

Estimating undisclosed flood risk in real estate transactions in Arizona

Financial Implications for single-family home buyers

Commissioned by Natural Resources Defense Council (NRDC)

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Purpose of Report

The Natural Resources Defense Council (NRDC) is a not-for-profit organization that engaged Milliman, Inc. (Milliman), an independent actuarial consulting firm, to study the potential amount of undisclosed flood risk in 25 states by estimating the total number of homes damaged by prior flooding.

Background

Like most states, those in the study area generally do not have laws that effectively require that flood damage be disclosed in real estate transactions. Homes that have experienced flooding in the past are more likely to experience flood damage in the future, meaning buyers of previously damaged homes can unknowingly purchase homes that are at an increased risk of flooding relative to the average home. Milliman estimates that 4% of homeowners in the United States have any flood insurance coverage, potentially leaving unsuspecting buyers of previously damaged homes to be substantially more at risk of paying out of pocket for unexpected flood damages. Additionally, these home buyers could be less likely to purchase flood insurance without the awareness that a home had previously flooded or take actions to lower their risk of flood damage in the future such as raising the home or relocating important systems. Those home buyers who do purchase insurance may be subject to higher premiums to insure their homes than they had anticipated.

The following information is only specific information about the impact of flooding on the state. For a comparison of all the states in the study area as well as full details of the data sources and methodology used in the study, read the [full report](#).

FIGURE 1: AVERAGE STANDARD AAL FOR DAMAGED HOME BY MSA

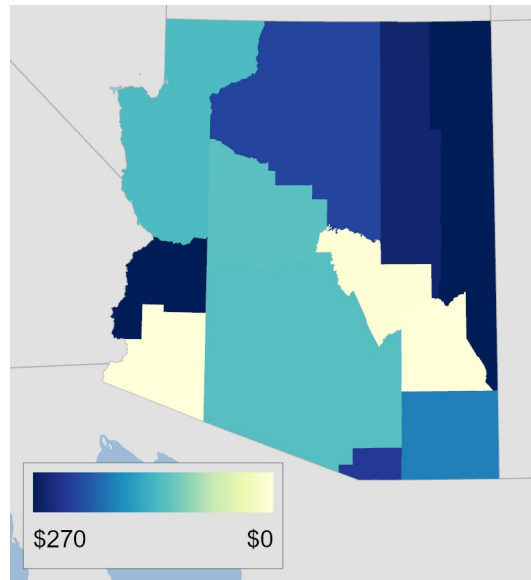


TABLE 1: RANKING OF KEY METRICS IN 25 STATE STUDY AREA

NFIP paid claims count	21 st
NFIP average claim amount	4 th
Percent of homes with prior flood damage	24 th
Home sales with prior flood damage	21 st
Average Standard AAL of home with prior flood damage	25 th
Total cost of flooding for sold homes with prior flood damage	25 th

State Summary

Arizona has the lowest average AAL for homes with prior flood damage and percentage of homes with prior flood damage of all the states in the study area. In Arizona, our analysis estimates that 1,995 homes have been previously flooded between 2010-2024 (0.1% of all single-family homes) and 102 of those were subject to sale in 2023. The total expected annual cost of flooding for these sold homes (average AAL * the home sales by MSA) is \$11,436.

FIGURE 2: SUMMARY STATISTICS ON NUMBER OF SINGLE-FAMILY HOMES

Total Single-Family Homes	1,933,048
Single-Family Homes with NFIP Claim (since 2010)	370
Estimated Single-Family Homes with Flood Damages	1,995
Estimated 2023 Home Sales with Flood Damages	102
Total Cost of Flooding	\$11,436

The map in Figure 1 shows the average Standard AAL for damaged homes by MSA across the state of Arizona. The average Standard AAL for a previously damaged home varies from \$0 to \$270 depending on the MSA. In comparison to other states in the study, Arizona has a low risk of flooding.

In the analysis, only one MSA has a percentage of homes with prior flood damage above 1% which is Payson. Phoenix-Mesa-Chandler has the most estimated homes with prior flood damage at 1,242, but that is 0.1% of the homes in the MSA and an average AAL of \$123.

Arizona has the lowest difference in AAL, \$18, between a home that has been previously flooded and the state average for the Standard scenario. This dollar difference grows by 81% under the High scenario to \$33. In Exhibit 2 Page 4, there are six MSA's that have a negative value for the dollar difference, meaning that the average home in the MSA has a higher AAL than a home that has been previously flooded. We believe this is due to the small data size and lack of flooding in Arizona. Since most homes in Arizona have low flood risk, this results in an unintuitive result for certain areas in the state.

FIGURE 3: AVERAGE ANNUAL LOSS BY SCENARIO

	Climate Scenario		
	Standard	Medium	High
AAL All Homes	\$95	\$99	\$119
AAL Damaged Homes	113	119	152

The total cost of flood damage over the life of a 15-year or 30-year period is expected to be a significant amount for a home with previous flood damage. If a home is occupied for 15 years in Arizona, we would expect an average flood cost of \$1,691 over the 15-year period ($\$1,691 = 15 * \113). This difference in flood costs highlights the importance of flood disclosure laws so that home buyers have a clear picture of the potential financial burden from flooding.

FIGURE 4: AVERAGE ANNUAL LOSS BY SCENARIO

Average Flood Cost	Climate Scenario		
	Standard	Medium	High
15 Year	\$1,691	\$1,792	\$2,281
30 Year	3,381	3,584	4,563

Limitations of this analysis can be found included within the [full report](#).

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