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The Mispricing of Flood Insurance: A Look at Portland, Oregon

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OVERVIEW

In 2017 and 2018, the City of Portland, Oregon piloted an innovative program, the Flood Insurance Savings Program (FISP), to help residents of two low-to-moderate income neighborhoods afford the increasing costs of flood insurance. Congressional changes in the pricing of National Flood Insurance Program (NFIP) policies had led to higher prices on flood insurance for older homes in these neighborhoods. As flood insurance is required for property owners in mapped 100-year floodplains with a federally-backed mortgage or a mortgage from a federally-regulated lender, many homeowners became concerned about their ability to stay in their homes.

The Portland FISP included one-on-one consultations between participants and an insurance agent who specialized in writing flood policies. The consultations uncovered widespread errors in the prices that residents were paying, that, typically, although not always, caused homeowners to pay more than was necessary. The consultations also revealed that many homeowners were not being advised about cost-effective measures they could take to reduce risks from flooding, some of which would also lower insurance costs. These findings point to the need for improved education about flood insurance for insurance agents and policyholders, as well as policy reform to improve the financial resilience of lower-income consumers in the face of increasing flood risks from growing urbanization and projected changes in precipitation due to climate change.

KEY FINDINGS

- The City of Portland, Oregon piloted an innovative flood insurance affordability program in 2017 and 2018 that included one-on-one consultations between flood insurance policyholders and an insurance agent who was an expert on flood insurance.
- These consultations found that roughly half of the reviewed policies had some type of error in pricing or could have been priced lower through the application of an elevation certificate. Other policyholders could have secured lower prices by adopting mitigation measures or switching to a private insurer.
- A review of these errors suggests a need for continuing education for insurance agents that sell flood policies.
- FEMA's new approach to pricing, Risk Rating 2.0, could make the writing of flood insurance policies easier for agents, reducing some of the errors we identified.

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FLOOD INSURANCE IN THE LENTS AND POWELLHURST-GILBERT NEIGHBORHOODS

The Neighborhoods

Lents and Powellhurst-Gilbert, two adjacent neighborhoods in outer Southeast Portland, are among the city's most diverse. The American Community Survey[2] indicates that there are fewer white residents in these neighborhoods than in Portland overall, and education and income levels are lower than in the rest of the city. Residents of these neighborhoods are more likely to be foreign born (27%) than Portland residents (14%) and almost 40% speak a primary language at home other than English. While 35% of Portland residents have a Bachelor's degree, only 13% of residents in Lents and Powellhurst-Gilbert do. Poverty rates are also higher in the study area at just over 23%, compared to just under 16% in Portland overall.

These neighborhoods have long been prone to flooding from Johnson Creek. A large Works Project Administration project in the 1930s was undertaken to control flooding by deepening, straightening, and armoring the creek, disconnecting the creek from its original floodplain.[3] Johnson Creek has flooded 42 times since 1937, often resulting in substantial property damage—a problem only made worse by significant residential development beginning in the 1960s.[4] To help reduce chronic flooding, the City of Portland restored a portion of the Johnson Creek floodplain in 2012, called the Foster Floodplain Natural Area.[5] This has reduced the occurrence of smaller, frequent floods, but did not impact the risk of a 100-year flood or more severe flood. In 2020, as a part of this ongoing effort, the City of Portland began the West Lents Floodplain Restoration Project, which aims to re-connect Johnson Creek with its historic floodplain to reduce the risk of nuisance floods to nearby homeowners.[6]

Flood Insurance Requirements

Flood insurance is available to residents of Portland through the federal National Flood Insurance Program (NFIP), housed in the Federal Emergency Management Agency (FEMA), as well as through a small number of private insurers. FEMA maps the 100-year floodplain on Flood Insurance Rate Maps (FIRMs). The areas with an annual estimated flood probability of at least 1% are designated as the Special Flood Hazard Area (SFHA). Flood insurance is mandatory for homeowners in the SFHA who have a federally-backed mortgage or a loan from a federally-regulated lender. In the Lents and Powellhurst-Gilbert neighborhoods, there are almost 600 single-family residential buildings in the SFHA.

Price Changes in the NFIP and the Impacts on Lents and Powellhurst-Gilbert Residents

Since its founding, the NFIP has priced flood insurance based on broad flood zones depicted on FEMA flood maps. Prices are much higher in the SFHA than outside the SFHA and also vary based on characteristics of the homes, such as the structure's elevation and type of basement.[7] Historically, older homes received a discounted price. These older structures are referred to as pre-FIRM, since they were built before FEMA mapped flood hazards in a community.

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[2] We report 2018 five-year ACS estimates for census tracts that mostly closely align with neighborhood boundaries.
[3] Bureau of Environmental Services (2012). *Johnson Creek Restoration Projects Effectiveness Monitoring*. December: City of Portland, Oregon.
[4] Data on Johnson Creek flooding is available from the National Oceanic and Atmospheric Administration: https://water.weather.gov/ahps2/hydrograph.php?wfo=pqr&gage=syco3.
[5] For more information, see: https://www.portlandoregon.gov/bes/article/286175.
[6] See: https://www.portlandoregon.gov/bes/78422.
[7] Kousky, C., B. Lingle, and L. Shabman (2017). "The Pricing of Flood Insurance." *Journal of Extreme Events* 4(1). DOI: 10.1142/S2345737617500014.

Congressionally-mandated changes to NFIP pricing in 2012 and 2014 led to the phase-out of pre-FIRM price discounts. As price increases were adopted, they became a destabilizing force in the Lents and Powellhurst-Gilbert neighborhoods, where roughly 90% of homes are pre-FIRM. For homeowners subject to the mandatory purchase requirement, the cost of flood insurance was threatening to force people to sell their homes. For others, flood insurance became a luxury they could not afford. But in the event of a flood, with limited federal aid for localized flood events, households without savings or insurance could suffer serious financial hardship. Those who needed the insurance the most were least able to afford it.

Pre-FIRM prices are increasing every year at between 5% and 18% until they reach FEMA's "full risk" rates. The full-risk rates, however, require an elevation certificate. This is because the price is determined in part by the height of the structure, as this is directly related to the likelihood it will flood. (The elevation certificate provides the difference between the height of the first floor of the structure and the estimated height of waters in a 100-year flood, called the base flood elevation.) FEMA made the decision to keep increasing rates indefinitely until an elevation certificate was provided. Once provided, the property could be given whichever rate was cheaper. Many homeowners did not realize that rates would rise until an elevation certificate was provided, nor did they understand that, once obtained, it could possibly generate immediate cost savings.[8] Unfortunately, elevation certificates cost several hundred dollars, something many residents in these neighborhoods could not afford.

Local Assistance with Flood Insurance

In response to the concern over escalating flood insurance premiums, the Portland Housing Bureau developed the Flood Insurance Savings Program (FISP) under the leadership of Jacob Sherman.[9] The program funded elevation certificates for lower-income households, which are necessary to receive risk-based pricing in the NFIP—for some, as stated, a less expensive policy. Home assessments were offered in partnership with a local non-profit, Enhabit, to identify flood mitigation measures, as well as other health and safety needs in the home. Finally, the program also offered consultations with an insurance agent with extensive knowledge of flood insurance. These consultations uncovered numerous errors in the pricing of residents' flood insurance policies and also identified untapped options for residents to lower the cost of flood insurance, as discussed further below. The program overall helped 86 low- and middle-income residents save an average of $720 annually on their flood insurance premiums. Over 90% of FISP participants saw some premium reduction. The savings came from applying elevation certificates, correcting errors in pricing, better tailoring the policy to the individual, or taking other measures, such as petitioning for a change in flood zone when applicable.

POLICY ERRORS IN PORTLAND

The Consultation Process

Most homeowners turn to an insurance agent to help them secure flood insurance. The majority of NFIP policies are written by private insurance firms, even though pricing is set by FEMA and FEMA manages all claims. In this way, insurance agents—not federal employees—write the majority of NFIP insurance policies. The City of Portland hired an agent with deep expertise on the NFIP, Gail Moldovan-Trujillo, to conduct one-on-one consultations with

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[8] For properties whose lowest floor is below the base flood elevation, pre-FIRM prices can provide a substantial cost savings. For properties whose lowest floor is above BFE, it is actually cheaper in most cases for these homes to pay the full risk rates—that is, if they can afford to obtain the elevation certificate.

[9] Sherman, J., and C. Kousky (2018). Local Solutions to Flood Insurance Affordability: Portland's Flood Insurance Savings Program. Philadelphia, PA: Wharton Risk Center, University of Pennsylvania. https://riskcenter.wharton.upenn.edu/wp-content/uploads/2018/11/Local-Solutions-to-Flood-Insurance-Affordability.pdf

participants in the FISP program. Unlike when consumers contact agents on their own, this agent was not paid by the sale of an insurance policy: she was paid a set fee for each consultation to help make sure that individuals had the insurance policy that best met their needs. She reviewed the elevation certificate and home assessment, priced an NFIP policy, priced a private flood insurance policy, and then compared these to the resident's current policy to create a tailored recommendation.

Findings from the Consultations

The consultations exposed the fact that NFIP pricing is currently so complicated that agents who do not routinely write flood policies struggle with accurately pricing the policy and may also consistently fail to identify options for policyholders to lower costs either by making changes to the home or by adjusting the insurance policy. NFIP rates vary by flood zone (the SFHA has multiple flood zones within it) and with property characteristics such as the existence and type of basement, number of stories, and elevation. There are different fees on policies, such as one that is higher for nonprimary residences. Pre-FIRM rates, while beneficial for some older homes, are now being phased out. If an updated FIRM maps an area into a different flood zone, a grandfathering procedure lets the homeowner keep their current rate under certain circumstances. There are certain hazard mitigation measures that will lower prices, although these vary by flood zone. There is a process to re-map structures out of the SFHA if they have been mapped incorrectly (see below, the discussion on Letter of Map Amendment (LOMA)). In addition, the NFIP is a public program and changes have been made repeatedly over its 50-year history by Congress and FEMA. Staying on top of all the changing nuances of the program is no small task; it is little wonder that agents that do not write many flood insurance policies make mistakes.

At least half of the reviewed policies in these Portland neighborhoods were found to have some type of mis-rating or could have obtained a lower premium through application of an elevation certificate. Other policies could have received lower premiums through adoption of flood mitigation measures or switching to a private insurer. For lower and middle-income families, the cost of flood insurance can be a burden on household finances and may even affect their ability to stay in the property. A few errors were also uncovered where the policyholder was incorrectly given a rate that was too low. This, however, is not necessarily beneficial, since if the error is discovered when the customer files a claim, they must pay back the extra premium. This could be a challenge, especially if it occurs at a time when a household has suffered flood damage and lacks the funds needed to make repairs.

Most Common Errors Found in Flood Insurance Policies

Wrong zone: A little more than 10% of reviewed properties were rated using the wrong flood zone. Lenders will use one of several companies to perform a "flood zone determination" at the time a mortgage is issued. This zone is then used to price the flood insurance policy. Troublingly, for some residents, companies provide different answers about whether the property's building footprint, or a structure attached to the building footprint (like a garage), is in a SFHA. In theory, there should be no confusion about the flood zone. In cases where a floodplain boundary crosses a structure, it should be rated based on the higher risk zone. Flood insurance prices increase quite dramatically when crossing the line from outside the SFHA to inside the SFHA, such that an error on the zone could be hugely impactful on the price charged. This area of Portland had experienced a prior mistake on their flood map; while fixed by the time of the FISP, it is unclear if this mistake contributed to more errors in zone determination than would be found in other locations around the country.

Basements: Roughly 15% of the sample of consultations had miscoded basements. They might have been rated as "slab on grade" when they actually had a basement, for example. Errors on the presence and/or type of a basement led to both higher and lower rates. It is unclear if these errors were because agents did not know the basement type and just chose a default, or if there were mistakes communicating the type of basement between the customer and agent, or some other problem. One likely possibility is that the specific questions can be confusing, and choosing "slab on grade" eliminates multiple follow-on questions in rating, making the process easier and faster for agents.

Occupancy: A couple properties were coded as being nonprimary residences and thus required to pay a $250 fee, when they were actually primary residences and should have been charged only a $25 fee. The nonprimary residence fee was introduced in 2014. FEMA required completion of a form verifying a structure was a primary residence and, if the form was not returned, the property owner was assessed a $250 fee. Unfortunately, many people thought it was junk mail or did not know about this requirement and so were charged $250 when they should not have been. This policy has since been changed, so that if the mailing and property address for the policy are the same, FEMA assumes it is a primary residence and does not apply the $250 fee.

Elevation certificates: Portland's Flood Insurance Savings Program (FISP) was able to lower the cost of flood insurance for many pre-FIRM properties simply by having an elevation certificate applied to their policy. Many agents, however, did not know how to correctly apply the elevation certificate to get a lower rate, as it necessitated comparing pre-FIRM and post-FIRM pricing and choosing the one that was lowest. It was also found that sometimes the wrong floor or grade from the elevation certificate had been entered. Understanding the lowest rated floor for an NFIP policy can be confusing. The common-sense answer is to use the first floor, but this is not always the case.[10] Other times, the elevation certificate had been conducted with an outdated FEMA flood map. Despite the possible benefits in price, though, the upfront cost of obtaining an elevation certificate, as discussed above, was a substantial barrier for households before the FISP was adopted. The city was able to lower the costs of elevation certificates through bulk purchase and then used public funds to provide them to lower-income families. It is also important to note that not all properties saw a lower price from correct application of an elevation certificate; properties with basements generally did not benefit.

Policy options: A handful of policies had homeowners paying too much because the policy's coverage limit was higher than what they needed. Coverage should typically not exceed the replacement cost of the structure. For properties subject to the mandatory flood insurance purchase requirement, there is a requirement on how much insurance is needed—either the loan amount, 80% of replacement cost, or the NFIP coverage maximum of $250,000. Sometimes lenders, agents, or consumers are confused by the language and think they have to insure for $250,000 when they are not required to do so and may not need to do so from a risk management perspective. It was also found that a few homeowners were unnecessarily paying insurance for a garage or other structure where the insurance was not cost-effective. This was traced to a determination by the FDIC that lenders had to require insurance on any structure that was part of the property appraisal. In response, flood insurance began to be enforced on garages, sheds, and even chicken coops. Since this requirement imposed unnecessary and burdensome costs on homeowners, it was reversed in 2014 legislation, but it took time before everyone was aware that these structures did not need to be insured. This speaks to the changes that constantly take place within the NFIP; failure to be aware of the latest updates can unnecessarily impose costs on consumers—and for lower-income families, the consequences can be serious.

LOMAs: Flood insurance is mandatory in areas that FEMA has determined as being in the 100-year floodplain. The FISP found 17 properties that were on naturally high-ground that should have been designated as outside the SFHA. Through a process called Letter of Map Amendment (LOMA), residents can have their property re-mapped outside the SFHA and

[10] The details are available in a guidebook from FEMA, which makes clear the complexity: FEMA (2017) *National Flood Insurance Program: Insurance Agents' Lowest Floor Guide.* Washington, DC: Federal Emergency Management Agency.

thus removed from the mandatory purchase requirement. Homeowners may still choose to purchase flood insurance, but now at a much-reduced rate, reflecting the elevation of their home. Most residents were unaware of this option, or due to language barriers or lack of resources, unable to exercise it. The city helped them secure these LOMAs.

Private flood insurance firms: There were many homeowners whose NFIP policy was priced correctly, but who were able to obtain less expensive insurance by switching to a private firm. This was most commonly the case for homes with basements. For the pre-FIRM homes and the flood zones in these neighborhoods, homes with basements often had extraordinarily high NFIP premiums. Since the area is mainly prone to shallow flooding, however, many private firms offered less expensive policies. While not an error in NFIP pricing, this was an option that many agents did not know to discuss with their clients. Beyond simply price, however, there are other things to consider when switching to a private firm, such as policy retention and whether any favorable rating in the NFIP would be forfeited. It takes an agent with deep understanding of the entire flood insurance market to provide this type of tailored advice to a client.

POLICY IMPLICATIONS

The Portland Flood Insurance Savings Program uncovered widespread errors in NFIP policies and also uncovered missed opportunities for consumers to save money by adopting mitigation measures or better tailoring the policy to meet their needs. It is difficult to say how widespread such challenges may be nationwide, but the complexities of current NFIP pricing are universal, so these errors and missed opportunities likely exist in other communities. A 2016 report from the FEMA Flood Insurance Advocate found that lack of agent education was a widespread problem.[11] In places of very high flood risk, though, where many agents have greater familiarity with flood insurance—such as coastal Florida—this problem may be less pronounced. There are several public policy changes, however, that can help reduce these problems and better protect consumers.

To begin, states can require continuing education specific to floods for any insurance agent that sells flood insurance. Following the FISP in Portland, the city worked with other stakeholders to explore such a change. In 2018, Oregon became the fifth state in the country to require flood-specific continuing education for insurance agents (others are Delaware, Louisiana, Maryland, and North Carolina). Now, any agent selling flood insurance must complete two credit hours on writing flood insurance policies every two years. In states without continuing education requirements, agents will likely get only three credit hours on flood insurance once at the start of their career (this is a minimum required by FEMA since 2004). With the program making price and rule changes every year, and Congress intervening at various points, agents need more frequent education on the NFIP. This education should include information on cost-effective mitigation measures and how to tailor policies to consumer needs so that agents can be advocates for their customers in helping them not only get the best flood insurance policy, but better manage their flood risk.

FEMA should also take steps to make the pricing of NFIP policies easier and more transparent. In 2021, FEMA will be introducing a new approach to pricing flood policies, referred to as Risk Rating 2.0. This approach will move away from pricing flood insurance based on flood zones and instead use modern catastrophe models to develop parcel-specific rates, based on all sources of flooding include rainfall flooding, as well as riverine and coastal flood risk. This will help eliminate one of the errors found in Portland: use of the wrong flood zone. With flood zones abandoned for pricing, there will also not be price "cliffs" at the boundary between zones, which generated large impacts on consumers depending exactly on where the SFHA line was drawn. These parcel-specific rates will better reflect underlying risk.

FEMA should use the rollout of Risk Rating 2.0 to consider other reforms to help eliminate some of the difficulties identified above, and it appears the agency is on track to do so. For example, FEMA has stated it will eliminate the need for elevation certificates in the new pricing system. Given the cost burden on lower- and middle-income

[11] FEMA (2016). *The Annual Report Summary: Office of the Flood Insurance Advocate*. Washington, DC: Federal Emergency Management Agency, National Flood Insurance Program.

families, as well as the time required to find and schedule a surveyor, this would be beneficial for insureds. FEMA has also noted that pricing under Risk Rating 2.0 will be easier to understand for agents and customers. This could help eliminate errors and will be another large benefit of the new pricing system. Based on the findings in Portland, we recommend that FEMA couple the rollout of Risk Rating 2.0 with mandatory agent education on the new system, as well as with outreach to consumers and local officials to clearly explain the benefits of the new system.

While Risk Rating 2.0 will lead to more accurate rates, it will not address the challenges faced by lower-income households struggling to afford flood insurance.[12] Our research in these two neighborhoods of Portland, for example, found that the average willingness-to-pay for flood insurance was 47% to 59% of the median NFIP premium in these communities.[13] These are the very households that need flood coverage the most, since they are unlikely to have sufficient savings to cover flood damage, may not have a credit score and debt-to-income ratios that qualify them for borrowing to repair flood damage, and federal assistance (contrary to popular belief) can be quite limited. A means-tested assistance program, which would provide targeted aid to lower-income families, could help improve the financial resiliency of these homeowners.[14]

[12] FEMA (2018). *An Affordability Framework for the National Flood Insurance Program.* Washington, DC, Department of Homeland Security, Federal Emergency Management Agency. April 17.

[13] Netusil, N. R., C. Kousky, S. Neupane, W. Daniel, and H. Kunreuther (2021). "The Willingness to Pay for Flood Insurance." *Land Economics* 74(1).

[14] See for example: (1) National Research Council (2016). *Affordability of National Flood Insurance Premiums: Report 1*. Washington, DC, National Academies Press; (2) Dixon, L., N. Clancy, B. M. Miller, S. Hoegberg, M. Lewis, M., B. Bender, S. Ebinger, M. Hodges, G. M. Syck, C. Nagy, and S. R. Choquette (2017). *The Cost and Affordability of Flood Insurance in New York City: Economic Impacts of Rising Premiums and Policy Options for One- to Four-Family Homes*. Santa Monica, CA, RAND Corporation.