

Estimating undisclosed flood risk in real estate transactions in Vermont

Financial Implications for single-family home buyers

Commissioned by Natural Resources Defense Council (NRDC)

Larry Baeder, Data Scientist
Sean Gao, Data Scientist
Greg Dietzen, FCAS, MAAA, Consulting Actuary



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

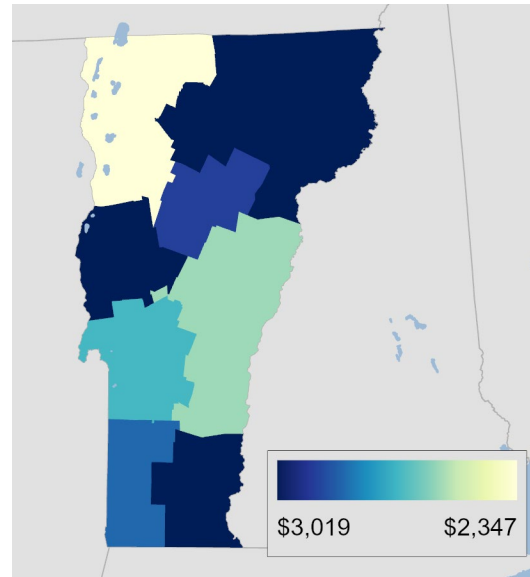


TABLE 1: RANKING OF KEY METRICS IN 25 STATE STUDY AREA

NFIP paid claims count	15 th
NFIP average claim amount	6 th
Percent of homes with prior flood damage	5 th
Home sales with prior flood damage	18 th
Average Standard AAL of home with prior flood damage	8 th
Total cost of flooding for sold homes with prior flood damage	14 th

State Summary

Vermont has the sixth largest NFIP average paid loss, \$34,013, in the study area for single-family homes since 2010. In Vermont, our analysis estimates that 2,582 homes have been previously flooded between 2010-2024 (1.4% of all single-family homes) and 132 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 \$361,569.

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

Total Single-Family Homes	188,349
Single-Family Homes with NFIP Claim (since 2010)	1,123
Estimated Single-Family Homes with Flood Damages	2,582
Estimated 2023 Home Sales with Flood Damages	132
Total Cost of Flooding	\$361,569

The map in Figure 1 shows the average Standard AAL for damaged homes by MSA across the state of Vermont. The average Standard AAL for a previously damaged home varies from \$2,347 to \$3,019 depending on the MSA in Vermont. This shows that the state average AAL of \$2,729 does not fully illustrate the potential financial impact for certain geographies.

In the analysis, all the MSA's in Vermont have an estimated percentage of single-family homes with prior flood damage above 1%. Barre has the largest percentage, 2.4%, with an average AAL of \$2,911. The locations outside the MSA's have the highest average AAL of \$3,019 and the largest estimated number of homes with prior flood damage.

Vermont has the 8th largest difference in AAL, \$2,511, between a home that has been previously flooded and the state average for the Standard scenario. This dollar difference grows by 38% under the High scenario to \$3,462. Overall, the effect of climate change will adversely impact homeowners whose homes have already been flooded significantly more than the average homeowner in the state.

FIGURE 3: AVERAGE ANNUAL LOSS BY SCENARIO

	Climate Scenario		
	Standard	Medium	High
AAL All Homes	\$218	\$255	\$294
AAL Damaged Homes	2,729	3,198	3,756

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 Vermont, we would expect an average flood cost of \$40,932 over the 15-year period ($\$40,932 = 15 * \$2,729$). 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	\$40,932	\$47,974	\$56,344
30 Year	81,864	95,948	112,688

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

Solutions for a world at risk™

Milliman leverages deep expertise, actuarial rigor, and advanced technology to develop solutions for a world at risk. We help clients in the public and private sectors navigate urgent, complex challenges—from extreme weather and market volatility to financial insecurity and rising health costs—so they can meet their business, financial, and social objectives. Our solutions encompass insurance, financial services, healthcare, life sciences, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

milliman.com

CONTACT

Larry Baeder
larry.baeder@milliman.com

Greg Dietzen
greg.dietzen@milliman.com

