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HEALTH AND SOCIAL CHARACTERISTICS OF THE NONMETRO ELDERLY

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The United States population is aging demographically, with concomitant changes in family life, health and social services, and the workplace. With an increase in the size and visibility of the elderly population in general, there has been an increased awareness of the special needs of the rural or nonmetro elderly. The elderly are at greater risk of disability than the general population, and they are substantial users of health, medical, and other services. The ability of elderly persons to live independently in the community has important implications for long-term care and federal spending as well as for effective local planning for health care and other services. The level and determinants of the health status of the elderly by type of residence have received substantially less research attention than demographic and socioeconomic variations. This study focuses on the health status and utilization of health care services by the nonmetro elderly, compared with their counterparts in metro areas.

The availability and accessibility of health care facilities are critical in determining the quality of life for many elderly Americans. In studying the rural or nonmetro elderly, a central issue is their underutilization of health care services, as recognized in a report by the National Research Council, National Academy of Sciences, The Aging Population in the Twenty-First Century. The availability of health care services often poses problems in low-density, sparsely populated nonmetro communities; many of these communities are both far from the sophisticated medical care which is concentrated in metro centers and restricted in their ability to provide like services in their own jurisdictions.

The majority of research on the health status of the rural elderly indicates that they have poorer health and higher incidences of health problems than their urban counterparts (Coward & Lee, 1985; Krout, 1989). Several research studies have found that the rural elderly have a greater number of health problems and more severe health disabilities compared with the urban elderly, and that more rural elders retire for health reasons (Coward & Lee, 1985; Davenport & Davenport, 1977; Lassey, Lassey & Lee, 1980; McCoy & Brown, 1978; and Palmore, 1983). On the other hand, a detailed examination of national health statistics by the Urban Institute found some differences in mortality rates, incidence of acute and chronic illnesses, the number of restricted activity days and bed disability days, and self-assessed health by residence, although these differences were usually neither large nor consistent. The authors concluded that place of residence in general is not associated with significant differences in health status (Paringer, Black, Feder, and Holahan, 1979). Thus, it has not been clearly established that residence has an independent effect on health status of the elderly.

There is more certainty that significant differences exist in health care services for the elderly by residence. Rural areas have fewer health resources and services and a lower ratio of doctors, nurses, pharmacists, and other health care personnel (Krout, 1986; Lassey and Lassey, 1985). Substantial evidence indicates that the range of services for elders living in small towns and rural communities is more narrow, that fewer service alternatives are available in rural areas, that rural health and human services are less accessible and more costly to deliver than in urban areas, and that fewer health care providers exist to offer particular services (Coward & Rathbone-McCuan 1985; Coward & Cutler, 1989; Coward & Lee, 1985; Krout 1986; Miller, 1982; Nelson, 1980; Rathbone-McCuan, 1981; and Taietz and Milton, 1979). The continuing inadequacies of facilities and services for many rural communities is well documented (Coward & Lee, 1985; and Miller, 1982).

In light of such inconsistent findings on residential differences in health status, more systematic research needs to be carried out in order to clearly assess the magnitude and nature of the health status and use of available health care resources by the elderly. The aim of this study is a better understanding of characteristics of the elderly in nonmetro America, the health status of the nonmetro elderly, the social support networks and life conditions affecting the health of the nonmetro elderly, and the availability and use of health services for the nonmetro elderly. The study focuses on factors which differentiate the nonmetro elderly from the elderly in central cities and suburban areas in terms of health status, health conditions and impairments, functional limitations, family structure and living arrangements, social and community support, economic well-being, and the utilization of health care services.

Research which focuses exclusively on the rural elderly, and thereby fails to treat residence as a variable, cannot go beyond the descriptive level and is limited in terms of promoting an understanding of the implications of residence for the lives of the elderly. Coward and Lee (1985) argue strongly that research on the rural elderly needs to be comparative in order to be useful and enlightening. Dichotomous residential comparisons (rural-urban or metro-nonmetro) are inadequate and limited, and an analytic framework that reflects greater residential variation is needed.

Contingency table analysis is used to uncover the bivariate relationship between residence and health status and service utilization, taking into account the effects of demographic and socioeconomic factors. Several factors other than health status and the prevalence of disease and disability determine how the elderly utilize health services. These include demographic characteristics, availability of social support, access to care, health benefits, and provider behavior (Ouslander and Beck, 1982). What role do demographic and socioeconomic factors play in the use of health care services? It is still unclear in many instances how or to what degree differences in service availability influence and affect the health of residents. Analysis of residential differences in the utilization of health services by elderly persons will have important implications for rural development policy and future planning and allocation of resources.

Methodology and Sample Characteristics

The 1984 Supplement on Aging (SOA), a special supplement to the National Health Interview Survey (NHIS), is used to investigate the relationship between residence, health status, and the use of health care services by the elderly. The NHIS is an annual household interview survey of the civilian noninstitutional population of the United States conducted by the National Center for Health Statistics (NCHS). The SOA obtained more detailed information about the health status, social characteristics, and living arrangements of persons 55 years of age and older who were living in the community--a total sample of 16,148 respondents age 55 and over. Information is included on: family structure, relationships, support, and living arrangements; community and social support and use of community services; occupation and retirement and sources of retirement income; health conditions and impairments; activities of daily living (ADLs), instrumental activities of daily living (IADLs), and functional limitations; prevalence of chronic conditions; nursing home stays; and opinions about one's own health.

The elderly are defined as persons 55 years and older. Those age 55 to 69 years old, who are actually middle-aged, serve as a comparison group for those age 70 and older. In many cases, data are presented for the entire age group 55 years and older because either the subgroup of the population is very small (such as minorities) or the event is relatively rare (use of special transportation for the elderly).

Place of residence is one of many factors which affects the health of the elderly. The dichotomy metro-nonmetro conceals important differences within the residential areas. This paper expands the residential classification into nonmetro, suburban, and central city. The residential coding on the SOA limited the residential detail available, but use of the SOA offers the advantage of being able to generalize about the national population.

Health status is traditionally conceptualized as the presence or absence of disease. In defining and measuring the health of the elderly, illness is a better concept than disease in that illness refers not only to the presence of a specific disease, but also to the individual's perceptions and behaviors in response to the disease. More importantly, defining health in terms of disease ignores a critical concept of the health of the elderly--functional status (Ouslander and Beck, 1982). The impairment of functioning--in terms of basic activities of daily living (ADLs) and instrumental ADLs (IADLs)--has important consequences for elderly individuals' ability to cope with disease and illness, as well as their need for health care services. It is therefore critical to include some measure of functional status in defining the health of the elderly. For a more complete assessment of health status, this study examines self-reported assessments of health, functional limitations, and limitations in ability to perform ADLs and IADLs.

The proportions of elderly persons with functional limitations in this study are conservative estimates. Because the SOA excluded the institutionalized elderly, some selection bias is evident. To the extent that the institutionalized elderly have more functional limitations than their noninstitutionalized counterparts, the prevalence of limitations for the total elderly population is underestimated in this paper. Furthermore, the proportions of persons experiencing difficulty would have been higher had the analysis been restricted to individuals who routinely performed each activity, that is, to those at risk of health-related problems in their performance.

Persons who did not perform certain activities for reasons unrelated to health, such as men who did not cook because their wives did so, and those who did not respond were included in the base populations (but not the numerators) of the proportions of persons having difficulty with each activity. Because some of the individuals in these two categories may have had unreported problems performing ADLs/IADLs, the extent of functional disability is thus slightly understated.

Suburban elders were somewhat more likely to be younger than those in central cities and nonmetro areas. A disproportionate share of nonmetro and suburban elders were white, whereas minority elderly (blacks and Hispanics) represented a larger share of the central city population. The geographic distribution of the nonmetro elderly population is the same as the total nonmetro population, with more nonmetro elders residing in the South than their counterparts in central cities and in suburbs. Regardless of residence, only 3 percent of all elders 55 years and above lived in a retirement community.

Approximately two-thirds of both suburban and nonmetro elders were married and living with their spouse, compared with 56 percent of the elderly in central cities. Central city elders were less likely to be married than either nonmetro or suburban elders, and had the highest proportion living alone (29 percent), compared with 23 percent in nonmetro areas and 20 percent in the suburbs. Elderly persons living alone are more likely to experience health problems and higher poverty (Commonwealth Fund Commission on Elderly Living Alone, 1987). Spouses and children are potential sources of social support for elderly persons. Fewer central city elders had any living (adult) children, and nonmetro elders had the largest share with 5 or more children.

Nonmetro elders 55 years and over completed fewer years of education than their metro counterparts. For example, 36 percent of suburban elders had completed 4 years of high school, whereas 32 percent in nonmetro areas and cities had done so. In addition, nonmetro elders were worse off financially than their metro counterparts, especially those in suburban areas. Seventy percent of nonmetro elders 55 years and over had incomes under $20,000, compared with 63 percent of those in central cities and 49 percent in the suburbs. Not unexpectedly, more nonmetro elders were below the poverty level than were those in cities and the suburbs. Nonmetro and suburban elders were more likely to own their homes (84-85 percent) than were elders residing in cities (69 percent).

More nonmetro and central city elders perceived themselves to be completely retired than did their suburban counterparts, reflecting the younger age structure of the suburban elderly population. Nonmetro elders 55 years and older were more likely to report having retired due to health (31 percent) than either city elders (29 percent) or suburban elders (24 percent). The nonmetro elderly were also more likely to be currently receiving retirement income than the elderly in metro areas. Among retired persons, suburban elders were more likely to have more than one source of retirement income than their nonmetro counterparts. Sixty-two percent of nonmetro elders reported receipt of only Social Security retirement income, compared with 56 percent in cities and 52 percent in the suburbs.

Health Status Differentials

Self-ratings of health status for those age 55 years and above were higher for suburban elders (44 percent reporting their health as excellent or very good), compared with 38 percent in central cities and 37 percent in nonmetro areas. Among those age 70 years and older, the residential distinction becomes less apparent, with 36 percent, regardless of residence, reporting their health as excellent or very good. Self-reporting of health in the elderly correlates well with both ratings by physicians and survival rates, especially in those under 85, and is therefore a useful survey technique (Ouslander & Beck, 1982).

ADLs, especially measures of mobility, are key indicators of one's ability to live independently in the community and are also significant predictors of admission to nursing homes (Branch and Jette, 1982), use of paid home care (Soldo and Manton, 1985), and use of both hospital and physician services (Wan and Odell, 1981). ADLs are the basic tasks of everyday life, including bathing or showering, dressing, eating, transferring (getting in or out of a chair or bed), walking, getting outside, and using/getting to a toilet. Most elders 55 years and over have no difficulties performing personal care activities (ADLs). Eighty-four percent of suburban elders and 80 percent each of nonmetro elders and central city elders reported no difficulty with activities of daily living. Elderly persons are more likely to have problems with walking than with any other personal care activity--nearly 16 percent of nonmetro elders and city elders had difficulty walking, compared with 12 percent in suburban areas.

With advancing age, the prevalence of functional limitations increases, with 74 percent of suburban elders 70 years and over reporting no ADL difficulties, compared with about 72 percent in nonmetro areas and 71 percent in central cities. Sixteen percent reported 2 or more ADL difficulties, compared with 11 percent of the elderly age 55 and older. Hence, the need for assistance in performing daily activities is greater at older ages. A residential difference is found only for difficulty in walking, with 24 percent of nonmetro and 23 percent of central city elders having difficulty, compared with 20 percent of suburban elders. With advancing age, residential location seems to diminish in importance as a factor affecting one's ability to perform activities of daily living.

ADLs do not measure the full range of activities necessary for independent living in the community, and instrumental activities of daily living (IADLs) were developed to partially fill this gap. IADLs include preparing own meals, shopping for personal items, managing money, using the telephone, doing heavy housework, and doing light housework. IADLs capture those activities that are more complex and less severe than ADLs. Elderly persons 55 years and older residing in the suburbs reported fewer IADL difficulties (81 percent with none) than those in nonmetro areas (77 percent with no IADLs) or central cities (76 percent with none). Residential differences are found primarily for doing heavy housework, with fewer suburban elders reporting difficulty with housework.

More elderly persons age 70 and above had difficulties performing IADLs, with less residential variation. Sixty-nine percent of suburban elders had no IADL difficulties, compared with 67 percent each in nonmetro areas and central cities. More elders 70 years and older reported difficulty with 2 or more IADLs than did those age 55 and above. Fifteen percent of elders age 70 and above reported 2 or more IADL difficulties in both suburban and nonmetro

areas, and 17 percent in central cities. In comparison, 8 percent of the elderly 55 years and above in the suburbs, 9 percent in nonmetro areas, and 11 percent in central cities reported 2 or more IADL difficulties. The most difficulty is found in performing heavy housework, with shopping for personal items next in frequency. Within each age group, residential differences are still apparent, though less so for those age 70 years and over.

A third measure of functional ability includes: walking a quarter of a mile, walking up 10 steps, standing for 2 hours, sitting for 2 hours, stooping-crouching-kneeling, reaching up over head, reaching out as if to shake hands, using fingers to grasp, lifting or carrying 25 pounds, and lifting or carrying 10 pounds. Among the elderly 55 years and above, 54 percent of nonmetro elders, 50 percent of central city elders, and 43 percent of suburban elders had one or more functional limitations. Not surprisingly, more elderly persons 70 years and older reported functional limitations than those age 55 and above, with 65 percent of nonmetro elders, 62 percent of central city elders, and 59 percent of suburban elders with one or more functional limitations.

Twenty-six percent of nonmetro elders 55 years and over had difficulty with 4 or more functional activities, compared with 25 percent in central cities and 19 percent in suburban areas. Higher proportions of elderly persons age 70 and above had 4 or more functional limitations, with less residential variation--35 percent of nonmetro, 32 percent of central city, and 30 percent of suburban elders. The activities that elders reported difficulty with most frequently are walking a quarter of a mile, standing for 2 hours, stooping-crouching-kneeling, and lifting or carrying 10 or 25 pounds. With the exception of lifting and carrying activities, nonmetro elders were more likely to report difficulty with functional activities than their metro counterparts. Among those reporting functional limitations, the majority had experienced the limitation for at least one year.

Arthritis and hypertension are common ailments among the elderly and affect one's ability to perform the various activities of daily living. Elderly persons with arthritis more commonly have difficulty with the ADLs of walking, getting out, and transferring. Over half of nonmetro elders 55 and over had arthritis or rheumatism (51 percent), compared with 46 percent in central cities and 44 percent in the suburbs. Forty-two percent of nonmetro elders had hypertension, the same proportion as in central cities, compared with 37 percent in the suburbs. Among those age 70 and older, arthritis and hypertension are more prevalent, with less variation by residence.

The relationship between residence and health status was controlled by demographic variables (age, sex, marital status, living arrangements), socioeconomic status (measured by education and income level), and selected medical conditions (arthritis and hypertension). Elderly persons 70 years and above report their health as excellent or very good less often than those age 55-69 years old. The elderly 70 years and older are more likely to report their health as fair or poor, which is not surprising since ADL, IADL, and other functional limitations are all more prevalent at more advanced ages. Within age groups, health status differences by residence are still apparent, with more nonmetro elders reporting fair or poor health than their metro counterparts.

Women fared worse than men on all measures of health status, with residential differences by gender still apparent. A smaller proportion of women than men reported their health as excellent or very good and a greater proportion of women had at least one functional limitation. It appears that when all persons age 55 and older are considered, sex differentials in self-reported health and functional disabilities reflect the fact that women in this age group are older, on average, than men.

Social support (familial and nonfamilial) is usually thought to be beneficial to health and longevity, and may have a moderating effect on the health and use of health services of the elderly. Married persons use health services less, either because they can substitute home health care (informal care) for formal use of services or because marriage confers other benefits, such as improved health status, that might also be characteristic of nonmarried people who live with others (Cafferata, 1987). The spouse is the most important source of help in times of illness, especially for men; adult children living inside the house, and to a lesser extent siblings, are also important sources of help during illness. Suburban elders 55 years and over were more likely to have a household relative available to care for them than were nonmetro elders or central city elders. The elderly in central cities were more likely to have no one to care for them than their suburban or nonmetro counterparts. Friends and relatives have also been shown to assist elderly persons in a wide variety of nursing tasks. Living with others may reduce the need for the use of formal health care services (such as physician visits), independently of marital status because of the substitution of home care (family members) for formal health care and/or the enhancement of physical and mental health. Formal social support may be more important in the absence of informal support, such as a spouse, (adult) children, other relatives, friends, and neighbors.

Marital status affects self-assessments of health, and not being married is associated with poorer health status. Non-married elders are less likely to report their health as excellent or very good--35 percent of non-married elders in nonmetro areas and 37 percent of their married counterparts reported excellent or very good health. More non-married elders shift their reported health status to fair or poor, compared with their married counterparts. For example, 36 percent of non-married elders in nonmetro areas had fair or poor health, compared with 31 percent of their married counterparts. Non-married elders also reported more functional limitations, with residential differences still evident by marital status.

Elders who lived with their spouse were, as expected, the healthiest as measured by self-assessments of health and physical functioning. Elders who lived with other relatives or nonrelatives had poorer health than their counterparts who either lived alone or with their spouse. It was expected, however, that those living alone would fare worse than those living with others, relatives or nonrelatives. Perhaps the elderly living with others did so because of their poor health and the need for assistance. Suburban elders were in better health for each type of living arrangement. The elderly with 2 to 4 children tended to be healthier than those with no living children.

Higher socioeconomic status is associated with better health. Wide differences in health status are found among the elderly by income level, with fewer low-income elders (incomes under $20,000) reporting excellent or very

good health than their counterparts with incomes of $20,000 and above. For example, 31 percent of nonmetro elders with incomes under $20,000 reported their health as excellent or very good, compared with 51 percent of their counterparts with incomes of $20,000 and above. Fewer elders with incomes of $20,000 and above had difficulty with ADLs, IADLs, or other functional limitations. Residential differences within income group for the various measures of health and physical functioning are small but still evident. The income effect on health status is magnified for the nonmetro elderly due to their lower financial standing.

Higher education is also associated with more elders reporting excellent or very good health. Twenty-six percent of nonmetro elders who had not completed high school reported excellent or very good health, compared with 45 percent who had completed 4 years of high school, and 53 percent who had completed one or more years of college. A higher proportion of the elderly with at least 4 years of high school reported no ADL or IADL limitations, compared with those who had not completed high school. Only slight improvements in physical functioning occur for those who had completed some college. Residential differences are still evident within educational groups. The effect of educational attainment on health hits the nonmetro elderly the hardest, as they are more likely to be less educated than their metro counterparts.

Arthritis and hypertension are prevalent among the elderly and affect their ability to perform activities of daily living. Similar proportions of elders with and without arthritis reported their health as good. However, those with arthritis were more likely to report their health as fair or poor. The three measures of physical functioning show dramatic differences, with a much lower level of physical functioning for those with arthritis. The effect is magnified for nonmetro elders who more often have arthritis than their metro counterparts. For example, 90 percent of nonmetro elders without arthritis had no ADL limitations, compared with their counterparts with arthritis (72 percent). Wide residential differences occur for self-assessments of health and functional limitations, with suburban elders faring better than both city and nonmetro elders.

A similar pattern is found for the effect of hypertension on reported health status and functional ability, although the difference between the two groups is lower in magnitude. Elderly persons without hypertension more frequently report their health as excellent or very good than their counterparts with hypertension, with residential differences still apparent. For example, 44 percent of nonmetro elders without hypertension reported their health as excellent or very good, compared with 27 percent of their counterparts who had hypertension.

Use of community services provides some social support for the elderly, and residential location affects the availability of such services. These services include use of a senior center, use of special transportation for the elderly, eating meals in a senior center, use of homemaker services, use of adult day care, and use of a visiting nurse service. Regardless of residence, 81 percent of the elderly 55 years and older used no community services. About 16 percent used 1 or 2 services, and only 2 percent used 3 to 5 services. Nonmetro elders were somewhat more likely to use 2 or more services (10 percent) than their metro counterparts (8 percent).

Use of a senior center (13 percent) and eating meals in a senior center (7 percent) were the most frequently used services. Nonmetro and suburban elders were slightly more likely to use a senior center (13 to 14 percent) than were the elderly in central cities (11 percent). More nonmetro elders ate in senior centers (10 percent) than their metro counterparts (6 percent). Only a very small proportion used a visiting nurse service (2 percent), with no difference by residence. The availability of services in the community is undoubtedly a factor in use, and actual use reflects both availability and level of participation by local residents.

Use of Health Care Services

Health care services can be meaningfully divided into informal care (family, friends, and neighbors), and formal care (community-based services). In this study, informal care is measured by restricted activity days and bed disability days. Regardless of residence, about 7 percent of the elderly age 55 and older were restricted to bed and 13 percent reported restricted activity days in the past 2 weeks. Suburban elders were slightly more likely to have no restricted activity days (89 percent) than were nonmetro elders (87 percent) and central city elders (86 percent). Sixty-two percent of the elderly 55 years and over, regardless of residence, did not use any informal care and 11 percent were high users of informal care[1]. Central city elders were more likely to be high users of informal care (13 percent) than nonmetro elders (11 percent) and suburban elders (9 percent).

Formal care consists of physician visits, hospital stays, and nursing home stays. The network of formal services available in small towns and rural areas is more limited in range than the network available in urban areas (Coward and Cutler, 1988). The use of formal health care services differs by residence, with nonmetro elders 55 years and older more apt not to have seen a doctor in the past year (23 percent) than suburban elders (19 percent) and central city elders (21 percent). Somewhat greater physician use is found among those 70 years and older, along a similar residential pattern.

Nonmetro elders 55 years and older were about as likely to have stayed in the hospital for 1-30 days (16 percent) as were their metro counterparts (15 percent). Among those age 70 and older, 21 percent of nonmetro elders had stayed in a hospital 1-30 days, compared with 19 percent of their metro counterparts. Regardless of residence, only one percent of the elderly 55 years and older, and 3 percent of those age 70 and older, had ever been a patient or resident in a nursing home. Twenty percent of the elderly 55 years and over used no formal health care--22 percent in nonmetro areas, 20 percent in cities, and 19 percent in the suburbs[2]. Central city elders were more

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[1] Some or moderate use of informal health care means having 1-5 restricted activity days in the past 2 weeks or 1-30 bed disability days in the past year. High use of informal care is defined as either 6-14 restricted activity days or 31 or more bed days.

[2] Some or moderate use of formal care is defined as either 1-11 doctor visits or hospital stays of 1-30 days in the past year, and no nursing home stays. High use of formal care was determined if the individual had either 12 or more doctor visits, had been hospitalized for 31 or more days, or had ever

likely to report high use (17 percent), compared with their suburban and nonmetro counterparts (13 percent each). This may reflect both poorer health and less social support among the central city elderly.

Use of formal health care services increases with advancing age. For example, 25 percent of nonmetro elders 55-69 years old used no formal care, compared with 19 percent of nonmetro elders age 70 and older. Female elders 55 years and older, regardless of residence, were more likely to use health care services than their male counterparts. Elderly women were also more likely to be high users of formal care, especially those in central cities.

As expected, married elders were less likely to use formal health care services than their non-married counterparts. For example, 17 percent of nonmetro elders who were not married used formal care to a great extent, compared with only 10 percent of married nonmetro elders. More central city elders were high users of both informal and formal care within each marital status group. Twenty-one percent of elders residing in cities who were not married used formal care to a great extent, compared with 15 percent of their married counterparts. Married elderly persons seem to substitute home health care (informal care) for formal care.

Elders who lived with others used both informal and formal health care services more than elders in different living arrangements. Residential differences in health service use still remain. Only small differences in health care use are found by number of (adult) children potentially available for care, with elderly persons with one child or 2-4 children somewhat less likely to use either informal or formal health care. Apparently, the elderly without living children have fewer sources of social support, and hence, use formal care services more frequently.

The effect of socioeconomic status on the use of health care services was assessed by income and educational level. The elderly with less than a high school education used formal health care more than those with at least 4 years of high school. For example, 15 percent of nonmetro elders without 4 years of high school used formal care to a great extent, compared with 10 percent of nonmetro elders who had completed 4 years of high school. Differences in health care use between elders who completed 4 years of high school and those who completed 1 or more years of college were minimal. Residential differences are found in use of both informal and formal health care, with higher use by central city elders.

The low-income elderly (incomes less than $20,000) were more likely to use informal and formal health care, regardless of residence, than were their counterparts with incomes of $20,000 and above. Central city elders were more likely to be high users of formal health services than their suburban and nonmetro counterparts. Nineteen percent of low-income elders in central cities were high users of formal care, compared with 16 percent in the suburbs, and 15 percent in nonmetro areas. Among the elderly with incomes of $20,000 and above, 14 percent in central cities, and 10 percent in the suburbs and 9 percent in nonmetro areas, used formal care to a great extent. Nonmetro elders have lower economic status, on average, than their metro counterparts,

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been in a nursing home.

and health care use is clearly affected by both residence and income.

Elderly persons with arthritis are more likely to have functional limitations and to depend on health care services. Seventeen percent of nonmetro elders with arthritis did not use formal care, compared with 28 percent of nonmetro elders without arthritis. Those with arthritis not only used care more, but also used care to a greater extent, with 17 percent of nonmetro elders with arthritis using formal care heavily, compared with 7 percent of nonmetro elders without arthritis. Twenty-three percent of city elders were high users of formal health care, compared with 12 percent of their counterparts without arthritis. Central city elders tended to use formal care to a greater extent than their counterparts in suburban and nonmetro areas.

The presence of hypertension is related to health service use in a similar way as arthritis. Elders with hypertension used health services more often than their counterparts without hypertension, and usage was greatest among those in central cities.

Since one's health status reflects the need for health care, the relationship between health service use and residence is controlled by health status. A marked increase in use of informal and formal health care (moderate and high) occurs for elders with more negative self-reports of health. Among the elderly who had reported their health to be good, 8 percent of nonmetro, 11 percent of suburban, and 13 percent of city elders used formal care to a great extent. In contrast, 26 percent of nonmetro elders reporting fair or poor health used formal care to a great extent, as did 30 percent in the suburbs, and 34 percent in cities.

High use of both informal and formal care increases substantially between elders with one or fewer ADL limitations and those with 2 or more limitations. Residential differences are evident, with 40 percent of nonmetro elders with 2 or more ADLs using formal care to a great extent, compared with 43 percent of suburban elders, and 48 percent of city elders. Among those with one ADL, 23 percent each in nonmetro and suburban areas and 28 percent in cities were high users of formal care. The same general pattern of health care service use is evident with both IADL and functional limitations. About one-quarter of the elderly with no IADLs used no formal care, compared with 7 to 12 percent of elders with one IADL, and 6 to 9 percent with 2 or more IADLs. Eighteen percent of nonmetro elders with 1-3 functional limitations did not use any formal care, compared with only 10 percent of nonmetro elders with 4 or more limitations.

Conclusions

The majority of elderly persons are, and perceive themselves to be, in good health. This paper has examined residential differences in the health status and use of health care services by the elderly. Suburban elders rated their health better than their counterparts in cities and nonmetro areas, and also reported fewer ADL, IADL, and functional limitations than either nonmetro or central city elders. The health status of nonmetro elders and city elders was comparable on these measures. The nonmetro elderly were more likely to have certain chronic conditions, such as arthritis, than their metro counterparts, and this definitely affected their physical functioning. Difficulty in performing personal care and home management activities (ADLs and IADLs) may

indicate some loss in the quality of life, but it does not necessarily indicate a present or imminent need for health and social services.

Residential differences in self-assessments of health and physical functioning were still evident when other factors--marital status, income, education, and arthritis--were held constant. Socioeconomic status, as measured by education and income, interacts with residence to affect the health of the elderly and their use of health care services. This has a double impact on the nonmetro elderly, as they are, on average, less educated and financially worse off than their metro counterparts. The social support networks of the nonmetro elderly may ameliorate their poorer health conditions to some extent, but not enough to overcome the impact of their lower socioeconomic status. Residential differences in health status diminish somewhat with advancing age.

Health care services were expected to be less available to nonmetro elders, and the present analysis supports this. The nonmetro elderly were less likely to use formal health services--physician visits, hospital stays, and nursing home care. Central city elders used both community and health services to a greater extent than either nonmetro or suburban elders. This suggests that indeed there is a gap between the nonmetro elderly's need for care, based on their poorer health status, and the availability of services to meet this need.

The ability or inability of the elderly to obtain help with difficult personal care activities is an important factor in determining which individuals are able to remain in the community and which must enter nursing homes or other institutions for needed care and assistance. A substantial and growing number of the elderly have or are at risk of developing chronic conditions that impair their ability to function independently. Health and social services need to be designed to provide better and more effective care for this population. An increasing number of private long-term care insurance policies and proposed public long-term care insurance programs rely on ADL measures to determine if an individual qualifies for benefits. Residential differences in functional limitations as well as access to and availability of services need to be considered in planning for long-term care.

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