American Healthy Homes Survey II Additional Environmental Findings

FINAL REPORT

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Office of Lead Hazard Control and Healthy Homes

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ABSTRACT

The American Healthy Homes Survey II (AHHS II), conducted from March 2018 through June 2019, measured levels of lead, lead hazards, pesticides, formaldehyde and mold in homes nationwide and collected information on other housing-related health hazards. This report includes estimates of the prevalence of formaldehyde in household air, as well as the prevalence of the following potential health or safety hazards: high hot water temperature; absent or non-working smoke alarms; absence of carbon monoxide (CO) detectors; absent or non-working fire extinguishers; smoking in the home; pests (cockroaches, bed bugs and mice); electrical hazards; mold and visible water damage; and slips and falls. Estimates are provided both for all housing and for important subpopulations of housing defined by region, age, urbanization, presence of children under age 6, housing type, tenure, Government support, income, race, and ethnicity.

Formaldehyde levels in the air in homes nationwide were found to be well below 100 parts per billion (ppb), a level at which the Environmental Protection Agency currently says that certain health effects, such as burning sensations in the eyes and throat, nausea, and difficulty in breathing, begin to appear. Of the 117.8 million total housing units represented by the survey, a significant number of homes (an estimated 11.6 million (10%)) were found to have water temperature above 140°F, hot enough for third degree burns to occur with contact of 6 seconds or longer. An estimated 17.3 million homes (15%) did not have a working smoke detector (of which 8.3 million (7%) had no smoke detector at all), more than half of homes (54%) had no fire extinguisher, and 44.9 million homes (38%) had an interior combustion source but no CO detector. Smoking was found to be much more common in lower income homes, as were pests of all three types, but slip/fall hazards were more common in higher income homes. Electrical hazards, mold, and water damage were more common in older homes.

The housing characteristics most often associated with statistically significant differences in housing health hazards were region and age. Significant differences in formaldehyde, smoke alarms, fire extinguishers, pests, mold, visible water damage and slip/fall hazards were noted for both age and region, while differences in electrical hazards were found by age and in smoking by region. The next most important characteristics were ownership and income/poverty status. Significant differences were found by tenure (owned/rented) in formaldehyde, hot water temperature, smoke alarms, CO monitors, smoking, fire extinguishers and pests, and by income/poverty status in smoking, fire extinguishers and pests. Higher income and home ownership were associated with lower frequency of hazards in these cases. Few differences in housing health hazards were found by race and ethnicity, an exception being smoking, which was much more common in African American and non-Hispanic homes.

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INTRODUCTION AND REPORT ORGANIZATION

The American Healthy Homes Survey II (AHHS II) is an update to the first American Healthy Homes Survey (AHHS), conducted in 2005-2006, and the National Survey of Lead and Allergens in Housing (NSLAH) conducted in 1998-1999. Sponsored by the U.S. Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA), the primary focus of AHHS II was to monitor changes in the prevalence of lead-based paint (LBP) and LBP hazards in homes over time and to refine HUD's understanding of certain patterns identified in AHHS and NSLAH. However, AHHS II included for the first time, measurement of levels of formaldehyde in indoor air as well as a suite of observations on common potential health and safety hazards in the home. Information was collected on hot water temperature; evidence of cockroaches, bed bugs and mice; conditions that could cause slips and falls; smoking; water damage, both visible and as indicated by measurements with a moisture meter; carbon monoxide detectors, fire alarms and fire extinguishers; electrical hazards; and mold or musty smells. Sampling was also conducted for mold, pesticide residues and lead in water; those results will be published elsewhere.

This report provides estimates of levels of formaldehyde in homes (mean and 90th percentile) as well as prevalence of potential health and safety hazards based on the observations made. The estimates are provided both for all housing and for important subpopulations of housing defined by region, age, urbanization (Metropolitan Statistical Area (MSA) or not), presence of children under age 6, housing type, tenure, government support, income, race, and ethnicity. Tables of estimates are provided throughout. Many are large, spanning several pages, and are therefore placed at the end of the section to which they apply.

Note: Unless otherwise noted, **all statements of statistical significance in this report are at the 5% level (p ≤ 0.05)**. Statistically significant differences are highlighted in the tables. For variables with two levels, for example ethnicity or housing unit type, the lower-hazard level is highlighted green and the higher, yellow (note than a lower value can mean a higher hazard, for example "percent of homes with a working smoke detector"). For variables with three or four levels, for example race or region, a three-color scheme is used, with green for the lowest-hazard level, yellow for the next higher and red for the highest. Statistically tied levels are shaded the same. For some variables, the two-color scheme is sufficient, for example when one level is significantly lower than all the others but they do not differ significantly from each other. In a small number of cases, the three-color scheme cannot properly portray the pattern of significant differences. Such cases are noted in the report.

For details on the survey design and operations, response rates, characteristics of the sample compared to the American Housing Survey and the Current Population Survey, and weighting and statistical analysis, refer to the report titled *American Healthy Homes Survey II: Lead Findings* (Final Report June 15, 2021).

1.0 FORMALDEHYDE

Measurements of formaldehyde levels in the air of homes surveyed were taken by drawing a known volume of air through a glass sorbent tube containing silica gel coated with 2,4-dinitrophenylhydrazine, a method equivalent to NIOSH method 2016. A personal air pump, nominally set to 1.5 liters per minute (LPM) flow rate, was used to collect the air sample. This pump was mounted on the handle of a rolling briefcase (with air collected about 30 inches above the floor), placed within or as close as possible to a common living area location unlikely to be disturbed during collection and unlikely to draw air from outside the home, i.e., located well away from any open windows. The duration of air sampling was maximized by initiating the sample collection as soon as possible upon access to the home and allowed to run as long as possible with a target sampling time of 180 minutes, resulting in a target collection volume of 0.27 m^3. Actual mean sample collection volume for field samples was slightly less at 0.20 m^3, primarily because data collection in some homes was completed in under 3 hours. Field samples collected in each PSU[1] were placed as soon as practical in a cooler with frozen ice packs and then transferred to a freezer at the end of the workday. At the end of data collection activities in the PSU, all formaldehyde samples were sent to the laboratory in a cooler with frozen ice packs.

A formaldehyde sample was collected in 689 of the 703 housing units in which the survey was conducted (98%). The main reason a sample was not collected in 14 units was failure of the sampling pump. The limit of detection based on the sampling time varied from a minimum of 0.06 parts per billion in air (ppb) to a maximum of 0.33 ppb, with an average of 0.15 ppb. Only one sample of the 689 was below the detection limit. The maximum formaldehyde level was 100.9 ppb or 0.1 parts per million (ppm). According to EPA[2],

> "*Formaldehyde…can cause watery eyes, burning sensations in the eyes and throat, nausea, and difficulty in breathing in some humans at elevated levels (above 0.1 parts per million)*".

Formaldehyde has been found to cause certain cancers in workers exposed to high levels, such as industrial workers and embalmers[3]. All but one of the 689 homes tested were below the 0.1 ppm current level of concern (see also Golden[4]).

Table 1 shows estimates of mean and 90th percentile formaldehyde levels in homes, both nationwide and broken down by region, age and various housing and demographic variables. The mean formaldehyde level was 18.9 ppb (95% confidence interval 17.4-20.3 ppb), with a 90th percentile of 34.0 ppb. Thus, typical levels in homes are far below the 0.1 ppm level of concern

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[1] Primary Sampling Unit, typically a county or group of contiguous counties in which recruitment of 25-30 homes was attempted during a 17-day period.
[2] https://www.epa.gov/indoor-air-quality-iaq/what-should-i-know-about-formaldehyde-and-indoor-air-quality
[3] HHS/PHS/National Toxicology Program. 2021. Report on Carcinogens, Fifteenth Edition. https://doi.org/10.22427/NTP-OTHER-1003
[4] Golden R. Identifying an indoor air exposure limit for formaldehyde considering both irritation and cancer hazards, Critical Reviews in Toxicology, 41:8, 672-721. https://doi.org/10.3109/10408444.2011.573467.

and are in line with "*low levels, usually less than 0.03 parts per million (ppm), in both outdoor and indoor air*", reported by the Consumer Product Safety Commission (CPSC)[5].

Differences in formaldehyde levels by housing age and Census Region were found. Homes built in 1978 or later had higher levels than homes in the earlier age ranges, most likely due to increased use of particleboard and other construction materials that emit formaldehyde. Although the differences were statistically significant, they were quite modest in absolute terms – a mean of 21.9 ppb post-1977 vs 14.7-16.4 ppb for older homes. Differences between the earlier age categories were not significant. Homes in the Midwest and South had levels significantly higher than those in the Northeast, which in turn had significantly higher levels than those in the West.

Owner-occupied homes had significantly higher formaldehyde levels than rented homes, but no other socioeconomic or demographic variables exhibited significant differences in formaldehyde levels.

Formaldehyde is known to be present in cigarette and cigar smoke[6], as well as at lower levels in e-cigarettes and other vaping products[7]. However, worst-case calculations in Godish[8] indicate that "*the effect of cigarette smoking on formaldehyde levels in indoor spaces would be negligible*". We classified homes as "Non Smoking" if nobody smoked in the home, "Moderate Smoking" if somebody smoked less than 4 times a day in the home, and "Heavy Smoking" if somebody smoked 4 or more times a day in the home. Surprisingly, "Non Smoking" homes had significantly higher mean levels of formaldehyde than "Moderate Smoking" homes (19.37 ppb vs 15.64 ppb). However, this is likely due to interactions between smoking characteristics and formaldehyde. For example, owner-occupied homes had significantly higher levels of formaldehyde than rented homes, as noted above, but (see Chapter 6) rented homes were more than twice as likely to be classified as "Smoking" (moderate or heavy) compared to owner-occupied homes – 26.2% vs 12.5%.

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[5] CPSC. *An Update on Formaldehyde*. CPSC Publication 725, 2016 Revision 020216. https://www.cpsc.gov/s3fs-public/An-Update-On-Formaldehyde-725_0.pdf.

[6] National Academies of Sciences, Engineering, and Medicine. Review of EPA's 2022 Draft Formaldehyde Assessment. 2023. https://doi.org/10.17226/27153.

[7] Kosmider L, Cox S, Zaciera M, et al. Daily exposure to formaldehyde and acetaldehyde and potential health risk associated with use of high and low nicotine e-liquid concentrations. Scientific Reports 10, 6546 (2020). https://doi.org/10.1038/s41598-020-63292-1

[8] T Godish. Formaldehyde exposures from tobacco smoke: a review. American Journal of Public Health 79, no. 8 (August 1, 1989): pp. 1044-1045. Abstract at https://doi.org/10.2105/AJPH.79.8.1044. Full article at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1349907/pdf/amjph00234-0100.pdf.

HU Characteristic	Formaldehyde Levels (ppb)				HUs in Sample
	Mean	Lower 95% CI[b]	Upper 95% CI	90th Percentile	
Total Housing Units	18.9	17.4	20.3	34.0	689
Region:					
Northeast	17.48	15.79	19.17	31.77	138
Midwest	20.69	18.1	23.28	38.97	161
South	21.66	18.75	24.57	36.91	231
West	13.53	10.72	16.34	23.31	159
Construction Year:					
1978-2017	21.93	19.7	24.16	36.91	217
1960-1977	16.36	14.45	18.27	30.64	218
1940-1959	16.42	14.25	18.59	30.46	154
Before 1940	14.65	12.16	17.14	31.77	100
Urbanization:					
MSA	18.98	17.29	20.67	34.25	547
Non-MSA	18.42	15.61	21.23	33.28	142
One or More Children Under Age 6:					
All HU Ages	16.74	14.61	18.87	26.55	106
HUs built 1978-2017	18.12	15.13	21.11	25.44	32
HUs built 1960-1977	16.59	13.03	20.15	27.70	39
HUs built 1940-1959	13.2	8.56	17.84	26.59	19
HUs built before 1940	15.22	8.95	21.49	24.85	16
Housing Unit Type:					
Single family	19.24	17.53	20.95	34.81	559
Multi-family	17.18	14.53	19.83	30.68	130
Tenure:					
Owner-occupied	20.41	18.38	22.44	35.97	410
Renter-occupied	16.1	14.67	17.53	28.73	279
Household Income:					
Less than $35,000/year	17.69	15.82	19.56	32.59	300
Equal to or more than $35,000/year	19.59	17.7	21.48	34.17	389
One or More Children Under Age 6:					
All Income Categories	16.74	14.61	18.87	26.55	106
Less than $35,000/year	16.94	12.76	21.12	27.84	46
Equal to or more than $35,000/year	16.63	14.52	18.74	26.35	60
One or More Children Under Age 6:					
All Income Categories	16.74	14.61	18.87	26.55	106
In Poverty	17.3	12.86	21.74	30.42	40
Not in Poverty	16.53	14.44	18.62	25.81	66
Government Support:					
Government support	16.91	12.67	21.15	34.25	67
No government support	19.13	17.56	20.7	34.00	615

Table 1. Mean and 90th Percentile Formaldehyde Levels (PPB) by Selected Housing Unit (HU) Characteristics

HU Characteristic	Formaldehyde Levels (ppb)				HUs in Sample
	Mean	Lower 95% CI[b]	Upper 95% CI	90th Percentile	
Poverty by Urbanization:					
MSA					
In poverty	18.26	15.53	20.99	34.81	116
Not in poverty	19.12	17.21	21.03	33.90	431
Non-MSA					
In poverty	16.8	11.66	21.94	31.09	37
Not in poverty	18.79	15.8	21.78	33.67	105
All Housing					
In poverty	17.9	15.47	20.33	34.48	153
Not in poverty	19.05	17.42	20.68	33.90	536
Race:					
White	18.49	16.88	20.1	33.46	490
African American	20.05	16.72	23.38	35.97	124
Other[c]	19.86	13.97	25.75	35.19	75
Ethnicity:					
Hispanic/Latino	16.96	14.85	19.07	30.46	120
Not Hispanic/Latino	19.15	17.58	20.72	34.89	569
Smoking:					
Non Smoking	19.37	17.84	20.90	35.22	564
Moderate smoking	15.64	12.85	18.43	26.54	56
Heavy smoking	17.14	13.5	20.78	28.89	69

Table 1. Mean and 90th Percentile Formaldehyde Levels (PPB) by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] CI = confidence interval for the estimated number.
[c] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

2.0 HOT WATER TEMPERATURE

The water temperature at the kitchen faucet was measured using a digital meat thermometer after running the hot water for 2, 3 and 4 minutes. The highest of the three temperatures was used as a measure of hot water temperature in the home.

According to the Consumer Product Safety Commission (CPSC)[9]:

> "*The majority of injuries and deaths involving tap water scalds are to the elderly and children under the age of five. The U.S. Consumer Product Safety Commission (CPSC) urges all users to lower their water heaters to 120 degrees Fahrenheit. In addition to preventing accidents, this decrease in temperature will conserve energy and save money. Most adults will suffer third-degree burns if exposed to 150 degree water for two seconds. Burns will also occur with a six-second exposure to 140 degree water or with a thirty second exposure to 130 degree water. Even if the temperature is 120 degrees, a five minute exposure could result in third-degree burns.*"

The CPSC recommendation is based solely on the risk of burns from excessively hot water, particularly in young children and the elderly. The elderly are more prone to scalds because of reduced skin sensitivity, increased reaction time, reduced coordination and mobility, and the effects of medication[10]. However, because of the potential for contamination with *Legionella* (the bacteria responsible for Legionnaires Disease), the World Health Organization (WHO) recommends that water be heated and stored at 60°C (140°F)[11]. Canadian studies have shown that the probability of *Legionella* contamination increases considerably if the temperature in electric water heaters is lowered to 49°C (120°F)[12]. However, *Legionella* contamination is not a problem in gas- or oil-fueled water heaters.

Table 2 shows the number and percent of homes with a gas water heater with a hot water temperature < 120°F, between 120 and 140°F, and > 140°F. Table 3 is the same table for homes without a gas water heater. An estimated 55.2 million (46.9%) homes had a gas water heater and an estimated 61.4 million (52.2%) did not[13]. While some homes have oil-fired water heaters, especially in the Northeast, and propane water heaters are sometimes found in rural areas, the majority of homes without a gas water heater have an electric water heater.

A significantly higher percentage of homes without a gas water heater (45.3%) had a water temperature below the 120°F threshold considered safe against bacterial growth (especially *Legionella*) than those with a gas water heater (27.9%). This is potentially concerning since, as

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[9] *CPSC Safety Alert*, *Avoiding Tap Water Scalds.* Publication 5098 009611 032012. https://www.cpsc.gov/s3fs-public/5098.pdf.

[10] Abu-Sittah GS, Chahine FM, Janom H. Management of burns in the elderly. Annals of Burns and Fire Disasters. 2016 Dec 31;29(4):249-245.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5347309/.

[11] World Health Organization (WHO). Legionella. In: Guidelines for Drinking Water. Addendum: Microbiological Agents in Drinking Water, 2nd edition, 2002. https://www.who.int/publications/i/item/9241545356.

[12] Lévesque B, Lavoie M, Joly J. *Residential water heater temperature: 49 or 60 degrees Celsius?* Can J Infect Dis Vol 15 No 1 January/February 2004. https://doi.org/10.1155/2004/109051.

[13] The sum of these numbers is 116.6 million, slightly less than the estimated 117.8 million total homes eligible for AHHS II. This is because data on the water heater was missing for 4 of the 703 homes surveyed.

noted above, most homes without gas water heaters have electric heaters, which are much more susceptible to bacterial growth. On the other hand, 15.5% of homes with gas water heaters had water temperature greater than 140°F, significantly more than homes without (5.0%). Overall, an estimated 11.6 million homes (9.9%) had water temperature > 140°F. As noted by CPSC, above, Water that hot will cause third degree burns in 6 seconds[9]. In summary, approximately 10% of homes had hazardous water temperature based on the 140°F threshold, and approximately 45% of homes (22.1 million) with (likely) electric water heaters had water temperature below 120°F, posing a potential risk of bacterial growth.

For homes with a gas water heater, none of the housing characteristics showed significant differences in water temperature > 140°F. The same was true for homes without a gas water heater. However, for such homes significantly lower percentages had low water temperature (< 120°F) in:

1. Homes with children under age 6

2. Rented homes

3. Homes receiving Government support

4. Homes of families with lower income ($35,000/year).

Findings 2-4 suggest that homes of families with lower income without gas water heaters may be less likely to have low water temperature, perhaps due to inclusion of utilities in the rent.

Table 2. Hot Water Temperature (°F) for Homes with a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units								
Less than 120	55,218	15,406	11,920	18,892	27.9%	22.5%	33.3%	100
Between 120 and 140	55,218	31,276	24,344	38,208	56.6%	49.4%	63.9%	194
Greater than 140	55,218	8,536	4,939	12,133	15.5%	9.4%	21.6%	46
Region:								
Northeast								
Less than 120	9,355	2,857	1,257	4,457	30.5%	16.8%	44.3%	17
Between 120 and 140	9,355	4,830	3,333	6,328	51.6%	39.9%	63.4%	32
Greater than 140	9,355	1,668	108	3,228	17.8%	0.3%	35.3%	11
Midwest								
Less than 120	14,777	4,291	2,100	6,483	29.0%	18.7%	39.4%	23
Between 120 and 140	14,777	8,059	6,086	10,032	54.5%	42.3%	66.7%	53
Greater than 140	14,777	2,426	1,270	3,583	16.4%	10.0%	22.9%	15
South								
Less than 120	16,728	4,348	2,950	5,747	26.0%	17.7%	34.3%	31
Between 120 and 140	16,728	10,330	4,844	15,816	61.8%	44.9%	78.6%	63
Greater than 140	16,728	2,049	83	4,015	12.3%	0.3%	24.8%	8
West								
Less than 120	14,358	3,909	2,226	5,593	27.2%	15.6%	38.8%	29
Between 120 and 140	14,358	8,057	4,619	11,496	56.1%	44.7%	67.5%	46
Greater than 140	14,358	2,392	89	4,695	16.7%	4.2%	29.1%	12
Construction Year:								
1978-2017								
Less than 120	24,091	5,928	3,550	8,305	24.6%	15.6%	33.7%	26
Between 120 and 140	24,091	13,593	8,697	18,489	56.4%	44.8%	68.0%	51
Greater than 140	24,091	4,570	1,421	7,719	19.0%	7.5%	30.4%	15
1960-1977								
Less than 120	9,453	2,380	1,336	3,424	25.2%	15.0%	35.3%	27
Between 120 and 140	9,453	5,688	3,813	7,563	60.2%	48.0%	72.3%	56
Greater than 140	9,453	1,384	451	2,317	14.6%	6.3%	23.0%	11
1940-1959								
Less than 120	10,830	3,422	1,899	4,945	31.6%	20.9%	42.3%	25
Between 120 and 140	10,830	6,285	4,562	8,009	58.0%	46.6%	69.5%	55
Greater than 140	10,830	1,123	368	1,877	10.4%	4.0%	16.7%	9
Before 1940								
Less than 120	10,845	3,677	1,490	5,863	33.9%	19.5%	48.3%	22
Between 120 and 140	10,845	5,709	3,497	7,922	52.6%	37.7%	67.6%	32
Greater than 140	10,845	1,459	523	2,395	13.5%	4.3%	22.6%	11
Urbanization:								
MSA								
Less than 120	46,939	12,905	9,860	15,951	27.5%	21.7%	33.3%	82
Between 120 and 140	46,939	26,247	19,813	32,681	55.9%	47.8%	64.0%	165
Greater than 140	46,939	7,786	4,243	11,330	16.6%	9.5%	23.7%	40
Non-MSA								
Less than 120	8,280	2,501	805	4,197	30.2%	15.9%	44.5%	18
Between 120 and 140	8,280	5,030	2,449	7,610	60.7%	44.7%	76.8%	29
Greater than 140	8,280	749	132	1,366	9.0%	2.7%	15.4%	6

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
One or More Children Under Age 6:								
All HU Ages								
Less than 120	8,394	2,401	1,066	3,736	28.6%	15.5%	41.7%	17
Between 120 and 140	8,394	4,838	2,362	7,314	57.6%	41.0%	74.3%	33
Greater than 140	8,394	1,156	0	2,393	13.8%	0.0%	27.9%	6
No Children Under Age 6:								
All HU Ages								
Less than 120	46,824	13,005	9,389	16,621	27.8%	21.4%	34.1%	83
Between 120 and 140	46,824	26,439	20,369	32,509	56.5%	48.7%	64.2%	161
Greater than 140	46,824	7,380	4,024	10,736	15.8%	9.3%	22.3%	40
Housing Unit Type:								
Single family								
Less than 120	50,892	13,923	10,305	17,542	27.4%	21.2%	33.6%	92
Between 120 and 140	50,892	28,976	22,222	35,730	56.9%	49.0%	64.9%	179
Greater than 140	50,892	7,993	4,453	11,532	15.7%	9.1%	22.3%	43
Multi-family								
Less than 120	4,326	1,483	0	3,002	34.3%	0.0%	54.8%	8
Between 120 and 140	4,326	2,300	517	4,084	53.2%	33.5%	72.8%	15
Greater than 140	4,326	543	0	1,185	12.6%	0.0%	28.5%	3
Tenure:								
Owner-occupied								
Less than 120	40,518	11,451	8,391	14,510	28.3%	21.5%	35.1%	72
Between 120 and 140	40,518	22,080	15,930	28,230	54.5%	45.8%	63.2%	126
Greater than 140	40,518	6,987	3,763	10,211	17.2%	10.0%	24.5%	35
Renter-occupied								
Less than 120	14,700	3,955	1,927	5,984	26.9%	18.1%	35.7%	28
Between 120 and 140	14,700	9,197	6,261	12,132	62.6%	54.0%	71.1%	68
Greater than 140	14,700	1,548	564	2,533	10.5%	3.8%	17.2%	11
Household Income:								
Less than $35,000/year								
Less than 120	18,967	5,439	3,552	7,326	28.7%	21.3%	36.0%	41
Between 120 and 140	18,967	10,370	7,638	13,102	54.7%	46.4%	63.0%	79
Greater than 140	18,967	3,158	1,208	5,108	16.7%	7.9%	25.4%	18
Equal to or more than $35,000/year								
Less than 120	36,251	9,967	6,730	13,204	27.5%	20.2%	34.8%	59
Between 120 and 140	36,251	20,907	14,609	27,204	57.7%	47.4%	68.0%	115
Greater than 140	36,251	5,378	2,763	7,993	14.8%	7.7%	22.0%	28
Government Support:								
Government support								
Less than 120	3,162	1,065	0	2,542	33.7%	0.0%	68.0%	5
Between 120 and 140	3,162	1,554	489	2,620	49.2%	19.9%	78.4%	15
Greater than 140	3,162	543	0	1,185	17.2%	0.0%	36.8%	3
No government support								
Less than 120	52,000	14,286	10,692	17,880	27.5%	21.6%	33.3%	94
Between 120 and 140	52,000	29,722	22,820	36,624	57.2%	49.6%	64.7%	179
Greater than 140	52,000	7,993	4,453	11,532	15.4%	8.9%	21.8%	43

Table 2. Hot Water Temperature (°F) for Homes with a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	

Table 2. Hot Water Temperature (°F) for Homes with a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	Hus in Sample
Refusal/Don't Know[d]	56							1
Poverty:								
In poverty								
Less than 120	6,860	1,720	703	2,737	25.1%	12.8%	37.3%	16
Between 120 and 140	6,860	4,538	2,940	6,137	66.2%	53.4%	78.9%	39
Greater than 140	6,860	602	69	1,135	8.8%	1.3%	16.3%	6
Not in poverty								
Less than 120	48,358	13,686	10,278	17,095	28.3%	22.1%	34.5%	84
Between 120 and 140	48,358	26,738	20,173	33,303	55.3%	47.1%	63.5%	155
Greater than 140	48,358	7,933	4,359	11,508	16.4%	9.5%	23.3%	40
Race:								
White								
Less than 120	42,740	11,192	8,209	14,176	26.2%	20.2%	32.1%	74
Between 120 and 140	42,740	24,624	18,964	30,284	57.6%	49.6%	65.7%	141
Greater than 140	42,740	6,923	3,757	10,089	16.2%	9.6%	22.8%	36
African American								
Less than 120	7,665	2,589	1,630	3,547	33.8%	21.4%	46.1%	17
Between 120 and 140	7,665	4,171	1,751	6,590	54.4%	36.6%	72.2%	35
Greater than 140	7,665	906	0	1,818	11.8%	0.0%	24.3%	6
Other[e]								
Less than 120	4,813	1,625	183	3,067	33.8%	9.9%	57.7%	9
Between 120 and 140	4,813	2,482	692	4,271	51.6%	25.5%	77.6%	18
Greater than 140	4,813	706	0	1,785	14.7%	0.0%	35.6%	4
Ethnicity:								
Hispanic/Latino								
Less than 120	8,078	2,953	1,111	4,795	36.6%	18.4%	54.7%	27
Between 120 and 140	8,078	3,440	1,537	5,344	42.6%	27.7%	57.5%	32
Greater than 140	8,078	1,685	441	2,928	20.9%	8.3%	33.5%	10
Not Hispanic/Latino								
Less than 120	47,140	12,453	8,440	16,467	26.4%	19.6%	33.3%	73
Between 120 and 140	47,140	27,836	20,911	34,761	59.0%	51.1%	67.0%	162
Greater than 140	47,140	6,851	3,618	10,084	14.5%	8.0%	21.1%	36

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all Hus" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] Refusals and "don't know" responses by survey respondents.
[e] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

Table 3. Hot Water Temperature (°F) for Homes without a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units								
Less than 120	61,438	27,834	22,102	33,566	45.3%	39.2%	51.4%	159
Between 120 and 140	61,438	30,539	24,605	36,473	49.7%	43.7%	55.7%	180
Greater than 140	61,438	3,065	1,441	4,689	5.0%	2.5%	7.5%	20
Region:								
Northeast								
Less than 120	11,637	4,371	2,514	6,227	37.6%	21.3%	53.8%	27
Between 120 and 140	11,637	6,343	3,229	9,456	54.5%	37.1%	71.9%	45
Greater than 140	11,637	924	401	1,446	7.9%	3.4%	12.4%	7
Midwest								
Less than 120	11,770	5,028	3,765	6,291	42.7%	31.0%	54.4%	27
Between 120 and 140	11,770	6,074	3,999	8,149	51.6%	39.6%	63.6%	38
Greater than 140	11,770	668	0	1,453	5.7%	0.0%	12.1%	4
South								
Less than 120	26,748	13,657	9,770	17,545	51.1%	43.6%	58.5%	69
Between 120 and 140	26,748	12,152	8,979	15,325	45.4%	38.6%	52.3%	63
Greater than 140	26,748	939	0	2,174	3.5%	0.0%	7.8%	4
West								
Less than 120	11,283	4,778	1,214	8,342	42.4%	23.3%	61.4%	36
Between 120 and 140	11,283	5,971	2,633	9,309	52.9%	35.6%	70.2%	34
Greater than 140	11,283	534	59	1,008	4.7%	0.3%	9.7%	5
Construction Year:								
1978-2017								
Less than 120	32,897	14,345	9,465	19,226	43.6%	34.9%	52.3%	49
Between 120 and 140	32,897	16,945	12,776	21,113	51.5%	42.7%	60.3%	73
Greater than 140	32,897	1,607	374	2,841	4.9%	1.3%	8.4%	8
1960-1977								
Less than 120	16,146	7,431	5,056	9,807	46.0%	35.3%	56.8%	63
Between 120 and 140	16,146	7,502	5,176	9,827	46.5%	35.7%	57.2%	58
Greater than 140	16,146	1,213	302	2,125	7.5%	2.4%	12.6%	10
1940-1959								
Less than 120	7,185	3,298	1,851	4,745	45.9%	32.4%	59.4%	30
Between 120 and 140	7,185	3,781	2,484	5,078	52.6%	39.0%	66.3%	32
Greater than 140	7,185	106	0	320	1.5%	0.0%	4.5%	1
Before 1940								
Less than 120	5,210	2,760	1,184	4,336	53.0%	34.4%	71.6%	17
Between 120 and 140	5,210	2,312	744	3,880	44.4%	26.5%	62.3%	17
Greater than 140	5,210	138	0	415	2.6%	0.0%	7.9%	1
Urbanization:								
MSA								
Less than 120	42,854	19,495	14,990	24,001	45.5%	38.4%	52.6%	119
Between 120 and 140	42,854	20,697	15,954	25,439	48.3%	41.3%	55.3%	129
Greater than 140	42,854	2,662	1,144	4,180	6.2%	3.0%	9.4%	18
Non-MSA								
Less than 120	18,584	8,339	4,795	11,883	44.9%	32.8%	56.9%	40
Between 120 and 140	18,584	9,843	6,276	13,409	53.0%	41.4%	64.5%	51
Greater than 140	18,584	403	0	981	2.2%	0.0%	5.4%	2

Table 3. Hot Water Temperature (°F) for Homes without a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Presence of Children Under Age 6:								
One or more children < age 6								
Less than 120	6,508	1,994	782	3,206	30.6%	15.7%	45.6%	18
Between 120 and 140	6,508	3,857	2,146	5,569	59.3%	42.7%	75.8%	30
Greater than 140	6,508	657	0	1,545	10.1%	0.0%	22.9%	3
No children < age 6								
Less than 120	54,930	25,840	20,450	31,229	47.0%	40.4%	53.6%	141
Between 120 and 140	54,930	26,682	20,924	32,439	48.6%	42.3%	54.9%	150
Greater than 140	54,930	2,408	889	3,927	4.4%	1.6%	7.2%	17
Housing Unit Type:								
Single family								
Less than 120	43,832	21,105	16,152	26,058	48.2%	41.1%	55.2%	118
Between 120 and 140	43,832	20,447	15,711	25,183	46.6%	39.9%	53.4%	122
Greater than 140	43,832	2,280	1,048	3,513	5.2%	2.6%	7.8%	15
Multi-family								
Less than 120	17,606	6,729	4,245	9,213	38.2%	28.4%	48.0%	41
Between 120 and 140	17,606	10,093	6,526	13,659	57.3%	46.8%	67.8%	58
Greater than 140	17,606	784	0	1,617	4.5%	0.0%	9.1%	5
Tenure:								
Owner-occupied								
Less than 120	33,918	17,775	13,242	22,307	52.4%	43.8%	61.0%	93
Between 120 and 140	33,918	14,861	11,095	18,626	43.8%	34.9%	52.8%	84
Greater than 140	33,918	1,283	187	2,379	3.8%	0.8%	6.8%	7
Renter-occupied								
Less than 120	27,520	10,059	6,606	13,512	36.6%	27.6%	45.5%	66
Between 120 and 140	27,520	15,678	11,303	20,054	57.0%	48.0%	65.9%	96
Greater than 140	27,520	1,782	751	2,813	6.5%	2.8%	10.1%	13
Household Income:								
Less than $35,000/year								
Less than 120	26,798	10,328	7,272	13,383	38.5%	29.9%	47.2%	66
Between 120 and 140	26,798	15,068	11,048	19,088	56.2%	47.9%	64.5%	92
Greater than 140	26,798	1,403	253	2,552	5.2%	1.1%	9.3%	10
Equal to or more than $35,000/year								
Less than 120	34,639	17,506	12,527	22,486	50.5%	41.8%	59.3%	93
Between 120 and 140	34,639	15,471	11,340	19,602	44.7%	36.2%	53.1%	88
Greater than 140	34,639	1,662	494	2,830	4.8%	1.5%	8.1%	10
Government Support:								
Government support								
Less than 120	7,618	2,254	652	3,855	29.6%	14.8%	44.3%	13
Between 120 and 140	7,618	5,082	2,588	7,576	66.7%	51.8%	81.6%	32
Greater than 140	7,618	283	0	756	3.7%	0.0%	10.3%	2
No government support								
Less than 120	52,928	25,112	19,698	30,525	47.4%	40.4%	54.5%	143
Between 120 and 140	52,928	25,275	19,909	30,641	47.8%	40.7%	54.8%	147
Greater than 140	52,928	2,541	1,072	4,010	4.8%	2.2%	7.4%	16
Refusal/Don't Know[d]	892							6

Table 3. Hot Water Temperature (°F) for Homes without a Gas Water Heater by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Poverty:								
In poverty								
Less than 120	13,316	4,468	2,445	6,491	33.6%	23.7%	43.4%	36
Between 120 and 140	13,316	8,291	5,226	11,355	62.3%	52.6%	72.0%	53
Greater than 140	13,316	557	0	1,137	4.2%	0.0%	8.5%	5
Not in poverty								
Less than 120	48,122	23,366	18,136	28,596	48.6%	41.1%	56.0%	123
Between 120 and 140	48,122	22,248	17,017	27,480	46.2%	39.0%	53.5%	127
Greater than 140	48,122	2,508	1,020	3,995	5.2%	2.4%	8.1%	15
Race:								
White								
Less than 120	45,417	21,471	16,662	26,280	47.3%	39.5%	55.1%	114
Between 120 and 140	45,417	21,903	16,127	27,679	48.2%	40.3%	56.2%	120
Greater than 140	45,417	2,043	851	3,235	4.5%	1.9%	7.1%	13
African American								
Less than 120	9,513	3,605	1,770	5,441	37.9%	24.2%	51.5%	26
Between 120 and 140	9,513	5,318	2,990	7,647	55.9%	44.2%	67.6%	39
Greater than 140	9,513	590	0	1,555	6.2%	0.0%	15.7%	3
Other[e]								
Less than 120	6,508	2,758	738	4,777	42.4%	22.3%	62.4%	19
Between 120 and 140	6,508	3,318	1,618	5,017	51.0%	30.6%	71.4%	21
Greater than 140	6,508	432	0	877	6.6%	0.0%	12.2%	4
Ethnicity:								
Hispanic/Latino								
Less than 120	7,460	3,863	1,923	5,804	51.8%	32.9%	70.7%	26
Between 120 and 140	7,460	2,924	1,197	4,652	39.2%	20.2%	58.2%	19
Greater than 140	7,460	673	84	1,261	9.0%	1.5%	16.6%	6
Not Hispanic/Latino								
Less than 120	53,978	23,971	18,688	29,253	44.4%	37.8%	51.0%	133
Between 120 and 140	53,978	27,615	22,039	33,191	51.2%	44.7%	57.6%	161
Greater than 140	53,978	2,392	842	3,942	4.4%	1.7%	7.2%	14

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all Hus" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] Refusals and "don't know" responses by survey respondents.
[e] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

3.0 SMOKE ALARMS

During the interior walkthrough inspection, survey interviewers checked whether the home had one or more smoke alarms and, if possible, tested them to see if they were working[14]. The data collected on smoke alarms is shown in Table 4.

Table 4. Data collected on Smoke Alarms in AHHS II

Smoke alarm(s) present in home? Yes......1 No ....2 (SKIP TO NEXT PAGE)	TYPE Central System.......1 Battery Operated....2	LEVEL(S) OF HOME (circle all that apply) 0 1 2 3 4 5	NUMBER PRESENT _____
Are smoke alarm(s) present where all household members sleep (in room or immediately outside room)? Yes............... 1 No 2		IF NO, number of rooms not covered by smoke alarm? _____	
TEST ALARMS – ARE ALL WORKING? Yes .... 1 No..................... 2 Can't Test.......... 3		IF NO, HOW many are not working? _____	

Each home was classified in one of 5 categories based on the data collected in Table 4:
1. Smoke alarms(s) present and at least one working.
2. Smoke alarms(s) present but none working.
3. Smoke alarms(s) present but it could not be determined whether any were working.
4. No smoke alarm present
5. Missing data.

For example, if not all smoke alarms were working, or some or all could not be tested, and the number present was greater than the number not working, the home was classified in Category 1.

Table 4 shows estimates of the number and percent of homes in each category by selected housing and demographic characteristics. An estimated 8.3 million homes (7.1%) had no smoke detector. Telephone surveys conducted by the National Fire Protection Association since 2000 found 96% of households reported having at least one smoke alarm, leaving approximately 5 million homes without one[15]. Our estimate is significantly higher at 8.3 million (95% confidence interval 5.7 million-10.9 million). A possible reason for the discrepancy could be a greater reluctance to admit not having a smoke alarm to an in-the-home interviewer than to a telephone interviewer.

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[14] Some smoke alarms could not be tested because they were inaccessible (e.g., located on a high ceiling) or they were in areas of the home the interviewer was not allowed to access (e.g., a bedroom where someone was sleeping).
[15] Ahrens M. Smoke Alarms in US Home Fires. National Fire Protection Association. February 2021. p. 2. https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/smoke-alarms-in-us-home-fires.

We were able to determine that an estimated 67.8 million homes (57.6%) definitely had at least one working smoke alarm, while 17.3 million (14.7%) did not (7.1% with no alarm and 7.6% with an alarm(s) but none working). In 27.6% of homes, there was a smoke alarm(s) but we could not determine whether any were working. If we assume that these homes are similar to those where we could determine the status of the smoke alarms[16], we can derive an estimate of the percent of all homes with at least one working smoke alarm. First, of the 76,730,000 homes with a smoke alarms(s) where the status could be determined, 67,777,000 (88.3%) had a working alarm. Applying this percentage to the 32,005,000 homes where the status could not be determined, we estimate that 28,260,000 actually had a working alarm. This gives an estimated 96,037,00 homes (81.6%) with at least one working smoke alarm, leaving 18.4% of homes (approximately 22 million) without a working smoke alarm (95% confidence interval 14.9%-21.9%)[17].

There were apparent regional differences in presence and status (working/non-working) of smoke detectors. The South had the highest percent of homes without a smoke detector and the West the lowest, although the differences by region were not statistically significant. The Northeast had the highest percent of homes with a known working smoke detector (69.3%) and the South the lowest (44.7%). However, the significance of this difference is difficult to assess because the South also had a much higher percent of homes where it could not be determined whether or not there was a working detector (36.3% vs 20.9%). Under the previously mentioned assumption that these homes are similar to those where we could determine the status of the smoke alarms, estimates and approximate 95% confidence intervals for the percent of homes by region without a working smoke detector are shown below.

Percent of Homes without a Working Smoke Detector by Region

Region	Percent with no Working Smoke Detector	95% CI
Northeast	10.7%	7.1% - 14.2%
Midwest	19.8%	12.4% - 27.1%
South	25.7%	18.0% - 33.4%
West	13.6%	7.5% - 19.7%
ALL	18.4%	14.9% - 21.9%

The South had a significantly higher percentage of homes without a working detector than the Northeast or West, which did not differ significantly. The Midwest had a significantly higher percent than the Northeast, but the difference with the West was not significant[18].

As expected, the percent of homes without smoke detectors increased with age, from 2.6% for post-1977 homes to 14.1% for those built before 1940. The percent for post-1977 homes was significantly less than for the other age categories, which were not significantly different. Single-family homes were significantly more likely not to have a smoke detector than multifamily

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[16] This assumption is somewhat open to question because if a smoke alarm was inaccessible to the interviewer, it may be less likely to be tested by the resident or have the battery changed regularly if battery operated, and therefore more likely not to be working.
[17] Approximate confidence interval using a Taylor Series expansion.
[18] The highlighting scheme for significant differences cannot be consistently applied to the table. For example, Midwest is significantly greater than Northeast but not significantly different from South or West.

homes (8.2% vs 2.0%), as were owner-occupied homes compared to rented homes (8.7% vs 4.2%), and homes without government support compared to those with such support (7.5% vs 2.8%), presumably due to tighter regulation of multifamily housing, in which renters are more likely to live and where government support is more common. Of the three categories, by far the strongest effect was single- vs multifamily: 20.5% of single-family homes did not have a working smoke detector, compared to only 9.4% of multifamily homes, a highly significant difference. For tenure and Government Support, there were no significant differences in the percent of homes with no working smoke detector.

A higher percentage of lower income homes (<$35,000 annual household income) had no smoke detector than of higher income homes ($\geq$ $35,000) – 8.6% vs 6.1%, but the difference was not significant. However, significantly more lower income homes did not have a working smoke detector (25.1%) when compared to higher income homes (13.6%), suggesting less maintenance and testing of the detectors in lower income homes.

With respect to race, significantly fewer African American homes (3.5%) did not have a smoke detector compared to White homes (7.5%). However, there was no significant difference in no working smoke detectors between White, African American and Other households. With regard to ethnicity, Hispanic homes were significantly more likely not to have a smoke detector (14.4%) compared to non-Hispanic homes (6.0%), and also significantly more likely not to have a working smoke detector (26.8% vs 17.2%).

Table 4. Presence of Smoke Alarms and Working Smoke Alarm by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units								
Present, at least one works	117,751	67,777	59,411	76,143	57.6%	52.5%	62.6%	405
Present, none work	117,751	8,953	5,856	12,051	7.6%	4.9%	10.3%	61
Present, unknown number work	117,751	32,005	25,274	38,736	27.2%	22.3%	32.0%	168
None present	117,751	8,322	5,736	10,908	7.1%	4.7%	9.4%	64
Region:								
Northeast								
Present, at least one works	20,993	14,538	12,052	17,024	69.3%	58.2%	80.3%	90
Present, none work	20,993	630	7	1,253	3.0%	0.2%	5.8%	5
Present, unknown number work	20,993	4,397	1,771	7,023	20.9%	10.9%	31.0%	32
None present	20,993	1,271	445	2,097	6.1%	1.9%	10.2%	11
Midwest								
Present, at least one works	26,699	16,343	12,806	19,881	61.2%	51.3%	71.2%	100
Present, none work	26,699	2,016	402	3,631	7.6%	1.5%	13.6%	11
Present, unknown number work	26,699	5,700	2,882	8,519	21.4%	12.6%	30.1%	33
None present	26,699	2,174	243	4,105	8.1%	0.8%	15.5%	14
South								
Present, at least one works	43,640	19,505	14,016	24,994	44.7%	35.5%	53.9%	106
Present, none work	43,640	4,389	2,155	6,622	10.1%	4.8%	15.3%	28
Present, unknown number work	43,640	15,847	10,789	20,905	36.3%	26.4%	46.3%	76
None present	43,640	3,827	2,622	5,031	8.8%	5.5%	12.0%	29
West								
Present, at least one works	26,420	17,391	12,790	21,992	65.8%	55.5%	76.1%	109
Present, none work	26,420	1,918	648	3,188	7.3%	2.3%	12.3%	17
Present, unknown number work	26,420	6,061	3,852	8,270	22.9%	15.0%	30.9%	27
None present	26,420	1,050	142	1,958	4.0%	0.4%	7.6%	10
Construction Year:								
1978-2017								
Present, at least one works	57,919	33,922	26,139	41,704	58.6%	50.3%	66.8%	135
Present, none work	57,919	3,957	1,947	5,967	6.8%	3.2%	10.5%	16
Present, unknown number work	57,919	18,147	12,868	23,425	31.3%	23.7%	38.9%	65
None present	57,919	1,485	615	2,355	2.6%	1.0%	4.1%	6
1960-1977								
Present, at least one works	25,599	14,907	11,870	17,944	58.2%	49.2%	67.3%	132
Present, none work	25,599	1,916	893	2,939	7.5%	3.5%	11.5%	19
Present, unknown number work	25,599	6,431	3,790	9,073	25.1%	16.6%	33.7%	51
None present	25,599	2,196	968	3,423	8.6%	3.9%	13.2%	21
1940-1959								
Present, at least one works	18,178	10,209	7,940	12,478	56.2%	48.0%	64.4%	84
Present, none work	18,178	1,584	497	2,672	8.7%	3.5%	13.9%	16
Present, unknown number work	18,178	3,868	2,658	5,077	21.3%	14.9%	27.7%	31
None present	18,178	2,381	1,260	3,502	13.1%	7.2%	19.0%	22
Before 1940								
Present, at least one works	16,055	8,739	5,997	11,481	54.4%	42.0%	66.8%	54
Present, none work	16,055	1,496	548	2,443	9.3%	3.2%	15.4%	10
Present, unknown number work	16,055	3,560	1,727	5,392	22.2%	13.9%	30.5%	21
None present	16,055	2,260	642	3,878	14.1%	5.0%	23.2%	15

Table 4. Presence of Smoke Alarms and Working Smoke Alarm by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Urbanization:								
MSA								
Present, at least one works	90,723	53,074	46,057	60,091	58.5%	53.2%	63.8%	323
Present, none work	90,723	6,321	3,824	8,817	7.0%	4.2%	9.8%	46
Present, unknown number work	90,723	25,046	19,745	30,347	27.6%	22.7%	32.5%	136
None present	90,723	5,840	3,452	8,229	6.4%	3.8%	9.1%	46
Non-MSA								
Present, at least one works	27,028	14,703	10,147	19,259	54.4%	41.5%	67.3%	82
Present, none work	27,028	2,632	799	4,466	9.7%	2.9%	16.6%	15
Present, unknown number work	27,028	6,960	2,812	11,107	25.7%	12.2%	39.3%	32
None present	27,028	2,481	1,490	3,472	9.2%	4.4%	14.0%	18
One or More Children Under Age 6:								
All HU Ages								
Present, at least one works	14,979	8,315	4,773	11,857	55.5%	42.6%	68.4%	58
Present, none work	14,979	1,689	640	2,739	11.3%	4.4%	18.2%	16
Present, unknown number work	14,979	4,214	2,414	6,014	28.1%	17.3%	39.0%	26
None present	14,979	685	169	1,200	4.6%	1.1%	8.1%	7
No Children Under Age 6:								
All HU Ages								
Present, at least one works	102,772	59,462	51,666	67,258	57.9%	52.6%	63.2%	347
Present, none work	102,772	7,264	4,688	9,840	7.1%	4.5%	9.7%	45
Present, unknown number work	102,772	27,791	21,379	34,204	27.0%	21.9%	32.2%	142
None present	102,772	7,637	5,124	10,150	7.4%	4.8%	10.0%	57
Housing Unit Type:								
Single family								
Present, at least one works	95,590	53,508	46,102	60,913	56.0%	50.4%	61.5%	322
Present, none work	95,590	7,891	4,974	10,808	8.3%	5.1%	11.4%	52
Present, unknown number work	95,590	25,779	19,998	31,561	27.0%	21.7%	32.2%	134
None present	95,590	7,874	5,359	10,389	`8.2%`	5.5%	10.9%	59
Multi-family								
Present, at least one works	22,161	14,269	10,013	18,525	64.4%	54.1%	74.7%	83
Present, none work	22,161	1,062	182	1,942	4.8%	1.1%	8.5%	9
Present, unknown number work	22,161	6,226	3,334	9,117	28.1%	18.5%	37.7%	34
None present	22,161	447	0	975	`2.0%`	0.0%	4.3%	5
Tenure:								
Owner-occupied								
Present, at least one works	75,302	41,064	34,602	47,526	54.5%	48.8%	60.3%	231
Present, none work	75,302	5,077	3,092	7,061	6.7%	3.9%	9.6%	31
Present, unknown number work	75,302	22,154	17,156	27,153	29.4%	23.7%	35.1%	108
None present	75,302	6,546	4,319	8,772	`8.7%`	5.6%	11.7%	46
Renter-occupied								
Present, at least one works	42,449	26,713	21,028	32,398	62.9%	54.6%	71.3%	174
Present, none work	42,449	3,876	2,023	5,730	9.1%	5.0%	13.3%	30
Present, unknown number work	42,449	9,851	5,812	13,890	23.2%	15.1%	31.3%	60
None present	42,449	1,776	683	2,868	`4.2%`	1.5%	6.8%	18
Missing	42,449	233						2
Household Income:								

Table 4. Presence of Smoke Alarms and Working Smoke Alarm by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Less than $35,000/year								
Present, at least one works	45,994	26,597	21,167	32,028	57.8%	50.7%	64.9%	176
Present, none work	45,994	5,541	3,449	7,633	12.0%	7.6%	16.5%	37
Present, unknown number work	45,994	9,498	6,300	12,697	20.7%	14.5%	26.8%	60
None present	45,994	3,957	2,031	5,883	8.6%	4.4%	12.8%	32
Equal to or more than $35,000/year								
Present, at least one works	71,757	41,180	34,133	48,227	57.4%	50.7%	64.1%	229
Present, none work	71,757	3,412	1,728	5,096	4.8%	2.3%	7.2%	24
Present, unknown number work	71,757	22,507	17,356	27,658	31.4%	25.0%	37.7%	108
None present	71,757	4,365	2,390	6,339	6.1%	3.5%	8.7%	32
Government Support:								
Government support								
Present, at least one works	10,781	6,701	4,205	9,197	62.2%	48.9%	75.4%	45
Present, none work	10,781	885	0	1,802	8.2%	0.0%	16.6%	5
Present, unknown number work	10,781	2,813	654	4,972	26.1%	11.7%	40.5%	14
None present	10,781	306	24	587	2.8%	0.2%	5.5%	5
No government support								
Present, at least one works	106,023	60,611	52,899	68,322	57.2%	51.8%	62.5%	358
Present, none work	106,023	8,012	5,190	10,835	7.6%	4.8%	10.3%	55
Present, unknown number work	106,023	28,872	22,659	35,085	27.2%	22.2%	32.3%	151
None present	106,023	7,910	5,373	10,446	7.5%	4.9%	10.0%	58
Poverty:								
In poverty								
Present, at least one works	22,033	12,108	8,086	16,130	55.0%	40.9%	69.0%	63
Present, none work	22,033	1,634	320	2,947	7.4%	1.7%	13.1%	8
Present, unknown number work	22,033	6,126	2,205	10,047	27.8%	12.6%	43.0%	26
None present	22,033	1,913	1,080	2,747	8.7%	3.8%	13.6%	12
Missing	20,340	149						2
Not in poverty								
Present, at least one works	97,411	55,820	47,853	63,786	57.3%	51.7%	62.9%	319
Present, none work	97,411	6,228	3,652	8,805	6.4%	3.7%	9.1%	37
Present, unknown number work	97,411	27,691	21,529	33,854	28.4%	23.2%	33.7%	136
None present	97,411	7,126	4,683	9,570	7.3%	4.7%	10.0%	51
Race:								
White								
Present, at least one works	89,252	52,534	45,983	59,086	58.9%	53.6%	64.1%	302
Present, none work	89,252	6,101	3,092	9,111	6.8%	3.5%	10.2%	39
Present, unknown number work	89,252	23,272	17,649	28,896	26.1%	21.0%	31.2%	110
None present	89,252	6,725	4,547	8,904	7.5%	5.0%	10.1%	47
African American								
Present, at least one works	17,179	9,365	5,403	13,326	54.5%	40.0%	69.0%	67
Present, none work	17,179	1,722	658	2,787	10.0%	3.9%	16.2%	13
Present, unknown number work	17,179	5,420	3,623	7,218	31.6%	21.0%	42.1%	37
None present	17,179	596	113	1,078	3.5%	0.7%	6.2%	8
Other[d]								
Present, at least one works	11,321	5,878	2,972	8,784	51.9%	36.3%	67.5%	36
Present, none work	11,321	1,130	266	1,993	10.0%	4.0%	15.9%	9

Table 4. Presence of Smoke Alarms and Working Smoke Alarm by Selected Housing Unit (HU) Characteristics

HU Characteristic	All Hus[b] (000)	Number of Hus[a] (000)			Percent of Hus (%)			Hus in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Present, unknown number work	11,321	3,313	1,091	5,534	29.3%	13.0%	45.5%	21
None present	11,321	1,000	248	1,753	8.8%	2.5%	15.2%	9
Ethnicity:								
Hispanic/Latino								
Present, at least one works	15,538	8,773	6,012	11,534	56.5%	46.7%	66.3%	62
Present, none work	15,538	1,325	376	2,274	8.5%	3.3%	13.8%	12
Present, unknown number work	15,538	2,980	1,631	4,328	19.2%	10.7%	27.6%	25
None present	15,538	2,231	890	3,573	<mark>14.4%</mark>	7.4%	21.3%	19
Not Hispanic/Latino								
Present, at least one works	102,213	59,004	50,746	67,262	57.7%	52.5%	62.9%	343
Present, none work	102,213	7,628	4,924	10,333	7.5%	4.8%	10.2%	49
Present, unknown number work	102,213	29,026	22,558	35,493	28.4%	23.1%	33.7%	143
None present	102,213	6,090	3,806	8,374	<mark>6.0%</mark>	3.6%	8.3%	45

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all Hus" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

4.0 CARBON MONOXIDE (CO) DETECTORS

During the interior walkthrough of each home visited, the interviewer checked for the presence of the following combustion sources: furnace, gas stove or fireplace, wood fireplace, gas hot water heater, gas dryer and portable fuel-fired heater. They were also asked to list any additional combustion sources present and to check for a carbon monoxide (CO) detector (although they did not test any that were present).

The home was considered to have a (potential) <u>CO hazard</u> if there was at least one interior combustion source but no CO detector[19]. Data was missing for one unit, i.e., combustion sources were present but it was not reported whether there was a CO detector. Table 5 shows the prevalence of CO hazards nationwide and by various geographic, socioeconomic and demographic characteristics of housing.

The survey found that an estimated 44.9 Million homes (38.1%) nationwide had a (potential) CO hazard, approximately twice the estimated 22 million homes (18.4%) without a working smoke detector. According to the CDC[20]:

> *"Each year, more than 400 Americans die from unintentional CO poisoning not linked to fires, more than 20,000 visit the emergency room, and more than 4,000 are hospitalized."*

Single-family homes were significantly more likely to have a CO hazard than multifamily homes, as were owner-occupied homes compared to rented homes and White homes compared to African American homes. The common factor in these differences may be that multifamily and rented homes are more likely to be professionally managed and consequently more likely to have CO detectors, in part for liability and insurance reasons, and also because local ordinances requiring smoke and CO detectors for rental housing are not uncommon. Similar differences were found for smoke alarms.

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[19] Exterior combustion sources listed under "Other combustion source present", such as gas or charcoal grills, were not considered CO hazards even if the home did not have a CO detector.
[20] https://www.cdc.gov/co/faqs.htm

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	44,899	38,128	51,670	38.1%	33.2%	43.1%	268
Region:								
Northeast	20,993	6,345	4,196	8,493	30.2%	18.8%	41.7%	44
Midwest	26,699	10,439	7,255	13,623	39.1%	29.9%	48.3%	66
South	43,640	17,947	13,460	22,433	41.1%	32.6%	49.6%	99
West	26,420	10,168	6,858	13,479	38.5%	28.1%	48.9%	59
Construction Year:								
1978-2017	57,919	20,973	15,355	26,591	36.2%	27.5%	44.9%	77
1960-1977	25,599	10,370	8,017	12,723	40.5%	31.9%	49.1%	90
1940-1959	18,178	6,974	5,370	8,579	38.4%	30.7%	46.1%	60
Before 1940	16,055	6,582	4,308	8,857	41.0%	31.1%	50.9%	41
Urbanization:								
MSA	90,723	32,282	27,013	37,552	35.6%	30.2%	41.0%	200
Non-MSA	27,028	12,616	8,366	16,867	46.7%	36.1%	57.3%	68
One or More Children Under Age 6:								
Total Housing Units	14,979	6,221	3,292	9,149	41.5%	26.4%	56.7%	42
No Children Under Age 6:								
Total Housing Units	102,772	38,678	32,242	45,115	37.6%	32.2%	43.0%	226
Housing Unit Type:								
Single family	95,590	38,971	32,967	44,975	==40.8%==	35.2%	46.4%	231
Multi-family	22,161	5,928	2,628	9,228	==26.7%==	14.0%	39.5%	37
Tenure:								
Owner-occupied	75,302	31,550	25,939	37,160	==41.9%==	35.7%	48.1%	173
Renter-occupied	42,449	13,349	9,846	16,853	==31.4%==	23.7%	39.2%	95
Household Income:								
Less than $35,000/year	45,994	18,429	14,600	22,257	40.1%	33.5%	46.7%	125
Equal to or more than $35,000/year	71,757	26,470	21,280	31,660	36.9%	31.1%	42.7%	143
Government Support:								
Government support	10,781	3,362	1,340	5,384	31.2%	15.6%	46.8%	25
No government support	106,023	41,193	34,875	47,511	38.9%	33.5%	44.2%	240
Poverty:								
In poverty	20,340	6,594	4,301	8,888	32.4%	23.9%	40.9%	55
Not in poverty	97,411	38,305	31,555	45,054	39.3%	33.7%	45.0%	213
Race:								
White	89,252	36,180	30,088	42,271	==40.5%==	34.9%	46.1%	203
African American	17,179	4,714	2,817	6,612	==27.4%==	16.6%	38.3%	38
Other[d]	11,321	4,005	1,845	6,165	35.4%	20.7%	50.1%	27
Ethnicity:								
Hispanic/Latino	15,538	6,046	3,355	8,737	38.9%	26.5%	51.3%	53
Not Hispanic/Latino	102,213	38,853	31,922	45,784	38.0%	32.6%	43.4%	215

Table 5. Carbon Monoxide Hazards by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

5.0 FIRE EXTINGUISHERS

The following information on fire extinguishers and their status was collected by interviewers during the interior walkthrough:

Is there a fire extinguisher in the house?	IF PRESENT				
	ROOM	CODE	GAUGE STATUS	EXPIRED?	TYPE(S) (Circle all that apply)
Yes......1 No 2			Charged...........1 Not Charged ....2 Can't Tell ....3 No Gauge 4	Yes ....1 No.........2 Can't Tell...3	A ....1 B ....2 C 3
			Charged...........1 Not Charged ....2 Can't Tell ....3 No Gauge 4	Yes ....1 No.........2 Can't Tell...3	A ....1 B ....2 C 3
			Charged...........1 Not Charged ....2 Can't Tell ....3 No Gauge 4	Yes ....1 No.........2 Can't Tell...3	A ....1 B ....2 C 3
			Charged...........1 Not Charged ....2 Can't Tell ....3 No Gauge 4	Yes ....1 No.........2 Can't Tell...3	A ....1 B ....2 C 3

It was not possible for our interviewers to test fire extinguishers. To determine whether a fire extinguisher was working, we used a combination of the answers to GAUGE STATUS and EXPIRED?. For example, if GAUGE STATUS = Charged, we counted the fire extinguisher as working even if it was expired. If GAUGE STATUS = Not Charged, we counted the fire extinguisher as not working even if it was not expired. Likewise, if the interviewer could not tell whether the fire extinguisher was charged or it had no gauge, we counted it as not working or working depending on whether it was expired or not. Finally, if GAUGE STATUS = Can't Tell or No Gauge, and EXPIRED? = Can't Tell, we classified the status as "Don't Know".

We then classified each home into the 5 categories shown in Table 6, which shows the prevalence of the 5 categories nationwide and by various geographic, socioeconomic and demographic characteristics of housing. Nationwide, an estimated 63.4 million homes (53.8%) had no fire extinguisher at all, while 46.7 million (39.6%) had at least one working fire extinguisher. For 23 of the 703 homes surveyed, there was one or more fire extinguishers present but none working. For 19, we could not determine whether or not there was a working fire extinguisher.

Regionally, the Northeast had the highest percentage of homes with a working fire extinguisher (49.1%) and the Midwest the lowest (31.8%). The difference between the two regions was

statistically significant. Curiously, with regard to age, the oldest homes had the highest percentage of working fire extinguishers, while those built 1940-1959 had the lowest; the difference was statistically significant. Owner-occupied homes had a significantly higher percent working fire extinguishers, as did higher income homes compared to lower income, and homes not in poverty compared to homes of families in poverty. Not surprisingly, these latter three significant differences appear to reflect an income effect: wealthier homes are more likely to have a working fire extinguisher.

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units								
Present, at least one works	117,751	46,662	38,990	54,334	39.6%	34.8%	44.5%	258
Present, none work	117,751	4,620	2,430	6,809	3.9%	2.1%	5.8%	23
Present, unknown number work	117,751	2,742	1,369	4,115	2.3%	1.2%	3.5%	17
None present	117,751	63,382	56,525	70,238	53.8%	48.6%	59.0%	403
Region:								
Northeast								
Present, at least one works	20,993	10,316	7,523	13,108	49.1%	41.3%	57.0%	65
Present, none work	20,993	679	328	1,030	3.2%	1.3%	5.2%	4
Present, unknown number work	20,993	869	183	1,556	4.1%	1.1%	7.2%	6
None present	20,993	8,919	7,350	10,488	42.5%	35.3%	49.6%	63
Midwest								
Present, at least one works	26,699	8,494	5,602	11,386	31.8%	23.7%	39.9%	44
Present, none work	26,699	890	295	1,484	3.3%	1.1%	5.6%	7
Present, unknown number work	26,699	708	0	1,560	2.7%	0.0%	5.6%	4
None present	26,699	16,470	13,865	19,075	61.7%	53.1%	70.2%	105
South								
Present, at least one works	43,640	16,306	11,278	21,334	37.4%	28.4%	46.3%	83
Present, none work	43,640	2,486	527	4,445	5.7%	1.4%	10.0%	8
Present, unknown number work	43,640	843	321	1,365	1.9%	0.7%	3.2%	6
None present	43,640	24,005	19,085	28,925	55.0%	45.2%	64.8%	143
West								
Present, at least one works	26,420	11,547	7,374	15,720	43.7%	31.7%	55.7%	66
Present, none work	26,420	564	0	1,257	2.1%	0.0%	4.8%	4
Present, unknown number work	26,420	322	0	967	1.2%	0.0%	3.7%	1
None present	26,420	13,987	10,306	17,669	52.9%	40.0%	65.9%	92
Construction Year:								
1978-2017								
Present, at least one works	57,919	23,535	16,825	30,246	40.6%	31.6%	49.7%	89
Present, none work	57,919	2,185	112	4,258	3.8%	0.2%	7.4%	5
Present, unknown number work	57,919	1,179	165	2,193	2.0%	0.3%	3.8%	7
None present	57,919	31,020	23,951	38,089	53.6%	44.7%	62.5%	123
Don't know	57,919	0						0
1960-1977								
Present, at least one works	25,599	9,175	5,915	12,435	35.8%	26.7%	45.0%	73
Present, none work	25,599	1,185	660	1,709	4.6%	2.5%	6.8%	8
Present, unknown number work	25,599	457	0	1,041	1.8%	0.0%	4.0%	3
None present	25,599	14,573	12,020	17,126	56.9%	47.8%	66.1%	140
1940-1959								
Present, at least one works	18,178	6,152	4,488	7,816	33.8%	25.6%	42.1%	51
Present, none work	18,178	973	235	1,711	5.4%	1.5%	9.3%	7
Present, unknown number work	18,178	1,001	46	1,955	5.5%	0.6%	10.4%	6
None present	18,178	10,053	7,590	12,517	55.3%	45.4%	65.2%	90
Before 1940								
Present, at least one works	16,055	7,800	5,113	10,487	48.6%	37.2%	60.0%	45
Present, none work	16,055	277	0	614	1.7%	0.0%	3.8%	3
Present, unknown number work	16,055	106	0	317	0.7%	0.0%	2.0%	1
None present	16,055	7,735	5,050	10,421	48.2%	37.0%	59.4%	50

Table 6. Presence of Fire Extinguishers and Working Fire Extinguishers by Selected Housing Unit (HU) Characteristics

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Table 6. Presence of Fire Extinguishers and Working Fire Extinguishers by Selected Housing Unit (HU) Characteristics

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Urbanization:								
MSA								
Present, at least one works	90,723	35,947	28,989	42,905	39.6%	33.7%	45.5%	207
Present, none work	90,723	3,368	1,367	5,368	3.7%	1.6%	5.9%	17
Present, unknown number work	90,723	2,093	795	3,391	2.3%	0.9%	3.7%	13
None present	90,723	49,179	43,028	55,330	54.2%	48.0%	60.4%	317
Non-MSA								
Present, at least one works	27,028	10,715	7,484	13,946	39.6%	31.9%	47.4%	51
Present, none work	27,028	1,252	363	2,141	4.6%	1.1%	8.1%	6
Present, unknown number work	27,028	649	201	1,097	2.4%	0.9%	3.9%	4
None present	27,028	14,203	11,174	17,231	52.5%	44.0%	61.1%	86
Housing Unit Type:								
Single family								
Present, at least one works	95,590	39,035	32,617	45,454	40.8%	35.6%	46.1%	219
Present, none work	95,590	4,429	2,224	6,633	4.6%	2.3%	6.9%	21
Present, unknown number work	95,590	2,444	1,025	3,862	2.6%	1.1%	4.0%	15
None present	95,590	49,336	43,364	55,308	51.6%	46.4%	56.9%	314
Multi-family								
Present, at least one works	22,161	7,627	3,869	11,384	34.4%	21.2%	47.6%	39
Present, none work	22,161	191	0	463	0.9%	0.0%	2.1%	2
Present, unknown number work	22,161	298	0	739	1.3%	0.0%	3.4%	2
None present	22,161	14,045	9,394	18,697	63.4%	50.3%	76.4%	89
Tenure:								
Owner-occupied								
Present, at least one works	75,302	34,417	29,138	39,696	==45.7%==	40.2%	51.2%	187
Present, none work	75,302	3,585	1,524	5,645	4.8%	2.0%	7.5%	17
Present, unknown number work	75,302	2,362	953	3,770	3.1%	1.3%	5.0%	14
None present	75,302	34,593	29,445	39,741	45.9%	40.5%	51.4%	199
Renter-occupied								
Present, at least one works	42,449	12,245	7,672	16,818	==28.8%==	19.8%	37.8%	71
Present, none work	42,449	1,035	37	2,033	2.4%	0.2%	4.7%	6
Present, unknown number work	42,449	380	0	851	0.9%	0.0%	2.0%	3
None present	42,449	28,788	22,966	34,611	67.8%	58.7%	77.0%	204
Household Income:								
Less than $35,000/year								
Present, at least one works	45,994	13,730	9,152	18,308	==29.9%==	22.3%	37.4%	77
Present, none work	45,994	1,849	169	3,529	4.0%	0.5%	7.5%	9
Present, unknown number work	45,994	1,546	653	2,438	3.4%	1.4%	5.4%	10
None present	45,994	28,660	24,038	33,281	62.3%	53.7%	71.0%	211
Equal to or more than $35,000/year								
Present, at least one works	71,757	32,932	26,424	39,440	==45.9%==	39.7%	52.1%	181
Present, none work	71,757	2,770	1,044	4,497	3.9%	1.5%	6.3%	14
Present, unknown number work	71,757	1,196	174	2,219	1.7%	0.3%	3.1%	7
None present	71,757	34,722	29,567	39,876	48.4%	42.3%	54.5%	192
One or More Children Under Age 6:								
Present, at least one works	14,979	5,424	2,699	8,149	36.2%	21.8%	50.6%	32
Present, none work	14,979	496	0	1,176	3.3%	0.0%	7.7%	3

Table 6. Presence of Fire Extinguishers and Working Fire Extinguishers by Selected Housing Unit (HU) Characteristics

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Present, unknown number work	14,979	195	0	587	1.3%	0.0%	3.9%	2
None present	14,979	8,864	5,618	12,109	59.2%	43.5%	74.8%	71
Government Support:								
Government support								
Present, at least one works	10,781	4,086	1,099	7,074	37.9%	18.2%	57.7%	19
Present, none work	10,781	76	0	228	0.7%	0.0%	2.1%	1
Present, unknown number work	10,781	192	0	579	1.8%	0.0%	5.3%	1
None present	10,781	6,426	3,879	8,973	59.6%	40.2%	79.0%	49
No government support								
Present, at least one works	106,023	42,358	36,377	48,339	40.0%	35.4%	44.5%	237
Present, none work	106,023	4,544	2,359	6,728	4.3%	2.3%	6.3%	22
Present, unknown number work	106,023	2,550	1,171	3,928	2.4%	1.1%	3.7%	16
None present	106,023	56,226	49,812	62,640	53.0%	48.1%	58.0%	349
Poverty:								
In poverty								
Present, at least one works	20,340	5,077	2,191	7,963	==25.0%==	13.6%	36.4%	30
Present, none work	20,340	446	0	1,058	2.2%	0.0%	5.1%	4
Present, unknown number work	20,340	793	155	1,431	3.9%	1.0%	6.8%	6
None present	20,340	14,024	10,337	17,711	68.9%	56.9%	81.0%	117
Not in poverty								
Present, at least one works	97,411	41,585	34,778	48,392	==42.7%==	37.6%	47.8%	228
Present, none work	97,411	4,173	2,071	6,276	4.3%	2.2%	6.4%	19
Present, unknown number work	97,411	1,949	726	3,173	2.0%	0.8%	3.2%	11
None present	97,411	49,358	43,244	55,471	50.7%	45.4%	56.0%	286
Race:								
White								
Present, at least one works	89,252	37,041	30,634	43,447	41.5%	35.9%	47.1%	199
Present, none work	89,252	3,899	1,749	6,049	4.4%	2.0%	6.8%	16
Present, unknown number work	89,252	1,977	746	3,208	2.2%	0.9%	3.5%	12
None present	89,252	45,989	39,536	52,443	51.5%	45.7%	57.3%	273
African American								
Present, at least one works	17,179	5,556	3,525	7,587	32.3%	22.8%	41.9%	32
Present, none work	17,179	631	329	932	3.7%	1.7%	5.6%	6
Present, unknown number work	17,179	374	0	809	2.2%	0.0%	4.9%	3
None present	17,179	10,618	7,077	14,158	61.8%	51.3%	72.3%	85
Other[d]								
Present, at least one works	11,321	4,066	1,458	6,673	35.9%	20.6%	51.2%	27
Present, none work	11,321	90	0	270	0.8%	0.0%	2.3%	1
Present, unknown number work	11,321	391	0	946	3.5%	0.0%	8.4%	2
None present	11,321	6,774	3,971	9,578	59.8%	44.5%	75.2%	45
Ethnicity:								
Hispanic/Latino								
Present, at least one works	15,538	4,861	2,462	7,261	31.3%	20.5%	42.0%	33
Present, none work	15,538	370	0	815	2.4%	0.0%	5.1%	3
Present, unknown number work	15,538	188	0	456	1.2%	0.0%	2.9%	2
None present	15,538	10,119	7,216	13,023	65.1%	52.1%	78.2%	82
Not Hispanic/Latino								

Table 6. Presence of Fire Extinguishers and Working Fire Extinguishers by Selected Housing Unit (HU) Characteristics

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Present, at least one works	102,213	41,801	34,764	48,837	40.9%	36.1%	45.7%	225
Present, none work	102,213	4,249	1,949	6,550	4.2%	1.9%	6.4%	20
Present, unknown number work	102,213	2,554	1,148	3,961	2.5%	1.2%	3.8%	15
None present	102,213	53,262	47,037	59,487	52.1%	47.1%	57.1%	321

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

6.0 SMOKING

In the tablet interview, respondents were asked the following questions about smoking:

Q40.   How often are cigarettes smoked <u>inside</u> the house?

    LESS THAN ONCE A DAY 1
    1-3 TIMES A DAY 2
    4-10 TIMES A DAY 3
    MORE THAN 10 TIMES A DAY 4
    NOBODY SMOKES INSIDE THE HOUSE 5

    DON'T KNOW 8

Q40a.   How often are cigars, pipes or other types of tobacco products smoked <u>inside</u> the house?

    LESS THAN ONCE A DAY 1
    1-3 TIMES A DAY 2
    4-10 TIMES A DAY 3
    MORE THAN 10 TIMES A DAY 4
    NOBODY SMOKES INSIDE THE HOUSE 5

    DON'T KNOW 8

We classified a home as "No smoking" if both of these questions were answered "Nobody smokes inside the house" or one was so answered and the other was answered "Don't know". Table 9 shows smoking prevalence nationwide and by selected housing unit characteristics.

Overall, an estimated 17.5% of homes were classified as smoking (95% confidence interval 14.3% - 20.7%), broadly consistent with CDC[21] data estimating that approximately 14% of US adults were current smokers in 2019. By region, the South had the highest prevalence of smoking (21.3%) and the West the lowest (12.8%); the difference was statistically significant. Smoking was significantly more likely in:

1. Homes with no children under age 6

2. Multifamily homes compared to single-family

3. Rented compared to owner-occupied homes

4. Lower-income homes

5. Poor homes

6. Government-supported homes

7. African American homes compared to White and Other Race homes

8. Non-Hispanic homes.

Finding 1 indicates reluctance to smoke around young children. Further, defining heavy smoking as someone smoking in the homes 4 or more times per day, it was estimated that only 0.8% of homes with children under 6 were classified as "heavy smoking", compared to 9.0% moderate smoking (less than 4 times per day).

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[21] https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/

Findings 2-7 likely reflect an underlying income/education effect, consistent with CDC data[17] showing higher adult smoking prevalence at lower income and educational levels. The largest difference in Findings 2-7 was for Finding 4 between homes with annual household income < $35,000 (28.9%) vs those with household income ≥ $35,000 (10.1%), an odds ratio of 3.6. Considering heavy smoking, the difference was even greater – 16.4% for lower income vs 3.7% for higher income, an odds ratio of 5.1. In fact, the same pattern was observed for Findings 2, 3, 5 and 6: the difference between categories was even greater for heavy smoking than for smoking as a whole. Generally speaking, it seems than lower income homes are more likely to have smokers and relatively even more likely to have heavy smokers, exacerbating the impacts on health.

Finally, CDC finds smoking much less prevalent among Hispanics than Non-Hispanics (except for Asians), consistent with Finding 8.

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	20,574	16,809	24,339	17.5%	14.4%	20.5%	129
Region:								
Northeast	20,993	3,319	1,881	4,758	15.8%	8.4%	23.2%	23
Midwest	26,699	4,558	3,208	5,907	17.1%	11.2%	22.9%	30
South	43,640	9,316	6,410	12,222	21.3%	15.7%	27.0%	56
West	26,420	3,381	2,023	4,738	12.8%	8.0%	17.6%	20
Construction Year:								
1978-2017	57,919	10,078	7,187	12,970	17.4%	12.7%	22.1%	40
1960-1977	25,599	5,171	3,474	6,869	20.2%	14.6%	25.8%	46
1940-1959	18,178	3,238	1,762	4,714	17.8%	10.4%	25.3%	28
Before 1940	16,055	2,086	851	3,320	13.0%	5.8%	20.1%	15
Urbanization:								
MSA	90,723	16,467	13,130	19,804	18.2%	14.7%	21.6%	103
Non-MSA	27,028	4,107	2,363	5,851	15.2%	8.8%	21.6%	26
Presence of Children Under Age 6:								
One or more children under age 6	14,979	1,473	613	2,333	9.8%	4.9%	14.8%	11
No children under age 6	102,772	19,100	15,470	22,731	18.6%	15.1%	22.0%	118
Housing Unit Type:								
Single family	95,590	14,477	11,261	17,693	15.1%	11.9%	18.3%	91
Multi-family	22,161	6,096	3,435	8,758	27.5%	18.6%	36.4%	38
Tenure:								
Owner-occupied	75,302	9,436	6,722	12,150	12.5%	8.9%	16.2%	53
Renter-occupied	42,449	11,138	7,875	14,400	26.2%	20.5%	32.0%	76
Household Income:								
Less than $35,000/year	45,994	13,307	10,019	16,596	28.9%	23.3%	34.5%	87
Equal to or more than $35,000/year	71,757	7,266	5,131	9,402	10.1%	7.3%	12.9%	42
Government Support:								
Government support	10,781	3,335	1,622	5,048	30.9%	16.8%	45.0%	24
No government support	106,023	17,101	13,377	20,825	16.1%	12.8%	19.5%	103
Poverty:								
In poverty	20,340	6,851	4,724	8,978	33.7%	25.8%	41.5%	48
Not in poverty	97,411	13,723	10,294	17,151	14.1%	10.7%	17.5%	81
Race:								
White	89,252	13,392	9,896	16,889	15.0%	11.2%	18.8%	74
African American	17,179	5,865	3,479	8,250	34.1%	25.9%	42.4%	46
Other[d]	11,321	1,317	354	2,279	11.6%	4.1%	19.1%	9
Ethnicity:								
Hispanic/Latino	15,538	1,607	573	2,642	10.3%	4.8%	15.9%	13
Not Hispanic/Latino	102,213	18,966	15,380	22,553	18.6%	15.2%	21.9%	116

Table 7. Smoking Prevalence by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.

[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.

[c] CI = confidence interval for the estimated number or percent.

[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

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7.0 PESTS

7.1 Cockroaches

During the tablet interview, the respondent was asked whether they had cockroaches in their home in the last 12 months and, if so, when was the last time they saw cockroaches. Interviewers also checked for cockroaches (live or dead) or evidence thereof (cockroach stains) in each of the 4 rooms (plus the basement if present) selected for collection of room observations. We classified the home as having a cockroach infestation if live or dead cockroaches or cockroach stains were observed in any room, or if the resident reported seeing cockroaches in the last month.

Table 8 shows the prevalence of cockroach infestation nationwide and by geographic, socioeconomic and demographic characteristics of housing. Overall, an estimated 18.7 million homes (15.9%) were found to be infested with cockroaches. Cockroach infestation was significantly higher in the South (26.9%) than in the other three regions, which did not differ significantly. Infestation was significantly more likely in lower income than in higher income homes (23.6% vs 11.0%), in homes of families in poverty than in homes of families not in poverty (29.9% vs 13.0%), in Government-supported housing than in housing not receiving Government support (25.5% vs 14.9%) and in rented housing than in owner-occupied homes (24.8% vs 10.9%). As before, these factors appear to be directly or indirectly income-based, suggesting that cockroach infestation is generally more likely in lower income homes. No significant differences were found by housing age or type, urbanization, race or ethnicity.

Table 8. Cockroach Infestation by Selected Housing Unit (HU) Characteristics							
HU Characteristic	**All HUs[b] (000)**	**Number of HUs[a] (000)**			**Percent of HUs (%)**			**HUs in Sample**
		Estimate	*Lower 95% CI[c]*	*Upper 95% CI*	*Estimate*	*Lower 95% CI*	*Upper 95% CI*	
Total Housing Units	117,751	18,725	13,920	23,529	15.9%	11.8%	20.1%	132
Region:								
Northeast	20,993	1,411	530	2,293	6.7%	2.5%	10.9%	11
Midwest	26,699	1,845	149	3,542	6.9%	0.3%	13.5%	11
South	43,640	11,748	7,873	15,623	26.9%	18.0%	35.8%	71
West	26,420	3,720	1,620	5,820	14.1%	5.6%	22.6%	39
Construction Year:								
1978-2017	57,919	7,421	4,592	10,249	12.8%	7.6%	18.0%	29
1960-1977	25,599	4,852	2,960	6,744	19.0%	12.4%	25.5%	45
1940-1959	18,178	4,120	2,473	5,766	22.7%	14.4%	30.9%	44
Before 1940	16,055	2,333	826	3,840	14.5%	6.4%	22.7%	14
Urbanization:								
MSA	90,723	15,675	11,081	20,269	17.3%	12.2%	22.4%	110
Non-MSA	27,028	3,049	1,644	4,454	11.3%	5.5%	17.0%	22
One or More Children Under Age 6:								
All HU Ages	14,979	2,972	1,443	4,500	19.8%	10.6%	29.1%	24
No Children Under Age 6:								
All HU Ages	102,772	15,753	10,971	20,535	15.3%	10.6%	20.0%	108
Housing Unit Type:								
Single family	95,590	13,603	9,810	17,396	14.2%	10.2%	18.3%	98
Multi-family	22,161	5,122	2,587	7,656	23.1%	12.9%	33.3%	34
Tenure:								
Owner-occupied	75,302	8,197	5,267	11,127	10.9%	6.8%	14.9%	53
Renter-occupied	42,449	10,528	7,147	13,909	24.8%	17.3%	32.3%	79
Household Income:								
Less than $35,000/year	45,994	10,863	7,488	14,237	23.6%	17.3%	29.9%	81
Equal to or more than $35,000/year	71,757	7,862	4,616	11,108	11.0%	6.5%	15.4%	51
Government Support:								
Government support	10,781	2,753	1,203	4,303	25.5%	16.3%	34.8%	19
No government support	106,023	15,778	11,558	19,999	14.9%	10.7%	19.0%	110
Poverty:								
In poverty	20,340	6,075	3,839	8,311	29.9%	21.2%	38.5%	56
Not in poverty	97,411	12,650	8,487	16,812	13.0%	8.7%	17.3%	76
Race:								
White	89,252	13,088	9,129	17,048	14.7%	10.3%	19.0%	86
African American	17,179	3,966	2,151	5,782	23.1%	14.8%	31.4%	28
Other[d]	11,321	1,670	628	2,712	14.7%	6.1%	23.4%	18
Ethnicity:								
Hispanic/Latino	15,538	3,217	1,054	5,379	20.7%	8.6%	32.8%	32
Not Hispanic/Latino	102,213	15,508	11,377	19,639	15.2%	11.0%	19.3%	100

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d]"Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

7.2 Bed bugs

During the tablet interview, respondents were asked whether they had bed bugs in their home in the last 12 months. Table 9 shows the prevalence of bed bugs nationwide by geographic, socioeconomic and demographic characteristics of housing. Overall, an estimated 2.8 million homes (2.4%) had bedbugs. As with cockroach infestation, higher prevalence of bed bugs was associated with lower income and poverty. An estimated 4.6% of lower income homes reported bed bugs, significantly higher than the estimated 1.0% of higher income homes. The difference was even greater for the poverty factor: 7.7% of homes of families in poverty had bed bugs compared to only 1.3% of homes of families not in poverty. There was also a large difference by Government support (though not statistically significant because of the small number of Government-supported homes in the sample): 8.1% of Government-supported homes had bed bugs compared to only 1.8% of those not receiving Government support. Finally, 4.3% of rented homes had bed bugs, significantly more than owner-occupied homes (1.3%)

Table 9. Bed Bug Prevalence by Selected Housing Unit (HU) Characteristics							
HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	2,821	1,162	4,480	2.4%	1.0%	3.8%	17
Region:								
Northeast	20,993	686	176	1,195	3.3%	0.8%	5.7%	5
Midwest	26,699	778	0	1,836	2.9%	0.0%	6.9%	4
South	43,640	557	0	1,135	1.3%	0.0%	2.5%	4
West	26,420	800	0	1,819	3.0%	0.0%	6.7%	4
Construction Year:								
1978-2017	57,919	1,612	120	3,104	2.8%	0.3%	5.3%	7
1960-1977	25,599	646	64	1,229	2.5%	0.4%	4.7%	6
1940-1959	18,178	245	0	593	1.3%	0.0%	3.2%	2
Before 1940	16,055	318	0	774	2.0%	0.0%	4.8%	2
Urbanization:								
MSA	90,723	2,162	862	3,462	2.4%	1.0%	3.8%	14
Non-MSA	27,028	659	0	1,689	2.4%	0.0%	6.3%	3
Presence of Children Under Age 6:								
One or more children under age 6	14,979	562	0	1,243	3.8%	0.0%	8.0%	3
No children under age 6	102,772	2,259	747	3,772	2.2%	0.7%	3.7%	14
Housing Unit Type:								
Single family	95,590	1,878	507	3,249	2.0%	0.6%	3.4%	12
Multi-family	22,161	943	0	1,951	4.3%	0.0%	8.5%	5
Tenure:								
Owner-occupied	75,302	979	117	1,840	1.3%	0.2%	2.4%	6
Renter-occupied	42,449	1,843	600	3,085	4.3%	1.5%	7.2%	11
Household Income:								
Less than $35,000/year	45,994	2,120	601	3,639	4.6%	1.4%	7.9%	12
Equal to or more than $35,000/year	71,757	701	34	1,367	1.0%	0.1%	1.9%	5
Government Support:								
Government support	10,781	870	44	1,696	8.1%	0.3%	15.8%	5
No government support	106,023	1,951	630	3,273	1.8%	0.6%	3.1%	12
Poverty:								
In poverty	20,340	1,568	392	2,745	7.7%	1.7%	13.7%	9
Not in poverty	97,411	1,253	303	2,203	1.3%	0.3%	2.3%	8
Race:								
White	89,252	1,951	433	3,470	2.2%	0.5%	3.9%	11
African American	17,179	573	0	1,213	3.3%	0.0%	7.0%	4
Other[d]	11,321	296	0	721	2.6%	0.0%	6.2%	2
Ethnicity:								
Hispanic/Latino	15,538	279	0	651	1.8%	0.0%	4.1%	3
Not Hispanic/Latino	102,213	2,542	926	4,159	2.5%	0.9%	4.0%	14

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.

[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.

[c] CI = confidence interval for the estimated number or percent.

[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

7.3 Mice

In the interview, respondents were asked the following questions about mice in their home:

Q18.   In the last 12 months, have you seen mice or evidence of mice, such as nests or droppings, in your home?

    YES 1
    NO 2   ➔(SKIP TO Q20)
    DON'T KNOW 8   ➔(SKIP TO Q20)

Q19.   About how often do see mice or evidence of mice in your home? Is it…?

    Every Day,.. 1
    Once a week, ... 2
    Once a month,... 3
    Once a year.. 4
    Seldom 5
    Never.. 6
    DON'T KNOW 8

We classified the home as having a mouse infestation if the respondent reported seeing mice once a month or more frequently. Table 10 shows the prevalence of mouse infestation by various housing characteristics. An estimated 9.4 million homes nationwide (7.9%) are infested with mice. Mouse infestation was more common in the Northeast and South than in the Midwest and West. The differences between the Northeast and South and the West were statistically significant. Homes built before 1940 were more likely to have mouse infestations than any other age group, the differences from post-1977 homes and those built 1940-1959 being statistically significant. The only other significant difference found was that low income homes had higher prevalence of mouse infestation than higher income homes. As might be expected, homes not in an MSA were more than twice as likely to be infested with mice than MSA homes, but the difference was not statistically significant.

Table 10. Mouse Infestation by Selected Housing Unit (HU) Characteristics

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	9,354	6,392	12,316	7.9%	5.6%	10.3%	63
Region:								
Northeast	20,993	2,386	974	3,799	11.4%	5.5%	17.2%	18
Midwest	26,699	1,415	352	2,479	5.3%	1.4%	9.2%	9
South	43,640	4,868	2,538	7,198	11.2%	6.4%	15.9%	27
West	26,420	684	220	1,148	2.6%	0.7%	4.5%	9
Construction Year:								
1978-2017	57,919	3,118	1,322	4,915	5.4%	2.5%	8.3%	13
1960-1977	25,599	2,158	1,223	3,094	8.4%	5.0%	11.9%	20
1940-1959	18,178	1,130	461	1,799	6.2%	2.5%	9.9%	14
Before 1940	16,055	2,947	945	4,950	18.4%	6.8%	29.9%	16
Urbanization:								
MSA	90,723	5,688	3,724	7,652	6.3%	4.2%	8.3%	44
Non-MSA	27,028	3,666	1,449	5,883	13.6%	6.3%	20.8%	19
One or More Children Under Age 6:								
All HU Ages	14,979	778	15	1,541	5.2%	0.1%	10.3%	7
No Children Under Age 6:								
All HU Ages	102,772	8,576	5,820	11,333	8.3%	5.9%	10.8%	56
Housing Unit Type:								
Single family	95,590	8,271	5,218	11,324	8.7%	5.6%	11.7%	55
Multi-family	22,161	1,083	244	1,923	4.9%	1.1%	8.7%	8
Tenure:								
Owner-occupied	75,302	6,174	3,372	8,975	8.2%	4.6%	11.8%	35
Renter-occupied	42,449	3,180	1,747	4,614	7.5%	4.2%	10.8%	28
Household Income:								
Less than $35,000/year	45,994	5,308	3,255	7,360	11.5%	7.6%	15.4%	41
Equal to or more than $35,000/year	71,757	4,047	2,231	5,862	5.6%	3.2%	8.1%	22
Government Support:								
Government support	10,781	813	85	1,541	7.5%	0.6%	14.5%	7
No government support	106,023	8,541	5,585	11,497	8.1%	5.4%	10.7%	56
Poverty:								
In poverty	20,340	2,301	1,113	3,490	11.3%	5.8%	16.8%	23
Not in poverty	97,411	7,053	4,082	10,024	7.2%	4.4%	10.1%	40
Race:								
White	89,252	7,201	4,349	10,053	8.1%	5.1%	11.0%	44
African American	17,179	1,539	545	2,533	9.0%	2.9%	15.0%	13
Other[d]	11,321	613	15	1,212	5.4%	0.9%	9.9%	6
Ethnicity:								
Hispanic/Latino	15,538	937	107	1,768	6.0%	1.2%	10.9%	12
Not Hispanic/Latino	102,213	8,417	5,565	11,269	8.2%	5.6%	10.9%	51

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

8.0 ELECTRICAL HAZARDS

In each of the 4 rooms where room observations were recorded (plus the basement if present), the interviewer noted whether there were extension cords, power strips or multi-outlet adapters plugged in. Respondents were also asked, during the tablet interview, how many times during the last month they had to reset a circuit breaker or replace a fuse. We classified a home as having an *electrical hazard* if at least 4 rooms had one or more of extension cords, power strips or multi-outlet adapters plugged in OR if, within the last month a circuit breaker was reset or fuse replaced two or more times.

Nationwide, an estimated 8.9 million homes (7.6%) were found to have an electric hazard. Of the housing characteristics on which data was collected, only housing age had a significant impact on the prevalence of electrical hazards. As might be expected, older homes had more electrical hazards. Homes built in 1978 or later had a significantly lower prevalence of electrical hazards than those built 1940-1959 or before 1940. Homes built 1960-1977 also had lower prevalence of electrical hazards than older homes but the differences were not quite statistically significant.

Table 11. Electrical Hazards Overall and by Housing Age								
HU Characteristic	**All HUs (000)**	**Number of HUs (000)**			**Percent of HUs (%)**			**HUs in Sample**
		Estimate	**Lower 95% CI**	**Upper 95% CI**	**Estimate**	**Lower 95% CI**	**Upper 95% CI**	
Total Housing Units	117,751	8,897	6,149	11,645	7.6%	5.3%	9.8%	61
Construction Year:								
1978-2017	57,919	2,926	1,259	4,593	5.1%	2.3%	7.8%	12
1960-1977	25,599	1,604	700	2,508	6.3%	3.1%	9.4%	15
1940-1959	18,178	2,379	1,177	3,581	13.1%	6.8%	19.4%	21
Before 1940	16,055	1,988	800	3,176	12.4%	6.1%	18.6%	13

9.0 MOLD AND MOISTURE DAMAGE

As part of the room observation protocol, interviewers were directed to complete a *Building Materials – Moisture Testing Log*. They were required to check for visible mold and musty smells in the common living area, a bedroom and the basement if present. They took measurements with a TRAMEX MEP non-invasive moisture meter at three heights (3 inches, 3 feet and 6 feet) on an interior and exterior[22] wall of the common living area and bedroom, and on a below-grade interior wall of the basement. They also checked for visible water damage and took a moisture measurement in the center of up to two visibly water-damaged areas in each room.

9.1 Mold

We classified the home as having a (potential) *mold hazard* if visible mold or a musty smell was noted by the interviewer in any of the three rooms inspected in the *Building Materials – Moisture Testing Log* or if the respondent in the tablet interview reported a frequent mildew odor or musty smell in the home. Table 11 shows the prevalence of mold hazards nationwide and by various geographic, socioeconomic and demographic characteristics of housing. Overall, an estimated 26.6 million homes (18.0%) nationwide had a mold hazard. Mold hazards were strongly age related, as might be expected, with older homes more likely to have mold hazards than newer homes. Homes built prior to 1960 were significantly more likely to have a mold hazard (23.8%-36.8%) than those built 1978 or later (15.0%). There were also marked regional differences, with the Northeast and Midwest having more mold hazards than the South and West. The differences were statistically significant.

There were no significant differences in mold hazards for other housing characteristics.

9.2 Visible Water Damage

A home was classified as having *visible water damage* if visible water damage was found in at least one room. Table 12 shows the prevalence of visible water damage nationwide and by various geographic, socioeconomic and demographic characteristics of housing. Overall, an estimated 6.9 million homes nationwide (5.9%) had visible water damage. As with mold hazards, the Northeast and Midwest had more water damage than the West and South but in this case the differences were not statistically significant. Also, as with mold hazards, the prevalence of moisture damage increased with housing age. Homes built 1940-1959 and before 1940 have significantly more moisture damage than those built 1978 or later.

No significant differences in prevalence of visible water damage were noted for any of the other housing characteristics examined.

9.3 Moisture Meter Readings

The TRAMEX moisture meter has a color-coded scale with three levels:

- GREEN, indicating a low level of moisture in the substrate tested

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[22] Exterior to the room but not to the house.

- YELLOW, meaning a moderate level of moisture
- RED, indicating a high level of moisture in the substrate.

Up to 15 moisture readings on walls and up to 6 on visibly water-damaged areas could be taken in a home. We classified the home based on the *maximum* moisture reading taken:

- LOW if the maximum reading was GREEN
- MODERATE if the maximum reading was YELLOW
- HIGH if the maximum moisture reading was RED.

Table 13 shows the prevalences of low, moderate and high moisture readings nationwide and by various geographic, socioeconomic and demographic characteristics of housing. Overall, an estimated 23.3 million homes nationwide (19.8%) has high moisture readings. This is similar to the 22.6% with a mold hazard (musty smell or visible mold) but much higher than the 5.9% with visible water damage, which is not surprising since the moisture meter measures moisture content within the substrate. One would expect that visible water damage or a mold hazard would generally result in a high moisture meter reading, but not necessarily the converse. The South and West had less high moisture readings than the Northeast and Midwest; with respect to prevalence of high moisture readings, the West was significantly lower than the Midwest and Northeast and the South was significantly less than the Northeast. Prevalence of high moisture readings increased with housing age; the difference between pre-1940 housing (28.1%) and that built 1978 or later (16.1%) was statistically significant.

Curiously[23], non-Hispanic homes had significantly higher prevalence of high moisture readings (21.1%) than Hispanic homes (11.6%). No other housing characteristic showed significant differences in high moisture reading prevalence.

9.4 Summary

Presence of mold hazards, visible mold or musty smell and high moisture readings are all indicators of present or past water intrusion into a home. Not surprisingly, the prevalence of each increases with housing age, and is lower in the West, which has significant desert regions, than in the Northeast and Midwest. None of the other housing characteristics had a significant effect on the prevalence of mold and moisture damage.

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[23] When a large number of significance tests at the 5% level are conducted (as in this report), some findings of significance (up to 5%) will be spurious. Caution should be exercised when interpreting statistically significant differences for which an underlying cause is not apparent.

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	26,609	21,169	32,050	22.6%	18.1%	27.1%	178
Region:								
Northeast	20,993	6,069	4,228	7,910	28.9%	19.2%	38.6%	41
Midwest	26,699	8,697	4,741	12,654	32.6%	19.1%	46.0%	55
South	43,640	7,319	4,397	10,242	16.8%	9.9%	23.6%	48
West	26,420	4,524	3,104	5,944	17.1%	12.4%	21.9%	34
Construction Year:								
1978-2017	57,919	8,713	5,591	11,835	15.0%	10.2%	19.9%	38
1960-1977	25,599	6,088	3,952	8,224	23.8%	17.0%	30.6%	53
1940-1959	18,178	5,902	4,065	7,739	32.5%	24.9%	40.1%	48
Before 1940	16,055	5,906	3,587	8,225	36.8%	25.1%	48.5%	39
Urbanization:								
MSA	90,723	20,731	16,267	25,196	22.9%	18.1%	27.6%	142
Non-MSA	27,028	5,878	2,769	8,987	21.7%	10.3%	33.2%	36
One or More Children Under Age 6:								
All HU Ages	14,979	3,341	1,722	4,960	22.3%	13.3%	31.3%	25
No Children Under Age 6:								
All HU Ages	102,772	23,268	18,379	28,157	22.6%	18.0%	27.3%	153
Housing Unit Type:								
Single family	95,590	22,144	17,451	26,837	23.2%	18.4%	27.9%	149
Multi-family	22,161	4,465	2,435	6,496	20.1%	13.0%	27.3%	29
Tenure:								
Owner-occupied	75,302	16,284	11,748	20,820	21.6%	15.8%	27.4%	103
Renter-occupied	42,449	10,326	7,903	12,748	24.3%	19.2%	29.4%	75
Household Income:								
Less than $35,000/year	45,994	12,026	9,094	14,958	26.1%	20.0%	32.3%	85
Equal to or more than $35,000/year	71,757	14,583	9,804	19,363	20.3%	13.8%	26.8%	93
Government Support:								
Government support	10,781	2,733	1,436	4,031	25.4%	13.6%	37.1%	20
No government support	106,023	23,738	18,243	29,233	22.4%	17.2%	27.5%	156
Poverty:								
In poverty	20,340	5,995	3,900	8,089	29.5%	21.0%	38.0%	47
Not in poverty	97,411	20,615	15,345	25,885	21.2%	15.8%	26.5%	131
Race:								
White	89,252	19,571	14,489	24,652	21.9%	16.7%	27.1%	120
African American	17,179	4,552	2,964	6,140	26.5%	16.9%	36.1%	38
Other[d]	11,321	2,487	1,125	3,848	22.0%	12.9%	31.1%	20
Ethnicity:								
Hispanic/Latino	15,538	3,175	1,851	4,499	20.4%	14.2%	26.7%	29
Not Hispanic/Latino	102,213	23,434	17,932	28,936	22.9%	17.7%	28.1%	149

Table 12. Mold Hazards by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	6,943	3,681	10,204	5.9%	3.1%	8.7%	50
Region:								
Northeast	20,993	1,879	540	3,218	9.0%	2.8%	15.1%	16
Midwest	26,699	2,603	332	4,873	9.7%	1.2%	18.3%	18
South	43,640	1,547	224	2,871	3.5%	0.5%	6.6%	10
West	26,420	913	0	2,305	3.5%	0.0%	8.9%	6
Construction Year:								
1978-2017	57,919	1,303	208	2,398	2.2%	0.3%	4.2%	6
1960-1977	25,599	1,392	567	2,217	5.4%	2.2%	8.7%	14
1940-1959	18,178	1,798	728	2,867	9.9%	4.1%	15.7%	13
Before 1940	16,055	2,450	655	4,245	15.3%	5.6%	24.9%	17
Urbanization:								
MSA	90,723	5,948	2,868	9,028	6.6%	3.1%	10.0%	41
Non-MSA	27,028	994	0	2,067	3.7%	0.0%	7.7%	9
Housing Unit Type:								
Single family	95,590	6,161	3,101	9,220	6.4%	3.2%	9.7%	44
Multi-family	22,161	782	0	1,690	3.5%	0.0%	7.6%	6
Tenure:								
Owner-occupied	75,302	5,012	2,480	7,545	6.7%	3.4%	9.9%	34
Renter-occupied	42,449	1,930	686	3,175	4.5%	1.6%	7.5%	16
Household Income:								
Less than $35,000/year	45,994	2,486	1,214	3,758	5.4%	2.5%	8.3%	20
Equal to or more than $35,000/year	71,757	4,457	1,883	7,030	6.2%	2.7%	9.7%	30
One or More Children Under Age 6:								
All Income Categories	14,979	751	10	1,493	5.0%	0.3%	9.8%	5
Government Support:								
Government support	10,781	283	0	711	2.6%	0.0%	6.5%	2
No government support	106,023	6,659	3,470	9,848	6.3%	3.3%	9.3%	48
Race:								
White	89,252	4,867	2,192	7,542	5.5%	2.5%	8.4%	34
African American	17,179	1,055	75	2,035	6.1%	0.2%	12.1%	7
Other[d]	11,321	1,021	87	1,955	9.0%	0.3%	17.8%	9
Ethnicity:								
Hispanic/Latino	15,538	704	0	1,443	4.5%	0.0%	9.1%	6
Not Hispanic/Latino	102,213	6,238	3,288	9,188	6.1%	3.2%	9.0%	44

Table 13. Presence of Visible Water Damage by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, more than one race.

Table 14. Maximum Moisture Reading by Selected Housing Unit (HU) Characteristics							
HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units								
Low	117,751	79,678	70,961	88,394	67.7%	62.9%	72.4%	450
Medium	117,751	14,724	11,177	18,272	12.5%	9.8%	15.2%	101
High	117,751	23,349	17,927	28,772	19.8%	15.3%	24.3%	152
Region:								
Northeast								
Low	20,993	11,223	8,795	13,651	53.5%	48.2%	58.7%	76
Medium	20,993	2,804	1,619	3,989	13.4%	8.1%	18.6%	20
High	20,993	6,966	5,207	8,726	==33.2%==	25.8%	40.6%	43
Midwest								
Low	26,699	15,927	12,585	19,269	59.7%	49.5%	69.8%	92
Medium	26,699	3,562	1,693	5,431	13.3%	7.8%	18.9%	21
High	26,699	7,209	4,159	10,260	==27.0%==	15.5%	38.5%	48
South								
Low	43,640	32,330	26,191	38,469	74.1%	65.2%	82.9%	169
Medium	43,640	5,264	3,194	7,335	12.1%	7.3%	16.8%	34
High	43,640	6,046	2,383	9,708	==13.9%==	5.9%	21.8%	37
West								
Low	26,420	20,198	15,590	24,805	76.4%	66.4%	86.5%	113
Medium	26,420	3,094	1,250	4,938	11.7%	5.4%	18.0%	26
High	26,420	3,128	1,232	5,024	==11.8%==	4.2%	19.4%	24
Construction Year:								
1978-2017								
Low	57,919	43,704	35,330	52,079	75.5%	68.6%	82.3%	159
Medium	57,919	4,899	2,772	7,026	8.5%	4.9%	12.0%	21
High	57,919	9,315	5,595	13,035	==16.1%==	10.0%	22.2%	44
1960-1977								
Low	25,599	17,135	13,650	20,620	66.9%	59.9%	73.9%	147
Medium	25,599	3,453	1,972	4,935	13.5%	8.6%	18.4%	30
High	25,599	5,011	3,388	6,635	19.6%	12.9%	26.3%	48
1940-1959								
Low	18,178	10,283	7,849	12,716	56.6%	48.6%	64.5%	90
Medium	18,178	3,391	2,205	4,577	18.7%	12.3%	25.0%	31
High	18,178	4,505	3,034	5,976	24.8%	18.0%	31.5%	33
Before 1940								
Low	16,055	8,556	5,557	11,555	53.3%	43.0%	63.6%	54
Medium	16,055	2,981	1,535	4,427	18.6%	10.1%	27.0%	19
High	16,055	4,518	2,630	6,406	==28.1%==	18.3%	38.0%	27
Urbanization:								
MSA								
Low	90,723	59,862	53,172	66,552	66.0%	61.2%	70.8%	343
Medium	90,723	12,950	9,674	16,225	14.3%	11.1%	17.5%	91
High	90,723	17,911	13,299	22,523	19.7%	14.9%	24.6%	121
Non-MSA								
Low	27,028	19,816	14,228	25,403	73.3%	60.7%	85.9%	107
Medium	27,028	1,774	412	3,137	6.6%	1.6%	11.5%	10
High	27,028	5,438	2,586	8,291	20.1%	9.0%	31.3%	31
Housing Unit Type:								

43

Table 14. Maximum Moisture Reading by Selected Housing Unit (HU) Characteristics								
HU Characteristic	**All HUs[b] (000)**	**Number of HUs[a] (000)**			**Percent of HUs (%)**			**HUs in Sample**
		Estimate	**Lower 95% CI[c]**	**Upper 95% CI**	**Estimate**	**Lower 95% CI**	**Upper 95% CI**	
Single family								
Low	95,590	65,193	57,186	73,200	68.2%	63.0%	73.4%	364
Medium	95,590	11,511	8,673	14,350	12.0%	9.2%	14.9%	82
High	95,590	18,886	14,403	23,369	19.8%	15.1%	24.4%	125
Multi-family								
Low	22,161	14,485	10,218	18,751	65.4%	54.1%	76.7%	86
Medium	22,161	3,213	1,014	5,411	14.5%	6.2%	22.8%	19
High	22,161	4,464	2,229	6,698	20.1%	12.0%	28.2%	27
Tenure:								
Owner-occupied								
Low	75,302	52,844	46,270	59,417	70.2%	65.2%	75.1%	276
Medium	75,302	8,341	6,042	10,640	11.1%	8.3%	13.9%	56
High	75,302	14,118	10,855	17,380	18.7%	14.5%	23.0%	87
Renter-occupied								
Low	42,449	26,834	21,262	32,406	63.2%	56.4%	70.0%	174
Medium	42,449	6,383	3,685	9,081	15.0%	9.6%	20.5%	45
High	42,449	9,232	6,190	12,274	21.7%	14.9%	28.6%	65
Household Income:								
Less than $35,000/year								
Low	45,994	29,184	23,604	34,763	63.5%	56.0%	70.9%	186
Medium	45,994	5,407	3,409	7,405	11.8%	7.8%	15.7%	44
High	45,994	11,403	7,684	15,122	24.8%	17.2%	32.3%	78
Equal to or more than $35,000/year								
Low	71,757	50,494	43,753	57,234	70.4%	65.5%	75.2%	264
Medium	71,757	9,317	6,371	12,263	13.0%	9.3%	16.7%	57
High	71,757	11,946	8,882	15,011	16.6%	12.7%	20.6%	74
One or More Children Under Age 6:								
All Income Categories								
Low	14,979	10,484	6,945	14,024	70.0%	58.7%	81.3%	72
Medium	14,979	1,610	536	2,684	10.7%	3.8%	17.7%	15
High	14,979	2,885	1,044	4,726	19.3%	8.4%	30.1%	21
Government Support:								
Government support								
Low	10,781	6,983	3,732	10,233	64.8%	50.9%	78.7%	43
Medium	10,781	1,312	312	2,313	12.2%	3.8%	20.5%	9
High	10,781	2,485	1,007	3,964	23.1%	10.3%	35.9%	18
No government support								
Low	106,023	72,261	64,457	80,064	68.2%	63.2%	73.1%	402
Medium	106,023	13,229	10,090	16,368	12.5%	9.6%	15.3%	91
High	106,023	20,533	15,479	25,587	19.4%	14.8%	24.0%	133
Race:								
White								
Low	89,252	62,362	54,070	70,654	69.9%	64.6%	75.2%	334
Medium	89,252	10,559	7,544	13,575	11.8%	8.8%	14.9%	70
High	89,252	16,330	12,440	20,221	18.3%	13.8%	22.8%	98
African American								
Low	17,179	10,746	7,722	13,771	62.6%	51.0%	74.2%	72
Medium	17,179	1,984	791	3,176	11.5%	4.5%	18.6%	17

Table 14. Maximum Moisture Reading by Selected Housing Unit (HU) Characteristics

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
High	17,179	4,449	1,790	7,107	25.9%	13.6%	38.2%	37
Other[d]								
Low	11,321	6,569	3,613	9,525	58.0%	45.6%	70.5%	44
Medium	11,321	2,181	538	3,824	19.3%	9.0%	29.6%	14
High	11,321	2,570	1,077	4,064	22.7%	9.9%	35.5%	17
Ethnicity:								
Hispanic/Latino								
Low	15,538	11,237	7,759	14,715	72.3%	63.0%	81.7%	80
Medium	15,538	2,503	1,210	3,795	16.1%	9.3%	22.9%	21
High	15,538	1,799	784	2,814	11.6%	5.0%	18.1%	19
Not Hispanic/Latino								
Low	102,213	68,441	59,890	76,991	67.0%	61.6%	72.3%	370
Medium	102,213	12,222	8,921	15,522	12.0%	9.0%	14.9%	80
High	102,213	21,550	16,218	26,883	21.1%	16.1%	26.0%	133

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.

10.0 SLIP/FALL HAZARDS

A housing unit was considered to have a slip/fall hazard if there was a stair without a rail on both sides <u>OR</u> a room, stair or hallway with a rug or mat without an anti-slip feature. We did not include the absence of grab bars in bathrooms as a slip fall hazard both because grab bars are relatively uncommon (less than 20% of homes had a grab bar in each full bath), and because their absence is a hazard primarily to elderly residents. ***Information on resident ages was not collected in AHHS II.***

Table 14 shows the prevalence of slip/fall hazards by various housing characteristics.

Overall, an estimated 69.7 million homes (59.2%) had a slip/fall hazard. Regional differences were noted. Slip/fall hazards were statistically significantly less common in the South than in each of the other regions. The Northeast had the highest prevalence of slip/fall hazards, significantly higher than for the Midwest and South, though not for the West. Pre-1940 homes had significantly more slip/fall hazards than the other age groups, which did not differ significantly.

Homes of families with higher income had significantly more slip fall hazards than homes of families of lower income, as did homes of families not in poverty compared to homes of families in poverty. A possible explanation may be that higher income families are more likely to have larger homes with potentially more levels and stairs.

No significant differences were seen for other housing characteristics.

HU Characteristic	All HUs[b] (000)	Number of HUs[a] (000)			Percent of HUs (%)			HUs in Sample
		Estimate	Lower 95% CI[c]	Upper 95% CI	Estimate	Lower 95% CI	Upper 95% CI	
Total Housing Units	117,751	69,736	60,120	79,351	59.2%	53.3%	65.2%	408
Region:								
Northeast	20,993	16,317	12,249	20,384	77.7%	67.3%	88.2%	108
Midwest	26,699	16,820	12,543	21,097	63.0%	53.9%	72.1%	102
South	43,640	18,943	14,040	23,846	43.4%	33.9%	52.9%	104
West	26,420	17,657	11,861	23,452	66.8%	51.5%	82.2%	94
Construction Year:								
1978-2017	57,919	33,088	26,291	39,885	57.1%	49.0%	65.2%	129
1960-1977	25,599	13,344	10,546	16,143	52.1%	44.9%	59.4%	116
1940-1959	18,178	10,339	7,999	12,679	56.9%	47.6%	66.1%	83
Before 1940	16,055	12,964	9,549	16,378	80.7%	70.0%	91.5%	80
Urbanization:								
MSA	90,723	55,305	46,310	64,301	61.0%	53.6%	68.3%	331
Non-MSA	27,028	14,430	11,033	17,828	53.4%	46.1%	60.7%	77
One or More Children Under Age 6:								
All HU Ages	14,979	9,503	6,155	12,851	63.4%	51.9%	75.0%	65
No Children Under Age 6:								
All HU Ages	102,772	60,233	51,316	69,150	58.6%	52.3%	64.9%	343
Housing Unit Type:								
Single family	95,590	56,981	48,244	65,718	59.6%	53.1%	66.1%	336
Multi-family	22,161	12,755	8,348	17,162	57.6%	45.2%	69.9%	72
Tenure:								
Owner-occupied	75,302	46,729	39,966	53,492	62.1%	56.0%	68.1%	262
Renter-occupied	42,449	23,007	17,160	28,854	54.2%	44.8%	63.6%	146
Household Income:								
Less than $35,000/year	45,994	21,091	17,129	25,053	45.9%	37.4%	54.3%	144
Equal to or more than $35,000/year	71,757	48,645	40,614	56,675	67.8%	62.1%	73.5%	264
Government Support:								
Government support	10,781	5,784	3,189	8,380	53.7%	36.0%	71.3%	36
No government support	106,023	63,761	55,016	72,507	60.1%	54.0%	66.3%	370
Poverty:								
In poverty	20,340	9,444	6,599	12,290	46.4%	34.0%	58.9%	70
Not in poverty	97,411	60,291	50,977	69,606	61.9%	55.7%	68.1%	338
Race:								
White	89,252	52,615	44,388	60,842	59.0%	52.2%	65.7%	293
African American	17,179	10,281	7,372	13,190	59.8%	49.2%	70.5%	73
Other[d]	11,321	6,840	3,557	10,123	60.4%	47.4%	73.4%	42
Ethnicity:								
Hispanic/Latino	15,538	8,385	5,582	11,189	54.0%	39.1%	68.8%	61
Not Hispanic/Latino	102,213	61,350	52,224	70,476	60.0%	54.5%	65.6%	347

Table 15. Prevalence of Slip/Fall Hazards by Selected Housing Unit (HU) Characteristics

[a] "Housing units" include permanently occupied, noninstitutional housing units in which children are permitted to live.
[b] All percentages are calculated with the "all HUs" on the left most column of each row as the denominator.
[c] CI = confidence interval for the estimated number or percent.
[d] "Other" race includes Asian, American Indian or Alaskan Native, Native Hawaiian or other Pacific Islander, and more than one race.