaufort County.

Housing Burdens in Broward County & Miami-Dade County

The NFIP premium deficiency rate for Florida policies was estimated by the First Street Foundation to be 6.25, requiring an increase of 625% to cover the full risk of flood damage. In Broward County, 93% of NFIP policyholders are estimated by FEMA to pay higher premiums under RR2.0. In Miami-Dade County 87% of policyholders will be charged higher premiums. Affordability concerns are compounded as Broward and Miami-Dade Counties have the greatest percentage of housing-burdened ownership households among the select states. The rate of housing-burdened households exceeds 40% in both counties.

Housing Burdens in Ft. Bend County & Harris County

Ft. Bend and Harris Counties have housing-burdened ownership household rates of 26% and 27.5%, respectively, which closely align with the national rate. The First Street Foundation NFIP premium deficiency for Texas is 2.55, with current premiums requiring an estimated increase of 255% to represent the full risk of loss. This advantage is offset by the percentages of homeowners estimated to be charged increased premiums under RR2.0. In Ft. Bend County, 95.6% of NFIP policyholders will receive a premium increase and 91% of policyholders in Harris County will see increases.

Directing Assistance in Target Population

Variations in the rate of housing-burdened ownership households among the selected counties highlight differences in household financial capacity. Households in certain markets can substitute increased NFIP RR2.0 premium costs for other discretionary household spending while others lack such capacity. Among the NFIP affordability proposals, the Menendez-Pallone proposal stands alone in incorporating housing expenses as a variable in the equation to determine an eligible household's policy discount. The definition of housing expenses in the Menendez-Pallone proposal can be improved through alignment with the definition of mortgage-

related obligations in 12 CFR § 1026.43(b)(8), which captures all mandatory homeowner obligations that must be paid to avoid threat of foreclosure.

Each affordability proposal uses an income test to define a target population for NFIP discounts, with two using income as a secondary test to direct assistance within the target population. While income is useful in defining the target population, it can overlook different housing burdens within these populations. The use of housing expenses as a secondary or an additional targeting measure will direct discounts to households with the greatest housing burdens and lowest capacity to absorb higher NFIP policy costs.

The form of a NFIP policy discount will also significantly influence how assistance is directed within the target population. Of the three proposals, only the Waters proposal stipulates the discount an eligible policyholder may receive. The Biden-Harris and Menendez-Pallone proposals authorize FEMA to establish a graduated discount for eligible policyholders but fail to stipulate how discounts are operationalized. FEMA is empowered to develop and implement a program guided by the agency's culture and priorities, which may vary from those of legislative policymakers. While it is unnecessary to severely constrain FEMA, stipulating desired outcomes (i.e., amount of assistance necessary to make a policy affordable; the rate at which discounts are phased out; the distribution of discounts, etc.) will ensure an affordability program achieves the policy outcomes desired by federal legislators.

Evaluating Affordability Proposal Impacts in Select Counties

NFIP affordability programs rely on income as the primary eligibility test for affordability program participation, with household income-based limitations varying among the proposals. Chair Waters targets policyholders earning less than 80% of AMI while the remaining proposals limit benefits to households earning 120% or less of AMI. The Biden-Harris administration also requires subsidy recipients to earn less than 400% of the relevant Federal Poverty Guideline. Using these and other parameters it is possible to assess impacts of the affordability proposals within the select counties.

Methodology

ACS median income data were obtained for each select county and used to estimate affordability proposal income limitations. The Federal Poverty Guideline for a family of four was selected to measure the impact of this limitation in the Biden-Harris administration proposal. The NFIP Redacted Policies data set was used to calculate the number of policies with premiums exceeding 2% of median income qualifying for a subsidy under the Chair Waters proposal. Table 4 shows results for median income test levels, the Federal Poverty Guideline, 2% median income premium benefit, and the number of current single-family, primary residence NFIP policies by jurisdiction with premiums that exceed 2% of median income.

Table 4. Median Income, Affordability Proposal Increments, & Number of Policyholders Eligible for Waters Proposal

County	MI	80MI	120MI	160MI	BH_FPG_4	Waters2%MI	Pol_Wat
Broward	$60,922.00	$48,737.60	$73,106.40	$97,475.20	$111,000.00	$1,218.44	1,726
Miami-Dade	$53,975.00	$43,180.00	$64,770.00	$86,360.00	$111,000.00	$1,079.50	6,794
Franklin	$62,352.00	$49,881.60	$74,822.40	$99,763.20	$111,000.00	$1,247.04	270
Lucas	$49,946.00	$39,956.80	$59,935.20	$79,913.60	$111,000.00	$998.92	354
Beaufort	$71,430.00	$57,144.00	$85,716.00	$114,288.00	$111,000.00	$1,428.60	681
Charleston	$67,182.00	$53,745.60	$80,618.40	$107,491.20	$111,000.00	$1,343.64	4,342
Ft. Bend	$100,189.00	$80,151.20	$120,226.80	$160,302.40	$111,000.00	$2,003.78	150
Harris	$63,022.00	$50,417.60	$75,626.40	$100,835.20	$111,000.00	$1,260.44	10,227

ACS income ranges for owner occupied households were used to estimate the total population of owner-occupied households in the select counties at the 80%, 120%, and 160% median income levels. Table 5 shows the number and percentage of owner-occupied households meeting each proposed income test.[12]

Affordability Proposal Income Targeting

Linking a policyholder's eligibility for a premium subsidy to household income has varying effects among the select counties. Select counties with lower median incomes see a smaller percentage of the property-owning population potentially eligible for a premium subsidy. The opposite occurs in select counties with higher median incomes.

For example, Lucas County has a median income of $49,946 and with an income test of 120% median income, 55% of owner-occupied residences are potentially eligible for a premium

subsidy. In contrast, a greater percentage of NFIP insured homeowners in Ft. Bend County would qualify for a subsidy with a 120% AMI limitation test notwithstanding that the median

Table 5. Number & Percent Owner Occupied Housing by County & Median Income Segment

Broward	Own_Occ	%Own_Occ	Beaufort	Own_Occ	%Own_Occ
80% MI	150,499	34%	80% MI	25,377	46%
120% MI	222,632	50%	120% MI	34,044	61%
160% MI	281,111	63%	160% MI	44,004	79%
Miami-Dade	Own_Occ	%Own_Occ	Charleston	Own_Occ	%Own_Occ
80% MI	158,635	34%	80% MI	43,383	43%
120% MI	236,162	51%	120% MI	56,244	55%
160% MI	298,595	64%	160% MI	75,318	74%
Franklin	Own_Occ	%Own_Occ	Ft. Bend	Own_Occ	%Own_Occ
80% MI	70,288	25%	80% MI	81,204	42%
120% MI	119,384	43%	120% MI	125,432	65%
160% MI	219,859	58%	160% MI	192,555	100%
Lucas	Own_Occ	%Own_Occ	Harris	Own_Occ	%Own_Occ
80% MI	24,132	22%	80% MI	237,371	26%
120% MI	59,617	55%	120% MI	382,214	43%
160% MI	75,358	69%	160% MI	506,802	56%

income in Ft. Bend County is double that of Lucas County. This outcome is what the Biden-Harris Administration proposal seeks to avoid by incorporating the Federal Poverty Guidelines test. In Ft. Bend County, NFIP policyholders earning above $111,000, which includes more than half of the population of Ft. Bend homeowners, would be excluded from receiving a discount. Additionally, the three wealthiest counties have comparatively larger percentages of population earning at or below 80% MI and 120% MI compared to less wealthy counties.

Even when there is not a significant disparity in median income among counties, there is variation in percentages of the owner-occupied housing population within the median income bands. For example, 55% of Lucas County homeowners earn at or below 120% MI compared to 43% in Harris County. These examples show some of the difficulties in using only income as a measure of need and why other variables such as housing burden should be a factor.

Limitations in the data, specifically ACS reporting number of ownership households within general income bands, prevent a precise measure of households within each county potentially qualifying for a discount under the various income tests. However, the range data are

useful in illustrating the differences in wealth and how these differences may advantage homeowners in wealthier communities over others.

Finally, while not reported in this evaluation, ACS Table S.2503, from which the income range data were retrieved, reports household median income for owner-occupied and tenant-occupied housing units. In each jurisdiction, the median household income among ownership households was significantly higher than rental households and higher than the relevant county median income. Additional income tests such as the Federal Poverty Guidelines or the income tests in the Waters proposal may result in fewer NFIP ownership households in these communities qualifying for a NFIP policy discount under the proposals.

Assessing the Waters Proposal

Chair Waters' proposal stipulates eligible NFIP households may receive a subsidy if household earnings are 80% or less than AMI and the insured's NFIP premium is greater than 2% AMI. Table 4 shows the number of NFIP policies in each select county in 2021 where the total premium charged the policyholder exceeded 2% of county median income. The result is a highly targeted, but limited, subsidy in the proposed pilot program.

For example, only 1,726 single-family residence policies in Broward County had a chargeable premium exceeding 2% of the county's median income in 2021. In higher income Ft. Bend County, 150 policies were assessed a premium exceeding 2% of the county's median income. These outcomes emphasize the importance of how a premium subsidy is structured. The form of affordability proposals to date indicates that policymakers do not want to provide subsidies to objectively wealthy households. If the Biden-Harris or Menendez-Pallone proposals advance, policymakers should provide the clarity discussed in the prior section to FEMA on how policy discounts are to be operationalized to achieve desired outcomes.

Assessing a 1% of Total Coverage Affordability Proposal

An alternate proposed methodology of subsidizing flood risk in recent years limits a policyholder's NFIP premium to no more than 1% of total policy coverage. This proposal varies from the current consensus among policymakers that affordability programs should target subsidies to policyholders based on income. Yet, the proposal is similar in nature to the Waters' proposal and could be incorporated in any of the three major affordability program options under consideration.

An evaluation of the 1% of coverage proposal for select counties was conducted for NFIP policies with a 2021 effective date. The NFIP Redacted Policies data set was used to isolate the target population and calculate the number of policies within this population with premiums exceeding 1% of the mean total coverage in force. For this evaluation, the target population is defined as non-condominium, owner-occupied single-family primary residences. Table 6 shows the number of policyholders in the target group eligible in 2021 for a 1% of total coverage premium subsidy.

Table 6. One Percent Coverage Affordability Outcomes for Select Counties

County	No.SFPR	TotalBld	TotalCon	1%TotCov	NoSFRP>1%
Broward	59,148	$ 13,526,074,200	$ 4,415,975,000	$ 3,033.42	281
Miami-Dade	109,247	$ 24,239,174,100	$ 5,406,531,500	$ 2,713.64	2,528
Franklin	852	$ 141,643,600	$ 36,078,400	$ 2,085.94	89
Lucas	1,032	$ 146,133,300	$ 30,711,600	$ 1,713.61	120
Beaufort	22,805	$ 5,341,925,300	$ 1,997,813,500	$ 3,218.48	123
Charleston	42,067	$ 10,045,788,000	$ 3,120,225,500	$ 3,129.77	1,003
Ft. Bend	40,432	$ 9,588,693,000	$ 3,819,706,600	$ 3,316.28	21
Harris	183,029	$ 40,615,174,700	$ 15,529,877,600	$ 3,067.55	811

Compared to the Waters affordability pilot program, fewer covered policyholders qualify for assistance in each of the selected counties. Some degree of variation is attributed to differences in data and methodology used to prepare the evaluation. The Waters proposal was evaluated based on a synthesis of ACS ownership household income data and FEMA's estimated RR.20 premium dataset. The 1% of total policy coverage analysis was derived from the NFIP Redacted Policies data set, which allows a precise identification of the target population, yet is limited by use of the mean total insurance in force variable.

Adjusting target population parameters and the coverage amount variable will result in different outcomes. Higher total coverage amounts would expand the subsidy as would adjustments to the target population definition. Further, as premiums increase, it is likely more policyholders will be charged premiums exceeding the 1% of total coverage amount, thereby increasing the number of policyholders subject to the premium cap. Policymakers could use this method as a basis to define a general target population to be further refined with an income or other need-based variable such as housing burden.

Conclusion

According to FEMA policy data, the number of NFIP policies in force has declined from 4,985,726 in June 2021 to 4,535,515 in June 2022. The decline of 450,212 policies represents a 9% reduction in the year-over-year policy count. There were 346,778 fewer NFIP policies at the end of June 2022 than on January 1, 2022. The flood insurance gap is rapidly expanding, and nation's flood loss resilience is in decline.

A synthesis of peer-reviewed evaluations establishes a clear negative relationship between increases in NFIP policy costs and the number of NFIP policies in force and insurance in force. These evaluations further establish that different sectors of the NFIP policyholder population respond differently to flood insurance price increases. One evaluation found that while higher risk households are more likely to purchase flood insurance, these households have the greatest sensitivity to price. Additionally, income is a predictor of NFIP insurance with higher income households more likely to insure against flood risk than low-income households. The latter households may prefer and have a willingness to insure against flood risk but lack an ability to pay.

Price and income are among other variables factoring in a consumer's decision to purchase flood insurance. The decision to insure is complex and various cognitive behaviors can cause a consumer to fail to purchase flood insurance. Based on the negative relationship between higher flood insurance prices and the decision to insure, a strategy placing heavy emphasis on increased prices to communicate flood risk is likely to result in consumer cognitive behaviors most associated with a failure to insure. These effects are compounded by the implementation of RR2.0 without disclosure of NFIP price trajectories, failure by FEMA to disclose estimated NFIP premium deficiencies, and the absence of a NFIP affordability program.

Eight counties were selected for an evaluation of RR2.0 impacts on NFIP affordability. A credible private sector calculation of NFIP premium deficiencies was used to develop three actuarial premium models for each county. Three premium increase scenarios were calculated through each model to assess the amount of time in years required for the estimated mean actuarial premium to be achieved in each county. Scenario outcomes identified counties with higher risks of negative impacts and identified counties with reduced effects. An analysis of the percentage of ownership households with housing burdens exceeding 30% of monthly income reinforced these findings and the need for an affordability framework.

Assessments of proposed NFIP affordability programs determined that current proposals may not provide FEMA with sufficient clarity to achieve policymaker goals. Two of the three affordability programs rely on income-based assessments to determine need with one proposal requiring an evaluation of housing burdens when designing an affordability program. Given the importance of an affordability program to counter consumer income and price sensitivities, policymakers must provide FEMA additional guidance on how an affordability program is to be operationalized. An affordability program should be open to new and existing policyholders, to maximize benefits to NFIP participation and address those who have recently dropped coverage. To avoid further expansion of the insurance gap, FEMA must adopt a low premium increase rate under RR2.0 until an affordability program has been enacted by Congress, designed, tested, and validated by the agency, and scaled to full operational levels.

Recommendations

1. FEMA should disclose the factor by which premiums are changing for NFIP policies by ZIP code, county, and state and disclose the estimated RR2.0 full-risk premium and total policy cost for policies within these geographic subdivisions in a redacted policy data set comparable to the OPENFEMA FIMA Redacted Policies data set.

2. FEMA should clearly disclose planned premium rate increase velocities in RR2.0 to remove uncertainty for insureds and allow households and housing markets to prepare for higher NFIP policy costs.

3. Academic and government evaluations have established a direct link between increased NFIP policy costs and declines in policies in force and insurance in force. A FEMA analysis determined RR2.0 could result in a 20% reduction of NFIP policies in force, a figure confirmed by this evaluation. A policy that relies exclusively on premium and policy cost increases to communicate risk will widen the insurance gap, exposing homeowners and taxpayers to greater losses. While simultaneously employing alternate mechanisms to communicate risk, FEMA should counter the known negative relationship between price and participation by adopting a low-rate annual premium increase plan until Congress authorizes and FEMA has developed, tested in a pilot program, and fully implemented an affordability framework.

4. Legislators should carefully consider the limitations of affordability frameworks relying solely on income ratios to determine program eligibility. An income-based test is an efficient method of selecting a target population but may not effectively address the key issue of individual

household need. Housing burden should be an additional tool to target and equitably distribute assistance to areas with greater housing burdens and to measure a household's capacity to absorb NFIP premium increases.

5. Legislators and stakeholders should continue to evaluate affordability program design, pursue legislative enactment of an affordability program, and clearly communicate desired NFIP affordability public policy implementation outcomes to FEMA.

Louisiana Appendix

Risk Rating 2.0 Impacts in Top Two NFIP Louisiana Parishes

FEMA RR2.0 data indicate 70% of current NFIP policyholders (343,246) will have annual premiums increased by up to $120 per year, with 7% (34,352) receiving annual increases of up to $240 per year. Some 20% of Louisiana policyholders are forecast to have premiums reduced in the first year of RR2.0.

According to FEMA RR2.0 data, Jefferson Parish and Orleans Parish have the greatest number of single-family residence policyholders within the state. Of the 84,517 Jefferson Parish policyholders identified by FEMA, 80% face an annual premium increase of up to $120 under RR2.0 and 11% are scheduled for an increase of up to $240 per year. Of the 6,336 single-family home policyholders slated to receive a first-year premium reduction, most will see reductions in the $1 to $10 and $11 to $20 monthly ranges. Some 1,041 Jefferson Parish policyholders will receive first-year premium cuts of up to $1,200 per year.

Eighty-one percent of Orleans Parish NFIP policyholders will pay higher NFIP premiums under RR2.0, with 45,350 scheduled for first year rate increases of up to $120. According to FEMA RR2.0 data, 1,220 Orleans Parish policyholders will see premium reductions of up to $100 per month.

Figure A.1
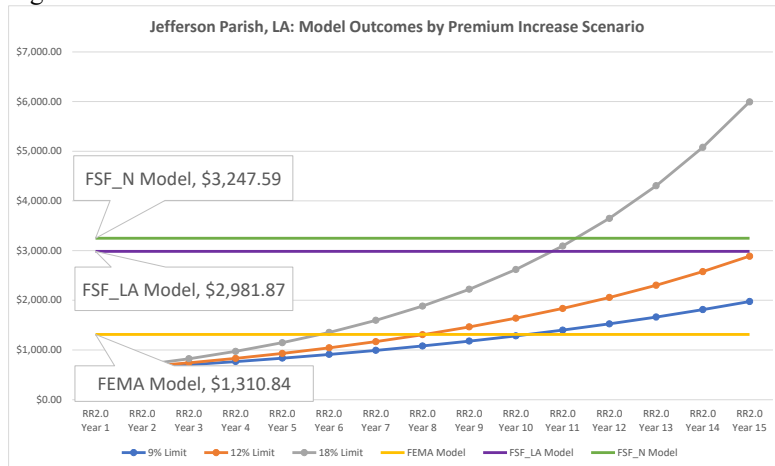
Figures A.1 and A.2 present results from Jefferson Parish and Orleans Parish rate model and rate increase velocity scenarios. The FEMA Model uses a premium deficiency factor of 1.22 and is based on FEMA premium deficiency estimates obtained through a Freedom of Information Act request by media outlets. The First Street Foundation estimated NFIP premium deficiency factor for Louisiana (4.05) and the national estimated deficiency factor (4.5) are also used to project estimated full risk NFIP premiums.

Figure A.2

Orleans Parish, LA: Model Outcomes by Premium Increase Scenario
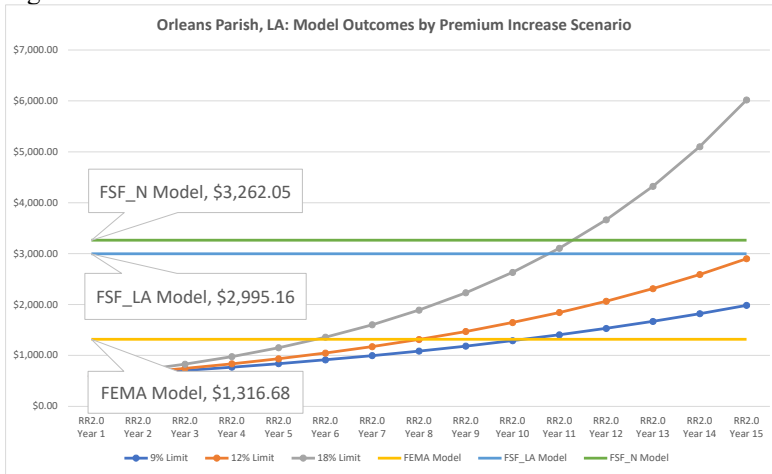
Jefferson Parish estimated mean full-risk premiums are (1) FEMA Model: $1,310.84; (2) FSF_LA Model: $2,981.87; and (3) FSF_N Model: $3,247.59 as compared to the mean NFIP premium of $590.47 on policies written in 2021. The mean NFIP premium paid by Orleans Parish policyholders in 2021 was $593.10. Estimated full risk mean premium model outcomes for Orleans Parish are $1,316.68 under the FEMA Model, $2,995.16 under the FSF_LA Model, and $3,262.05 under the FSF_N Model.

Jefferson Parish policyholders rapidly achieve the mean FEMA Model estimated actuarial rate under all rate increase scenarios with the 9% rate scenario taking the longest at 10 years. The maximum 18% increase rate achieves estimated FSF_LA and FSF_N Model full-risk premiums within 11 years, while the 12% and 9% rate scenarios take a more gradual path. The experience of policyholders in Orleans Parish mirrors that of policy holders in Jefferson Parish.

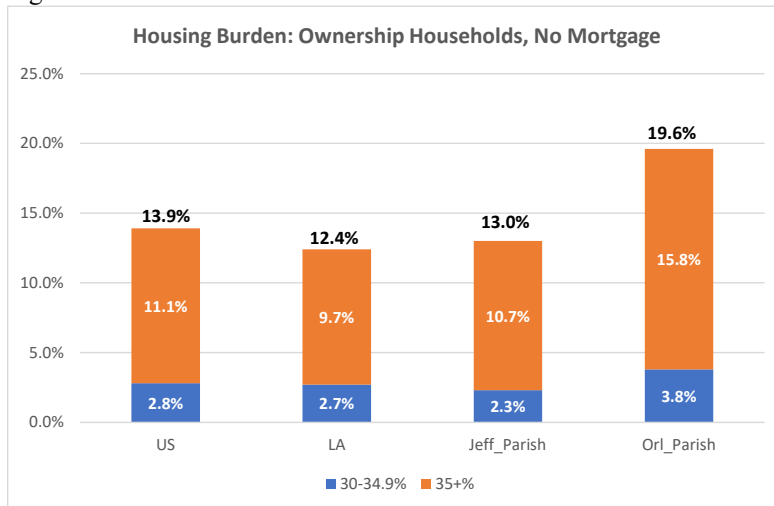Housing Burdens in Jefferson Parish and Orleans Parish

Figure A.3

Housing Burden: Ownership Households with a Mortgage
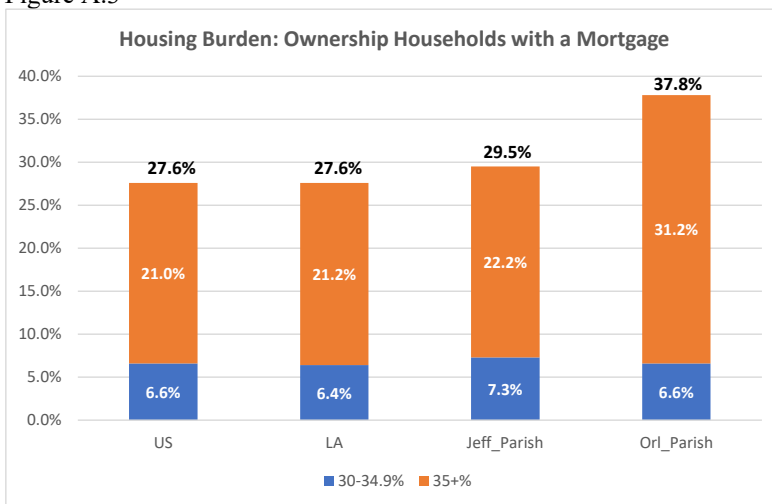
The ratio method of determining household housing burdens assumes a household has high housing costs when monthly mandatory housing costs exceed 30% of monthly household income. A greater percentage of homeowners with a mortgage in Jefferson Parish and Orleans Parish are considered housing-burdened when compared to the nation and Louisiana. Orleans Parish has the greater percentage of

Figure A.4

**Housing Burden: Ownership Households, No Mortgage**

homeowners with a mortgage with housing burdens, exceeding the national rate by 10% and exceeding Jefferson Parish by 8%. Orleans Parish homeowners without a mortgage also have disproportionately high housing burdens compared to the nation, Louisiana, and Jefferson Parish. Using housing burden as a factor in calculating NFIP affordability discounts would distribute additional resources to Orleans Parish ownership households to account for the greater need. Figures A.3 and A.4 show the distribution of housing-burdened ownership households by mortgage status.

Examining Trends in Louisiana NFIP Participation

Louisiana is the third largest NFIP state with 467,244 policies in force as of June 30, 2022. The volume of policies in force has fluctuated from 2009 to 2021, with a Compounded Annual Growth Rate of 1% over the period. NFIP policies in the state declined from 2011 to 2015 but grew from 2016 to 2018 and have had a modest overall decline since.
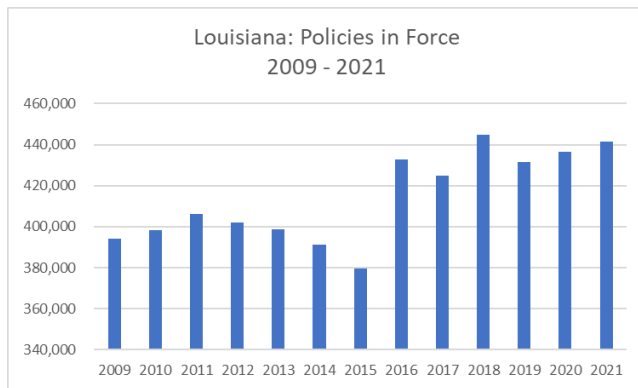
Policy declines from 2012 to 2015 are consistent with premium increases following implementation of the Biggert-Waters Act. Following the 2014 enactment of HFIAA, which reset NFIP premiums to pre-Biggert Waters Act levels, the state saw a significant increase in NFIP policies in force. During this time, NFIP premiums were reduced, making coverage more affordable, but new policy fees were being implemented that increased total policy costs. In 2021, policy fees accounted for more than 20% of total NFIP policy costs.

As increases in NFIP policy costs are associated with a reduction in NFIP policy purchases, overall growth of NFIP policies in Louisiana is counter to the expected trend. This

3

Louisiana: Mean Premium & Mean Policy Cost
2009 - 2021
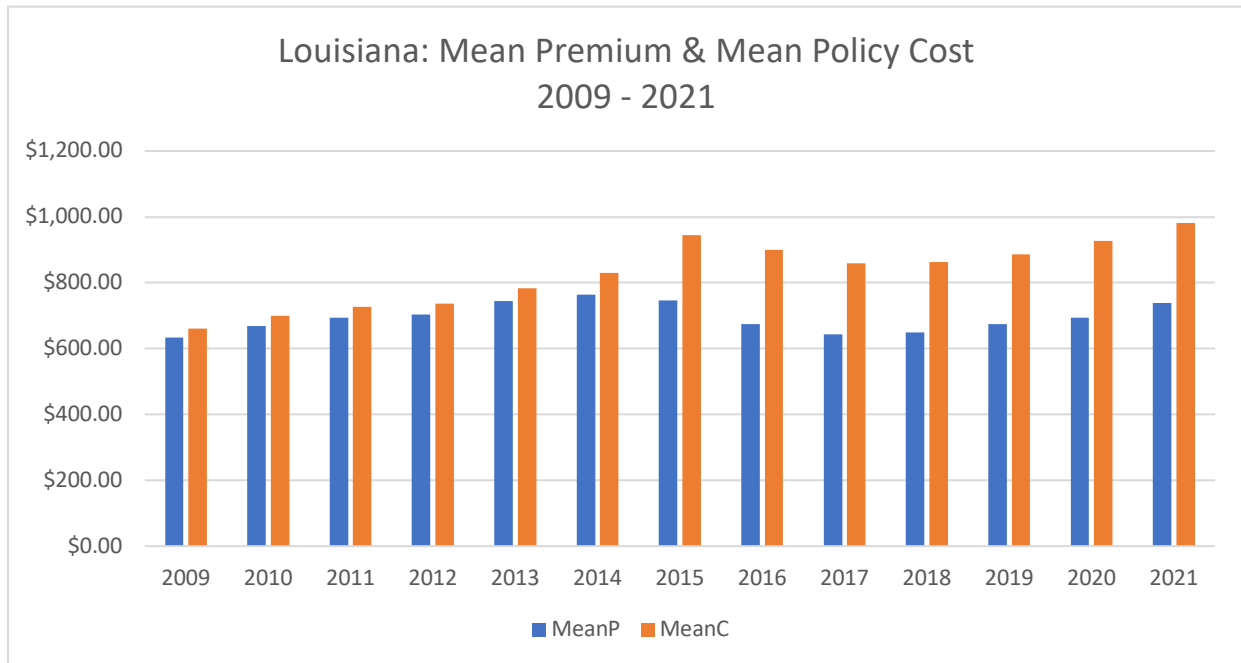
can be explained by federal regulations requiring homeowners who receive federal disaster assistance payments to repair or restore a home to purchase and maintain flood insurance.

For example, in August 2016, southeast Louisiana was inundated with historic rainfalls leading to Disaster Declaration FEMA-4277-DR.[13] Significant numbers of new NFIP policies were written in parishes in the disaster zone compared to 2015. In East Baton Rouge Parish there were 12,418 additional NFIP policies in 2016 compared to 2015, a 32% increase. Oher jurisdictions within the declared disaster zone with significant increases in NFIP policies from 2015 to 2016 were Livingston Parish (6,304; 33% increase); Ascension Parish (2,957; 25% increase); Tangipahoa Parish (3,233; 34% increase); and St. Tammany Parish (3,142; 8% increase).[14]

In 2017, the rate of increase for NFIP policy purchases dropped significantly while prior gains were maintained. East Baton Rouge Parish added 3,142 policies over 2016, an increase of 8%, far below the prior year 32% increase rate. The rate of NFIP policy growth fell to 5% in Livingston Parish; 5% in Ascension Parish; 3% in Tangipahoa Parish; and 1% in St. Tammany Parish.[15]

Louisiana NFIP policy growth patterns are consistent with findings by Atreya, et al. (2015), who observed that a temporary increase in NFIP policy purchases follows a flood event.

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[13] See https://www.fema.gov/disaster/4277/designated-areas
[14] Data retrieved from OPENFEMA FIMA NFIP Redacted Policies Data Set
[15] Ibid.

The initial increase was a result of FEMA automatic purchase of Group NFIP policies within the impacted population electing to receive federal disaster repair assistance. Policy counts have been sustained by mandatory NFIP purchase requirements accompanying federal repair assistance. NFIP policyholders in Louisiana exhibit the same price sensitivities as the general NFIP policyholder population but are not immune from external factors such as federal legal requirements in NFIP policy purchase decision-making.

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