Operating Costs of Owning a Home

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The latest 2019 American Housing Survey (AHS) shows that, on average, homeowners spend around $9,240 per year to operate and maintain a single-family detached home. The costliest part of running a home is paying property taxes that come a bit under $3,700. Fuels are the second largest component of operating a home ($2,500), followed by homeowners' insurance ($1,250), maintenance ($950), and water and trash bills ($850 combined).

Annual operating costs increase consistently with household income, home size and value. When measured as a fraction of home's value, annual operating costs average close to 5%, but the share is smaller for newer homes. For the newest homes in the sample (built after 2010), operating costs amount to about 3% of the home's value. In contrast, annual operating costs exceed 6% of the home's value for structures built prior to 1960. The difference in operating costs per dollar value imply that buyers can purchase higher-priced new homes and achieve the same overall homeownership costs as buyers of older less expensive homes.

The regional differences in operating costs are substantial as well. Homeowners in the East South Central Division spend the least – around $6,270 per year. For homeowners in New England, the expenses associated with operating and maintaining their single-family detached homes are twice as high and, on average, exceed $13,000.

Operating Costs in the AHS

The cost data for this study come from the AHS, which is conducted in odd-numbered years by the Census Bureau for HUD. In the years when it is conducted, the AHS collects extensive data on each home in the survey, including considerable detail on different categories of housing costs. This article is based on data from the most recent (2019) AHS, which was released to the public in September of 2020.

The 2020 AHS data show that, across all owner-occupied single-family detached homes, total operating costs average just over $9,240 (see Table 1). This includes property taxes, insurance, maintenance and utilities[1]. Mortgage payments are not included in this analysis. Defined this way, the largest component of operating costs are property taxes, accounting for just under $3,700, or 40% of the annual operating costs.

[1] The AHS truncates extreme values of each expense item. Before calculating the relevant averages, such expenses were deleted and, therefore, they do not affect the reported averages.

Fuels – the second largest component of operating costs – average just over $2,500, or 27% of annual operating costs. Fuels include the costs of electricity, gas, oil or other fuel (wood, coal, kerosene, or other).

Home insurance is the next most expensive item on the operating costs list. On average, homeowners pay just over $1,250 to cover home insurance. In addition, homeowners spend close to $1,000 on maintenance and $850 on annual water and trash collection bills.

Operating Costs by Home Size, Value and Year Built

Not surprisingly, all operating costs increase consistently as homes get bigger. The 2019 AHS does not provide the exact square footage of homes but rather groups all homes into the size buckets. As Table 1 illustrates, the annual operating costs rise as we move from a smaller size homes' group to the next larger size homes' bucket. For single family detached homes under 1,000 square feet, homeowners spend less than $6,600 per year. For homes that are between 1,000 and 1,500 square feet, the annual operating costs rise to over $7,000. For largest single-family detached homes with over 4,000 square feet, the operating costs approach $16,500, on average.

Table 1. Average Annual Operating Costs by Home Size
(Based on Owner-Occupied, Single-Family Detached Homes)

Operating Costs per House	All Homes	Under 1,000 sq.ft	1,000-1,499 sq. ft	1,500-1,999 sq. ft	2,000-2,499sq_ft	2,500-2,999 sq. ft	3,000-3,999 sq. ft	4,000 sq. ft or more
Fuels	2,508	1,962	2,143	2,353	2,575	2,801	3,026	3,515
Water&Trash	845	723	773	812	861	909	950	1,049
Maintenance	954	704	769	865	972	1,095	1,290	1,490
Insurance	1,251	826	966	1,119	1,286	1,467	1,706	2,223
Property Tax	3,685	2,361	2,409	3,025	3,772	4,518	5,521	8,190
Total	**9,244**	**6,576**	**7,060**	**8,174**	**9,466**	**10,791**	**12,492**	**16,467**

It is also intuitive that all components of operating costs increase consistently with home size. The water and trash bills rise modestly as homes get bigger. Looking at the two extremes – homes with under 1,000 square feet and homes with over 4,000 square feet- the annual water and trash costs increase from about $720 to $1,050. Fuels and maintenance expenses increase more noticeably as the home's square footage gets bigger. Homeowners' insurance and property taxes are most sensitive to the home's size. For homes under 1,000 square feet, annual homeowners' insurance and property taxes average just over $820 and $2,360, respectively. For homes with over 4,000 square feet, these costs increase multiple times to over $2,220 and $8,190.

Because larger homes are typically more expensive, it is not surprising that higher-priced homes come with higher annual operating and maintenance costs. Similarly, newer homes have higher square footage and, consequently, have higher annual operating costs. To make the comparison more meaningful, Table 2 considers annual operating costs as a fraction of the home's value and takes into account decade the home was built.

Table 2 Average Annual Operating Costs as a Percent of Home Value by Decade the Home was Built

Annual Operating Costs	All Homes	Before 1960	1960s	1970s	1980s	1990s	2000s	2010s
Fuels	1.7	2.2	1.6	1.9	1.4	1.5	1.5	1.1
Water&Trash	0.6	0.9	0.5	0.5	0.6	0.5	0.4	0.3
Maintenance	0.6	0.8	0.6	0.7	0.5	0.4	0.4	0.2
Insurance	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.4
Property Tax	1.5	1.8	1.4	1.5	1.3	1.3	1.6	1.2
Total	**4.9**	**6.3**	**4.7**	**5.2**	**4.3**	**4.2**	**4.3**	**3.2**

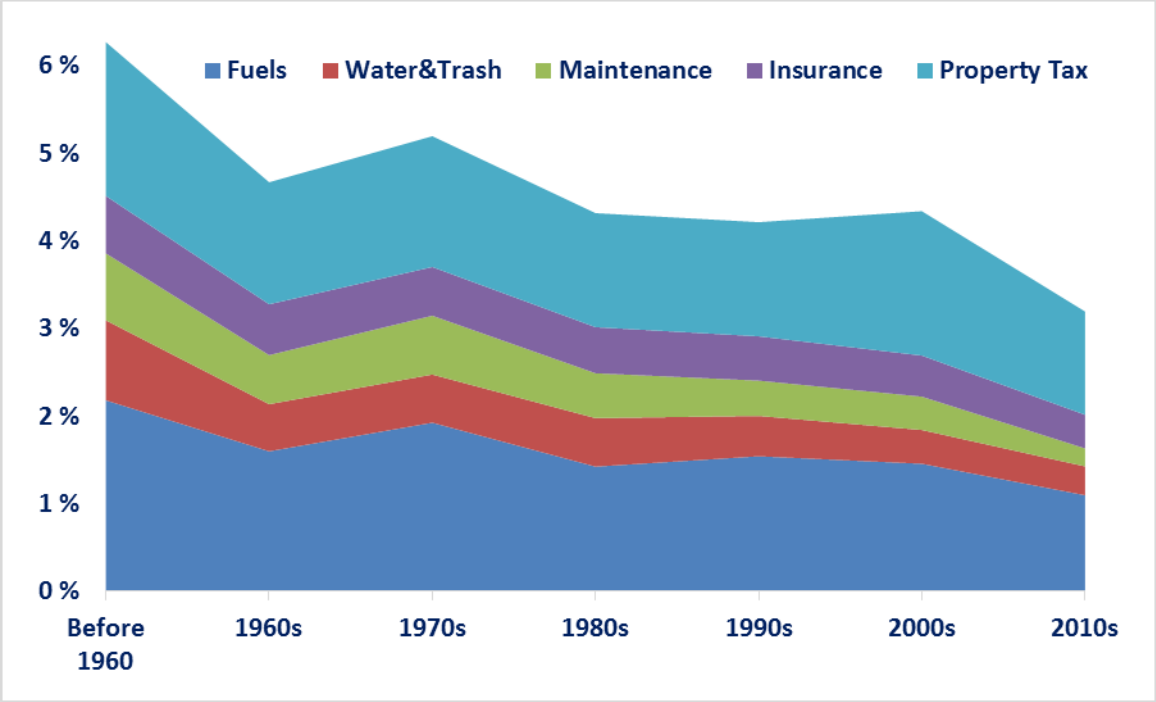
The clearest trend is for operating and maintenance costs to decline per dollar of value as homes become newer. On average, annual costs of running a home amount close to 5% of the home's value. This fraction exceeds 6% for homes built before 1960. As homes get newer, costs per dollar of value tend to decline. Homeowners of single-family detached homes built after 2010 spend an equivalent of 3% of the home's value per year on operating their newer homes.

As illustrated in Chart 1, for every cost component, with the exception of property taxes, costs per dollar of value tend to decline as homes become newer. For example, fuels on average cost 2.2% of the home's value per year for homes built before 1960 but only half of that, 1.1%, for homes built after 2010.

In newer homes, lower fuel costs per dollar of home value are relatively easy to explain as the result of factors such as more efficient appliances and HVAC equipment and increased insulation due to both buyer preferences and changes in building codes.

Lower maintenance costs per dollar of value in newer homes are not surprising either as owners of newer homes are less likely to face repairs. The definition of maintenance in the AHS is rather narrow. It includes only minor routine repairs such as painting, plumbing and roofing. It does neither include major repairs nor replacing components. In this sense, the estimated maintenance spending differences for homes by year built are rather conservative in the chart below. If major repairs and replacements were added to spending, it would increase the spread between the maintenance spending of newer and older homes.

Chart 1. Average Operating Costs as a Percent of Home Value by Year SFD Home was Built



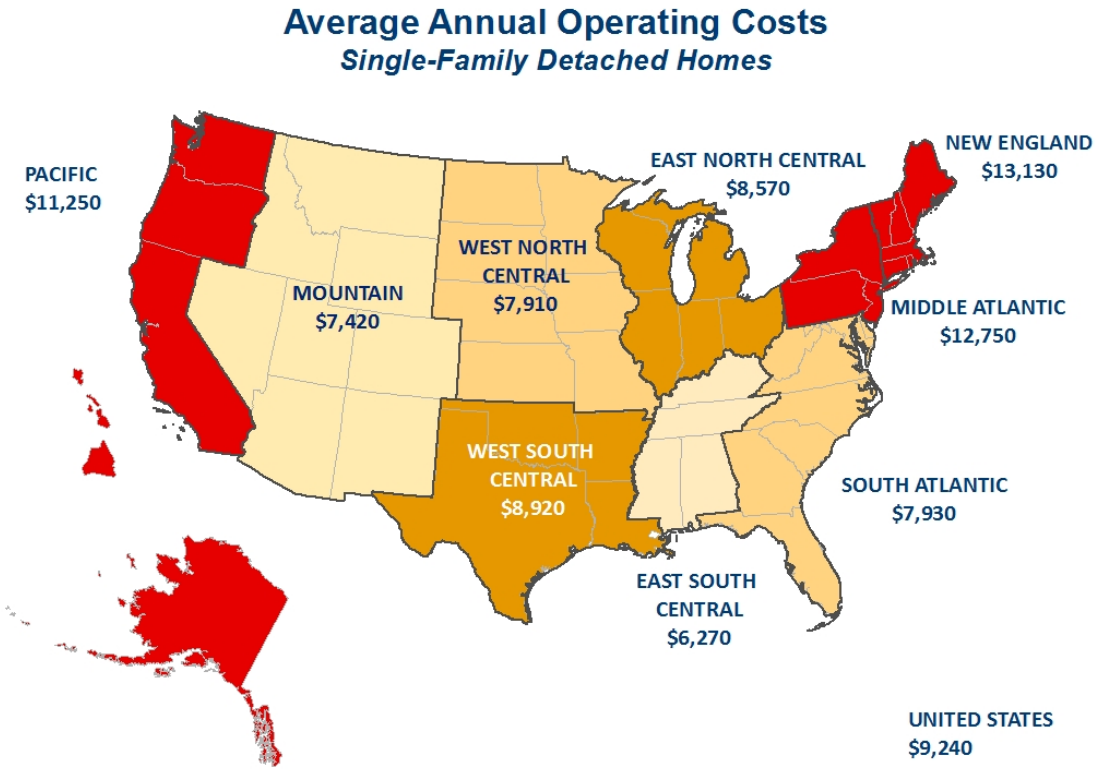
The reasons insurance costs per dollar of value tend to decline as homes get newer are less obvious. It is possible insurance companies judge that older homes are more likely to generate losses due to leaky rooves, faulty wiring or plumbing. Insurance premiums for older homes could also be higher because it costs more to repair older structures that originally have been built with older techniques and materials no longer in common use. Older homes that have depreciated substantially might have the associated replacement cost that diverges from the home's value, further breaking the link between insurance costs and the home's value.

When it comes to the effective property tax rates (the percentage of the property value paid in real estate taxes per year), there is no clear trend when comparing older and newer structures. This suggests that a multitude of other factors (regional differences, homestead exemptions, school districts) are more likely to explain the differences.

When looking at operating expenses as a fraction of the home's value, homeowners of the oldest homes built before 1960 spend most on fuels (2.2% of the home's value), followed by property taxes (1.8% of the home's value). The order is reversed for homeowners of single-family detached homes built after 2010. They spend 1.2% of the home's value on property taxes and 1.1% on fuels per year.

Regional Differences in Operating Costs

How much homeowners spend on operating and maintaining their homes also depends on where they live. Homeowners in the two Northeast divisions – New England and Mid Atlantic – spend most on running their single-family detached homes – over $13,130 and $12,750 per year, respectively.



Source: 2019 American Housing Survey, NAHB Estimates

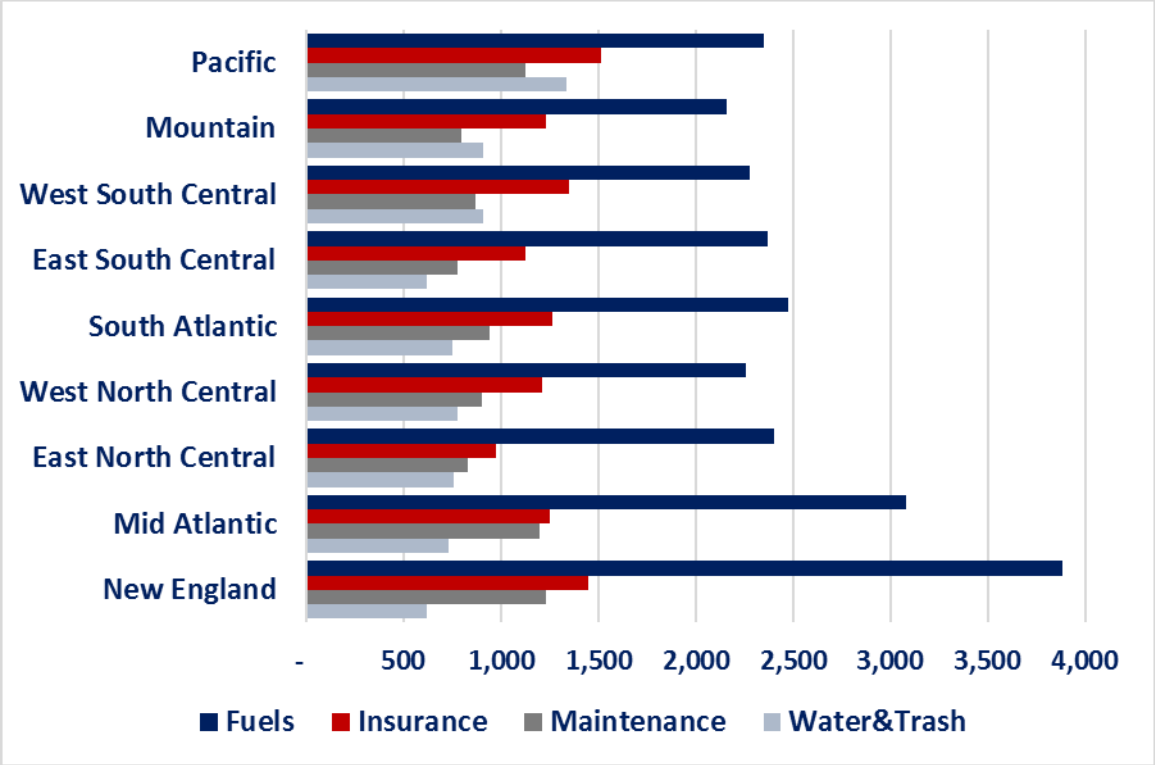
The two Northeast divisions register the highest average annual real estate taxes in the nation, approaching $6,000 in New England and $6,500 in Mid Atlantic (see Table 3). They also stand out for having the highest average annual fuel bills, with homeowners paying over $3,880 in New England and $3,080 in Mid Atlantic. Homeowners here also spend significantly more on maintenance, averaging $1,230 in New England and $1,200 in Mid Atlantic. As a result, the annual home operating costs in these divisions exceed the national average of $9,240 by far.

Table 3. Average Annual Operating Costs by Census Division

Annual Operating Costs	New England	Mid Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Fuels	3,881	3,079	2,402	2,260	2,474	2,371	2,274	2,158	2,348
Water&Trash	620	728	757	773	752	616	906	907	1,334
Maintenance	1,230	1,199	829	899	942	778	866	799	1,125
Insurance	1,447	1,250	976	1,211	1,263	1,127	1,351	1,232	1,517
Property Tax	5,954	6,496	3,608	2,771	2,503	1,381	3,522	2,324	4,921
Total	**13,132**	**12,753**	**8,571**	**7,914**	**7,934**	**6,273**	**8,920**	**7,420**	**11,246**

Homeowners in the Pacific division, on average, face the most expensive homeowners' insurance, as well as the highest water and trash bills (see Chart 2). They also incur some of the highest property taxes and maintenance expenses in the nation. As a result, a typical homeowner in the Pacific division spends substantially more than the national average to operate and maintain a single-family detached home, with annual costs approaching $11,250.

Chart 2. Average Annual Operating Costs (Excluding Property Taxes) by Census Division



At the other end of the spectrum is the East South Central division known for low property taxes. It also registers the lowest average maintenance, water and trash costs, and the second lowest homeowners' insurance costs. As a result, homeowners in the East South Central spend least to operate and maintain their single-family detached homes - $6,270 per year.

The New Home Premium

The analysis in this article concentrated on various annual costs of running a single-family detached home. It did not include mortgage payments – often the most expensive cost of owning a home. Combined together, mortgage payments and operating costs add up to overall costs of owning a home. Since operating and maintenance costs per dollar value are lower for newer homes, owners of these properties can afford more expensive mortgage payments and still end up with identical overall homeownership costs, compared to owners of older homes.

Table 4 below illustrates how buyers of newer homes can pay more for their mortgages but have the same first-year costs of ownership as a result of lower operating costs. In this exercise, all mortgage assumptions are identical for buyers of homes of different vintages.

The starting point in this analysis is the new homes sale price. It is set at $383,900, which is the average sale price of new homes sold in 2019, according to the Census Bureau.

Using the current standard 30-year mortgage assumptions, new home buyers' annual mortgage payments are then estimated at $18,572. New home buyers are also expected to spend 3.2% (see Table 2) of the home's value (or $12,255) on operating and maintaining their homes. As a result, their total first-year homeownership costs add up to $30,826[2].

The calculations are then repeated for each vintage category under the constraint that all home buyers have identical annual homeownership costs of $30,826. Because the annual operating costs per dollar value are higher for older homes (as shown in Table 2), buyers of older homes are restricted to making smaller mortgage payments. So the price of older homes has to be lower to keep the first-year homeownership costs constant. At the extreme, a home built before 1960 can cost no more than $282,485 to keep annual homeownership costs at $30,826.

Table 4. First Year Homeownership Costs by Decade the Home was Built

	Before 1960	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019
House Price	$ 282,485	$ 327,485	$ 311,160	$ 339,385	$ 343,020	$ 338,620	$ 383,900
DownPayment	$ 38,390	$ 38,390	$ 38,390	$ 38,390	$ 38,390	$ 38,390	$ 38,390
Mortgage Rate	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%
PMI	0.73%	0.73%	0.73%	0.73%	0.73%	0.73%	0.73%
Annual Mortgage Payments	$ 13,120	$ 15,539	$ 14,662	$ 16,179	$ 16,374	$ 16,138	$ 18,572
Annual Operating Costs	$ 17,706	$ 15,287	$ 16,164	$ 14,647	$ 14,451	$ 14,688	$ 12,255
Total First Year Costs	**$ 30,826**	**$ 30,826**	**$ 30,826**	**$ 30,826**	**$ 30,826**	**$ 30,826**	**$ 30,826**
New Home Premium	**136%**	**117%**	**123%**	**113%**	**112%**	**113%**	**100%**

In other words, if first-year cost is the constraint, home buyers can afford to pay a 36% premium for a new house, compared to the one built before 1960, simply because it is new and has lower operating and maintenance costs.

[2] Given the current generous standard deduction, home buyers in this example cannot reach additional after tax savings by claiming the mortgage interest and real estate tax deductions. As a result, the income tax saving are not considered in this analysis.