Mortality Trends in Craven County, NC
Total Deaths, Premature Mortality, and Ten Leading Causes of Death; 1979-2001

A Resource for Healthy Communities

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Introduction

Health Indicators Series:  
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Report Series #2: Mortality Trends for Craven County

Health Indicators is a series of reports describing community health at the state and county level. Health Indicators supplements the Eastern North Carolina Health Care Atlas published by the Center for Health Services Research and Development at East Carolina University. These reports are intended to provide state policy makers, local health departments, hospitals, and community-based health planning groups with a wide range of information useful for diagnosing the health of North Carolina and its local communities, evaluating the effectiveness of existing services, and envisioning and planning new interventions. The reports in this periodically published series can be used in conjunction with the County Health Data Book, produced by the North Carolina Office of Healthy Carolinians, as part of the Community Health Assessment Process. Individual reports in ECU’s Health Indicator Series are custom made for the counties of North Carolina. Reports in this series will describe trends in mortality, including premature mortality for all causes of death, true (crude) and age-adjusted mortality for leading causes of death, and measures of rate disparities or inequalities.

Report Series #2 of the series focuses attention on the two overarching goals of Healthy People 2010, the national blueprint for health improvement. The first goal is to increase the span and quality of life and the second is to eliminate health disparities. North Carolina’s companion plan, Healthy Carolinians 2010, has also embraced these two goals.

Report Series #2 is a tool to help evaluate how well Craven County and North Carolina are doing in relation to the goals set forth in Healthy People 2010 and Healthy Carolinians 2010 as well as important differences in life span. Using rate comparisons, this report describes the inequalities between Craven County and North Carolina, between whites and non-whites, and between males and females. Premature mortality, the focus of Report Series #1, is included in the death from all causes section located at the beginning of this report. The measure used to quantify premature mortality is described in more detail in the Methods and Interpretations section.

This report describes the leading contributors to mortality, provides a geographic context, and examines trends and inequalities for twenty-two years. The report begins with data highlights, provided as an introduction to the data, rather than a summary of them. Readers are encouraged to draw their own conclusions from the data and pose new questions suggested by what they see. The second section presents overall and five leading contributors to mortality for the state as a whole and by race and gender. Pie charts describe the relative contribution of each of five leading contributors to the overall rate. The charts also provide comparisons to the nation. Making the area of each pie chart equivalent to the rate for the population group conveys the dimension of disparity across population groups. The last section, the largest, is composed of graphs and tables describing recent trends in mortality and disparities in early death. The graphs include projections to the year 2010. These graphs and tables place Craven County health status in a historical context and provide a glimpse into the future.
Data Highlights

Leading 5 causes of death in Craven County, 1999-2001

The five leading causes of death are:
1. Heart Disease
2. Cancer (all sites)
3. Stroke
4. COPD
5. Diabetes

(unless otherwise noted, trends are reliable: for total deaths $R^2>0.35$)

Twenty-two year trends in mortality rates:

- Craven County's true mortality rate is above regional and state levels.
- Craven County's age-adjusted mortality rate is higher than state and national levels, but it is lower than the ENC levels and has shown a decrease of 14%.
- White males have seen the largest decrease in age-adjusted mortality rates, having experienced a 30% decrease over the 22 year time period.
- White females experienced an 12% decrease in a moderately reliable trend for the same time period.
- Non-white males experienced an increase of 15%, in a moderately reliable trend.
- The trend for non-white females was not reliable.
- Overall, racial disparities have increased, in a reliable trend ($R^2=0.60$) by 1571%.

All Causes of Premature Mortality

- Craven County had a lower decrease in its true rate of premature mortality than did the Eastern region and the state, but it decreased by 16%.
- A greater decrease in age-adjusted mortality rates was seen by the citizens of Craven County than the rate of the nation.
- All demographic groups saw decreases in their age-adjusted rates of premature mortality, with the exception of non-white females. Reliable trends occurred in whites, but not in non-whites. White males experienced the largest decrease (39%), followed by white females (23%). Non-white males had much higher rates of premature mortality, and saw a 7% decrease, while non-white females saw a 6% increase.
- Racial disparities rose 148% in a moderately reliable trend.
Comparison of county to state rates of age-adjusted mortality by 10 leading contributors in 2001

<table>
<thead>
<tr>
<th>Higher than the state rate</th>
<th>Lower than the state rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Disease — 2%</td>
<td>Stroke — 3%</td>
</tr>
<tr>
<td>Cancer: Trachea, Bronchus, Lung – 3%</td>
<td>Diabetes – 7%</td>
</tr>
<tr>
<td>COPD – 2%</td>
<td>Influenza and Pneumonia — 3%</td>
</tr>
<tr>
<td>All other Unintentional Injuries and Adverse Effects – 9%</td>
<td>Unintentional Motor Vehicle Injuries — 14%</td>
</tr>
<tr>
<td>Cancer: Colon, Rectum and Anus – 9%</td>
<td></td>
</tr>
<tr>
<td>Septicemia — 58%</td>
<td></td>
</tr>
</tbody>
</table>

Heart Disease

- Craven County’s true rate of heart disease increased in comparison with state and regional rates. Craven County had a 7% increase in its true mortality rate.
- The county’s age-adjusted rate shows a 37% decrease over the time period, and is similar to the trends observed in the state and nation.
- White males experienced a sharp decline in age-adjusted mortality rates for heart disease. All other demographic groups experienced smaller decreases in mortality trends. Whites experienced a larger decrease than non-whites.
- A moderately reliable trend shows a large increase (197%) in racial disparities in the rate of heart disease.

Stroke

- Craven County’s rate of age-adjusted mortality due to stroke was comparable to trends in the region, state, and nation.
- White males (56%) and white females (57%) saw age-adjusted mortality due to stroke decrease, while trends for non-whites were not reliable.
- A moderately reliable trend in disparity rates by race showed a 641% increase over the time period.
Cancer – Trachea, Bronchus, and Lung

- Craven county’s true mortality rate for TBL cancer changed from 18% lower than the regional rate in 1979 to being equal with the regional rate in 2001. The county’s true mortality rate increase was twice that of NC.
- Craven County’s age-adjusted rate of TBL cancer is lower than that of the region and state, and exhibits a lower rate of increase, in a moderately reliable trend.
- The age-adjusted rate of mortality in TBL cancer continues to improve moderately against the state and regional rates, moving from 2% greater in 1979 to 5% less in 2001 compared to the regional data, in a moderately reliable trend.
- White (123%) and non-white (283%) females saw large increases, in a moderately reliable trend.
- The trend in racial disparities in this area is not reliable.

Chronic Lower Respiratory Disease

- Craven County’s true mortality rate due to CLRD has increased 208% over 23 years.
- Craven County age-adjusted CLRD mortality experienced a lower increase than the region and state, in a moderately reliable trend.
- Non-white females have seen a huge increase (520%) in incidence of death from COPD, and white females have also seen a dramatic increase (145%) in CLRD related death; both have moderately reliable trends. Non-white males have also seen a large increase (168%) in the number of deaths from CLRD with a moderately reliable trend. The trend for white males is not reliable.
- The trend for whites and non-whites shows the same slope for age-adjusted mortality, but whites have a consistently higher rate of CLRD mortality.

Diabetes Mellitus

- Craven County has had a dramatic increase (600%) in the true mortality rate of diabetes compared to the regional (176%) and state (138%) increase in the true mortality rate due to diabetes.
- In age-adjusted mortality, however, the trend shows that Craven County also has a much larger increase than the region, state and nation. Craven County’s increase is 3 times the national average, double the state average, and well above the regional average.
- Non-white females have seen an exorbitant rate increase (262%) in their rate of age-adjusted mortality due to diabetes. White males (688%) and white females (181%) have also seen large increases, in moderately reliable trends. The trend for non-white males was not reliable.
- In the trend for white and non-white, the white mortality rate is steadily increasing, but the non-white slope remains much higher than the white slope.

Influenza and Pneumonia

- The percent increase that Craven County experienced for Influenza and pneumonia in age-adjusted and true mortality is four times that of eastern NC and NC.
- Non-white females experienced a 255% increase in influenza and pneumonia, with moderately reliable trends. The trends for all other demographic groups are unreliable.
- The non-white age-adjusted mortality is increasing in a moderately reliable trend.

**All Other Unintentional Injuries and Adverse Effects**

- Neither the trend in true mortality nor that of age-adjusted mortality for Craven County is reliable.
- A moderately reliable trend for age-adjusted mortality of white females in all other unintentional injuries and adverse effects shows an increase of 172%.
- Racial disparities in all other injuries and adverse effects showed a 105% decrease, in a moderately reliable trend.

**Cancer – Colon, Rectum, and Anus**

- Craven County’s percent increase in true rates of mortality due to CRA cancer was four times higher than regional and eight times higher than state percent increase.
- Trends for all demographic groups were unreliable.

**Septicemia**

- Craven County's percent increase in true rates of mortality due to septicemia was double the regional and three times the state percent increase.
- Craven County’s age-adjusted trend line was 47% greater in 1979, but the age adjusted trend line was 36% greater in 2001.
- Non-white males showed an enormous increase (5963%) in septicemia mortality, and white females also had an increase of 186% with moderately reliable trends.
- Trends for racial disparities were not reliable.

**Unintentional Motor Vehicle Injuries**

- Age-adjusted rates for non-white females showed a 418% increase in mortality rates due to unintentional motor vehicle injuries with a moderately reliable trend.
- None of the other trends in true mortality, age-adjusted mortality, demographic groups, or racial disparities for unintentional motor vehicle injuries for Craven County are reliable.
Methods, Interpretation, and References

Methods and Interpretation

Data Sources
The data for mortality and premature mortality in Craven County were obtained from death certificate data from the North Carolina State Center for Health Statistics and population data from the North Carolina Office of State Planning. For the US, data were obtained from the Compressed Mortality File compiled by the National Center for Health Statistics.

Measures
Two types of mortality measures are covered in this report. The first type is based on the density of deaths per population for a given area over a specified time interval. This type includes the true or "crude" mortality and age-adjusted mortality rates. These mortality rates are typically used in discerning where deaths are occurring and for comparing mortality among areas. The second type of mortality measure is years of life lost before age 75 (YLL-75). The YLL-75 measures include the death density component of both types of mortality rate measures, but they are further weighted by the number of years of life lost before age 75. Like mortality rates, they can either be true (crude) or age-adjusted. These measures provide an indication of the burden of premature mortality in a population or community. The yll-75 measure is sensitive to deaths occurring earlier in life rather than later. In this report the first type of mortality measures—true and age-adjusted rates—are emphasized. Premature mortality is the focus of report #1.

A simple count of the number of deaths occurring within an area for a given time period is useful for identifying potential problems or issues of public concern—particularly if the deaths result from a rare cause or are deemed an emerging problem for at-risk socio-demographic groups. In this sense, simple count data act as harbingers. Because nothing is known about the underlying population base from which health events arise, the analytical or even political utility of simple count data is limited. The size of the underlying population will have a natural influence on the observed number of health events. The observed influence is the density of deaths per underlying population. When measured over a given unit of time (usually 1 to 5 years), the density becomes a rate. (The rate is typically multiplied by 100,000 for ease in interpreting the usually small resultant value.) This is the actual observed or true rate for an area and it is an improvement over simple count data because it accounts for the relative size of the underlying population. The chief advantage of the true rate is that it focuses attention on potential public health problems more rigorously than simple counts data. However, the number of health events such as mortality are influenced by more than just the underlying size of the population. The composition of the population will have additional effects on the number of health events that occur and for the analysis of mortality the most important effect is that of the population’s age structure.

Because aging is the greatest risk for mortality, the age structure (composition) of a population will have an effect on the true mortality rate. For example, two counties may have similar population sizes but one has a larger proportion of people over the age of 45 than the other. It is more likely that the older population will experience more deaths over the course of time, which will be reflected in a higher true mortality rate. Age structure, therefore, has a direct effect on the true mortality rate and in order to make meaningful comparisons, population age structures need to be controlled.

Age-adjustment or controlling for a population’s age structure requires an external reference or standard to weight the comparison populations by
age groups. (Currently, the US 2000 Standard Million Population is used in age adjusting populations for comparisons.) The weighting scheme redistributes the age group sizes of the observed population as if it had the same structure as the standard reference population. The standardized age group population is then applied the number of deaths found in the corresponding age group of the observed population to produce an expected number of deaths for that age group. The expected number of deaths are summed and then divided by the weighted total population yielding an age-adjusted death rate. Once age structure is controlled, analysis of the effects of selected diseases on mortality is more tractable and the effects of race and gender can be studied more effectively.

The study of premature mortality focuses on the burden of disease and death in a population. The amount of burden is measured in the accumulated amount of years of life lost (YLL) before a benchmark age. We use 75 years of age as a benchmark because it approximates current life expectancy at birth in the United States and captures deaths from chronic disease occurring in later life. To calculate the number of years lost, the age of each person who dies before age 75 is subtracted from 75 and the lost years are summed. The YLL for each person who dies before age 75 is first aggregated and then the result divided by the population under 75 years of age. Again, the value will be relatively small and so a further multiplication of 10,000 magnifies the number into a more understandable rate. The true YLL for an area, like the true mortality rate, is not readily comparable to other areas but it is useful for assessing community health, evaluating health services, and for health planning. Comparisons are possible when age-adjustment with a standard reference population is used.

Age-adjusted rates for both mortality and premature mortality have little intrinsic meaning, however, and can mask the burden and trends of health events that may be of local importance. A casual inspection of adjusted rates may divert attention from the actual health problems of a population and inappropriately guide interventions or resource allocation. Thus, it is important to consider the actual number of deaths (count data) in conjunction with the true rate first, and then use the adjusted rate only if one wishes to factor out age in understanding the health of a population. All of the statistics presented are for the three-year period (1999 to 2001). A three-year period was used because it provides a useful summary of the mortality experience while minimizing wide year-to-year fluctuations in the rate due to the effect of small numbers.

**Interpreting the Pie Charts**

Pie charts are provided as a visual representation of the burden of mortality and they also depict the proportion of mortality accounted for by each of the leading contributors. (The leading causes of death are found in the table preceding the pie chart section.) The pie charts compare the relative levels of burden and proportions by region and demographic groups. With the exception of the second pie chart figure, all rates are true (or crude). The area of each pie is based on the true mortality rate for the population over a three-year period (1999-2001), with larger pie charts representing higher true mortality rates. For purposes of presentation, we set a limit on the smallest possible area of a circle and assigned this area to the population with the smallest rate. (This lower limit is based on the age-adjusted rate for white females in North Carolina.) We then scaled up the circles for all other groups proportionately based on their rates.

The first two pie chart figures compare the proportions of leading causes of death across regions at the national, state, and county level. The first figure in this set allows comparisons using true rates, which illustrates the relative burden of disease intrinsic to each region. The second figure, which is age-adjusted, allows for direct comparisons among regions. The following two figures use proportions based on true mortality rates to show the relative burden of disease intrinsic within race/gender groups and within two major racial groups.

While comparing the pie charts, the reader should remember that the slices of the pie show differences in how much of the total true or age-adjusted mortality rate is accounted for by a specific contributor, not the absolute differences in magnitude of the disease-specific true mortality
rate. Finally, the reader will see that some pies are composed of different leading contributors to mortality, so they have different colored slices. The variable sizes of pie slices demonstrate differences in the mortality patterns across populations and are of significant importance in studying inequalities and disparities in population health.

**Interpreting the Trend Figures**

Four different types of figures are created to show trends in mortality by all causes and for each of the leading causes in the county over a twenty-three year period. True and age-adjusted mortality rate trends are shown for deaths by all causes in addition to the ten leading causes of death. Premature mortality is described for deaths by all causes only. The first figure in the trend series illustrates the true mortality rates for the county, region, and state. Here, the magnitude of each region’s mortality pattern for each time interval can be examined. The second figure shows age-adjusted mortality rates for the county, region, state, and nation. In this figure, these geographical entities can be compared directly, because their age structures have been controlled. The third figure compares trends in age-adjusted mortality rates by race and gender. Again, age structure is controlled for each group, which permits observation of the effects of race and gender on these groups. The last figure depicts racial differentials based on true mortality over the twenty-three year time period. True mortality is used here so that the percent differences of the actual number of deaths, or the relative mortality experience for, can be examined for potential disparities. Trend lines provide historical depth to mortality processes as well as a basis for future comparisons and action.

The trend line concept is borrowed from statistical modeling. However, unlike true modeling, we are not assuming the statistical independence of each sequential observation (the rate at time interval x). Instead, our assumption is that each observation is dependent to some degree on previous observations, forming a trend. If the degree of dependence is high, then the observations (rates) should lie close to the trend line. If observations appear to bounce around the fitted line in a random fashion, then there is less dependence and less of a trend in the observations. The purpose of trend lines is to uncover patterns in the data, which will assist the investigator in determining and understanding the underlying processes which generate them.

Mathematically, an equation of the line can be derived from a set of observation points. This line is an estimate of where each observed rate would be if the previous observation could predict with 100% accuracy the value of the next observation. In nature, this situation seldom arises and the degree to which individual observations deviate from this linear trend line is an indication of how well they “fit” or conform to the trend. The linear trend lines in the time series figures project theoretical rates to the year 2010 from historical values (1979 to 2001) to provide a general idea about where mortality trends are heading.

The equation of the line allows the user to calculate an expected or fitted rate—a rate on the trend line—for a given year. The variable “x” in the equation of the line represents the ordinal year in the series. For example, 1990 represents the 11th year in the time series. When the number 11 is substituted for x in the equation of the line describing ENC’s age-adjusted mortality rate for cancer of lung, trachea, and bronchus for the years 1979 to 2001, the calculated fitted rate approaches 63 persons dying per 100,000 people from this disease. The observed age-adjusted rate for 1990 is 69 deaths per 100,000 people. (The observed rates are the values found in the table that runs along the x-axis of the time series chart.) For the year 1990, the expected mortality rate is 63 per 100,000 people compared to the observed rate of 69—an underestimate of six people for that year. Each previous and subsequent year’s difference between the expected and observed rates will vary by a greater or lesser degree. The amount of variation can be measured to determine how well the line fits or models the observed data.

The time series figures include coefficients of determination (R^2), to note when the trend lines are significant, and the percent increase or decrease from 1979 to 2001. The coefficients of determination are included in order to show how well the trend lines fit the data. R-square can
range from 0 to 1, with higher scores representing a better fit. The trend lines are generally unreliable when \( R^2 \) is less than 0.11, moderately reliable when \( R^2 \) is between 0.11 and 0.35, and most reliable when \( R^2 \) is greater than 0.35. Graphically, data points, data lines, and trend lines are weighted according to their significance. The thinnest, dotted trend lines are for those where \( R^2 \) is less than 0.11 and should be considered non-significant. The thickest dotted lines are used for trends where the \( R^2 \) is greater than 35.0. In some cases, the trend lines do not fit the data well (i.e. small \( R^2 \)). In other words, the presentation of a trend line does not necessarily indicate a linear trend in the data line. In some instances a non-linear trend may be present; however, the theoretical basis with which to explore non-linear trends is beyond the scope of this publication. The percent change provides a quantitative measure of the projected rate of change as well as an indication of whether the trend is increasing or decreasing. Percentage increase or decrease is provided on the graphs for trends where \( R^2 \) is greater than 0.11. The reader should evaluate all available data carefully before drawing conclusions about mortality patterns.

The reader will notice that some data lines in the trend figures fluctuate widely. This fluctuation is due to two main factors. In a small population, the number of deaths may vary widely from year-to-year and lead to large changes in annual mortality and premature mortality rates, a phenomenon known as the effect of small numbers. In addition, because mortality is based on the age of death, any fluctuation in the distribution of deaths across age groups from year-to-year can cause rates to change dramatically. Both the number of deaths and the age of decedents influence trends in mortality.

Each figure, with the exception of the one showing disparity, is accompanied by two comparison tables located in the lower portion of the page. These tables are structured so that the reader can compare the rates derived from the equation of the line (i.e., the fitted rates) among different regions or demographic groups. The 1979 and 2001 tables compare the fitted rates calculated for the beginning and end of the observed time series in terms of percent difference. For example, ENC’s fitted rate for cancer of the lung, trachea, and bronchus in 1979 is 22% greater than (GT) Craven County’s fitted rate. In 2001, ENC’s fitted rate is the same as Craven County’s fitted rate. The tables permit a quick assessment of trends calculated from observed time series data.

**Caveats about the Concepts of Race, Gender, and Geography**

We also offer several caveats about the concepts of race, gender, and geography as they apply to the analysis of mortality patterns. While we do intend to bring attention to the stark racial inequalities in mortality across North Carolina, we do not mean to imply that this is a biological phenomenon. Other factors such as differences in socioeconomic status, educational attainment, occupation, and lifestyle probably account for the large racial gaps in mortality rates. Likewise, gender inequalities may have less to do with biological differences between men and women than with socially structured gender roles, health behaviors, occupational exposures, and use of health services. Finally, it is important to consider that county borders may not always be the most appropriate way to look at specific health problems. Few of our health care problems begin or end at political boundary lines and many of our health problems in North Carolina are common to large groups of counties. Counties are convenient units of data collection and readers should not jump to conclusions about health problems or possible solutions based solely on the way data appear when aggregated to this level. In some cases, data at multi-county, zip code, or minor civil division levels are a better way to understand problems and solutions. Similarly, as indicated in *Healthy Carolinians 2010*, consideration needs to be given to whether or not a county is characterized as rural or urban, as this can be an indication to the level of development and amount of resources available in a county.
References


Leading Causes of Death in Craven County, NC
Figure 1. Leading causes of death for the United States, North Carolina, Eastern North Carolina, and Craven County, (1999-2001). True Mortality rate per 100,000 population.

NC rate is 4% higher than US
ENC rate is 4% higher than NC
County rate is 2% lower than ENC rate.

Pie charts are proportionally scaled using the state age-adjusted mortality rate of white-females (718 deaths / 100,000 pop) as a standard. The areas are proportional to the rates. Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 2. Leading causes of death for the United States, North Carolina, Eastern North Carolina, and Craven County, (1999-2001). Age-Adjusted Mortality rate per 100,000 population.

United States  North Carolina  Eastern North Carolina  Craven County

<table>
<thead>
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<th>Cause</th>
<th>United States</th>
<th>North Carolina</th>
<th>Eastern North Carolina</th>
<th>Craven County</th>
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<tr>
<td>Heart Disease</td>
<td>32%</td>
<td>35%</td>
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<tr>
<td>Cancer</td>
<td>29%</td>
<td>27%</td>
<td>28%</td>
<td>26%</td>
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<tr>
<td>Chronic Lower Respiratory Diseases</td>
<td>7%</td>
<td>8%</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>Stroke</td>
<td>5%</td>
<td>8%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
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<td>5%</td>
<td>5%</td>
<td>22%</td>
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<tr>
<td>Motor Vehicle Injuries</td>
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<td>5%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>All other deaths</td>
<td>7%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
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</tbody>
</table>

United States: 855 deaths/100,000  North Carolina: 908 deaths/100,000  Eastern North Carolina: 988 deaths/100,000  Craven County: 941 deaths/100,000

NC rate is 6% higher than US  ENC rate is 9% higher than NC rate.  County rate is 5% lower than ENC rate.  County rate is 4% higher than NC rate.  County rate is 10% higher than US rate.

Pie charts are proportionally scaled using the state age-adjusted mortality rate of white-females (718 deaths / 100,000 pop) as a standard. The areas are proportional to the rates. Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 3: Leading causes of death for Craven County by race and gender, (1999-2001). True Mortality rate per 100,000 population.

Non-White Males

- The Non-White Male rate is 10% higher than the White Male rate, and 3% higher than Non-White Female rate.

- 949 deaths/100,000

Non-White Females

- The Non-White Female rate is 3% lower than the Non-White Male rate, and 1% higher than the White Female rate.

- 920 deaths/100,000

White Males

- 864 deaths/100,000

- 30% Heart Disease
- 26% Cancer
- 25% Chronic Lower Respiratory Diseases
- 5% Influenza and Pneumonia
- 5% Stroke
- 5% Diabetes Mellitus
- 5% All Other Unintentional Injuries
- 5% Septicemia
- 5% Motor Vehicle Injuries
- 5% All other deaths

White Females

- 910 deaths/100,000

- 32% Heart Disease
- 25% Cancer
- 22% Chronic Lower Respiratory Diseases
- 22% Influenza and Pneumonia
- 6% Stroke
- 9% Diabetes Mellitus
- 9% All Other Unintentional Injuries
- 9% Septicemia
- 9% Motor Vehicle Injuries
- 9% All other deaths

Pie charts are proportionally scaled using the state age-adjusted mortality rate of white-females (718 deaths / 100,000 pop) as a standard. The areas are proportional to the rates. Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 3a: Leading causes of death for Craven County by race and gender, (1999-2001). Age-Adjusted Mortality rate per 100,000 population.

The Non-White Male rate is 47% higher than the White Male rate, and 56% higher than Non-White Female rate.

**Non-White Males**
- Heart Disease: 35%
- Cancer: 24%
- Chronic Lower Respiratory Diseases: 23%
- Influenza and Pneumonia: 7%
- Stroke: 5%
- Diabetes Mellitus: 32%
- All Other Unintentional Injuries: 9%
- Septicemia: 6%
- Motor Vehicle Injuries: 5%
- All other deaths: 5%

1493 deaths/100,000

**White Males**
- Heart Disease: 30%
- Cancer: 26%
- Chronic Lower Respiratory Diseases: 25%
- Influenza and Pneumonia: 5%
- Stroke: 5%
- Diabetes Mellitus: 32%
- All Other Unintentional Injuries: 9%
- Septicemia: 6%
- Motor Vehicle Injuries: 5%
- All other deaths: 5%

1016 deaths/100,000

The Non-White Female rate is 36% lower than the Non-White Male rate, and 28% higher than the White Female rate.

**Non-White Females**
- Heart Disease: 35%
- Cancer: 24%
- Chronic Lower Respiratory Diseases: 21%
- Influenza and Pneumonia: 11%
- Stroke: 5%
- Diabetes Mellitus: 35%
- All Other Unintentional Injuries: 6%
- Septicemia: 9%
- Motor Vehicle Injuries: 5%
- All other deaths: 9%

957 deaths/100,000

**White Females**
- Heart Disease: 32%
- Cancer: 25%
- Chronic Lower Respiratory Diseases: 22%
- Influenza and Pneumonia: 6%
- Stroke: 5%
- Diabetes Mellitus: 35%
- All Other Unintentional Injuries: 9%
- Septicemia: 6%
- Motor Vehicle Injuries: 5%
- All other deaths: 5%

749 deaths/100,000

Pie charts are proportionally scaled using the state age-adjusted mortality rate of white-females (718 deaths / 100,000 pop) as a standard. The areas are proportional to the rates. Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4: Leading causes of death for Craven County by race (1999-2001). True Mortality rate per 100,000 population.

The Non-White rate is 5% higher than the White rate.

Non-Whites: 934 deaths/100,000

Whites: 886 deaths/100,000
Figure 4a: Leading causes of death for Craven County by race (1999-2001). Age-Adjusted Mortality rate per 100,000 population.

Non-Whites

The Non-White rate is 34% higher than the White rate.

Whites

1170 deaths/100,000

874 deaths/100,000

- Heart Disease
- Cancer
- Chronic Lower Respiratory Diseases
- Influenza and Pneumonia
- Stroke
- Diabetes Mellitus
- All Other Unintentional Injuries
- Septicemia
- Motor Vehicle Injuries
- All other deaths
Figure 5. Population Pyramid for Craven County, 2000. (Total 91,436, M-46,152, F-45,284)
Table 1. Leading contributors to age-adjusted mortality in Craven County by race and gender, 1999-2001.

<table>
<thead>
<tr>
<th>Race by Gender</th>
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<td>COPD and allied conditions</td>
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<td>Influenza and Pneumonia</td>
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<th>Race</th>
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<td>1st</td>
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<tr>
<td>2nd</td>
<td>Cancer (all sites)</td>
<td>Cancer (all sites)</td>
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<tr>
<td>3rd</td>
<td>Stroke</td>
<td>Stroke</td>
</tr>
<tr>
<td>4th</td>
<td>Diabetes Mellitus</td>
<td>COPD and allied conditions</td>
</tr>
<tr>
<td>5th</td>
<td>Kidney Disease</td>
<td>Influenza and Pneumonia</td>
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Ten Leading Causes of Death

Heart Disease

Stroke

Cancer - Trachea, Bronchus, and Lung

Chronic Lower Respiratory Disease

Diabetes Mellitus

Influenza and Pneumonia

All Other Unintentional Injuries and Adverse Effects

Cancer - Colon, Rectum, and Anus

Septicemia

Unintentional Motor Vehicle Injuries
All Causes of Death
Figure 6. All Causes of Death: 
Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

- Craven: 42% increase, \( R^2 = 0.82 \), \( y = 11.91x + 630 \)
- ENC: 15% increase, \( R^2 = 0.89 \), \( y = 5.42x + 808 \)
- NC: 11% increase, \( R^2 = 0.72 \), \( y = 4.06x + 816 \)

Comparison of Fitted Rates in 1979
- Craven: 22% LT, ENC: 1% GT
- Craven: 23% LT, NC: 1% LT

Comparison of Fitted Rates in 2001
- Craven: 4% GT, ENC: 2% LT
- NC: 2% LT, ENC: 2% GT
Figure 7. All Causes of Death:
Trends in age-adjusted mortality rates by county, region, state and nation,
1979-2001 with projections to 2010

1979 Craven rate is 6% less than ENC
2001 Craven rate is 6% less than ENC

Comparison of Fitted Rates in 1979
Craven ENC NC US
6% GT 2% LT 4% LT 6% LT Craven
6% LT 8% LT 10% LT ENC
2% GT 8% GT 2% LT NC
4% GT 11% GT 3% GT US

Comparison of Fitted Rates in 2001
Craven ENC NC US
7% GT 2% LT 6% LT Craven
6% LT 8% LT 12% LT ENC
2% GT 8% GT 5% LT NC
7% GT 14% GT 5% GT US

Craven 14% decrease
ENC 13% decrease
NC 13% decrease
US 14% decrease

R² = 0.44
y = -6.64x + 1076

R² = 0.89
y = -6.91x + 1145

R² = 0.90
y = -6.49x + 1058

R² = 0.94
y = -7.39x + 1032
Figure 8. All Causes of Death: Trends in age-adjusted mortality rates by race and gender, 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

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<th>WF</th>
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<td>60% GT</td>
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Comparison of Fitted Rates in 2001

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Figure 9. All Causes of Death: Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

- **Non-white:**
  - 9% increase
  - $R^2 = 0.10$
  - $y = 4.43x + 1071$

- **White:**
  - 20% decrease
  - $R^2 = 0.65$
  - $y = -9.85x + 1080$

1979 Non-white rate is 1% less than White
2001 Non-white rate is 35% greater than White
Figure 10. All Causes of Death: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
1571% increase
$R^2 = 0.60$
y = 1.67x - 2
All Causes of Premature Mortality
Figure 11. All Causes of Premature Mortality:
Trends in premature mortality rates by county, region, and state,
1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

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<td>8% LT</td>
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Comparison of Fitted Rates in 2001

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<td>15% LT</td>
<td>11% LT</td>
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</tr>
<tr>
<td>5% LT</td>
<td>12% GT</td>
<td>NC</td>
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Figure 12. All Causes of Premature Mortality:
Trends in age-adjusted premature mortality rates by county, region, state, and nation, 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
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<td>2% GT</td>
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Comparison of Fitted Rates in 2001

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<td>25% GT</td>
<td>10% GT</td>
<td>US</td>
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Figure 13. All Causes of Premature Mortality:
Trends in age-adjusted premature mortality rates by race,
1979-2001 with projections to 2010
Figure 14. All Causes of Premature Mortality: Trends in age-adjusted premature mortality rates by race, 1979-2001 with projections to 2010

1979 Non-white rate is 44% greater than White
2001 Non-white rate is 110% greater than White

Non-white
2% increase
R² = 0.00
y = -1.21x + 1381

White
33% decrease
R² = 0.59
y = -14.38x + 960
Figure 15. All Causes of Premature Mortality: Disparity in premature mortality rates by race, 1979-2001 with projections to 2010

Race
148% increase
$R^2 = 0.26$
y = 2.89x + 43
Heart Disease
Figure 16. Heart Disease:
Trends in mortality rates by county, region, and state,
1979-2001 with projections to 2010

1979 Craven rate is 26% less than ENC
2001 Craven rate is 6% less than ENC

Craven ENC NC
7% increase 15% decrease 21% decrease
$R^2 = 0.09$ $R^2 = 0.77$ $R^2 = 0.85$
y = 0.72x + 229 y = -2.15x + 309 y = -3.12x + 319

Actual Deaths

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Comparison of Fitted Rates in 1979

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<tr>
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Comparison of Fitted Rates in 2001

<table>
<thead>
<tr>
<th>Craven ENC NC</th>
<th>Craven ENC NC</th>
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<tr>
<td>35% GT 40% GT</td>
<td>7% GT 3% GT</td>
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<tr>
<td>26% LT 3% LT</td>
<td>6% LT 4% GT</td>
</tr>
</tbody>
</table>
Figure 17. Heart Disease:
Trends in age-adjusted mortality rates by county, region, state, and nation,
1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

\[ y = -6.91x + 408 \]  
\[ 37\% \text{ decrease} \quad R^2 = 0.83 \]

\[ y = -8.02x + 457 \]  
\[ 39\% \text{ decrease} \quad R^2 = 0.97 \]

\[ y = -7.89x + 425 \]  
\[ 41\% \text{ decrease} \quad R^2 = 0.98 \]

\[ y = -7.51x + 421 \]  
\[ 34\% \text{ decrease} \quad R^2 = 0.98 \]
Figure 18. Heart Disease: Trends in age-adjusted mortality rates by race and gender, 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th></th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
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<td>28% GT</td>
<td>30% LT</td>
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<td>22% LT</td>
<td>45% LT</td>
<td>42% LT</td>
<td>WM</td>
<td></td>
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<tr>
<td>42% GT</td>
<td>83% GT</td>
<td>7% GT</td>
<td>NWF</td>
<td></td>
</tr>
<tr>
<td>33% GT</td>
<td>71% GT</td>
<td>6% LT</td>
<td>WF</td>
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Comparison of Fitted Rates in 2001

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<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
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<td>24% LT</td>
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<td>31% GT</td>
<td>19% LT</td>
<td>32% LT</td>
<td>WM</td>
<td></td>
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<tr>
<td>61% GT</td>
<td>23% GT</td>
<td>16% LT</td>
<td>NWF</td>
<td></td>
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<tr>
<td>92% GT</td>
<td>46% GT</td>
<td>19% GT</td>
<td>WF</td>
<td></td>
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</table>
Figure 19. Heart Disease:
Trends in age-adjusted mortality rates by race,
1979-2001 with projections to 2010

1979 Non-white rate is 13% less than White
2001 Non-white rate is 20% greater than White

Non-white
20% decrease
$R^2 = 0.30$
y = -3.34x + 369

White
42% decrease
$R^2 = 0.81$
y = -8.14x + 425
Figure 20. Heart Disease:
Disparity in mortality rates by race
1979-2001 with projections to 2010

Race
197% increase
$R^2 = 0.34$
y = 1.76x - 20
Stroke
Figure 21. Stroke: Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

Craven County

ENC

NC

11% increase

R² = 0.04

y = 0.29x + 59

15% decrease

R² = 0.53

y = -0.56x + 81

12% decrease

R² = 0.46

y = -0.41x + 77

1979 Craven rate is 28% less than ENC

2001 Craven rate is 6% less than ENC

Actual Deaths

Comparison of Fitted Rates in 1979

Comparison of Fitted Rates in 2001

Craven | ENC | NC

Craven | ENC | NC

39% GT | 32% GT | Craven

28% LT | 5% LT | ENC

24% LT | 5% GT | NC

6% LT | 1% LT | ENC

5% GT | 1% GT | NC

Craven County

Center for Health Services Research and Development, ECU
Figure 22. Stroke:
Trends in age-adjusted mortality rates by county, region, state, and nation,
1979-2001 with projections to 2010

Craven 45% decrease  \( R^2 = 0.48 \)
\( y = -2.43x + 120 \)

ENC 44% decrease  \( R^2 = 0.91 \)
\( y = -2.60x + 131 \)

NC 39% decrease  \( R^2 = 0.89 \)
\( y = -2.03x + 113 \)

US 38% decrease  \( R^2 = 0.88 \)
\( y = -1.87x + 92 \)

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<thead>
<tr>
<th>Year</th>
<th>Craven</th>
<th>ENC</th>
<th>NC</th>
<th>US</th>
</tr>
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<td>1979</td>
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<td>151</td>
<td>120</td>
<td>120</td>
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<td>2001</td>
<td>110</td>
<td>138</td>
<td>123</td>
<td>128</td>
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Comparison of Fitted Rates in 1979

Craven: 9% GT 6% LT 23% LT ENC: 11% GT 3% LT 23% LT Craven
NC: 8% LT 14% LT 30% LT ENC: 10% LT 8% LT 31% LT ENC
US: 6% GT 16% GT 18% GT NC: 3% LT 8% GT 25% LT NC

Comparison of Fitted Rates in 2001

Craven: 11% GT 3% GT 23% LT ENC: 10% LT 8% LT 31% LT ENC
NC: 8% GT 16% GT 18% GT US: 3% LT 8% GT 25% LT NC
US: 30% GT 44% GT 34% GT
Figure 23. Stroke: Trends in age-adjusted mortality rates by gender and race, 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th>Gender</th>
<th>Race</th>
<th>Rate Increase/Decrease</th>
<th>R²</th>
<th>Equation</th>
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<tbody>
<tr>
<td>NWM</td>
<td></td>
<td>5% increase</td>
<td>0.00</td>
<td>y = 0.30x + 121</td>
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<tr>
<td>WM</td>
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<td>56% decrease</td>
<td>0.36</td>
<td>y = -3.34x + 130</td>
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<tr>
<td>NWF</td>
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<td>15% decrease</td>
<td>0.02</td>
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<td>WF</td>
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<td>57% decrease</td>
<td>0.59</td>
<td>y = -3.02x + 118</td>
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Comparison of Fitted Rates in 2001

<table>
<thead>
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<th>Gender</th>
<th>Race</th>
<th>Rate Increase/Decrease</th>
<th>R²</th>
<th>Equation</th>
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</thead>
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<td>WM</td>
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</tr>
<tr>
<td>WF</td>
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</table>

Craven County

Center for Health Services Research and Development, ECU
Figure 24. Stroke: 
Trends in age-adjusted mortality rates by race, 
1979-2001 with projections to 2010

1979 Non-white rate is 7% less than White
2001 Non-white rate is 99% greater than White

Non-white
5% decrease
\[ R^2 = 0.00 \]
\[ y = -0.24x + 114 \]

White
56% decrease
\[ R^2 = 0.61 \]
\[ y = -3.10x + 123 \]
Figure 25. Stroke: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
641% increase
$R^2 = 0.33$
y = 4.38x - 15
Cancer -
Trachea, Bronchus, and Lung
Figure 26. Cancer - Trachea, Bronchus, and Lung: Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

Craven 98% increase
\[ R^2 = 0.63 \]
\[ y = 1.53x + 34 \]

ENC 62% increase
\[ R^2 = 0.86 \]
\[ y = 1.19x + 42 \]

NC 56% increase
\[ R^2 = 0.83 \]
\[ y = 1.07x + 42 \]

1979 Craven rate is 18% less than ENC
2001 Craven rate is the same as ENC

<table>
<thead>
<tr>
<th>Actual Deaths</th>
<th>Craven</th>
<th>ENC</th>
<th>NC</th>
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<td>2001</td>
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<td>42</td>
<td>46</td>
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<tr>
<td>2010</td>
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<td>40</td>
<td>43</td>
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<table>
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<tr>
<th>Comparison of Fitted Rates in 1979</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craven</td>
</tr>
<tr>
<td>22% GT</td>
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<tr>
<td>18% LT</td>
</tr>
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<td>18% LT</td>
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<table>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>0%</td>
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<tr>
<td>4% GT</td>
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</table>

Craven County  Center for Health Services Research and Development, ECU 53
Figure 27. Cancer - Trachea, Bronchus, and Lung: Trends in age-adjusted mortality rates by county, region, and state, 1979-2001 with projections to 2010

1979 Craven rate is 2% greater than ENC
2001 Craven rate is 5% less than ENC

Craven
- 25% increase
  - \( R^2 = 0.14 \)
  - \( y = 0.60x + 54 \)
ENC
- 35% increase
  - \( R^2 = 0.68 \)
  - \( y = 0.83x + 53 \)
NC
- 35% increase
  - \( R^2 = 0.71 \)
  - \( y = 0.77x + 48 \)
Figure 28. Cancer - Trachea, Bronchus, and Lung:
Trends in age-adjusted mortality rates by race and gender,
1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th>Race</th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17% GT</td>
<td>40% increase</td>
<td>22% decrease</td>
<td>283% increase</td>
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<tr>
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<td>302% GT</td>
<td>R² = 0.06</td>
<td>y = 1.71x + 93</td>
<td>R² = 0.06</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>y = -1.09x + 109</td>
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</tbody>
</table>

Comparison of Fitted Rates in 2001

<table>
<thead>
<tr>
<th>Race</th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14% LT</td>
<td>1006% GT</td>
<td>847% GT</td>
<td>302% GT</td>
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<td></td>
<td>91% LT</td>
<td>136% GT</td>
<td>58% LT</td>
<td>WF</td>
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<td></td>
<td>54% GT</td>
<td>56% LT</td>
<td>39% LT</td>
<td>WM</td>
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<td></td>
<td>247% GT</td>
<td>125% GT</td>
<td>37% LT</td>
<td>NWF</td>
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<tr>
<td></td>
<td>154% GT</td>
<td>84% GT</td>
<td>27% LT</td>
<td>WF</td>
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</table>

Craven County

Center for Health Services Research and Development, ECU
Figure 29. Cancer - Trachea, Bronchus, and Lung: Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

Non-white 62% increase
\[ y = 1.24x + 44 \]
\[ R^2 = 0.19 \]

White 14% increase
\[ y = 0.37x + 57 \]
\[ R^2 = 0.04 \]

1979 Non-white rate is 22% less than White
2001 Non-white rate is 10% greater than White
Figure 30. Cancer - Trachea, Bronchus, and Lung:
Disparity in mortality rates by race,
1979-2001 with projections to 2010

Race
125% increase
\[ R^2 = 0.04 \]
\[ y = 1.64x - 29 \]
Chronic Lower Respiratory Disease
Figure 31. Chronic Lower Respiratory Disease: Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

Craven
208% increase
\[ R^2 = 0.58 \]
\[ y = 1.37x + 14 \]

ENC
182% increase
\[ R^2 = 0.96 \]
\[ y = 1.31x + 16 \]

NC
155% increase
\[ R^2 = 0.96 \]
\[ y = 1.26x + 18 \]

1979 Craven rate is 9% less than ENC
2001 Craven rate is the same as ENC

Actual Deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>Craven</th>
<th>ENC</th>
<th>NC</th>
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<tbody>
<tr>
<td>1979</td>
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Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th>County</th>
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<th>NC</th>
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<tr>
<td>Craven</td>
<td>10% LT</td>
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<tr>
<td>ENC</td>
<td>9% LT</td>
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<tr>
<td>NC</td>
<td>19% LT</td>
<td>11% LT</td>
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Comparison of Fitted Rates in 2001

<table>
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<tr>
<th>County</th>
<th>ENC</th>
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<tr>
<td>Craven</td>
<td>0%</td>
<td>2% GT</td>
</tr>
<tr>
<td>ENC</td>
<td>0%</td>
<td>2% GT</td>
</tr>
<tr>
<td>NC</td>
<td>2% LT</td>
<td>2% LT</td>
</tr>
</tbody>
</table>
Figure 32. Chronic Lower Respiratory Disease: Trends in age-adjusted mortality rates by county, region, state, and nation, 1979-2001 with projections to 2010

- **Craven County**
  - **83% increase**
  - \( R^2 = 0.28 \)
  - \( y = 0.97x + 26 \)

- **ENC**
  - **110% increase**
  - \( R^2 = 0.94 \)
  - \( y = 1.16x + 23 \)

- **NC**
  - **101% increase**
  - \( R^2 = 0.95 \)
  - \( y = 1.06x + 23 \)

- **US**
  - **57% increase**
  - \( R^2 = 0.95 \)
  - \( y = 0.82x + 27 \)

1979 Craven rate is 11% greater than ENC
2001 Craven rate is 3% less than ENC
Figure 33. Chronic Lower Respiratory Disease: Trends in age-adjusted mortality rates by race and gender 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th></th>
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<td>y = 1.19x + 18</td>
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Comparison of Fitted Rates in 2001

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<td>71% LT</td>
<td>14% LT</td>
<td>NWM</td>
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<td>75% LT</td>
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<td>691% GT</td>
<td>578% GT</td>
<td>578% GT</td>
<td>WM</td>
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<td>295% GT</td>
<td>168% GT</td>
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<td>241% GT</td>
<td>295% GT</td>
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<tr>
<td>NWF</td>
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<td>247% GT</td>
<td>85% LT</td>
<td>WF</td>
<td>27% GT</td>
<td>47% GT</td>
<td>63% LT</td>
<td>WF</td>
<td>27% GT</td>
<td>47% GT</td>
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</table>
Figure 34. Chronic Lower Respiratory Disease: Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

Non-white
182% increase
\[ R^2 = 0.21 \]
\[ y = 0.88x + 11 \]

White
59% increase
\[ R^2 = 0.16 \]
\[ y = 0.89x + 33 \]

1979 Non-white rate is 68% less than White
2001 Non-white rate is 43% less than White
Figure 35. Chronic Lower Respiratory Disease: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
52% increase
$R^2 = 0.03$
y = 6.50x - 277
Diabetes Mellitus
Figure 36. Diabetes Mellitus:
Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

Actual Deaths

<table>
<thead>
<tr>
<th>Year</th>
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Comparison of Fitted Rates in 1979

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Comparison of Fitted Rates in 2001

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Figure 37. Diabetes Mellitus:
Trends in age-adjusted mortality rates by county, region, state, and nation,
1979-2001 with projections to 2010

1979 Craven rate is 41% less than ENC
2001 Craven rate is 22% less than ENC

Comparison of Fitted Rates in 1979

<table>
<thead>
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<th>Craven</th>
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<tr>
<td>167% increase</td>
<td>102% increase</td>
<td>84% increase</td>
<td>51% increase</td>
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<td>Craven</td>
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<td>US</td>
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<td>1979 Craven rate is 41% less than ENC</td>
<td>2001 Craven rate is 22% less than ENC</td>
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Comparison of Fitted Rates in 2001

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<td>7% LT 20% GT 10% LT NC</td>
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<tr>
<td>3% GT 33% GT 11% GT US</td>
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<thead>
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<th>US</th>
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<td>3% LT 33% GT 11% GT</td>
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<tr>
<td>3% GT 33% GT 11% GT US</td>
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<th>US</th>
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<td>7% LT 20% GT 10% LT NC</td>
<td>3% GT 33% GT 11% GT US</td>
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<td>3% GT 33% GT 11% GT US</td>
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</table>
Figure 38. Diabetes Mellitus:
Trends in age-adjusted mortality rates by race and gender, 1979-2001 with projections to 2010

NWM
42% increase
$R^2 = 0.03$
$y = 0.59x + 31$

WM
688% increase
$R^2 = 0.37$
$y = 0.90x + 3$

NWF
262% increase
$R^2 = 0.37$
$y = 1.81x + 15$

WF
181% increase
$R^2 = 0.17$
$y = 0.45x + 5$
Figure 39. Diabetes Mellitus:
Trends in age-adjusted mortality rates by race,
1979-2001 with projections to 2010

1979 Non-white rate is 408% greater than White
2001 Non-white rate is 185% greater than White

Non-white
135% increase
$R^2 = 0.31$
$y = 1.35x + 22$

White
319% increase
$R^2 = 0.36$
$y = 0.63x + 4$
Figure 40. Diabetes Mellitus: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
17% increase
\[ R^2 = 0.00 \]
\[ y = 2.03x + 261 \]
Influenza and Pneumonia
Figure 41. Influenza and Pneumonia:
Trends in mortality rates by county, region, and state,
1979-2001 with projections to 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual Deaths</th>
<th>Comparison of Fitted Rates in 1979</th>
<th>Comparison of Fitted Rates in 2001</th>
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</thead>
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Craven County
Figure 42. Influenza and Pneumonia:
Trends in age-adjusted mortality rates by county, region, state, and nation, 1979-2001 with projections to 2010

Craven 19% increase
R² = 0.04
y = 0.23x + 27

ENC 6% decrease
R² = 0.02
y = -0.10x + 35

NC 4% decrease
R² = 0.01
y = -0.05x + 34

US 21% increase
R² = 0.38
y = 0.32x + 30

1979 Craven rate is 23% less than ENC
2001 Craven rate is 3% less than ENC

Comparison of Fitted Rates in 1979
Craven ENC NC US
30% GT 27% GT 11% GT Craven 30% GT 27% GT 11% GT Craven
23% LT 2% LT 15% LT ENC 3% LT 1% LT 12% LT ENC
21% LT 2% GT 13% LT NC 3% LT 1% LT 11% LT NC
10% LT 18% GT 15% GT US 13% LT 11% LT 10% LT US
Figure 43. Influenza and Pneumonia:
Trends in age-adjusted mortality rates by race and gender,
1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th>Race</th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
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<tbody>
<tr>
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<td>207% GT</td>
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<tr>
<td>18% GT</td>
<td>106% GT</td>
<td>73% LT</td>
<td>WF</td>
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Comparison of Fitted Rates in 2001

<table>
<thead>
<tr>
<th>Race</th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
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<tr>
<td>60% GT</td>
<td>5% LT</td>
<td>39% LT</td>
<td>15% LT</td>
<td>NWM</td>
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<td>207% GT</td>
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<td>18% GT</td>
<td>12% GT</td>
<td>29% LT</td>
<td>WF</td>
<td></td>
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</table>
Figure 44. Influenza and Pneumonia:
Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

1979 Non-white rate is 64% less than White
2001 Non-white rate is 16% less than White

White
2% increase
\[ R^2 = 0.00 \]
\[ y = 0.04x + 33 \]

Non-white
138% increase
\[ R^2 = 0.18 \]
\[ y = 0.75x + 12 \]
Influenza and Pneumonia: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Figure 45. Influenza and Pneumonia: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
77% increase
$R^2 = 0.07$
y = 5.79x - 165
All Other Unintentional Injuries and Adverse Effects
1979 Craven rate is 27% less than ENC
2001 Craven rate 4% greater than ENC

Craven County  
Center for Health Services Research and Development, ECU  
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Figure 47. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates by county, region, state, and nation, 1979-2001 with projections to 2010

1979 Craven rate is 19% less than ENC
2001 Craven rate 3% greater than ENC

Craven 17% decrease  
\( R^2 = 0.03 \)  
y = -0.21x + 27

ENC 35% decrease  
\( R^2 = 0.75 \)  
y = -0.54x + 34

NC 29% decrease  
\( R^2 = 0.75 \)  
y = -0.38x + 29

US 22% decrease  
\( R^2 = 0.69 \)  
y = -0.27x + 24

Comparison of Fitted Rates in 1979

Comparison of Fitted Rates in 2001

<table>
<thead>
<tr>
<th>Country</th>
<th>Craven</th>
<th>ENC</th>
<th>NC</th>
<th>US</th>
<th>Craven</th>
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<td>15% GT</td>
<td>42%</td>
<td>22%</td>
<td>GT</td>
<td>US</td>
<td>27%</td>
<td>23%</td>
<td>17%</td>
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</table>
Figure 48. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates by race and gender, 1979-2001 with projections to 2010

Craven County

Comparison of Fitted Rates in 1979

- NWM: 49% decrease
  - $R^2 = 0.08$
  - $y = -1.51x + 68$
- WM: 22% decrease
  - $R^2 = 0.03$
  - $y = -0.40x + 40$
- NWF: 37% decrease
  - $R^2 = 0.03$
  - $y = -0.37x + 22$
- WF: 172% increase
  - $R^2 = 0.15$
  - $y = 0.44x + 6$

Comparison of Fitted Rates in 2001

- NWM: 42% LT
- WM: 88% LT
- NWF: 92% LT
- WF: 212% GT

- NWM: 71% GT
- WM: 82% GT
- NWF: 74% LT
- WF: 1117% GT

Craven County

Center for Health Services Research and Development, ECU

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Figure 49. All Other Unintentional Injuries and Adverse Effects:
Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

- **Non-white**
  - 44% decrease
  - $R^2 = 0.09$
  - $y = -0.81x + 40$

- **White**
  - 1% increase
  - $R^2 = 0.00$
  - $y = 0.01x + 22$

1979 Non-white rate is 82% greater than White
2001 Non-white rate is 1% greater than White
Figure 50. All Other Unintentional Injuries and Adverse Effects: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
105% decrease
$R^2 = 0.13$
y = -6.33x + 133
Cancer - Colon, Rectum, and Anus
Figure 51. Cancer - Colon, Rectum, and Anus:
Trends in mortality rates by county, region, and state,
1979-2001 with projections to 2010

Craven County

1979 Craven rate is 30% less than ENC
2001 Craven rate is 12% greater than ENC

Comparison of Fitted Rates in 1979
Craven ENC NC
105% increase 28% increase 12% increase
\( R^2 = 0.39 \)
\( y = 0.55x + 12 \)
\( R^2 = 0.63 \)
\( y = 0.21x + 17 \)
\( R^2 = 0.33 \)
\( y = 0.10x + 18 \)

Actual Deaths

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Comparison of Fitted Rates in 2001
Craven ENC NC
105% increase 28% increase 12% increase
\( R^2 = 0.39 \)
\( y = 0.55x + 12 \)
\( R^2 = 0.63 \)
\( y = 0.21x + 17 \)
\( R^2 = 0.33 \)
\( y = 0.10x + 18 \)

Actual Deaths

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Craven County

Center for Health Services Research and Development, ECU
Figure 52. Cancer - Colon, Rectum, and Anus:
Trends in age-adjusted mortality rates by county, region, and state,
1979-2001 with projections to 2010

- **Craven** 12% increase
  
  \[ R^2 = 0.02 \]
  
  \[ y = 0.12x + 22 \]

- **ENC** 5% decrease
  
  \[ R^2 = 0.08 \]
  
  \[ y = -0.06x + 24 \]

- **NC** 12% decrease
  
  \[ R^2 = 0.46 \]
  
  \[ y = -0.13x + 23 \]
Figure 53. Cancer - Colon, Rectum, and Anus: Trends in age-adjusted mortality rates by race and gender, 1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th>Race</th>
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<th>WM</th>
<th>NWF</th>
<th>WF</th>
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</thead>
<tbody>
<tr>
<td>21% increase</td>
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<td>y = 0.30x + 31</td>
<td>WM 1% decrease</td>
<td>R² = 0.00</td>
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</table>

Craven County

Center for Health Services Research and Development, ECU
Figure 54. Cancer - Colon, Rectum, Anus:
Trends in age-adjusted mortality rates by race,
1979-2001 with projections to 2010

Non-white
57% increase
$R^2 = 0.04$
y = 0.54x + 21

White
1% decrease
$R^2 = 0.00$
y = 0.00x + 22

1979 Non-white rate is 7% less than White
2001 Non-white rate is 47% greater than White
Figure 55. Cancer - Colon, Rectum, and Anus: Disparity in mortality rates by race, 1979-2001 with projections to 2010

Race
360% increase
R^2 = 0.02
y = 3.82x - 23
Septicemia
Figure 56. Septicemia:
Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

<table>
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<tr>
<th>County</th>
<th>1979 Rate</th>
<th>2001 Rate</th>
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Actual Deaths

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Figure 57. Septicemia:
Trends in age-adjusted mortality rates by county, region, state, and nation,
1979-2001 with projections to 2010

NC 74% increase
R² = 0.50
y = 0.24x + 7

ENC 96% increase
R² = 0.54
y = 0.32x + 7

Craven 82% increase
R² = 0.16
y = 0.39x + 11

US 60% increase
R² = 0.53
y = 0.19x + 6

1979 Craven rate is 47% greater than ENC
2001 Craven rate is 36% greater than ENC

Comparison of Fitted Rates in 1979
Craven ENC NC US
32% LT 34% LT 45% LT 47% GT
47% GT 3% LT 19% LT ENC
52% GT 3% GT 16% LT NC
81% GT 23% GT 19% GT US

Comparison of Fitted Rates in 2001
Craven ENC NC US
26% LT 37% LT 48% LT Craven
36% GT 14% LT 30% LT ENC
58% GT 16% GT 18% LT NC
93% GT 42% GT 22% GT US
Figure 58. Septicemia:
Trends in age-adjusted mortality rates by gender and race
1979-2001 with projections to 2010

Comparison of Fitted Rates in 1979

<table>
<thead>
<tr>
<th></th>
<th>NWM</th>
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<th>NWF</th>
<th>WF</th>
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<td>2762% GT</td>
<td>1206% GT</td>
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<td>92% LT</td>
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<td>54% LT</td>
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<td>23% GT</td>
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<td>92% LT</td>
<td>134% GT</td>
<td>119% GT</td>
<td>WF</td>
<td>62% GT</td>
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Comparison of Fitted Rates in 2001

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<th>NWM</th>
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<th>NWF</th>
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<td>92% LT</td>
<td>62% LT</td>
<td>32% GT</td>
<td>WF</td>
<td>62% LT</td>
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</table>

NWM 5963% increase
$R^2 = 0.26$
$y = 1.48x + 1$

WM 53% decrease
$R^2 = 0.07$
$y = -0.41x + 17$

NWF 72% increase
$R^2 = 0.05$
$y = 0.51x + 16$

WF 186% increase
$R^2 = 0.21$
$y = 0.60x + 7$
Figure 59: Septicemia: Trends in age-adjusted mortality rates by race, 1979-2001 with projections to 2010

Non-white

175% increase

$R^2 = 0.19$

$y = 0.85x + 11$

White

55% increase

$R^2 = 0.07$

$y = 0.26x + 10$

1979 Non-white rate is 2% greater than White
2001 Non-white rate is 81% greater than White
Figure 60. Septicemia: Disparities in mortality rates by race, 1979-2001 with projections to 2010

Race
62% increase
$R^2 = 0.01$
y = 1.71x + 61
Unintentional Motor Vehicle Injuries
Figure 61. Unintentional Motor Vehicle Injuries: Trends in mortality rates by county, region, and state, 1979-2001 with projections to 2010

1979 Craven rate is 29% less than ENC

2001 Craven rate is 31% less than ENC

Craven | ENC | NC
--- | --- | ---
19% decrease | 17% decrease | 25% decrease
R² = 0.05 | R² = 0.46 | R² = 0.63
y = -0.18x + 21 | y = -0.22x + 29 | y = -0.29x + 26

Actual Deaths

Comparison of Fitted Rates in 1979

Craven | ENC | NC
--- | --- | ---
41% GT | 24% GT | Craven
29% LT | 11% LT | ENC
20% LT | 13% GT | NC

Comparison of Fitted Rates in 2001

Craven | ENC | NC
--- | --- | ---
45% GT | 16% GT | Craven
31% LT | 20% LT | ENC
14% LT | 25% GT | NC

Craven County
Figure 62. Unintentional Motor Vehicle Injuries: Trends in age-adjusted mortality rates by county, region, state, and nation, 1979-2001 with projections to 2010

- **Craven**: 13% decrease  
  \[ R^2 = 0.02 \]  
  \[ y = -0.11x + 19 \]

- **ENC**: 13% decrease  
  \[ R^2 = 0.34 \]  
  \[ y = -0.16x + 28 \]

- **NC**: 20% decrease  
  \[ R^2 = 0.56 \]  
  \[ y = -0.23x + 25 \]

- **US**: 27% decrease  
  \[ R^2 = 0.79 \]  
  \[ y = -0.31x + 22 \]
Figure 63. Unintentional Motor Vehicle Injuries:
Trends in age-adjusted mortality rates by race and gender,
1979-2001 with projections to 2010

Craven County Center for Health Services Research and Development, ECU

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Figure 64. Unintentional Motor Vehicle Injuries:
Trends in age-adjusted mortality rates by race,
1979-2001 with projections to 2010

1979 Non-white rate is 2% greater than White
2001 Non-white rate is 81% greater than White

Non-white
175% increase
$R^2 = 0.19$
$y = 0.85x + 11$

White
55% increase
$R^2 = 0.07$
$y = 0.26x + 10$
Figure 65. Unintentional Motor Vehicle Injuries: Disparity in mortality rates by race, 1979-2001 with projections to 2010
Appendix

Heart Disease
Stroke
Atherosclerosis
Cancer - Lip, Oral Cavity, and Pharynx
Cancer - Stomach
  Cancer - Colon, Rectum, and Anus
  Cancer - Liver
  Cancer - Pancreas
  Cancer - Larynx
  Cancer - Trachea, Bronchus, and Lung
  Cancer - Malignant Melanoma of Skin
  Cancer - Breast
  Cancer - Cervix Uteri
  Cancer - Ovary
  Cancer - Prostate
  Cancer - Bladder
  Cancer - Brain
  Cancer - Non-Hodgkin's Lymphoma
  Cancer - Leukemia
  Human Immunodeficiency Virus (HIV) Disease
Septicemia
Diabetes Mellitus
Influenza and Pneumonia
Chronic Lower Respiratory Disease
Chronic Liver Disease and Cirrhosis
Nephritis, Nephrotic Syndrome, and Nephrosis
Unintentional Motor Vehicle Injuries
All Other Unintentional Injuries and Adverse Effects
Suicide
Homicide
Legal Intervention
Alzheimer's Disease