# NURSING HOME RESIDENTS IN RURAL AND URBAN AREAS, 2001

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**The Office of Rural Health Policy**
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**The Southwest Rural Health Research Center**
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PROJECT OFFICER:

Joan Van Nostrand, DPA
The Office of Rural Health Policy
Health Resources and Services Administration
Department of Health and Human Services

AUTHORS:

Charles D. Phillips, PhD, MPH
Catherine Hawes, PhD
Malgorzata Leyk Williams, MS
The Southwest Rural Health Research Center
The School of Rural Public Health
Texas A&M University System Health Science Center



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# EXECUTIVE SUMMARY

## *Introduction*

Of the almost 1.6 million long-stay nursing home residents in the USA, over one-half million of them receive their care outside metropolitan areas. These residents entered a nursing home either to recover from some episode of acute illness or to receive care for some chronic health problem. For those concerned about the individuals who are elderly, need formal institutional care, and are living in rural areas, a range of questions arise. The primary source of formal long-term care in rural areas is nursing homes. What are the residents in these rural nursing homes like? How do they differ from nursing home residents in more urban areas? Do they enter these homes from settings different than those in urban areas? How do they differ in health status? How might we investigate whether the quality of care in nursing homes changes as rurality increases? By providing information on the entire population of longer-stay nursing home residents in the country in 2001 and categorizing them according to the rurality of the nursing home in which they receive care, the authors provide descriptive data with which to address these and other questions.

## *Data Sources*

This report is based on data from the Minimum Data Set for Nursing Home Resident Assessment and Care Screening (MDS).[1,2] These data were procured from the national data archive administered by the Centers for Medicare and Medicaid Services (CMS). The MDS is a multidimensional assessment tool used in all Medicare or Medicaid certified nursing homes, which captures resident status on a variety of dimensions. A full admission assessment is performed when the resident enters the nursing home, briefer quarterly assessments are completed every three months, and a full assessment is performed annually on each resident in the nursing home. This report is based on these annual assessments performed during calendar year 2001.

Using annual assessments emphasizes the characteristics of longer-stay residents, rather than those of residents who enter a nursing home for a short, rehabilitative stay. The proportion of short-stay residents recovering from an acute episode varies considerably across nursing homes in locales differing in their rurality.[3] The emphasis on longer-stay residents provides more comparable resident pools for our analyses.

## *Measurement*

Most of the resident characteristics presented in the tables are self-explanatory. However, some scales are used in our presentation. The first is the Cognitive Performance Scale (CPS), a seven-category scale that captures the level of a resident's cognitive function.[4] In this presentation, the seven CPS categories were aggregated into three more general categories differentiating among residents: who were cognitively intact or borderline intact; who were mildly to moderately severely cognitively impaired; or who were severely or very severely impaired.

Function status is reported using the Activities of Daily Living Hierarchy (ADL Hierarchy).[5] The seven-level scale reflects the degree to which a resident received assistance in early-loss (personal hygiene), mid-loss (using the toilet, locomotion) and late-loss (eating) ADLs. In the tables in this volume, the seven-level scale is presented as six-levels: independent or needs supervision; limited physical assistance; extensive assistance in early loss ADLs; extensive assistance in later loss ADLs; total dependence in some ADLs; total dependence in all four ADLs used in the scale.

The MDS-CHESS scale measures residents' clinical instability and risk of death. The scale is presented in five categories: no instability; slightly unstable; mildly unstable; moderately unstable; and highly unstable.[6]

The tables contain two case-mix acuity measures, both minor variants of the RUG-III case-mix classification system.[7] The RUG-III classification system places each resident into a case-mix category populated by residents receiving similar levels of care. Each of the resident categories in the model is given a case-mix index (CMI). The CMI reflects the relative amount of care provided for that resident versus that provided to residents in other categories. Averaging the CMIs for all residents in a nursing home and comparing that home's average CMI to the average CMI in other homes gives one a rough indicator of the relative acuity level in different facilities. The first acuity measure (total case-mix) is an estimate of all the care provided to residents by facility staff and therapists. The second measure (nursing case-mix) estimates, as indicated, only the nursing time (RN, LPN/LVN, and aide) provided to residents. For both of these measures, higher values indicate higher average care needs in the facility.

The 19 Quality Indicators presented at the end of each table are 19 of the indicators developed by the University of Wisconsin for use in the nursing home survey process.[8,9] These indicators simply reflect the presence of the various quality indicators in each of the populations. For example, for the nation as a whole, 13.33% of the 128,334 residents in nursing homes in isolated areas had the presence of a pressure ulcer recorded on their annual assessment.

Data are presented in four categories reflecting the degree to which a home operated in a rural or urban area. The categories reflecting the degree of rurality are

based on population and commuting patterns. They reflect the extent to which the population in the zip code in which a home operates is located within or is integrated by its commuting pattern into an urban area, a large town, a small town or a largely isolated small town. This coding schema, Rural-Urban Commuting Area (RUCAs) codes, was developed by the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) Rural Health Research Center.[10] More information is provided on these and other indicators in the Appendix.

At times, the percentages or numbers in the first column of a table will not be completely consistent with the data in the columns for the four specific locales. This is the case because in some instances homes in an area (nation, region, or State) could not be placed in a specific locale reflecting their level of rurality.

In a very limited number of instances, the number of residents in a column in a table numbered lower than 100. In this circumstance, no data were reported. This decision was made because of privacy concerns and because quality indicators based on such limited numbers are potentially unstable and of questionable utility.

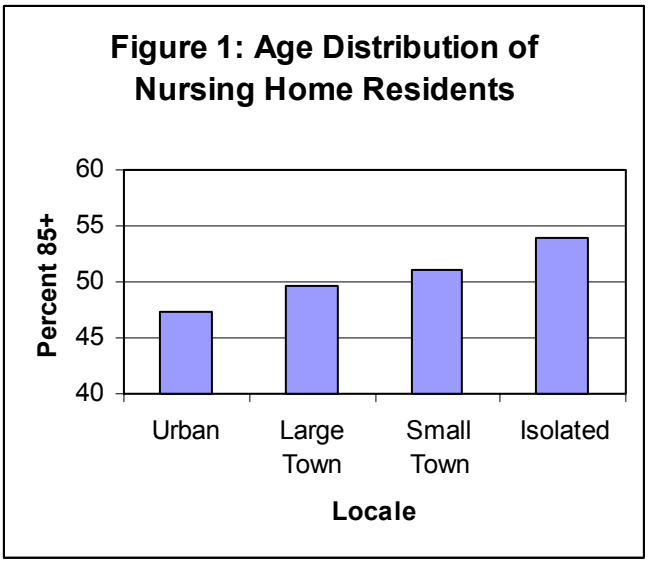
## *Highlighted Findings*

The discussion below will focus on those findings that tend to exhibit monotonic relationships with rurality. Relationships that are fundamentally linear, with urban and isolated areas at the extremes, imply an effect of the dimension of rurality rather than some effect particular to a specific area (e.g., large towns).

**Context: Utilization and the Nursing Home Industry.**

While small towns and isolated areas contain only 14.6% of the US population 75 years old or older (75+), these same areas contain 20% of the nation's nursing home (NH) beds. Metropolitan areas have only 82.3 nursing home residents per 1,000 individuals 75+. Small towns have 121.5 nursing home residents per 1000 persons 75+, and isolated areas have 99 NH residents per 1000 individuals 75+. Nursing homes outside metropolitan areas are less likely to be operated as for-profit entities and are less likely to be affiliated with multi-home chains. Facilities in metropolitan areas are more likely to receive citations for deficiencies on their annual survey by the State, but they are likely to be better staffed than facilities outside metro areas.[3]

**Figure 1: Age Distribution of Nursing Home Residents**



**Resident Age.**

The general population in rural areas has a higher percentage of individuals likely to need long-term care services. Only 5.6% of the urban population in 2000 were 75 years of age or older, while 7.4% of the population in isolated rural areas were 75 or older.[3] The same general finding holds true for nursing home residents. As Figure 1 indicates, the proportion of nursing home residents 85 years of age or older (85+) increased monotonically with rurality. Only 47.2% of residents in urban nursing homes were 85+, while 54% of the residents in nursing homes in isolated areas were 85+. Almost 11% of residents in nursing homes in isolated areas were 95 years of age or older. This proportion is 22% higher than the proportion of residents (9%) in urban areas who are 95+. Conversely, as one would expect, the proportion of residents younger than 86 years of age decreased as rurality increased.

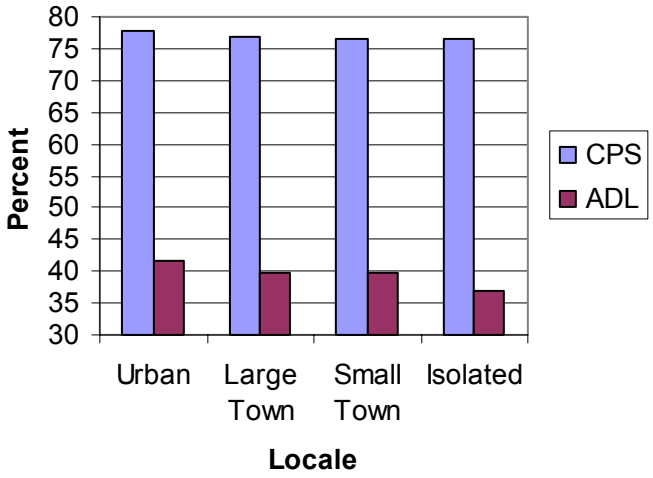
**Living Arrangements and Admission.**

In all locales, the most common route to a nursing home was through an acute care setting. After that generalization, the details become somewhat more complex. The proportion of individuals in urban nursing homes who entered after an acute care stay was over 54%, while just over 42% of those in isolated areas came into a NH after such a stay. Instead, the proportion of residents entering a nursing home from a private home, with or without services, increased with rurality. Living arrangements prior to entry into a nursing home also differed by locale. A majority of residents in all locales lived alone prior to moving to a nursing home. However, individuals in more rural areas were more likely to live alone than were individuals in less rural areas.

**Functional and Cognitive Status.**

Given the greater age of nursing home residents in more rural areas, one might expect them to suffer greater functional and cognitive impairments. This is not the case. Figure 2 displays the percentage of residents who suffer from mild to very severe cognitive impairment. It indicates there is no clear effect of locale on the level of cognitive impairment. Percentages only range across the locales from 76.5% to only 77.9%. Differences do appear in our ADL scale, but they are not in the expected direction, given the results for age. Figure 2 also presents the

**Figure 2: Functional and Cognitive Impairment**



percentage of residents in nursing homes who are totally dependent in some or all of the four ADLs included in the scale. Roughly 42% of residents in urban areas are heavily impaired. That can be compared to the roughly 40% in homes in large and small towns and almost 37% in homes in isolated areas. Among these longer-stay residents, severe ADL impairment decreases as rurality increases.

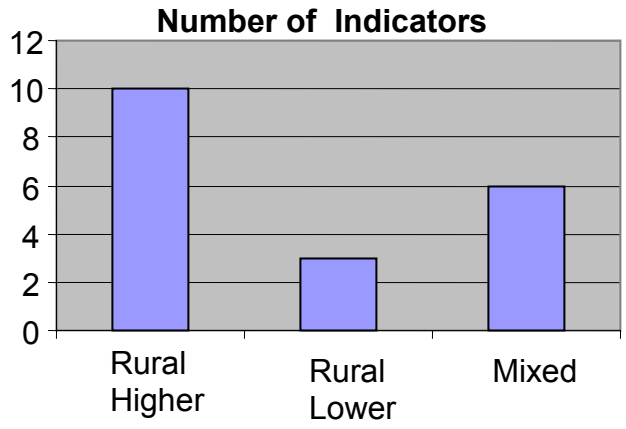
**Resident Case-Mix.**

The RUG-III-based case-mix indices provide a sense of the general acuity of longer-stay residents receiving nursing home care in different locales. The Total Case-Mix Index decreases with rurality. This result implies that as rurality increases residents receive fewer specialized therapies. The nursing case-mix is, however, stable across the four locales. This result implies that nursing home residents' nursing needs vary little across locales.

**Quality Indicators.**

Nineteen quality indicators are presented for each locale in Figure 3. Because we are dealing with population data, the pattern of results, rather than the size of differences, will be the focus of this discussion. Higher values on these quality indicators mean a greater likelihood of care problems. With 10 of the 19 indicators, one finds that these indicators of potential quality problems are higher in all three non-metropolitan locales than in purely urban settings. Only with three of these indicators (pressure ulcers, tube feeding, and incontinence) does one see all three of the more rural locales with indicator values lower than those observed in urban facilities. With six of the indicators, the results are mixed. In these cases, some of the more rural locales had higher values and others had lower values. However, in four of these cases, it was residents in homes in isolated areas that had the lowest percentage of potential problems.

**Figure 3: Prevalence Levels of Indicators of Potential Quality Problems**




These results, along with other information, paint an interesting picture of quality differences among nursing homes across rural and non-rural areas. If one simply looks at staffing data, then one would assume that nursing home quality is inversely related to rurality. Staffing levels decrease as rurality increases, so quality should decrease as well.[3] However, when one looks at deficiency data from the annual

licensure and certification surveys, deficiencies go down as rurality increases.[3] So, quality should be better in more rural areas.

The quality indicator data provided here presents a more mixed, but more realistic, picture of quality of care differences in nursing homes that differ in their rurality. These differences do not follow a simple pattern. As other research has indicated, the pattern of quality differences among nursing homes differing in rurality is complex.[11] With the results presented here, one sees that in some instances rural facilities seem to do better than urban facilities, and in other instances more rural facilities seem to do worse.

One also sees that the relationship between rurality and quality is not always linear. Quality does not seem to increase or decrease consistently with each increase or decrease in rurality. For example, in some instances, homes in isolated areas seemed to evidence better quality than urban areas, but the same was not true of homes in large or small towns.

These data also remind us of the importance of regional differences. Residents in nursing homes in isolated areas almost uniformly, across the regions of the nation, were the most likely to have symptoms of depression without therapy. However, the prevalence of this potential quality problem in isolated areas across the nation was 9.2%. Across the ten regions, the prevalence of this quality indicator ranged from a low of 6.5% for homes in isolated areas in Region II to a high of 12.2% for homes in isolated areas in Region X. This almost 90% difference reminds one that rurality is not the only geographic dimension that affects nursing home quality.

## *Organization of the Volume*

Following this section, the volume provides detailed tables containing data on the nursing home residents in the nation as a whole, on residents in each of the ten CMS regions, and on residents in each of the States. The regional tables appear in numerical order (i.e., I-X). The State tables appear in alphabetical order. A series of technical notes follow these tables in the Appendix. These notes clarify the data definitions and the specific procedures used to produce both the database on which this report is based and the tables provided in the report.