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# Health Status Among Low-Income Elderly Persons: Rural-Urban Differences

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This research compares the health status of low-income elderly persons in rural and urban areas. Using data from the Social Security Administration's 1973 national survey of low-income aged and disabled, the study demonstrates that the prevalence of many chronic disorders and impairments is significantly greater among the rural aged than for their cohorts in more urban areas. These differences persist after controls for age, sex, and race are introduced. No significant differences between the rural and urban elderly were apparent in the utilization of health services. The determinants of chronic health status of the elderly have already occurred, by and large, and an explanation of disorders and impairments cannot be found by examining current sociodemographic status. Such an explanation is contained in the accumulated effects of years of residence in differing social, economic, and physical environments.

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Previous research has demonstrated a wide prevalence of medical problems among the elderly, including a tendency with increasing age to experience limitation of physical activity and multiple chronic conditions. Rather than reaffirm such findings, the present investigation attempts to identify some general factors that affect the health status of the elderly population. The analysis focuses specifically on the effects of two key variables: Welfare recipient status and size of residential location. Since residential location represents experience over a period of time within a given life-space—including the effects of environmental, economic, cultural, and institutional forces—its effect is expected to be pervasive and widespread. An evaluation of such an effect must, however, account for the demographic correlates of residence that may also be associated with health.

## Background

### Health of the Aged

The health of the elderly is an issue of increasing concern—a concern at least partly attributable to changes in the age structure of the population. In the United States, for example, the elderly population has increased in relative size and in absolute numbers—from 4.1 percent of the total population in 1900 to 10.5 per-

cent in 1975, or from 3.1 million persons to 22.4 million.<sup>1</sup> Changes in age structure have clear implications for the health status of a population because the process of aging is directly associated with the prevalence of chronic conditions and disabilities. Recent research has shown that disability increases steadily with age, regardless of sex or regardless of the measure of disability applied.<sup>2</sup> Moreover, data from the Health Interview Survey of the National Center for Health Statistics demonstrate that the elderly have nearly two and one-half times as many restricted activity days as the general population and more than twice as many days in bed and hospital days.

The need for medical care increases with age. In 1969, elderly persons (aged 65 and older) averaged almost seven visits each to physicians' offices, compared with only four visits for children and about five visits for persons in the prime working ages (25–64). Medical care is especially burdensome for the elderly since they tend to have fewer economic resources than other age groups. A recent Bureau of the Census report<sup>3</sup> demonstrated that the income per person for families with el-

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<sup>1</sup> Jacob S. Siegel, "Demographic Aspects of Aging and the Older Population of the United States," *Current Population Reports* (Series P-23, No. 59), Bureau of the Census, 1976.

<sup>2</sup> James O. Carpenter, Ray F. McArthur, and Ian T. Higgins, "The Aged: Health, Illness, Disability, and Use of Medical Services," in C. L. Erhardt and J. E. Berlin (eds.), *Mortality and Morbidity in the United States*, Harvard University Press, 1974; Matilda W. Riley and Anne Foner, *Aging and Society* (vol. 1), Russell Sage Foundation, 1968.

<sup>3</sup> Jacob S. Siegel, *op cit*.

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derly heads was 18 percent below the corresponding figure for all families.<sup>4</sup> Moreover, out-of-pocket spending for health care per person increases with age. When health insurance premiums are excluded from total expenses, 10 percent of the population aged 65 and older spent at least \$500 for health care during 1970, for the population under age 17 the proportion was only 1 percent.<sup>5</sup> Thus, a complex relationship exists between old age, low income, the prevalence of chronic disorders, and the need for medical care.

### Size of Residential Location and Health

Elderly persons are most numerous in highly urbanized areas, but the proportion of persons aged 65 and older is higher in less urbanized settings. In 1974, the highest proportion of elderly persons (13 percent) was found in totally rural nonmetropolitan counties and the smallest proportion (8 percent) in the suburban fringe counties of standard metropolitan statistical areas.<sup>6</sup> The problems associated with aging are thus of special concern to small towns and rural areas.

Residential locations vary in a number of characteristics thought to be associated with health. Among these factors are the industrial and occupational structure of the labor force, the physical environment, the presence of adequate sanitation facilities, access to preventative and emergency medical services, and population composition (age, sex, race, etc.). Not all these factors are directly relevant to the health of the elderly, but several are. Consequently, there is sufficient reason to expect differences between those with urban and those with rural residence with respect to their health status.

Little systematic research has focused on the comparative health condition of the populations of urban and rural areas. The research that has been performed suggests that rural areas were considered healthier places to live before the twentieth century but that urban areas have since taken the lead.<sup>7</sup> Michael D. Lebowitz suggests that this difference reflects the availability of better medical care in the urban areas, but he also points out that through the 1960's the average life expectancy of urban dwellers was about 2 years less than that of residents of nonurban areas.<sup>8</sup>

Moreover, recent data from the Health Interview Survey show little or no systematic variation in health status between residential categories. Nonmetropolitan

areas, for example, were found to have slightly more activity limitation resulting from chronic conditions, and metropolitan areas were slightly worse off with respect to acute illness. In contrast, these data show a clear pattern of differentially poorer health among various subgroups of the nonmetropolitan population.<sup>9</sup> A case in point is the elderly. The expectation that older persons suffer from poorer health in rural areas thus appears to be based in fact. Testimony before the Select Committee on Aging identified the low-income elderly and residents of nonmetropolitan areas as two subgroups of the population who report being in "poor health" more frequently than other persons.<sup>10</sup>

### Purposes and Objectives

The purpose of this research is to describe the health characteristics of the low-income elderly population in the United States. In addition, attempt is made to identify and describe significant differences in the health status of this population according to welfare reciprocity and residential location.

The major hypothesis of the study was that health status varies with size of residential location and that such variation is generally evident, regardless of welfare assistance status or of the measure of health status applied. As an initial test of this, three control variables were introduced—age, sex, and race—that have been shown to be significantly associated with both residence and health status. The suspicion was that residential differences in health are primarily the result of underlying demographic patterns largely accounted for by these key variables. If indeed size of residential location has an effect on health status, it is believed that it is through the intervening influence of these other associated factors, coincidental to where one lives. Accordingly, health differences between areas are expected to diminish greatly when the control variables are introduced.

### Data and Methods

#### Sample Description and Selection

This study utilizes data from the 1973 Survey of the Low-Income Aged and Disabled.<sup>11</sup> Four samples were

<sup>9</sup> Infants, victims of auto accidents, and blue-collar workers (Brooks, 1972). See, respectively, NCHS, *Vital Statistics of the United States, 1969*, op cit, NCHS, *Motor Vehicle Accident Death Rates in the United States, 1950-67* (Vital and Health Statistics, Series 20-9), 1971, and Charles H. Brooks, *Work Injuries Among Blue-collar Workers* (Vital and Health Statistics, Series 10-68), NCHS, 1972.

<sup>10</sup> Theodore Cooper in "Briefing on Health Status of the Elderly," *Hearings Before the Subcommittee on Health and Long-Term Care of the Select Committee on Aging*, House of Representatives (94th Cong., 2d sess.), February 20, 1976, pages 135-165.

<sup>11</sup> A total of 17,551 household interviews were completed by Census interviewers. For information concerning the survey design, purposes, and detailed sample descriptions, see Thomas Tissue, "The Survey of the Low-Income Aged and Disabled: An Introduction," *Social Security Bulletin*, February 1977.

<sup>4</sup> The relative income position of families with elderly heads has improved somewhat in recent years. Their income per person was 23 percent below that of all families in 1970.

<sup>5</sup> National Center for Health Statistics, *Vital Statistics of the United States, 1969 Vol II, Mortality*.

<sup>6</sup> Bureau of the Census, "Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population 1970 and 1974," *Current Population Reports* (Series P-23, No. 55), 1976.

<sup>7</sup> Milton I. Roemer, "Health Needs and Services of the Rural Poor," *Medical Care Review*, May 1968, pages 371-390.

<sup>8</sup> D. Lebowitz, "Social Environment and Health," *Public Health Reviews* (Nos. 3-4), 1975.

interviewed in the Survey, which was designed as a before-after investigation to collect demographic and socioeconomic information considered necessary to assess the impact of the supplemental security income (SSI) program. Data from two of the samples are used: (1) a sample of noninstitutionalized old-age assistance (OAA) recipients who had reported receiving aid at least some time during the 1973 survey year and perhaps even longer and (2) a sample of aged persons in the general population considered to be potentially eligible for SSI.

The singular requirement for inclusion in the OAA sample was that the respondent had received aid sometime during the survey year. Since all the States included in the sample had a uniform age-entrance requirement of 65, all sample persons were at least this age and many were much older. The OAA sample was weighted to represent a national caseload of 1,665,000 recipients.

It was felt that, in addition to elderly welfare recipients, some individuals and couples with higher incomes but with specific problem characteristics might also be eligible for aid under the provisions of the new SSI program. The sample of potential SSI eligibles selected from the general population was screened from the July 1973 Current Population Survey (CPS) of the Bureau of the Census. Two sample selection criteria—age and income—were applied.

An age minimum of 65 was established for comparability with the OAA sample, and the income ceiling excluded single persons with annual incomes of \$5,000 or more and couples with annual incomes of \$6,500 or more. The intended effect of this procedure was to focus the study on that element of the general population of elderly persons who, at the time of selection, appeared to have the greatest potential for being SSI recipients in 1974 and who would have suitable characteristics for comparison with the converted SSI population.

Based on CPS income data for 1973,<sup>12</sup> the sample represents about 74 percent of the nonmarried population aged 65 and over and about 51 percent of the elderly married population. The data in table 1 show that 54 percent of the potentially eligible aged SSI population, as defined above, had annual family incomes of less than \$4,000 and that about 40 percent were living either at the "near poor" level (1.00–1.25 percent above poverty) or below the poverty level. The sample was weighted to represent a national population of 15,445,000 elderly persons.

### Nonrecipient Population

A further refinement in the study design was necessary in order that the CPS aged sample be more analyt-

<sup>12</sup> Bureau of the Census, "Money Income in 1973 of Families in the United States," *Current Population Reports* (Series P-60, No 97), 1975.

**Table 1.—Income characteristics of OAA sample and potential SSI eligibles in CPS sample**

Characteristic	Sample population	
	OAA	Potential SSI eligibles in CPS
Total number (in thousands)	1,665.2	15,445.0
Percent		
With annual family income		
less than \$4,000	87.0	53.5
Below "near poor" level <sup>1</sup>	79.0	39.7
Family income		
Mean	\$2,037	\$3,663
Median	1,845	3,041

<sup>1</sup> Near poor means 1.25 of the poverty level.

ically comparable with the sample of OAA recipients. Respondents reporting the receipt of any public assistance during the survey year (approximately 12 percent) were therefore excluded. Before their deletion, a comparability analysis was performed to determine the extent to which the subset was similar in characteristics to the OAA sample. Selected sociodemographic characteristics are presented in table 2. The results demonstrate that for the majority of items compared, the two populations are similar and that the deletion of the subset from the larger CPS sample is more than justified.

### Definition of Terms

**Size of residential location.** A four-category coding scheme of urban-rural location was developed to analyze residential differences in health status. The categories, derived from responses completed jointly by interviewers and respondents, are: (1) Farm or open country, (2) small towns—less than 25,000 population, (3) small cities—25,000–100,000 population, and (4) large cities—100,000 or greater population. The large-city category also includes suburban locations.<sup>13</sup>

The reliability of the residence item is attested to by a reinterview intraclass correlation coefficient of .89. A cross classification of the residence codes with the more

<sup>13</sup> The four categories were further reduced to three by combining the farm or open country and small town codes for use in the multivariate analysis described in the last section of the article.

**Table 2.—Percent in OAA sample and CPS sample reporting receipt of welfare during year, by selected characteristics**

Characteristic	Sample population	
	OAA	In CPS and receiving welfare during year
Percent		
Black	26.3	25.7
Widowed	53.1	50.5
Living alone	42.0	44.1
With spouse only	19.1	20.1
With family income		
Less than \$1,000	6.1	5.2
1,000–1,999	46.3	45.2
Women	69.8	62.5
With southern residence	51.9	54.1
Below poverty level	63.3	63.0

traditional urban-rural classification, based on land use, lends additional support to the reliability of the coding scheme. Ninety percent of farm or open-country respondents were classified as rural, and 98 percent of those who resided in places with population greater than 25,000 were classified as urban. Residents of places with less than 25,000 population were intermediate, 36 percent were classified as rural, and 64 percent urban.

**Time in community.** Time in community refers to the number of years of continuous residence in the person's neighborhood or part of town. The longer the period of continuous residence, the more plausible the argument that size of residential location has an influence on health status. The data demonstrate that most sample persons have lived in their current communities for long periods of time. Among OAA recipients about 6 in 10 (62 percent) were community residents for 10 years or longer. Among the CPS group about 7 in 10 (72 percent) reported that they had been in their communities for at least 10 years. That is, their exposure to their present environment has been sufficient to influence the condition of their health.

**Race.** The population is divided into three groups, "white," "black," and "other." Persons of Latin-American descent were recorded by interviewer as white. The term "other" includes American Indians, and Japanese, Chinese, and other persons of Oriental background. Since persons classed as "other" accounted for only 1 percent of the OAA sample and only about 2 percent of the CPS sample of potentially eligible SSI recipients, they are excluded from specific tabulations that use race as a control variable.

**Health status.** In lieu of a standard definition of individual health adequacy, an operational definition of health was applied. Health status is treated as a normative, multidimensional concept and was assessed by response to a number of items answered either by the sample person or by a proxy respondent.<sup>14</sup> The health-status measures included items relating to physical functioning capacity, prevalence of chronic disease and impairments, self-assessment of health, and the occurrence of multiple disorders. In addition, several items measured health "outcomes" and related health behaviors such as number of days ill in bed, days hospitalized, last contact with a physician, and last time spent as an overnight patient in a hospital.

Physical functioning capacity was determined by response to a battery of six items developed by Lawrence Haber and scored to form an index of physical activity limitation. Haber combined items relating to body movement and manual limitations into a scale designed

<sup>14</sup> If the sample person was at home but unable to be interviewed because of poor health, the interview was conducted with a proxy respondent who was intimately familiar with the sample person's situation and circumstances. Proxy respondents represented 7 percent of the OAA sample and 4 percent of the CPS sample.

to assess the level of difficulty in performing various functions such as walking, using stairs or inclines, standing, sitting, and stooping.<sup>15</sup> Based on reinterview analysis, an intraclass correlation coefficient of reliability for the combined index was .67.

Prevalence of chronic disease was determined by response to a checklist of 38 chronic conditions, 34 of which are repeated from the Health Interview Survey's standard list of such conditions and are considered by the National Center for Health Statistics to be chronic regardless of the date of onset.<sup>16</sup> For purposes of further refinement, each specific health condition was also classified into one of 11 major categories in the International Classification of Diseases, Adapted (ICDA).<sup>17</sup> It is important to stress the ICDA cautionary note that the purpose of such a statistical classification is "to provide a list of disabilities for compiling statistics and not to serve as a nomenclature of diseases." Hence, etiology and symptomatology are not distinguished in applying this classification. In addition, the health information reported in any household survey is subject to the usual constraints and problems of reliability.<sup>18</sup> In most instances, respondents pass on to interviewers information given by physicians. For those not physician-diagnosed, however, health conditions reported may be nothing more than a description of symptoms.<sup>19</sup>

## Method of Analysis

Three levels of analysis have been established. First, sociodemographic and health characteristics of the recipient and nonrecipient populations were compared. Second, parallel comparisons by residence were made within each of the populations. Third, control variables

<sup>15</sup> Scale categories include four major groupings: (1) No limitations in any of the specified activities, (2) manual or body-movement limitations other than in walking or inability to use one or both hands (minor loss), (3) limitations in walking or severe manual limitations (moderate loss), (4) limitations in both walking and manual activities (severe loss). See Lawrence Haber, *The Epidemiology of Disability II: The Measurement of Functional Capacity Limitations* (Social Security Survey of the Disabled, Report No. 10), Office of Research and Statistics, Social Security Administration, 1970.

<sup>16</sup> NCHS, *Health Interview Survey—1957-1974* (Series 1-11), appendix 111, 1976.

<sup>17</sup> Department of Health, Education, and Welfare, *Eighth Revision, International Classification of Diseases, Adapted for Use in the United States*, 1968.

<sup>18</sup> In a study that compared chronic conditions reported in interviews with information derived from medical records, accuracy and completeness of reporting increased with age. Among those aged 65 and over, the reporting was higher for women than for men. The investigation also found that level of reporting of chronic conditions was markedly higher among persons who considered their general state of health as fair or poor than for those who stated their health was excellent. See William G. Madow, *Net Differences in Interview Data on Chronic Conditions and Information Derived from Medical Records* (Vital and Health Statistics, Series 2-57), NCHS, 1967, pages 21-24.

<sup>19</sup> NCHS, *Health Interview Survey*, op cit, page 7.

**Table I.—Approximate standard errors of estimated percentages of OAA recipients and nonrecipients**

[68 chances out of 100]

Size of base (in thousands)	Estimated percentage							
	1 or 99	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
<b>OAA recipients</b>								
10	1.7	2.3	3.7	5.1	6.9	7.9	8.5	8.7
25	1.1	1.5	2.4	3.3	4.4	5.1	5.5	5.6
50	7	11	17	24	32	37	40	4.1
75	6	9	14	19	26	31	33	3.4
100	5	8	12	17	23	27	29	3.0
250	3	5	8	11	15	18	19	2.0
500	2	4	6	8	11	13	15	1.5
750	2	3	5	7	10	11	12	1.3
1 000	2	3	4	6	9	10	11	1.2
2 500	1	2	3	4	6	7	8	.8
<b>Nonrecipients</b>								
10	6.5	9.1	14.2	19.6	26.1	29.9	32.0	32.6
25	4.1	5.8	9.0	12.4	16.5	19.0	20.3	20.7
50	2.9	4.1	6.4	8.8	11.7	13.5	14.4	14.7
75	2.4	3.3	5.2	7.2	9.6	11.0	11.8	12.1
100	2.1	2.9	4.5	6.2	8.4	9.6	10.3	10.5
250	1.3	1.8	2.9	4.0	5.3	6.1	6.6	6.7
500	9	13	21	28	38	44	47	4.8
750	8	11	17	23	31	36	39	4.0
1,000	7	9	15	20	27	32	34	3.5
2 500	4	6	9	13	18	21	22	2.3
5 000	3	4	7	10	13	15	16	1.7
7,500	3	4	6	8	11	13	14	1.4
10,000	2	3	5	7	10	11	12	1.3
25,000	1	2	3	5	7	7	8	.9

(sex-age and race-age) were introduced to test the health-residence hypothesis

Generalized standard error tables were produced for estimated percentages in this report (tables I and II) <sup>20</sup> Standard errors were derived from survey data by computing estimated rel-variances (that is, the coefficient of variation squared) for a representative set of characteristics <sup>21</sup> Separate generalized curves were derived for the OAA and the CPS samples, as well as for selected subsets of each. Determinations of the statistical significance of the difference between two independent percentages were made by standard procedures <sup>22</sup>

## Findings

### Comparisons of the Recipient and Nonrecipient populations

The elderly populations studied are characterized by low-to-moderate levels of socioeconomic status (in-

<sup>20</sup> A detailed discussion of sampling procedures and particular statistical techniques applied in the Survey of the Low-Income Aged and Disabled can be found in Erma Barron, *Survey of Low-Income Aged and Disabled Survey Design, Estimation Procedures and Sampling Variability*, Office of Research and Statistics, Social Security Administration (forthcoming)

<sup>21</sup> For a discussion of the relative precision of sample estimates, including the application of rel-variances, see Morris H. Hansen, William N. Hurwitz, and William G. Madow, *Sample Survey Methods and Theory* (Vol. 1), John Wiley and Sons, Inc., 1953

<sup>22</sup> For the percentage in question, estimates were found from the tables then squared, summed, and their square roots determined. If the absolute difference between the two percentages compared exceeded twice the standard error of the difference, the two percentages were considered to be significantly different at the 5-percent level

**Table II.—Approximate standard errors of estimated percentages of OAA recipients**

[68 chances out of 100]

Size of base (in thousands)	Estimated percentage							
	1 or 99	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
<b>Open country towns, and small cities</b>								
10	1.9	2.6	4.1	5.8	7.8	9.0	9.7	9.9
25	1.2	1.7	2.7	3.7	5.1	5.9	6.3	6.5
50	8	12	19	27	37	43	47	4.8
75	7	10	16	23	31	36	39	4.0
100	6	9	14	20	27	32	35	3.6
250	4	6	13	13	19	22	24	2.5
500	3	4	7	10	14	17	18	1.9
750	2	3	6	8	12	14	16	1.7
<b>Large cities</b>								
10	2.1	3.0	4.6	6.3	8.4	9.6	10.2	10.4
25	1.3	1.9	2.9	4.0	5.2	6.0	6.3	6.5
50	9	13	20	28	36	41	44	4.5
75	8	11	16	22	29	33	35	3.6
100	7	9	14	19	25	28	30	3.0
250	4	6	9	12	15	17	18	1.8
500	3	4	6	8	10	11	12	1.1

come, educational level, lifetime occupation, and industry) and by residence in predominantly rural areas and in the South. In addition, a sizable proportion also originated in the South. Women account for more than 60 percent of the elderly needy population, and well over 50 percent have lived in their present communities for 10 or more years (table 3)

These overall characteristics of the survey population mask important differences between OAA recipients and that segment of the elderly needy population not receiving assistance. The data in table 3 demonstrate that the social and economic position of the population receiving aid is substantially worse than that of persons not receiving aid. It is important to keep these preestablished distinctions in mind—that is, that the aged welfare population is a definitely different subset of the larger universe of needy elderly Americans <sup>23</sup>

**Sociodemographic characteristics.** In contrast to nonrecipients, those receiving aid were more likely to be women (70 percent, compared with 60 percent), black (26 percent, compared with 8 percent), and to have substantially less formal education (8 percent at least high school graduates, compared with 53 percent). They were also much more likely to be residents of the South (52 percent, compared with 33 percent), and even more likely to have originated there (60 percent, compared with 33 percent). The elderly needy, as discussed

<sup>23</sup> The OAA sample represents the aged welfare population as defined within each of the various 50 States, the same individual might be able to qualify for aid in one State but not in another. The only two selection characteristics shared by OAA sample persons were (1) being at least aged 65 and (2) meeting the particular program requirements of the State where they lived. The nonrecipients were selected from the larger CPS sampling units and are therefore conceptually associated with the underlying assumptions of population concentration and representation as defined by the Bureau of the Census

**Table 3.—Selected sociodemographic characteristics Number and percent of OAA recipients and nonrecipients, by area of residence, 1973**

Characteristic	Total	OAA recipients				Total	Nonrecipients			
		Farm or open country	Small towns	City			Farm or open country	Small towns	City	
				Small	Large				Small	Large
Total number (in thousands)	1,665 2	378 2	554 6	253 3	475 6	13,628 9	2,561 6	4 478 2	2 422 8	4,136 0
Percent										
Black	26 3	29 5	19 0	24 8	33 1	8 1	6 6	5 6	6 1	13 1
Women	69 8	61 6	70 6	75 0	72 5	59 5	51 6	60 5	63 3	61 2
Aged 75 or older	48 1	47 1	51 0	49 8	44 6	40 7	32 9	40 8	41 6	44 7
With 12 years or more education	8 4	2 5	6 8	12 2	12 7	53 2	49 0	55 4	56 3	51 4
Marital status										
Married	27 2	43 4	28 6	17 4	17 8	51 0	61 4	52 2	47 4	45 0
Widowed/separated/divorced	65 1	48 1	65 9	72 6	73 6	42 7	33 5	42 6	46 5	46 7
Below poverty level	63 3	70 6	72 4	51 0	53 2	21 5	23 9	23 7	17 9	19 9
Living alone	42 0	26 9	45 3	46 8	47 8	30 3	21 8	30 2	32 7	34 4
Lifetime occupation										
White collar	10 4	3 8	9 0	13 4	15 9	31 0	19 1	30 7	36 9	36 5
Blue collar (excluding farm)	46 4	28 5	44 1	55 7	58 3	38 3	31 1	38 3	38 3	42 1
Farm										
Operators	6 6	15 4	6 6	2 9	1 8	5 3	16 1	5 0	1 9	1 0
Laborers	16 0	28 4	19 5	8 1	6 0	4 1	11 0	4 3	2 4	1 0
Never worked	16 0	20 2	15 9	15 1	13 3	9 0	12 8	10 3	6 8	6 5
Lifetime industry										
Extractive	24 3	46 1	28 0	12 9	8 4	11 4	29 7	12 6	5 6	2 3
Manufacturing	12 5	7 7	11 2	16 8	15 5	23 8	20 2	22 5	27 5	25 4
Region of residence										
Northeast	13 5	5 1	9 4	19 2	21 9	25 3	17 3	25 7	27 9	28 4
North Central	13 4	7 9	17 1	13 0	13 6	28 1	27 7	32 5	23 5	26 2
South	51 9	80 0	57 5	35 7	31 8	32 8	49 4	30 8	28 5	27 3
West	21 2	7 0	15 9	32 1	32 7	13 8	5 6	11 0	20 1	18 0
Region of origin										
South	59 6	82 2	63 3	46 2	44 5	32 6	49 9	29 5	23 0	29 2
Foreign	12 9	1 9	5 9	20 0	29 3	14 3	5 0	10 0	19 6	23 0
Years in community										
Less than 1	6 6	4 7	6 8	6 9	7 8	3 8	3 1	4 3	5 2	2 9
10 or more	62 3	79 0	64 0	53 9	51 5	72 0	75 8	70 6	67 3	73 7
Housing quality										
With hot and cold water	81 9	55 0	81 3	93 2	98 0	95 6	86 3	95 1	98 4	99 4
No flush toilet	13 3	40 1	10 6	2 9	1 0	3 7	13 7	3 0	1 0	—
No access to telephone	25 6	39 9	25 2	20 1	17 7	6 6	10 7	6 8	5 3	4 8
Median										
Age	74 2	74 0	74 8	74 5	73 6	72 9	71 5	72 9	73 1	73 6
Family income	\$1,845	\$1 677	\$1 730	\$2,050	\$1 987	\$3 371	\$3 143	\$3 419	\$3 705	\$3 330

earlier, are a residentially stable population. Assistance recipients were somewhat more likely to be mobile than their nonrecipient counterparts (62 percent were community residents for 10 years or longer, 72 percent in the other population).

A major distinguishing feature of OAA reciprocity is the distribution of persons by marital status. Recipients were more likely to be widowed, separated, or divorced (65 percent, compared with 43 percent for the nonrecipients) and much less likely to be married (27 percent, compared with 51 percent). Similarly, they were more likely to live alone (42 percent, but only 30 percent of the nonrecipients).

Measures of the quality of their housing lend further support to a generally inferior life style. Proportionately fewer lived in units with both hot and cold water (82 percent, in comparison with 98 percent of the nonrecipients). Proportionately more of the former had no flush toilets (13 percent, compared with 4 percent). Perhaps of greater importance was the lack of access to a telephone, which, considered in the context of their many problems, looms as a major handicap (26 percent for recipients, 7 percent for nonrecipients).

With respect to annual family income, an indicator of

economic deprivation, OAA recipients were substantially worse off. More than three-fifths were below the officially established poverty level, compared with one-fifth of the nonrecipients, and their median annual family income (\$1,845) was only 54 percent of that for the nonrecipients (\$3,371). These differences appear to be associated, at least in part, with differences in lifetime occupation and industry between the two populations—OAA recipients had occupied lower-level jobs. Only one-tenth held white-collar positions, for example, compared with almost one-third of the nonrecipient group. Proportionately more of the recipients worked as farmers or as farm laborers (23 percent, compared with 9 percent). Another significant dimension was their greater lack of any lifetime work experience whatsoever (16 percent of the recipients and 9 percent of the nonrecipients).

In summary, low-income elderly persons comprise both samples but the socioeconomic position of the recipients was consistently lower than that of their nonrecipient counterparts—not an unexpected finding in light of the existing evidence and for reasons of OAA qualification. The salient differences between these populations serve to further emphasize their distinctly separate

**Table 4.**—Selected health characteristics Number and percent of OAA recipients and nonrecipients, by area of residence, 1973

Characteristic	Total	OAA recipients				Total	Nonrecipients			
		Farm or open country	Small towns	City			Farm or open country	Small towns	City	
				Small	Large				Small	Large
Total number (in thousands)	1,665.2	378.7	554.6	225.3	475.6	13,628.9	2,561.6	4,478.2	2,422.8	4,136.0
Percent with—										
Self rating of health as poor	49.8	59.9	51.3	43.4	43.1	22.0	29.0	20.4	19.0	21.2
5 or more health disorders	46.3	50.7	49.9	43.0	40.2	25.0	30.1	24.9	34.3	22.3
Severe physical activity limitation	46.4	50.0	48.1	46.0	41.5	23.9	29.7	22.7	25.3	21.0
Mean number of health disorders	4.98	5.27	5.20	4.81	4.59	3.55	3.94	3.55	3.58	3.27

life styles and to support the decisions to separate them in the present analysis

**Health indicators.** Recipients were much more likely to evaluate their health as "poor" (50 percent, compared with 22 percent of the nonrecipients), to average more health disorders (4.98, compared with 3.55), and to manifest substantially more severe physical activity limitations (46 percent and 25 percent), as shown in table 4. Particularly notable were differences between the two groups in the prevalence of circulatory, mental, and musculoskeletal disorders (table 5). Moreover, a substantially higher proportion of recipients reported visual and auditory impairments, stiffness or deformity of the limbs, and chronic back trouble. Not only was the OAA population worse off than its nonrecipient counterpart in sociodemographic status but in health status as well.<sup>24</sup>

## Rural-Urban Comparisons

**Sociodemographic characteristics.** Rural-urban differences for OAA recipients are demonstrated in table 3. Most of the characteristics vary directly and regularly with residence, as one moves from the most rural to the most urban category. These factors reflect the environments in which people live and work and thus may be a determinant of health status of the population.

In general, these items portray a rural population that is differentially less well off than its counterpart in more urbanized areas. Socioeconomic status (as indexed by family income, educational attainment, and lifetime occupation) is consistently lower in the rural residence categories. The proportion of OAA recipients with com-

pletion of high school education rose from only 3 percent on farms or in the open country to about 13 percent in the largest cities. Similarly, the percentages for family income and lifetime occupational status increase regularly in going from the rural to the urban residence categories. Rural residents also have housing of poor quality (as indexed by the presence of hot and cold running water and/or flush toilets), and a smaller proportion of rural residents has access to a telephone. Age, sex, and race, on the other hand, bear no consistent linear association with residence. In fact, the proportion that is black is curvilinearly distributed over the categories of urban and rural residence.

For OAA recipients, residential location has a consistent and systematic effect on marital status and living arrangements and on region and origin of residence. Significantly lower proportions of rural persons are widowed, separated, or divorced, and consequently a lower proportion lives alone. Furthermore, a substantial proportion of persons in all residence groups lives in the South but the percentage is much higher in the most rural categories. In addition, a majority of persons in all residence categories originated in the South, but the proportion rose to more than 60 percent in small towns and to about 80 percent on farms or in the open country. Finally, about 80 percent of the rural residents have lived in their present community at least 10 years, the same is true of only 52 percent of large-city persons.

For nonrecipients, the clear urban-rural gradients in sociodemographic characteristics demonstrated among the OAA population are somewhat less obvious. In table 3, some important urban-rural patterns do emerge with respect to five types of factors: Marital status and living arrangements, lifetime occupation, housing quality, region of current residence, and region of origin. Compared with their urban counterparts, rural persons among nonrecipients tend to be less likely to live alone, more likely to occupy poorer quality housing, to have worked at lower-status and/or farm-related jobs, and more likely to live in the South and have Southern origin. These differences are generally "environmental" in nature—that is, they relate to the living and working space of the population. Consequently, they may be expected to have an effect on health.

<sup>24</sup> See David B. Eppley, "OAA Recipients in 1965: Health Conditions and Health Services," *Welfare in Review*, July 1969. Eppley's sociodemographic and health findings are similar to those in the present study. The median ages shown in both studies are roughly the same, both studies reveal the tendency of OAA recipients to live in the South and nonmetropolitan areas, and the prevalence of arthritis and high blood pressure is at the same rank. See also Mary Bauer, *Health Characteristics of Low-Income Persons* (Vital and Health Statistics, Series 10-74), NCHS, 1972. Bauer concluded that low-income persons continued to have multiple health disadvantages and that welfare recipients had poorer health than nonrecipients.

**Table 5.—Chronic conditions and impairments** Number and percent of OAA recipients and nonrecipients, by area of residence, 1973

Chronic condition	Total	OAA recipients				Total	Nonrecipients			
		Farm or open country	Small towns	City			Farm or open country	Small towns	City	
				Small	Large				Small	Large
Total number (in thousands)	1,665.2	378.7	554.6	253.3	475.6	13,628.9	2,561.6	4,478.2	2,422.8	4,136.0
Percent										
Neoplasm	6.4	6.1	6.7	7.3	5.9	4.6	4.4	4.7	6.0	3.8
Endocrine	16.0	14.5	15.8	15.7	17.4	10.9	10.0	11.0	11.6	10.9
Mental	26.1	30.6	28.5	24.4	20.3	10.2	11.7	10.5	10.2	8.9
Nervous	2.9	2.2	3.0	4.0	2.8	1.7	1.4	1.6	1.8	2.0
Circulatory	71.9	77.2	72.7	69.9	67.8	57.3	59.3	59.1	57.5	54.1
Respiratory	25.0	25.6	26.5	24.7	22.9	18.3	22.6	17.3	18.0	17.1
Digestive	30.2	32.5	31.4	25.4	29.4	19.7	25.5	19.2	18.7	17.4
Genitourinary	16.3	24.0	17.2	14.9	9.9	6.7	11.1	6.8	5.0	4.9
Skin	6.2	4.6	6.2	6.8	7.0	5.4	4.8	6.1	5.8	4.9
Musculoskeletal	63.2	68.5	64.4	60.3	59.0	47.4	56.5	46.4	46.8	43.1
Stiffness or deformity of foot, leg, arm, or hand	24.0	30.6	23.1	24.2	19.6	13.3	16.2	12.0	12.8	13.4
Chronic back trouble	24.8	28.0	26.4	22.4	21.6	15.2	18.6	15.4	13.2	13.9
Spinal deformity	9.4	9.9	9.1	9.9	9.0	6.7	8.7	6.5	5.4	6.6
Ill defined	4.5	3.3	4.3	4.8	5.7	2.3	1.7	1.9	2.7	2.8
Other										
Hearing	24.0	26.3	27.2	23.3	18.8	16.5	16.5	17.8	16.8	14.6
Visual	30.5	31.2	32.7	31.1	26.6	15.2	13.2	15.5	15.4	15.7

In contrast, the clear urban-rural differences in other aspects of socioeconomic status (income and education) and duration of residence that were demonstrated in the recipient population are not duplicated among nonrecipients. Moreover, the differences that do exist are of smaller magnitude than among persons receiving aid.

**Health indicators** In light of the preceding profile demonstrating the relative deprivation of the OAA population in rural areas, it is not surprising that such persons manifest higher rates of chronic conditions and disabilities than do urban recipients, as tables 4 and 5 indicate.

For several of the health items analyzed, major differences occur between the two extreme ends of the rural-urban continuum, and for many of the items a regular increase in disease and disability is seen as one moves from urban to rural areas. Table 4 presents data on "self evaluation" of health, and these indicators appear to be congruent with the other indicators of health status shown in table 5. Rural recipients more often reported their health as poor, averaged more specific chronic disorders, and had more severe activity limitations.

The highest prevalence rate among the major ICDA classes was for circulatory disorders, ranging from a high of 77 percent for the most rural population to a low of 68 percent for the most urban. Other major rural-urban differences occurred for musculoskeletal, genitourinary, and mental disorders—all manifesting significantly higher prevalence rates in rural areas and regular patterns of decline among the rural and urban residential categories.<sup>25</sup>

In addition, rural residents had higher prevalence rates for hearing impairments, "stiffness or deformity of

the foot, leg, arm, or hand," and chronic back trouble—all possibly related to their occupational work history—that is, to blue-collar and farm-related occupations. Although the prevalence of visual impairments was high in rural areas, it differed only from the rate occurring in the largest cities.

The data in tables 4 and 5 for nonrecipients support the generalization that rural residents, particularly those who live in farm and open-country areas, have a generally poorer health profile than that of persons who live in communities of larger size. Although residential differences are evident, many are not as clear cut nor are they as robust as those reported among the recipients. Moreover, few regular patterns of increasing prevalence are evident across the four residence categories—from most urban to most rural—an indication of a linear trend. For the three types of health indicators examined, open-country residents have the poorest health profile. They are most likely to evaluate their health as poor, to average more health disorders, and to have proportionally more severe physical activity limitations.

Among the nonrecipients, the prevalence rates for specific major chronic disorders exhibit a pattern similar to that reported among the recipients, although the magnitude of rural-urban differences is less extreme. Three of the most common classes of disorders—musculoskeletal, digestive, and genitourinary conditions—have the highest prevalence rates in rural areas. On the other hand, rural areas do not show a higher prevalence of circulatory or mental disorders, as they did among the recipients. Furthermore, no residential differences were observed for either hearing or visual impairments or for impairments of the back or the extremities. Thus, the health of the nonrecipients does vary according to residence, but this variation is not nearly as marked as that among their assistance counterparts.

<sup>25</sup> "Chronic nervous trouble" accounts largely for the relatively high rate of mental disorders.

**Effects of controls for age, sex, and race** In general, the data in tables 6-9 show that the rural-urban differences in health status among the assistance population do not diminish when age, sex, and race are introduced as control variables. Regardless of age, sex, and race, proportionally more rural recipients rated their health as "poor" and they averaged a greater number of

health problems. The relationship between activity limitation and rural-urban residence is somewhat less clear. In particular, the pattern of residential differences becomes inconsistent for women and blacks who are younger than age 75. Nevertheless, the general association between residence and health status persists, regardless of adjustments for the controls. Similarly, the

**Table 6.—Selected health characteristics, by sex and age. Number and percent of OAA recipients and nonrecipients, by area of residence, 1973**

Characteristics	Men						Women					
	Aged 65-74			Aged 75 and over			Aged 65-74			Aged 75 and over		
	Country small towns	City		Country small towns	City		Country small towns	City		Country small towns	City	
		Small	Large		Small	Large		Small	Large		Small	Large
OAA recipients												
Total number (in thousands)	175.2	39.7	81.7	133.5	23.4	48.7	296.7	87.5	181.9	327.9	102.7	163.4
Percent with—												
Self rating of health as poor	59.2	39.6	42.3	54.6	47.5	45.6	53.0	39.3	39.8	54.3	47.9	46.8
5 or more health disorders	44.3	38.1	35.0	50.4	35.0	29.7	51.1	39.6	41.6	52.7	49.6	44.5
Severe physical activity limitation	38.2	37.1	28.5	46.1	41.5	35.1	45.6	45.4	43.3	58.6	50.9	47.9
Mean number of health disorders	4.95	4.60	4.23	5.14	3.97	4.09	5.32	4.70	4.53	5.31	5.16	4.94
Nonrecipients												
Total number (in thousands)	1,911.0	521.1	919.3	1,099.1	366.9	683.2	2,457.0	893.7	1,364.7	1,572.7	641.0	1,164.8
Percent with—												
Self rating of health as poor	25.4	11.2	21.2	28.2	23.4	24.7	20.2	18.8	19.8	23.6	23.5	21.0
5 or more health disorders	26.3	19.3	20.7	31.2	20.1	24.3	24.1	26.5	22.2	28.5	27.3	22.8
Severe physical activity limitation	20.9	8.2	17.5	26.6	30.4	19.5	24.4	24.7	15.1	31.4	37.3	31.5
Mean number of health disorders	3.63	3.28	3.09	3.76	3.11	3.26	3.60	3.78	3.34	3.84	3.77	3.34

**Table 7.—Selected health characteristics, by race and age. Number and percent of OAA recipients and nonrecipients, by area of residence, 1973**

Characteristic	White						Black					
	Aged 65-74			Aged 75 and over			Aged 65-74			Aged 75 and over		
	Country small towns	City		Country small towns	City		Country small towns	City		Country small towns	City	
		Small	Large		Small	Large		Small	Large		Small	Large
OAA recipients												
Total number (in thousands)	352.3	91.5	159.8	358.1	96.7	144.4	116.6	34.4	95.3	100.9	28.5	62.1
Percent with—												
Self rating of health as poor	54.4	34.0	38.8	51.7	43.4	42.7	57.7	53.4	43.1	64.2	63.9	55.2
5 or more health disorders	51.7	39.3	41.1	54.6	47.9	46.2	39.0	40.1	37.8	44.0	43.9	31.3
Severe physical activity limitation	43.2	42.0	36.5	54.3	50.1	45.9	41.4	44.9	43.0	56.7	46.8	44.2
Mean number of health disorders	5.40	4.63	4.61	5.45	5.08	5.15	4.50	4.79	4.22	4.64	4.49	3.96
Nonrecipients												
Total number (in thousands)	4,048.3	1,301.2	1,887.2	2,550.1	959.7	1,649.5	313.1	108.1	355.4	104.1	39.8	187.7
Percent with—												
Self rating of health as poor	20.4	13.1	18.6	24.8	22.4	22.4	50.3	49.5	29.1	47.4	41.0	23.6
5 or more health disorders	24.7	22.5	22.4	30.2	24.1	24.4	29.5	41.8	19.7	25.1	32.7	15.3
Severe physical activity limitation	22.4	16.8	13.3	28.8	34.3	26.2	26.5	41.8	30.8	40.4	42.5	36.3
Mean number of health disorders	3.58	3.57	3.26	3.82	3.52	3.37	4.04	4.08	3.19	3.51	3.94	2.93

**Table 8—Chronic conditions, by sex and age** Number and percent of OAA recipients and nonrecipients, by area of residence, 1973

Chronic condition	Men						Women					
	Aged 65-74			Aged 75 and over			Aged 65-74			Aged 75 and over		
	Country small towns	City		Country small towns	City		Country small towns	City		Country small towns	City	
		Small	Large		Small	Large		Small	Large		Small	Large
OAA recipients												
Total number (in thousands)	175.2	39.7	81.7	133.5	23.4	48.7	296.7	87.5	181.8	327.9	102.7	163.4
Percent												
Neoplasm	6.3	3.8	4.7	5.5	4.0	9.2	7.8	7.9	6.2	5.8	8.9	5.2
Endocrine	8.8	11.8	11.9	8.8	11.4	4.4	24.0	20.4	19.8	14.0	14.2	21.4
Mental	28.4	23.0	18.6	25.1	17.7	9.3	34.0	27.5	25.2	27.9	23.7	18.9
Nervous	3.0	1.8	4.1	2.9	1.4	1.3	2.8	6.4	2.5	2.3	3.3	2.8
Circulatory	66.4	66.6	55.1	74.6	55.0	53.7	76.8	70.9	70.4	76.7	73.7	75.4
Digestive	35.4	30.9	33.4	32.6	27.2	31.6	32.4	19.6	27.1	29.2	27.8	29.3
Genitourinary	20.5	19.6	9.8	22.7	9.8	7.9	18.9	17.4	11.1	19.6	12.1	9.2
Respiratory	30.2	37.6	29.4	27.7	20.6	24.8	25.9	27.7	23.7	23.5	18.1	18.1
Musculoskeletal	56.9	48.0	43.7	64.5	44.3	43.3	68.4	62.7	65.1	69.4	66.1	64.9
Nonrecipients												
Total number (in thousands)	1 911.0	521.1	919.3	1 099.0	366.9	683.2	2 457.0	893.7	1 364.7	1 572.8	641.0	1 164.8
Percent												
Neoplasm	4.9	3.4	1.0	4.7	6.3	8.2	4.1	7.0	2.9	4.9	6.7	4.5
Endocrine	9.6	3.2	11.4	6.9	6.8	5.0	14.9	17.7	13.9	7.9	12.7	10.7
Mental	8.2	8.9	7.7	8.4	1.9	8.0	15.1	11.3	9.7	9.5	14.3	9.5
Nervous	1.7	1.5	1.9	1.6	( <sup>1</sup> )	2.2	1.3	2.8	1.9	1.7	1.6	2.0
Circulatory	52.8	44.7	49.5	56.0	43.9	55.8	60.8	63.9	54.3	66.6	66.9	56.8
Digestive	23.6	22.6	20.9	23.7	22.4	19.7	20.1	17.3	17.4	19.2	15.3	13.0
Genitourinary	8.3	3.7	3.9	9.0	4.6	3.6	8.4	5.9	5.4	8.2	5.2	5.8
Respiratory	28.2	17.1	22.7	23.5	23.9	27.4	13.9	21.2	13.0	13.8	10.8	11.3
Musculoskeletal	41.0	45.9	39.0	45.5	34.9	27.0	53.2	46.5	48.4	59.6	54.8	49.2

<sup>1</sup>Less than 1 percent

**Table 9—Chronic conditions, by race and age** Number and percent of OAA recipients and nonrecipients, by area of residence, 1973

Chronic condition	White						Black					
	Aged 65-74			Aged 75 and over			Aged 65-74			Aged 75 and over		
	Country small towns	City		Country small towns	City		Country small towns	City		Country small towns	City	
		Small	Large		Small	Large		Small	Large		Small	Large
OAA recipients												
Total number (in thousands)	352.3	91.5	159.8	358.1	96.7	144.4	116.1	34.4	95.3	100.9	28.5	62.1
Percent												
Neoplasm	7.9	9.0	7.7	6.7	8.0	7.0	5.5	( <sup>1</sup> )	2.8	2.4	8.3	4.6
Endocrine	19.3	17.6	14.5	12.2	14.9	18.4	15.9	17.6	22.4	11.9	8.9	15.4
Mental	33.2	26.9	26.2	28.7	22.8	18.0	28.0	24.3	19.0	21.3	22.8	14.7
Nervous	3.6	4.4	2.6	2.5	3.7	2.4	1.0	6.7	4.0	2.5	1.0	2.8
Circulatory	73.7	68.2	63.2	75.6	69.4	70.9	70.0	74.5	71.1	78.6	74.3	72.3
Digestive	36.7	24.0	35.1	32.9	31.0	33.6	23.7	20.8	18.6	21.3	17.3	22.4
Genitourinary	19.1	15.2	11.7	19.4	10.4	9.2	19.7	26.3	8.9	24.3	16.4	8.6
Respiratory	30.6	30.6	28.9	26.5	20.0	24.2	18.2	31.6	20.7	18.3	14.6	9.1
Musculoskeletal	62.3	55.1	54.7	67.0	61.3	60.0	70.0	67.7	65.0	71.6	64.4	60.7
Nonrecipients												
Total number (in thousands)	4 048.3	1 301.2	1 887.2	2 550.1	959.7	1 649.5	313.1	108.0	355.4	104.1	39.8	187.7
Percent												
Neoplasm	4.7	5.5	2.3	5.1	6.9	5.7	1.9	7.8	1.2	( <sup>1</sup> )	( <sup>1</sup> )	7.8
Endocrine	12.9	12.6	11.7	7.5	10.1	8.9	8.8	10.2	20.8	8.8	23.9	6.2
Mental	11.4	8.8	9.2	9.5	9.8	8.4	21.0	30.4	8.1	( <sup>1</sup> )	12.5	14.4
Nervous	1.6	2.5	1.9	1.7	1.1	2.0	( <sup>1</sup> )	( <sup>1</sup> )	1.9	( <sup>1</sup> )	( <sup>1</sup> )	2.8
Circulatory	57.2	55.9	51.9	62.8	57.9	56.2	59.7	65.6	58.1	56.7	64.9	62.0
Digestive	22.0	19.0	19.3	21.3	18.0	15.9	19.5	24.1	18.5	18.7	19.7	8.6
Genitourinary	7.7	4.3	4.1	8.1	5.2	5.3	17.2	14.8	9.1	19.3	( <sup>1</sup> )	2.8
Respiratory	20.6	20.0	17.2	17.7	15.8	17.2	14.9	16.8	17.4	21.1	12.5	19.0
Musculoskeletal	46.4	44.8	43.1	53.7	46.9	41.6	67.1	67.1	54.3	62.8	52.4	35.6

<sup>1</sup>Less than 1 percent

rural-urban gradient appears to hold for the specific disorders that were shown to vary with residence in the earlier analysis. The patterns for mental and musculoskeletal disorders are especially clear, but those for circulatory and genitourinary disorders are somewhat less consistent.

In contrast, among the nonrecipients, many of the rural effects are diminished. Some, however, continue to persist. The rural relationship for health evaluation is apparent mainly for blacks, and the higher number of disorders reported in rural areas holds only for men. In addition, the proportionally higher rural rates of severe activity limitations are conditional for older men, younger women, and younger whites.

Rural effects among the nonrecipients also persist for selected major disease categories. Genitourinary disorders continue to be higher among blacks in rural areas, and higher rural rates for mental conditions persist among younger women and for blacks. Perhaps the clearest urban-rural difference among the nonrecipients is for musculoskeletal disorders. Except for younger men and younger whites, rural persons have higher prevalence rates for such conditions. The difference among older blacks is quite striking: 63 percent for those in rural areas, 36 percent for those in large cities. The general diminution of these rural-urban gradients among the nonrecipient population is not surprising, given the lesser magnitude of differences and the lesser degree of regularity in residence-health patterns before the introduction of control factors.

**Health outcomes.** The basic finding that the rural elderly have a higher prevalence of chronic health conditions leads one to expect that they will use more health services as well, but the data in table 10 do not support this expectation. Utilization of health services (as indexed by days hospitalized, last period of hospitalization, the last physician visit) does not appear to vary with residence. Nor does the number of days ill in bed.

How does one account for this inconsistency? Does it mean that the low-income elderly in rural areas are a medically underserved population—that is, they use fewer medical services than they need in relation to their differentially poorer health? The present analysis does not address this question directly, yet some speculative explanations are possible.

Two methodological considerations are relevant. First, these findings suggest that measures of chronic disorders and impairments are not good predictors of "days ill in bed." Such a health outcome is more likely to be associated with incidence of acute illness. Second, health utilization measures applied in the survey may not include certain "medical services" used by the study population. Older rural residents, especially those of Southern origin or Southern residence and those with little formal education, may depend, for example, on

folk medicine or other nonconventional services and practitioners. They may also depend more heavily on nonprescription proprietary medicines to alleviate their problems.<sup>26</sup> Moreover, they may have a cultural predilection against obtaining medical care at all.

Methodological considerations aside, an number of tentative explanations for the inconsistency between illness and utilization of health services are possible. Recent studies have demonstrated that rural persons have less access (both physical and financial) to medical services and that utilization decreases directly with inaccessibility.<sup>27</sup>

Another possible explanation may be found in the differences between the urban and rural elderly in family living arrangements. As demonstrated earlier in table 3, the urban elderly are more likely to live alone than their rural counterparts. Consequently, home-care arrangements may be less available to them after the onset of severe illness or disability and their only alternative may be to enter an institution. Such persons would thus be eliminated from the survey population. A "healthier" urban elderly population may be created, in effect, as many of the most severely disabled persons may have entered institutions. In contrast, rural persons may be more likely to obtain home care or be encouraged to seek such arrangements when nursing homes are relatively inaccessible, and they could thus remain in the survey population. A negative bias on the comparative health status of the rural elderly would thus be exerted.

This finding is suggestive, rather than definitive. It suggests that the gap between the need for health care and its utilization is greater among the low-income elderly in rural areas than among their urban counterparts.

Still another contributing factor appears to be the complex relationship between physical isolation, declining physical function, and mortality. According to a current McCoy paper, OAA recipients with severely declining health who lived alone were less likely to survive if they were unable to obtain personal assistance when needed.<sup>28</sup> Because recipients living alone tend to be urbanized, these conditions may also accentuate rural-urban differences.

<sup>26</sup> Findings from a national survey of health practices suggest that the tendency to self-medicate is a complex behavior difficult to categorize by standard demographic variables such as age, education, and income. See National Analysts, Inc., *A Study of Health Practices and Opinions* (conducted for the Food and Drug Administration, Department of Health, Education, and Welfare), 1972. The study, which did not focus exclusively on the elderly population of low-income persons, found that elderly persons tend to use health practitioners other than "regular physicians."

<sup>27</sup> See, for example, Edward M. Bosnac, M.S. Hyg., Rosalind C. Parkinson, and David S. Hall, "Geographic Access to Hospital Care: A 30 Minute Travel Time Standard," *Medical Care*, July 1976, pages 616-624.

<sup>28</sup> John L. McCoy, *A Logistics Analysis of Survival Among a Sample of Aged Welfare Recipients* (in preparation), 1978.

**Table 10** —Days ill in bed and utilization of health services Number and percentage distribution of OAA recipients and nonrecipients, by area of residence, 1973

Item	OAA recipients					Nonrecipients				
	Total	Farm or open country	Small towns	City		Total	Farm or open country	Small towns	City	
				Small	Large				Small	Large
Total number (in thousands)	1 665 2	378 2	554 6	225 3	475 6	13,628 9	2,561 6	4 478 2	2 422 8	4,136 0
Total percent	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
Days ill in bed										
None	55 1	53 7	55 4	55 4	55 8	70 7	68 0	72 2	69 9	71 1
1-6	9 5	9 5	9 1	9 8	9 8	7 7	8 7	7 4	7 4	7 7
7-20	16 1	16 6	16 2	18 6	14 1	10 9	9 6	11 9	11 8	10 4
21 or longer	19 3	20 2	19 3	16 2	20 3	10 6	13 7	8 5	10 9	10 8
Days hospitalized										
None	76 1	75 2	73 4	78 2	79 0	83 7	84 2	82 7	84 7	84 0
1-6	4 4	4 3	5 7	3 6	3 4	3 7	4 6	4 5	2 5	3 1
7-20	11 5	12 6	12 7	12 6	8 5	7 3	5 6	8 4	7 9	6 8
21 or longer	8 0	7 9	8 2	5 6	9 1	5 3	5 6	4 4	4 9	6 1
Last contact with physician										
Past month	49 6	47 3	49 2	47 3	53 0	37 2	39 0	36 9	34 9	37 9
Past 6 months	27 4	29 6	26 9	28 0	26 0	30 1	28 4	29 8	34 5	28 9
Past year	8 9	9 8	9 3	8 8	7 7	12 7	13 1	13 6	11 1	12 2
More than 1 year	14 1	13 3	14 6	15 9	13 3	19 9	19 5	19 7	19 5	21 0
Last time hospitalized										
Past month	5 0	5 3	5 5	4 4	4 5	3 4	3 8	3 2	1 8	4 1
Past 6 months	12 1	11 4	13 2	12 5	11 2	8 4	8 4	7 6	9 3	8 9
Past year	12 0	11 7	12 9	11 8	11 0	8 6	7 8	10 1	8 7	7 4
Past 5 years	28 7	27 6	29 3	28 3	29 1	29 5	31 0	31 7	31 0	25 2
More than 5 years	42 2	44 0	39 0	42 9	44 2	50 1	49 0	47 4	49 2	54 4

## Implications For the Future

The general hypothesis that health status differs among the low-income aged population with residence is supported by the study findings. The persistence of a "rural effect," following the introduction of age, sex, and race as control variables, suggests that the corollary hypothesis concerning the intervening effects of these key factors cannot be fully accepted. At least these variables do not sufficiently account for variations in health status relating to residence. Indeed, other variables or combinations of variables, not considered here, may serve to explain higher rates of chronic disorders and impairments among the rural aged.

As noted earlier, differences in prevalence rates were much more clear cut among the OAA population. In contrast, the prevalence patterns among nonrecipients were suggestive rather than definitive. Nevertheless, the presence of a rural effect, which appears to be influenced by the accumulated experience of low socioeconomic status, cannot be rejected. The major theme that emerges from these findings concerns the accumulated effects of life experience in an environment of relative economic deprivation, or what might be described as the "rural health-poverty syndrome." Is there a combination of factors that contributes to the significantly poorer health profile among the rural population? The findings here suggest that to answer this question

the larger rural aggregate should be divided into analytically relevant subgroups. A recent article by James Copp<sup>29</sup> has suggested that health needs occur disproportionately among a number of identifiable subpopulations, and the health profile of the low-income aged in the present analysis certainly supports that contention.

Not only is rural residence pivotal in bringing into focus the severe health problems of this subpopulation, but two additional contextual variables—Southern residence and Southern origin—appear to be of equal importance. Compounding the relative impacts of these three variables is the associated circumstance of residential stability among the low-income aged population. The persons studied in this research have lived in and presumably been affected by their present environment for a considerable time.

Moreover, because of the age of the study population, many of the chronic conditions and impairments can be viewed as products of both the aging process and of generational living patterns. Largely, what is dealt with here is a population that was born near the turn of the century and grew up in low-income areas of the agrarian South. It is a population being viewed at the final stage

<sup>29</sup> James H. Copp, "Diversity of Rural Society and Health Needs," in Edward W. Hassinger and Larry R. Whiting (eds.), *Rural Health Services: Organization, Delivery, and Use*, Iowa State University Press, 1976.

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of its life cycle. The determinants of its chronic health status have already occurred, by and large, and variation in the prevalence of chronic disorders and impairments cannot be explained by examining current socioeconomic status. Rather, such an explanation is contained in the accumulated effects of years of residence in different cultural, social, economic, and physical environments.

The manner in which residential location has an impact on the health of the elderly is probably an indirect process. Rather than acting as a direct ecological outcome, continuous rural residence is the representation of a series of unique life events, including the accumulation of effects that result from social and economic experience. The long-standing evidence that poor rural persons tend to dwell in inferior housing is an additional factor.<sup>30</sup> A representative scenario suggests a life history and lifestyle of economic deprivation complicated by Southern small-town and rural community experience and of marginal employment in low-status and low-wage jobs in extractive industries.

To the extent that health status is related to social and economic experience over a lifetime, one might expect a leveling of rural-urban differences in the health status of the elderly in the future. Recent research has shown a diminishing of sociodemographic differences between metropolitan and nonmetropolitan areas. In an analysis of the changing character of the nonmetropolitan population between 1950 and 1975, Zuckes and Brown documented a convergence in income, occupational status, educational attainment, household size, and labor-force participation of women.<sup>31</sup> In addition, the recent industrial development of nonmetropolitan America has afforded economic opportunities for racial minorities not heretofore available in such areas. Minority dependence on low-wage and low-skill extractive industries has been greatly lessened, and manufacturing and services are now the major employers of minorities in nonmetropolitan areas.<sup>32</sup> Furthermore, an increasing number of urban elderly appear to be migrating to rural

areas.<sup>33</sup> Thus, the rural elderly of the future will not be as homogeneous with regard to rural origin and/or rural life experience.

One further consideration should be mentioned. The quality and availability of health care among the poor appears to be improving. Medicaid (medical assistance) is helping with the medical care costs of increasingly larger numbers of low-income persons, particularly those in the younger age groups (children under age 21 and adults in families receiving aid to families with dependent children).

Increased Medicaid protection appears to have increased the low-income population's demand for and utilization of medical services. In 1964, 28 percent of such persons, compared with 18 percent of their more affluent counterparts, had not seen a doctor in the preceding two years. By 1973, these proportions had declined to 17 percent and 13 percent, respectively. Differences between poor and wealthier persons in the utilization of hospital care have also diminished. Thus the elderly poor of the future will have a different, and presumably superior, health-services experience than that of the current OAA study population.

Changes in the organization of medical care in rural areas have also taken place in recent years. In 1975, the U.S. Public Health Service began an administrative effort called "rural health initiative" (RHI) to integrate existing programs designed to improve the delivery of health care services in rural America. During 1976, 96 new RHI projects and 44 new "health underserved rural area" projects were added to the 51 already under way. As a result, 459 rural counties are now receiving services under these programs.

This progress is encouraging, yet it is hoped that efforts, which focus on rural areas in general, also consider the special needs of various subgroups within the rural population. More specifically, the present research has identified the low-income elderly as a population with multiple disadvantages that appears to use fewer health services than would be expected on the basis of their prevalence of chronic disorders and impairments. Such a population requires special consideration in the planning of health policy and in the planning and development of health delivery systems.

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<sup>33</sup> Calvin L. Beale, *The Revival of Population Growth in Nonmetropolitan America* (Economic Research Service Report 605, Department of Agriculture), 1975.

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<sup>30</sup> National Advisory Commission on Rural Poverty, *The People Left Behind*, 1967.

<sup>31</sup> James J. Zuckes and David L. Brown, "The Changing Character of the Nonmetropolitan Population, 1950-1975," in Thomas R. Ford (ed.), *Rural U.S.A.: Persistence and Change*, Iowa State University Press, 1978.

<sup>32</sup> David L. Brown, "Racial Disparity and Urbanization, 1960-1970," *Rural Sociology*, Fall 1978.