

Affordability of National Flood Insurance Program Premiums—Report 2

Drawing on lessons learned from a proof-of-concept analysis, this report proposes that the Federal Emergency Management Agency develop a microsimulation model—which will use a database of records for individual policyholders and property owners to mimic how policy decisions might affect those individuals—to simulate the effects of different National Flood Insurance Program affordability policy options. The report also notes, however, that some of the essential data needed to support such modeling are not currently available to the Agency.



Credit: David Valdez/FEMA

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). Congressional concern regarding the long-term financial viability of the NFIP led to passage of the Biggert-Waters Act of 2012. That legislation sought to link premium rates more closely to flood risk and ensure that NFIP revenues would be adequate to pay future claims and administrative expenses. Because of concerns about the ability of some policyholders to pay higher premiums, the legislation called for FEMA to investigate the affordability of flood insurance and design an affordability framework that might include a means-tested financial assistance program.

The National Academies of Sciences, Engineering, and Medicine were asked to prepare two reports to provide input to FEMA's affordability framework. The first report, released in March 2015, described concepts of affordability, assistance program design decisions, and policy options that could reduce the cost of flood insurance. This follow-on study describes an analytical approach FEMA might use to evaluate affordability policy options and is informed in

part by a proof-of-concept analysis completed by the North Carolina Floodplain Mapping Program.

ANSWERING “WHAT IF?” QUESTIONS

Policymakers often ask agencies questions about the possible effects of various policy options, including the potential costs to the government and how different sectors of society will be affected. A structured analytical process for answering these questions, based on the development of a computer model and supporting data, can simulate policies and estimate their effects. The committee determined that a microsimulation model is well suited for evaluating affordability policy options.

A well-developed microsimulation model would have a database that includes both insured and uninsured properties in areas of flood risk. For each property, the model's computer program would use information on flood risk, property characteristics, structure elevation, socioeconomic characteristics and preferred coverage to simulate the premiums to be paid and claims that might be made under both current policy and a proposed

alternative policy option. The simulation program could also determine if property owners are eligible for assistance and the amount of assistance provided, if appropriate. By aggregating the results for individual property owners, the microsimulation model would estimate the effects of the proposed alternative option on NFIP net revenues, federal expenditures, and other outcomes for the entire nation and subgroups of interest.

BUILDING MODELING CAPACITY

Microsimulation models reflect the complexities of government programs and individual circumstances. As a result, their construction requires substantial time and resources. There are professionally recognized practices that FEMA can use when it develops a microsimulation model. For example, designing a series of self-contained modules, which can be added to or removed from the model, helps build capacity incrementally as new and better data become available.

Finding: FEMA's capability to evaluate affordability policy options is very limited, but can be substantially advanced by embracing a microsimulation modeling approach and building the model incrementally through time following recognized practices. This would begin with conceptual microsimulation model design and the writing of computational algorithms for the self-contained modules as necessary data are identified and data gaps filled.

DATA GAPS

The committee assessed the data readily available to FEMA and found that some key data are lacking. Particularly important data gaps are the absence of first floor elevation data for many properties and flood risk profiles necessary for estimating expected flood damage and claims. Further,

there is often very little readily available information on the property owner's income, wealth, or housing costs, which inhibits the ability to create simulations of means-tested affordability assistance programs.

Finding: Information available from the NFIP policy database are missing data critical to a comprehensive analysis of affordability policy options. Numerous other sources of information, including new survey data collection, could be used to conduct microsimulation policy option analyses. Although the data for a national affordability study initially will be limited, numerous opportunities for database improvement for answering NFIP policy questions can be secured as budget resources permit.

ACTION IN THE NEAR-TERM

In the near-term, there are analyses that FEMA can carry out using currently available tools and data. For instance, FEMA could derive baseline estimates of how much premiums would increase if subsidized rates were phased out. Furthermore, some important questions could be answered with modest investments in methods or database development. For example, building on the North Carolina proof-of-concept analysis by using data already obtained by the state or by gathering new socio-economic data on samples of policyholders and property owners would allow FEMA to evaluate affordability policy options, recognizing that estimates for North Carolina would be state-specific.

Finding: Some decision relevant analyses can be completed with currently available analytical tools and data, or with limited investments in methods and database development. In the process of doing such analyses, FEMA also will make progress toward building analytical capacity to conduct more comprehensive policy analyses in the future.

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The National Academies of Sciences, Engineering, and Medicine appointed the above committee of experts to address the specific task requested by the Federal Emergency Management Agency. The members volunteered their time for this activity; their report is peer-reviewed and the final product signed off by both the committee members and the Academies. This report brief was prepared by the Academies based on the committee's report.

For more information, contact the Water Science and Technology Board at (202) 334-3512 or visit <http://dels.nas.edu/wstb>. Copies of *Affordability of National Flood Insurance Program Premiums—Report 2* are available from the National Academies Press, 500 Fifth Street, NW, Washington, DC 20001; (800) 624-6242; or as free PDFs at www.nap.edu.

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