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# Research Brief: Updated Estimates of Home Repair Needs and Costs

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COMMUNITY DEVELOPMENT AND REGIONAL OUTREACH

## Introduction

Housing quality, like affordability and supply, is a critical dimension of the nation's housing stock. Building on a previous report that presented the first cost-based measure of home repair needs, this research brief updates estimates of national and regional repair costs using the most recent available data. Despite a modest decline in the prevalence of repair needs, rising costs and growth in the number of occupied housing units increased the estimated cost of addressing physical housing deficiencies nationwide to \$149.3 billion in 2022, an 18 percent nominal increase from the 2018 estimate. Repair needs were concentrated among lower-income households,<sup>1</sup> which accounted for an estimated \$57.1 billion of that total.

**\$149.3 billion**

is the estimated cost of addressing physical housing deficiencies nationwide in 2022

**18% ↑**

increase from the 2018 estimate

**\$57.1 billion**

of that total was concentrated among lower-income households

<sup>1</sup> Defined as households making less than 200 percent of the federal poverty guidelines.

## Data and Methods

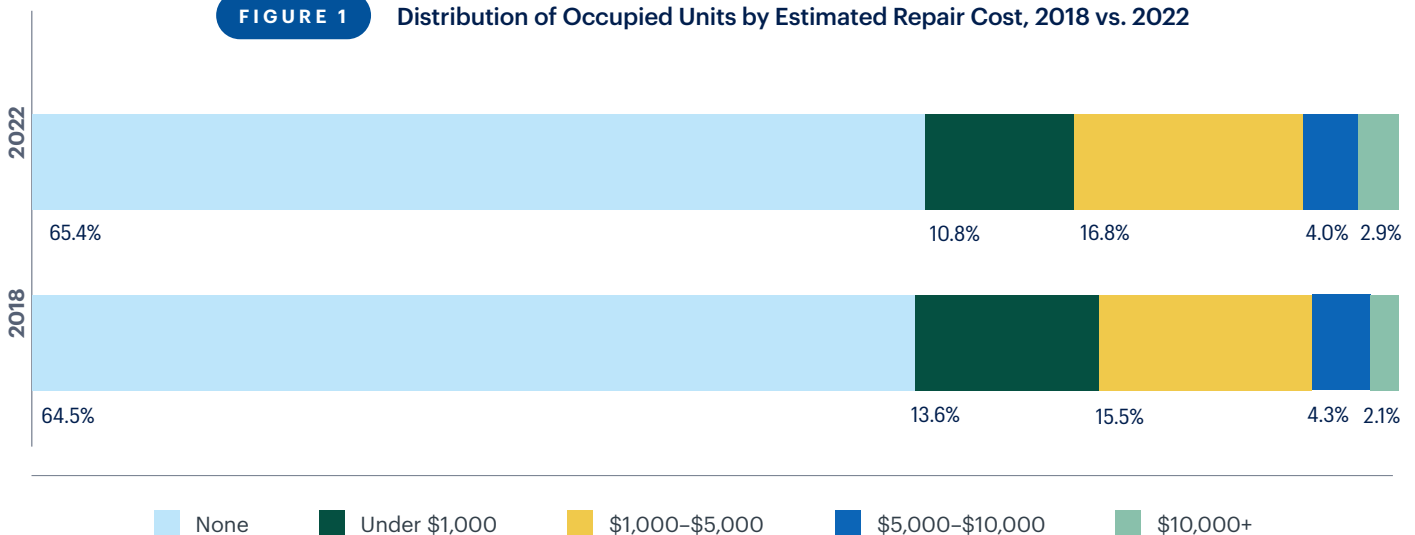
A detailed description of the repair cost estimation methodology used in this update is provided in the materials accompanying the original 2019 report.<sup>2</sup> In short, my coauthors and I worked with Gordian, a firm that specializes in construction cost estimation, to develop a custom repair cost data set that corresponds to repair needs captured in the biennial American Housing Survey (AHS) using its RSMeans database. Repair costs include the average cost of labor, materials, equipment, and contractor overhead for specific interventions (e.g., fixing a broken window, replacing a broken heater, remediating mold, etc.). Pairing this custom data set with AHS unit-level microdata, repair costs were assigned based on reported housing deficiencies for each occupied unit in the data set. These costs were then rolled up to the household level and aggregated using survey weights to produce national and regional estimates. One substantive change to the cost estimation methodology has been incorporated since the 2019 report.<sup>3</sup> All estimates from the 2017 AHS referenced in this brief incorporate this revision. As a result, the figures included in this brief are similar but not directly comparable with those included in the 2019 report.

This update draws on the most recent available microdata from the AHS at the time of writing, which is the 2021 survey year. This is paired with an updated RSMeans repair cost data set for 2022. RSMeans repair cost data are often available for more recent years than the most recent AHS data. As a result, 2018 costs discussed in this brief correspond to estimates based on the 2017 AHS, and 2022 costs correspond to those based on the 2021 AHS.

## Changes in Repair Needs

Figure 1 compares the distribution of repair costs among occupied units in 2018 and 2022. The results are very similar across years; roughly two-thirds of households reported no housing deficiencies, and most households with repair needs had estimated costs under \$5,000. There was a small, but statistically significant, decrease in the share of households with repair needs from 35.5 percent to 34.6 percent. However, there was a substantial increase in the number of occupied units between survey years (128.5 million in 2021, compared with 121.6 million in 2017), driving an increase of 1.4 million units with repair needs to a total of 44.6 million. Average repair costs, in nominal dollars, increased from \$2,931 in 2018 to \$3,359 in 2022, contributing to the slight shift toward higher cost categories in 2022.

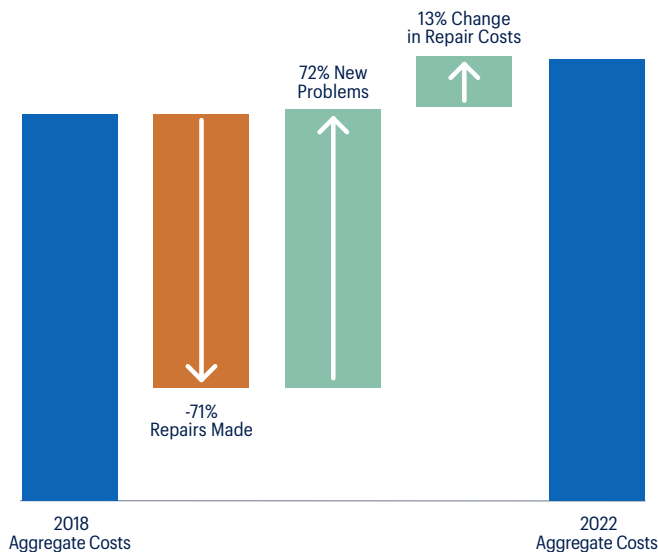
**FIGURE 1** Distribution of Occupied Units by Estimated Repair Cost, 2018 vs. 2022



Sources: Author’s analysis of 2017 and 2021 AHS Public Use File (PUF) and 2018 and 2022 RSMeans data from Gordian. Nominal dollar values are used for each year.

<sup>2</sup> Available at [www.philadelphiafed.org/community-development/housing-and-neighborhoods/measuring-and-understanding-home-repair-costs](http://www.philadelphiafed.org/community-development/housing-and-neighborhoods/measuring-and-understanding-home-repair-costs).

<sup>3</sup> For households reporting that their home had no heating system, the installation of heating equipment is now conditional on these households also reporting that their unit was uncomfortably cold for at least 24 hours during the preceding winter. As a result, the estimate of the share of units with repair needs in 2017 has been revised to 35.5 percent, down from the initial 35.8 percent. The estimate of aggregate repair costs, in 2018 dollars, has been revised to \$126.2 billion, down from the original estimate of \$126.9 billion.

**FIGURE 2****Percent Change in Aggregate Repair Costs from 2018 to 2022**

Sources: Author’s analysis of 2017 and 2021 AHS PUF and 2018 and 2022 RSMMeans data from Gordian.

Note: The percent decrease in repair needs (“Repairs Made”) is calculated as the aggregate decrease in repair costs for units that had lower repair costs in 2022 compared with 2018 (using 2018 values for both years) divided by aggregate repair costs in 2018. The percent increase in repair needs (“New Problems”) is calculated as the aggregate increase in repair costs for units that had higher repair costs in 2022 compared with 2018 (again using 2018 values for both years) divided by aggregate repair costs in 2018. “Change in Repair Costs” represents the percent change caused by recalculating the 2022 repair costs using 2022 values. Survey weights for the 2017 AHS are used for both years. Only units that were occupied in both 2017 and 2021 are included in this analysis.

Figure 2 disaggregates the causes of changes in aggregate repair costs from 2018 to 2022, examining only units that were included in both years of AHS data.<sup>4</sup> There was considerable churn in repair needs between survey years, with completed repairs accounting for 72 percent of aggregate costs during this period, then offset by a nearly equivalent increase associated with the costs of new repair needs. This highlights that physical housing conditions are dynamic, with most reported repair needs resolved in the years between surveys while new housing deficiencies

continually emerge. However, households with incomes below 100 percent of federal poverty guidelines (FPG) were nearly twice as likely as households with incomes at or above 200 percent of FPG to experience persistent<sup>5</sup> repair needs across survey years (14.9 percent versus 7.7 percent).

Figure 2 also illustrates how increases in the costs of repair interventions have contributed to the rise in aggregate repair costs. If costs had been held constant at 2018 levels, aggregate repair costs for the full sample of units in 2022 would have been \$132.5 billion, roughly 11 percent lower than the actual 2022 estimate.<sup>6</sup>

Variations in the prevalence and costliness of repair needs by household and unit characteristics are discussed at length in the previous report. Overall, the patterns observed in the 2017 AHS continue to hold in the 2021 survey year, including the higher prevalence of repair needs among lower-income households, households of color, older units, and manufactured homes (Divringi, et al., 2019). Updated estimates broken out by these characteristics and for the 15 largest metropolitan statistical areas are provided in the Appendix. Accordingly, this update will only briefly describe two modest but noteworthy changes between survey years.



**Households with incomes below 100 percent of federal poverty guidelines (FPG) were nearly twice as likely as households with incomes at or above 200 percent of FPG to experience persistent repair needs.**

<sup>4</sup> Although the AHS is a longitudinal survey designed to capture the same housing units over time, there are several reasons why a unit may be included in one survey year and not others. Units exit the AHS sample when demolished or converted to a nonhousing use, and some households in the sample may not complete interviews in a given survey year. The AHS also adds a sample of newly constructed units each survey cycle to remain representative over time (U.S. Department of Housing and Urban Development and U.S. Department of Commerce, Bureau of the Census 2022). Last, the repair cost methodology applies only to occupied units, meaning units that were vacant in one of the survey years are omitted from the analysis in Figure 2.

<sup>5</sup> Repair needs are considered persistent if the unit had repair costs >\$0 in 2018 and repair costs equal to or greater than the 2018 value in 2022 (based on 2018 RSMMeans costs for both years).

<sup>6</sup> Of the roughly 80 repair interventions used in the analysis, some were modestly less expensive in 2022 than in 2018, but most increased in cost, with a median increase of 8 percent.

Between the 2017 and 2021 AHS waves, there was a slight but statistically significant decrease (1.9 percentage points) in the prevalence of repair needs among renters, which largely accounts for the overall decline in the share of units with repair needs.<sup>7</sup> Notably, the total number of renter-occupied units with repair needs remained essentially flat, despite an increase of nearly 2 million rented units during this period. These findings are unexpected in light of surveys suggesting that landlords were opting to defer maintenance and repair of their properties during the COVID-19 pandemic in response to diminished rental income and eviction moratoria (Goodman, Choi, and Pang, 2021; de la Campa, Reina, and Herbert, 2021). The analysis does not find evidence of these practices in the 2021 AHS, although this may represent too narrow a time frame to capture these effects.<sup>8</sup>

A second noteworthy change is the decrease in the share of households in poverty who reported having at least one repair need, from 42.4 percent in 2017 to 40.1 percent in 2021. Again, the change is statistically significant but qualitatively modest, and poor households remain substantially more likely than households overall to encounter repair needs. Still, given the widespread economic disruption and tightening housing market

associated with the pandemic, this is a promising indication that the aggregate improvement in physical housing conditions extended to more vulnerable households.

## Summary

Despite a slight decline in the share of households reporting at least one repair need, aggregate repair costs increased substantially from 2018 to 2022 because of growth in the overall number of households and increases in the costs of repair interventions. Notably, improvements in physical housing conditions appear to be concentrated among more vulnerable groups, such as poor households and renters, but substantial disparities in exposure to housing deficiencies remain. Further, housing problems appear to be more persistent for low-income households, who are also more likely to be burdened by housing costs (Routhier 2019). Given the increasingly well-documented impacts of physical housing deficiencies on resident and community well-being (Boch, et al., 2020; Braveman, et al., 2011; de Leon and Schilling, 2017; South, MacDonald, and Reina, 2021; Galea, et al., 2005), repair resources can be most effectively targeted to vulnerable households with persistent housing quality issues, many of whom are systematically disadvantaged in the broader housing market (Swope and Hernández, 2019).



<sup>7</sup> A decline of 0.2 percentage point among homeowners was not statistically significant.

<sup>8</sup> Households in the 2021 sample were interviewed between May 3 and September 30, 2021 (U.S. Department of Housing and Urban Development and U.S. Department of Commerce, Bureau of the Census, 2022). For reference, the CARES Act moratorium, which covered the subset of renters in properties that received federal subsidies or mortgage backing, lasted from March 27 through July 25, 2020. The more expansive CDC national eviction moratorium went into effect on September 4, 2020, and was extended, with some gaps and revisions, through August 26, 2021. A patchwork of additional state and local moratoria were in place before and after the CDC order (Benfer, et al., 2022).

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# Appendix

TABLE A1

National Repair Cost Estimates by Unit and Household Characteristics, 2022

	Percent with Repair Needs	Number with Repair Needs (Millions)	Repair Costs		
			Aggregate (Billions)	Median	Average
<b>All Occupied Units</b>	34.6%	44.5	\$149.3	\$1,560	\$3,359
<b>Tenure</b>					
Owner-Occupied	33.2%*	27.3	\$97.9	\$1,618	\$3,578*
Renter-Occupied	37.2%*	17.1	\$51.5	\$1,560	\$3,009*
<b>Ratio of Income to Poverty Level</b>					
Less than 100%	40.1%*	7.1	\$28.6	\$1,838*	\$4,003*
100%–199%	38.6%*	8.0	\$28.5	\$1,737*	\$3,547*
200% or Above	32.6%*	29.3	\$92.3	\$1,560	\$3,151*
<b>Race/Ethnicity of Householder</b>					
Asian or Pacific Islander†	27.6%*	2.0	\$5.2	\$1,480	\$2,626*
Black or African American†	39.8%*	6.8	\$23.9	\$1,628	\$3,506
Hispanic or Latino (Any Race)	37.7%*	6.9	\$23.6	\$1,610	\$3,402
Native American†	48.0%*	0.5	\$2.5	\$3,098*	\$4,903*
White†	33.1%*	27.4	\$91.4	\$1,560	\$3,333
Other/Two or More Races†	46.8%*	0.8	\$2.8	\$1,560	\$3,451
<b>Household Type</b>					
Married Couple	32.2%*	19.9	\$66.1	\$1,560	\$3,326
With Children	36.4%*	9.2	\$30.5	\$1,560	\$3,327
Single Female Householder	37.2%*	14.3	\$47.8	\$1,560	\$3,337
With Children	44.7%*	4.0	\$14.4	\$1,836*	\$3,630*
Single Male Householder	35.8%*	10.3	\$35.4	\$1,733*	\$3,454
With Children	41.5%*	1.5	\$5.6	\$1,560	\$3,774*

# Appendix

**TABLE A1 (CONTINUED)**

	Percent with Repair Needs	Number with Repair Needs (Millions)	Repair Costs		
			Aggregate (Billions)	Median	Average
<b>Structure Type</b>					
Manufactured Home	43.5%*	2.9	\$12.2	\$1,901*	\$4,153*
Single-Family	34.5%	31.0	\$115.5	\$1,718*	\$3,728*
Small Multifamily (2–9 Units)	34.2%	4.8	\$10.8	\$1,442*	\$2,251*
Large Multifamily (10+ Units)	32.3%*	5.7	\$10.8	\$1,300*	\$1,888*
<b>Year Built</b>					
1939 or Earlier	45.2%*	7.2	\$28.0	\$1,834*	\$3,882*
1940–1969	39.5%*	12.4	\$46.7	\$1,736*	\$3,774*
1970–1999	33.3%*	17.1	\$53.5	\$1,560	\$3,138*
2000 or Later	26.1%*	7.8	\$21.1	\$1,480	\$2,703*
<b>Location</b>					
Metropolitan Area	34.2%	37.4	\$119.9	\$1,560	\$3,203*
Nonmetropolitan Area	37.2%*	7.0	\$29.4	\$1,965*	\$4,189*
<b>Census Region</b>					
Northeast	34.8%	7.9	\$23.8	\$1,560	\$3,009*
Midwest	35.6%	10.0	\$34.6	\$1,610	\$3,473
South	35.4%	17.3	\$59.8	\$1,595	\$3,467
West	32.3%*	9.3	\$31.0	\$1,560	\$3,335

Source: Author's analysis of 2021 AHS PUF and 2022 RSMeans data from Gordian.

Note: Medians and averages calculated for units with estimated repair costs >\$0. Repeated median values reflect the costs of common individual repairs or combinations of repairs.

\* Denotes statistically significant difference from all occupied units at the p<0.10 level. Only calculated for share of units with repair needs, median repair cost, and average repair costs.

\*Non-Hispanic or Latino

# Appendix

**TABLE A2** Repair Cost Estimates by Tenure, Selected Metropolitan Statistical Areas, 2022

	Agg. Repair Costs (Billions)	All			Owner-Occupied Units			Renter-Occupied Units		
		% with Repair Needs	Median	Average	% with Repair Needs	Median	Average	% with Repair Needs	Median	Average
Atlanta-Sandy Springs-Roswell	\$2.3	32.9%	\$1,436	\$3,021	30.7%	\$1,436	\$3,108	37.0%	\$1,447	\$2,890
Boston-Cambridge-Newton	\$2.0	31.6%	\$1,658	\$3,273	32.4%	\$1,702	\$3,704	30.6%	\$1,495	\$2,614
Chicago-Naperville-Elgin	\$4.3	29.8%	\$1,888	\$3,903	28.8%	\$2,000	\$4,272	31.8%	\$1,791	\$3,258
Dallas-Fort Worth-Arlington	\$3.1	39.4%	\$1,369	\$2,793	37.5%	\$1,562	\$3,368	42.2%	\$1,258	\$2,048
Detroit-Warren-Dearborn	\$2.0	35.4%	\$1,495	\$3,160	35.3%	\$1,576	\$3,099	35.7%	\$1,495	\$3,307
Houston-The Woodlands-Sugar Land	\$3.4	47.5%	\$1,369	\$2,767	46.3%	\$1,326	\$2,967	49.3%	\$1,375	\$2,489
Los Angeles-Long Beach-Anaheim	\$3.9	28.1%	\$1,694	\$3,080	24.5%	\$1,779	\$3,490	31.0%	\$1,656	\$2,809
Miami-Fort Lauderdale-West Palm Beach	\$1.7	25.9%	\$1,387	\$3,050	23.3%	\$1,748	\$3,351	29.9%	\$1,263	\$2,689
New York-Newark-Jersey City	\$9.2	34.6%	\$2,028	\$3,478	30.8%	\$2,028	\$3,473	38.6%	\$2,028	\$3,481
Philadelphia-Camden-Wilmington	\$3.7	38.1%	\$1,821	\$3,942	36.8%	\$1,841	\$4,321	40.7%	\$1,607	\$3,238
Phoenix-Mesa-Scottsdale	\$1.4	31.7%	\$1,358	\$2,477	28.8%	\$1,358	\$2,702	37.3%	\$1,358	\$2,150
Riverside-San Bernardino-Ontario	\$1.6	30.6%	\$1,748	\$3,564	28.1%	\$1,824	\$3,598	35.3%	\$1,748	\$3,512
San Francisco-Oakland-Hayward	\$1.9	29.4%	\$1,964	\$3,746	26.4%	\$1,964	\$3,992	33.1%	\$1,977	\$3,506
Seattle-Tacoma-Bellevue	\$1.8	32.4%	\$1,638	\$3,526	33.4%	\$1,638	\$3,704	31.0%	\$1,554	\$3,258
Washington-Arlington-Alexandria	\$2.3	35.3%	\$1,343	\$2,738	33.4%	\$1,467	\$3,093	38.2%	\$1,253	\$2,239

Sources: Author's analysis of 2021 AHS PUF and 2022 RSMMeans data from Gordian. Cost estimates adjusted for regional variation using zip code-level location factors from Gordian (2021).





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