Insurance vs. Disaster Aid: The Distributional Incidence of Federal Flood Spending*

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Abstract

The federal government protects households against flood risk through two channels: ex ante, through subsidized insurance premiums in the National Flood Insurance Program (NFIP), and ex post, through disaster aid programs including FEMA Individual Assistance, SBA disaster loans, and hazard mitigation grants. Because insurance coverage crowds out disaster aid, there is a tension between these channels: subsidizing premiums is costly, but the resulting increase in coverage reduces future disaster spending. In 2021, FEMA began implementing Risk Rating 2.0, which transitions the NFIP to actuarially fair pricing and eliminates premium subsidies. This paper asks how the net fiscal incidence of this transition—accounting for both the lost subsidy and the increased disaster spending it triggers—varies across the income distribution.

In a companion paper (Gruber and Solomon, 2026), we estimate that each additional 1% NFIP coverage reduces ex-post FEMA disaster spending by approximately $200 per household per event, using variation from flood disasters in neighboring counties as an instrument for insurance takeup. We estimate an aggregate marginal value of public funds (MVPF) for the NFIP subsidy of 2.1 and find that the optimal subsidy is 46%, comparable to the pre-RR2.0 level. But that analysis treats the subsidy as uniform. In practice, the incidence of subsidized flood insurance—and of the disaster aid it displaces—varies substantially across the income distribution. This paper extends our framework to characterize this heterogeneity and evaluate whether alternative subsidy designs could do better.

We find that the pre-RR2.0 subsidy is regressive at the household level: the highest-income quintile receives $34.57 per household per year, compared to just $9.72 for the lowest quintile—a gap driven entirely by coverage rates (22 vs. 4 policies per 100 houses), not by per-policy generosity. Even accounting for the fact that higher-income households drop the most coverage when subsidies are removed—they hold more policies and therefore see the largest decline—the net fiscal savings from RR2.0 remain concentrated in wealthy counties. The coverage decline is modest across all quintiles (0.2–3.2 policies per 100 houses) because demand is relatively price-inelastic, so households primarily absorb the subsidy loss as higher prices rather than dropping coverage. Crowd-out also varies sharply: each additional policy displaces roughly $85

*Companion paper to Gruber and Solomon (2026). We thank [acknowledgements].

per household in disaster aid in the poorest counties, rising to $391 in the wealthiest, because higher-income households receive more disaster aid in the absence of insurance.

But the MVPF of the subsidy is highest for the poorest quintile (4.65, vs. 1.19–3.57 for Q2–Q5). Although per-policy crowd-out is smaller for low-income households, their subsidies are also much smaller, and the crowd-out savings nearly offset the cost. This creates a tension: the current subsidy is regressive in its distribution but most efficient where it reaches the poor.

We evaluate three counterfactual reforms. First, a *means-tested* reform that doubles subsidies for below-median-income counties while eliminating them for above-median counties redirects spending toward the households where crowd-out savings are largest relative to subsidy cost. For the poorest quintile, this reform is self-financing: the crowd-out savings exceed the subsidy. Second, *extending the SFHA purchase mandate* to non-SFHA areas generates broad-based fiscal savings ($480 million per year) but has little redistributive content. Third, *community rating*—charging all policyholders a uniform premium—is unambiguously regressive: because low-income counties tend to have lower flood risk (mean full-risk premium of $1,322 in Q1 vs. $1,674 in Q5), a flat national premium forces the poorest households to cross-subsidize the wealthiest.

Keywords: flood insurance, subsidy incidence, MVPF, reclassification risk, means-testing, climate risk

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