

Introduction

Each year the State Center for Health Statistics produces the publication *Leading Causes of Death*, describing North Carolina's mortality experience in terms of the underlying (or primary) causes of death. The tables in this report provide basic mortality statistics for counties and the state. More than a dozen of the leading causes of death in North Carolina are tabulated. In addition, four major cancer sites and total infant mortality are included. A more detailed break out of cause-specific mortality by age, race, and sex is provided in the companion publication *North Carolina Detailed Mortality Statistics*.

Causes of death from the 1979 to 1998 North Carolina death certificates were coded according to the International Classification of Diseases, Ninth Revision (ICD-9). However, beginning in 1999 the causes of death were coded using the tenth revision of this coding system, ICD-10. The change to ICD-10 has led to substantial changes in the content and structure of this publication.

Only single-year rates are included: Normally in this publication, we produce five-year unadjusted and age-adjusted death rates by county of residence. However, due to the change in the cause-of-death coding system, we did not combine 1999 with earlier years of data to produce multi-year rates by cause of death. Only single-year numbers and rates are presented. The rationale for this is that for some causes of death, comparability across the ICD revisions is not good. Furthermore, age-adjustment requires that the death data be divided into 10 age groups, and comparability is more problematic for specific age groups. Also, dividing a single year of data into 10 age groups may lead to unstable age-adjusted rates due to small numbers of deaths for some counties. As a result, this 1999 edition of *Leading Causes of Death* is abbreviated, showing numbers of deaths and unadjusted death rates only for the single year 1999. Our plan is to build up to multi-year age-adjusted death rates as subsequent years of mortality data, coded under the ICD-10 system, become available.

County maps are not included: With the inclusion of only single-year 1999 rates in this publication, we do not present county maps of the death rates. Small numbers of deaths for a single year at the county level may lead to very unstable rates¹ and so the geographic patterns portrayed might not be accurate.

Limitations of the data in this volume: Without having age-adjusted death rates, there are problems in comparing data across counties or across time, since differences in the rates may be due largely to differences in the age of the populations. The data for some causes of death will not be comparable to data published in previous editions, due to changes in the rules for coding underlying causes of death in the new ICD system. Specific "comparability ratios" will be released by the National Center for Health Statistics, providing numerical adjustments for comparing or combining data across the ICD revisions. Among the causes of death shown in this publication, we know that there were substantially *fewer* pneumonia and influenza deaths in 1999, compared to previous years, due to the changes in the disease coding system. In addition, coding system changes have resulted in substantially *more* deaths in 1999 due to nephritis/nephrotic syndrome/nephrosis.

¹Buescher PA. Problems with rates based on small numbers. *Statistical Primer* 1997; No. 12. State Center for Health Statistics. (<http://www.schs.state.nc.us/SCHS/pubs/>)

The 1998 edition of *Leading Causes of Death* was an expanded version, showing age-adjusted death rates for the twenty years of data (1979-1998) coded under the ICD-9. The reader may want to refer to this publication for data on mortality patterns and trends, until we have several years of ICD-10 data available for producing updated age-adjusted death rates. This expanded mortality publication and other publications of the Center (listed on inside of front cover) are available upon request. Also, a variety of data from the Center (including much of the data from the 1998 *Leading Causes of Death*) is available on our Web site at <http://www.schs.state.nc.us/SCHS/healthstats>.

This edition of *Leading Causes of Death* includes Alzheimer's disease for the first time. With increasing diagnosis of this condition, and changes in the cause-of-death coding rules associated with ICD-10, Alzheimer's disease is now among the top ten causes of death in North Carolina. Please refer to the cause-of-death rankings on page 5.

For questions concerning this publication, please contact:

State Center for Health Statistics
Division of Public Health
North Carolina Department of Health and Human Services
1908 Mail Service Center
Raleigh, NC 27699-1908
(919) 733-4728

Caution: A rate with a small number of events in the numerator will have substantial random variation over time. A rule of thumb is that any rate with fewer than 20 deaths in the numerator may be subject to serious random error. Therefore, many of the rates in this volume should be interpreted with caution.