

Measuring and Understanding Home Repair Costs: Spotlight on the Philadelphia Region

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INTRODUCTION

Home disrepair is associated with significant negative impacts on residents' physical and mental well-being, including increased risks of depression, respiratory illness, and injury.¹ Although the 19th-century slum conditions that catalyzed advocacy for the earliest building and health codes have become rare in the modern United States, many households and communities across the country continue to struggle with aging and inadequately maintained homes. To provide a nuanced and policy-relevant measure of repair needs, the Federal Reserve Bank of Philadelphia and PolicyMap developed a cost-based index that summarizes housing quality based on the estimated cost of addressing substandard housing issues. Nationally, we estimated the total costs of needed repairs at \$126.9 billion for occupied units in 2018, including \$50.8 billion in units occupied by low-income households.² This brief focuses on the Philadelphia region, where we estimated the total costs of repairs at over \$2.7 billion in 2018. We found that a significant share of units with repair needs are occupied by low-income households, including families with children and older homeowners.

REPAIR COST ESTIMATION

To develop the repair cost estimates described in this brief, we merged two data sets. The first was the 2017 American Housing Survey (AHS) public use file (PUF), which provided detailed, unit-level data on the physical characteristics and condition of occupied housing units, as well as demographic and socioeconomic data on the households that live in them. The second was a custom data set of repair costs developed in collaboration with consultants at Gordian, a construction cost estimation firm, using its RSMMeans data set. We matched housing issues reported in the AHS with their corresponding repair costs from Gordian, adjusting where necessary based on unit size and other context variables. To avoid assigning redundant repair costs (e.g., separately repairing a roof leak and a hole in the roof), we developed a set of rules that prioritized the more extensive repair, assuming it would also address related but more minor issues.

We summed total repair costs to the unit level, then aggregated unit-level costs using survey weights provided in the AHS to create regional and national estimates.³

PHILADELPHIA REGION SPOTLIGHT

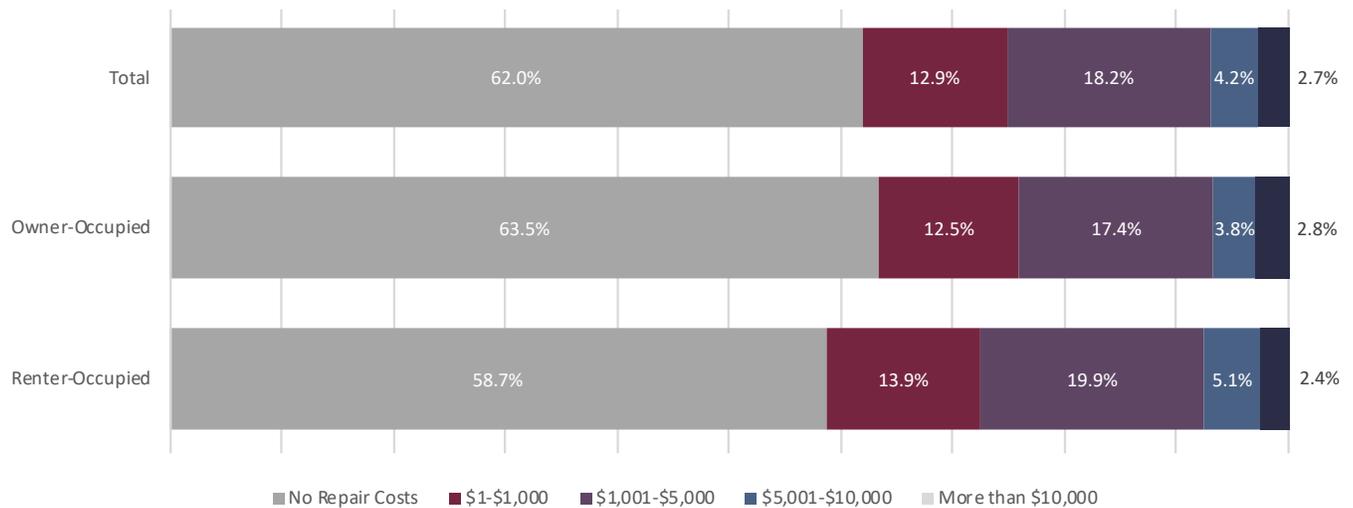
Although limited geographic information is provided in the AHS PUF, we were able to break out results for the Philadelphia-Camden-Wilmington metropolitan statistical area (the Philadelphia MSA).⁴ The Philadelphia MSA encompasses a wide range of communities, including thriving and disinvested urban neighborhoods, traditional inner-ring suburbs, and affluent exurbs.

In aggregate, the region's housing profile differs from that of the nation overall in several notable ways. First, the Philadelphia region has a relatively old housing stock, with close to one-third of units built before 1950 (31.0 percent) compared with less than one-fifth nationally (18.4 percent). Additionally, a larger share of the region's housing units is single-family homes (78.3 percent, versus 70.6 percent nationally). As shown in table 1, both of these characteristics are associated with a greater prevalence of housing quality problems. Last, the Philadelphia MSA has a higher homeownership rate among households with incomes below the federal poverty level (44.9 percent, compared with 39.5 percent nationally),⁵ and those households may have difficulty affording the repair needs associated with an older housing stock.⁶

We estimated that the total cost of addressing home repair needs in the Philadelphia MSA was over \$2.7 billion in 2018.⁷ Figure 1 summarizes the distribution of unit-level repair costs overall and by tenure. Housing quality problems were slightly more prevalent in the Philadelphia MSA than they were nationally (38.0 percent versus 35.8 percent), but for renter- and owner-occupied units in Philadelphia, the distribution was similar; roughly two in five units reported at least one home repair need, the vast majority of which had estimated repair costs under \$5,000. Roughly one in 40 homes had repair needs in excess of \$10,000.

* The views expressed here are those of the author and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia, the Federal Reserve System, or PolicyMap.

FIGURE 1. BREAKDOWN OF REPAIR COSTS BY TENURE, PHILADELPHIA MSA



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

TABLE 1. REPAIR COSTS BY CATEGORY, PHILADELPHIA MSA

Category	Share of Units Reporting Issue	Aggregate Costs (Millions)	Share of Aggregate Costs	Average Costs*
Electrical	6.6%	\$202.5	7.4%	\$1,329
Heating	4.9%	\$153.5	5.6%	\$1,355
Leaks and Mold	20.0%	\$733.3	26.7%	\$1,590
Pests	5.8%	\$78.5	2.9%	\$590
Plumbing	2.4%	\$65.1	2.4%	\$1,170
Structural	15.6%	\$1,509.7	55.0%	\$4,197

Sources: Author’s analysis of 2017 AHS PUF and 2018 RSMMeans data from Gordian
 * For units with repair costs >\$0.

As shown in Table 1, leaks and mold were the most commonly reported category of repair needs in the Philadelphia MSA, followed by structural issues affecting walls, foundations, and roofs. Structural repairs were significantly more costly on average, accounting for the majority of aggregate repair costs in the region. Among units with repair needs, the most frequently reported issues were roof leaks (13.7 percent), cracks or holes in walls or ceilings (13.7 percent), cracked or crumbling foundations (13.1 percent), basement leaks (12.5 percent), and signs of rodents at least weekly (11.8 percent).

In the Philadelphia MSA, units with a reported housing problem had a median home repair cost of \$1,685, with an average cost that was nearly twice as high (\$3,125). Households that were more likely to report repair needs included those with incomes below the federal poverty line, those headed by black

or African American or Hispanic or Latino householders, those headed by single women, families with children, and those living in units built before 1940 (Table 2). Although median and average repair costs were fairly similar across these categories, repair needs were notably more costly for households headed by single women with children and for households living in units built before 1940.

VULNERABLE HOUSEHOLDS

The analysis presented thus far represents a snapshot of home repair needs. However, each year, new housing quality issues will arise, and some portion of needed repairs will be addressed, indicating that poor housing conditions may be a temporary experience for many households. Accordingly, a focus on households that are vulnerable to persistent exposure to substandard housing conditions is justified. Low-income

households (those with incomes below 200 percent of the federal poverty line) may be more vulnerable to persistent disrepair because they are less able to afford needed repairs or to move to a higher-quality unit. Additionally, many physical and mental health hazards associated with poor housing conditions are thought to be more acute for children and older adults.⁸ With a focus on these potentially vulnerable groups, key findings for the Philadelphia MSA include:

- The majority of rental units with repair needs were occupied by low-income households (54.8 percent).

- A substantial share of low-income renters with repair needs lived in older (largely built pre-1950), single-family homes (40.2 percent) and older multifamily units (35.7 percent).
- The majority of low-income renter households with repair needs were headed by single women (61.9 percent), and more than four in 10 had children present (44.9 percent).
- Low-income households were a minority of owner-occupied units with repair needs (25.7 percent), reflecting the generally higher economic standing of homeowners.

TABLE 2. REPAIR COST ESTIMATES BY UNIT AND HOUSEHOLD CHARACTERISTICS, PHILADELPHIA MSA

	Percent with Repair Needs	Number with Repair Needs (Thousands)	Repair Costs		
			Aggregate (Millions)	Median	Average
All Occupied Units	38.0%	877.7	\$2,742.5	\$1,685	\$3,125
Tenure					
Owner-Occupied	36.5%	574.6	\$1,825.4	\$1,685	\$3,176
Renter-Occupied	41.3%	303.1	\$917.2	\$1,685	\$3,026
Ratio of Income to Poverty Level					
Less than 100%	55.2%*	184.4	\$666.5	\$1,695	\$3,614
100-199%	40.8%	129.7	\$457.5	\$1,764	\$3,528
200% or Above	34.0%*	563.6	\$1,618.5	\$1,585	\$2,872
Race/Ethnicity of Householder					
Asian or Pacific Islander†	30.4%*	37.5	\$76.8	\$1,101	\$2,046*
Black or African American†	48.9%*	254.0	\$925.7	\$1,873	\$3,645
Hispanic or Latino (Any Race)	50.2%*	77.3	\$218.9	\$1,585	\$2,830
White†	33.4%*	494.2	\$1,447.6	\$1,559	\$2,929
Household Type					
Married Couple	36.3%	394.2	\$1,077.6	\$1,310*	\$2,733*
With Children	43.0%*	202.5	\$552.5	\$1,392*	\$2,728
Single Female Householder	42.5%*	313.2	\$1,105.2	\$1,755	\$3,528
With Children	47.7%*	94.1	\$409.3	\$2,955*	\$4,348*
Single Male Householder	35.1%	170.2	\$559.7	\$1,695	\$3,288
Structure Type					
Single-Family Home	38.6%	696.7	\$2,358.3	\$1,695	\$3,385*
Small Multifamily (2–9 Units)	40.7%	89.9	\$160.4	\$1,213*	\$1,784
Large Multifamily (10+ Units)	32.0%*	80.2	\$202.4	\$1,585	\$2,525*
Year Built					
1939 or Earlier	49.5%*	264.5	\$1,027.4	\$2,060*	\$3,884*
1940–1969	40.7%	326.8	\$892.0	\$1,392*	\$2,729
1970–1999	30.3%*	219.4	\$629.0	\$1,695	\$2,867
2000 or Later	27.2%*	66.9	\$194.1	\$1,392	\$2,900

Sources: Author's analysis of 2017 AHS PUF and 2018 RSMMeans data from Gordian

Note: Medians and averages are calculated for units with estimated repair costs > \$0. This only includes categories with >100 observations in the Philadelphia MSA. 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. This is only calculated for the share of units with repair needs, median repair cost, and average repair cost.

†Non-Hispanic or Latino

- A large segment of low-income homeowners with repair needs was older adults who were long-term residents of their units (43.0 percent). For these households, which may have additional needs for adaptive home modifications,⁹ our cost measure likely understates the level of investment needed to provide a suitable living environment.
- Close to one-third of low-income, owner-occupied households with repair needs had children present (31.7 percent).

CONCLUSION

Given the region’s older housing stock and the legacy of disinvestment in many neighborhoods, housing quality and

repair needs will likely remain salient concerns in the Philadelphia MSA for the foreseeable future. The existing body of research on the individual and community benefits of mitigating substandard housing conditions suggests that the societal return in terms of improved health outcomes and neighborhood conditions is often highest for interventions that prioritize the most vulnerable households.¹⁰ Our analysis indicates that low-income households are disproportionately likely to live in units with repair needs. For many of these households, units in poor condition may be the only financially attainable option, reinforcing the importance of viewing housing affordability and quality as intertwined challenges.

ADDITIONAL RESOURCES

For additional research and data on home repairs, see:

- Federal Reserve Bank of Philadelphia and PolicyMap, *Measuring and Understanding Home Repair Costs: A National Typology of Households*, available at philadelphiafed.org/-/media/community-development/publications/special-reports/home-repair-costs-national-report.pdf
- Federal Reserve Bank of Philadelphia and PolicyMap, *Technical Appendix: A Repair Cost–Based Index of Housing Quality*, available at philadelphiafed.org/-/media/community-development/publications/special-reports/home-repair-costs-technical-appendix.pdf
- PolicyMap and Federal Reserve Bank of Philadelphia, *The Real Cost of Home Repairs*, available at www.policymap.com/issues/housing-quality/

ENDNOTES

¹ James Krieger and Donna L. Higgins, “Housing and Health: Time Again for Public Health Action,” *American Journal of Public Health* 95:5 (2002), pp. 756–68.

² Eileen Divringi, Eliza Wallace, Keith Wardrip, and Elizabeth Nash, *Measuring and Understanding Home Repair Costs: A National Typology of Households*, Special Report, Philadelphia: Federal Reserve Bank of Philadelphia, 2019.

³ Eliza Wallace, Eileen Divringi, Keith Wardrip, Elizabeth Nash, *Technical Appendix: A Repair Cost–Based Index of Housing Quality*, Special Report, Philadelphia: Federal Reserve Bank of Philadelphia, 2019.

⁴ See OMB Bulletin No. 18-04 for the definition of this area, available at www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf.

⁵ Author’s calculations based on the 2017 AHS PUF.

⁶ Shannon Van Zandt and William M. Rohe, “The Sustainability of Low-Income Homeownership: The Incidence of Unexpected Costs and Needed Repairs Among Low-Income Home Buyers,” *Housing Policy Debate* 21:2 (2011), pp. 317–41.

⁷ Aggregate, median, and average repair cost estimates for the Philadelphia MSA were adjusted for local construction costs using the Philadelphia city location factor in Gordian, *2018 Contractor’s Pricing Guide: Residential Remodeling Costs with RSMMeans Data*, Rockland, MA: The Gordian Group, Inc., 2017.

⁸ Rebekah Levine Coley, Tama Leventhal, Alicia Doyle Lynch, and Melissa Kull, “Relations Between Housing Characteristics and the Well-Being of Low-Income Children and Adolescents,” *Developmental Psychology* 49:9 (2013), pp. 1775–89; Sandra Newman, “The Living Conditions of Elderly Americans,” *Gerontologist* 43:1 (2003), pp. 99–109.

⁹ Newman (2003).

¹⁰ Hilary Thomson, Sian Thomas, Eva Sellstrom, and Mark Petticrew, “The Health Impacts of Housing Improvement: A Systematic Review of Intervention Studies from 1887 to 2007,” *American Journal of Public Health* 9:53 (2009), pp. S681–92; Ingrid Gould Ellen and Ioan Voicu, “Nonprofit Housing and Neighborhood Spillovers,” *Journal of Policy Analysis and Management* 25:1 (2006), pp. 31–52.