ENERGY AND THE AGED: A CHALLENGE TO THE QUALITY OF LIFE IN A TIME OF DECLINING ENERGY AVAILABILITY

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MONDAY, NOVEMBER 26, 1979

U.S. SENATE,
SPECIAL COMMITTEE ON AGING,
Washington, D.C.

The special committee met, pursuant to notice, at 2:15 p.m., in the International Ballroom Center, Washington Hilton Hotel, Senator Lawton Chiles (chairman) presiding.

Present: Senators Chiles and Pryor.

Also present: E. Bentley Lipscomb, staff director; Deborah K. Kilmer, professional staff member; David A. Rust, minority staff director; Theresa M. Forster, financial clerk; and Joan Nielubowski, clerical assistant.

WELCOMING REMARKS BY GEORGE A. SACHER, PRESIDENT, GERONTOLOGICAL SOCIETY

Mr. SACHER. Welcome to the symposium on "Energy and the Aged: A Challenge to the Quality of Life in a Time of Declining Energy Availability." We are honored today by the participation of two U.S. Senators: Senator Lawton Chiles of Florida, the chairman of the U.S. Senate Special Committee on Aging, and Senator David Pryor of Arkansas.

This symposium will be conducted in the form of a hearing of the U.S. Senate Special Committee on Aging. We hope today in our presentation to examine the ways in which the problems of the energy production and its decreased availability will affect the quality of life of the aged. Earlier hearings of the Senate Special Committee on Aging have centered on the problem of rising energy costs, whereas we here will deal more specifically with the ways in which people's lives, families, and communities will be affected by increased availability of energy and how people and institutions may be required to adjust.

At this time, I shall turn the proceedings over to Senator Lawton Chiles, chairman of the Senate Special Committee on Aging.

Chairman Chiles.

OPENING STATEMENT BY SENATOR LAWTON CHILES, CHAIRMAN

Senator CHILES. Thank you. I am pleased to share the presidential symposium with Mr. Sacher for the opening of the 32d annual scientific meeting of the Gerontological Society. I welcome you all

to your Nation's Capital. I hope you will have time to visit the Capital and to explore the city's beauty and history.

I am sure some of you can recall the conferences when the participation totaled about 100 and that was considered to be an encouraging attendance. Today, gerontology has emerged as a leading discipline and I doubt that few confuse the field with others, which happened frequently in the past. I particularly recall the day when a congressional colleague was opposing the need for gerontology centers. He expounded for some time about the impracticality of geology centers. I have often wondered if geology ever suffered from that speech. Gerontology certainly hasn't.

As a member and now chairman of the Senate Committee on Aging, I have learned a great deal about the impact of aging on our society. We are getting older. And, hopefully, we are getting wiser. It will be challenging for us to adapt our society to the needs of a growing older population. I am thinking, for instance, of employment practices, social security, health care, and overall research. We are going to have to be creative.

This will be difficult in itself even if all other aspects of society remained relatively unchanged. But drastic changes are taking place and the buzz word of this decade is certainly "energy." I can remember when energy was something confined within one's body. Now there are no boundaries.

The Senate Committee on Aging has held a series of hearings over the past few years on the impact of declining energy availability and rising prices on the elderly. The overall conclusions are that the elderly use a higher percentage of their income for energy costs and are far more susceptible to weather-related health problems. Using this evidence, I recently led a Committee on Aging effort on the Senate floor to assure that elderly will have priority under the proposed energy assistance program. I am happy to announce that this measure was approved by the full Senate.

These direct needs of the elderly—utility costs and health problems—will be addressed by the new energy assistance program. But the indirect impacts of the energy crisis are yet to be fully realized. What will be the results of the changing energy sources on the aging society? How do we plan for the provision of health care, social services, housing, and transportation?

During the past few months, the Congress has spent many hours on energy-related legislation. For example, the Senate Finance Committee has reported several bills which provide for billions of dollars in grants and credits for energy conservation and the development of alternative energy sources. Right now, we are debating on the floor of the Senate the windfall profits tax, and if you see someone tap Senator Pryor or me, we are about to vote to table one of the amendments to our proposal. We hope that won't interrupt our hearings but that is a distinct possibility.

Conservation and solar banks are proposed to allow subsidized low-interest loans to be provided by financial institutions to encourage innovative methods of conserving energy and utilizing the Sun. In addition to solar development, the legislation gives incentives for the development of other sources—wind, geothermal, wood, biomass, hydroelectric, ocean thermal, oil shale, tar sands, coal liquefaction, and unconventional natural gas. It is expected that these

incentives will give way to even more sources and the development of a sound base for energy resources. Therefore, creative sources can be imagined. But, how and where will these new resources be used? This is where my challenge falls to you.

Your Government will be providing incentives and resources for such development, but the creative minds in this room and across the country must determine how to translate these crude resources into concrete programs and delivery. How will the public benefit? How will the quality of life be changed, yet improved? This is the subject that our distinguished witnesses will address today.

The Committee on Aging has already heard from many with ideas for the future. Some are scientific and some are pure commonsense, like the elderly woman who thought of using her husband's old nightshirts to cover the windows because they couldn't afford storm windows. The creative American mind.

The committee has been working closely with the Department of Health, Education, and Welfare in the development of a long overdue policy on long-term care and home health care. HEW has recently submitted its second effort to the Congress who mandated the report. We will have more to say on this report later. Such plans must include adapting to the medical and physical changes generated by the decline in traditional energy resources.

Where to live and how to commute? Many of our elderly don't want to live in section 202 congregate housing or it is not available to them. Mass transit is not always accessible.

More and more of our elderly do not live in the homes of their families, let alone in the same city. Certainly we are interested in incentives for families to take care of their own older relatives but many of our programs and traditional ways are disincentives to such arrangements. How can we affect such obstacles? It is a great challenge but it is ours. We must prepare for it.

The Senate Committee on Aging is deeply involved in all of these issues and needs your help. The committee and society have had an effective relationship in the past and I certainly look forward to continuing that relationship and welcome your continued good advice in the future.

Sharing the dias with me is Senator Pryor, who has had long experience in working with problems of the aging as a Member of the House of Representatives and Governor of Arkansas prior to coming to the Senate. He was one of the leading advocates for improvement of nursing home care and he is certainly a valuable and outstanding member of our Senate Committee on Aging.

Senator Pryor, do you have some opening remarks?

STATEMENT BY SENATOR DAVID PRYOR

Senator PRYOR. Mr. Chairman, I would like to commend you and the staff of the committee for bringing this matter to our attention and for allowing us the opportunity to discuss this great concern with such a distinguished group of Americans that has assembled here in Washington.

Mr. Chairman, you are directly responsible, I think, for the Energy Assistance Act of 1979. You had a great deal to do with the architectural designs for portions of this plan, and I think that this program should aid in the health and safety of thousands of the

Nation's elderly. I believe it goes a long, long way in making life a little more bearable.

Mr. Chairman, not too long ago I was addressing an elderly group of citizens in another State and a man 100 years old came up to me. We had a very nice visit. I noticed that he had all of his teeth, didn't wear glasses, and had a full head of hair. He looked wonderfully healthy, vibrant, and robust. I said, "My goodness, you look so healthy and I imagine you have seen an awful lot of changes in your time." He said, "I sure have seen a lot of changes, Senator, and I have been against all of them." [Laughter.]

You know, that might be a good statement to start off on because we do see an awful lot of changes today. The changes that we are seeing, many of them we have no control over, as they change the lifestyles of the aging population. A large percentage of our population is growing older. The number of our citizens over 65 is increasing, which means that new demands are made on us for our resources, for our imagination and our creativity, and certainly our dedication to solving some of these problems.

A lot of people talk about conservation among the elderly and that the elderly ought to conserve more energy. Well, very honestly, I think the elderly people of our country today are conserving energy—they are doing it because of necessity, they are doing it because they cannot afford to do otherwise. I just hope as we progress during the next year or two or three, in trying to shape an even more meaningful energy policy as it relates to the elderly—I just hope for goodness' sake that those of us in politics and those of us in Congress and in the Senate don't mess things up. We have a propensity to do this from time to time. To shape the legislation and to shape the policy we need the help more than ever before from people like yourselves who are involved deeply and committed to the issue of growing old in America and the high cost of energy and the necessity of life that energy presents to every elderly citizen in America.

I just applaud your efforts and your dedication to this particular cause and hope that we can count on your support in helping to shape the policy for the future.

Thank you.

Senator CHILES. Senator Pryor, I hate to vote cloture on you, but the motion to table has been made on the Senate floor and we are going to have to leave. We apologize. If we are not going to have a series of votes, we will try to come back.

Mr. Sacher, I think you will have to conduct it right now and we will try to return if we possibly can.

Mr. SACHER [presiding]. Thank you, Senator Chiles, for coming by.

Well, we have had the short presence of the members of the Senate Committee on Aging. I will resume the chair now and the program will substantially continue in precisely the form in which it was developed. I hope that the Senators will be able to return.

In the order of our appearance I would have been the first to be introduced, so I will make my remarks at this time.

STATEMENT OF GEORGE A. SACHER, PRESIDENT, GERONTOLOGICAL SOCIETY, AND SENIOR BIOLOGIST, DIVISION OF BIOLOGICAL AND MEDICAL RESEARCH, ARGONNE NATIONAL LABORATORY, ARGONNE, ILL.

Mr. SACHER. I am a biologist employed at Argonne National Laboratory, which is an energy research laboratory supported by the Department of Energy. Whereas my three colleagues will speak on the consequences of energy scarcity for the quality of life of older Americans, I wish to address another aspect of the relation between energy and aging, namely the current status of research on the impacts of energy production on the aging process and the aged.

As you know, the Nation is now examining the energy options that are available to take the place of vanishing oil resources. Every energy source has some deleterious effect on the environment and the health of the population, and some of these effects are cumulative over the entire lifespan, so that they can accelerate the aging process, advance the time of onset of senescent disease, and shorten the lives of the exposed population. It is useful to distinguish between the kinds of long-term effects that lead to lifelong chronic impairment and the effects that are expressed as terminal diseases, such as cancer.

The various energy-related pollutants produce these different kinds of injury in different degrees, but the magnitudes of these effects are still for the most part unknown. This means that we urgently need a research program on the health effects of energy production that will enable us to compare the various energy alternatives in terms of the amount of biological injury they do per unit amount of energy delivered and consumed. If that assessment is not properly made, if our energy future is decided without consideration of the full range of health effects or, what is even worse, if decisions are made on the basis of false or distorted assessments of the relative health risks of the different energy paths, then future generations may have to pay a price in additional disease and death for decisions that this Nation will be making in the next few years.

The biggest decisions facing us now are about the amount of investment to be made in nuclear power and in several new coal combustion technologies. These decisions cannot be made competently at present because the public and, I regret to say, the decisionmakers have a distorted and fragmentary perception of the relative health hazards created by these energy technologies. After more than 30 years of intensive research, we know a good deal about the life-shortening and cancer-causing actions of nuclear radiations. However, we still know comparatively little about the chronic debilitating effects of nuclear radiations. In regard to the coal technologies, we know little about the cancer hazard from coal combustion, although surprisingly the amount of radioactivity released into the air in the course of coal combustion makes radiation hazard a significant part of the health cost of coal combustion. The coal technologies give rise to chronic debilitating diseases arising from airborne pollutants, a hazard that does not exist for nuclear power.

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Research on these long-term, age-related health effects of energy pollutants is in a difficult situation at present because these effects are expressed as small modifications of the natural aging process so that research on the chronic effects of environmental factors is similar in method and results to aging research. Because of this, there is some uncertainty at present about the responsibilities of the Department of Energy (DOE), the National Institute on Aging (NIA), the National Cancer Institute (NCI) and other Federal agencies in regard to the support of research on these age-related health risks.

In my capacity as president of the Gerontological Society, I addressed inquiries to Ruth Clusen, Assistant Secretary for Environment, Department of Energy, and to Dr. Robert Butler, Director, National Institute on Aging. They were both most cooperative. Ms. Clusen's letter of reply,[1] which will be inserted in the record, makes it clear that in addition to the DOE commitment to the study of the specific health effects of hazardous energy products, and their mechanism, the Department of Energy also recognizes a responsibility to study the aging process itself, although necessarily with a lower priority than the specific effects of energy pollutants.

The National Institute on Aging, as Dr. Butler informed me, is ready to support research on the effects of energy pollutants on the aging process and the aged, and NIA is currently supporting one epidemiological project on the effects of proximity to coal-fired powerplants on the health of the aged.

There is clearly the will in both agencies to deal with the problem of environmental effects on aging, but it can also be seen that their ability to carry out this intention is subject to two severe limitations, one of which is limitation of interagency information transfer and the other is limitation of budgets. In regard to the information barrier, the effectiveness of NIA in its capacity to investigate environmental effects on aging can be impaired because the agency and its grantees on the whole have limited access to information about new DOE-sponsored energy technologies.

On the budget question, DOE has greatly reduced its budget for aging research since the creation of NIA, and although this is for the most part proper, there are grounds for questioning whether they may have reduced this budget item to the point at which some of the high-priority concerns of DOE about long-term effects of energy byproducts are being compromised. This is frequently the fate of marginal activities when budgets are limited and difficult funding choices must be made, but in the present instance some important research activities are suffering because of the gap that has opened between DOE- and NIA-supported research in the interactions between the environment and the aging process.

My recommendation, Senator Chiles, is that an interagency task force be established by DOE, NIA, NCI, and the other interested agencies to examine the general problem of support for funding research programs on the interactions of environmental factors with aging. By the nature of such research, the interests of two or more agencies are often involved, and it may be important to

[1] See appendix, item 1, page 29.

recognize this and to develop plans for interagency program planning and funding.

This task force should utilize workshops and site visits to familiarize the task force members, and through them their agencies, with the true dimensions of the problem of environmental interactions with the aging process. Such an undertaking would be a signal positive contribution to the increasingly difficult problem of assuring full and healthy lives for human beings living in an increasingly inimical manmade environment.

Thank you.

Mr. LIPSCOMB [presiding]. Thank you.

Senator Chiles asked the staff to sit in for him while he has gone to vote, and as indicated earlier, we do hope that he and possibly some of the other members of the committee will be able to return depending on what is going on on the floor action. Appropriately enough, the whole issue is energy, which is taking place across town.

You will notice white cards at the end of each aisle. If you would like a copy of this hearing transcript to be mailed to you, simply print your name and address on the card and leave it on the chair as you depart and the report will be sent to you as soon as we publish it.

Also, this audience is made up of experts in many fields and all of you could probably be witnesses at this hearing if time allowed. Therefore, if any of you would like to submit written testimony to the committee, the hearing record will be kept open for a period of 30 days after today and your testimony would be included in the official hearing record if you choose to submit it.

If any of you have any questions that you would like to ask of the panel, we would also request that you write them on white cards and they will be collected at a later point in the program today.

Now we would like to have our next witness, Dr. Nicholas Rango. If you would, we will hear from you now, Dr. Rango.

STATEMENT OF NICHOLAS RANGO, M.D., SAMUEL R. MILBANK PROFESSOR OF HEALTH AND SOCIETY, BARNARD COLLEGE, COLUMBIA UNIVERSITY, NEW YORK, N.Y.

Dr. RANGO. My testimony today concerns a grim social problem: old people freezing to death. The clinical condition is called hypothermia, which is defined as a core body temperature—rectal temperature—less than 35 degrees Centigrade or 95 degrees Fahrenheit. Although hypothermia has many medical causes—including metabolic disease, hypothalamic and central nervous system dysfunction, drugs, severe burns, and overwhelming infection—I will address only accidental hypothermia which results from exposure to environmental cold and not from primary pathology in the body.

My argument is straightforward, containing three essential points. First, clinical evidence demonstrates that the elderly are particularly susceptible to hypothermia. Second, existing national data on deaths attributed to hypothermia by age group are consistent with the contention that the old are particularly vulnerable. Third, government intervention is justified to protect from hypothermia high-risk groups, especially the aged poor.

Permit me to begin by presenting an actual case summary of an old man in whom exposure to cold was considered to be the primary cause of low body temperature.

G.H.M. was male, aged 95. Lived in a house in poor state of repair and inadequately heated. Steadily ailing in health for about 2 weeks before hospital admission and refused help. Very ill for 3 days before admission while living in cold home environment. Admitted to hospital stuporous and very cold. Pulse 64 per minute. Pneumonia in right lung and congestive heart failure. EKG showed evidence of heart disease and irregular rhythm. Deep body temperature reached 36 degrees Centigrade after 4 days. Died 10 days after admission.

I chose this case because it demonstrates several of the potentially lethal consequences of hypothermia, particularly cardiac, neurological, and infectious complications.

Hypothermia has many adverse effects on health, the most important of which can be briefly described. With reduction of body temperature, metabolic rate is decreased, falling to 50 percent of normal at 28 degrees Centigrade or 82 degrees Fahrenheit. Among the cardiovascular effects are slowing of heart rate, weakening of pulses, changes in blood pressure, irritability of heart muscle, and conduction disturbances that include lethal abnormalities in heart rhythm. Neurological effects include a decrease in blood flow in the brain, absence of reflexes, dilation of pupils, and impaired mental function ranging from confusion and hallucinations to deep coma. Individuals suffering from severe hypothermia may be mistaken as dead because of these cardiovascular and neurological manifestations. It is for this reason that doctors have applied the dictim, "No one cold is dead until warm and dead."

Why are the aged particularly vulnerable to hypothermia? Good experimental work demonstrates that some elderly have impaired ability to feel cold and, therefore, may fail to respond quickly enough to cold by increasing room temperature and by adding clothing. If the individual is physically disabled, mentally impaired, or both, he or she may not be able to leave a cold environment quickly enough like an underheated tenement apartment. Besides insensitivity to cold and immobility, the aged sometimes have defects in thermoregulation. Body temperature regulation is under complex neurological control. Age-related decline in autonomic nervous function can result in impaired temperature regulatory mechanisms in the elderly. Other poorly understood thermoregulatory defects may also be present. What is evident is that these are multiple physiological abnormalities that place the elderly at risk of thermoregulatory failure.

The impact of adverse social circumstances such as poor housing and living alone has also been discussed in the hypothermia literature. Attempting to ascertain the incidence of hypothermia in the elderly and the nature and effects of the condition, a multidisciplinary team of British investigators conducted a national survey and reported in 1977 that, "The combination of a declining physiology and the most deprived social circumstances greatly increase the risk of an old person becoming hypothermic." Thus, a strong case can be made for regarding the very old who are poor as a special high risk group.

Next, what do we know about the incidence of hypothermia? How frequently does hypothermia cause hospitalization or death, particularly in the aged? Let me acknowledge from the start that our knowledge of the epidemiology of hypothermia remains quite limited. There is little published information except for a few British reports. For example, the Royal College of Physicians of London conducted a study in 1966, which stated that 1.2 percent of elderly hospital admissions were officially reported as hypothermia on the medical record. A decade later, in 1977, a pilot study of low body temperatures in old people found that 3.6 percent of elderly patients admitted to hospitals had hypothermia. We should note that each of the British studies stresses the tendency to underestimate the true proportion of hospital admissions which are due to hypothermia as well as hypothermia-caused deaths. Even these underestimated fractions, however, demonstrate that hypothermia among the aged is a significant problem, at least in Great Britain.

Because comparable American studies do not exist, the temptation is great to make cross national inferences from these British estimates. Fortunately, the National Center for Health Statistics in the Department of Health, Education, and Welfare has collected relevant mortality data coded by underlying cause of death. Category E901 represents deaths attributed to exposure to excessive cold on the death certificate. Because death—or illness—from hypothermia may result from exposure to cold both inside and outside buildings, this category lumps together varying circumstances of exposure together in order to establish total mortality attributed on death certificates to the general cause, exposure to cold. With this in mind, I have arranged the unpublished NCHS data to show deaths occurring in the United States for different age groups from 1970 to 1977. You will find this data in table I.

TABLE I.—DEATHS FROM EXCESSIVE COLD (E901) FOR DIFFERENT AGE GROUPS, 1970–77

Age group	1970	1971	1972	1973	1974	1975	1976	1977
Less than 1 year	11	5	4	4	2	1	2	2
1 to 4	5	0	0	2	3	5	2	1
5 to 9	3	1	2	1	1	1	0	0
10 to 14	5	5	4	2	1	3	6	6
15 to 19	9	13	8	11	8	13	8	21
20 to 24	10	13	10	18	11	18	15	24
25 to 29	11	10	10	17	15	11	26	17
30 to 34	14	15	10	19	9	15	13	17
35 to 39	18	21	16	23	21	14	12	21
40 to 44	20	22	36	22	23	22	20	27
45 to 49	46	23	46	27	32	23	21	50
50 to 54	51	40	48	33	36	38	41	51
55 to 59	43	26	62	24	29	29	37	57
60 to 64	52	41	60	44	27	34	52	70
65 to 69	42	26	40	34	32	35	38	56
70 to 74	37	34	34	31	24	34	47	63
75 to 79	37	30	36	21	23	23	21	50
80 to 84	29	18	26	27	21	24	32	58
85 to 89	16	10	28	13	14	10	19	29
90 to 94	5	6	6	6	12	3	7	10
95 to 99	1	2	4	0	2	1	3	3
More than 100	0	0	0	1	1	0	1	1
Age not stated	1	0	0	1	1	2	1	0
Total	466	361	490	381	348	359	424	634

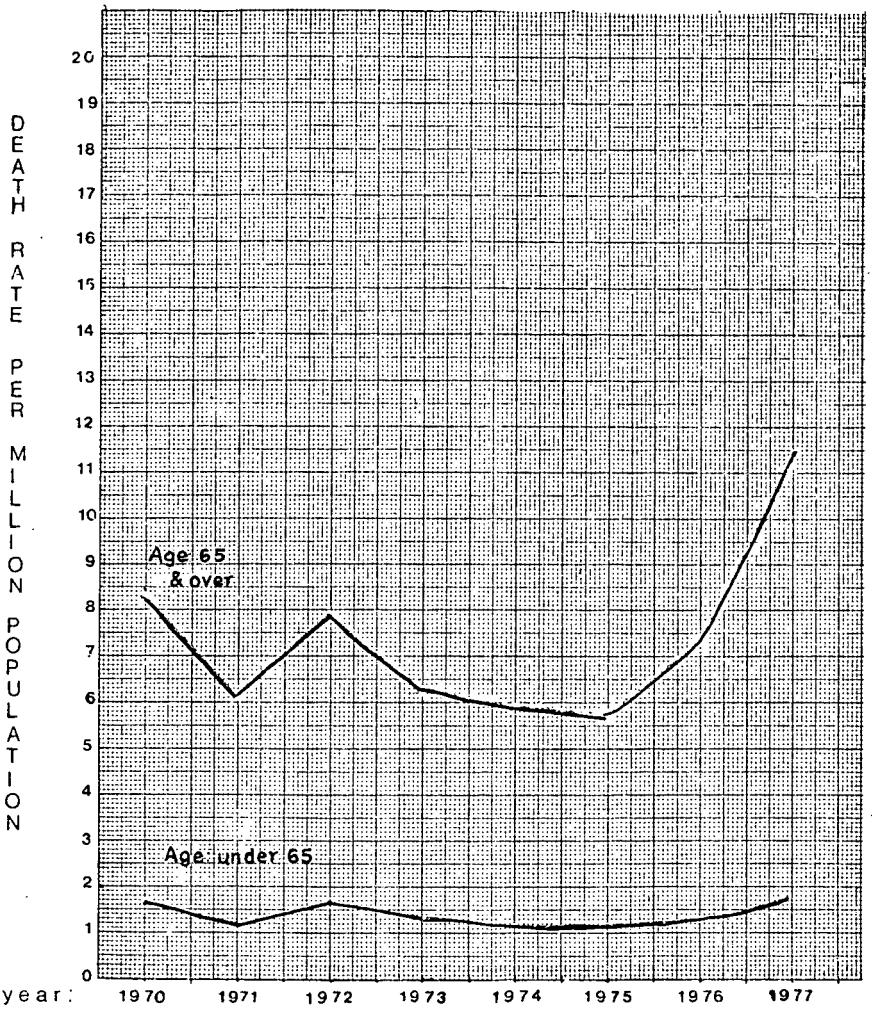
Source: Unpublished data from National Center for Health Statistics.

The question remains, do the data show the elderly to be at greater risk than the rest of the population? Using observed numbers of hypothermia deaths for the numerator and between census population estimates published by the Bureau of the Census for the denominator, mortality rates are easily obtained. Each annual mortality rate represents the actual number of reported hypothermia deaths by estimated total population at risk in millions. Graphing these rates permits straightforward appreciation of differences between the aged and nonaged, as well as trend observed. Figure I presents this comparison of annual mortality rates due to hypothermia for Americans age 65 and over and under age 65 from 1970 to 1977.

FIGURE I

DEATH RATE FROM EXCESSIVE COLD FOR 1970 - 1977

source: national center for health statistics

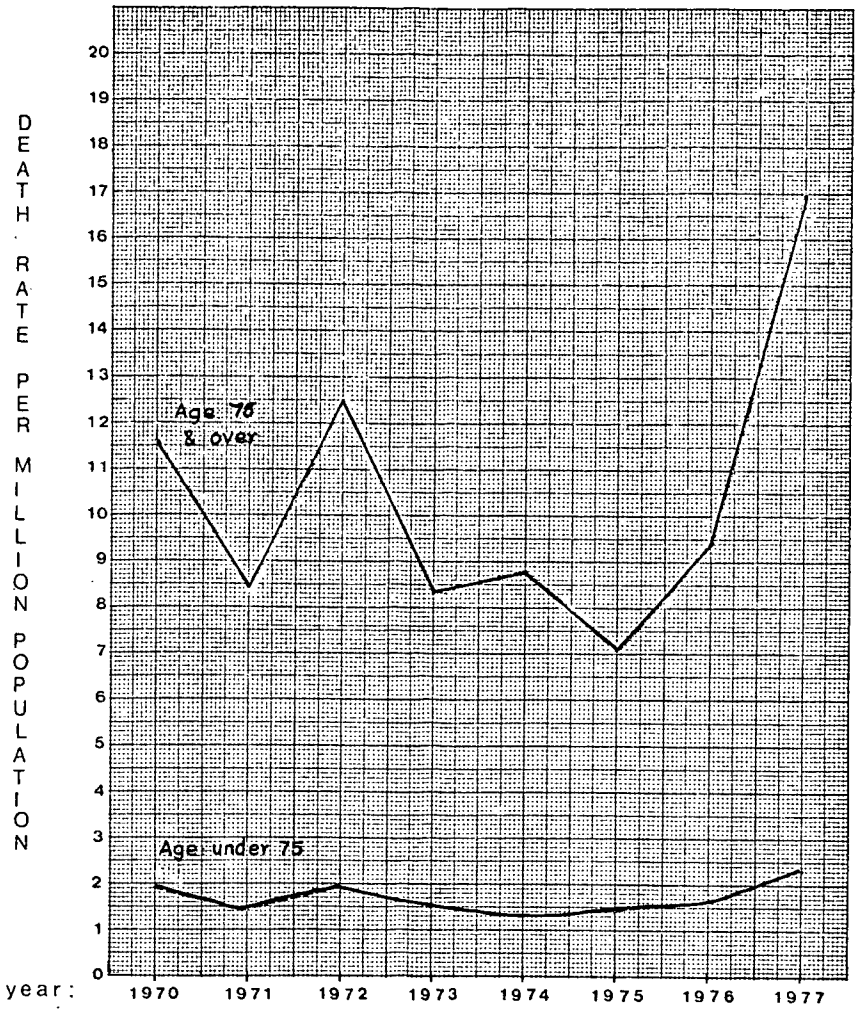


The medical literature indicates that physiological susceptibility to hypothermia increases in advanced old age. Social gerontology has amply documented the unique economic and social hardships of the very old, the so-called old-old. The Royal College of Physicians' survey identified those age 75 and over as constituting one of two age groups with highest rate of hospital admission due to hypothermia. The other group consisted of infants less than 12 months. Therefore, it is also important to show differences in death rates of Americans over and under age 75. Figure II does so using the same NCHS data for years 1970 to 1977, which you see now presented on the right.

FIGURE II

DEATH RATE FROM EXCESSIVE COLD FOR 1970 - 1977

source: national center for health statistics



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Two alarming conclusions are inescapable. First, there exists a marked and consistent difference in mortality rates between the old and the rest of the population. This difference is particularly dramatic in the case of those age 75 and over for whom the risk of dying from exposure to excessive cold is at least five times as great as for those under age 75 during each year of observation. Second, a striking rise in mortality rates for the elderly occurs in 1976 and 1977. Because data from 1978 and 1979 is not yet available, we cannot be certain whether this upturn has continued or abated. In the face of worsening economic prospects for the elderly poor, it is reasonable, I believe, to assume that this upward trend in mortality has in fact continued.

The data presented here needs to be interpreted with caution. Mortality rates deflate the problem because hypothermia is often difficult to diagnose, particularly when the body is discovered some time after death. The relationship between hypothermia and other illnesses is also complex, and while hypothermia may be the prime cause of death, it may be the related illness that is recorded on the death certificate. These mortality rates, therefore, are flawed by a systematic bias toward underestimation of the numerator. Nevertheless, since no firm evidence on the number of deaths wholly or partly due to hypothermia exists elsewhere, we are compelled to rely on these data, the best available at the national level.

Although the reported number of hypothermia-related deaths is relatively low, the true magnitude of the problem allows no room for complacency. Mortality rates for any disease condition represents merely "tip of the iceberg" estimation of the underlying magnitude of the problem. Permit me briefly to explain why.

First, official mortality rates from death certificates do not include undocumented deaths due to hypothermia.

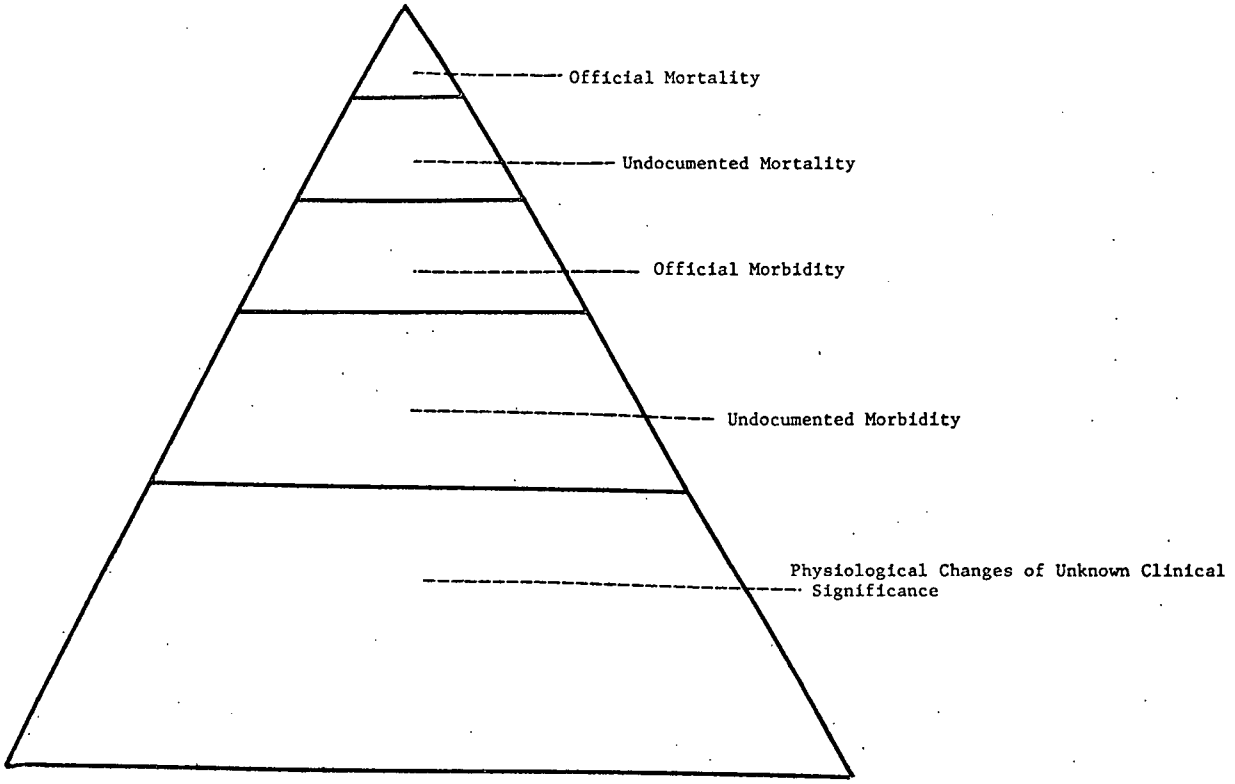
Second, mortality rates tell us nothing about the extent of morbidity caused by the disease or condition in question. Because many more people freeze than freeze to death, we can be certain that the morbid consequences of hypothermia extend far beyond the number of total deaths caused by hypothermia.

Third, in addition to mortality and morbidity, various physiological changes of unknown clinical significance result from hypothermia. These effects, by definition, are excluded from mortality as well as morbidity estimates.

Fourth, beyond pathological and physiological changes, exposure to cold causes great human discomfort and misery. In terms of personal comfort and preferences, who would deny that feeling cold inside one's home greatly reduces the quality of life?

Of course, our health statistics cannot report the intensity and magnitude of human misery resulting from hypothermia. Yet, an accurate understanding of the entire problem is impossible without taking into account each level of adversity. To clarify this point, I have prepared a schematic representation of the health-related consequences of hypothermia which you see in the chart to our right. Although quality of life considerations are not included, the figure does suggest one way to place the problem of hypothermia into a general public health context. This is figure III.

FIGURE III



HEALTH CONSEQUENCES OF HYPOTHERMIA

The information presented today alerts us to the poverty of current knowledge of hypothermia. Clinicians and basic scientists need to elucidate more fully the pathophysiological mechanisms; epidemiologists should provide us with sound estimates of the magnitude and distribution of the condition; social policy specialists ought to explore specific preventable causes in the social environment that predispose individuals and groups to hypothermia. Only if this three-pronged attack is waged can we be assured that current and future efforts by the Government will be successful in diminishing the misery, morbidity, and mortality caused by hypothermia.

Often forgotten is the fact that the Government is compelled to make important and costly policy decisions under conditions of great uncertainty because the prevailing knowledge and wisdom of experts contribute little to reduction of that uncertainty.

Hypothermia is a case in which adequate clinical and epidemiological knowledge is absent, yet the need for ameliorative action is present. Congress therefore is to be credited for recently approving legislation aimed at providing emergency assistance to help the poor heat their homes this winter. This action by Congress represents the crucial first step toward formulation of long-range policy to combat the problems created by inflation of energy costs. Permit me to conclude by offering four recommendations to the Senate Special Committee on Aging that go to specific intervention measures as well as evaluation of energy assistance policy.

The first recommendation is concrete and requires no additional funding, something that should please all of our politicians. Congress should instruct appropriate Government agencies to verify that hospitals, clinics, and health professionals are, in fact, using low-reading clinical thermometers. As most of you know, the lowest reading on our thermometers is 94 degrees. Since the ordinary thermometer inaccurately records the hypothermia condition, using it alone will result in failure to record hypothermia and consequent deflation of the importance of the problem.

The second recommendation is equally practical. Congress should initiate study of the advisability of providing electric blankets to high-risk groups, such as the elderly poor. More effective than using extra bedclothing, extra blankets or a hot water bottle, the electric blanket provides warmth and comfort during the entire night at relatively low cost. Of course, safety is one important issue that requires investigation. Providing means to purchase electric blankets, therefore, represents a highly cost effective measure to improve the quality of life and health of people chronically exposed to cold.

Now that Congress has approved funding of heating assistance to the poor, we must find ways to get that assistance directly and specifically to those in need. One important target group is the elderly who rent rather than own their homes, particularly those who live in large tenement buildings in urban settings. Energy assistance directed toward them may be reduced and diffused by several intermediaries including the landlord and the building manager. Providing money for an electric blanket is minimum assurance that the individual in need has been personally helped by the Government.

The third recommendation has scientific and public policy implications. Congress should recommend a study of the epidemiology of hypothermia in the United States. Determining the prevalence and distribution of this condition is necessary for identifying preventable causes. Prevention, in turn, should constitute the cornerstone of Government assistance programs. Thus, epidemiological investigation is required to insure that current and future Government efforts are in fact effective.

The fourth and last recommendation concerns human values rather than scientific knowledge or program effectiveness. Why should the Government assist low-income elderly and other economically disadvantaged groups in meeting increased residential fuel costs? Alternatively stated, how can we build public consensus in this country on the moral necessity of Government intervention?

The American public, I believe, is prepared to support the proposition that any citizen, old or young, black or white, female or male, is entitled not to freeze at home for lack of money. However, more public education is needed to understand that adequate home heating is a necessary precondition of health. Those in our society who suffer and die from living in a cold home environment suffer and die unnecessarily. By alleviating suffering and by preventing deaths, energy assistance to the poor enhances the moral quality of our entire society. Has not the time arrived when heating assistance ought to join health, nutrition, income, and transportation services as essential components of basic life supports?

Opposing Government assistance creates in the near future the likelihood of an epidemic of hypothermia particularly affecting individuals compelled to live without warmth at home. Opposing Government assistance denies the right of the elderly to finish their days without the cruel and unnecessary hardship of exposure to cold. The need for Government assistance arises, therefore, from our recognition of the right of each person not to suffer cold inside the home, the last sanctuary of comfort and dignity.

Thank you. [Applause.]

Mr. LIPSCOMB. Thank you, Dr. Rango.

I have two notes saying, "The audience objects to dealing with people whom they don't know, so you and your colleagues should be introduced."

I am Bentley Lipscomb, staff director of the Senate Special Committee on Aging. Immediately to my right is Debbie Kilmer who is the energy specialist on the Senate Special Committee on Aging, and to her right is Dave Rust who is the minority staff director for the Senate Special Committee on Aging.

We are prepared now to accept questions from the audience. If you have a question that you would like to submit to the panel, if you would so indicate by simply holding up the white card, there will be someone to pick them up as we go along. They will be sorted into categories and will be available for asking later on.

Our next witness is Dr. Gordon Streib. Please proceed, Dr. Streib.

STATEMENT OF GORDON F. STREIB, PH. D., GAINESVILLE, FLA., GRADUATE RESEARCH PROFESSOR OF SOCIAL GERONTOLOGY, UNIVERSITY OF FLORIDA

Mr. STREIB. Thank you very much, Mr. Chairman.

President Sacher asked me to speak on energy, the aged, and the family.

The continuing concern with energy resources requires persistent, imaginative planning and implementation for all Americans, and particularly the elderly. When we discuss the elderly, we must separate the needs and concerns of the newly retired—those persons from 65 to 75, and the frail elderly—that increasing segment that is composed of those 80 and older, because their problems are different and the strategies and plans for coping with their concerns and needs must be variable. There is, however, an underlying issue which involves almost all of the elderly; namely, a declining amount of fuel for heating and transportation, and a fixed income to meet the rising costs. Thus the elderly are among the most vulnerable, and careful planning and implementation are required to meet their needs.

An energy shortage means different things to different older people. For some, the most needy, it means actually being cold, sitting in the dark, scrimping on the use of hot water or cooking heat. For others, it may mean that the plans for travel must be abandoned—that visits to children and grandchildren in other parts of the country will be curtailed. But certainly for everyone it will mean that a larger percentage of their financial resources will have to be spent on heat and transportation, leaving less discretionary income for the middle-income elderly and perhaps actual suffering and deprivation for the very old and very frail.

The needs of individual older persons become more of a social problem as they age because they have less resources—economic, physical, social, and psychological—and therefore have fewer alternatives for meeting their problems, in comparison to other segments of the population.[1] Furthermore, impairment of the thermoregulatory system is one of the characteristics of aging in some people. There may be different factors involved—such as diminished metabolic rate, lack of exercise, or the effect of drugs. In addition, it is believed that aging itself has effects on the cerebrovascular system and on the body's thermostat.[2] Thus, a combination of factors results in the generalization that older persons often feel the cold more intensely, and need a warmer temperature to live in than other age groups.

The issue of energy constraints is multifaceted and crosscuts all major segments of our institutional life. It is for this reason that it is vastly complicated and demands assessment of how energy requirements intersect with other major parts of our society. The shortage of energy requires that we examine carefully our ideas and practices related to the family and determine whether there are ways in which family considerations enter the energy arena and might be adapted to conserve resources and yet not lower the quality of life. This is a most challenging assignment, for when we consider the structure and function of the diverse kinds of families in our society we realize that there is no quick and easy answer. There are, however, some trends, possible changes and experiments

[1] Gordon F. Streib, "Older Families and Their Troubles: Familial and Social Responses," The Family Coordinator, 1972, vol. 21, pp. 5–19.

[2] J. C. Brocklehurst and T. Hanley, Geriatric Medicine for Students. Edinburgh and New York: Churchill Livingstone (Longman Group), 1976, p. 51.

which offer a few glimmers of optimism in this generally gloomy forecast of life ahead.

The whole structure and operation of American family life for a number of generations has emphasized the nuclear household in which husband, wife, and children live together. When the children obtain jobs, or even while they are still completing their education, they often leave home and live in their own private apartments. This emphasis on one's own private dwelling unit, while costly from the standpoint of energy, is compatible with American values of freedom, self-reliance, privacy, and independence. According to the latest census figures,[1] there are 5,362,000 households composed of a woman over 65 living alone, and 1,439,000 males over 65 living alone. In addition, there are over 8 million households of husband and wife living together, in which one is over 65. It is from this latter category that additional single-person households appear in the statistics every month, because of the death of a spouse.

Our culture has fostered generally a set of beliefs and practices which emphasize a form of individualism in the economy and occupational sphere, self-sufficiency in terms of transportation and mobility and a strong tendency in the family toward intimacy at a distance between the generations. If we are to develop a reasonable and coherent energy program that relates to the family and the elderly, these trends cannot be overlooked.

When a disability occurs among the elderly, housing changes are considered in about half of the cases, according to a nationwide survey reported by Newman.[2] In earlier and more traditional times, the first alternatives to be considered were for the elderly person to move in with children, or for the children to move in with the parents. These solutions have been increasingly rejected in urban America, both by the adult children and the elderly themselves. Both generations prize their freedom and independence; the older generation does not want to endanger the affectional ties with their children by living with them.

Therefore, when the older person becomes slightly dependent, or cannot afford to heat, repair and maintain a single house for simply one person, new solutions are often sought. In the United States, at the present time, there are probably 20 or 25 experiments in shared housing which are functioning and which may offer some clues as to new forms of cooperative families.[3]

At the University of Florida, where I am located, I have organized a small group of researchers who are studying one such family arrangement in central Florida called share-a-home.[4] At this time, there are 10 families formed of nonrelated elderly people who share a household and live together as a family. A housekeeper is employed to cook the meals, and additional staff is employed for housecleaning, and so forth. Obviously, it is much more economical of energy to heat a dwelling for eight people rather than eight separate homes or apartments; it uses less energy to cook for

[1] "Current Population Reports: Household and Family Characteristics: March 1978," p. 20, No. 340, Washington, D.C., U.S. Government Printing Office, 1979.

[2] S. J. Newman, "Housing Adjustment of the Disabled Elderly," The Gerontologist, 1976, vol. 16, pp. 312–317.

[3] Gordon F. Streib, "An Alternative Family Form for Older Persons: Need and Social Context," The Family Coordinator, 1978, vol. 27, pp. 413–420.

[4] Gordon F. Streib and Mary Anne Hilker, "The Cooperative 'Family' as an Alternative Lifestyle for the Elderly," Alternative Lifestyles, vol. 3 (forthcoming).

eight people at once than to cook eight separate meals. In addition, a family car is owned or rented for the use of each household, which is a saving in transportation costs.

I have recently returned from a 2-month travel fellowship awarded by the World Health Organization to study alternative living arrangements for the elderly in Great Britain and Scandinavia.[1] I was impressed by the ingenuity in developing diverse kinds of housing and living arrangements for the elderly which are not traditional in the sociological sense but seem to be energy conserving, satisfying psychologically and meet the problems of the lonely, ambulant, slightly dependent older person.

One of the most notable schemes which I observed in Britain is run by the Abbeyfield Society.[2] It is similar to "share-a-home" in Florida. Abbeyfield is a nonprofit charitable organization which operates over 700 homes serving over 5,000 older people whose average age is over 80. Prince Charles is the patron of the organization. The program is growing at the rate of one house a week, so it is estimated that there will be over 50 new houses formed by the end of the year. The demand is so great that there is a waiting list in all houses.

The typical Abbeyfield house is an old, large, single-family dwelling in which six residents and a housekeeper reside. Each person has her own private bed-sitting room, and brings her own furniture, pictures, rugs, bed, and enough china to make breakfast or serve tea to guests. Two meals a day are served in the dining room—lunch and dinner. An unpaid committee of local citizens from the community is the sponsoring organization. These local committees constitute the key factor to the success of Abbeyfield. The committee arranges for the purchase or leasing of a house, the remodeling when necessary, hiring of the staff and monitoring the day-to-day activities.

The committee also raises money by morning coffee hours, bake sales or craft sales, for the purchase of extra furnishings for the house. Such functions also serve to integrate the house with the neighborhood and enhances community support and interest in the welfare of the residents. Many of the volunteers are persons who are newly retired and find it meaningful to become involved in such a socially significant project.

One of the most striking aspects of the Abbeyfield Society is the way in which this private, nonprofit organization has worked out cooperative arrangements with a variety of governmental agencies to provide a familylike arrangement for older Britons. For example, the Abbeyfield Society has received housing grants from the Government amounting to over $18 million for renovating and modernizing older mansions and in a few instances building new facilities in residential neighborhoods. Another feature of Abbeyfield's cooperative arrangement with governmental agencies is the supplemental income scheme which enables an Abbeyfield resident with an inadequate pension to meet housing and personal costs. This supplemental income scheme is similar to our SSI, only it is variable according to the rent which the house charges. It should

[1] The statements made and opinions expressed are those of the author and not the World Health Organization. I wish to thank WHO for awarding me a travel fellowship.

[2] Gordon F. Streib, "Some Impressions of Abbeyfield by an American Sociologist," Abbeyfield Bulletin: The Journal of the Abbeyfield Society (in press).

be pointed out that although Abbeyfield was organized and is sponsored and managed by middle-class Britons, approximately three-fourths of the residents have incomes so low that they require supplementary benefits from the Government program.

There is a realization by Government officials that the Abbeyfield approach is not only very satisfying from the standpoint of the individual, but is economically feasible from the standpoint of providing a support system for the frail older person and insures that she has a warm, safe, comfortable home. The British public officials and private taxpayers are aware that a scheme like Abbeyfield is less costly and more desirable socially and psychologically than facilities like an American nursing home. Furthermore, by living together cooperatively, there is a considerable saving of energy because all of these persons formerly lived in a private home or apartment which made greater demands upon energy resources.

I personally visited 15 Abbeyfield Society homes, including one in a mansion in the suburbs of London, one in an old rowhouse in Edinburgh, one in a resort town in Wales, and one in a public housing project in the combat zone of Belfast, Northern Ireland. The latter was particularly interesting because the authorities had given the society permission to remove the walls between the two adjoining apartments on the first floor and combine them to provide a home for six older women in their own neighborhood.

I have spent some time explaining the Abbeyfield Society and its attempt to provide a familylike living environment for older Britons because it is similar to a number of isolated experiments in the United States. However, in our country we have not yet been able to spread the concept. Too often, the organizers have had to struggle with a variety of legal and bureaucratic problems which hamper and frustrate the development of such innovative plans. My impression of the British bureaucratic structure and method of operating is that their system is more flexible and adaptable in fostering innovative programs than is true in this country. The British approach to housing and family arrangements focuses upon the end product and intent of the project rather than on specific regulations and the nuances of legal terminology, and filling out of forms.

Americans often speak about the need for decentralizing our efforts and permitting more autonomy at the local level, but at the same time we impose rules and regulations that are highly specific, detailed and sometimes difficult to interpret and follow. There are many cultural links between the United Kingdom and the United States and linguistic, political and ideological similarities so that we can learn from their experiences. At the same time, there are some cultural differences so that we must make our own adaptations in attempting to establish new familylike arrangements which provide decent, comfortable, supportive environments and at the same time do not require large expenditures of tax money or energy resources.

The programs I have just described are designed to cope with the growing segment of the elderly who are no longer able to live by themselves because of physical, psychological, or economic reasons. However, in all highly developed industrial countries, the over-

whelming majority of older persons live in their own house or apartment and desire to remain there. Therefore, we must give some consideration to those 90 percent who continue to live in a nonsheltered form of housing but may require some assistance from social service agencies. In the years ahead, we must think of how the services they need can be provided, either at home or at community centers, and still reduce the demand upon energy resources. We will need all of our ingenuity to develop innovative programs in these areas.

Here, again, I turn to my recent research fellowship for examples of innovation in supplying services in Scandinavian countries. In Sweden, there were some particularly imaginative services. Like the United States, Sweden is predominately an urban society but they also have vast rural areas, as we have in Florida, Arkansas, and Montana. These are sparsely populated and it is hard to provide pensioners with even minimal service because of the cost of sending services long distances. However, the old people want to live in their own homes as long as possible. This set of circumstances poses an interesting set of problems if one is concerned with the family, the elderly and energy conservation.

One program used by Swedes in isolated rural areas is the adaptation of the rural postman to provide certain social services.[1] These are divided into four major kinds: Contact service, the delivery of goods, home visits, and special duties such as help in filling out forms. The contact service means that the rural postman keeps his eyes open for anything that suggests that help may be needed and he immediately informs the local government agency if any person along his route is sick, has had an accident or needs help for any task such as in clearing snow, chopping wood, or getting water.

The delivery of goods involves bringing the elderly resident materials which have been ordered by writing or telephone from shops along the route or in the town from which he starts his route; drugs and prescriptions, a box of groceries weighing no more than 20 pounds, and even in some cases meals-on-wheels—hot food packed in plastic containers are delivered by the postman.

After an experimental trial period in which the results were favorable, the postal department drew up an agreement with the National Board of Health and Welfare so that rural postmen would carry out these services along their regular routes. The local municipalities pay the postal service on a fixed fee basis for each of the services provided.

Such a program in the United States would require considerable flexibility and imagination by our postal officials, the Department of Health and Welfare, and officials of local government.[2] However, from the standpoint of energy, it would be desirable to experiment with programs of this kind in rural Florida and perhaps rural Montana or Maine. Also, when I read in the newspapers that postal services are planning to close in some areas because the volume of mail is too low to justify keeping certain branches open,

[1] "Rural Postmen in Sweden Help To Provide Social Services." Stockholm, Sweden: The Swedish Post Office and the Swedish Board of Health and Welfare.

[1] For a discussion of innovations in the U.S. Post Office, see: Wayne E. Fuller, "RFD: The Changing Face of Rural America," Bloomington: Indiana University Press. See also Carl Van Doren, "Benjamin Franklin," for innovations in the system by the first Postmaster General.

I wonder if schemes like this could not be developed to help our rural postal delivery become economically sound.

There would be some protests, of course. A few years ago, when the SSI program was initiated, the Social Security Administration expressed doubts about the difficulties in handling a new form of income maintenance based upon determination of need at the local level. Some local social security offices, I am told, suffered severe growing pains until they were able to adapt to the new services they were assigned to deliver. I am sure there would be similar resistance in the postal service as they adapted to a new society with a shortage of energy, but I am confident they could meet the challenge.

Another program the Swedes are using is the "service bus."[1] Instead of sending our services individually, as we do in most cases with a private car bringing each social service helper, they use a minibus to bring a variety of services to the older rural resident. The service is used to help pensioners and handicapped persons and may include personal care, such as giving a bath, cleaning and housework, library activities and distribution of occupational therapy materials. The buses are equipped with cleaning supplies, insulated containers for transportation of fresh and frozen foods, supplies for elementary hair dressing and shaving, and the like. Usually two trained home helpers are on duty in the bus. These buses go into all parts of rural Sweden which are as isolated as many regions in the United States.

Let me conclude by proposing four general principles which should undergird our policies relating to energy, the elderly and the family.[2]

First, as we have all said, we need to think creatively and use existing facilities. There should be an emphasis on adapting older structures to be safe and economical of energy. Our economy and our energy resources cannot afford unlimited building of new structures for the elderly, even though this may be an ideal that many of us wish could be realized.

Second, the mobility of American families and the separation of family units means that if we want to keep the generations together we must provide a transportation system that will enable old and young to see each other more easily. For the elderly particularly, this means a much improved, efficient, dependable public transportation system. Furthermore, we must think beyond simply the technical aspects and think of service—staff to help elderly persons with their baggage, to help them make connections, and so forth.

Third, we must devise policies and programs that encourage decisionmaking at the local level and thereby increase our democratic processes and enhance the sense of community. The establishment of local committees to create alternative living arrangements, to monitor them and to support them should be fostered.

Fourth, government agencies at all levels must learn to cooperate in new ways across bureaucratic structures if we are to have programs that are viable and feasible and accomplish the common

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[1] "Service Bus," National Board of Health and Welfare, Stockholm, Sweden.

[2] David Morris, "Energy, Democracy, and the Carter Energy Plan," pp. 265-286, in The Federal Budget and Social Reconstruction, Marcus G. Raskin (ed.), Washington, D.C.: Institute for Policy Studies, 1978.

goal of reducing the use of energy, assisting the elderly and strengthening the family.

Thank you, Mr. Chairman. [Applause.]

Mr. LIPSCOMB. Thank you, Dr. Streib.

For those of you who think that Dr. Streib was using the States of Florida and Arkansas because they happen to be the home States of the two Senators who appeared, let me point out that they rank No. 1 and No. 2, respectively, of all the States, in percentage of population which is elderly.

Our next witness is Jack Meltzer. I know that due to circumstances beyond everybody's control we are running out of time, but I would urge you all to stay. At this time we will hear from Mr. Meltzer.

STATEMENT OF JACK MELTZER, CHICAGO, ILL., PROFESSOR, SCHOOL OF SOCIAL SERVICES ADMINISTRATION, UNIVERSITY OF CHICAGO

Mr. MELTZER. Thank you. It is an honor for me to appear at the Gerontological Society symposium before the Special Committee on Aging. I am addressing you, the society, today as a colleague sharing your common concern with the issues.

In respect to energy and the quality of life, the aged are both a victim and a model.

Energy is but one, albeit central element, among a growing number of critical and declining resources. The aged as a group are ill equipped emotionally and generally less able financially to compete in the marketplace for goods and services. They tend to be materially disadvantaged by a decline in resources disproportionate to their numbers. Energy is an all pervasive resource with both direct and indirect effects. Not only does energy cost more, but it adds to the cost of other goods and services almost without exception. The aged, therefore, without a subsidy in some form, cannot avoid being victimized by the demand for and supply of energy. Further, given the activity and occupational patterns of the aged, rationing and other allocation devices are unlikely to assign a preferred status to the aged unless priorities are arbitrarily established to benefit the aged as a matter of public preference.

The aged, along with the infirm, are among the most energy dependent groups in society. Consequently, the elderly cannot be expected to cope with the threat to the quality of their lives, which is posed by the energy shortage, without some form of public intervention.

Many of the elderly are concerned with personal financial resources and many are experiencing mental or physical health problems. The elderly have learned to live and cope with these reality factors. Their sense of time and history has provided them with perspective. In many respects the elderly constitute a model for all of us as we seek to maintain or achieve a quality of life in the face of diminishing energy and other resources. The elderly have had to face questions of choice and alternative lifestyles based both on need as well as deliberate, even if limited, preference and conscious selection. Increasingly, this will be the reality universally faced by all of us.

Further, the living patterns of a large number of elderly represent a model of energy conservation. The elderly are generally an urban population tending to live in areas of relatively higher density than is the case for the total population. The elderly also tend toward group or congregate living arrangements, either formally or spontaneously organized. The elderly rely in greater measure than the general population on their own capacities and on some form of mass or group transportation for both necessary and recreational trips. For these and many other energy conscious reasons, both imposed and voluntary, elderly behavior deserves emulation and comes closer to the behavior recommended by the Government for all of us if we are to conserve energy.

The limited financial resources of many of the aged, a significant number of whom are in poverty, and others who have fixed incomes, together with the physical and mental health associated with the aging process, affect the capacity of the elderly to move with ease and to be mobile. All of these factors have profound energy implications.

Energy costs have not only an appreciable effect on the price of housing directly but also affect the related costs of such activities as cooking and water supply. Because of these factors, we may expect to see an increasing number of elderly left to fend for themselves in declining and decaying rooming- and boarding-houses, as they are priced out of relatively better housing units. And the impact does not stop here.

On the one hand, the aged with resources are frequently among the urban pioneers, playing a pivotal role in the restoration of the city. The aged, along with other urban pioneers, are often in the vanguard of the committed urban dwellers, being among the first wave of residents in geographic areas with limited marketability. As many of these areas begin to be improved and reflect a growing and widening demand, the conversion to condominiums and the general evidences of community self-renewal makes it increasingly difficult for the elderly to continue to afford to live in the areas they helped promote.

The elderly become the targets of the process they helped set in motion. The process is, in part, stimulated by a reaction to the energy crisis attracting people back to the inner city and thereby accelerating market demand; a situation excerbated for the elderly by the increased costs resulting from the diminishing energy supply. In these connections, the elderly are forced out of successively prime locations into areas that are less accessible to the facilities and services on which the elderly depend, and to lower density areas less suitable to their preference and to their needs.

In addition, the costs of transportation, which have risen alarmingly almost as a direct result of the cost of energy, and rising labor costs indirectly attributable to energy and to inflation, have narrowed the available options and the maneuverability of the aged. This has reduced the opportunities available to the aged for recreation, family visits and vacations, and equally importantly made more costly the access to health care providers, to shopping, to volunteer activity, to day care and like facilities, and to nutritional sites. The elderly tend to rely on paratransit alternatives in larger measure than the general population. Paratransit are modi-

fied forms of transit, including vans and other minivehicles and dial-a-ride and other on-demand arrangements. The elderly are therefore likely to be profoundly affected by energy considerations since these alternative forms of transit are often less energy efficient, given the number of people served. Consequently, the ever-present danger exists that the aged will be increasingly isolated over time.

Beyond all else, the elderly with and without resources, and the nonaged poor, are finding it necessary to limit themselves to survival-related expenditures, largely due to the costs of energy. The margin of spendable income that can be utilized by the elderly to enhance the quality of their existence will inevitably continue to be sharply limited or vanish entirely. In many respects, this is dramatized in the case of the institutionalized elderly and those in formally organized group living facilities.

For the institution and group living facility, energy-related expenditures have reduced the dollars available for important support services, including such activities and functions as occupational and physical therapy, vocational programs, social services, et cetera, as well as the optional and desirable free time and recreationally related activities. Some evidence also exists that the quality of food may have suffered, that dehumanizing procedures have been initiated, and other measures instituted to compensate for rising energy and related costs.

These phenomena are evident, even if in less dramatic form, in the case of the noninstitutional elderly, since the social and related services available to them, the nutritional services, the day care services, and other essential quality-of-life components are each in turn needing to make financial accommodations in the face of rises in the cost of energy and thereby affecting the quantity and quality of services available to the aged.

Among the other threats to the well-being of the elderly are the prospect of utilizing alternative energy sources, many of which have polluting effects and are particularly dangerous to the health of the aged, the group most vulnerable to a decline in environmental quality.

At a more global level, the extent to which energy is likely to affect the economy, inflation, and job availability will most certainly be felt by the elderly in greater measure than other groups in the population. Consequently, the opportunities available to the elderly to remain in or return to the labor force will inevitably be sharply reduced and the quality of the retirement condition of the aged person will thereby be diminished and diluted. Increasingly, the elderly whose initial options are already circumscribed will be confronted with decisions that are imposed by circumstances in such matters as regional and community location, housing, social services, and the like, rather than able to base their choices on free will and preference. While this is true for the general population, it will press harder on the elderly.

The elderly as a group are perceived as relying heavily on their own personal ingenuity and life resources. Clearly, the aged are going to need to make a much greater and more energetic effort in these regards than has been the case heretofore with the continuing pressures likely to be exerted on them by the supply and cost of

energy. In addition, the elderly are going to be forced to consolidate their political power if they are to stem or at least compensate for the effects of the diminishing supply of energy for survival-related as well as quality-of-life considerations. For the aged, survival and quality-of-life considerations are closely related, and for many in the elderly population these two factors come close to coinciding.

It is essential, therefore, that our legislative bodies focus their attention on developing special compensating devices to counter the energy effects on the elderly and to preserve their minimum levels of well-being.

Now the tendency is to view and deal with the energy resource as an absolute asset whose provision and use is assumed to have inherent value. From this vantage point satisfaction is perceived as a market phenomenon, measurable by energy units produced and consumed. Quality-of-life considerations, on the other hand, go rather to issues of choice and alternatives, to questions of conservation and validation, to human service-related considerations, and to a concern with criteria that establish orders of satisfaction and standards for assessing program and system performance. A concern with quality of life, therefore, substitutes behavioral for market phenomena and gives heavier weight to services provided and satisfactions derived by diverse activity patterns than to questions of the supply and distribution of material resources and goods.

In these and other regards, the elderly are uniquely suited to effect and influence the extension and universal provision of quality human services. We are also apt to see an extension and refinement of the small-is-beautiful approach and attitude as we accelerate our efforts at meeting individual and personalized goals and at finding devices to bring decisions closer to the people affected by these decisions. Here again, the aged are likely to continue to be models and pioneer in how to make do with scarcity, how to provide reciprocal supports and construct networks of relationship, how to cope with pressure, how to renew and recycle one's resources, and generally how to deal with problems of adaptation and change.

Despite their frequently heroic and trail-blazing role, the elderly, because of limited resources and mental and physical disabilities, are least able to compete with other target groups and constituencies on a marketplace basis. The elderly are at a distinct disadvantage as they seek to perform and compete within the range of prevailing options in the marketplace. The aged are forced to seek compensatory and supplementary financial or programmatic subsidies and supports and to become politically engaged, and then by their numbers and the quality of their organized pressure to achieve through public policy what they are unable to achieve in a free and competitive market.

The aged can continue to teach us how to deal with the diminishing supply of energy by stressing the careful and thoughtful conservation of the energy resource. However, as a society, we hold the aged hostage since they depend on us for a supply of energy that is not only critical to the quality and texture of their life, but in the final analysis may literally affect their capacity to minimally survive. [Applause.]

Mr. LIPSCOMB. Thank you very much, Mr. Meltzer.

Again, let me say that we appreciate the input of this panel. We would hope that there would be others in the audience who would share their thinking with us. Due to time constraints and the fact that other sections are scheduled on the program, we will not have an opportunity for the questions. We will, however, share those questions with the members of the Committee on Aging and other Senators and see that they are adequately briefed on the issues that have been raised in this session today as they move forward in their deliberations. The Senate is becoming more and more aware of the impact rising energy costs has on our Nation's elderly.

I can assure you that the members of the committee are quite concerned about the impact of this particular phenomena on the older people of this country. Regrettably, we do not see any diminution of the potential for these adverse effects in the coming months.

We thank all of you who stayed through to the end with us. If we on the committee can be of service or assistance to you in providing you with information or if you wish to share ideas with us, as indicated earlier we will keep the hearing record open for a period of 30 days. We would be pleased to receive your input.

On behalf of Senator Chiles, I would declare this hearing adjourned and turn the meeting back over to Mr. Sacher.

Mr. SACHER. Thank you, Mr. Lipscomb. On behalf of the Gerontological Society I wish to thank Senator Chiles and Senator Pryor from Arkansas for their participation in this hearing and I want to thank you very much. [Applause.]

[Whereupon, at 3:40 p.m., the hearing adjourned.]

APPENDIX

MATERIAL SUBMITTED FOR THE RECORD

ITEM 1. LETTER FROM RUTH C. CLUSEN, ASSISTANT SECRETARY FOR ENVIRONMENT, U.S. DEPARTMENT OF ENERGY, TO GEORGE A. SACHER, PRESIDENT, GERONTOLOGICAL SOCIETY, DATED DECEMBER 4, 1979

DEAR MR. SACHER: It is a pleasure to respond to your request for a clarification of DOE policy concerning "research on the effects of energy-related environmental factors on health, longevity, and lifetime well-being and productivity." I recognize that much of the technical discussion will be "old hat" to you and ask your forbearance in revisiting familiar terrain in placing our views in technical perspective.

In assessing health consequences of energy technologies, one of the important things the environmental (EV) research program must do is to characterize long-term, late appearing health effects induced by chronic exposure to low doses of hazardous chemical and physical agents. Since induced effects of this type develop gradually over extended periods of time relative to lifespan, and often after a protracted period of latency, care must be exercised in order to distinguish effects produced by an environmental agent from functional changes and patterns of morbidity and mortality that occur spontaneously as a consequence of the aging process. To make this distinction and draw correct inferences, knowledge concerning the aging process is essential. In addition, as you know, a reduction in lifespan is one of the long-term effects of energy-related environmental agents in which we have an interest. For important reasons, therefore, the EV health research program requires sound statistical data on lifespan and the progress of changes that occur in normally aging populations (animal or human).

In the context of evaluating health impacts of energy technologies, four categories of research concerned with or related to biological aging can be differentiated. These are discussed below in order of decreasing importance (priority) to DOE:

1. LONG-TERM OR LIFETIME STUDIES OF HEALTH EFFECTS OF HAZARDOUS ENVIRONMENTAL AGENTS

To make a statistically valid distinction between induced health effects and spontaneously occurring age-related changes (aging effects), it is necessary to collect detailed information on pathophysiological changes, morbidity, and mortality throughout the lifespan of exposed and control subjects. Longitudinal studies of this sort generate extensive data on the aging process in normal (unperturbed) populations and on changes induced in the aging process and lifespan by hazardous agents. As you know, EV supports many different longitudinal studies in short-lived animals, long-lived animals, and human populations. This is high-priority research.

2. STUDY OF EFFECT OF ANIMAL OR HUMAN AGE AT TIME OF EXPOSURE ON SENSITIVITY AND RESPONSE TO HAZARDOUS AGENTS

In assessing human health risks at the population level, it is necessary to identify subpopulations that may be at particular risk because of an abnormally high sensitivity to a hazardous agent. Since age is one of the variables that is known to affect or modify sensitivity in significant ways, it is important in the case of each energy-related agent of interest to evaluate sensitivity and response patterns at a number of critical periods throughout the lifespan, beginning with the prenatal period. Work of this type is also clearly of importance to DOE and of high priority.

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.[1]

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.[2] 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

[1] 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.

[2] 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.[3] 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.

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[3] 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 [4]

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, calking 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 [5] 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—calking, 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.

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[4] Data presented are for owner occupied, one-family homes, mobile homes and trailers.

[5] 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 [1]	Total number (thousands)	Percent			
		Total	Metropolitan [2]	Nonmetropolitan	
				Total [3]	Urban	Rural
United States:						
Owner—Heating fuel:						
Utility gas [4]	5,531	54.9	61.8	44.9	70.4	29.1
Bottled, tank, LP gas [5]	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 [6]	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
Renter—Heating fuel:						
Utility gas [4]	2,325	54.2	54.5	53.1	73.1	30.5
Bottled, tank, LP gas [5]	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
Northeast:						
Owner—Heating fuel:						
Utility gas [4]	798	38.5	42.5	26.3	36.3	18.9
Bottled, tank, LP gas [5]	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
Renter—Heating fuel:						
Utility gas [4]	504	37.3	36.5	43.5	53.1	25.7
Bottled, tank, LP gas [5]	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
North Central:						
Owner—Heating fuel:						
Utility gas [4]	1,953	66.7	77.7	53.5	85.9	32.5
Bottled, tank, LP gas [5]	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
Renter—Heating fuel:						
Utility gas [4]	756	74.0	78.8	64.6	88.2	34.5
Bottled, tank, LP gas [5]	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 [1]	Total number (thousands)	Percent			
		Total	Metropolitan [2]	Nonmetropolitan	
				Total [3]	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 [4]	1,687	48.3	53.9	43.5	70.4	28.4
Bottled, tank, LP gas [5]	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 [4]	589	50.6	50.9	48.4	70.3	28.9
Bottled, tank, LP gas [5]	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 [4]	1,092	69.6	77.9	47.5	67.9	33.2
Bottled, tank, LP gas [5]	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 [4]	476	65.0	66.7	54.1	71.7	33.7
Bottled, tank, LP gas [5]	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

[1] 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.

[2] 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.

[3] 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.

[4] Gas that is piped through underground pipes from a central system and serves a neighborhood.

[5] Gas stored in tanks at the dwelling which are refilled or exchanged when empty.

[6] 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 [1]	Total [2] number (thousands)	Percent			
		Total	Metropolitan	Nonmetropolitan	
				Total	Urban	Rural
United States:						
Owner—Cooking fuel:						
Utility gas [3]	4,378	43.3	53.6	29.0	44.9	19.0
Bottled, tank, LP gas [4]	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 [3]	2,459	57.2	64.7	36.0	50.2	20.0
Bottled, tank, LP gas [4]	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
Northeast:						
Owner—Cooking fuel:						
Utility gas [3]	1,085	52.3	62.0	22.9	33.4	15.1
Bottled, tank, LP gas [4]	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 [3]	977	72.3	76.6	41.2	51.7	21.9
Bottled, tank, LP gas [4]	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
North Central:						
Owner—Cooking fuel:						
Utility gas [3]	1,339	45.7	57.3	31.8	51.9	18.9
Bottled, tank, LP gas [4]	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 [3]	583	57.0	66.8	37.5	50.9	20.4
Bottled, tank, LP gas [4]	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 [1]	Total [2] number (thousands)	Percent				
		Total	Metropolitan	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 [3]	1,238	35.4	42.0	29.7	46.8	20.1
Bottled, tank, LP gas [4]	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 [3]	524	44.2	52.0	34.2	50.1	20.0
Bottled, tank, LP gas [4]	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 [3]	717	45.3	53.2	24.2	31.5	19.1
Bottled, tank, LP gas [4]	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 [3]	375	50.6	53.6	32.1	45.2	16.5
Bottled, tank, LP gas [4]	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

[1] Numbers may not add to totals and percentages to 100 due to rounding.
[2] See table 1, footnotes 5 and 6.
[3] Gas that is piped through underground pipes from a central system and serves a neighborhood.
[4] 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 [1]

Item	Total [2] number (thousands)	Percent			
		Total	Metropolitan	Nonmetropolitan	
				Total	Urban	Rural
United States—Currently in dwelling:						
Storm windows: [3]						
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: [4]						
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: [5]						
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: [3]						
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: [4]						
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: [5]						
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: [3]						
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: [4]						
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: [5]						
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 [1]—Continued

Item	Total [2] number (thousands)	Percent				
		Total	Metropolitan	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: [3]						
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: [4]						
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: [5]						
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: [3]						
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: [4]						
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: [5]						
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

[1] 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.

[2] See table 1, footnotes 5 and 6.

[3] 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.

[4] Includes additional doors hung in exterior doorways.

[5] 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 [1]

Item	Total [2] number (thousands)	Percent			
		Total	Metropolitan	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

[1] 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.
[2] 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.

Fear.—The most intolerable symptoms the elderly feel are fear of freezing, fear of being cold and alone, fear even of going to sleep.

Worsening nutrition and medical care.—As fuel costs and inflation erode fixed incomes, the elderly have less and less for food, medication, transportation, and medical care. Those losses will in turn make those elderly more physically vulnerable to cold.

Things *can* be done to lessen the threats of the energy crisis to the elderly. Things *must* be done. With rising fuel costs and dropping home temperatures, we may be approaching a threshold beyond which we will see an epidemic of hypothermia.

WHAT SHOULD BE DONE TO PREVENT IT

Hypothermia should be made a reportable illness. Only then can public health authorities discern patterns and take action.

Free home energy expert consultations should be provided for the elderly. Tax credits are irrelevant for the most vulnerable.

Spot temperature checks of apartments should be made by housing and public health authorities. Teams should be empowered to act quickly in heating crises.

No elderly person should be allowed to have their gas turned off or heating oil withheld because of overdue bills.

Nursing homes should be checked frequently to insure adequate heating, 24 hours a day. Rising fuel costs are squeezing nursing home profits. Helpless elderly will be the losers.

More home care services must be provided. Even infrequent visits and phone calls can stave off malignant isolation and fear.

Housing for the elderly must be increasingly designed to meet all these needs. It should be nonprofit. Congregate models should be encouraged. Accommodations with 24 hour supervision are often necessary.

Elderly patients being discharged home from hospitals in winter should be able to receive safety and heating checks of their homes.

The pressures of the energy crisis on the elderly can only get worse. Now is the time to act . . . not in the awful aftermath of the mass freezings of elderly Americans.

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