

California Wildfires: Can Insurance Markets Handle the Risk?

Wildfires in California destroy thousands of structures each year, and in 2017 that number jumped to 10,800. In 2018, wildfires wrought even greater destruction, with more than 22,000 structures destroyed, according to the California Department of Forestry and Fire Protection. Those conflagrations can devastate homeowners and bring heavy costs for the insurance industry. To assess how fire risks will affect the California insurance market, and consequently homeowners, RAND researchers undertook a novel study in two fire-prone areas in Northern and Southern California. They found that, while the market in lower-risk ZIP codes within those two areas was working relatively well as of 2017, higher-risk ZIP codes faced challenges.

Those challenges may intensify as wildfire risks increase, potentially affecting the health of the insurance market, policy

KEY FINDINGS

- **Health of the admitted insurance market:** Insurers in the admitted market had high market share relative to surplus and residual markets in both the Northern and Southern California study areas, one indicator of a healthy market. Still, in higher-risk ZIP codes within those areas, admitted insurers had a slightly smaller share of the market, and evidence indicates that market share is falling more rapidly in these areas than in lower-risk areas.
- **Premiums:** Premiums increase with wildfire risk, and premiums have increased faster in higher-risk areas than lower-risk areas, a sign of a responsive market. Many insurers, however, believe that the rates for higher-risk areas do not fully reflect the difference in risk. Regulators say they need more evidence to justify rate adjustments in higher-risk areas.
- **Take-up rates:** Living in a higher-risk area does not lower the rate of insurance policy take-up among homeowners once the proportion of housing units that are used for seasonal, recreational, or occasional use is accounted for.
- **Amount of coverage:** Homeowners in higher-risk areas are purchasing policies with lower coverage limits relative to structure value, potentially creating coverage adequacy issues.
- **Deductibles:** Homeowners in higher-risk areas are choosing higher deductibles, potentially causing coverage adequacy issues.

affordability, coverage adequacy, and insurer profitability. The RAND team found that wildfire risk is likely to increase markedly in some areas under business-as-usual greenhouse gas (GHG) emissions scenarios.

The study focused on two areas: a 1.9-million-acre region in the Sierra Nevada foothills spanning parts of Placer, Nevada, and El Dorado Counties in Northern California, and an 860,000-acre region in western San Bernardino County, east of Los Angeles in Southern California.

In the Northern California study area, the researchers found that the average number of acres burned each year may double by mid-century and double again by 2100 under a business-as-usual GHG emissions scenario. The researchers project that an aggressive and successful GHG emissions control strategy would stabilize the average number of acres burned in the second half of the century, keeping the average annual risk at mid-century levels. In the Southern California study area, the researchers project that the number of acres burned may not change substantially.

Policymakers, insurers, and homeowners all are exploring how to adjust to changing wildfire risk in

California. This research is designed to help them consider policy options for the insurance market.

Examining Wildfire Risk and Insurance Markets

The RAND researchers focused on four main questions:

1. What is the current wildfire risk in the study areas and how might climate change affect it through the end of the century?
2. How well is the residential insurance market currently working in higher-risk fire areas?
3. How might climate-induced changes in wildfire risk affect the residential insurance market?
4. What factors can influence the effects of climate change on the residential insurance market?

To answer these questions, the researchers used a combination of quantitative and qualitative methods: wildfire scenario analysis that accounted for multiple climate projections and population growth patterns, regression analysis to investigate the impact of the change in risk on indicators of insurance market health, and interviews with insurers, regulators, consumer

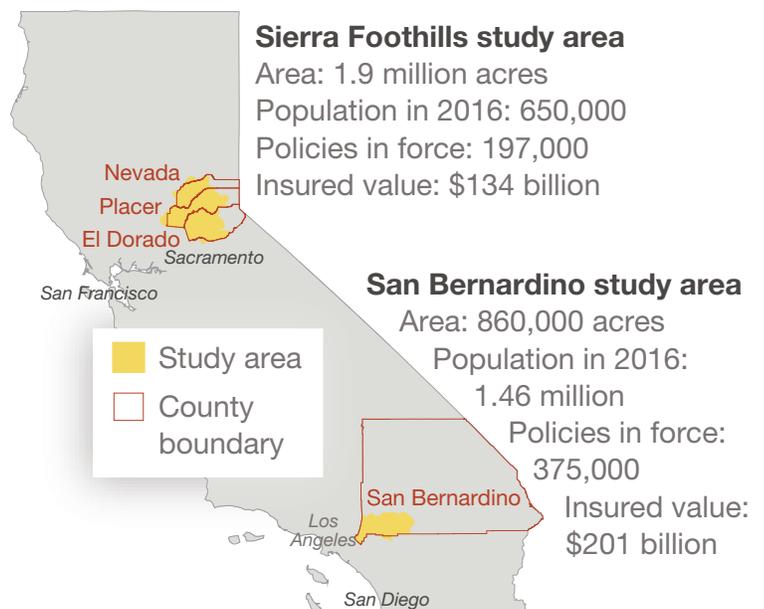
California Insurance Market Primer

Admitted insurers: Insurance companies approved by a state's insurance department and subject to its pricing and other regulations. In the event of company failure, an insurer-funded guarantee fund will pay claims up to \$500,000.

Surplus lines insurers: Insurance companies that write policies on risks that admitted insurers will not cover. Policies are generally more expensive. There is no guarantee fund that will step in to pay claims in the event of company failure.

FAIR Plan: The California Fair Access to Insurance Requirements Plan is a pool composed of all the admitted insurers in the state set up to assure the availability of basic property insurance. Consumers can go directly to the FAIR Plan for coverage.

The Sierra Foothills and San Bernardino Study Areas



advocates, and county staff on possible market responses to changes in risk.

What the Analysis Reveals

Overall, the San Bernardino study area faced higher wildfire risk in 2017 than the Sierra Foothills area. However, by mid-century, wildfire risk in the Sierra Foothills study area is projected to roughly double in the riskiest one-third of ZIP codes under a business-as-usual GHG emissions scenario. By the end of the century, structure risk is projected to quadruple in the riskiest one-third of ZIP codes. The analysis showed little future change in this risk in the San Bernardino study area.

Market Share of Admitted Insurers

The market share of admitted insurers is high overall in the Sierra Foothills and San Bernardino study areas, but there is evidence that admitted insurers are facing challenges in higher-risk wildfire areas. The market share of admitted insurers is 7.8 percentage points lower in the highest-risk ZIP codes than areas with little wildfire risk when other factors are controlled for. There is also evidence that the challenges in the admitted market are accelerating: Market share of the admitted market declined much faster between 2007 and 2015 in the higher-risk ZIP codes.

Nonrenewal Rates

Evidence suggests that insurer-initiated nonrenewal rates in the admitted market are somewhat higher in higher-risk ZIP codes, but major differences have not been observed so far.

Premiums

Insurance rates per \$1,000 of coverage in the admitted market increase substantially with wildfire risk, and have been growing more rapidly in recent years compared with lower-risk areas. Even so, many insurers believe that the difference between premiums for low- and high-risk properties does not fully reflect the actual difference in risk. At the time this research was published, the California Department of Insurance held that insurers haven't provided sufficient evidence to support a request for higher premium differentials.

Take-Up, Coverage Amount, Deductibles

Increasing structure risk does not appear to be decreasing homeowners' insurance policy take-up rate. However, homeowners in high-risk areas are purchasing less coverage relative to structure value. They also are selecting higher deductibles than homeowners in lower-risk ZIP codes. Further analysis of the adequacy of coverage is warranted.

Insurer Financial Performance

For the homeowners multiple-peril line of insurance, admitted insurers broke even in terms of combined underwriting profits between 2001 and 2017. Policies written in the fire insurance line were profitable over the same period. Overall, the industry was profitable when investment returns are included. However, the pattern in annual underwriting profits shows that a large wildfire event can wipe out many years of underwriting profits.

Changing Risk and the Market

The RAND team projects that by 2055 the insurance market in the Sierra Foothill study area for the highest-risk ZIP codes will experience several changes affecting insurers and homeowners:

- a 5 percentage point drop in the market share of admitted insurers, reducing their market share vis-à-vis surplus lines and the FAIR Plan
- an 18 percentage point increase in premiums in the admitted market per \$1,000 coverage, reflecting higher risk and potentially creating affordability issues for homeowners; ZIP codes with the greatest risk show significantly higher increases
- a 6.5 percentage point drop in the ratio of coverage amounts to property value, potentially exacerbating under-coverage issues for homeowners
- an increase of \$121 in deductibles per \$1,000 of coverage.

Little change in these indicators is projected for the lower-risk areas of the Sierra Foothills study area because climate change is expected to have little impact on wildfire risk in the lower-risk areas. Similarly, the changes projected for the San Bernardino County study area were very small.

Effects of Regulations

The RAND team identified regulatory and other factors that will influence how climate change will affect the residential insurance market. Insurance regulatory issues include the extent to which rates reflect the full difference in fire risk across structures, whether probabilistic models of wildfire risk are allowed in the rate-approval process, and whether the net

reinsurance margin is allowed as an expense in rate filings. Although there is no indication that current FAIR Plan rates are artificially low, the extent to which rates offered by the FAIR Plan keep up with the increase in risk will also be an important factor in how insurance markets respond to climate-induced changes in wildfire risk.

This brief describes work done in the Center for Catastrophic Risk Management and Compensation within RAND Social and Economic Well-Being and described in *The Impact of Changing Wildfire Risks on California's Residential Insurance Market*, by Lloyd Dixon, Flavia Tsang, and Gary Fitts, published in *California's Fourth Climate Change Assessment*, August 2018, EP-67670 (available at www.rand.org/t/EP67670.html). To view this brief online, visit www.rand.org/t/RBA635-1. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. **RAND**® is a registered trademark.

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