

SUPPLEMENTAL INFORMATION

The Roles of Housing and Household Characteristics in U.S. Residential Heat Risk

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Analysis software

To summarize the two heat risk variables by housing type, tenure, race, ethnicity, and income, we used survey weights provided by the U.S. EIA and the ‘survey’ package in R statistical software version 4.2.2 (Lumley, 2020; U.S. EIA, 2020).

Coding binary outcome variables

We coded the first outcome variable – the frequency that the home was kept at an unhealthy temperature – as a binary representing whether the household responded that they kept their home at an unhealthy temperature “almost every month,” “some months,” or “1 or 2 months.” The survey did not define “unhealthy temperature” thresholds or the type of medical attention that was needed.

Coding housing variables

We recoded housing type into four categories: detached single-family; attached single-family, such as duplexes and townhouses; multifamily, including low-, mid-, and high-rise apartments; and manufactured housing, which may also be called mobile, modular, or prefabricated homes. We included renter and owner-occupied housing, the two primary types of housing tenure in the U.S. The RECS dataset does not indicate affordable or social housing sub-categories, so any such units would be included in the relevant housing type category.

Independent variables in regression analysis

Our primary independent variables of interest were housing type, tenure, income, and race and ethnicity. Other independent variables pertained to housing setting (e.g. cooling degree days, rural location) context, housing characteristics (e.g. housing built since 2000, AC characteristics, broken AC equipment, adequate insulation, large shade tree), and other household characteristics (e.g. household size, number of children, number of seniors). Descriptive statistics for these variables are included in Supplemental Table 1 below.

Descriptive statistics of study variables

Supplemental Table 1: Descriptive statistics (unweighted, n = 18,314)

Category	Variable	Mean	St. Dev.	Min	Max
Health-related outcomes	Kept home at unhealthy temp	0.09	0.28	0	1
	Needed medical attention	0.004	0.06	0	1
Housing type and tenure	Detached single-family	0.67	0.47	0	1
	Attached single-family	0.09	0.29	0	1
	Multifamily	0.19	0.39	0	1

	Manufactured housing	0.05	0.22	0	1
	Renter-occupied	0.27	0.44	0	1
Housing setting	Cooling degree days (1000s)	1.31	0.99	0	4.9
	Rural	0.22	0.41	0	1
Other housing characteristics	Built since 2000	0.25	0.43	0	1
	Household has central air conditioning	0.66	0.47	0	1
	Household has window or other air conditioning	0.21	0.41	0	1
	Household has no air conditioning	0.13	0.33	0	1
	No air conditioning days due to broken equipment	0.04	0.2	0	1
	Adequate insulation	0.82	0.38	0	1
	Has large shade tree	0.47	0.5	0	1
Household characteristics	White (non-Hispanic)	0.76	0.43	0	1
	Black (non-Hispanic)	0.08	0.27	0	1
	Asian and Pacific Islander (non-Hispanic)	0.05	0.21	0	1
	Other non-Hispanic	0.03	0.16	0	1
	Hispanic	0.09	0.28	0	1
	Income below \$50K	0.38	0.49	0	1
	Household size	2.46	1.37	1	7
	Number of children in household	0.51	0.94	0	4
Number of seniors in household	0.55	0.75	0	6	