

Running the Numbers

*A Periodic Feature to Inform North Carolina Healthcare Professionals
about Current Topics in Health Statistics*

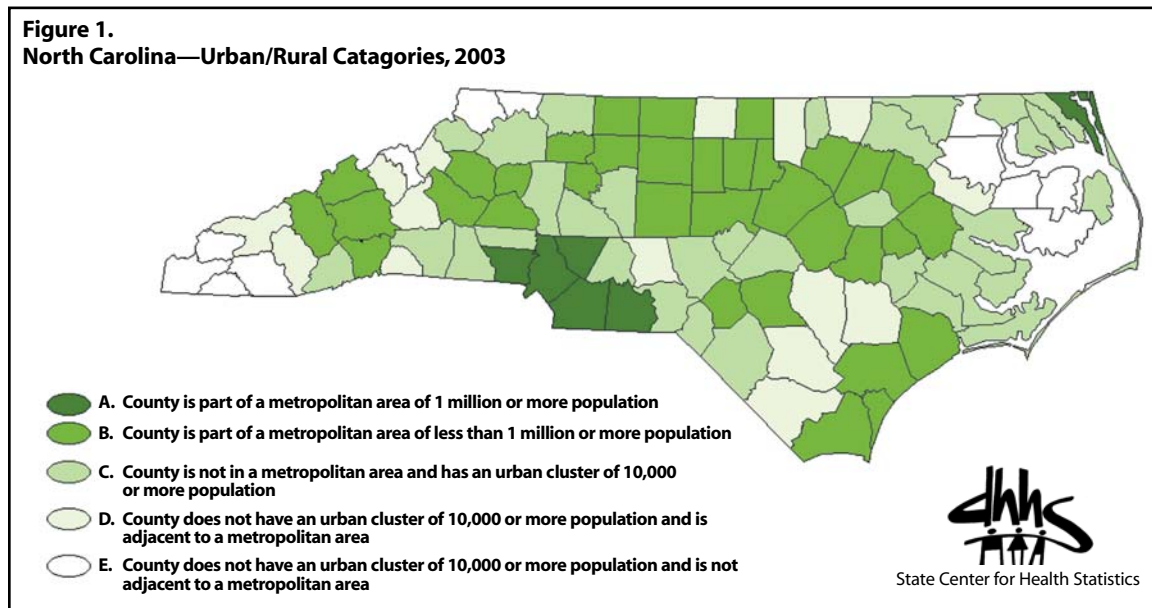
*From the State Center for Health Statistics, North Carolina Department of Health and Human Services
www.schs.state.nc.us/SCHS*

North Carolina Death Rates by a Rural-Urban Gradient

Death rates in North Carolina vary substantially across demographic categories, such as age and gender, and also by geographic area. For example, the death rates for many causes of death are highest in the older age groups, and counties in eastern North Carolina often have the highest death rates in the state. One important dimension of variation in health measures is the rural-urban continuum.

Urbanization in an area is an important characteristic affecting access to health services. Also, communities at different urbanization levels vary in their demographic, environmental, economic, and social characteristics. These characteristics strongly influence the magnitude and types of health problems that communities face. In this short report, we show death rates for selected causes of death by five levels of urbanization. This presentation is descriptive only. The causes of the health differentials by degree of urbanization are numerous and varied.

Figure 1.
North Carolina—Urban/Rural Categories, 2003



We divided the 100 counties in North Carolina into five groups, from most to least urbanized (see map). This classification system is based on the United States Department of Agriculture's (USDA) 2003 Urban Influence Codes. These groups are roughly defined as: A. county is part of a metropolitan area of 1 one million or more population (six counties); B. county is part of a metropolitan area of less than 1 one million population (34 counties); C. county is not in a metropolitan area and has an urban cluster of 10,000 or more population (32 counties); D. county does not have an urban cluster of 10,000 or more population and is adjacent to a metropolitan area (15 counties); and E. county does not have an urban cluster of 10,000 or more population and is not adjacent to a metropolitan area (13 counties).

We present age-adjusted death rates for selected major causes of death for the combined 2000-2004 period. Age adjustment removes the effect of differing age distributions on the death rates. In general, rural counties have an

older population and would tend to have higher unadjusted death rates for most chronic diseases just due to the age of the population. In 2004, the percentage of North Carolina's population that was age 65 and older was 11.9%. This percentage increases steadily from 9.4% in the most urban counties (category A) to 18.7% in the least urban counties (category E).

In 2004, the percentages of North Carolina's population of 8,541,000 residing in each of the five standard USDA urban/rural categories were: 15.3% in category A, 53.7% in category B, 22.8% in category C, 5.8% in category D, and 2.4% in category E. The table below shows age-adjusted death rates for each of these county groups and the state total, for selected causes of death.

Table 1.
2000-2004 North Carolina Age-adjusted Death Rates (Deaths per 100,000 Population) by Selected Causes of Death and Urban/Rural Category

	Most Urban			Most Rural		
	NC Total	Categ. A	Categ. B	Categ. C	Categ. D	Categ. E
All Causes	897.6	889.1	874.9	936.5	961.2	906.0
Heart Disease	233.9	224.1	222.2	257.2	257.7	229.0
Cancer	197.4	192.3	196.1	202.5	201.3	197.3
Stroke	67.5	63.7	67.0	69.1	73.4	63.9
Diabetes	27.5	24.9	26.0	29.2	35.5	30.3
Chronic Obstructive Lung Disease	46.0	45.3	45.5	46.4	48.0	51.1
Alzheimer's Disease	25.5	35.0	24.8	23.9	22.5	21.9
Motor Vehicle Injuries	19.6	15.1	17.5	24.6	29.1	27.2
Other Unintentional Injuries	24.8	22.3	24.2	26.6	27.7	31.0
Suicide	11.7	10.7	11.2	12.8	12.6	13.5
Homicide	7.3	7.7	6.5	8.6	9.0	6.9

For deaths from all causes, heart disease, cancer, stroke, and diabetes, the age-adjusted death rates tend to be higher in the more rural counties, with the exception of category E (the most rural counties), where the death rates are lower than for category D. In looking at the unadjusted death rates for these causes of death (not shown in table), the category E counties have by far the highest death rates, reflecting their much higher percentage of the population that is age 65 and older.

For chronic lung disease, the most rural counties have the highest age-adjusted death rates. For Alzheimer's disease, the highest age-adjusted rate occurs in the most urban counties, with decreasing rates for the more rural counties (though the highest unadjusted Alzheimer's death rate occurs in the category E counties). For motor vehicle injuries, other unintentional injuries, and suicide, the most rural counties have the highest death rates. For homicide, the category C and D counties have substantially higher death rates.

The somewhat lower age-adjusted death rates observed in the Category E counties for many of the causes of death is consistent with the findings of other studies and may, in part, reflect the fact that these counties contain places where healthy people go to retire or retreat. The rural/urban differences in death rates observed here are purely descriptive, and we have not tested any of these differences for statistical significance. However, given that five years of data were used, all of the death rates shown in the table are fairly stable and based on at least 200 deaths in the numerator, with the exception of suicide (149 deaths) and homicide in the category E counties (66 deaths). Many factors account for the patterns shown here, including rural/urban variations in socioeconomic status and access to healthcare.

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