

Estimating undisclosed flood risk in real estate transactions in Pennsylvania

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

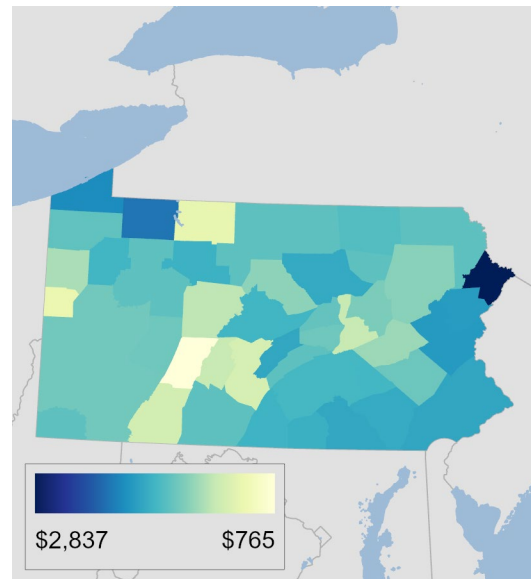


TABLE 1: RANKING OF KEY METRICS IN 25 STATE STUDY AREA

NFIP paid claims count	2 nd
NFIP average claim amount	10 th
Percent of homes with prior flood damage	6 th
Home sales with prior flood damage	4 th
Average Standard AAL of home with prior flood damage	10 th
Total cost of flooding for sold homes with prior flood damage	7 th

State Summary

Pennsylvania has the second largest number of NFIP claims for single-family homes in the study area since 2010 with 13,225. The state also has a relatively low adjustment factor, 83.7%, indicating more homes with repeated flood events. In Pennsylvania, our analysis estimates that 52,477 homes have been previously flooded between 2010-2024 (1.3% of all single-family homes) and 1,668 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 \$2,936,411.

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

Total Single-Family Homes	3,978,010
Single-Family Homes with NFIP Claim (since 2010)	13,225
Estimated Single-Family Homes with Flood Damages	52,477
Estimated 2023 Home Sales with Flood Damages	1,668
Total Cost of Flooding	\$2,936,411

The map in Figure 1 shows the average Standard AAL for damaged homes by MSA across the state of Pennsylvania. The average Standard AAL for a previously damaged home varies from \$765 to \$2,837 depending on the MSA in Pennsylvania. This shows that the state average AAL of \$1,743 does not fully illustrate the potential financial impact for certain geographies.

In the analysis, 28 out of 38 MSA's have a percent of homes with prior flood damage above 1%. New York-Newark-Jersey City has the highest average AAL at \$2,837, but only 413 estimated single-family homes with prior flood damage. Philadelphia-Camden-Wilmington has the highest number of estimated single-family homes with prior flood damage, 17,448, with an average AAL of \$1,910.

Pennsylvania has the 10th largest difference in AAL, \$1,650, between a home that has been previously flooded and the state average for the Standard scenario. This dollar difference grows by 16% under the High scenario to \$1,920. Overall, the effect of climate change may adversely impact homeowners whose homes have already been flooded more than the average homeowner in the state.

FIGURE 3: AVERAGE ANNUAL LOSS BY SCENARIO

	Climate Scenario		
	Standard	Medium	High
AAL All Homes	\$92	\$104	\$111
AAL Damaged Homes	1,743	1,939	2,032

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 Pennsylvania, we would expect an average flood cost of \$26,144 over the 15-year period ($\$26,144 = 15 * \$1,743$). 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	\$26,144	\$29,082	\$30,475
30 Year	52,287	58,165	60,950

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

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