

### 3. STUDY OF UNDERLYING CAUSES OF LIFE-SHORTENING INDUCED BY ENERGY-RELATED AGENTS

From a mechanistic point of view, it may be of interest to determine whether a given agent shortens life by inducing a specific life-shortening disease, by accelerating the aging process, or by some combination of the two mechanisms. In the case of ionizing radiation, as you are well aware, a considerable effort has been invested in this type of research over a period of years. Similar research on other energy-related agents can be expected in the future. While this category of research is definitely relevant to DOE interest, it is less urgent than the research described in the two preceding categories.

### 4. STUDY OF THE AGING PROCESS ITSELF

Research aimed at dissecting, characterizing, and understanding the aging process per se is only tangentially related to the matter of health-risk assessment and therefore ranks low in the present DOE scale of priorities.

It is evident that the four research categories addressed above span a range of priorities on the basis of relevance to major DOE interest. The same is undoubtedly true from the point of view of programmatic interest of the National Institute on Aging. It is interesting and noteworthy, however, that the two sets of priorities are probably related in an inverse manner. If such is in fact the case, each of the four categories of research should qualify for support in one or both of the agencies. Special budgetary problems or programmatic needs may introduce temporary perturbations in funding, but it is our view that research in all four categories is needed and should qualify for support at the Federal level.

I appreciate hearing from our laboratory scientists on substantive policy issues and hope the information provided will prove helpful. If I may be of further assistance, please let me know.

Sincerely,

RUTH C. CLUSEN,  
*Assistant Secretary for Environment.*

### ITEM 2. PAPER ENTITLED "HOUSEHOLD ENERGY UTILIZATION BY THE ELDERLY," BY ROBERT A. BYLUND, NELSON L. LE RAY, AND CHARLES O. CRAWFORD, OF THE DEPARTMENT OF SOCIOLOGY, MOREHEAD STATE UNIVERSITY, MOREHEAD, KY.

#### INTRODUCTION

Approximately one in every five households in the United States is headed by a person 65 years or older. Increasing energy costs have a severe impact on older Americans (U.S. Senate, 1979, p. 165; Olivarez, 1979). With rapidly rising energy costs and concern about the availability of fuel, important questions are raised concerning the types of energy used by the elderly for heating and cooking, and the presence or absence of selected structural features related to energy conservation and reduction of heat loss during the winter. The purpose of this report is to present nationwide and regional information on: (1) The heating and cooking fuel utilized by elderly headed households, and (2) energy conservation features in their housing.<sup>1</sup>

The data for this report are from the household records from the 1975 annual housing survey (AHS) conducted by the Bureau of the Census. The information for the survey was collected by personal interviews conducted from October to December 1975.

This data set provides the best information available at the time this study was undertaken, on the housing situation in the United States in terms of the scope of information available and the sampling procedures employed.<sup>2</sup> The housing section of the decennial census provides some information on the characteristics of housing units, but the amount of detailed information does not approach that provided by the annual housing survey. The currency of the 1975 annual housing survey also makes it a more desirable data source, and the size of the sample drawn is large enough to permit analysis of subpopulations, such as the elderly (Struyk, 1976, 1977).

The total sample for the 1975 annual housing survey consisted of about 72,600 housing units, both occupied and vacant. Information on 3,700 of these units could

<sup>1</sup> See Bylund, Le Ray, and Crawford, 1979, for a presentation of the household and dwelling unit characteristics of elderly headed households; Bylund, Crawford, and Le Ray, 1978, for a discussion of housing quality of the elderly; and Struyk, 1977.

<sup>2</sup> Preliminary analysis of annual housing survey data for 1977 indicate few differences.

not be obtained, leaving approximately 69,000 units for analysis. The sampling rate was one in 1,366 in urban areas, and about two in 1,366 in rural areas.

The focus of this study is households with heads 65 years of age or older. There were 11,762 unweighted cases in the sample in this category, which when weighted represents some 14,383,000 elderly households in the United States. These households contain over 85 percent of the total noninstitutionalized elderly population.

The estimates presented in this report should be used with a degree of caution. They are intended as estimates and should not be considered as authoritative as a complete enumeration.<sup>3</sup> All statements of differences appearing in the narrative, but not necessarily in the tables, are significant at the 90 percent confidence level (1.6 standard errors) or higher unless otherwise indicated. This means that the chances are at least 90 in 100 that a difference identified in the text, represents a difference in the population that is greater than chance variation arising from the use of the sample.

#### HEATING FUEL

Many elderly, because of their relatively low and often fixed incomes, are especially vulnerable to changes in the supply and price of home heating fuel irrespective of type—gas, fuel oil, kerosene, electricity, coal, coke, or wood. This section describes the major home heating fuel sources utilized by households headed by an individual 65 years of age or older.

Of the estimated 14.4 million elderly headed households in the United States in 1975, over 7.8 million, or 54 percent, were dependent upon utility gas (gas that is piped through underground pipes from a central system and serves a neighborhood) for heating. One-fourth, or 3.6 million of the elderly households were dependent upon fuel oil or kerosene (table 1), compared with 56 and 22 percent, respectively, of the total U.S. households dependent upon these two sources. Differences between elderly owners and renters in dependency upon utility gas, fuel oil, and kerosene were not significant.

In nonmetro rural areas, there was a high dependence upon fuel oil and kerosene, bottled, tank or LP gas (stored in tanks at the dwelling unit which are refilled or exchanged when empty) and wood. Of the nonmetro rural households, 26 percent of the owners and 22 percent of the renters depended on fuel oil and kerosene for heating. Twenty-five percent of the owners and 20 percent of the renters depended on bottled, tank or LP gas; while 5 percent of the owners and 12 percent of the renters depended on wood for heating.

Noteworthy regional highlights on type of heating fuel included:

Northeast: Highest dependence of all regions on fuel oil and kerosene—1.9 million, or 56 percent of all elderly households in the region.

North central: High dependence on utility gas—2.7 million, or 69 percent of all elderly households.

South: High dependence on utility gas—2.3 million or 49 percent of all elderly households. One in five nonmetro rural renter elderly households depend upon wood.

West: High dependence on utility gas—1.6 million, or 68 percent of all elderly households. One in four nonmetro rural elderly households dependent upon electricity.

#### COOKING FUEL

Utility gas and electricity were the most frequently reported energy sources for cooking among elderly households enumerated (table 2). Forty-eight percent, or 6.8 million of the elderly households, depended upon utility gas, compared with 45 percent of all U.S. households. Forty-three percent of the owner occupied units and 57 percent of the renter units depended upon utility gas for cooking. Six million elderly households, or 42 percent, depended upon electricity for cooking, compared with 47 percent of all U.S. households. Metro areas had a relatively high dependency upon utility gas (54 percent of the owners and 65 percent of the renters), compared with nonmetro areas where the greatest dependence was upon electricity (51 percent of the owners and 45 percent of the renters). Relatively little use was made of fuel oil, kerosene, coal, coke or wood for cooking.

Noteworthy regional highlights on type of cooking fuel include:

Northeast: Highest dependence of all regions on utility gas—2.1 million, or 60 percent of all elderly households. Renter dependency on gas was 77 percent.

North central: High dependency on utility gas and electricity—1.9 million, or 49 percent of the elderly households on gas, and 1.6 million, or 41 percent on electricity.

<sup>3</sup> For a discussion of the reliability of these estimates, see Bylund, Le Ray, and Crawford, 1979: and Bureau of the Census and Department of Housing and Urban Development, 1977.

South: High dependency on electricity and gas—2.2 million, or 47 percent of all elderly households on electricity, and 1.8 million, or 38 percent on gas. Eight percent of nonmetro rural renter households depended on wood.

West: High dependency on electricity and gas—1.1 million, or 48 percent of all elderly households on electricity, and 1.1 million, or 47 percent on gas. Highest dependency on electricity in nonmetro areas, where 62 percent of the owners and 56 percent of the renters use this as their major fuel for cooking.

#### ENERGY CONSERVATION<sup>4</sup>

This section presents information on three items that help to conserve energy by reducing heat loss during the winter: Storm windows or other protective window covering, storm doors, and attic or roof insulation. About 60 percent of the 9 million owner-occupied, one-family dwelling units were reported to have storm windows and/or doors on some or all windows and entrances. In addition, 70 percent reported attic insulation (table 3).

Noteworthy regional energy conservation highlights included:

Northeast: Three-fourths of the dwelling units had protective window covering on all windows; four-fifths had storm doors on all exterior doors, and about three-fourths had attic insulation.

North central: Over 80 percent of the dwelling units had protective covering on all windows and doors and had attic insulation.

South: Only 22 percent of the elderly headed dwelling units had storm windows on all windows and only 27 percent had storm doors on all exterior doors. About 60 percent had attic insulation.

West: Lowest proportion of storm windows on all windows (12 percent) and storm doors on all exterior doors (14 percent). Seventy percent had attic insulation.

Energy conservation measures were added or installed during the past 12 months (prior to the 1975 enumeration) in all regions and residential areas (table 4). In general, caulking and weatherstripping around doors and windows was the most frequently added measure for conserving energy.

#### SUMMARY AND IMPLICATIONS

Approximately 14.4 million, or one in five of the U.S. households is headed by a person 65 years of age or older. For heating fuel, the greatest dependency was upon utility gas in the north central, south, and west, while the northeast was highly dependent upon fuel oil and kerosene. For cooking fuel, the greatest dependency was upon utility gas and electricity in the north central, south, and west, while the northeast had a relatively high dependency upon utility gas.

Elderly headed households will be impacted by increased costs and availability of energy for home heating and cooking. The 1.9 million elderly households in the northeast that depend upon fuel oil and kerosene for heating are in an especially vulnerable supply situation. In September 1979, the northeast had the highest average price for utility gas (42.46 per thousand therms versus a U.S. city average of \$33.60), electricity (\$34.53 per 500 kWh versus a U.S. city average of \$26.50), and about equalled the U.S. city average per gallon for No. 2 fuel oil (northeast 0.850; U.S. city average, 0.848) (U.S. Department of Labor, 1979). Efforts to conserve energy by lowering thermostats could result in accidental hypothermia<sup>5</sup> and worsened pre-existing conditions such as diabetes, circulatory and liver problems. Deterioration of health might lead to hospitalization.

Although there was a relatively high frequency of use of conservation measures in the northeast and north central regions, given the nature of the climate, high priority might be given to the addition of those measures in the northeast and north central regions, given the nature of the climate, high priority might be given to the addition of those measures requiring the least cost and technical ability—caulking, weatherstripping, storm doors, and windows. However, in the long run, attic insulation would be required before optimum energy conservation could be achieved.

It is hypothesized that individual resources that might have been utilized for energy conservation will be used to meet increased fuel costs. Over the long term, the addition and upgrading of energy conservation measures will result in a reduction of energy use. However, the financial resources required to install storm windows, doors, and insulation is beyond the means of the many elderly headed households who subsist on relatively low and often fixed incomes. Assistance from public and private agencies is required.

<sup>4</sup> Data presented are for owner occupied, one-family homes, mobile homes and trailers.

<sup>5</sup> Hypothermia is lower than normal body temperature—typically 95° F. (35° C.). It can result from exposure to relatively cool temperatures for a short period of time—for the elderly, 60° F. (15.5° C. to 65° F.) (18.3° C.) (U.S. Department of Health, Education, and Welfare, 1978).

TABLE 1.—ELDERLY HEADED HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, AND MAJOR HEATING FUEL, 1975

Heating fuel, tenure, and area <sup>1</sup>	Total number (thousands)	Percent				
		Total	Metropolitan <sup>2</sup>	Nonmetropolitan		
				Total <sup>3</sup>	Urban	Rural
<b>United States:</b>						
<b>Owner—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	5,531	54.9	61.8	44.9	70.4	29.1
Bottled, tank, LP gas <sup>5</sup> .....	866	8.6	3.1	16.3	2.7	24.8
Fuel oil, kerosene .....	2,483	24.6	25.2	23.8	19.5	26.4
Electricity .....	891	8.8	8.0	10.0	6.2	12.4
Coal or coke .....	117	1.2	1.0	1.5	0.6	2.0
Wood .....	173	1.7	0.6	3.4	0.5	5.2
No fuel <sup>6</sup> .....	21	0.2	0.3	0.1	0.1	0.2
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	10,082		5,909	4,173	1,604	2,570
<b>Renter—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	2,325	54.2	54.5	53.1	73.1	30.5
Bottled, tank, LP gas <sup>5</sup> .....	148	3.5	1.1	10.2	1.5	19.9
Fuel oil, kerosene .....	1,068	24.8	27.8	16.6	12.2	21.5
Electricity .....	598	13.9	14.9	11.2	10.2	12.3
Coal or coke .....	48	1.1	0.7	2.3	1.6	3.2
Wood .....	78	1.8	0.2	6.3	1.1	12.1
No fuel .....	28	0.6	0.8	0.3	0.3	0.4
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	4,293		3,166	1,127	598	529
<b>Northeast:</b>						
<b>Owner—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	798	38.5	42.5	26.3	36.3	18.9
Bottled, tank, LP gas <sup>5</sup> .....	17	0.8	0.6	1.4	0.0	2.5
Fuel oil, kerosene .....	1,154	55.6	53.8	61.1	60.3	61.6
Electricity .....	64	3.1	1.4	8.0	2.7	11.9
Coal or coke .....	32	1.6	1.5	1.7	0.7	2.4
Wood .....	10	0.5	0.1	1.5	0.0	2.6
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	2,075		1,559	516	220	296
<b>Renter—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	504	37.3	36.5	43.5	53.1	25.7
Bottled, tank, LP gas <sup>5</sup> .....	6	0.4	0.2	1.8	0.0	5.0
Fuel oil, kerosene .....	750	55.7	57.4	42.7	34.3	58.1
Electricity .....	77	5.7	5.0	10.8	12.6	7.4
Coal or coke .....	11	0.8	0.8	1.3	0.0	3.8
Wood .....						
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,349		1,185	164	106	58
<b>North Central:</b>						
<b>Owner—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	1,953	66.7	77.7	53.5	85.9	32.5
Bottled, tank, LP gas <sup>5</sup> .....	252	8.6	2.1	16.4	0.8	26.5
Fuel oil, kerosene .....	555	18.9	16.3	22.1	10.6	29.6
Electricity .....	108	3.7	2.5	5.1	1.9	7.2
Coal or coke .....	37	1.3	1.2	1.3	0.8	1.7
Wood .....	21	0.7	0.1	1.5	0.0	2.5
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	2,926		1,595	1,331	523	809
<b>Renter—Heating fuel:</b>						
Utility gas <sup>4</sup> .....	756	74.0	78.8	64.6	88.2	34.5
Bottled, tank, LP gas <sup>5</sup> .....	40	3.9	1.2	9.3	0.0	21.1
Fuel oil, kerosene .....	127	12.5	11.8	13.7	6.4	23.0
Electricity .....	86	8.4	7.4	10.7	5.3	17.5

TABLE 1.—ELDERLY HEADED HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, AND MAJOR HEATING FUEL, 1975—Continued

Heating fuel, tenure, and area <sup>1</sup>	Total number (thousands)	Percent				
		Total	Metropolitan <sup>2</sup>	Nonmetropolitan		
				Total <sup>3</sup>	Urban	Rural
Coal or coke .....	7	0.7	0.7	0.6	0.0	1.4
Wood .....	4	0.4	0.1	1.1	0.0	2.5
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,021		67.9	342	192	150
South:						
Owner—Heating fuel:						
Utility gas <sup>4</sup> .....	1,687	48.3	53.9	43.5	70.4	28.4
Bottled, tank, LP gas <sup>5</sup> .....	519	14.9	7.2	21.4	5.0	30.5
Fuel oil, kerosene .....	632	18.1	20.0	16.4	14.4	17.6
Electricity .....	492	14.1	16.8	11.8	9.0	13.3
Coal or coke .....	45	1.3	0.8	1.8	0.5	2.5
Wood .....	117	3.3	1.4	5.1	0.7	7.5
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	3,493		1,602	1,890	680	1,210
Renter—Heating fuel:						
Utility gas <sup>4</sup> .....	589	50.6	50.9	48.4	70.3	28.9
Bottled, tank, LP gas <sup>5</sup> .....	88	7.6	2.7	13.5	3.3	22.2
Fuel oil, kerosene .....	153	13.1	13.7	11.9	9.2	14.4
Electricity .....	239	20.5	28.4	9.6	10.6	8.6
Coal or coke .....	26	2.2	1.1	3.7	2.7	4.6
Wood .....	70	6.0	0.9	12.3	2.8	20.7
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,165		651	514	242	272
West:						
Owner—Heating fuel:						
Utility gas <sup>4</sup> .....	1,092	69.6	77.9	47.5	67.9	33.2
Bottled, tank, LP gas <sup>5</sup> .....	78	5.0	2.5	11.5	2.5	17.8
Fuel oil, kerosene .....	145	9.2	6.3	16.7	15.7	17.4
Electricity .....	227	14.4	12.5	19.8	12.3	25.3
Coal or coke .....	3	0.2	0.1	0.3	0.0	0.5
Wood .....	24	1.5	0.6	3.9	1.7	5.5
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,569		1,138	431	178	253
Renter—Heating fuel:						
Utility gas <sup>4</sup> .....	476	65.0	66.7	54.1	71.7	33.7
Bottled, tank, LP gas <sup>5</sup> .....	15	2.1	0.8	9.7	0.0	21.5
Fuel oil, kerosene .....	37	5.1	4.6	7.6	2.6	13.8
Electricity .....	195	26.6	27.8	21.6	20.4	23.4
Coal or coke .....	4	0.6	0.2	2.9	5.3	0.0
Wood .....	4	0.6	0.0	3.4	0.0	7.6
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	731		628	103	56	46

<sup>1</sup> Numbers may not add to totals and percentages to 100 due to rounding. Due to the small number of cases, the category "other fuels" has been deleted. "Other fuels" include any other fuel, for example, briquettes, sawdust, corn cobs, or purchased steam. For the United States, "Other fuels" were reported by 0.1 percent of the households.

<sup>2</sup> Except in the New England States, a metropolitan area is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county or counties containing such a city or cities, contiguous counties are included if, according to criteria, they are socially integrated with the central city. New England States, towns, and cities, rather than counties, are the units used in defining metro areas. All areas not designated as metro are nonmetro.

<sup>3</sup> Urban comprises all urbanized areas and places of 2,500 inhabitants or more outside urbanized areas. More specifically, urban consists of all (a) places of 2,500 inhabitants or more incorporated as cities, villages, boroughs (except Alaska), and towns (except in the New England States, New York, and Wisconsin), but excluding the rural portions of extended cities; (b) unincorporated places of 2,500 inhabitants or more; and (c) other territory, incorporated or unincorporated, included in urbanized areas. Areas not classified as urban constitute rural.

<sup>4</sup> Gas that is piped through underground pipes from a central system and serves a neighborhood.

<sup>5</sup> Gas stored in tanks at the dwelling which are refilled or exchanged when empty.

<sup>6</sup> Due to the small number of cases, the "no fuel" category has been deleted from the regional breakdown.

Source: Compiled from 1975 annual housing survey data tapes.

TABLE 2.—ELDERLY HEADED HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, AND MAJOR COOKING FUEL, 1975

Cooking fuel, tenure, and area <sup>1</sup>	Total <sup>2</sup> number (thou- sands)	Percent				
		Total	Metropoli- tan	Nonmetropolitan		
				Total	Urban	Rural
<b>United States:</b>						
Owner—Cooking fuel:						
Utility gas <sup>3</sup> .....	4,378	43.3	53.6	29.0	44.9	19.0
Bottled, tank, LP gas <sup>4</sup> .....	1,089	10.8	5.5	18.4	4.4	27.1
Electricity.....	4,510	44.7	40.4	50.7	50.1	51.1
Fuel oil, kerosene.....	17	0.2	0.1	0.2	0.1	0.3
Coal or coke.....	10	0.1	0.1	0.1	0.1	0.1
Wood.....	77	0.8	0.2	1.5	0.3	2.2
No fuel.....	5	0.0	0.1	0.1	0.1	0.1
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	10,086		5,912	4,175	1,605	2,570
Renter—Cooking fuel:						
Utility gas <sup>3</sup> .....	2,459	57.2	64.7	36.0	50.2	20.0
Bottled, tank, LP gas <sup>4</sup> .....	223	5.2	2.3	13.4	2.1	26.3
Electricity.....	1,466	34.1	30.1	45.3	43.3	47.5
Fuel oil, kerosene.....	10	0.2	0.1	0.6	0.8	0.4
Coal or coke.....	1	0.0	0.0	0.1	0.0	0.3
Wood.....	38	0.9	0.1	3.2	1.7	4.9
No fuel.....	101	2.4	2.7	1.3	2.0	0.5
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	4,298		3,171	1,127	598	529
<b>Northeast:</b>						
Owner—Cooking fuel:						
Utility gas <sup>3</sup> .....	1,085	52.3	62.0	22.9	33.4	15.1
Bottled, tank, LP gas <sup>4</sup> .....	207	10.0	6.1	21.6	13.0	28.1
Electricity.....	761	36.7	31.4	52.6	53.0	52.2
Fuel oil, kerosene.....	4	0.0	0.1	0.5	0.0	1.0
Coal or coke.....	7	0.4	0.3	0.6	0.7	0.5
Wood.....	9	0.4	0.0	1.8	0.0	3.2
No fuel.....						
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	2,075		1,559	516	220	296
Renter—Cooking fuel:						
Utility gas <sup>3</sup> .....	977	72.3	76.6	41.2	51.7	21.9
Bottled, tank, LP gas <sup>4</sup> .....	34	2.5	1.1	13.1	1.4	34.7
Electricity.....	302	22.4	19.7	41.5	41.2	42.2
Fuel oil, kerosene.....	6	0.5	0.3	1.9	2.9	0.0
Coal or coke.....						
Wood.....	1	0.1	0.0	0.4	0.0	1.2
No fuel.....	30	2.2	2.3	1.8	2.8	0.0
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,350		1,186	164	106	58
<b>North Central:</b>						
Owner—Cooking fuel:						
Utility gas <sup>3</sup> .....	1,339	45.7	57.3	31.8	51.9	18.9
Bottled, tank, LP gas <sup>4</sup> .....	313	10.7	4.4	18.3	2.5	28.5
Electricity.....	1,264	43.2	38.2	49.1	45.7	51.4
Fuel oil, kerosene.....	4	0.1	0.1	0.2	0.0	0.3
Coal or coke.....						
Wood.....	8	0.3	0.0	0.6	0.0	1.0
No fuel.....						
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	2,928		1,596	1,332	523	809
Renter—Cooking fuel:						
Utility gas <sup>3</sup> .....	583	57.0	66.8	37.5	50.9	20.4
Bottled, tank, LP gas <sup>4</sup> .....	59	5.8	2.0	13.4	2.3	27.5

TABLE 2.—ELDERLY HEADED HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, AND MAJOR COOKING FUEL, 1975—Continued

Cooking fuel, tenure, and area <sup>1</sup>	Total <sup>2</sup> number (thou- sands)	Percent				
		Total	Metropoli- tan	Nonmetropolitan		
				Total	Urban	Rural
Electricity.....	356	34.8	28.7	46.8	43.8	50.7
Fuel oil, kerosene.....						
Coal or coke.....						
Wood.....	1	0.1	0.0	0.4	0.0	0.9
No fuel.....	23	2.3	2.5	1.9	3.0	0.5
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,024		682	342	192	150
South:						
Owner—Cooking fuel:						
Utility gas <sup>3</sup> .....	1,238	35.4	42.0	29.7	46.8	20.1
Bottled, tank, LP gas <sup>4</sup> .....	496	14.2	8.3	19.1	3.9	27.8
Electricity.....	1,705	48.7	48.6	48.8	48.4	49.0
Fuel oil, kerosene.....	6	0.2	0.1	0.2	0.2	0.2
Coal or coke.....	2	0.1	0.0	0.1	0.0	0.2
Wood.....	51	1.5	0.9	1.9	0.5	2.7
No fuel.....	4	0.1	0.1	0.1	0.2	0.1
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	3,503		1,607	1,895	684	1,212
Renter—Cooking fuel:						
Utility gas <sup>3</sup> .....	524	44.2	52.0	34.2	50.1	20.0
Bottled, tank, LP gas <sup>4</sup> .....	115	9.7	5.8	14.8	2.7	25.5
Electricity.....	482	40.7	38.6	43.3	41.8	44.7
Fuel oil, kerosene.....	4	0.3	0.0	0.7	0.7	0.8
Coal or coke.....	1	0.1	0.0	0.1	0.0	0.3
Wood.....	34	2.8	0.3	6.1	4.1	8.0
No fuel.....	25	2.1	3.2	0.7	0.6	0.8
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,184		667	517	243	274
West:						
Owner—Cooking fuel:						
Utility gas <sup>3</sup> .....	717	45.3	53.2	24.2	31.5	19.1
Bottled, tank, LP gas <sup>4</sup> .....	73	4.6	2.1	11.3	1.6	18.0
Electricity.....	780	49.3	44.4	62.3	66.1	59.6
Fuel oil, kerosene.....	3	0.2	0.2	0.2	0.0	0.3
Coal or coke.....						
Wood.....	9	0.6	0.0	2.0	0.8	2.9
No fuel.....						
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,583		1,151	432	178	254
Renter—Cooking fuel:						
Utility gas <sup>3</sup> .....	375	50.6	53.6	32.1	45.2	16.5
Bottled, tank, LP gas <sup>4</sup> .....	15	2.0	1.1	7.6	0.0	16.7
Electricity.....	326	44.0	42.0	56.1	52.2	60.8
Fuel oil, kerosene.....						
Coal or coke.....	1	0.1	0.0	0.7	0.0	1.5
Wood.....	2	0.3	0.0	2.0	0.0	4.5
No fuel.....	23	3.1	3.3	1.4	2.6	0.0
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	741		638	103	56	47

<sup>1</sup> Numbers may not add to totals and percentages to 100 due to rounding.

<sup>2</sup> See table 1, footnotes 5 and 6.

<sup>3</sup> Gas that is piped through underground pipes from a central system and serves a neighborhood.

<sup>4</sup> Gas stored in tanks at the dwelling which are refilled or exchanged when empty.

Source: Compiled from 1975 annual housing survey data tapes.

TABLE 3.—ELDERLY OWNER HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, PRESENCE OF STORM WINDOWS, STORM DOORS, AND ATTIC INSULATION IN DWELLING, 1975<sup>1</sup>

Item	Total <sup>2</sup> number (thou- sands)	Percent				
		Total	Metropoli- tan	Nonmetropolitan		
				Total	Urban	Rural
United States—Currently in dwelling:						
Storm windows: <sup>3</sup>						
Yes, all .....	4,275	47.2	49.3	44.5	47.3	42.9
Some .....	1,122	12.4	11.4	13.6	12.2	14.5
No .....	3,659	40.4	39.3	41.9	40.5	42.7
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	9,056		5,055	4,001	1,491	2,511
Storm doors: <sup>4</sup>						
Yes, all .....	4,720	52.1	53.6	50.3	53.7	48.3
Some .....	1,018	11.2	10.2	12.6	12.3	12.8
No .....	3,315	36.6	36.3	37.1	34.0	38.9
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	9,053		5,055	3,999	1,491	2,508
Attic insulation: <sup>5</sup>						
Yes .....	6,301	70.1	72.6	67.0	70.5	64.9
No .....	2,248	25.0	22.0	28.8	25.0	31.1
Don't know .....	436	4.9	5.4	4.2	4.5	3.9
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	8,985		5,010	3,975	1,483	2,492
Northeast—Currently in dwelling:						
Storm windows: <sup>3</sup>						
Yes, all .....	1,226	74.4	75.2	72.1	76.2	69.4
Yes, some .....	313	19.0	17.6	22.5	23.0	22.2
No .....	110	6.7	7.2	5.3	0.8	8.5
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,649		1,190	460	189	271
Storm doors: <sup>4</sup>						
Yes, all .....	1,329	80.6	82.3	76.2	78.9	74.2
Yes, some .....	219	13.3	12.3	15.7	16.3	15.4
No .....	102	6.2	5.4	8.1	4.8	10.4
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,650		1,190	460	189	271
Attic insulation: <sup>5</sup>						
Yes .....	1,181	72.2	74.1	67.6	63.7	70.3
No .....	387	23.7	21.2	30.0	33.1	27.9
Don't know .....	66	4.1	4.7	2.4	3.2	1.9
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	1,634		1,178	457	189	268
North Central—Currently in dwelling:						
Storm windows: <sup>3</sup>						
Yes, all .....	2,138	81.1	86.2	75.7	79.4	73.4
Yes, some .....	327	12.4	9.7	15.2	12.6	16.8
No .....	171	6.5	4.1	9.1	7.9	9.7
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	2,636		1,357	1,280	488	791
Storm doors: <sup>4</sup>						
Yes, all .....	2,300	87.3	91.0	83.3	89.3	79.6
Yes, some .....	194	7.4	5.3	9.6	7.1	11.1
No .....	142	5.4	3.8	7.1	3.6	9.3
Total, percent .....		100.0	100.0	100.0	100.0	100.0
Total, number .....	2,636		1,357	1,280	488	791
Attic insulation: <sup>5</sup>						
Yes .....	2,152	81.9	83.9	79.7	84.4	76.8



TABLE 3.—ELDERLY OWNER HOUSEHOLDS BY REGION, METRO AND NONMETRO RESIDENCE, PRESENCE OF STORM WINDOWS, STORM DOORS, AND ATTIC INSULATION IN DWELLING, 1975<sup>1</sup>—  
Continued

Item	Total <sup>2</sup> number (thous- ands)	Percent				
		Total	Metropoli- tan	Nonmetropolitan		
				Total	Urban	Rural
No.....	389	14.8	12.1	17.7	13.0	20.7
Don't know.....	87	3.3	4.0	2.6	2.7	2.5
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	2,628		1,352	1,276	488	788
South—Currently in dwelling:						
Storm windows: <sup>3</sup>						
Yes, all.....	727	22.0	23.9	20.5	20.2	20.7
Yes, some.....	344	10.4	11.6	9.5	7.3	10.7
No.....	2,229	67.5	64.4	70.0	72.5	68.6
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	3,300		1,453	1,846	648	1,199
Storm doors: <sup>4</sup>						
Yes, all.....	883	26.8	27.2	26.5	24.9	27.4
Yes, some.....	481	14.6	16.3	13.3	14.8	12.4
No.....	1,930	58.6	56.6	60.2	60.2	60.2
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	3,294		1,450	1,844	648	1,196
Attic insulation: <sup>5</sup>						
Yes.....	1,936	59.4	65.2	54.8	59.5	52.3
No.....	1,145	35.1	29.7	39.3	34.0	42.3
Don't know.....	180	5.5	5.1	5.8	6.5	5.5
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	3,261		1,432	1,830	641	1,189
West—Currently in dwelling:						
Storm windows: <sup>3</sup>						
Yes, all.....	183	12.4	7.7	24.4	25.6	23.6
Yes, some.....	138	9.4	6.3	17.4	17.8	17.1
No.....	1,151	78.1	86.0	58.2	56.6	59.2
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,473		1,057	416	166	250
Storm doors: <sup>4</sup>						
Yes, all.....	209	14.2	9.6	26.0	32.8	21.4
Yes, some.....	124	8.4	5.6	15.5	13.2	17.0
No.....	1,142	77.4	84.8	58.6	54.0	61.6
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,475		1,059	416	166	250
Attic insulation: <sup>5</sup>						
Yes.....	1,034	70.8	66.6	81.3	79.7	82.4
No.....	324	22.2	24.9	15.3	16.6	14.4
Don't know.....	103	7.0	8.5	3.4	3.6	3.2
Total, percent.....		100.0	100.0	100.0	100.0	100.0
Total, number.....	1,462		1,049	413	165	248

<sup>1</sup> Numbers may not all add to totals and percentages to 100 due to rounding. Data available only for owners living in single unit structures. Approximately 10 percent of all owners did not live in single unit structures.

<sup>2</sup> See table 1, footnotes 5 and 6.

<sup>3</sup> Includes protective window covering, such as storm windows, double-glazed glass, closeable shutters, or plastic. Housing units with "some" have protective coverings over some, but not all windows.

<sup>4</sup> Includes additional doors hung in exterior doorways.

<sup>5</sup> Includes roll or blanket insulation encased in a paper covering, fiberglass batting, and loose insulation which is blown between the attic floor joists.

Source: Compiled from 1975 annual housing survey data tapes.

TABLE 4.—ELDERLY HOUSEHOLDS IN THE UNITED STATES BY REGION, METRO AND NONMETRO RESIDENCE, AND ADDITION OF STORM WINDOWS, STORM DOORS, INSULATION DURING LAST 12 MONTHS AND COST OF INSULATION, 1975 <sup>1</sup>

Item	Total <sup>2</sup> number (thou- sands)	Percent				
		Total	Metro- politan	Nonmetropolitan		
				Total	Urban	Rural
United States—Within last 12 months:						
Storm windows .....	365	7.7	6.4	9.2	7.8	10.1
Storm doors .....	249	4.9	4.8	4.9	4.5	5.3
Weatherstripping .....	589	7.4	7.4	7.4	6.8	7.7
Insulation .....	2,590	3.2	3.2	3.2	3.7	2.9
Northeast—Within last 12 months:						
Storm windows .....	74	5.8	4.7	8.5	8.5	8.4
Storm doors .....	42	3.3	2.8	4.5	4.4	4.5
Weatherstripping .....	122	9.0	8.4	10.4	8.7	11.7
Insulation .....	48	3.5	3.1	4.6	5.1	4.3
North Central—Within last 12 months:						
Storm windows .....	145	6.4	5.5	7.3	5.4	8.6
Storm doors .....	96	4.1	4.6	3.6	2.5	4.3
Weatherstripping .....	230	9.5	8.6	10.4	8.8	11.5
Insulation .....	93	3.8	4.0	3.6	3.7	3.5
South—Within last 12 months:						
Storm windows .....	91	9.4	9.1	9.7	5.6	11.7
Storm doors .....	85	6.8	7.1	6.6	7.0	6.4
Weatherstripping .....	163	5.4	6.4	4.7	5.4	4.3
Insulation .....	72	2.4	2.6	2.2	2.2	2.2
West—Within last 12 months:						
Storm windows .....	55	21.3	18.0	24.0	26.3	21.9
Storm doors .....	26	9.0	9.5	8.5	8.0	8.9
Weatherstripping .....	74	6.2	6.1	6.4	4.6	8.0
Insulation .....	45	3.8	3.2	5.4	8.3	2.9

<sup>1</sup> Numbers may not add to totals and percentages to 100 due to rounding. Only respondents responding positively to items in table 3 were asked if items had been added in the last 12 months.

<sup>2</sup> See table 1, footnotes 5 and 6.

Source: Compiled from 1975 annual housing survey data tapes.

### ITEM 3. STATEMENT SUBMITTED BY EDWARD W. CAMPION, M.D., CHIEF, GERIATRICS UNIT, MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MASS.

The energy squeeze is on and the vulnerable elderly will be squeezed the worst. As a society, we have a moral and practical obligation to protect our elderly. Their comfort, their enjoyment of life and even their survival may be jeopardized as a result of the growing energy crisis.

Let there be no mistake about it, millions of our elderly are frail, even helpless. The most vulnerable are the poor and chronically ill—those crippled by arthritis or stroke, those weakened by heart disease or cancer, and particularly those with limited mental function. Many of these people are as helpless as infants and they have less physical resistance.

What are the dangers? They are obvious and odious:

*Hypothermia.*—This life-threatening severe drop in body temperature is a medical emergency. Inadequate heating can precipitate it.

*Isolation.*—Particularly in the winter, frail elderly become dangerously housebound, constantly afraid, and deteriorate physically and mentally.

*Fires and burns.*—Elderly patients seeking warmth in inadequately heated apartments will turn to unsafe sources of heat. Accidents, injuries, burns, and deaths will result.

*Asphyxiation.*—Antiquated heating systems plus tightly insulated dwellings will result in some frail old people suffocating to death.

*The misery of being cold.*—Thousands in marginally heated buildings will survive but will have their lives become a constant struggle for the basic creature comfort of warmth.